

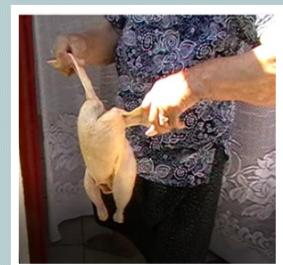
# European food safety

Mapping critical food practices and cultural differences  
in France, Norway, Portugal, Romania and the UK

Editor: Silje Elisabeth Skuland

Authors (alphabetical): Borda, D., Didier, P., Dumitrașcu, L., Ferreira, V., Foden, M., Langsrud, S., Maître, I., Martens, L. Møretrø, T., Nguyen-The, C., Nicolau, A. I. Nunes, C., Rosenberg, T. G., Skuland, S. E., Teigen, H. M., Teixeira, P., and Truninger, M.

OSLO METROPOLITAN UNIVERSITY  
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**OSLO METROPOLITAN UNIVERSITY**  
CONSUMPTION RESEARCH NORWAY SIFO

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<b>Funder:</b> European Commision Horizon 2020, Programme: Sustainable Food Security - Resilient and resource-efficient value chains and the specific topic "SFS – 37 – 2016 The impact of consumer practices in food safety: risks and mitigation strategies"		
<p><b>Summary:</b> How is food handled in safe and unsafe ways from retail to fork in European households? This is the overall research question raised in this report. The aim of this report is to contribute to an in-depth, detailed, empirical and nuanced analysis of how food is handled in everyday life in five European countries: France, Norway, Portugal, Romania and the UK. The first chapters (Part 1) describe the food cultural difference and food safety variation between the five countries, theories of practices that underpin the study and the transdisciplinary methods employed for studying shopping, transportation, storage and cooking a meal with chicken and raw vegetables in 75 European households. The first empirical chapters (Part 2) introduce the households in this study (chapter 2.1), discuss the everyday food life the households (chapter 2.2) and describe food anxieties and experiences with foodborne illnesses (chapter 2.3). Part 3 concentrates on food procuring and organising practices in the households and includes three empirical discussions of shopping (chapter 3.1), transportation (chapter 3.2) and storage (chapter 3.3). Part 4 discusses food preparation and comprises five chapters discussing the order of cooking (chapter 4.1), chicken preparation (chapter 4.2), vegetable preparation (chapter 4.3), determining doneness (chapter 4.4) and washing hands (chapter 4.5). Finally, Part 5 discusses the main findings in the report and suggests further research steps.</p>		
<p><b>Sammendrag:</b> Hvordan håndteres mat på trygge og utrygge måter fra butikk til bords i europeiske husholdninger? Dette er det overordnede forskningsspørsmålet som studeres i denne rapporten. Målet med denne rapporten er å bidra til en grundig, detaljert, empirisk og nyansert analyse av hvordan mat håndteres i hverdagen i fem europeiske land: Frankrike, Norge, Portugal, Romania og Storbritannia. De første kapitlene (Del 1) beskriver matkulturelle forskjeller og mattrygghet i de fem landene, praksisteorien som ligger til grunn for studien og den transdisiplinære metoden for å studere innkjøp, transport og oppbevaring av mat og tillaging av et måltid med kylling og rå grønnsaker i 75 europeiske husholdninger. De første empiriske kapitlene (Del 2) introduserer husholdningene i studien (kapittel 2.1), diskuterer hverdagssliv og matforbruk i husholdningene (kapittel 2.2) og beskriver matbekymringer og erfaringer med matbårne sykdommer (kapittel 2.3). Del 3 koncentrerer seg om matinnkjøp og organiseringsspraksiser i husholdningene og inkluderer tre empiriske diskusjoner om matinnkjøp (kapittel 3.1), transport (kapittel 3.2) og matoppbevaring (kapittel 3.3). Del 4 diskuterer tilberedning av mat og består av fem kapitler som diskuterer rekkefølgen på matlaging (kapittel 4.1), tillagning av kylling (kapittel 4.2), tillagning av salat (kapittel 4.3), avgjørelse om at maten er ferdig (kapittel 4.4) og vaske hender (kapittel 4.5). Til slutt diskuterer Del 5 hovedfunnene i rapporten og foreslår videre forskning.</p>		
<p><b>Keywords:</b> Food safety* Retail-to-fork* Shopping* Transport* Storage* Cooking* Chicken and vegetable consumption* Kitchen infrastructure* Critical consumer handling* Practice theory* Transdisciplinary methods* France* Norway* Portugal* Romania* UK*</p>		
<p><b>Stikkord:</b> Mattrygghet* Butikk-til-bords* Matinnkjøp* Transport* Matoppbevaring* Matlaging* Kylling og grønnsaksforbruk* Kjøkken* Kritiske forbrukerhandlinger* Praksisteo* Transdisiplinær metode* Frankrike* Norge* Portugal* Romania* Storbritannia*</p>		

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## Foreword

This report presents an analysis of food safety in private kitchens in 75 households in Europe. The report contributes to an empirical analysis of how food is handled from retail to fork, in France, Norway, Portugal, Romania and the UK. It draws upon fieldwork employing observational and conversational methods, and includes screenshots from food preparation of chicken and vegetables, photographs of shopping, transporting and storing food, and transcripts of conversations and observation of how food is handled. It contributes to better understanding of safe and unsafe food handling in European households, a comprehensive collection of qualitative data from domestic life of consumers from different countries and transdisciplinary understandings of critical food handling in private homes.

### *The Horizon 2020 project – SafeConsume*

This report is a part of the Horizon 2020-funded project, SafeConsume, *Safer food through changed consumer behavior: Effective tools and products, communication strategies, education and a food safety policy reducing health burden from foodborne illnesses*. SafeConsume is coordinated by Dr. Solveig Langsrød at Nofima, Norway, and is a large research and innovation project with 32 partners, including researchers from various disciplines, market actors, authorities and NGOs from 14 countries. The project started on the 1<sup>st</sup> of May 2017 and lasts for 60 months (2017 – 2022). SafeConsume is divided into nine work packages, where this report describes the results of the first WP1 *Characterization of consumer behaviours and barriers*. WP1 is led by Dr Silje Elisabeth Skuland at SIFO/Oslo Metropolitan University, Norway.

The main objective of SafeConsume is to reduce the health burden from foodborne illnesses by changing consumer behaviour through effective and convenient tools and products, communication strategies, education and an inclusive food safety policy. As such, the project builds on the hypothesis that consumer behaviour is both a core problem and solution in this part of the food chain. In this context, behaviour is defined as the consumer actions affecting the risks of foodborne infection at all stages from retail to consumption including food choice, storage and preparation. As existing strategies for risk mitigation through changing consumer behaviour seem to fall short, the intention of the project is to supplement the methodologies and existing paradigms with an improved approach, which is to describe and understand consumer behaviour using a methodology based on theories of practices and combine this insight with microbial risk assessment. SafeConsume is thus a transdisciplinary project aiming to link consumer behaviour and microbiological risks.

Transdisciplinary projects are those in which researchers from different fields not only work closely together on a common problem over an extended period but also create a shared conceptual model of the problem that integrates and transcends separate

disciplinary perspectives. Transdisciplinarity is a specific form of interdisciplinarity in which boundaries between and beyond disciplines are transcended, and knowledge and perspectives from different scientific disciplines as well as knowledge from societal stakeholders, are integrated.<sup>1</sup> In SafeConsume, a transdisciplinary methodology for field studies employing qualitative sociological methods, such as walking-with video interviews and semi-structured observation has been combined with HACCP methodology.

This report is a comprehensive first-step analysis of the transdisciplinary fieldwork conducted in the spring of 2018 in a total of 75 households in France, Norway, Portugal, Romania and the UK; 15 households in each country. The aim of this report is to contribute to a detailed, empirical and nuanced analysis of how food is handled in everyday life in these five European countries. The overall research question raised in this report is: How is food handled in safe and unsafe ways from retail to fork in European households?

### *Fieldwork data and methods*

Most studies comparing food risks at the consumer stage make use of statistical survey methodology. There are few qualitative comparisons of food consumption across national borders in Europe. This report thus contributes to a better understanding of everyday life of the food consumer in Europe – and the differences and similarities between Southern, Northern, Western and Eastern European food cultures in relation to food safety. Furthermore, despite the practical nature of food consumption, most qualitative studies of food consumption employ conversational methods such as interviews and focus group, relying on consumers' statements of what and how they shop, transport, store and cook food.

In order to study food safety as a part of food handling activities in mundane life, this study reports from a comprehensive fieldwork combining on-site observational and conversational methods in food stores (supermarkets, groceries, open markets), on the move (walkways, private cars, public transport) and in homes (kitchens, fridges, freezers, cellars, garages, backyards). Researchers from each of the countries have observed and interviewed people during shopping, transportation, storage and preparation of food.

The advantage of this approach has been to study the material, social and cultural context of food consumption and how it is carried out in domestic lives. The approach taken has produced a large and detailed dataset including 300 hours of audio records, 75 hours of cooking videos and 2500 pictures, combined into 75 data summary documents including transcripts of audio and video recording (100-250 pages each). Working with large sets of qualitative data, and in particular analysing visual data such

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<sup>1</sup> H2020 2015-2017, SCF 3, Work program, p. 13 URL:  
[https://ec.europa.eu/research/participants/data/ref/h2020/wp/2016\\_2017/main/h2020-wp1617-food\\_en.pdf](https://ec.europa.eu/research/participants/data/ref/h2020/wp/2016_2017/main/h2020-wp1617-food_en.pdf)

as video footage, has been a time-consuming endeavour. Meanwhile, an in-depth practice theoretical analysis of this substantial fieldwork dataset was too ambitious to complete within the timeframe set out for developing this report.

### *The process of developing the report*

The fieldwork data described in this report had multiple purposes within the SafeConsume project. First, the fieldwork data was used for determining the impact of certain consumer behaviour on microbial hazards from retail to fork. Second, it was used for developing a pan-European survey of 10 000 households in ten European countries. Third, it was used for developing opportunities for design solutions. All these purposes meant following a strict time schedule. The process of recruiting households started in December 2017. The fieldwork started in February 2018 and was finalised at the end of July 2018. Writing the report started in September 2018 and was finished in February 2019.<sup>2</sup>

### *The first step in the analysis and data contribution*

This report is a first-step analysis defined as ‘mapping critical food practices and cultural differences of safe and unsafe food handling in European households’. This has been informed by the transdisciplinary approach employed in SafeConsume, integrating HACCP analysis and practice theory to define the main research objective as ‘critical consumer handling’ (CCH). SafeConsume’s particular focus is on foods such as poultry, raw vegetables, fruits, berries, eggs, seafood (scallops and mussels) and ready to eat foods (included cheese, ham and deli-products not cooked before eating) as these are associated with the health risks posed by *Salmonella enterica*, *Campylobacter spp*, *Toxoplasma gondii*, *Norovirus* and *Listeria monocytogenes*. The report concentrates on the critical consumer handling of poultry, vegetable and fruit from retail to fork. It is structured around defined critical food handling steps (CCHs), which are:

1. Shopping and food choice of poultry and fresh vegetables and fruit
2. Transportation and storage
3. Washing fresh vegetables and fruit (before or after handling raw poultry)
4. Handling and preparing fresh vegetables (before or after handling raw poultry)
5. Handling and preparing poultry
6. Cooking poultry

These critical food handling steps are broad categories of actions. This report thus describes the multiple doings of the research participants under each defined step and their socio-material context. Thus, as a first-step analysis, this report is empirical in nature by describing the doings observed and the meanings expressed by the research participants and by associating these observations to the foods, the material environment, the tools, and the practical skills involved. A complete practice

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<sup>2</sup> The report was held confidential until publishing in May 2020.

theoretical analysis will be provided in future journal publications. As such the report contributes with a rich and detailed qualitative dataset on safe and unsafe food handling that welcomes reuse and reanalysis. Furthermore, the report fulfils the overall aim of SafeConsume to provide open-access data for the larger scientific community, for the policy developers and for the public.

### *The collaborative effort*

This report is a result of a collaborative effort of 17 researchers from various scientific backgrounds working together to better understand safe and unsafe food handling in domestic kitchens.

The authors contributing to writing the report (in alphabetical order) are:

- Prof. Daniela Borda*, PhD Industrial Engineering, Faculty of Food Science and Engineering from the "Dunarea de Jos" University of Galati, Romania.
- Dr. Pierrine Didier*, (PhD) anthropologist and post-doctoral fellow at INRAE (the French National Institute for Agricultural Research), France.
- Dr. Loredana Dumitraşcu*, PhD Industrial Engineering, lecturer at Food Science and Engineering, "Dunarea de Jos", University of Galati, Romania.
- Dr. Vânia Ferreira*, Microbiologist and Researcher at Escola Superior de Biotecnologia, Universidade Católica Portuguesa, Portugal
- Dr. Mike Foden*, Research Associate in the School of Social Science and Public Policy, Keele University, UK.
- Dr. Solveig Langsrud*, Senior Research scientist, PhD Microbiology, Nofima, Norway
- Dr. Isabelle Maître*, lecturer researcher in sensory analysis and consumer science. École Supérieure d'Agricultures (ESA)-INRA, France.
- Prof. Lydia Martens*, Professor of Sociology, School of Social Science and Public Policy, Keele University, UK.
- Dr. Trond Mørretrø*, Research scientist, PhD Microbiology, Nofima, Norway
- Dr. Christophe Nguyen-The*, research director at INRAE, PhD agricultural sciences (the French National Institute for Agricultural Research), France.
- Prof. Anca Ioana Nicolau*, PhD, Industrial Biotechnology, Faculty of Food Science and Engineering from the "Dunarea de Jos" University of Galati, Romania.
- Dr. Cristina Nunes*. Sociologist and Research Associate at the Instituto de Ciências Sociais da Universidade de Lisboa, Portugal.
- Thea Grav Rosenberg*, Master degree, Media Science and researcher at Consumption Research Norway (SIFO), Oslo Metropolitan University, Norway.
- Dr. Silje Elisabeth Skuland*, Sociologist and Researcher at Consumption Research Norway (SIFO), Oslo Metropolitan University, Norway.
- Helene Maria Fiane Teigen*, Master degree, Media Science and Researcher at Consumption Research Norway (SIFO), Oslo Metropolitan University, Norway.
- Prof. Paula Teixeira*, Associate Professor in Microbiology at Escola Superior de Biotecnologia, Universidade Católica Portuguesa, Portugal
- Dr. Mónica Truninger*, Sociologist and Researcher at Instituto de Ciências Sociais da Universidade de Lisboa, Portugal.

Five teams of authors have had a significant role in writing the empirical chapters. Each of the country teams have written the country-specific empirical chapters, contributed to various parts in the introduction and the summaries. The social scientists had the responsibility of developing the analysis in this report. This was done by developing the empirical chapters by writing examples chapters for the other teams to follow, writing summaries of each chapter, the methodology and the final discussion.

Below is an overview of the five teams, persons involved and contribution to the report:

University of Lisbon, Portugal	<i>Dr. Mónica Truninger Dr. Cristina Nunes</i>	Writing country-specific sub-chapters Writing chapters (1.5 and part 5) Developing example chapters (4.2)
University of Galati, Romania	<i>Dr. Loredana Dumitrascu Prof. Anca Ioana Nicolau</i>	Writing country-specific sub-chapters Copy-editing
INRAE <sup>3</sup> and ESA <sup>4</sup> , France	<i>Dr. Pierrine Didier Dr. Christophe Nguyen-The Dr. Isabelle Maître</i>	Writing country-specific sub-chapters Copy editing Writing chapter summaries (3.2 and 3.3)
Keele University	<i>Dr. Mike Foden Prof. Lydia Martens</i>	Writing country-specific sub-chapters Writing chapter 1.4 Developing example chapters (2.2, 2.3 and 3.1) Writing chapter summaries (4.2 and 4.3) Copy editing
Consumption Research Norway, Oslo Metropolitan University	<i>Dr. Silje Elisabeth Skuland Helene Maria Fiane Teigen</i>	Writing country-specific sub-chapters Writing chapters (1.1 and 1.3) Developing example chapters (3.2, 3.3, 4.1, 4.4 & 4.5) Writing chapter summaries (2.2, 2.3, 3.1, 4.1, 4.4, 4.5) Copy editing, formatting and putting together the report

<sup>3</sup> French National Institute for Agricultural Research

<sup>4</sup> École Supérieure d'Agricultures

This report rests on the work undertaken by a large team of people contributing to various parts and steps of the research project.

*List of acknowledgements:*

Portugal	Ana Delicado Nadia Nunes Margarida Paulos Ana Sofia Ribeiro Rui Maia Maria João Cardoso Luís Junqueira Alexandre Silva Joana Feio	Data Documents, Literature Review Data Documents Data Documents Data Documents Fieldworker Fieldworker, Microbiology Copy editing Copy editing Fieldworker, Data Documents
Romania	Corina Neagu Valerica Celmare Răzvan Dinică Florentina Bucur Elena Bujor Augustin Mihalache	Fieldworker, Microbiology, Data Documents, Transcriber Fieldworker, Data Documents, Transcriber Fieldworker, Data Documents, Transcriber Transcriber, Microbiology Transcriber Preliminary analysis
France	Flore Lourtiox Anaïs Roger Charline Cocandieu Isolde Lebouc	Fieldworker, Microbiology and transcriber Transcriber Transcriber Transcriber
UK	Phil Voysey Lotika Singha	Microbiology Data Documents
Norway	Therese Hagtvedt Janina Berg Maria Støle Stine Thørting Tove Husabø Anine K. Frykholm Inger E. Øien Julia P. Skuland	Fieldworker, Microbiology Microbiological analyses Microbiological analyses Data analysis Preliminary analysis, Data Documents Preliminary analysis, Data Documents Transcriber Transcriber

Institute Director at Consumption Research Norway (SIFO), Eivind Jacobsen has quality assured this report.

### *A short summary of a long report*

This report is divided into five parts and included 17 chapters. Since the fieldwork provided various ways of handling food, each of the country specific sub-chapter varies with regards to some themes addressed.

PART ONE (Chapter 1.1-1.5) introduces the study and the five countries with an emphasis on the food cultures, food market and shopping patterns and the food safety situation in each of the countries. Furthermore, it describes prior research and understanding of food safety, the practice theoretical approach framing the study of food handling in this report. Finally, the last chapter (1.5) describes the methodology, including research ethical issues and concerns, data storage and protection, the transdisciplinary research design, description of the study areas, the recruitment and sample in all five countries, the socio-demographic characteristics of the sample across and within all five countries. Finally, it describes how the fieldwork was carried in the five countries, how it was organised, including piloting and meetings with households and the research tools used.

PART TWO provides an introduction of the households in the study for each of the countries (2.1). Chapter 2.1 describes their everyday food life, including food provisioning activities, role division and responsibility for food provisioning, general food preferences and dietary requirements, how and where the research participants learned to cook and changes over life course. The chapter ends with a summary of differences and similarities in food provisioning activities in the five countries. Chapter 2.3 gives examples of food anxieties and food safety issues as these were described by the research participants and how and where they had learnt about hygiene and safe food handling. After describing experiences with food-related illnesses, the chapter ends by comparing and summarising the food anxieties and food safety issues in the five countries.

PART THREE: Includes three chapters on shopping (3.1), transportation (3.2) and storage (3.3). Chapter 3.1 starts off by describing the shopping experience, general shopping routines, the route taken and how the research participants selected chicken, vegetables and salad and fruit. Chapter 3.2 takes us through transporting food from shop to home, including distance, time, means of transportation and temperature, packing and carrying and challenges and strategies for transporting foods. Chapter 3.3 describes storage routines such as unpacking groceries, storage locations, storage devices and includes information about fridge temperature and age as well as meanings of what kinds of food can be kept in room temperatures or the fridge. All the chapters in part three end with a summary.

PART FOUR includes four chapters on food preparation and one chapter on washing. The first chapter, Chapter 4.1, describes the order of cooking and show how cooking might intermingle, overlap or done in separate steps. The chapter provides examples of the process of cooking, how caring for children influence food preparation, and sums

up by arguing that the order of cooking is very much affected by the meal prepared and the household members involved. Chapter 4.2 gives an account of the handling and preparing chicken from unpacking chicken products and tools used, cutting and trimming the chicken, washing the chicken or not, washing hands while handling the chicken and seasoning the chicken. Finally, the summary discusses how and why the handling of chicken varies between the countries, for instance why washing the chicken is common in some countries but not all, and why opening the chicken package is a challenge in some countries but not all. Chapter 4.3 describes how salad and raw vegetables are handled and prepared in the households, including various ways of washing, chopping, peeling or tearing, seasoning. The chapter includes overviews of tools used namely knives, chopping boards, bowls, salad spinners, and scissors and ends with a summary of ways of dealing with raw vegetables. Chapter 4.4 describes the heating process of chicken and discusses the ways of determining when the chicken is ready to eat. The chapter describes using recipes, checking or monitoring the colour visually, checking firmness and timing cooking based on experience. The chapter summarises how determining if the chicken is ready to eat is depended on the cooking method and the type of chicken cooked. Chapter 4.5 describes hand washing routines in Romania, France and Norway, and provides examples of when and how hands are washed during cooking. Furthermore it provides examples of how to dry hands, rinsing or washing and the meanings attached to washing hands. It also describes how hands are moved (or not moved) when they are greasy.

PART FIVE: Sums up and discusses the main findings. It also provides some concluding reflections, future research steps and concerns about the study in this report.

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## PART ONE: INTRODUCTION, THEORY & METHODOLOGY

## Chapter 1.1: Introduction

It is often said that domestic kitchens and home cooks are to blame for much of the outbreaks of foodborne illnesses. Estimates say that nearly forty percent of foodborne outbreaks are caused in the domestic sphere among 23 million cases of illness caused by bacteria, parasites, toxins and allergens in food and 5, 000 deaths in Europe every year (WHO 2015). Still, how food risk is handled in private kitchens by domestic cooks has been remarkably absent in the research literature despite its estimated impact. Countless reports and journal articles have, however, made numerous contributions to researching consumers' perceptions and attitudes towards food risk and reported on what it takes to change consumer behaviour from unsafe to safe food consumption. Few studies have emphasised that food consumption takes place in households and in the everyday life of people living together with their families, spouses, flatmates or on their own.

Thus, the aim of this report is to contribute to an in-depth, detailed, empirical and nuanced analysis of how food is handled in everyday life in five European countries: France, Norway, Portugal, Romania and the UK. The overall research question raised in this report is: how is food handled in safe and unsafe ways from retail to fork in European households?

The report focuses on two food groups: Poultry and raw vegetables and three household types: Young single men, expecting parents or families with infants (or Young families) and Elderly households. It enlightens how food is handled in these different households during shopping, transportation, storage and cooking in everyday life. Another focus is on how handling food safely or unsafely varies between these three household types and across national food cultures. And a third focus is on how food handling differs between rural and urban households and the impact social, economic and material circumstances has on safe food handling.

The report is part of the H2020-funded project, SafeConsume, a transdisciplinary and multi-actor research and innovation project with the aim of investigating the link between consumer food handling and risk of foodborne disease in Europe. The aim of the project is to move beyond traditional cognitive models to food safety which emphasise how beliefs, perceptions and knowledge form risk behaviour. In most of the literature of food safety, the individual consumer has been seen upon as a possible change agent, who may prevent the spread of foodborne illnesses at the point of consumption. While these models provide valuable insight into the psychological barriers to risk reduction, they largely ignore the social-material infrastructure and the habitual nature of everyday consumption.

The report is informed by the transdisciplinary approach employed in SafeConsume. Researchers from different scientific disciplines, namely from social sciences and microbiological sciences, have worked closely together and created a shared conceptual

model for studying food risk. This model integrates HACCP analysis and practice theory, defining the main research object as “*Critical consumer handling*” (CCH). The report concentrates on the critical consumer handling of poultry, vegetable and fruit from retail to fork, following the defined critical handling steps, which are: 1) Shopping and food choice of poultry and fresh vegetables and fruit, 7a) Washing fresh vegetables and fruit (before handling raw poultry), 8a) Handling and preparing fresh vegetables (before handling raw poultry), 5) Handling and preparing poultry, 6) Cooking poultry, 7b) Washing fresh vegetables and fruit (after handling raw poultry), 8b) Handling and preparing fresh vegetables (after handling raw poultry). We focus on these steps of food handling and the socio-material context where they take place.

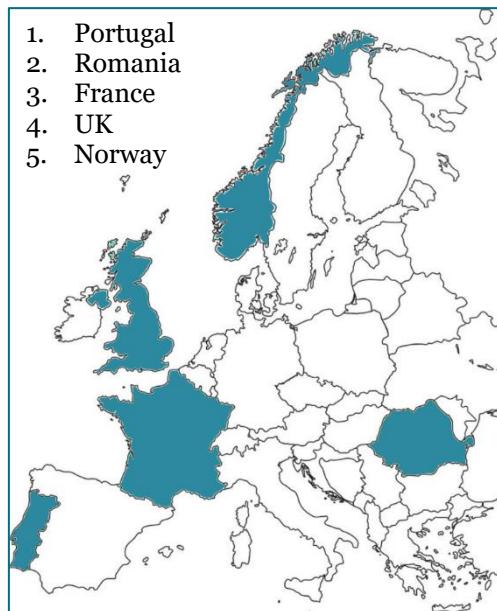
As such we move away from the individual models of human behaviour and emphasise instead that food handling is collectively shared by groups of individuals and embedded in socio-material structures which varies between national borders. We thus focus on how critical food handling is performed – what our research participants *do* – and how this reflects patterns of socially shared ways of handling food.

In this report, we draw on theories of practices (Schatzki, 1996, 2002; Shove et al, 2012), which emphasise the practicality of social life, comprising both individualistic and structural approaches to social action. Attention is given to the tacit and unconscious nature of much of human behaviour and to how repetitive and routinized forms of action dominate much of food work in everyday life. The practice theoretical approach used here combine natural and social science by concentrating on how beliefs, competences, actions, bodies, germs and material infrastructure are entangled in producing or reducing risk of exposure to foodborne illness. Chapter 1.3 discusses the theoretical approach further.

The report includes analysis of how food is handled in 75 households in Europe. These households and their food handling practices have been observed in four food handling contexts: during shopping, transportation, storage and cooking in private homes. The fieldwork has resulted in rich ethnographic work in kitchens, cupboards, fridges, freezers, in cars, busses, walkways and food stores, and includes video footage, photographs, interviews and field notes. Chapter 1.4 discusses in more detail the methodology employed in this study.

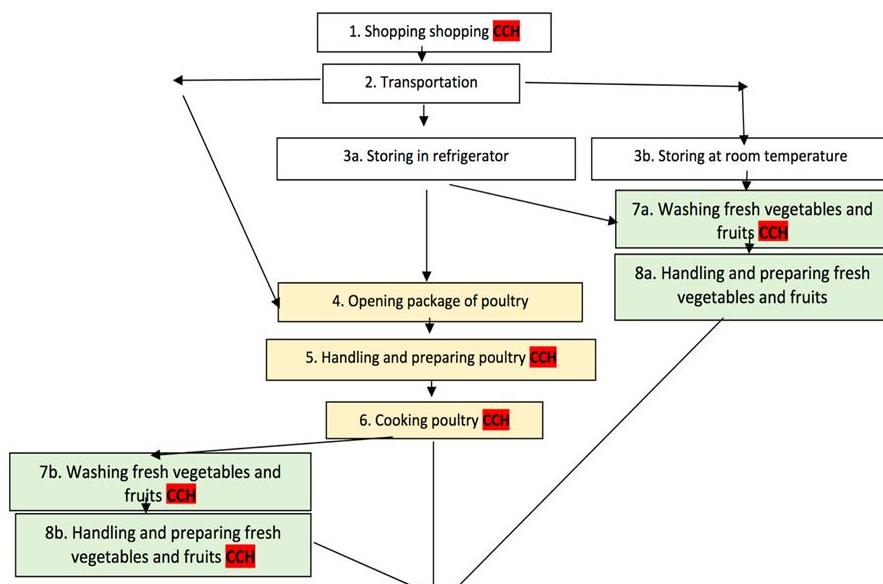
## Outline of the report

This introduction continues with a brief description of each countries’ food culture, including information about the food industry and food safety authorities, the consumption pattern of poultry and vegetables, a description of the current situation of foodborne outbreaks and public understanding of food risk. The introduction will start with Portugal, continue with Romania, France, the UK and, finally, Norway.



**Figure 1.1.1: The five countries discussed in this report**

The first empirical chapters (part 2) introduce the participants in this study (chapter 2.1) and discuss the everyday food life the participants presented during the visits (chapter 2.2). Further on, a discussion of participants' food anxieties and experiences with foodborne illnesses (chapter 2.3) is addressed. These chapters will inform the discussions in the following parts of the report. The next two parts (part 3 and 4) are structured in a similar way as the Poultry, Vegetable and Fruit flow chart (see figure 1.2).



**Figure 1.1.2: Flowchart CCHs: Poultry with fresh vegetables and fruit (PVF)**

Part 3 concentrates on food procuring and organising practices among the participants and includes three empirical discussions of shopping (chapter 3.1), transportation (chapter 3.2) and storage (chapter 3.3). Part 4 discusses food preparation among the participants and comprises five chapters discussing the order of cooking (chapter 4.1),

chicken preparation (chapter 4.2), vegetable preparation (chapter 4.3), determining doneness (chapter 4.4) and hand wash (chapter 4.5). All of the empirical chapters, discuss the empirical studies in each of the countries, following the same order as the introduction. Finally, Part 5 discusses the main findings in the report and suggest further research steps.

The chapters included in parts 2 to 4 include summary discussions and comparative tables (except for chapters 3.2 and 3.3 in Part 3). These tables must be read with caution. First, the tables provide no statistical information about commonalities between groups or countries. Second, the tables provide simplified information about the rather large and detailed qualitative data in this study and should thus be read in the context of the summary discussions. The highlighted information in these tables will be fully appreciated as contextually bounded and intrinsically linked to strings of activities in the 75 kitchens we observed.

## Chapter 1.2: Introduction to the five countries

This chapter provide country specific introductions, including the role chicken and vegetables play in the various food cultures, information about the food industry, shopping patterns, food safety authorities, and descriptions of the current situation of foodborne outbreaks and public understanding of food risk. This will serve as a backdrop for the further discussion in the report.

### The food culture in Portugal

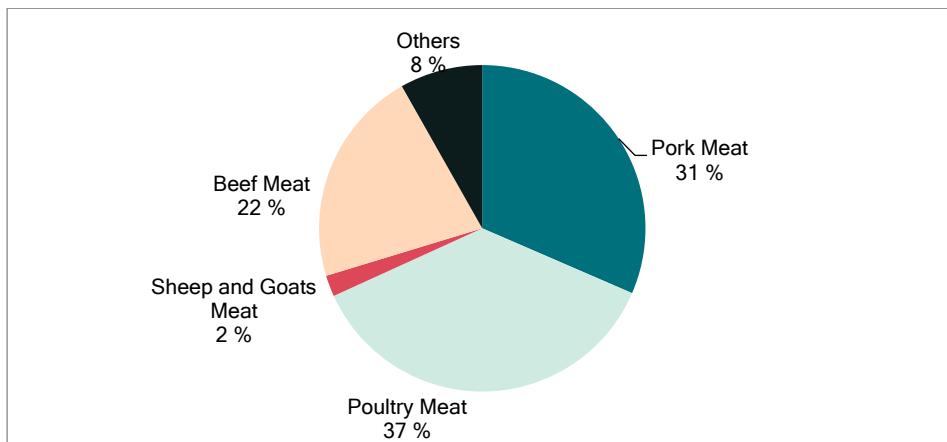
Portugal is a country in Southern Europe with 10 million inhabitants. According to the database PORDATA (2019), in 2019 the number of Portuguese who had a degree was 18.1%, the unemployment rate was fixed at 8.9% and the GDP per capita was 17,329 € ([www.pordata.pt](http://www.pordata.pt)). At the political level, the democratic regime was established on April 25, 1974 and when the empirical data for this report was collected, the country was governed by the Socialist Party, supported by a parliamentary agreement with the Communist Party and the Left Bloc (2015-2019). In October 2019 there were new elections with the win of the Socialist Party, but this time around, the parliamentary agreement with the two other parties was dissolved. Between 2011 and 2014, Portugal experienced a serious economic and financial crisis that forced the country to resort to financial assistance from the IMF, the European Central Bank and the European Commission. In the last years, Portugal has been recovering from the crisis, but the general living standards are not high and there are significant economic and social differences between high and low classes.

### Chicken and vegetables in Portuguese food culture

The Portuguese food culture is historically associated with the Mediterranean diet. According to Truninger et al (2017) and Truninger and Freire (2014), this diet has been culturally perceived as a model that can improve health and well-being. However, over the last decades, the Portuguese food practices have been distancing themselves from the patterns that characterize the Mediterranean diet. According to the report on the Second National Survey on Food and Physical Activity (Lopes et al 2017), only 18.2% of the Portuguese population have food habits close to the Mediterranean dietary patterns, which is higher in males (20% vs. 16% of women) and in ageing people. On the same report it is analysed the number of meals during the day and, in general, 7 meals are taken: before breakfast (19.8% of the total sample); breakfast (94.7%); middle-morning (55%); lunch (98.1%); middle-afternoon (85.8%); dinner (97%) and supper (39.6%). However, the most important meals are lunch and dinner. On the other hand, only 6.8% of the respondents reported making a special diet, the most mentioned was sodium restriction (22.1%). Portugal is also a country with different culinary and food influences due to its colonial past and historical links with Brazil, India, Macao and the Portuguese-speaking African countries. These countries introduced the use of spices and different kinds of vegetables in cooking. Soup has also an important role in Portuguese food culture (normally eaten at lunch and dinner). Many Portuguese consider that this is a way to eat vegetables in higher quantities and

to encourage children to eat vegetables, it being very important to their health, growth and proper development. A very popular soup is made of boiled chicken, rice and some peppermint leaves (a sort of chicken *bouillabaisse*), often taken when people feel sick. Apart from soup, chicken is cooked in many different ways: boiled, stewed, grilled, charcoal, baked in the oven, and chicken curry (Indian or Africa influences). A typical ready-meal dish that people often buy to skip having to cook dinner in the evening or at Sunday lunch is charcoal chicken, with salad and chips or crisps as a side. Very often people resource to this cheap convenient and ready-made dinner when they leave work and are on their way home. Several shops are specialized in the sale of charcoal chicken, having long opening hours well past dinner time. This type of chicken can also be found in supermarket chains. This dish has been popularized abroad in international restaurant chains like Nando's (e.g. UK, South Africa among many other countries), with its associated peri-peri sauces. Interestingly, it is often associated by tourists and foreigners as a typical traditional dish from Portugal, when in fact it is seen by the Portuguese themselves more like convenience food than a typical traditional dish such as the ones composed of dried salted codfish.

According to the National Office for Statistics the average daily availability of poultry per capita reached 37% in the years 2012-2016 (Figure 1.1.1), a value that was higher than all other kinds of meat, particularly pork (31%) and beef (22%) (INE 2017). Indeed, poultry is the most available meat and Portugal is the biggest consumer of poultry meat per capita, per year, in Europe (37 kg against the EU average of 22,5kg).



**Figure 1.2.1: Daily Meat Availability per Capita (Average: 2012-2016) (INE 2017)**

Regarding private raising hens and growing vegetables there are no available data, however some groups of the population keep domestic hens in their back gardens for private consumption (not only for meat but also for eggs). Since 2016 it is compulsory to register domestic raising poultry (also for eggs) at the General Directory of Food and Veterinary (DGAV), however statistics are not available yet.

As to vegetable growing, some people have a small plot of land to grow vegetables. This is particularly seen among the older population groups in rural inland areas of the

country. Yet, in cities (like Lisbon and Porto) one can still observe these practices going (in peripheral -urban areas or in the outskirts of the city). Among the African descendants (particularly the low-skilled and low-waged migrant population groups from the former Portuguese African colonies) there is appropriation of wasteland to grow vegetables, especially crops that are more expensive in the market or that remind them from their original country (exotic African crops difficult to find in the Portuguese market). In the last decade, popular urban movements around vegetable growing in cities have also picked up pace in the country, with municipalities promoting urban farming. This was particularly important during the economic crisis where 10,8% of the Portuguese population started to grow fruit and vegetables, and some of these vegetable growing practices took advantage of municipal urban farming schemes and urban food strategies (Schmidt et al 2018). In the first survey applied to the Portuguese population on sustainability (Schmidt et al 2018), eating vegetables was associated with a healthy diet and high lifestyle quality. According to the results of this survey, 54% of respondents report that having a healthy diet is part of a healthy lifestyle. They associate healthy diets with the frequent consumption of vegetables. Around 81% of people with tertiary education and 70% of people with secondary education consider that eating vegetables is an important practice that contributes to health and having a good diet. Despite this, only half of the population eats the WHO recommended portions of fruit and vegetables. In 2016, the Portuguese population had available 108kg of vegetables per capita/per year (INE 2017).

### The food market and shopping patterns

In Portugal, the food market is composed of 6 big supermarket chains: Sonae (Modelo Continente: 825 shops), Jerónimo Martins (Pingo Doce and Feira Nova: 413 shops), Lidl (245 shops), Musketeers (Intermarché), Auchan (Jumbo) and Minipreço. The supermarkets Continente and Pingo Doce are the ones that have registered greater number of sales in the last years (Silva 2017). There are 137 shops per million people in Portugal (Norwegian Ministry of Agriculture and Food 2011).

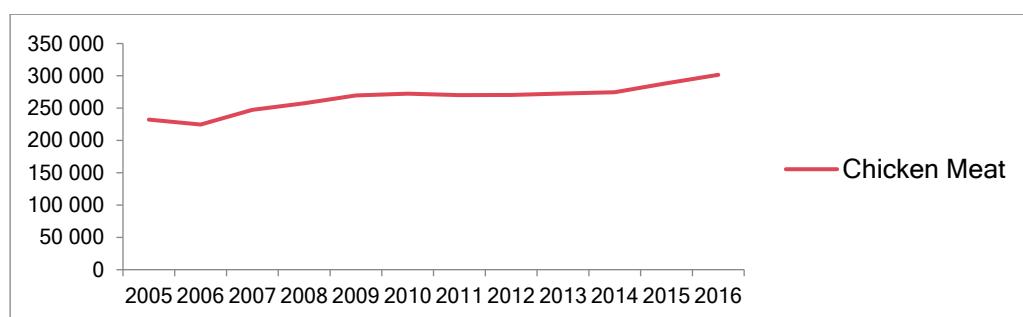
There are also local markets that sell fresh vegetables, fruits, meat, fish and seafood, as well as small grocery shops, which are widely used by elderly people, sometimes with reduced mobility. These also play an important role in the maintenance of social ties in the neighbourhoods, especially among elderly people living on their own. There are also some organic food chains (Celeiro, Go Natural) and smaller organic supermarkets (e.g. Miosótis in Lisbon). In the last years, fairs and markets with organic food and products have proliferated in Portuguese cities, some of these initiatives have been carried out in partnership with local authorities (e.g. Lumiar (Parish council+ BIO Market)). According to survey data on the Portuguese population reported in Schmidt et al (2018), 69.7% respondents usually do their shopping in big supermarkets; 52.4% in specialty shops, i.e., greengrocers or butcher's shops; 39% in grocery stores; 33% get home grown food from their close social networks (some of the traces of a recent peasant society are still visible); and 21% shop in retail outlets or fairs of organic

products. Internet food shopping is an insignificant niche market in the country (in 2016, 81.8% of the Portuguese responded never buying foods online).

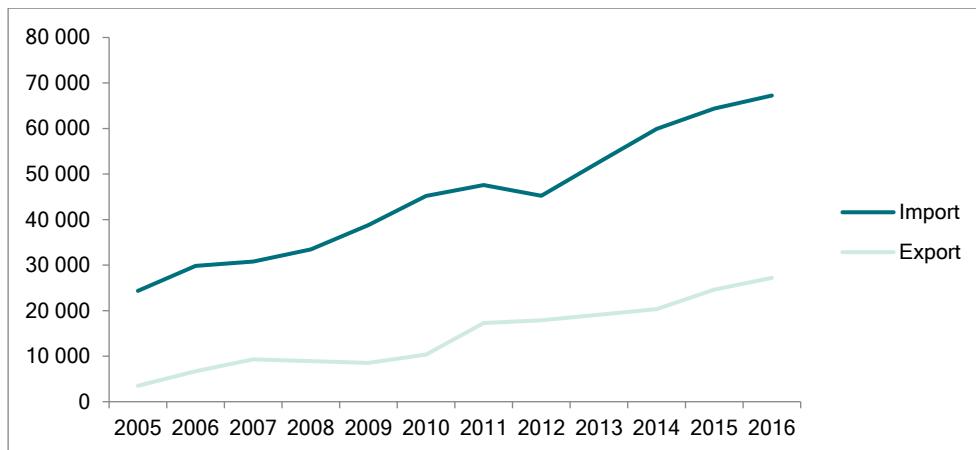
Moreover, data from the Eurobarometer survey (European Commission 2012) regarding the criteria of buying food, shows that the Portuguese exhibit some distinctive trends. It is the country where quality ranks lower (chosen by just 49% of interviewees, against a 65% EU average), whereas price (93%), geographical origin (77%) and brand (54%) are above the EU averages (91%, 71% and 47% respectively). Just 14% of Portuguese respondents state that they always check the labels to ensure that the food has specific characteristics, against an EU average of 22%. Plus, 59% of the Portuguese (and 37% of the Europeans) are not able to identify any food logo, such as fair trade, organic or protected geographical indication.

### *The food industry and production of chicken and vegetables (including import/export)*

According to a report published by INE on food supply in 2013 Portugal is mainly an exporter of wine, olive oil, vegetables and fruits (INE 2013). Its main trading partners are the European Union countries, with exports to Portuguese-Speaking Countries also increasing (e.g. Brazil, Angola, Mozambique, and Cape Verde). However, according to the same report, Portugal is a country with surpluses in wine production, but dependent on the production of cereals and oilseeds. In the import sector it is highlighted the origin of products from the USA and Canada, especially soy, corn and wheat. In the period between 2006 and 2010, it is estimated that food products represented about 7.9% of imports and 5.2% of the country's exports. The production of vegetables represented the highest increase (about 6.2% per year) between different kinds of food products (wine, olive oil, eggs and fresh fruits). According to data for the same period, Portugal shows a level of food self-sufficiency of 83% for agricultural products. According to data collected on the production of chicken in Portugal from 2005 until 2016 (GPP 2019), there was an increase of 69,432 thousand tons (Figure 1.1.2). Import and export data show that there has also been an increase in these sectors for poultry meat (including chicken, duck and turkey meats) (Figure 1.1.3). However, the numbers of imports were higher than exports. The imports of poultry meat between 2005 and 2016 had an increase of 42 thousand tons and the exports about 23 thousand tons (GPP 2019).

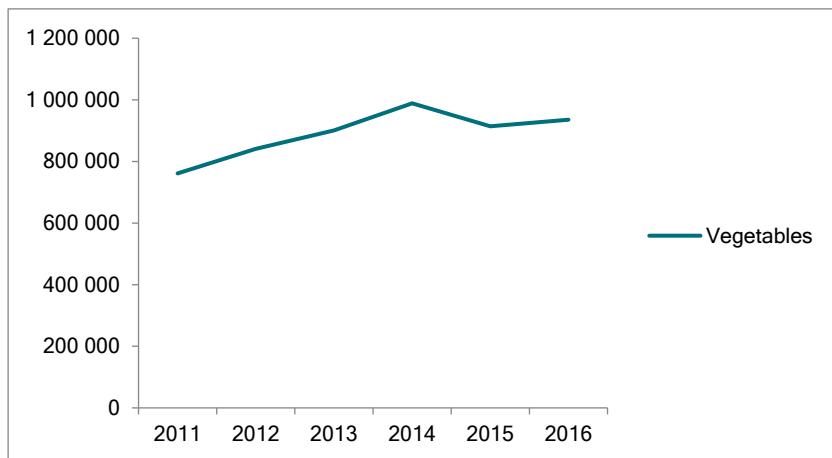


**Figure 1.2.2: Chicken Meat (production by tonnes) (GPP 2019)**



**Figure 1.2.3: Poultry meat – Import and export (by tonnes) (GPP 2019)**

Between 2011 and 2016 the production of vegetables and frozen vegetables has grown reaching around 24 thousand tonnes (Figures 1.1.4 and 1.1.5). However, the production of non-frozen vegetables is higher and also increased over the same period up to 174 thousand tonnes (GPP 2019). Regarding the import and export of fresh vegetables, there was also an increase (from 2005 to 2016), but imports of these products are higher than exports; imports of fresh vegetables increased 248 thousand tonnes and exports around 128 thousand tonnes; imports of frozen vegetables increased around 12 thousand tonnes and exports around 30 thousand tonnes, yet with a slight decrease in 2016 (Figure 1.1.6).



**Figure 1.2.4: Vegetables (production by tonnes) (GPP 2019)**

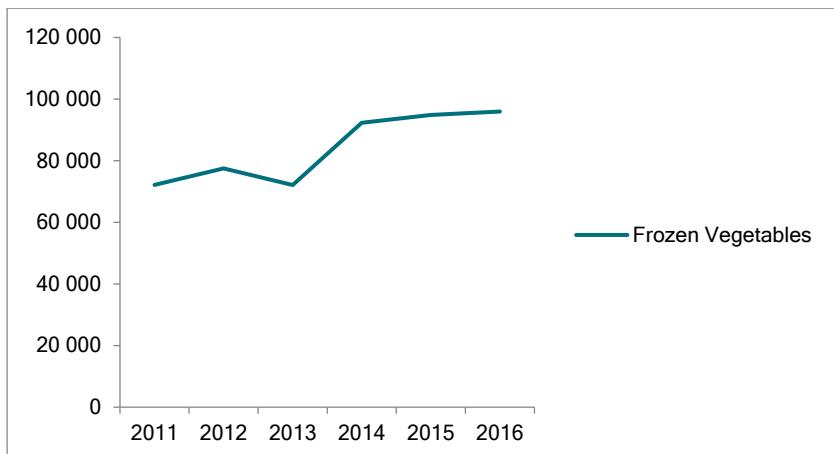


Figure 1.2.5: Frozen Vegetables (production by tonnes) (GPP 2019)

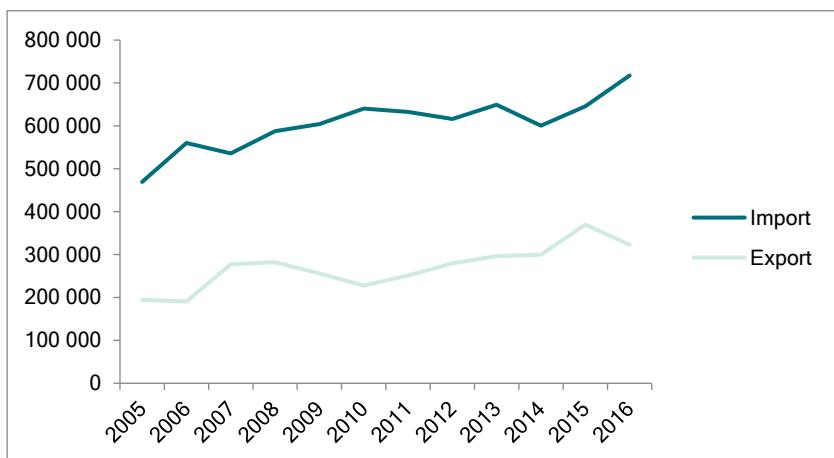


Figure 1.2.6: Figure 1.1.6: Frozen Vegetables – Import and Export (by tonnes) (GPP 2019)

## Food safety authorities

In Portugal, the institution that supervises hygiene and food safety standards and regulations in public establishments is the Food Safety and Economic Authority (ASAE) created in 2005. ASAE acts not only in food issues, but also in other areas: tourism and commercial practices; safety of products and installations; intellectual property and industrial property ([www.asae.gov.pt](http://www.asae.gov.pt)). One of the main roles of ASAE in the food area is to inspect and investigate criminally food frauds and crimes against public health (“fake food”). ASAE also belongs to the Coordinated Control Plans of the European Commission. From 2013 to 2016, the following plans were developed: horse meat (2013-2014); honey and fish (2015-2017). ASAE also has a scientific and laboratory analysis to examine animal hazards and participates in the International RiskBenefit4EU project funded by the European Food Safety Authority (EFSA) “... to assess and integrate the risks and benefits of food for the health of consumers, microbiological, nutritional and chemical aspects” (National Institute of Health Dr Ricardo Jorge 2018). The technical and scientific component also includes the food safety laboratory, which is organized around three aspects: Laboratory of Drinks and Wine Products (where they analyse wine, other drinks and also olive oil); Physical-

Chemical Laboratory (where control and safety analyses are carried out with special emphasis, for example, on allergens, additives and chemical contaminants); Laboratory of Microbiology and Molecular Biology (where they conduct laboratorial tests and validate methodologies for the detection of, for example, *Salmonella*, *Listeria monocytogenes* and *Cronobacter*).

### *Food consumption and food safety*

The social science research on public opinion and food safety in Portugal does not abound. However, there are a few studies that were developed in the aftermath of one of the most notorious food scandals – the Mad Cow Disease. In 2007, a book on the Portuguese and new risks included a case study of BSE in Portugal (Gonçalves et al 2007). The case study described how the issue emerged in Portugal and the actions of scientific and political actors. At an early stage, the controversy between scientists from different institutions (one a university, the other a state laboratory) was used by government officials to deny the risk. Three years later, after the first confirmed cases, the government was forced to intervene and to appoint a scientific committee to monitor the situation. However, relevant legislation failed to be applied and scientific advice was often dismissed. Political objectives, such as the preservation of the government's public image was awarded more importance than the scientific assessment of risk and the safeguarding of public health. Nevertheless, this case had the merit of widening the discussion of risk to a variety of other actors. Also, it serves as an example of the influence of European regulations over national policies that would have a lasting impact, mainly in the creation of national authorities for food safety.

This case also highlights the role of the public as consumers and how civil society organisations (consumer associations) are called upon to represent the collective interests of the public in risk debates. On the other hand, surveys carried out at the time of the controversy show that a high proportion of consumers reduced meat consumption in response to the BSE crisis, although most resumed their habits once the issue disappeared from the media (Schmidt, Fonseca and Truninger 2004).

The results of the international comparative study on trust in food in six European countries – Norway, UK, Denmark, Italy, Germany and Portugal (Kjaernes et al 2007), whose fieldwork was conducted between 2002 and 2004, showed that levels of confidence on political and institutional actors responsible for food issues were quite low in Portugal (26%). However, most people believe first in consumer organizations and food experts, and only after in food authorities and the media. Market agents and politicians are the least trustworthy.

The first larger nation-wide survey on sustainability in Portugal (Schmidt et al 2018), whose fieldwork was conducted in 2016 among 1500 respondents (with a representative sample of the Portuguese population) stated that individuals with high education were more concerned about healthy food practices. Thus, as the level of

education increases, items such as “food variety”, “reducing the consumption of salty products”, “avoiding high-calorie products” and “avoiding processed foods” were more valued (Schmidt et al 2018: 101). The results of the same survey pointed out that the consumption of organic farming products is higher in individuals with a degree (22% of individuals with high education versus 15.8% of those without high education), but also in individuals who are living in rural areas (22.3% versus 12.9% of the big cities). The Portuguese respondents also showed to be concerned with different issues related to food safety, which include “contamination of food by bacteria, e.g. *Salmonella*, *Listeria*” (75.8%), “the presence of polluting substances, e.g. mercury in fish” (74.8%), “the presence of pesticide residues” (74.5%) and “the carcinogenic potential of processed meats” (73.6%).

Data from the international study on trust in food (Kjaernes et al 2007), showed that the six countries under analysis were sceptic about the quality of food purchased. However, the Portuguese along with the Italians were among those that showed greater distrust of the quality of the food usually bought for their household. When asked about confidence in different kinds of foods (e.g. fresh fruit / vegetable, beef, pork, chicken and eggs), the European population under study generally showed greater confidence on foods such fresh tomatoes and fresh fruits and vegetables and less on meats. For example, the majority of Portuguese respondents (65%) perceived fresh fruit and vegetables as safe food and have shown less confidence in meat (especially chicken - 24%; beef - 28%, but also pork - 32%). On the other hand, the Norwegians compared to the Portuguese, showed lower levels of confidence in fresh fruit and vegetables (57%) but higher in meat (e.g. pork: 43%, beef: 40% and chicken: 30%).

Regarding the issue of improvement or deterioration related with a set of key food issues (e.g., prices, quality, and safety), the Portuguese showed that they are among the most negative respondents concerning the conditions on these subjects. They believe that food prices have worsened as well as the quality and trust in food (67%). The only aspect in which the Portuguese show a similar opinion to respondents from the other five countries is regarding food safety. In general, all respondents consider that food safety conditions have improved in their countries. The fieldwork took place just after a series of food scares in Europe (e.g. BSE; foot and mouth disease), that obliged European member states to take seriously contingency plans to mitigate food risks.

The 2010 Eurobarometer on food-related risks (European Commission 2010) also provides interesting information on food safety attitudes in Portugal. Thus, 89% of the Portuguese population stated that they were concerned with food safety, whereas the EU average was placed at 79%. Moreover, 62% of the Portuguese consider that the food they eat may be harmful for their health, against 48% of the Europeans. The issues that the Portuguese are more concerned (over 70% of respondents) include the quality and freshness of food, the welfare of farm animals, food pollution, pesticides in fruit and vegetables, bacteria contamination, hormones and antibiotics in meat, and food-related diseases (diabetes or heart conditions). Overall, Portuguese respondents show

higher levels of concern than their European counterparts in all issues. With regard to food safety, the Portuguese tend to trust more food producers and supermarkets as sources of information than the EU average. The Portuguese also place higher trust in EU authorities in heeding scientific advice, informing citizens about food risks and valuing consumer health over the profits of producers. The latest Eurobarometer about food security and food quality published in 2012 also shows interesting data (European Commission 2012). The results for Portugal reveal that concern rates about the sufficiency of food production are higher than almost everywhere else in Europe (with the sole Greece): 85% of the Portuguese surveyed state that they are concerned with food production in their own country, 78% with food production in Europe and 81% in the world, whereas the European averages are 43%, 40% and 76% respectively. These results may be associated with a not so distant past of food scarcity but also with the perception that the Common Agricultural Policy had a severe impact on the Portuguese agricultural and fishing sectors, leading to a reduction in domestic production and an over-reliance on imports. Accordingly, the majority of Portuguese citizens surveyed agreed that the EU should produce more food to be less dependent on imports (93%) and also to meet the demand of non-EU countries (90%) and should as well help other countries to produce more food (87%).

### *Foodborne illnesses*

Similar to other European countries (e.g. UK, France) Portugal has also dealt with high profile food scares since the 1980s, including *Salmonella* in eggs, BSE-contaminated beef (popularly known as the Mad Cow Disease), and more recently the so-called ‘horsemeat scandal’ where undisclosed horsemeat in processed foods was found. It is important to note that, for example, regarding the BSE outbreak, the demand for beef in Portugal fell by 50 per cent at the peak of the crisis (Kjaernes et al 2007: 79).

In Portugal, the institutional system in place for the notification of foodborne disease outbreaks has the following procedures. The National Institute of Health Doutor Ricardo Jorge (INSA) in collaboration with the Directorate-General for Food and Veterinary (DGAV) notifies each year to the European Food Safety Authority (EFSA) the data of foodborne disease outbreaks occurred in Portugal whose laboratory investigation in the food area was performed by INSA. In 2016, in the Food Microbiology Laboratories of the Food and Nutrition Department (DAN), in the scope of the investigation of 24 outbreaks, foodstuffs and environmental samples collected in the food premises of production/distribution were analysed, that reportedly affected 629 human cases, from which 80 have been hospitalized and without any fatal cases. Most of the outbreaks occurred in public settings (96% of those with identified source). Residential institutions were the settings where more outbreaks occurred and the main contributory factors identified were time/temperature abuse, cross contamination and use of food ingredients obtained from unsafe sources.

In the context of the outbreaks investigated in 2016, the responsible agent was identified in 71% (17/24) of outbreaks: staphylococcal enterotoxins / *Staphylococcus*

## Chapter 1.2: Introduction to the five countries

*aureus* (n=6); *Bacillus cereus* or their toxins 5 (n=6); *Clostridium botulinum* type B (n=1); *Clostridium perfringens* (n=1). Cooked dishes were commonly associated with these outbreaks. We emphasize the outbreak probably caused by *Vibrio parahaemolyticus* (other *Vibrio* species and *Aeromonas hydrophila* were also isolated) with the consumption of cooked seafood. This was the largest outbreak reported (50 cases, all the individuals were hospitalized). We also point out another outbreak where Norovirus, Non-O157 verotoxigenic *Escherichia coli* (E. coli) and *Salmonella* spp. were detected in clams that had been harvested in areas where it was prohibited the harvesting of bivalves for sale and for consumption. The number of reported cases and outbreaks from 2008 to 2016 are presented in Table 1.2.1.

**Table 1.2.1: Number of outbreaks and cases of food poisoning from 2008 to 2016.**

	2008 <sup>a</sup>	2009 <sup>a</sup>	2010 <sup>a</sup>	2011 <sup>a</sup>	2012 <sup>b</sup>	2013 <sup>b</sup>	2014 <sup>b</sup>	2015 <sup>b</sup>	2016 <sup>b</sup>
<b>Outbreaks</b>	14	11	4	8	7	10	13	20	17
<b>Cases</b>	139	251	56	101	135	183	589	421	487

Source: a) Belo Correia et al (2013); b) Saraiva et al (2018).

Globally no major differences had been identified concerning the implicated foods, pathogenic agents and settings where contaminated foods were ingested. The official data demonstrate that there are still a low number of foodborne outbreaks with laboratory investigation; most cases and outbreaks are not reported to the official entities. Concerning isolated cases (e.g. campylobacteriosis and listeriosis), probably more frequently acquired in the domestic environment, and much will hardly be reported to official entities. In several occasions, consumers will not look for medical advice. On the other hand, on several occasions, health professionals do not report foodborne diseases. Listeriosis, for example, has been notified in Portugal only since April 2014 although several cases (some fatal) had been reported in scientific publications. The deadliest foodborne outbreak in Portugal - March 2009 to February 2012, 30 cases of listeriosis, case fatality 36.7% - was not reported by the official entities.

More recently, another outbreak not reported by the official entities: an outbreak of acute gastroenteritis associated with norovirus occurred in April 2015 in a Portuguese army base, affecting 46 soldiers. Botulism is probably an exception with almost all the cases being reported. Although being a rare disease, cases/outbreaks of foodborne diseases are found in almost all the official reports – 93 cases since 1999. Due to the severity of the diseases, all the individuals are hospitalized. In addition, botulism is notified in Portugal since 1999. Homemade fermented sausages and cured ham are the foods associated with these incidents more frequently.

### *Media*

Foodborne outbreaks had greatly attracted media attention. News in the written press, television and other media referring outbreaks involving a large number of people, mainly children and the elderly are released quite frequently. However, the information provided is scarce. We hardly ever know how many individuals were affected, what are their age groups, the place of consumption and hospitalizations. Moreover, foods consumed and microbial agents are rarely mentioned. Again, botulism is an exception probably because the symptoms are quite different from those related to the most common foodborne diseases (e.g. contaminations by *Salmonella*). Most of the news are related to incidents in schools, nursing homes, canteens, sports events, festivals, weddings. That is, always events involving a large number of individuals. In most of the cases no follow up is given.

All in all, despite relevant work conducted by Portuguese microbiologists and sociologists on food safety and consumers (e.g. Mateus, Maia and Teixeira 2014; Azevedo et al 2014; Noronha et al 2006; Azevedo et al 2005) more studies are needed to understand consumers practices regarding food safety of particular products (e.g. chicken, fruit and vegetables, seafood, eggs) and wider justifications and rationale for their food handling practices. Also, more work is needed to analyse media discourses on food safety, what are the media sources often used to get information from (e.g. national or international experts and organizations), and how are the news framed in terms of the tone of discourse (e.g. alarmistic; appeasing).

## The food culture in Romania

Situated in the South-Eastern part of the European continent, Romania is one of the largest countries of Europe (238,391 km<sup>2</sup>) and one of the newest EU member states. It has a population of 20 million inhabitants, 54.0% of them living in urban areas. The literacy rate is 98.8%<sup>1</sup>, and the Human Development Index (HDI) is 0.881/<sup>2</sup>. The unemployment rate is 4.3% and has a descendent trend.

Romania is a semi-presidential republic, which is divided into 41 counties and the municipality of Bucharest (country's capital). Romania has an upper-middle income country economy. According to Eurostat, Romania's GDP per capita in PPS (the purchasing power standard) is 55, representing 63% of the EU average in 2017, an increase from 41% in 2007 (the year of Romania's accession to the EU) (Casotă 2017).

### Food market – and patterns of shopping

At the beginning of 2018, the large retail Romanian food market was estimated at 40 billion euros and it was considered among the most dynamic EU food markets in terms of growth but having only 62.4% of the market share compared to 90% in central EU countries (Pop 2018). A recent study indicates that 2 out of 8 consumers are going to the open market to buy their food. Open markets are popular places to purchase food because of their location, the person-to-person interaction with sellers, and the prices, while the quality and freshness of the food are perceived to be better than in supermarkets. Older consumers have a preference for local products probably because they have shopped at the open market for many years and have developed a relationship with the sellers. Younger consumers experience a greater sensitivity towards more environmentally friendly farming techniques. At the open market consumers can be in touch directly with producers and learn how their food is produced, can have a sense of community building, and contribute to the preservation of the traditional life style as a recent study shows (Polimeni et al 2018). As for online food purchasing, despite its dynamic growth rate (plus 12% in 2017 compared to 2016), this particular way of shopping remains relatively low in Romania compared to other Western and Central EU countries, while for household items, electronics and clothes, the online purchase using phone apps grew in 50% in 2017 compared to 2016 (Casotă 2017).

Statistics indicate that Romanian consumption patterns include meat in the daily diet, mostly chicken and pork and a preference for cheap food and all sorts of discounts campaigns promoted by retailers (Spiridon 2017a).

According to a study made by Millward Brown Institute in April 2015, 37% of the Romanian adults are eating fruits 2-3 times a day, while 12 % are eating only once a day. Most of the Romanians (94%) are eating fruits raw, with no processing, either

<sup>1</sup> <https://www.indexmundi.com/romania/literacy.html>

<sup>2</sup> <http://hdr.undp.org/en/countries/profiles/ROU>

washed or washed and peeled and 4% are eating them as ready-to-eat mousses. Only 9 % of the Romanians are eating vegetables 4-5 times/day and 37% of them once.

There are many food habits that have changed in the last years possibly due to social network interactions and frequent travelling abroad, and a positive trend is the preferences for fresh fruits and vegetables, which could be noticed for 3 out of 10 consumers, but also the reduction of pork consumption (Arvunescu 2017).

An important trend of the Romanian consumer has been reported by retailers who noticed a decrease in the amount of food purchased but an increase in frequency and a preference for products with high quality level (Stoian 2015). Statistics indicate that an average urban consumer is represented by a person with a higher education degree, well informed by online media, a curious label reader, engaged in medium physical activity. Moreover, Romanian consumers like the other Europeans are looking for new and original tastes and textures to spike the boredom of the daily routine. All sort of premium meat products are trendy and looked for, especially in the highly crowded urban areas. Another very important and appreciated trend is given by food processors who are making efforts to help consumers get oriented in the often too crowded markets by providing them with helpful information such as recipes, lists of health benefits associated with food consumption and safety or savings made by purchase (Stoian 2015).

However, a polarization of the consumers can be noticed related to the income that influence the behavioural profile regarding food consumption. In general, consumers who live in rural areas are the ones with a lower income than the ones living in cities, but an important part of their food is mostly cultivated or raised in their own backyards. These consumers are the ones who are still dependent partially or totally on an agricultural life style. The average income of population in Romania is low in the rural area and it was 1,134.96 lei/ person/month in the first 3 months of 2018, (representing 243.55 euro /month); meanwhile, in the urban area, in September 2018, the income after the latest salary raise was 2,688 lei/ person/month representing 571.88 euro/ person/month (INS 2018a).

From the total money spent by a rural household during the first 3 months of 2018, 16.8% represented food and drinks expenses, while 19.1 % represented the value brought by the foods raised/grew in the own backyard. In the urban areas, for the same period, 17.9% represented the amount of money spent on food and drinks and only 4.2% represented the contribution brought by the own-procured/raised foods (INS 2018b).

Romanians are fastidious eaters of traditional dishes based on pork, chicken and lamb, especially during Christmas and Easter holidays, and this behaviour is most probably related to the food scarce experienced during the communism times. Nowadays, the Romanian consumer tries to overcompensate all the lack of food in the past, often getting drawn directly into a consumeristic unbalanced attitude and thus producing an

important amount of food waste. However, this tendency was mostly noticed in the urban areas while in the rural areas a more balanced attitude towards food consumption had been noticed (Spiridon 2017b). For example, the Romanians are consuming a quarter of the yearly amount of meat in December either grilled or prepared in the oven, most part being represented by pork meat (Stirile ProTv 2017).

The orthodox fasting that lasts 40 days before Christmas and 48 days before Easter are dictating the food shopping preferences of most elderly women in Romania. They are inclined to shop beans, potatoes, rice, vegetables and mushrooms and do not consume at all products of animal origin in the respective months (Crangan 2016)

### *Raising hens/growing vegetables versus shopping*

As indicated by the statistics, in Romania the annual consumption of chicken was 20.1 kg /person in 2015 with an average daily consumption of 50 g chicken meat/ capita (INS 2016) while, in average, for EU28 the consumption was 115.3 kg/person /year in 2013 (European Environment Agency 2017). Not only the consumers' income is polarized but also the farmers in Romania are either very rich with large capital investments or very poor, the latest being the predominant ones representing 55 % of the total. In 2017, basically 33,918,072 chicken capita, representing 44.15% of the total chickens, were raised by intensively growth systems and 42,902,365 capita representing 55% of the total chickens were raised by small farms and families as subsistence means. Considering that the total number of small households raising hens reported by the National Sanitary Veterinary and Food Safety Authority (ANSVSA) was 1,800,000, it results that an average of 24 chickens were owned by families living in the rural areas.

Taking into consideration the rising systems for hens, egg laying hens associated with intensive farming represents 22.17%, while those associated with households represent 77.83%, and meat hens raised intensively represent 59.36%, while those raised in households represent 40.64% (Stafie 2017). This means that Romanians prefer eggs obtained in coops from households.

In Romania, the surface cultivated with vegetables in 2016 covered 228.1 kha and a total production of 3358.3 kt of vegetables was obtained, from which the main ones were tomatoes (627.1 kt ), onions (325.0 kt), cabbage (992.3 kt) and bell peppers (201.8 kt) (INS 2013). An almost equal amount of vegetables was imported by Romania while the export represented only 2 % of the total (INS 2015a).

### *Food industry (chicken and vegetables) including import/export*

In 2015, the total production of refrigerated raw chicken meat and organs was 358.13 kt from which 136.42 kt of chicken meat and 4.02 kt of chicken liver and other organs were sold in Romania and 1.124 kt refrigerated meat and 0.09 kt of liver were exported; in the meantime, 85.17 kt of frozen chicken meat and 3.75 kt of frozen chicken liver were produced for the internal market and 23.79 kt of frozen chicken meat plus 0.063

kt of frozen chicken liver were exported. The processed chicken meat delivered internally in 2015 was 20.93 kt, while 18.83 kt was exported; 0.52 kt was the canned chicken meat delivered on the internal market and 0.05 kt the one exported. In 2017, the statistics indicate an import of chicken meat valued at 48.2 million euros and export of 32.5 million euros.

Significant quantities of vegetables were obtained just for several categories. Mushrooms production in 2015 was 4.042 kt for the Romanian market and 0.58 kt exported; beans on the internal market were 4.78 kt, peas 11.2 kt, canned tomatoes 1.11 kt, tomato pasta 3.17 kt and concentrated tomatoes 16.59 kt. The export was negligible for these vegetables (INS 2015b). In 2015, the amount of frozen vegetable provided by the Romanian food industry to the national market was 3.923 kt and the exported amount was 0.98 kt.

### **Food safety authorities**

In Romania, the National Sanitary Veterinary and Food Safety Authority (ANSVSA) is the main organization responsible for control and coordination of all food-safety related activities. This institution is coordinated by the Romanian prime minister and stays under the direct responsibility of the Romanian Government. Under ANSVSA's supervision functions the Institute of Diagnostic and Animal Health (IDSA) and the Veterinary Police. ANSVSA operates at county level through its Directions. To fulfil its mission, ANSVSA collaborates with the Ministry of Agriculture and Rural Development, the Ministry of Health and the Romanian National Authority for Consumers' Protection.

A plan for official control of food business operators is established annually and its results are published in the Annually Report of ANSVSA.

### ***Food consumption and food safety***

Many recent studies tried to underpin the Romanian's scares, and most of the strongest ones are not food related concerns but professional, personal and social, specific for different age categories. For example, under 35 years of age the main fear is the anxiety of failure, in the age group of 36-45 years old the uncertainty feeling is the dominant one, in the age range of 45-60 years the fears regarding financial security rule and in the over 60 years old category fears of failure to raise up to the challenge abound (Toma 2015).

Food choices are based upon the conceptualization of 'what people desire to eat, what they believe they ought to eat and what they usually consume across food properties' (Baiardi et al 2016; Rappoport 2001). In a recent study that included Romanian consumers it was confirmed that women are more risk averse in terms of food purchases and safety (De Boer et al 2007; Baiardi et al 2016). Moreover, older and more educated individuals showed higher risk aversion and social class displayed an important explanatory power: self-employed individuals exhibited higher awareness

towards taste and conviviality. Manual workers, house-persons and unemployed individuals were especially careful regarding prices (Baiardi et al 2016).

When buying food, the major concerns for Romanians are related to the content of sugar, fat and the presence of additives. Probably one of the most debated and inflated scare by the media and nutritionists lately is the fear of additives' presence, meat salami and processed cheese being incriminated for presence of various preservatives, colorants and flavours (Redacția CSID 2015). People merely trust the raw materials and vegetables grown by farmers and consider those fresher, safer and more natural than the ones sold by retailers.

### *Trust in the food industry and in the food safety authorities*

The EU was stormed in 2013 by the scandal of meat products adulteration with horse meat that was traced back to Romania. Other 2013 scares were the presence of aflatoxin detected in the 13,800 L of milk imported by Romania from Hungary and contamination of Romanian turkey meat with antibiotic residues that made many consumers to lose trust and overshadowed the entire Romanian food industry. Echoes of these crises are still present, however at least partially, from 2015 the trust in some Romanian food companies started to be restored (State 2015). In 2017, many countries from Central and Eastern Europe (CEE), including Romania, complained on dual food quality standards and started to raise the problem of unequal treatment of its citizens who lived the fear to be treated as *second class* consumers. Even if the president Juncker of the EU Parliament reassured that the “commission will develop a methodology to harmonise food products tests among member states and will work on a code of conduct for brands, to prevent dual quality problems” the public trust was seriously shaken (Tamma 2017). Moreover, the frequent corruption scandals in Romania induced general distrust in all the public authorities, including the ones responsible for food safety.

### *Outbreaks of foodborne illnesses*

Food borne diseases are underreported in Romania as Romanians will see a doctor only if their health status is severely damaged. Data about food borne outbreaks are hard to find as authorities do not make publicly reports or statistics on this subject. Despite this situation, some data are available in reports produced by international or European organisations as World Health Organisation (WHO), EFSA (European Food Safety Authority) and ECDC (European Centre for Disease Prevention and Control), based on reports sent by the Romanian authorities.

According to the European Health Information Gateway, foodborne cases increased in-between 2000-2003 in Romania (Table 1.2.2). After 2003, the number of declared cases of microbiological food borne diseases decreased regularly up to 2015, when only 598 cases were reported.

**Table 1.2.2: Microbiological foodborne diseases, number of cases reported in Romania, 2000-2015**

Year	No. of cases	Year	No. of cases
2000	2370	2008	1781
2001	2798	2009	1083
2002	3537	2010	946
2003	4110	2011	725
2004	3299	2012	453
2005	2426	2013	619
2006	2404	2014	655
2007	2348	2015	598

In Romania the number of illnesses caused by *Campylobacter jejuni* increased gradually along the years. Between 2008-2012, 92 cases of campylobacteriosis were reported, whereas, between 2011-2016, Romania reported 1543 of cases (per 100 000 population) out of which 149 cases in 2011, 92 cases in 2012, 218 cases in 2013, 256 cases in 2014, 311 cases in 2015 and 517 cases in 2016. Most cases of campylobacteriosis were reported in June, July and August. The increase in reported cases may not only reflect changes in exposure, but also improvements in Romanian surveillance systems. Romania has been rated in 2016 as one of the EU countries with the lowest rates for campylobacteriosis ( $\leq 4.6$  per 100,000). In Romania, campylobacteriosis was mainly a domestically acquired infection with  $> 99\%$  of cases reported as domestic (ECDC 2015; EFSA & ECDC 2016; 2017).

Reported human cases of salmonellosis and notification rates per 100,000 population in the EU/European Economic Area (EEA), by country and year, indicated that between 2011-2015, the numbers of cases of salmonellosis increased in Romania from 989 cases in 2011, reached a maximum in 2014 (1512 cases) and decreased in 2016 to 1479 cases. Households were by far the most frequent place of exposure to *Salmonella*. Compared with the other places of exposure, the outbreak reporting rate for household outbreaks caused by *Salmonella* was more than four-times higher. In strong-evidence food-borne outbreaks, *Salmonella* was the most common agent reported in private households (EFSA & ECDC 2016; 2017).

The number cases of listeriosis reported on humans (notification rates per 100,000 in the EU/EEA) who live in Romania, varied between 1 case in 2011 to 12 cases in 2015 and decreased in 2016 to 9 cases (NIPH 2016).

Meat and meat products thereof were the most frequently reported food vehicles in all the settings except restaurants, and eggs and egg products were predominantly associated with households. Fish, shellfish, molluscs and crustaceans were mainly associated with restaurants, pubs, street vendors and so forth, where they were found to cause one in every four strong evidence outbreaks reported in these places of exposure EFSA & ECDC 2017)

In Romania, 70 food outbreaks were reported in 2015 and 63 more in 2016. A total number of 10,286 consumers were exposed to the risk that led to a total number of 1,457 officially registered illnesses, from which 962 cases were hospitalized. The foods that harboured pathogens were:

- **milk and dairy products** in 35.34% cases; the identified pathogens were *Staphylococcus aureus*, which was present in 55.32% cases, *Salmonella* ssp and *E. coli* in 12.77% cases and *Salmonella enteritidis* in 2.13% cases;
- **eggs and egg-based products** (sunny side up, boiled, dyed for Easter, stuffed with mayonnaise, mayonnaise, boeuf salad, mashed potatoes with raw eggs, pancakes) in 18.05% cases; the pathogen present in these products was *Salmonella enteritidis* in 70.83% cases;
- **ready-to-eat meals** (mostly meals based on meat served at weddings, funerals and on regular occasions in restaurants) in 15.79 % cases; *Staphylococcus aureus* was present in 28.57% cases, *Salmonella* in 9.52% cases and *E. coli* in 9.52% cases;
- **chicken meat** in 9.77 % cases; meat was contaminated with *Salmonella* (*S. enteritidis*, *S. infantis*) that accounted for 53,85% of cases;
- **pork meat** in 9.77%;
- **sweets** in 6.02% cases
- **fish based foods** in 3.01 % cases.

The main cause responsible for the outbreaks was the improper food storage in 41.1% cases and contaminated persons in 24.06% (Rapoport et al 2016).

It is difficult or almost impossible to correlate the current pattern of foodborne outbreaks with the national food culture as long as official data are not available. The SafeConsume project will thus contribute to filling this research gap. Meanwhile, based on what is presented by mass-media, outbreaks are very often associated with meals served at funeral repasts. This happens especially in the countryside because high amounts of food are prepared in small kitchens, in which hygiene rules are not entirely followed and storage of food is inadequate. Then, new food habits like eating out are also a cause of outbreaks.

### *Main published foodborne outbreaks by mass media*

Foodborne outbreaks described by Romanian mass media were mostly related to *Salmonella* outbreaks, linked to contaminated foods (eggs, fast food, raw milk cheese, pasteurized milk served in schools, hamburgers, processed pork products, cakes with cream) or cross contamination during food preparation. Most of the outbreaks happened after eating in restaurants, canteens, school or food supplied by catering services. More than 50% of the food outbreaks presented in mass media between 2002 and 2017 occurred during the summer.

## The food culture in France

France was among the founding countries of the European Economic Community in 1957 which became the European Union in 1992. France comprises mainland France and overseas territories. Mainland France represents 543 940 km<sup>2</sup> (633 809 km<sup>2</sup> with the overseas territories) for a population of 64 812 052 (66 992 699 with the overseas territories) (Insee 2018a), with a population density of 119 inhabitants/km<sup>2</sup>. Most mainland France is under an oceanic climate, with some continental influences in the East of France and some parts with a mountain climate. The South-East is under a Mediterranean climate. The French informants were recruited in “Maine et Loire” which has a typical oceanic climate. According to Insee (2018b), in 2015, the mean annual standard of living (the disposable income of the household divided by the number of consumer units) in France was 25 280 € or 24 160 PPS (an artificial common reference currency unit which eliminates the differences of price levels between countries), above 22 000 PPS as in Luxembourg, Germany, Denmark, Netherland, Sweden, Finland, Belgium, Austria. Minimum monthly full-time salary was 1390 PPS (1460€), slightly lower than in Germany and Belgium and slightly higher than in Ireland. The standard of living in France increased until 2008 when it reached a maximum and has slightly decreased or remained stable since then. The French research participants all came from “Maine et Loire” which belongs to the “Pays de Loire” Region, where the median annual standard of living was very close to that of mainland France. However, poverty was less frequent in Pays de Loire than in mainland France (11.2% against 15.3%) with smaller income disparities. Education levels in France vary a lot with age (Insee 2018c). In 2017, persons with secondary and tertiary education represented respectively 30% and 14% of French aged between 25-34, whereas it represented 12% and 11% of French over 55.

## Food market and patterns of shopping

If hypermarkets are still the most popular distribution channel, its weekly attendance decreases (-6 points between 2012 and 2017) (CREDOC) and it profits to supermarkets and closer shops. Shopping by internet is increasing too. To buy products of good quality, consumers tend to go to several shops depending on the goods they look for. In 2017, 64.7% (in value) foods were purchased in supermarkets, 2.3% in open markets, 18.4% in specialized shops, 6.4% in small shops (Insee 2018d). There are 196 food stores in France per million people (Norwegian Ministry of Agriculture and Food 2011).

A large survey, INCA3 (Anses 2017) has been conducted in France between February 2014 and September 2015 on a representative sample of 5 855 people, 2698 children from 0 to 17 years old and 3157 from 18 to 79 years old (Anses 2017). Food and beverage consumption (3 days record), height and weight, PCS, food habits, practices which could be unsafe, and skills have been recorded. More than half of the processed food consumed outside the catering circuit, by adults comes from industry and one third are homemade. Soups, dishes with eggs or vegetables are mainly homemade; entremets,

ice cream, fruit juices and fruit purees are mainly industrial. The part of homemade is doubled for children from 0 to 17 (22%) and adults from 65 to 79 (48%).

Fish, meat, fresh fruit and vegetable are shopped in Super and Hypermarkets by more than half of households while bread and viennoiseries come from the bakers. The criteria of choice during shopping depend on the geographic area, the age, the level of education and the SPC.

Raw animal products consumption increased since the previous survey INCA2, multiplied by two for fish (15% to 31%) and with a significant progression for raw beef meat (24 to 30%).

In France chicken consumption is high, and if we consider all the poultry, the average consumption is 26 kg per habitant whereas it is less than 22kg/hab in Europe. In 2017, chicken meat purchasing was stable whereas pork meat and beef meat purchases decreased (FranceAgrimer). However, whole chicken consumption decreased (-4,7%) (average price 5,11 €/kg) whereas chicken cut consumption increased (+2,3%) (7,62 €/kg).

French authorities recommend eating at least five fruit or vegetable per day, but these recommendations are less and less followed (CREDOC). In 2016, the number of high fruit & vegetable consumers has decreased (25%), with a higher prevalence (54%) of low consumers (less than 3.5 portions per day) in families with two children or more, with no diploma or very few, and more people living in North of France. In 2014 French consumed 127 kg per capita for fruits and vegetables (Mediаfel 2014). Among vegetables eaten raw (or often eaten raw) they consumed 2 kg green salad, 1.7 kg cucumber and 6 kg tomatoes (Interfel 2014). 89% of French consumers most often eat raw fruits, and 52% processed fruits (juice, mashed potatoes), 64% of consumers mostly eats raw vegetables and 64% of vegetables cooked and prepared (FranceAgrimer 2016).

### *Raising hens/growing vegetables versus shopping*

In INCA3, Anses (2017) noted that 75% of consumers eat at least once a month (and 75% of these once a week), self-produced products, mostly eggs, fruits and vegetables. Approximately 8% of table eggs consumed in France are self-produced eggs (FranceAgrimer 2017). The weekly auto-consumption is higher in the elderly (63% of the 65-79 years) than in younger adults (51 % of 18-44 years).

### *Food industry (chicken and vegetables) including import/export*

In 2015 imports in food products represented 38,700 M€ and exports 45,700 M€ (Insee 2018e). France is the fourth largest chicken producer in Europe and exports a third of its production (2014), but this exportation decreased in 2017 (FranceAgrimer) and the balance of trade is in deficit. The chicken production increased of 2% in 2017 to raise 25 045 tons eq carcass.

France is the third largest fruit and vegetables producer behind Italy and Spain but the balance of trade is still in deficit even if global import of vegetables had decreased during the three first trimesters of 2018 (FranceAgrimer). The main vegetables French people buy were tomato, carrot, melon, courgette, salad and onion during the three first trimesters of 2018.

### Food safety authorities

Food safety relates to different authorities in France. The French sanitary security agencies are public organisations whose aim is sanitary risk evaluation. About food, Anses (national agency of sanitary security of food, environment and work) depends on health, agriculture, environment, work and consumption ministries. It is advisory. Health ministry and Agriculture and food ministry are especially in charge of food sanitary risk. Epidemiology and surveillance of illnesses (including foodborne illnesses), as well as communication and education of the population with regard to health, is within the remit of “Santé Publique France” (France Public Health).

### *Food consumption and food safety*

Foodborne illnesses caused by toxigenic or infectious agents are no longer the main concern of French consumers. After an important increase in the perception of sanitary risks by French consumers between 1988 and 2003, their concerns shifted toward nutritional risks, in correlation with the setting of the “national program for health and nutrition” (PNNS) (Hebel 2016)

In 2010, French consumers were more worried about risk caused by pesticides residues, chemical contaminants and antibiotic residues in foods (38% declared to be very worried) than about risk caused by pathogenic bacterial in foods (22% very worried), similarly to EU consumers as a whole (23% very worried by pathogenic bacteria in foods)<sup>[4]</sup>. When detailed according to the food categories, chemical risks are the main concern for plant-based foods and processed foods, whereas hygiene is the main concern for meat and dairy products (Poulain 2016).

### *What about trust – in the food industry and in the food safety authorities?*

When worried, French consumers tend to rely on local products, French products, or produced according to quality labels (Sondage Toluna, Challenge 2016), in agreement with Fischler (2000) who considered that French consumers go toward quality indicators in response to safety issues. Most French consumers trust fresh foods (75%) and consider them safe for human health, whereas 35% trusts processed foods (Jauneau *et al* 2016).

### *Outbreaks of foodborne illnesses*

Declared foodborne outbreaks has been regularly increasing in France, with 640 outbreaks in 2005, 1032 in 2010 and 1455 in 2016, corresponding to respectively 6980, 9901 and 11429 cases (Santé Publique France 2017). Foodborne outbreaks that occurred in a family setting have represented a constant share of the total outbreaks

since 1996, comprised between 30 and 40% (33% in 2016). Non-commercial food establishments (canteen from companies, school, medical and social establishment) have accounted for constant numbers of food borne outbreaks since 2006, and therefore a declining share of the total outbreaks (37% of outbreaks in 2006 and 27% in 2016). In contrast, the share of foodborne outbreaks that occurred in commercial food establishments has regularly increased since 2002, from 20% to 41% in 2016 and represents the first setting of outbreaks in France since 2012.

Main deviations from hygiene practices, or potential causes of foodborne outbreaks, observed in family setting were in 2016: contaminated food (raw material of processed foods) in 40% of outbreaks, non-hygienic equipment in 41% outbreaks, contamination by food handlers in 27% outbreaks, non-adequate practices (e.g. not respecting the cold chain).

In 2016, the main causative agents of foodborne outbreaks in France were, in decreasing order and expressed as % of outbreaks for which a cause was identified: *Staphylococcus aureus* (24%), *Bacillus cereus* (17%), *Salmonella* (15%), Norovirus (13%), *Clostridium perfringens* (8%), *Campylobacter* (2%). In 2016 no causative agents could be identified in 13% of foodborne outbreaks. However, when considering only “microbiologically confirmed outbreaks” (23% of outbreaks in 2016), *Salmonella* comes first (35% of confirmed outbreaks). In 2017 7% of the reported outbreaks were attributed to chicken, whereas no outbreaks were attributed to fruits and vegetables (Santé Publique France 2017).

In family settings, since 2012, foodborne outbreaks (considering both confirmed and suspected agents) have mostly been caused by *Salmonella* (around 30%), followed by “toxin producing bacteria” (e.g. *Staphylococcus aureus*), whereas *Salmonella* has been the cause of only 5 to 10% of outbreaks in other settings. Foodborne outbreaks occurring within the family has not been reduced, in contrast to those from non-commercial food establishment, and has regularly increased in absolute value.

### *Foodborne diseases health burden*

Considering all foodborne diseases, both outbreaks and sporadic cases, and combining their frequency and severity, resulted in shiga-toxin producing *Escherichia coli* (STEC) as representing the highest health burden in France, followed in decreasing order by *Listeria monocytogenes*, *Toxoplasma gondii*, *Campylobacter*, *Salmonella* and Norovirus (Anses 2014). Consumers’ practices with the main impact to reduce the health burden of foodborne diseases were assessed as cooking meat and avoiding raw milk for STEC and *Salmonella*, cooking or freezing meat for *T. gondii*, cooking and avoiding cross contaminations for *Campylobacter*, cooking eggs for *Salmonella*.

Assessment of the health burden gives a different picture of food safety risk for French consumers than foodborne outbreaks, raising the importance of rarely occurring pathogens as STEC and *L. monocytogenes*.

Foodborne outbreaks which descriptions have been published in French or international journals are mostly *Salmonella* outbreaks, linked to contaminated foods (eggs, burgers, raw milk cheese, processed pork products, dry sausage) or cross contamination during food preparation. Other published outbreaks concern norovirus in oyster or berries; *Listeria monocytogenes* in processed, ready to eat pork products; *Clostridium botulinum* in processed foods (mostly home processed); STEC in beef burgers and sprouted seeds. Outbreaks linked to contaminated foods are also a consequence of consumers' practices, as undercooking, or no cooking for contaminated eggs and burgers, or not following storage instructions in the case of some *C. botulinum* outbreaks.

As presented in the above chapter, food borne illnesses are no longer the main concern of French consumers who mostly fear pesticides, chemical contaminants, tend to distrust processed food and rely more on fresh food, quality label, and local products. Indeed, the last national French survey on consumers' behaviours (INCA3) (Anses 2017) showed a trend in more risky behaviours with regards to microbiological foodborne hazards.

The refrigerator temperatures were measured in INCA survey and revealed that half of them are between 2 to 6°C, while 44% are above 6°C. The majority of households cool dishes at ambient temperature after cooking, and more than 65% let them less than 2 hours, except cakes which are stored at ambient temperature. Nearly 13% of the interviewees, when asked about a correct fridge temperature give a figure above 7°C. Nearly 10% do not know.

When cooked at home, products are stored and consumed rather soon, in less than 1 to 2 days for 78% of households. Half of the households consume pre-packed ready to eat food before the expiration date while it is only a third of households for ready to eat dishes and butter. When interviewers observe the fridge content, they notice more often butter older than expiration date+7 days (7,3%) than for cooked ham (2,7%) or smoked salmon (4,5%). Cheeses which are bought none pre-packed are consumed more often after 3 days after shopping (60% of households) than other none pre-packed products. Elderly people (65-79 years) are more likely to respect the expiration dates and consume earlier non packed food. We can notice that 5% of the 18-44 years evaluate meat freshness thanks to its appearance or odour, and 3% for smoked salmon. Since INCA2 survey, people seem to store longer perishable food and consume them more often after the date.

The Anses working group's concludes that food behaviours present a large heterogeneity, and it is worth to take in account this variability before evaluating risks and benefits of food. INCA3 results reveal new stakes for food safety: development of consumption of raw animal products, extension of storage time, higher percentage of consumers eating food after the limit date.

## Food culture in the UK

The UK is the third most populous country in the EU behind Germany and France. It comprises four constituent countries: England (pop: 55.6m), Scotland (5.4m), Wales (3.1m) and Northern Ireland (1.9m). The UK ranks tenth in the EU for GDP per capita, but has the eleventh highest levels of income inequality.

The UK has experienced a number of high-profile food scares since the 1980s, including *Salmonella* in eggs, BSE-contaminated beef, and more recently the discovery of undisclosed horsemeat (not typically eaten in the UK) and pork (prohibited in various religious traditions) in processed foods. These incidents, and their representations in the media, have variously instigated, played on and helped reproduce widely shared anxieties concerning particular food types, places of origin, production methods and patterns of consumption (Jackson 2010; Abbots and Coles 2013). In most of the above cases, scares were clearly attributed to a particular food type. During the 2000s, on the other hand, there emerged an unexplained rise in cases of listeriosis, especially among older people (Food Standards Agency 2009). It was anticipated that this rise might best be explained in terms of social factors, prompting recognition of a need to assess and potentially improve the social science evidence base on domestic food safety.

In response, the Food Standards Agency (FSA) commissioned a major evidence review on *Food safety behaviours in the home*, undertaken by the consultancy Greenstreet Berman. It was international in scope, drawing on over 300 research and evaluation documents from across social science disciplines, highlighting UK-specific examples where available.[2] Overall, the review ‘strongly indicated frequent failure to follow recommended food hygiene practices’ among the general population, reflecting problems in both understanding and implementation (Wright et al 2011: viii). These included ‘limited use and comprehension’ of food safety labelling; a lack of awareness of recommended storage and cooking procedures; and ‘fail[ure] to follow’ good practice in hand washing, cleaning and prevention of cross-contamination, despite higher levels of reported awareness (*ibid*: viii). These tendencies were particularly marked among men, older people, low income households and – perhaps counterintuitively – those with higher educational levels.

The Greenstreet Berman review also considered the factors influencing implementation (or otherwise) of food safety advice at an individual level, specifically focusing on the relationship between knowledge and action. Perception of risk was found to be an important intervening factor, with evidence suggesting an ‘optimism bias’ in how people assess their own susceptibility to foodborne illness (see Clayton et al 2003; Redmond and Griffith 2004; Howard and Wignarajah 2008). Crucially, in terms of intervention strategies, the review found little to indicate that household food practices can be changed by providing information and advice, especially when delivered through broad and untargeted campaigns.

A key contribution of the Greenstreet Berman review was to highlight a lack of sustained, in-depth research with households exploring in detail what they routinely do in relation to food and food safety, and why, when, where and with whom (Wills et al 2013). Many ‘consumer behaviour’-oriented studies of food safety are reliant on self-reporting and, in the UK at least, largely based on quantitative analysis of survey data (Wright et al 2011; Evans and Redmond 2014). The subset involving direct observation of meal preparation tend to be highly structured and conducted under controlled conditions in model kitchens (e.g. Harrison et al 2001; Meredith et al 2001; Redmond et al 2004; Evans and Redmond 2018) with some exceptions (Worsfold 1997; Hudson and Hartwell 2002). A further criticism of this body of research, and of similar perspectives prevalent elsewhere in food policy and practice, concerns an implicit assumption that individuals are responsible for what happens in their kitchens, focusing attention on their (supposedly deficient) knowledge, attitudes and behaviours. Lacking, as a result, is any detailed engagement with how those routine ways of thinking, understanding and acting are socially and culturally constituted, and how concerns around food risk interact with myriad other priorities in the flow of everyday life (Meah 2014; see also Holm 2003; Evans 2011). While mirroring the language used in its source material, the authors of the Greenstreet Berman review acknowledge the problematic use of terms such as ‘failure’, ‘non-compliance’ and ‘violation’, and seek to distance themselves from any implied normative judgement (Wright et al 2011).

A number of studies have begun to address these apparent shortcomings, including two high profile projects with a specific focus on food safety and domestic practices. Already underway was the ERC-funded project *Consumer Culture in an Age of Anxiety*, a collaboration between academic researchers in the UK and Sweden, with particular emphasis on food security and food safety (see Jackson 2015). And, in 2011, the FSA commissioned a qualitative study of UK households, prioritising ‘the mundane, difficult-to-recall, routine aspects of kitchen life and avoid[ing] an emphasis simply on individuals and “what they know about what they do”’ (Wills et al 2013: 3). Important insights can also be drawn from a host of related work on household food waste and on food anxieties more broadly.

### Patterns of shopping and eating

A large proportion of UK food shopping occurs in major chain supermarkets. Survey data suggests that most households (95%) shop at large supermarkets at least some of the time, with 86% doing their main food shopping there (Food Standards Agency 2017). The ‘big four’ food and drink retailers in the UK – Tesco, Sainsbury’s, Asda and Morrisons – together account for half of the grocery market, but a growing share is held by discount supermarkets such as Aldi and Lidl (Defra 2018a). Other common sources of food include mini supermarkets (used by 39% of survey respondents) and local ‘corner’ shops (28%) (Food Standards Agency 2017). Meanwhile, the UK has one of lowest density of food stores in Europe with 97 stores per million people (Norwegian

Ministry of Agriculture and Food 2011). Over the last two decades, several studies have compared various aspects of food risk in Europe.

Responsibility for household foodwork, as well as other forms of unpaid labour, is still highly gendered in the UK. For example, women spend twice as many hours per week cooking as men do (Office for National Statistics 2016). More than twice as many women as men are responsible for ‘all or most’ of the shopping and cooking in their household (Food Standards Agency 2017).

The character of food consumption in the UK changed substantially over the second half of the twentieth century and into the twenty-first. The proportion of total household expenditure allocated to food halved over this period, from 33% in 1957 to 16% in 2017 (Defra 2018b). In 2016/17, average weekly food expenditure per person was £43.18, two-thirds of which was on food consumed at home (Defra 2018c). The typical main meal of the day shifted from lunchtime in the early part of the twentieth century to the evening meal by the end of the century (Southerton 2009). The timing of the evening meal itself has become both later in the day and less socially synchronised (Durand-Daubin and Anderson 2018). There has been a decrease in the overall amount of time spent cooking and eating, but an increase in time spent eating out (Warde et al 2007).

Chicken consumption has increased dramatically over the period. Until the 1950s chickens were kept mainly for their eggs rather than being specifically bred for eating and so consumption of poultry meat was close to zero: just under 15g per person per week in 1954 (Ministry of Agriculture, Fisheries and Food 1961). Chicken is now by some distance the most popular meat. Between 1974 and 2015 purchase of uncooked chicken increased by 62% from 115g to 186g per person per week. The same period saw a similarly dramatic reduction in purchase of beef, pork and especially lamb. Overall purchase of fresh vegetables (in g per person) has remained largely stable, but the proportion of green vegetables making up this total halved from 47% in 1974 to 23% in 2015 (Defra 2017).

### *Raising hens and growing vegetables versus shopping*

The proportion of chicken and vegetables eaten in the UK coming from home-grown sources is minimal. ‘Free’ sources such as allotments and gardens supplied households with 3.8% of their fresh fruit and vegetables in 2015 (Defra 2017). Directly comparable historical figures are not available, but in 1950 free sources accounted for 7.8% of vegetables consumed, or 15.7% excluding potatoes (Ministry of Food 1952). We have not been able to find relevant statistics for chicken meat, but it can be assumed that the proportion home-reared is very small; however, 3.8% of eggs are home-laid (Defra 2017).

As explained above, the UK population relies heavily on supermarket shopping, with food coming from other sources, including outdoor markets, being minimal.

Depending on the type of homes people live in, these will either come with a garden or without. The UK has a gardening culture, though home-connected gardens are essentially for decorative purposes. The contemporary trend is for new-build homes to either come without gardens (2.2 million homes were said to be without a garden in 2010, and these were mostly new-build flats), or for the garden area to be much smaller than may have been the case in the past. It is not uncommon for older city-based terraced housing to come with small yards rather than with gardens. With the growth in urbanised living during industrialisation (19<sup>th</sup> Century), the UK has seen the growth in allotments. Allotments are collections of small pieces of land big enough for people to grow their own vegetables, fruits, and in some cases, to keep small life-stock like chickens. The National Allotment Society estimates that there currently are 330,000 allotment plots in the UK, and there is a growing demand for these, with 90,000 people on waiting lists.<sup>3</sup> Whilst, the trend in home-linked gardens are in decline, this supports the idea that there is a growth in the desire to ‘grow-your-own’, and this includes keeping small livestock, like chickens.

### *The food industry and production of chicken and vegetables (including import/export)*

Overall, the UK imports around half of its food. The majority of imported food originates within the EU (30% of total food consumed). Imports from outside the EU account for 20% of food consumed in the UK (Defra 2018a). UK agriculture accounts for just less than three-fifths of the chicken and vegetables the country consumes: 59% of its poultry meat (Agriculture and Horticulture Development Board 2018) and 57% of its vegetables (Defra 2018d). However, UK fruit production is proportionally much lower, accounting for only 16% of consumption (*ibid.*).

At the time of writing, the UK’s reliance on imported food (especially from within the EU), as well as the financial contribution of its exports, presents a potential concern for food security, with the UK due to leave the European Union in March 2019 (Lang et al 2018). The terms of the exit and future trade arrangements remain unresolved.

### **Food safety authorities**

The recent history of food safety in the UK can be described in a succinct way, connecting the significant growth in the consumption of chicken products (meat and eggs) from the 1950s onwards, with a transformation in the organisation of food retailing, shopping, and regulation. As discussed by Wales et al (2006: 189), the focus of post-second world war UK food policy had been the assurance of a ‘reasonable national supply of affordable food,’ which first saw the intensification of food production, followed by a centralisation of food retailing (especially from the 1980s onwards), in what has been termed ‘productionism’ (Lang 1999). Significant are the final decades of the 20<sup>th</sup> Century, and especially the 1990s, which were characterised by a series of food scares that moved from concerns over *Salmonella* in chicken and

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<sup>3</sup> Accessed on 24 January 2019: <https://www.nsalg.org.uk/allotment-info/brief-history-of-allotments/>

eggs (late 1980s), through worries over *Listeria* and *E. coli*, to the BSE scandal (1996) and foot & mouth disease (early 2000s). This stimulated a regulatory shift, from a relatively hands-off approach where responsibility for food safety and health was shared between two government departments, towards the establishment of the Food Standards Agency in 2000. Since then, the UK approach to food safety has prioritised (a) independence – the Food Standards Agency is an organisation that is independent from government departments; (b) consumer interests – the UK FSA puts consumer interests first in everything it does; and (c) transparency and openness (Wales et al 2006: 191). Since its inception, the FSA has developed an integrated structure for engaging with the food industry, and with consumers, especially through the provision of information and consumer recommendations. In addition, its work is informed by a range of scientific committees and by commissioned and financed research. In the social science field, this includes the Food and You survey (2008-2016).

### *Food consumption and food safety: household concerns*

The British Social Attitudes survey provides evidence on what matters to people about the food that they buy (NatCen 2016). The most widespread concern was that food should be healthy: 83% of respondents said this mattered to them a great deal or quite a lot. Other priorities include minimal number of stages in food processing (69%), fair pay for producers (58%), low cost (47%) and knowing where the ingredients have come from (43%). The relative importance of cost varies by income group, with the least well-paid more likely to report this as something that mattered, but healthiness was a more commonly reported priority across all sociodemographic groups.

While some of these issues perhaps hint at connections with food safety, there was not a direct question allowing consideration of how much microbiological risk matters to people compared with these other concerns. The FSA's Food and You survey, however, does provide some insights. Only 21% of respondents to the latest wave of this survey said they often worry about whether their food is safe to eat. And 76% felt they were unlikely to become ill from food prepared at home. By contrast, waste was a widespread concern, with 62% saying they always avoid throwing food away. 53% felt uninformed about the chemicals used in food production and 61% were concerned about long-term health effects of such chemicals (Food Standards Agency 2017).

Qualitative research has sought to uncover how the tensions between these concerns are managed in the course of food practice (see especially Watson and Meah 2013; Meah 2014 on how food safety competes with other, sometimes more pressing anxieties). In general, this body of research emphasises:

- the routine, unreflexive nature of much kitchen practice (e.g. Wills et al 2013; Evans 2014; Jackson 2015)
- the effect of disruption to routines at particular moments in the life course, e.g. having children (Wills et al 2013)

- that the kitchen is not always a neatly bounded space, and that food preparation is not always a neatly bounded activity, opening up possibilities for cross-contamination (Wills et al 2013)
- the combined role of sensory judgement and information in how things become edible/inedible (Watson and Meah 2013)
- the use of proxies and rules of thumb (Wills et al 2013)
- the effects of deteriorating materials and the ‘disgust’ response of bodies (Watson and Meah 2013; Evans 2014)
- the impact of how things are sold (Evans 2014) and available conduits for disposal (Metcalfe et al 2013) on household food practices.
- Many of these themes and the questions they raise were taken up in the WP1 fieldwork and analysis.

### *Trust in food*

Moving on to think about the related topic of trust in food, Wales et al (2006) argue that this is never static, and the institutional trust that evolved in response to the establishment of the Food Standards Agency in 2000, alongside the centralisation in food retailing, is subject to continuous challenges that demand the re-establishment of trust on a regular basis. Despite this, it may be argued, perhaps controversially, that the level of trust in food amongst UK consumers is very high. In Norway, high levels of trust are explained in part by the absence of significant food scares. It may be argued that in the UK, consumer trust must be related to the fact that the majority of the Nation’s Diet is supplied by only a handful of supermarket chains. These retailers carry substantial responsibility for their customers’ health and run the risk of financial disaster in the event of consumer trust being lost. That said, survey evidence suggests that trust differs among organisations: food inspectors and farmers are generally far more likely to be trusted than supermarkets, manufacturers or the government (NatCen 2006).

In view of this, the FSA recently commissioned two evidence reviews on consumer trust. The main findings of one of these is summed up as follows (Food Standards Agency 2018):

- Trust is a complex social necessity. There are 3 core steps in understanding trust decisions: Context; ‘Social Trust’ (Intention); ‘Cognitive Trust’ (Delivery).
- Loss of social trust is most damaging, while cognitive trust is more resilient.
- The context for food sector decisions makes trust easier for the public. The food sector also has major advantages in both the social and cognitive trust spheres.
- The current high levels of trust in FSA do not seem to be based on detailed understanding of FSA performance. As the public learn more about the food sector, this can increase concern. However, learning more about the FSA’s role increases trust in FSA.

- Overall the public want a visible, powerful FSA protecting their interests in the food system while maintaining proactive consumer communications that help the public empower themselves.

### *Foodborne illnesses*

Just under half (44%) of respondents to the Food and You survey said they had experienced food poisoning. 16% of these reported going to the doctor as a result. As already seen, few felt that they were likely to get food poisoning from food they prepared themselves at home (Food Standards Agency 2017).

While official surveillance statistics only include details of reported outbreaks (and therefore exclude isolated cases, i.e. those that are not formally linked to at least one other case), the Food Standards Agency has commissioned research to estimate total numbers of cases, GP consultations and hospital admissions related to foodborne illness. This uses a combination of primary research, secondary data and statistical modelling techniques. The most recent estimates suggest that, in 2009, there were over 500,000 cases of foodborne illness caused by 'known pathogens'. *Campylobacter* accounted for c.280,000 cases, followed by *Clostridium perfringens* (c.79,000), norovirus (c.73,000), *Salmonella* (c.34,000), *E. coli* (<10,000) and *Listeria* (<200). Poultry was the most common identified source, causing an estimated c.250,000 cases (Tam et al 2014).

## The food culture in Norway

Norway is a country in Northern Europe with 5,3 million inhabitants, sparsely populated in comparison to other European countries with a population density 15.8/km<sup>2</sup>. The country is rich in natural resources (oil, gas, minerals, timber, seafood, and hydropower), but depends heavily upon importing food. Norway maintains the Nordic welfare model, with universal social benefits and health care, and the state has ownership positions in key industry sectors<sup>4</sup>. The general living standards in Norway are quite high. Thus, there are small differences between social classes, high degree of gender equality and high degree of homogeneity in culture and social life.

### *The chicken and vegetables in Norwegian food culture*

Norwegian food culture is often regarded as homogenised, especially in terms of food meal formats and dinner repertoires. Typically, Norwegians eat three or four meals a day, including only one hot meal. More than 90 % of the population eat dinner at home more or less every day. The typical Norwegian meal day begins with breakfast with open-faced sandwiches with cheese or meat spread, a packed lunch (“matpakka”) with sandwiches for lunch at work and in school, a hot meal in the afternoon (around 4-5 pm), and then sandwiches again later in the evening (Kjaernes 2001). Because the lunch is eaten early and consists of a calorie-light meal (sandwiches), Norwegian people are typically hungry again quite early, resulting in an early dinner straight after working hours and before any leisure time activities (Kjaernes 2001). Increasingly busy schedules in the afternoon makes it difficult to fit a proper meal in the everyday dinner menu. The eating patterns of sausages, minced meat and ready-made pizzas reflect this. In spite of increased production and consumption of ready-made meals and processed food, cooking from scratch using fresh ingredients is a prevailing dominant discourse in the Norwegian food culture (Skuland 2016).

Despite the long-standing traditions of eating fish in Norway, Norwegians eat far more meat than fish<sup>5</sup>. Historically, meat consumption in Norway has been rather low, but is closing in on the European average (Vittersø and Kjaernes 2015). Almost 90 percent of Norwegians eat meat or meat products for one or more dinners every week. About half of the Norwegian population eat a main course based on minced meat for dinner one or more times a week (Bugge 2007). In comparison, more than half of the population report to eating fish or fish products of one dinner weekly (Spisefakta 2015). Traditionally, poultry has not played a significant part in the eating habits of Norwegians. Meanwhile, this has changed a lot over the last two or three decades. In fact, chicken has become an everyday food product, regarded as healthy, convenient and cheap food (Bjørkhaug et al 2017). Annual chicken consumption has increased

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<sup>4</sup> In <https://en.wikipedia.org/wiki/Norway> accessed November 2018.

<sup>5</sup> Norwegian fish production has become the second largest exporter of farmed fish in the world (after China) producing about 32 million (in 2013) seafood meals consumed worldwide every day.

threefold since the beginning of the 1990s, rising from 4 kilos in 1992 to 18 kilos chicken eaten per person in 2013 (Kielland 2013). Today, chicken or chicken products are eaten for dinner once a week or more often and as regularly as fish (Spisefakta 2015). Some argue that the increased availability of fresh poultry products on the market has replaced the demand for the traditional fish dinner.

Historically, vegetables have played a minor role in the eating patterns of Norwegians (Notaker 2000:188). Industrialized farming, development of distribution and increased knowledge of farming contributed to a gradual inclusion of vegetables and fruit in the diets of Norwegians. Over time, consumption of fruit, berries and vegetables has grown. Boiled vegetables have been included in Norwegians' idea of a proper meal. Meanwhile, boiling as a heat treatment of vegetables was challenged since the discovery of the vitamins in the beginning of the 20<sup>th</sup> century (Lyngø 2003) and also in cookbooks from the 1950s and 1960s. Here, colourful, crunchy and raw vegetables were promoted as healthy and tasty and for esthetical reasons (Skuland and Vittersø 2013). The traditional cooked vegetable on the side of the dinner plate has gradually been replaced by raw vegetables or a salad (Fagerli 1999). Putting the salad on the dinner menu was inspired by the American salad bar, which appeared in Norway in the 1960s (Bugge 2019). In 2013, a large consumption survey from (Spisefakta 2013) found that 69 percent of the respondents reported to eat a salad weekly. In 2014, Norwegians ate on average 92 kilos of fruit and berries and about 80 kilos of vegetables per person yearly (Helsedirektoratet 2015: 12). The National council for nutrition encourages Norwegian to eat more fruit, vegetables and berries and help support leading market actors such as the fruit and vegetables marketing board's and Bama's "Five a day" campaign.

### The food marked and shopping patterns

There are three leading food store chains that dominate the market, which are NorgesGruppen, Coop and REMA 1000. There are few specialist food stores or open food markets, and most of the consumed food is bought in the food store chains. There is a smaller range of food products in Norwegian food store chains compared to the other Nordic countries. Meanwhile, the density of food stores is one of the highest in Europe. There are 464 food stores per million people in Norway. In comparison, there are food stores in 196 in France per million people, 137 in Portugal and 97 the UK (Norwegian Ministry of Agriculture and Food 2011). Distances to the closest shops vary between urban and rural areas. In Oslo, 95 per cent live less than a two kilometres distance to the closest shop. However, in remote rural areas (with a population of about 3000 people) more than half live less than two kilometres away from the nearest shop (Vågaene 2000). In Norway, the three dominating food store chains have increasingly gained power over the consumers and the producers (Jacobsen and Dulsrud 2007; Dulsrud and Jacobsen 2009)

### *Raising hens and growing vegetables versus shopping*

There is no official statistics on raising hens or growing vegetables for private consumption. Interest in Community Supported agriculture has increased the last years. Until 2010, there was only two of such farms in Norway, but by spring of 2016 the number of farms had increased to 50 (Hvitsand 2016). The number has further increased to 77 farms in December 2018 (Økologisk Norge 2019). Meanwhile, fishing and angling, collection mussels, hunting, picking berries and mushrooms are rather common activities. Numbers from 2017 show that 36 % of Norwegians had been picking berries or mushroom the last 12 months, and 42 % had been fishing (Statistics Norway 2017).

### *The food industry and production of chicken and vegetables (including import/export)*

Norway relies heavily on imported foods, and over half of the food calories consumed in Norway are imported (Richards et al 2016). Except for fish, eggs, dairy products and most of the meat products, Norway relies upon importing foods such as grain, fruit, vegetables, margarine, butter, and oil. Today 56 percent of the vegetable consumption is imported goods (Directorate of health 2015). Meanwhile, Norwegian food production is protected by international agreements, primarily the WTO Agreement and the EEA Agreement, regulating the food import. Especially import of meat and dairy products is heavily regulated. Thus, a very modest share of the meat sold and consumed in Norway is produced abroad (Kjaernes et al 2010). One newcomer on the Norwegian food market is imported berries. From 2009 to 2016 import of strawberries doubled from 5089 to 10359 tons, raspberries increased from 221 to 1355 tons and blueberries from 771 to 4426 tons (Frukt.no). These are foods Norwegians traditionally have picked themselves and are often consumed raw.

### **Food safety authorities**

In Norway, the Norwegian Food Safety Authority (NFS) is the main governmental body regulating and controlling food safety, that is, that food and drinking water are as safe and healthy as possible for consumers. It also promotes plant, fish and animal health. NFS's regulations cover ethical keeping of animals and encourage environmentally friendly production. The Norwegian Food Safety Authority's role is to draft and provide information on legislation, perform risk-based inspections, monitor food safety as well as plant, fish and animal health and provide updates on developments in the field and plan for emergencies. They advise the Ministry of Agriculture and Food, the Ministry of Fisheries and Coastal Affairs and the Ministry of Health. In Norway, institutional arrangements in the food sector reflect a long-established Scandinavian consensus on the state's role in consumer protection where the public authorities are seen as having the main responsibility for food issues (Kjaernes et al 2007). Kjaernes (ed.) (2001) claims that a twofold food policy strategy has been favoured in the Scandinavian countries combining consumer protection and consumer information. Consumer protection implies regulation of the market to prevent inferior and harmful products on the market. Consumer information on the

other hand involves individual responsibility and, thus, implies that consumers become more capable of actively choosing between various food products, for instance in terms of individual responsibility for healthy diets.

### *Food consumption and food safety*

The major food concern among Norwegians is healthy eating. In the Health Meal survey in 2014, 75 percent reported to be very interested in eating healthy (Bugge and Skuland 2015). Meanwhile, people who eat healthy are generally more concerned about eating sustainably, including eating local, organic and seasonal food, limiting consumption of meat, food products imported by airplane and avoiding food with excessive packaging (Niva et al 2014). The top priorities among Norwegian consumers when shopping a food item is freshness (85 percent), taste (84 percent), nutritional (57 percent), price (51 percent), none or few additives (45 percent) produced in Norway (44 percent) (Spisefakta 2013). Norwegians are less concerned about foodborne illnesses compared, for instance, to additives in food. In a study from 2011, Jacobsen and Lavik found that 38 percent regard additives in food products a large problem, while only 12 percent reported that *Listeria* and *E. coli* were highly problematic (Jacobsen and Lavik 2011).

Generally, Norwegians are less concerned with sustainable food consumption in comparison with their Nordic neighbours (Niva et al 2014). Meanwhile, recent attention to welfare of chicken farms has been on the rise (Ellefsen 2013). Furthermore, 61 percent of Norwegian consumers acknowledging food waste as a problem and 42 percent report that they have reduced wasting food the last year (Stensgård and Hanssen 2018).

### *Trust in food*

In Norway, attention to food and eating has exploded in public and political debates in Norway. In this mediatized world, eating and cooking are highly contested practices (Halkier 2010). Skarstad (2007) shows for instance how fish is politicized and can be seen as both safe (healthy) and harmful (containing toxins) at the same time, depending on which discourse is being highlighted. Meanwhile, the responsibility to living a healthy life is often placed on the individual consumer (Kjaernes 2011). Berg (2004) argues that the possibility of getting sick or dying from foodborne diseases is smaller today than in earlier ages. However, the risk is perceived as greater because of all the attention health hazards foods receive in the Norwegian society. As elsewhere, food production has moved from households to a larger, complex and sometimes global food industry, resulting in an imbalance in power and information as people's direct control over the food has become significantly limited (Kjaernes et al 2010). Meanwhile, food safety competes with many concerns, often in opposition to each other, and may become less of a priority for an already overloaded consumer (e.g. sustainability; animal welfare; ethical consumption; choosing organic, local food; supporting small-scale food producers; avoiding food waste, farmed fish, pesticides, and avoiding additives). Haukenes (2007) argues that Norwegian consumers adopt

resignation, calculation or conscious ignorance when acting “against better knowledge”. Common for all of them is that they use taste as an important factor. Through negotiating between good taste and risk, Norwegian consumers often go for taste. Because consumers are navigating a complex landscape with several discourses and ideals while knowing less about what to eat, trust compensates for uncertainty. Kjaernes (2011) argues that encouraging people to change shopping routines towards more sustainable foods, they must trust that they are not fooled, that their choice has significance and that it does not involve (unacceptable) risks. Trust in food thus means trust in how the food market functions, and how the public authorities control the food market (Berg 2004). Studies show that Norwegian consumers are more sceptic towards the food market role in securing food safety in comparison to their Nordic neighbours. However, on the other hand Norwegians trust more the food authorities (Kjaernes et al 2001). Over the last two decades, emphasis has been put on strengthening trust relations between the food industry and consumers. A key strategy by the industry has been to provide consumers with products characterized by predictable standards of food quality and safety with regards to health (Kjaernes et al 2010).

Traditionally, Norwegian consumers have high levels of trust towards the food producers and food authorities (Kjaernes et al 2007; Berg 2005). Norwegian consumers trust consumer organisations, food experts, the media, food authorities and the food industry a lot more compared to other European consumers (Kjaernes et al 2007). The absence of food scandals such as the BSE crisis for instance, that have occurred in other European countries in the 1990s and early 2000 are probably one of the reasons for this. Berg (2004) argues that food scandals affect consumers’ trust in food. National food scandals increase the level of cautionary practices and critical views on food safety. This was evident in 2014, when there was a food scare related to antibiotic resistant bacteria in one third of fresh poultry on the Norwegian market. This case resulted in reduced sales (Veflen et al 2017). In a survey two years later, 36% of the respondents reported that their trust in Norwegian poultry was reduced as a consequence, whereas 25% reported increased trust (Ueland et al 2017). Interestingly, this national food scandal had a higher effect on trust in foreign poultry (51% reported reduced trust).

### *Foodborne illnesses*

In Norway, between 5,000 and 7,000 cases of food-and waterborne diseases are reported annually. The reporting system covers pathogens causing illnesses associated with food like *Salmonella*, *Listeria* and *Campylobacter*, but not *Toxoplasma*. Compared to other countries, the number of reported foodborne diseases in Norway is very low. This can be mainly explained by a low level of pathogens in the animal production. For example, *Salmonella*, which is the pathogen causing the highest number of cases in food borne outbreaks in Europe, is virtually not present in the Norwegian egg or poultry production chain (EFSA 2017). Only 25% of reported salmonellosis cases are acquired domestically (<http://www.msis.no/>), most of them

caused by imported products or contact with wild animals (Heier et al 2017). In line with the improved *Salmonella* situation in Europe, the number of cases has declined.

The last years, the most reported food associated pathogen in Norway has been *Campylobacter*, with 3883 cases in 2016. The number of *Campylobacter* cases in Norway has been stable the last years, and large outbreaks have been linked to contaminated water, poultry consumption (Jørgensen et al 2017) or outdoor games (bicycling or football) (Norwegian Institute of Public Health 2014b). It is likely to believe that infections acquired at home will result in sporadic cases, not necessarily outbreaks. A case-control study of sporadic *Campylobacter* infections in Norway 201-2011 identified several risk factors (Table 1.2.3) (MacDonald et al 2015).

**Table 1.2.3: Risk factors for sporadic cases of Campylobacteriosis in Norway 2010-2011**

Exposure	Odds ratio (95%)
Increased risk	
Drinking water directly from river, stream or lake	2.0-4.2
Water supply for own house	1.6-2.9
Drinking purchased bottled water	1.5-2.2
Barbeque	1.3-1.9
Eating undercooked meat	1.3-2.4
Eating chicken	1.4-2.1
Live on a farm with livestock	1.4-3.0
Dog in household	1.1-1.7
Cat in household	1.0-1.5
Decreased risk	
Frequently washing hands after contact with raw meat	0.5-0.8

In 2016, the most common pathogen causing outbreaks in Norway was Norovirus (Jørgensen et al 2017). Large norovirus outbreaks the last years has involved various foods, such as imported oysters, fresh produce and raspberries, salmon and poultry (Norwegian Institute of Public Health 2009). Although being identified as one of the top five pathogens contributing to health burden in Europe, *Toxoplasma gondii* is not a part of the regular surveillance programme in Norway. Acquisition of toxoplasmosis has been associated with eating raw meat or unwashed vegetables and contact with cat faeces. Its importance as a pathogen in Norway is unknown, but it has been estimated that the risk of exposure is 20 times lower in Norway compared to countries in southern Europe, due to the cold climate (Norwegian Institute of Public Health 2010).

Despite the surveillance programmes, the actual number of foodborne infections in Norway is hard to estimate. As in all surveillance programmes worldwide, there is a high level of underreporting (e.g. because people do not contact the health care system or stool samples are not taken). Also, less severe, but most likely more frequent illnesses, e.g. those caused by Norovirus and toxin formers (e.g. *Bacillus cereus* or *Staphylococcus aureus*) are not reported unless when they are causing large outbreaks. It is likely to believe that especially infections acquired at home are underreported, as they will occur from sporadic hygiene breaches and be spread geographically (and

therefore not recognized as an outbreak deserving further investigation). In a Norwegian survey (2009), 11% of the respondents report to become ill after intake of food. 9 years later Hebrok et al (2018) report the same result in a survey about food waste. According to Berg (2004), the result suggests that almost 500,000 of the Norwegian experience sickness after eating food. Meanwhile, Berg argues that the number might be underestimated as people easily forget when self-reporting up until a year back in time. Some foodborne diseases are experienced as quite mild as well and, thus, easy to forget.

The numbers of foodborne diseases can be explained by several factors, such as increased international trade with food, livestock and feedstuffs (Berg 2005). The globalisation of the food market and an increase in both legal (and illegal) imports of food from countries where the burden of disease is greater than in Norway, also means that the consequences of hygiene breaches can be far more extensive than before. Additionally, an increase in organically and locally produced food challenges maintaining a stable internal control. Moreover, increased traveling and migration, altered eating habits and lacking knowledge of kitchen hygiene all contribute to the spread of foodborne diseases (NIPH 2014). Exotic foods may be used by Norwegians in different ways to those in their production country.

Consumer kitchen hygiene practices in Norway have mainly been mapped using web-surveys. In a survey in 2009 2008 Norwegian consumers were asked about their kitchen practices. The survey contained questions about consumption of high-risk food, consumption of undercooked meat, cross-contamination practices, hand washing practices, cooling food and washing fruit and vegetables. In general, young and elderly men, those with higher education and those living near the capital reported more unsafe practices (Røssvold et al 2013). Table 1.2.4 shows an overview of the most frequent and most risky behaviours identified from an analysis of the survey (Røssvold et al 2012).

**Table 1.2.4: Ranking frequencies (1=most frequent) and risks (1=highest score frequency\*severity) of behaviours that can lead to foodborne infection**

Issue	Rank – frequency	Rank – risk
Don't cool leftovers rapidly down	6	1
Reheat leftovers two times	5	2
Eat sprouts often	10	3
Prefer hamburger raw in the middle	11	4
Eat unpasteurized cheese	12	5
Don't parboil sprouts and peas before eating	4	6
Taste raw meat	14	7
Not sure if leftovers are heated to boiling point before eating	15	8
Thawing frozen meat at room temperature	1	16
Don't know the temperature of refrigerator	2	11
Eating cold cuts after expiration date	3	18

According to the aforementioned survey, 71% of the respondents claimed that they washed raw vegetables before they eat them; 60% reported that they always washed their hands immediately after touching raw meat; and 78% with soap and water. In a similar study conducted in 2016, 73% reported that they always washed their hands after touching poultry or red meat, the high majority with soap and water (92%) (Ueland et al 2017). Approximately half of the respondents claimed that they had changed to safer practices after a poultry food scare that took place two years earlier, something that was also reflected by their responses. Using brushes for washing up is common in Norway. The knife used for poultry was reported to be washed in a dish washing machine (48%) or manually with a brush (69%). 12% reported that they use a food thermometer for checking thoroughness, others use colour /skin, core, meat juice) and/or temperature/time.

## Comparing the food cultures and food safety in five countries

Tables 1.2.5 and 1.2.6 provide an overview of similar and different food cultural and institutional aspects in the five countries. The eating pattern of poultry and vegetables differs between the five countries in terms of kilo *per capita*, but also in terms of the role this food have had in the food culture. For both UK and Norway, poultry has not had a significant role in the daily dietary patterns up until recently. In fact, poultry consumption increased as a response to the BSE-crisis in Europe in the late 1990s as a substitute of beef (Magdaleine et al 2008). (See Appendix A for an overview of commercial chicken products on the European market). In France, Portugal and Romania, poultry consumption has a long history as part of the everyday menus and food repertoires, although an increase in poultry consumption is also visible in these countries over the last decades (its low price combined with it being a good substitute to red meat due to rising health and safety concerns are possible explanations). Similarly, vegetables have not played a part in Norwegian food culture but are important in the Mediterranean diet in Portugal. Whereas shopping food in supermarkets and food groceries are the most common way of food procurement in all five countries, more French, Portuguese and Romanian consumers shop food in open markets compared to the British and Norwegian consumers. For Norwegian consumers, there are very few open markets available. Furthermore, raising hens and growing vegetables differs among the five countries. The relation between levels of trust in food and the number of outbreaks is not straightforward (Kjaernes et al 2007). The number of outbreaks reported by each country differs significantly, with France reporting more than 90% of the total outbreaks. These differences may reflect a heterogeneous geography of foodborne diseases, but also differences in the surveillance and reporting schemes. The most reported causative agent was *Salmonella* for the UK, bacterial toxins other than *C. botulinum* for France, Portugal and Romania and Norovirus for Norway. However, more than 30% of the reported outbreaks lack information on the causative agent and on the implicated food.

**Table 1.2.5: Number of food-borne (including waterborne) outbreaks, human cases and deaths reported by five countries (EFSA/ECDC reports)**

	2017			2016			2015		
	Outbreaks	Cases	Deaths	Outbreaks	Cases	Deaths	Outbreaks	Cases	Deaths
France	1,378	13,819	6	1,452	13,967	4	1,429	12,192	5
Norway	36	496	0	29	498	0	NA	NA	NA
Portugal	18	323	0	24	629	0	20	421	0
Romania	12	425	0	19	312	0	21	397	0
UK	41	906	1	49	2,627	3	53	1,202	1
Total	1,485	15,969	7	1,573	18,033	7	1,523	14,212	6

NA –Not available

**Table 1.2.6: Food cultural and institutional information in the five countries and variation in food risks**

Comparing food cultural institutional differences		Portugal	Romania	France	UK	Norway
Food habits	Chicken	37 kg per person per year (2016)	20.1 kg per person per year (2015)	26 kilos of poultry per person per year	9.5 kg per person per year (2015) (32 kg per person per in 2014 - UK poultry industry) <sup>6</sup>	18 kg per person per year (2018)
	Vegetable (raw)	108 kg/per capita/year (2016).	3/10 of Romanians eat raw vegetables daily	127 kg fruits and vegetables per capita/year (2014),	39.4 kg fresh vegetables per person per year (2015)	80 kilos of vegetables per person per year, 7/10 report to eat salads weekly
Food procuring	Number of food outlets per million people	137	145	196	97	464
	Open markets versus supermarket food stores	In 2016, 70 percent usually shopped in supermarkets; 52.4 percent shopped in specialty stores (e.g. butcher, greengrocers); 33 percent got home grown food from social networks; 21 percent usually shopped at organic food open markets/fairs/stores.	1/4 of Romanians use open markets to buy food	In 2017, 64.7% (in value) foods were purchased in supermarkets, 2.3% in open markets, 18.4% in specialized shops, 6.4% in small shops.	86 percent shop mainly at larger supermarkets	Three food store chains, few open markets and specialist food stores.
	Raising hens	Private production – not documented. Since 2016 it is compulsory to register domestic raising poultry (also for eggs) at	1.8 million court yards in which consumers are raising hens – 24 chickens	75 percent eat privately produced food monthly (eggs, fruit, vegetables)	Private production – not documented	Private production – not documented

<sup>6</sup> <https://www.wattagnet.com/articles/23265-uk-poultry-industry-sees-opportunity-for-higher-sales>

Comparing food cultural institutional differences		Portugal	Romania	France	UK	Norway
		the General Directory of Food and Veterinary (DGAV).	per family in rural areas	8 percent of all eggs consumed is produced privately		
	Growing vegetables	Private production – not documented. There are 9 initiatives of community gardens in Porto (study area), out of a total of 36 initiatives in the whole country. Several appeared because of the economic crisis.	Private production - not documented	74 percent consume privately produced fruits and vegetables (both regularly and occasionally)	3.8 percent of fruits and vegetables consumed from private production (2015)	Private production – not documented. (community supported farms increased from 2 in 2016 to 77 in 2018)
Food industry	Food import versus export	Food imports – 7.9 % of total imports and 5.2 % of total export.	Exports (2017): 6.23 M € Imports (2017): 7.1 M €	0.85 (Import 38,700 /Export 45,700 M €)	Import around half of food consumed	Large export of fish and seafood. Import of grain, fruit, vegetables, margarine, butter and oil
	Chicken	Chicken meat production lower than import	Export (2018): 58.2 Kt Import (2018): 123.3 Kt	The fourth largest chicken producer in Europe. 1/3 is exported	59 % of chickens consumed is produced in the UK	Heavy regulation of import of meat, eggs and dairy products, including chicken.
	Vegetables	Import of frozen vegetables higher than export	Export (2018): 5.3 Kt Import (2018): 54.5 Kt Import is 10 times higher than export	The third largest fruit and vegetable producer in Europe	57 % of vegetables consumed is produced in the UK	56 % of vegetables imported. Self-sufficient on chicken. Cross-border shopping
Food safety	Food safety authorities	ASAE – governmental agency	ANSVSA – governmental agency	ANSES – governmental agency	Food Standard Agency	NFSA – governmental agency

Comparing food cultural institutional differences		Portugal	Romania	France	UK	Norway
	Food safety concerns	Educational differences	Food additives, pesticides	Nutritional risk, pesticide, chemical containment		Healthiness, freshness, price, additives, high levels of trust
	Trust	Low levels of trust in food industry and food authorities	Low trust in actors within the food industry and in the food authorities	High trust in local foods, fresh foods	High levels of trust in food authorities and industry	High levels of trust in food authorities and industry.
	Reported outbreaks general 2017 (EFSA/ECDC reports)	18	12 36,825 hospitalized cases of acute diarrheal disease caused by food consumption in 2017 (June -October). Exact food not specified.	1,378	41	36
	Outbreaks chicken	No information for 2017; no outbreaks caused by chicken in 2016. 602 sporadic cases of campylobacteriosis most of these probably linked to poultry	No information	7% of total reported outbreaks in 2017	Most common food identified for outbreaks of foodborne infections. 13/53 outbreaks in 2015 (25%) 220/1202 cases in 2015 (18%) Source: EFSA	3883 cases of <i>Campylobacter</i> (1.4-2.1 odds ratio for chicken)
	Outbreaks vegetables	No information for 2017; 1 outbreak in 2016	No information	In 2017 46 outbreaks, In 2016 7 outbreaks	-	Sporadic cases of foodborne infections

## Chapter 1.3: European comparison and food research

At the European level, food safety is monitored and researched by the European Food Safety Authority (EFSA) and Eurobarometer. While EFSA provides scientific advice on all mattering food and feed safety, its work falls into two areas: risk assessment and risk communication. The Eurobarometer is a series of public opinion surveys conducted regularly on behalf of the European Commission since 1973, addressing a wide variety of topical issues relating to the European Union throughout its member states. Food safety has been the topic in 2015 and in 2010 for the Special Eurobarometer, which reports in-depth thematic studies carried out for various services of the European Commission or other EU Institutions. The survey, Special Eurobarometer 354 (European Commission, 2010), was carried out on a representative sample of 26.691 individuals in all 27 Member States studying public perception of food and food-related risks. The results showed that 37 percent associated food safety with food and eating. Meanwhile the economic crisis (20 percent) and environmental pollution (18 percent) were viewed by more respondents as risks very likely to affect their lives than food-related problems (11 percent). Furthermore, the survey shows that there is no single, widespread concern mentioned spontaneously by a majority of respondents. Instead 19 percent of citizens spontaneously cite chemicals, pesticides and other substances as the major concerns. Three out of 10 Europeans mention chemical residues from pesticides (31 percent), antibiotics (30 percent) and pollutants like mercury and dioxins (29 percent), together with cloning animals for food products (30 percent), as risks to be “very worried” about. In comparison 23 percent reported to be very worried about food poisoning from bacteria like *Salmonella* in eggs or *Listeria* in cheese. Moreover, EU citizens seemed to feel confident about being able to personally take steps to avoid bacterial contamination (e.g. *Salmonella* in eggs). Worry about “food poisoning from bacteria like *Salmonella* in eggs or *Listeria* in cheese”, varied a lot among the member states, ranging from 23 percent in Sweden to 85 percent in Cyprus. Moreover, for many of the member states, there were significant declines in the proportion of people worried about this issue from 2005 to 2010; most notably the United Kingdom (49 percent in 2010 with a decline of 14 percent) (European Commission, 2010).

Over the last two decades, several studies comparing various aspects of food risk among European consumers have been conducted. Many of these studies were done in the wake of the bovine spongiform encephalopathy (BSE) crisis, for instance Green et al (2005) study of public understanding of food risk in Finland, Italy, Germany and the UK, emphasise that risk communication is framed differently by different demographic groups in terms of trust, scepticism and concern. Another example is Hohl and Gaskell’s (2005) study on public perceptions of food risk based on data from the 2005 Eurobarometer survey on risk issues revealing cross-national similarities and differences in the risk perception of 25 Member States. Here, the main findings are a

south-north divide in levels of concerns (South-Europeans being more concerned about food risks than North-Europeans) and cross-national differences in the perception of the cause of food risk (Italian and German consumers relating food risk to food scares, Dutch, Greek and British consumers relating food risks to hygiene-related illnesses, and Swedish consumers associating food risk with imported foods). The aforementioned work by Kjaernes et al. (2007) that results from a large EU-funded study, Trust in Food, is another example. The authors compare the institutional impact of how consumers respond to food risk in Denmark, Germany, Norway, Italy, Portugal and the UK, in terms of trust and distrust. By an in-depth analysis of the regulatory, the food provisioning system and consumer trust, the study finds that British consumers have high levels of trust in the safety of food despite UK being heavily affected by BSE-crisis, more so than the Danish and Norwegian consumers. In comparison, German consumers are the least trustful among the six countries, lesser than the Italian and Portuguese consumers. The authors emphasise that trust or distrust is by no means only linked to individual responses to food risk information or media coverage on food scares. Instead, trust is a social relation between the consumers, the authorities and the food market producing the different levels of trust in the six countries, where cultural norms and expectations play a major role.

While, risk perception and trust truly have an impact on how people handle food in their everyday lives, there have been no comparative studies of food safety practices in domestic kitchens across European countries. Meanwhile, private kitchens and food practices have been the focus of a number of studies and research traditions. Broadly speaking, we can distinguish between a mainly quantitatively oriented tradition with a focus on risk, risk-perception and risk behaviour (e.g. Redmond and Griffith 2003a), and a mixed group of more culture- and institution-oriented studies, with a focus on everything from material culture (for example Amilien et al. 2004) to cultural categories (above all Douglas [1966] 2002) to politics and institutions (Busch 2004; Kjærnes et al. 2007). In addition, the field is overlapped by other major research areas, such as gender equality and gender-divided housework (Moreno-Colom 2017), habitual consumption (Gronow and Warde 2001; Shove et al, 2007), meal habits (Gronow et al. 2019), eating habits and nutrition (Roos and Wandel 2005; Bugge 2005), food culture (Amilien and Notaker 2018) and power relations in the food systems (see for example Marsden et al. 2018).

Internationally, there is a large number of studies of consumer knowledge, attitudes, and behaviors related to safe food handling in private homes (see overview in Redmond and Griffith 2003a). The vast majority of these are quantitative, survey-based. Many of them apply a cognitive psychological - psychometric approach, looking for relationships between knowledge, attitudes, intentions, self-reported responses and actual behavior (*ibid.* P. 133). Empirical research in cognitive psychology is mainly driven by experimental methods, but the conceptual approach, not least the

understanding of human beings as information processors, have to a large extent also been transferred to studies using survey data (see Redmond and Griffith 2003b).

Most of these studies were conducted with a view to developing more effective communication strategies to promote safe food management in private homes (Frewer and Miles 2001; Redmond and Griffith 2003a: 133; Nesbitt et al 2014). The focus is on risk, risk understanding and risk behaviour in everyday life. Often it is an explicit premise that some practices are better than others. There is a "correct answer" that experts know. Many studies have demonstrated a marked disparity between what consumers and experts perceive as risks (Flynn et al 1993). For example, while most experts believe that the greatest food risks are related to microbiological conditions, consumers are more concerned with conditions such as additives and pesticide residues (see Frewer and Miles 2001). The aim of these studies is therefore often to identify misconceptions, slack attitudes and dangerous habits. Based on such identification, measures are often proposed to improve communication with relevant groups about such problematic situations.

In their review of the research in the area, Redmond and Griffith (2003b) show that the survey studies often give a more optimistic picture of consumer food management than what one finds in, for example, focus group and observation studies. They explain it with the survey studies' reliance on self-reported practices, and people's well-known tendency to want to appear in good light (for themselves and others).

There is not only one cultural-institutional approach, but rather a broad variety of approaches founded in the various disciplines of the humanities and the social sciences. To the extent that they have something in common, it is the framing of individual behaviour within intersubjective, institutional or material structures. Anthropologists have been especially preoccupied with the dichotomous categories of clean/unclean. Cleaning – or purification – often take on ritual qualities and is more about cultural and symbolic sorting than microbial safety (Douglas [1966] 2002).

Sociologists have been particularly attentive to questions about trust. Given the distance between producers and consumers, and the complexities of modern food production and distribution, consumers have to place trust in various actors and institutions. Who these are, varies somewhat between countries. Scandinavians tend to put their trust in public authorities to a greater extent than e.g. Americans and South-Europeans do (Ansell and Vogel 2006). And, private actors, like large retailers and producers play a more active role in assuring their customers of the safety of their products in e.g. Britain and France than in Scandinavia (Kjaernes et al. 2007).

Sociologists have also focused extensively on the habitual character of food consumption (Warde 1997; Gronow and Warde 2001). Most food consumption is

entangled in everyday practices, most of which are truly routine in nature. That means that people do not pay much attention to them and do not really make a lot of overt choices, as assumed by rational choice theorists. Everyday consumption practices – understood as nexus of doings and sayings –, are very much guided by material structures and intersubjectively shared scripts (e.g. Shove et al 2012). They are just as much in hands as in heads (Jacobsen 2014).

The material nature - the thingness - of kitchens have also been studied by historians of technology (Oldenziel and Zachmann 2009). Among other things, they point to how modern kitchens gradually have been linked up with and today are completely interlocked with the infrastructures of modern societies. Clean water, sewage systems, electricity and waste disposal systems are fundamental to food consumption and to the safety of everyday food.

The role of international standards for the trade, labelling and consumption of food products have been extensively studied by e.g. geographers and political scientists. Standards represent private legal structures reaching beyond the jurisdiction of nation states and channel transactions, trust and food practices around the globe (Busch 2004).

## Chapter 1.4: Theories of practices: framing the complexities of domestic food handling

SafeConsume has adopted a novel theoretical approach for describing and understanding domestic food handling, and to assess food risks, through integrating insights from theories of practice with insights from microbial risk assessment. Theories of practice purport that individual and social-structural elements are integrated at the level of action. Action is therefore conceptualised as social. The five stages involving critical handling of food covered in SafeConsume - food procurement, transportation, storage, preparation and serving - all involve socially shared mundane activities carried out in the everyday life of European consumers. Cooking meals will be a common everyday activity in most households in Europe and cooking itself will involve a set of shared activities and priorities. This is not to argue, of course, that the performance of cooking is exactly the same each time it is carried out.

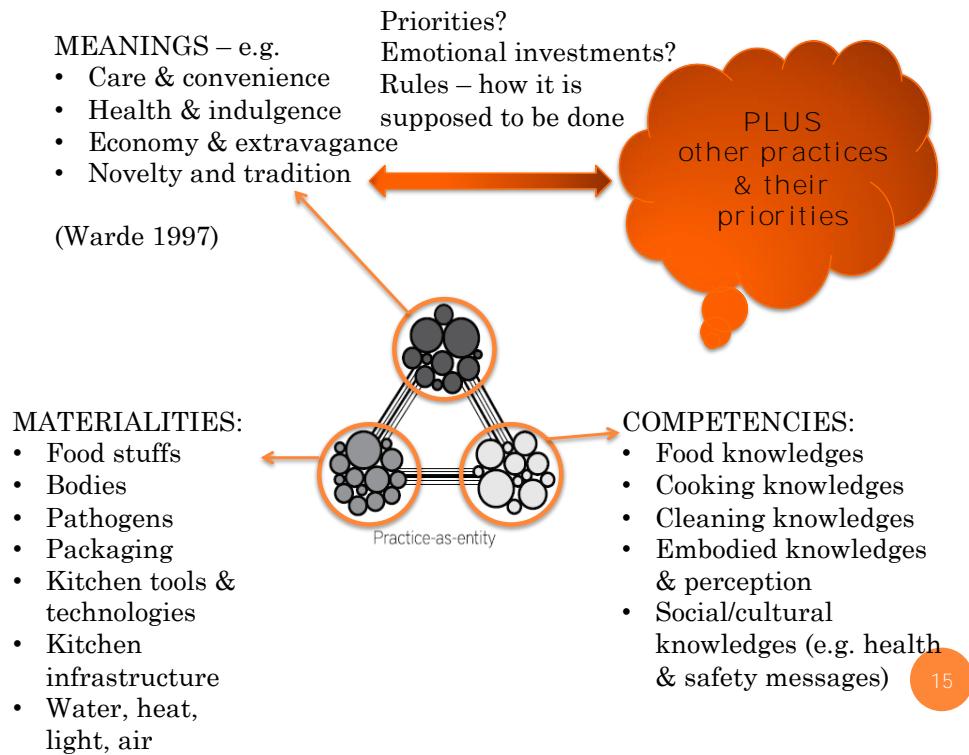
Theories of practice have been formulated, in recent years, as an alternative to the more commonly used framework of 'behaviour' and 'behaviour change', which assumes that the action conducted by individuals is individual, rather than social, and that individuals always act as rational and reflective beings, driven by the quest for information to inform action (e.g. Hargreaves 2011; Shove 2010). Theories of practice, by contrast, emphasize a practicality of everyday social life in which routines, rather than reflexivity, are common, and where action is guided by a complex of interlinking and mutually-informing factors that move beyond individual knowledge, attitudes and beliefs (e.g. Warde 2014). Following Reckwitz (2002: 249), a practice is:

a routinised type of behaviour which consists of several elements, interconnected to one another: forms of bodily activities, forms of mental activities, 'things' and their use, a background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge.

In addition to the routinised quality of conduct, theories of practice thus also push into the forefront the tacit and unconscious nature of much of human behaviour and the embodied and material qualities that make mundane life possible. SafeConsume has defined food handling in accordance with Shove's et al (2012) reworking of Schatzki's (1996, 2002) ontology of practices. This proposes that in the performance of food practices, consumers manage and maintain the relationships between the reasons, rules and understandings of how a practice ought to be done. Practice-as-entity brings together three ways in which action is social:

- (1) Beliefs / meanings (knowledge, emotions, motives)
- (2) Skills / competencies (practical competences, embodied or tacit knowledge)
- (3) The material environment (e.g. pathogens, foods, kitchens, utensils, human bodies, physical infrastructure)

Figure 1.4.1 offers a representation of sets of meanings, materialities and competencies that form part of handling food in the five stages identified earlier. The items that are listed alongside these three elements of practice-as-entity come together as small circular blobs in a visual representation of practice-as-entity that derives from the work of Kuijjer (2014). The listings of elements should not be seen as comprehensive. The specific elements that are, for instance, a part of the meanings and priorities of cooking, must be identified through empirical research. What is shown is that performing a practice always brings together a multitude of cultural, embodied and material elements, and may at the same time be informed by the priorities of other practices. One example of this is how, in families with young children, preparing food may be seen as an element of child care, but caring for a child may affect how food handling is itself organised. Another example is how the priorities of paid work informs the configuration of food handling in the home, and vice versa.



**Figure 1.4.1: The elements of practice-as-entity: meanings, materialities and competences**

It is further useful to distinguish between practice as a social entity and practice in performance. As social entities, practices can only come about by being performed, over time, by different people and entities (see e.g. Martens 2018). It is through such performances that ‘consensus’ arises with regards to why, how and by whom practices should be done. The use of brackets around consensus signals that the reasons, rules and understandings of practices shifts over time. And whilst performance is guided by

the elements (and their interconnections) of the practice-as-entity, there is always a degree of flexibility and agency in terms of how, in performance, these elements are drawn upon and reproduced. This is represented by Kuijer (2014) (added here as Figure 1.4.2), which shows that not all of the elements associated with a particular practice need to be present for performances to be recognisable as specific practices. The ‘same’ meal may be cooked whether practitioners include the elements included in performance 1 or performance 2, and the ‘same’ meal may be cooked at different points in time regardless of whether the same practitioner includes the elements of performance 1 or 2. In reality, and as performances tend to follow routines, it may be expected that repeated performances by individual practitioners tend to include more or less the same elements over time. One reason for this is that the material environment of the kitchen does not change significantly over time, and nor, as is shown in the subsequent discussion on shopping practices, do consumers vary the ingredients used in cooking a lot. In the same way, specific priorities and meanings may remain relatively stable over time, and embodied dexterities are also nurtured over time. At the same time, some elements in the practice-as-entity may be more important to include in performances than others.

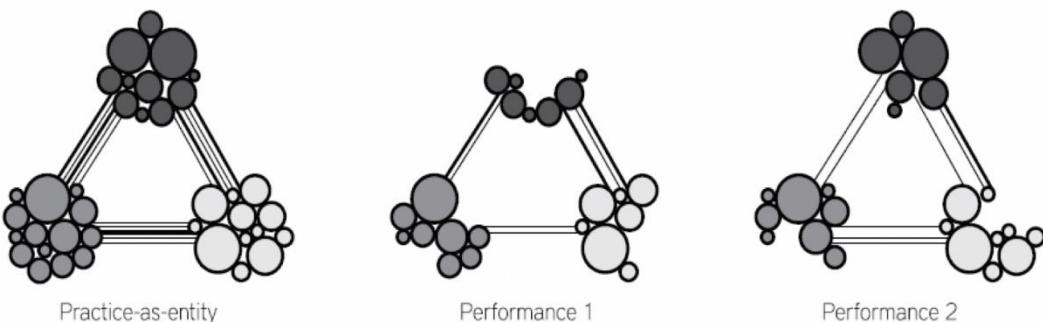


Figure 5-3 The practice-as-entity contains all elements and links that occur in the variety of performances it organises (note: it is usually more than two performances that make up an entity).

Figure 5-3 taken from Kuijer, S.C., 2014. Implications of social practice theory for sustainable design. PhD thesis Accessed Oct 2017 @ <https://repository.tudelft.nl/islandora/object/uuid:d1662dc5-9706-4bb5-933b-75704c72ba30?collection=research>

#### **Figure 1.4.2: In performance, practitioners may draw upon a selection of the elements that make up a practice-as-entity**

In addition to developing this alternative model of social action, theories of practice have implications for interventions in everyday life. Where interventions aim exclusively to change the motivation (or attitudes) of consumers to improve behaviour, these fail to recognize both that there are many interconnected elements involved in carrying out mundane activities, such as handling food. They also fail to recognize the tacit and routinized nature of mundane activities. Moreover, individual models of human behaviour favour individual fixes to societal challenges and ignore that food

handling is collectively shared by institutions and groups of individuals. Changing risky behaviour to safe food handling thus needs to be framed differently from mainstream models to individual behaviour. To mitigate the risks of food borne illness among collectives of consumers at a European level, SafeConsume has operationalised theories of practice in its broader programme of work. Unsafe food handling actions will be identified through its research programme, and it is argued that these can be changed in safer ways insofar as one or more of these elements of the practice-as-entity is altered, replaced or re-made.

## Chapter 1.5: Methodology

This chapter describes the fieldwork across 75 households in five European countries. It explains the research design and methodological path taken in SafeConsume, wherein it details the ethical issues, the transdisciplinary research design, the recruitment strategies, problems and how were they resolved; the selection of study areas, the sample and its socio-demographic characteristics; the research methods, tools and fieldwork activities, and also a reflection on the transdisciplinary fieldwork where we point out the opportunities, limitations and challenges of such an innovative methodological approach. The chapter is organized into five parts followed by a short conclusion. Across the five parts, we detail ethical issues and data protection; transdisciplinary research design; description of the study areas, recruitment process and sample; doing the fieldwork; and main reflections on the fieldwork conducted by the five teams.

### Research ethical issues and concerns

As explained in the introduction to this report, SafeConsume is a research project exploring how consumers handle food in relation to risk of foodborne illnesses and what the barriers to safe food handling are. These aspects were thoroughly explored and analysed in SafeConsume which aim was to investigate the everyday food practices of consumers, including studying food procurement, transportation, storage and food preparation, to find ways to reduce the risk of foodborne illnesses among European consumers. The SafeConsume project involved working with research participants in the collection of survey data, interviews, observations and the secondary use of information provided for other purposes. No data deemed as sensitive (e.g. sexual lifestyle, ethnicity, political opinion, religious or philosophical conviction) was collected. Given our chosen methods and techniques (visual methods, interviews, visits to consumers' households and taking samples of foods, pathogens and kitchen materials, i.e., used sponges/cloths for cleaning) together with the obligation to comply with Horizon 2020 funded research ethical requirements and data protection regulations, each research team had to obtain ethical approval in their respective countries. Thus, before starting the fieldwork a long process of getting ethical clearance for the methodological procedures, data protection treatment and archiving took place in all countries involved in SafeConsume (Norway, UK, Portugal, France and Romania). All countries got ethical clearance to conduct research from their respective authorities and institutions. Yet, despite the fact that European research funded by Horizon 2020 has to follow a series of ethical procedures and requirements that have to be in place across all partner countries, the ways ethical clearance is obtained are country-specific, and shift according to particular local institutional arrangements. One illustration of that is perhaps the singularity of the UK ethical clearance process as explained below, compared to the institutional procedures in place in other countries. Despite such organizational idiosyncrasies all share a common understanding on research ethics that strictly follows European and national research

ethical and data protection regulations. Such regulations put in place particular codes of conduct regarding: respect for the research participants; informed consent; provide appropriate information; privacy and data protection measures. All these principles were respected in each country where fieldwork was carried out as it is illustrated below.

In Portugal, the Portuguese Data Protection Agency (ANPD) gave ethical approval to the fieldwork conducted with family households. Two different ethical packages were submitted. One referring to the social science side of the research (permission to collect personal socio-demographic data from individuals in the families) and, another referring to the microbiological side of the research (permission to collect and handle samples of microorganisms found in research participants' homes). Ethical measures were taken in order to protect participants' interests in the research. Informed consent forms were filled in by all research participants at the beginning of each interview and an explanation of the research objectives and data collection procedures were addressed (taking samples of microorganisms of their kitchens). They were also briefed on their rights to withdraw from the research process at any time, during and after the study. We have also explained how their data would be stored and archived. All the empirical material collected was stored on a secure, encrypted drive only accessible by the project team. All transcripts were anonymised, including removing names of people and places; each household was assigned a unique identifier and research participants were given pseudonyms. The Data Protection Agency gave us a timeframe of 5 years after the project finishes wherein, we can keep and store in a secure place all the empirical material collected. After this period the coding files that identify research participants (e.g. name, age, place of residence) need to be destroyed.

In Romania, ethical approval (Decision no. 8/31.08.2017) for conducting the interviews with study groups was obtained upon a registered request (RCF1548/31.08.2017) from our institution's Commission of Ethics. For this occasion, two forms were created: The Accept of Being Interviewed on Food Shopping, Storage, Cooking and Other Food Safety Issues and The Consent Regarding Personal Data Processing. Before starting the interviews, we fully informed research participants about our meetings conduct, and samples that needed to be taken in their kitchens during the cooking session. We also obtained research participants' written consent to use the data collected in our studies. We asked questions about food preparation and food safety and hygiene in the kitchen during the cooking process, and we offered answers on food safety to curious participants at the end of our visit.

In the UK, the SafeConsume research strand was approved by the Ethical Review Panel at Keele University. A number of measures were taken to protect the interests of research participants, including gaining their informed consent, preserving their anonymity and faithfully representing their views and experiences. All research participants were given written information about the project and its purposes and

were asked to complete a consent form to indicate their willingness to take part. In addition, they were encouraged to ask questions at any point before, during or after the study and were made aware of their right to withdraw from the study without explanation at any time. Data were stored on a secure, encrypted drive only accessible by the project team. All transcripts were anonymised, including removing names of people and places; each household was assigned a unique identifier and research participants were given pseudonyms.

In France ethical approval was granted by the CNIL (Commission Nationale de l'Informatique et des Libertés - National Commission of Data processing and Freedoms) on the agreement number: 152182 REC 0717T001. According to fieldwork's ethics, we fully informed research participants about our meetings conduct, and samples that needed to be taken in their kitchens during the second visit. However, we waited for the end of food preparation to ask questions about food safety and hygiene in the kitchen, to prevent or limit changes in participants' behaviours. We also requested curious participants to wait until the end of their food preparation to ask the microbiologist questions about food safety, bacteria and transmissions.

In Norway the project was reported to the Norwegian Centre for Research Data, which is one of the largest research data archives, and aids researchers in ethical and privacy concerns. The research participants were informed about the project in a phone conversation before the first meeting and at both of the interview meetings, in addition to receiving a written information letter. The research participants agreed to have their films and pictures shown at circumstances related to the project as long as their anonymity was maintained. This included to make sure that no faces or other identifying visual cues were shown. Furthermore, any information that could contribute to identifying the research participants were removed from the transcriptions of the interviews and the data documents. This included information that was not revealing in itself, but that could be problematic combined with other information. During analysis, the Norwegian team also discussed how to best maintain privacy when analysing sensitive information, such as personal hygiene during cooking.

### Data storage and protection

Any personal data collected nationally was anonymized before being shared on the restricted shared project site. The data handling fully complied with the current EU directive for data protection (<http://ec.europa.eu/justice/data-protection/>) regardless if the research participants were located in EU member states. Common procedures (from literature or developed in the SafeConsume), data collection (literature data and collected data on food handling practices across Europe and corresponding effects on microbes and risk as well as opportunities for change), reports and SafeConsume meetings' minutes and slides presented in those meetings

were shared on the SafeConsume's project site (SharePoint, cloud) hosted by Nofima, Norway. Access to this site is restricted to project partners and password protected. All results were identified as confidential, legally protected or opened before uploaded to the shared site. All SafeConsume data are stored permanently only in one location: a SafeConsume site on Nofima's SharePoint system (SafeConsume Intranet). The participant organisations that collect data locally (lab, observation, survey, experiment) only stored these data in their local LAN systems for purposes of data cleaning, transformation and meta-data definition. When they finished they transferred the data to the SafeConsume Intranet. Once the integrity of the received files was established in the SharePoint system, all local copies in the local LAN systems of the participant organization that collected the data were deleted. Controllers in the sense of the data protection legislation were therefore only Nofima plus the participating organisations who collected the data locally or were responsible for data cleaning, transformation and integrity checking before the respective data were transferred for permanent storage to Nofima's SafeConsume Intranet. Data transfer only took place between countries in the European Economic Area (EEA) and complied with the requirements of Directive 95/46/EC and, from 25<sup>th</sup> May 2018, with the requirements of the EU General Data Protection Regulation (GDPR), and also the Regulation (EU) 2016/679.

Data transmission was always encrypted and took place for one of three purposes:

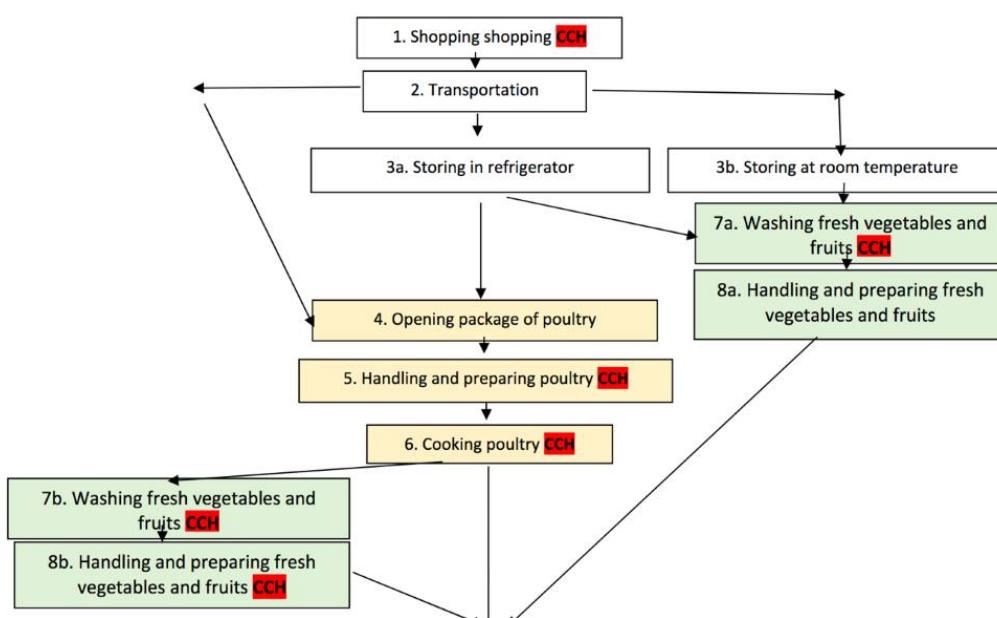
- Transfer between the controllers who collected original data to the SafeConsume site on Nofima's SafeConsume Intranet for the purpose of storage.
- Extraction of a data table from the SafeConsume Intranet and transmission to the desktop computer of a consortium member for the purpose of data processing.
- Transfer of appropriately anonymised/aggregated data tables from the SafeConsume Intranet to a public data archive for purposes of the open data initiative.

Each consortium member pertaining to SafeConsume signed a consent form to obtain access to the SafeConsume Intranet system.

### Transdisciplinary research design

As stated in Chapter 1.1 the SafeConsume consortium developed an innovative transdisciplinary research design across five European countries. Thus, a pan-European overview of consumer practices was conducted by collecting risk-based behavioural data, combining microbiological with social sciences' qualitative data, from 75 households, i.e., 15 households in each country. These households were visited for observation, interviews and sampling (pathogens, fridges' temperature) during food procurement, transportation, storage, preparation and serving. These data were also combined with data retrieved from an extensive literature review (e.g. scientific

and media documents). The households' practices themselves as well as barriers for changing practices were mapped using a standardized protocol based on generic HACCP and qualitative observation and interview procedures. The interdisciplinary ethnographic field study included two main visits to each households (e.g. some households in Romania, all households in the UK, France and Norway), and in some countries just one core visit followed by a small visit to get the temperature logger (e.g. some households in Romania, all households in Portugal). On the first visit, walk-along observations and interviews during food procurement and transport to homes were conducted, where observation of the fridge and other storage locations was undertaken. In this visit a temperature logger would be put inside the fridge to record the temperature (ideally) over the course of two weeks. The second visit, usually two weeks apart, included another observation of the fridge and storage locations, and observation of cooking and meal preparation (where serving, disposal and cleaning were included whenever possible). In this second visit the temperature logger was collected. Fieldwork and data collection were framed by a combination of Theories of Practice (ToP) and HACCP, in order to explore critical stages of consumer behaviour for food safety (Critical Consumer Points or Critical Consumer Handling – CCPs or CCHs). To recall, below is an example of the CCHs<sup>7</sup> regarding Poultry with fresh vegetables and Fruits (PVF) that informed the collection, processing and data analysis (Figure 1.5.1).



**Figure 1.5.1: Flowchart CCH: Poultry with fresh Vegetables and Fruits (PVF)**

<sup>7</sup> The CCHs were identified based on a review of evidence-base microbiological scientific literature that assesses the riskier consumer practices from shopping to consumption. For example, regarding shopping the food choices that are made in the shop can determine if consumers are more at risk of being contaminated by particular pathogens or not later.

And in the following, there is a description of the main contribution to the study of combining HACCP and Social practice theory (Table 1.5.1):

**Table 1.5.1: Combining HACCP and Social practice theory**

HACCP	Social practice theory
Behaviour/Critical consumer handling	Performance
Procedural step in food production that may involve potential contamination	Embodied performances-movement of human and non-human bodies
Materials: surfaces, utensils, food, hands, microbes	Materials (food, kitchens, kitchen surfaces, appliances, shopping bags, utensils, hands)
Awareness/knowledge	Meanings
Proper heating, cleaning, cooling, use of utensils etc.	Competences
Flowchart	Practice as entity
Barriers	Internal to (and not excluded from) social practices. Co-existing practices, interlocking (Spurling et al 2013)

This theoretical and methodological combination demanded a transdisciplinary research design, not only regarding team composition who were doing the fieldwork (interdisciplinary teams composed of microbiologists and social scientists, i.e., sociologists or socio-anthropologists) but also in the design of the observation and interview guide, data treatment, processing and data analysis. The SafeConsume team enabled a transdisciplinary link between practices and risk by determining the risk of consumer practices at each step from retail to consumption for the five most important foodborne hazards in Europe: *Campylobacter jejuni*, *Toxoplasma gondii*, *Salmonella enterica*; norovirus; *Listeria monocytogenes*. See the transdisciplinary working protocol in Appendix B.

Thus, it was applied a methodology for field studies of behaviours where qualitative sociological methods, such as walking-with video interviews and semi-structured observation was combined with HACCP methodology (identifying the most important steps – CCHs – that consumers should be aware of) and sampling (microbial, temperature logging) were developed and evaluated in the project. In addition to scientists, market actors with experience on similar surveys were included in the discussions. The advantage of this type of study is the real-life context interconnecting consumers' 1) beliefs, 2) skills and 3) material environment during performance of food

handling from retail to fork, which made possible to identify unforeseen risk behaviours. When conducting the fieldwork and data analysis the focus was on:

1. The material aspect of procuring and transporting food: Where the participating households buy their food (own produce, shop or open market, internet), the nature of the food (fresh, packaged, processed), food safety information (e. g. labelling, expiration date), the physical environment of the shop (e. g. supermarket, smaller outlets, placements of food, distance to home), transport vehicles (e. g. own feet, public transportation, bike, car, other), and carrying devices (trolleys, bags, boxes, special bags for cooled or frozen products or for fruits and vegetables, or simply hands). Temperature was logged during transport and storage.
2. The skills and competences involved: Food safety related product selection criteria for different kinds of products (e.g. due date considerations; sensory inspection; available tools such as time temperature indicators; trust in certain producers and lack of trust in others?), the order of buying certain food products (poultry and seafood after packaged dry goods) shopping habits and routines, ways of transporting food home (e. g. packaging of cool products together, reusable bags, timing transportation to foods bought and warm temperatures, getting home directly or stopping on the way).
3. Beliefs and knowledge of the research participants when shopping and bringing food home: awareness of possible food safety aspects regarding buying and transporting food from shop to home (how to and why?).
4. The study included a kitchen ethnography of all selected households focusing on storage, preparation and hygiene. The kitchen ethnography (that in some countries happened in the first visit, and in others in the second visit, see below) comprised in-depths interviews and video observations of preparation of poultry and fresh vegetables/salads combined with generic HACCP in domestic kitchen settings and microbial sampling/temperature loggings. Attention was given to exploring these three critical stages for food safety through the lens of ToP.
5. In households' kitchens we paid attention to the material aspects of storage, preparation and cleaning: Access to different kinds of storage facilities (fridge, freezer, cupboards pantries, open shelves etc.), kitchen design (fridge/freezer/cooking devices, chopping boards etc.), storing facilities for leftovers (boxes, jars, plates; enclosed or open) storage in fridge, freezer, pantry (separate from or together with other foodstuff), leftovers and disposal facilities

(bin in the kitchen), hygienic design of utensils, cleaning agents and disinfectants, cleaning equipment (brushes, wipes etc.). Hygiene of relevant facilities and equipment was verified by microbial analysis. Temperature of refrigerators was logged and analysed.

6. Attention was also paid to the kills and competences involved: Operational behaviour such as unpacking and storing away practices, storage habits/routines, cleaning habits, cooking habits, use of kitchen infrastructure and utensils and precautions against cross-contamination. Monitoring and verification behaviour such as monitoring by own senses (visually clean, colour of meat after cooking, smell/appearance), instrumental (e.g. thermometer) or sticking to recipe (e.g. cooking time).

7. Attention was also paid to the beliefs and knowledge about possible food safety aspects regarding storing, preparing and cleaning.

8. Results from the visits were then fed into a Risk Behaviour Map (hosted in SafeConsume Sharepoint) after each visit. More than 10.000 entries were inserted in this map, across all countries. The data inserted was a mix of sociological and microbiological data, showing the transdisciplinary commitment of the SafeConsume team involved in WP1.

## Description of the study area, the recruitment and sample in all five countries

All five countries selected particular study areas to recruit households and conduct the fieldwork. The decisions for selecting the study area were the outcome of a combination of factors, namely: the possibility to get maximum variation in one area regarding households' selection criteria (e.g. rural/urban residents; low income families; elderly people; young families with children; pregnant women; young single men); an area with a reasonably similar socio-demographic profile to the national one as whole; the team research interests (e.g. to expand the national research base on a less studied area); the cost-effectiveness of access to the fieldwork; the team logistics, organization of fieldwork and data analysis activities between social scientists and microbiologists. Given that geographical differences reflect socio-economic and demographic disparities we were careful to select our study areas to ensure accomplishing the research design objectives and the target groups previously agreed (vulnerable groups to foodborne diseases such as pregnant women and/or parents with small children/toddlers; elderly people; and high-risk groups such as young single men). Below we detail the rationale in each country for choosing certain study areas.

In Portugal, the city of Porto and its Greater Metropolitan Area was chosen. The National Office for Statistics classifies it as an urban area. The city of Porto was a good opportunity to expand our research base and contribute to the national literature on this topic. There are regional food differences in the Northern cuisine of Portugal that we thought important to explore and understand potential effects on food practices (a stronger weight of animal protein in food diets; a very strong rural and farming background that still has its traces in food handling practices of the third generation, whilst Lisbon (the capital of the country) social profile is much more cosmopolitan). The other reason is based on logistics and the methodological approach taken by the Portuguese team wherein we approached 'microbes' with the same status as humans in the research process (following a multispecies ethnography as first defined by Kirksey and Helmreich 2010). This meant that we had to respect the biomaterial conditions and life needs of microbes. In order to get high quality results, samples had to be analysed as soon as possible after collection and the laboratories for their analytical treatment were situated in Porto. Hence, the proximity to the fieldwork site facilitated the quick transportation to the labs straight after collecting the samples in research participants' kitchen homes.

Porto is the second largest city in Portugal (after Lisbon) located in the North Eastern part of the country with a population near 238 hundred thousand inhabitants (Census 2011). It is composed of 7 parishes, some of them with strong traces of a rural profile although they are officially classified as urban due to the criteria used by the National Statistics Office (e.g. population density, soil classification in "urban" or "rural" and residents' number). We decided to avoid the official classifications because they do not

always reflect the social images, expectations and experiences of rural-urban/city-country side that the residents have in a country like Portugal where the shift from the rural society of the 1960s to the urban society of the 21st century was fairly recent (50 years). We need to take into account that until the 1960s Portugal had a big portion of its population living from agriculture. With the end of the authoritarian state (in power for more than 40 years) and the arrival of a democratic state in 1974, together with the country's entry to the European Union (1986), a significant shift took place in Portuguese society, but without fully eradicating some aspects of a rural profile (Silva and Figueiredo 2013; Silva and Carmo 2013). According to sociologist Sedas Nunes (1964) there are two different societies that co-exist with one another in Portugal: one largely marked by a more conservative, traditional, rural background and another marked by modernity, cosmopolitan and young forward-looking generation, very much influenced by being part of the European Union. Although, nowadays such divisions between urban and rural are problematic, given the plurality of 'rurals' found in Portugal (Figueiredo et al 2011), we believe that official classifications between urban and rural (that are only based on resident numbers, administrative and territorial criteria) are not enough to fairly characterise or express fully the richness of food practices and experiences of the population living in an urban place like Porto. There is a significant part of the rural population (from the 1st and 2nd generation of rural migrants) living in an urban place. The city of Porto received rural populations in the 1950s and 1960s from neighbourhood villages sited in a rural context, hence, the likelihood to get households with a farming background or strong traces of a rural way of life (e.g. peasantry) was reasonably high (e.g. strong links to social networks living in rural villages; getting food in bulk from friends and family who live in the countryside; living in a place where they need the car or public transport to go shopping due to the distance from food retail outlets). Thus, we decided to drop the official urban/rural categories and considered instead to select some households from parishes that are distant from the nearest food store/supermarket and who buy most of their food at local markets.

In Romania, the place of residence (rural/urban) was also an important criterion in selecting the study area, it being Galati County (in the historical region of Moldavia, eastern Romania) the chosen area. This county is composed of its main capital city (Galati, a port town by the river Danube) that has a clear urban profile, but also other areas within the county that still have a very strong rural profile. Thus, this important mix of urban and rural localities was strongly considered in the selection of this region. To define rural/urban characteristics of places within Galati county the information from the Romanian "National Institute of Statistics and Economic Studies" (INSSE) was followed. "Urban areas" were represented by the city of Galati (with 240,000 inhabitants) and Targu Bujor town (Galati County, 6300 inhabitants, considered urban by national legislation). In Galati lived 8 of our households (5 Young single men, 2 Young families and 1 Elderly households), while in Targu Bujor lived one of the households (1 Widowed/Elderly households). "Rural areas" were defined as the ones

outside the influence of “urban areas”, having a small number of inhabitants, who, in high proportion, are people working in the land. Six of our households lived in rural areas: 3 households (3 Elderly households: 1 Young family and 2 Widowed) lived in Virlezi (Galati county, 2204 inhabitants, 50 km far from Galati, but close to Targu Bujor – 8 km); 2 households lived in Poiana (Galati county, 2711 inhabitants, 100 km far from Galati, but 29 km far from the town of Tecuci) and one household (1 Young family/3 children, of which one less than 1 year old) lived in Tulucesti (Galati county, 7444 inhabitants, 18 km far from Galati).

In the UK, before the start of SafeConsume activities, the research team carried out detailed scoping work to identify an appropriate geographical focus for the study. This included desk-based research, a subsequent site visit, and making initial contact with local stakeholders. Through this process the team selected a preferred study area, comprising:

- a medium-sized<sup>8</sup> ex-industrial town in the Midlands;
- the rest of the otherwise predominantly rural borough surrounding the town; and
- a nearby city (primarily for targeted recruitment of any specific population groups difficult to recruit in the town or its rural surroundings).

The combined area was considered appropriate for the study due to:

- its broadly similar sociodemographic profile to that of England as a whole (Table 1.5.2), the largest differences being a higher proportion of Asian/Asian British residents than the national average (11 per cent, compared with 8 per cent) and a higher proportion in routine and manual occupations (38 per cent, compared with 32 per cent);
- its heterogeneity at a small area level, including a mix of urban and rural localities and especially of more/less deprived neighbourhoods (Table 1.5.3);
- on a practical note, the convenience and cost-effectiveness of access by the research team.

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<sup>8</sup> As classified by the Centre for Towns (<https://www.centrefortowns.org/our-towns>), medium-sized towns have a population between 30,000 and 75,000

## Chapter 1.5: Methodology

**Table 1.5.2: Sociodemographic profile of the proposed study area**

	Age (%)					Ethnicity (%)					Socio-economic classification (NS-SEC)(%)									
	0-15	16-24	25-44	45-64	65+	White	Mixed	Asian	Black	Other	1	2	3	4	5	6	7	8	N/C	
Study area	20	13	28	24	16	84	2	11	2	1	9	19	12	8	8	16	14	7	9	
Town	20	12	28	25	15	86	2	11	1	0	7	17	12	7	9	19	17	6	6	
Rest of borough	18	10	23	30	20	98	1	1	0	0	12	23	11	12	8	14	12	3	6	
Nearby city	20	14	28	23	15	80	3	13	3	1	9	18	12	7	8	16	13	7	10	
England	19	12	28	25	16	85	2	8	4	1	10	21	13	9	7	14	11	6	9	

Source: Census 2011. The categories of the NS-SEC are largely defined by occupation, as follows: 1. Higher managerial, administrative & professional; 2. Lower managerial, administrative & professional; 3. Intermediate occupations; 4. Small employers & own account workers; 5. Lower supervisory & technical; 6. Semi-routine occupations; 7. Routine occupations; 8. Never worked/long-term unemployed; N/C=not classified (incl. full-time students).

**Table 1.5.3: Classification of neighbourhoods within the proposed study area, by urban/rural status and level of deprivation**

	Rural-Urban Classification (RUC2011) % urban/rural neighbourhoods (LSOAs)		Index of Multiple Deprivation (IMD2015): % neighbourhoods (LSOAs) in each decile									
			← More deprived					Less deprived →				
	Urban	Rural	1	2	3	4	5	6	7	8	9	10
Study area	92	8	13	14	12	9	8	6	8	7	12	11
Town	100	0	2	26	19	2	7	7	9	7	16	5
Rest of borough	41	59	0	0	0	7	14	10	21	17	14	17
Nearby city	100	0	19	14	12	11	7	5	5	5	10	11
England	83	17	10	10	10	10	10	10	10	10	10	10

Source: Defra Rural-Urban Classification 2011; DCLG English Indices of Deprivation 2015. For reporting of small area statistics England is divided into 32,844 Lower Layer Super Output Areas (LSOAs) of roughly similar population size. RUC2011: LSOAs are defined as ‘urban’ if they form part of a settlement of more than 10,000 people. IMD2015: Each LSOA in England is ranked according to measures of deprivation across seven socioeconomic domains. LSOAs falling in decile 1 are among the 10% most deprived nationally; LSOAs in decile 10 are among the 10% least deprived. For example, 13% of LSOAs in the study area are classified as being among the 10% most deprived in England.

In France, the city of Angers was the study area chosen. Several reasons justify this choice. Firstly, the place of residence (rural/urban) was a criterion in the selection of households. The research team defined rural/urban characteristics according to the French "National Institute of Statistics and Economic Studies" (Insee). With the help of a city and villages' list in the Maine-et-Loire department where the survey was conducted, we considered:

- "rural areas": areas outside the influence of urban areas where less than 40% of the employed residents have a job in an urban area. It also concerns areas outside the zone of influence of urban areas (whatever their size) but under the influence of several urban areas, not linked to a single urban area.
- "urban areas": at least 40% of the employed residents have jobs in urban areas but none of these urban areas account for more than 40% of the residents' jobs.

According to this classification, the city of Angers (prefecture of the Maine-et-Loire department) fitted squarely as an urban area wherein six of our households lived (2 Young single men, 2 Young families and 2 Elderly households), and one of them (1 Young families/Pregnant) lived in the city centre of the sub-prefecture of Maine-et-Loire department (Segré-en-Anjou-bleu). Eight of our households lived in rural areas: 5 households (2 Young single men and 2 Elderly households) lived in villages or small cities ranged from 15 km to 21km from the city of Angers (prefecture of the Maine-et-Loire department), 1 household (1 Young single man) lived at 29 km and 2 households (2 Young families) lived at 45 km from Angers. We did not choose cities further than 45 km from Angers for logistics reasons, to facilitate travelling to research participants' home.

In Norway, the study areas stretched to rural and urban areas surrounding Oslo. The main point of recruiting households from both rural and urban areas was to capture the differences and similarities in shopping patterns and transportation in areas with high and low density of food stores. Although most people in Norway live close to a food outlet, there are longer distances in rural areas than in urban, perhaps making the selection of food outlets smaller. In addition to this, the food outlets may be different in rural than urban areas in terms of the range of food products. Moreover, people in rural areas may be more prone to buy directly from local farms, and some may even know the farmers personally. Distance and type of food outlet could affect the type of food that is bought and how long the food is without proper cooling during transport from store to home. Households in rural areas may also have larger space for storing food, such as pantries and outhouses.

Oslo and the surrounding area were an obvious choice as the Norwegian research teams are located here. Most of the urban households were situated in Oslo, which is

the capital and the largest city in Norway with 673,500 inhabitants<sup>9</sup>. Only two of the urban households were not located in Oslo. These two were located in cities in neighbouring counties. At first, we defined a rural area as a municipality with less than 3,000 inhabitants. However as this made it difficult to find households, we expanded the definitions to include municipalities with less than 5,000 habitants. The rural households in our project were recruited from three different counties.

### *The recruitment process in the five countries*

The recruitment of volunteers from the general public for data collection was subcontracted to a professional research provider who was chosen based on a call for tender. Norstat was employed to recruit research participants in the five countries. As part of the requirements, this company complied with the ICC/ESOMAR Code on Market and Social Research. The ICC/ESOMAR Code on Market and Social Research is fully compliant with the new EU General Data Protection Regulation 2016/679.

A total of 75 households, covering five European countries were visited for observation and interview during purchase at retail, transportation, storage, preparation and serving. Given the scope of the study, including two visits observing and interviewing the research participants during shopping and cooking, employing a recruitment agency saved time and enabled recruitment based on a predefined set of criteria. National specific risk groups were selected in the sample of households, in addition to demographic groups. Moreover, care was taken to include risk groups that respond differently to information and education. Thus, three demographic groups were recruited: Elderly households (70+) and young families (infants/pregnant women), both determined as vulnerable to foodborne illnesses and young single men (20-29 year), determined as less vulnerable but high-risk food consumers. The table below shows the recruitment criteria employed across all five countries, which took into account particular specificities in each country, which considered cultural/institutional contexts (Table 1.5.4).

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<sup>9</sup> <https://www.ssb.no/kommunefakta/kostra/oslo/befolkningsprofil>

**Table 1.5.4: General recruitment criteria for all five countries**

General recruitment criteria for all five countries	
In my household, ...	N
I/we eat chicken and vegetables every fortnight or more often.	All
I/we eat eggs monthly (or more often)	All (at least one of the criteria)
I/we eat soft fruits when they are in season (fresh) or more often (frozen)	one of the criteria
I/we eat shellfish seasonally (or more often)	
In my household, I have the responsibility for shopping, cooking and cleaning	All (one or both criteria)
In my household, I share the responsibility for shopping, cooking and cleaning with my (spouse/cohabitant/housemates)	
I would be willing to invite researchers to assist me during shopping and to my home to see how I cook	All
Specific criteria for Norway and France	
My fridge is old	12 or more (at least one of the criteria)
My kitchen has looked the same for decades	
My kitchen is too small for my household	
Specific criteria for Portugal, Romania and the UK	
The minimum amount my household needs to make ends meet per month, would you say your total household income (after tax) is somewhat below that amount or far below that amount	22-23
Specific criteria for Portugal and Romania	
I live too far away from the nearest food store/supermarket and buy most of my food at local markets	
Specific criteria for Romania	
I keep chicken for meat and/or eggs	7-8
I cultivate vegetables in my home	

In general, the research team in all five countries called the research participants beforehand to confirm date, time and place for the first meeting and give them more information about what they were participating in and how the teams would do the interviews, with what equipment and so forth. Yet, in some countries (e.g. UK and France) more than in others (e.g. Portugal, Romania and Norway) there were some problems of communication with the local recruitment agency hindering the progress of fieldwork to a certain extent, which was swiftly resolved either by the local research team or the local recruitment agency. In the following, we describe some of the specificities of recruitment in each country, the problems faced by the teams and the solutions found.

### The recruitment process in Portugal

The recruitment was delegated to a local recruiter in Portugal (sub-contracted by Norstat) that handled the practicalities of recruitment. Norstat was in regular communication with Portuguese researchers to give updates of recruitment progress. Households were offered an incentive payment, also administered by the recruitment agency, for completing participation in the research. The recruiters were given a number of more detailed criteria for the local sample and potential participants were screened according to their answers to a series of questions (Table 1.5.5).

**Table 1.5.5: Detailed criteria for the Portuguese sample**

Elderly households			
		Include if...	Number of households
Age	70 year or older	Yes	5
Gender	Man	Yes	2-3
	Woman	Yes	2-3
Income	Low income	Yes	2-3
	Middle/high income	Yes	2-3
I live too far away from the nearest food store/supermarket and buy most of my food at local markets		Yes	2-3

Young families			
		Include if	Number of households
Pregnant		Yes	2-3
Age youngest child	Less than 12 months	Yes	2-3
Marriage status	Married/cohabitant	Yes	5
Employment	Full or part time	Yes	all
Income	Low income	Yes	2-3
	Middle/high income	Yes	2-3
I live too far away from the nearest food store/supermarket and buy most of my food at local markets		Yes	2-3

Young single men			
		Include if	Number of households
Age	20-29	Yes	5
Lives	Alone or with housemates	Yes	5
Income	Low income	Yes	2-3
	Middle/high income	Yes	2-3
I live too far away from the nearest food store/supermarket and buy most of my food at local markets		Yes	2-3

### *Education*

Although the terms primary, secondary and tertiary education are odd to classify educational levels in the Portuguese Education System, we have adopted these terms to comply with conceptual harmonization across all five countries. However, it is important to define these terms and situate them according to the education Portuguese context as a large proportion of the population still has low levels of education (in 2017, 53.5% of the population aged 15 or more had basic schooling levels, that is, 9 years of school; and only 18.1% of the population had a university degree (PORDATA, 2019)). We considered Primary education all research participants that have 0-9 years of basic schooling (including 1st, 2st, 3th educational levels); secondary education was defined as all research participants having completed secondary school 10-12 years schooling; and tertiary education includes all research participants with 1-

2 years professional/technological courses after secondary school; 1-4 years of college or university (BSc) and 5 years or more university education (MSc; PhD).

### *Low/High Income*

The income levels for the Portuguese households were calculated by using the numbers for average monthly salary across all sectors for 2017, as defined by the National Office for Statistics in Portugal. We defined “low income” the amount of money below €750 per month, per household after taxes, “medium income” the one between €750-2000 per month, per household and after taxes, and “high income” the one higher than €2000 per household and after taxes. These classifications were then calibrated against three other indicators: whether people were living on private or rented accommodation; whether it was pension income (given pensions in Portugal are very low); and subjective income (research participants’ answers to the question in the screening questionnaire: ‘My income allows me to live comfortably’; ‘... allows me to live reasonably’; ‘it is difficult to live with my current income’; ‘it is very difficult to live with my current income’). After a first classification according to these indicators, we also took into account, on one occasion (Josefina), ethnographic data when we visited Josefina’s household and gathered more details about her lifestyle and other sources of income that were not disclosed in the screening questionnaire.

### *Recruitment problems and solutions*

The research team in Portugal sent a list of areas within the Greater Metropolitan Area of Porto to help recruiters get a more diversified social and territorial profile (e.g. low income, strong traces of a rural profile, low education). However, the recruitment agency did not totally follow these instructions and recruited few from those specific groups. While fieldwork progressed, it was visible that there was a bias towards recruiting more households from the urban centre of Porto, with higher education levels and medium/high income. An attempt was made to correct the sample bias as much as possible but that meant to sacrifice some of the numbers of the quota of young single men (who were highly educated and were not low income). Thus, three young single men were recruited instead of the target of five single men. This was partly due to a missed turn up to an interview of one single man (he was contacted several times to reschedule the interview without success), which meant a last-minute replacement had to be found. The research team found an elderly woman with reduced mobility, low income, who turned up to be an interesting case, nicely giving diversity to the sample. It was decided to replace another young single man with a woman expecting a child and low income, to have more low-income cases in the sample, however these decisions were not taken lightly.

The recruitment agency was responsible for preliminary communication with the households, including contact by telephone shortly before each visit to confirm participation. However not always research participants were clearly briefed by the agency about the research objectives and what would be demanded from them. The

research team had to explain on the spot the research procedures and what research participants were supposed to do. On one occasion the research team was clearly surprised with the lack of information given to a research participant who did not know that she had to cook. On other occasions the target persons did not totally fulfil the criteria for recruitment. They were either not expecting a child when we were informed they were by the agency, or they were working in the food sector (or their family members were). The latter happened on two occasions and these two cases are clearly outliers in the sample given the amount of knowledge and care they display on food safety and hygiene. Still, they are interesting and rich cases that give diversity to the sample ending up being a welcome (albeit unintended) addition.

### The recruitment process in Romania

The professional recruitment agency, Mercury Research, which is the largest independent full-service market research company in Romania, recruited all the 15 households, respecting the criteria of age category and family status. However, this seemed to be a very difficult task and determined the agency's representatives to apply a particular strategy. So, to be able to fulfil their task, they asked the first recruited persons to suggest some other people either belonging to the same study group or to a different one.

For the study, we had several criteria to select our research participants. Within each study group (Young single men, Young families, Elderly households), we first focused on people who consume chicken, eggs, berries and shellfish. We also targeted people who were partly or fully responsible for shopping and cooking in their household. Apart from following a recruitment questionnaire with general questions similar to all five countries, recruiters were given a number of more detailed criteria for the local sample. It was important to differentiate between urban and rural households, thus questions about shopping at local markets, raising chickens and cultivating vegetables were probed (Table 1.5.6):

**Table 1.5.6: Detailed criteria for the Romanian sample**

	Include if	Number of households
I live too far away from the nearest food store/supermarket and buy most of my food at the local markets	Yes	Yes, on all three of these questions for 6 participants
I keep chicken for meat and/or eggs	Yes	
I cultivate vegetables at my home	Yes	

All the research participants agreed with the statement “I live too far away from the nearest food store/supermarket and buy most of my food at the local markets”. However, we believe there was some misunderstanding of research participants during recruitment as we realized (in the visits to their households) that all were going both to supermarkets and local shops. The difference being the frequency of shopping in

supermarkets or local shops. Contrary to our expectations, even people living in the countryside preferred to go to supermarkets, even if less frequently than going to local shops. Better prices and greater variety of goods were the main reasons for choosing supermarkets. Research participants had to answer whether their income is low, medium or high, but income was not considered a selection criterion.

#### *Low / high income*

We recruited people with different incomes. We defined as “low income” the amount of money below 350 euro per month, “medium income” the one between 350-750 euro, and “high income” an amount of money higher than 750 euro per household.

#### *Education*

Since 1989, reorganization of the Romanian education system is a continuous process aiming to have it aligned to the European one. The structure of tertiary education was recently introduced (2015). Five research participants had primary education (1 Young families and 4 Elderly households), four had secondary education (1 Young single men, 2 Young families and 1 Elderly households) and six had tertiary education (4 Young single men and 2 Young families).

#### *Recruitment problems and solutions*

One of the research participants recruited as pregnant had to be replaced with another one, as it was proved during the shopping conversation that she was neither pregnant, nor responsible for cooking. The first seven meetings with research participants incorporated the cooking visit immediately after shopping. When we changed the rule for the other 8 meetings, asking to have cooking in one or two weeks after shopping, the research participants were surprised that we accompanied them all the way to their homes and wanted to see how they stored the food. Then we agreed to do shopping and cooking in one go again, because of the distance between Galati and households (100 km).

### **The recruitment process in the UK**

The agency contracted for the UK work was experienced in recruiting consumers, albeit specialising in commercial market research. Households were offered an incentive payment, also administered by the recruitment agency, for completing participation in the research. An external partner was appointed to handle the practicalities of recruitment, in regular communication with researchers. The recruiters were given a number of more detailed criteria for the sample (Table 1.5.7); potential households were screened according to their answers to a series of questions.

**Table 1.5.7: Detailed criteria for the UK sample**

	<b>Criteria</b>	<b>Target</b>
By study group	Elderly households	5
	Young families	5
	Young single men	5
By location	Urban	9
	Rural	6
By income	Low income	6
	Medium/high income	9
<b>Total no. households</b>		<b>15</b>

First, the agency was asked to recruit the 15 households from within the proposed study area (as detailed above), including as many as possible from the ex-industrial town and its rural surroundings, but drawing on the larger and more diverse population base of the nearby city to ensure all sub-groups were successfully recruited. It was anticipated, for example, that it might be more challenging to recruit young single men in a location without its own university. Second, it was agreed that six of the households (two from each study group) should live in rural sections of the study area. Third, a minimum of six households (two from each study group) should be on low income, based on their own assessment of incomings and outgoings during screening: those answering that their income is ‘far’ or ‘somewhat’ below the amount they need to make ends meet were identified as ‘low income’ for recruitment purposes. A more precise question about household income was asked later in the research. Finally, potential participants should not have taken part in research within the six months prior to recruitment, to reduce the likelihood of attracting serial research participants.

#### *Recruitment problems and solutions*

All 15 households – five in each study group – were successfully recruited between February and July 2018. A further two households were recruited but withdrew from the study before completion of fieldwork. The research team and recruitment agency remained in regular communication to monitor the emerging profile of the sample. Following an initial period of fieldwork (February to March 2018) it was agreed that the agency should more proactively seek to diversify the sample, since six of the first seven households lived in urban areas, all were white British, most were university educated and all had above-national-average household income. The agency reported particular difficulty recruiting households for the study from outside of major settlements. As a result, it was also agreed to relax the target for rural recruitment; improving socioeconomic diversity of the sample was to be given higher priority.<sup>10</sup>

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<sup>10</sup> Note that the rural parts of the original study area were relatively affluent and disproportionately white (Tables 1.5.2 and 1.5.3), meaning that boosting the rural part of the sample while also improving its socioeconomic diversity would have been especially challenging. While both remained criteria for recruitment, a decision had to be made to prioritise one over the other.

Notwithstanding existing evidence of rural (as well as urban) ‘food deserts’ – reflecting not only physical access to food but a host of other social and economic factors – it was decided that, in the context of central England, proximity to retailers was less likely to impact on food safety than socioeconomic inequalities. Although not explicitly part of their contracted recruitment targets, the agency were requested to seek households with more varied educational experiences and those from black, Asian and minority ethnic (BAME) backgrounds, and to use additional information, already gathered through the recruitment process, as a proxy indicator for their household income (location, housing tenure, occupation, etc.) alongside the (still valuable) screening question on making ends meet.

### The recruitment process in France

The professional recruitment agency in France successfully recruited 11 households out of 15, respecting the criteria of age category and family status. However, the recruitment agency was not able to provide the last 4 households with the specific criteria (low income and living in rural areas). We had then to mobilize our consumer data base at Group ESA (consumers that are usually recruited for sensorial analysis tests). We selected households from our lists according to age (under 30 / over 70 years old), to whom we sent an online questionnaire, regarding their food habits, their living place and their income. We managed to recruit the last 4 households (2 Young single men and 2 Elderly households) all of them living in rural areas.

For the study, we had several criteria to select our households. Within each study group (Young single men, Young families, Elderly households), we first focused on people who consume chicken, eggs, berries and shellfish. We also targeted people who were partly or fully responsible for shopping and cooking in their household. Having also asked more general questions (similar to the ones made in the remaining countries), we recruited households based on the following specific questions questionnaire (Table 1.5.8):

**Table 1.5.8: Detailed criteria for the French sample**

I would like to invite researchers to my home to see how I cook	Include if	Yes
My fridge is old	Yes	Number of households
My kitchen has looked the same for decades	Yes	Yes on at least one of these questions for 6 or more of the households
My kitchen is too small for my household	Yes	

Five out of 15 research participants answered yes at the affirmation “my fridge is old” (3 Elderly households and 2 Young single men). Seven out of 15 research participants answered yes at the affirmation “My kitchen has looked the same for decades” (5 Elderly households and 2 Young single men). Five out of 15 research participants answered yes at the affirmation “My kitchen is too small for my household” (3 Young families and 2 Young single men). These kitchens’ characteristics were however not

exclusionary criteria. Two other criteria were needed to finally recruit households: living place (rural / urban) and income (low / high).

### *Low / high income*

We also recruited people with different economic levels. We defined “low income” as the threshold of taxable income in France, which is 14,917 euros per year for a single person in 2017. We therefore selected households who declared salaries, pensions and other annuities below the 15,000 euros amount. We did not base our selection criteria on the poverty threshold, which is even lower, and corresponds to monthly income after tax and benefits lower than either 846 euros per month (10 152 euros per year) or 1,015 euros (12 180 euros per year) (Insee, 2018b) according to the definition of poverty used (50% or 60% threshold of median standard of living).

We had more trouble finding and recruiting households with low income. The ones we have been in touch with did not accept to participate. We finally recruited 3 low income households (Young single men), 9 medium income households (2 Young single men; 5 Young families and 3 Elderly households) and 3 high income households (Elderly households). We divided them in these income categories according to their statements. One of the “low income” young single men was currently unemployed (Etienne), when the other ones (Aurelien and Vincent) were working part time.

### *Education*

In France, we understood primary education as the absence of Baccalaureate (diploma that validates the end of high school), secondary education as the graduation of Baccalaureate (end of high school), and Tertiary education as a graduation 2 years or more after Baccalaureate. Five research participants had a primary education (1 Young single man, 2 Young Families, 2 Elderly), 7 had a secondary education (3 Young single men, 2 Young Families, 2 Elderly) and 3 had a tertiary education (1 in each household category).

### *Recruitment problems and solutions*

During the first weeks of fieldwork, some of the research participants were partially or badly informed by the recruitment agency about the survey, its goal, the specificities of each visit as well as the profiles and number of researchers. Most of them, however, accepted that the socio-anthropologist followed them home after the supermarket visit. One of them, however, refused, because she was not informed enough that she needed to be followed until her living place. She accepted the second visit with no problem, as we explained the study to her in more detail. After that incident, a contact was established between the French socio-anthropologist and the French recruitment agency's responsible to fully inform them about the nature of the survey, the specificities of each visit and the profiles of researchers. Information was better communicated to research participants after this needed update.

## The recruitment process in Norway

Norstat was the research market company that directly recruited the 15 households in Norway. We always called the research participants beforehand to confirm date, time and place for the first meeting and give them more information about what they were participating in and how we would do the interviews, with what equipment etc. Households were offered an incentive payment, also administered by the recruitment agency, for completing participation in the research. Apart from the general questions similar across all countries, the recruiters were given more detailed criteria for the local sample (Table 1.5.9), with questions similar to the French case.

**Table 1.5.9: Detailed criteria for the Norwegian sample**

I would like to invite researchers to my home to see how I cook	Include if	Yes
		Number of households
My fridge is old	Yes	Yes on at least one of these
My kitchen has looked the same for decades	Yes	questions for 6 or more of the
My kitchen is too small for my household	Yes	households

The Norwegian recruitment criteria included having households with certain challenges with their kitchens. The three challenges were formulated as “My fridge is old”, “My kitchen has looked the same for decades” and “My kitchen is too small for my household”. We recruited eleven households that answered yes to one or more on these questions. Equally number of households reported to have an old fridge and a kitchen that has looked the same for decades. However, these two statements did not necessarily overlap. Only four households answered yes on both of these. Only two households reported to have a kitchen too small for their household (Table 1.5.10):

**Table 1.5.10: Kitchen statements across the three study groups**

	Young single men	Young families	Elderly households
My fridge is old	3	2	2
My kitchen is too small for my household	1	1	-
My kitchen has looked the same for decades	2	1	4

The area for recruitment included Oslo and the surrounding counties, with locations varying from the city centre of Oslo and up to 80 km outside of Oslo. Our households were allocated geographically like this: Oslo: 7 households (7 urban); Akershus: 4 households (3 rural, 1 urban); Buskerud: 1 household (1 rural); Østfold: 3 households (2 rural, 1 urban).

### *Low / high income*

Income inequality is low in Norway at both end of the scale. The income levels for the Norwegian households were calculated by using the numbers for average monthly and

yearly salary across all sectors divided in deciles for 2017 provided by Statistics Norway. Here, the overall average income in 2017 was 44,310 NOK per month and 539,900 NOK per year per person before tax. This average income was within the 7<sup>th</sup> decile. We thus defined low income as an income at the average for fourth decile or below, medium as the average income of the fifth to the eighth income deciles, and finally, high income as the average income of the ninth and tenth decile. Thus, low income was calculated from having a yearly average from 278,040 NOK to 427,800 NOK, medium was from 463,680 NOK to 595,200 NOK, and high from 694,440 NOK to 1,065,600 NOK. All numbers are per person. When calculating for couples, we calculated the average per person income in each of the deciles times 1,8, which is represent income difference between women and men, and in particular for women in maternity leave. The range for low is from 0 NOK – 770,040 NOK, medium from 834,624 NOK to 1,071,360 NOK, and high income from 1,249,992 NOK to 1,918,080 NOK. For pensioners, income was calculated differently since the size of the pensions varies less than income from paid work. Low income per person was defined as between 150,00 NOK to 199,000 NOK, medium from 200,000 NOK to 350,000 NOK, and high from 400,000 NOK to 450,000 NOK. These numbers were the Norwegian Labour and Welfare Administration.

### *Education*

In Norway a primary education (up until junior high, 10<sup>th</sup> grade) is compulsory, and it is common to complete high school, and thus accomplish a secondary education. In addition to this, the past years have seen a surge in higher education such as bachelor's degrees, master's degrees and an increase in completed PhD degrees<sup>11</sup>. A reason for this may be that Norway has a free education system. Students only have to pay a small study fee and there are good financial support systems to aid them throughout the education. Moreover, in Norway, we distinguish between short and long higher education. Thus, the category of tertiary education encompasses various levels of education above high school levels.

### *Recruitment problems and solutions*

On two occasions the recruited household did not match the criteria, but the recruitment agency replaced them swiftly, not hindering the progress in the fieldwork too much. Regarding the sample, we wanted to recruit households with a varied educational background. However, this turned out to be difficult and we acknowledge that the Norwegian sample is skewed in terms of education. In our sample there are three research participants with secondary education and the remaining 12 research participants have tertiary education.

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<sup>11</sup> <https://www.ssb.no/utdanning/statistikker/utniv>

## Socio-demographic characteristics of the sample across all five countries

In this section we will detail the sample socio-demographic characteristics across all five countries. Each country, in liaison with the local recruitment agency made strong efforts to get a varied sample (e.g. education, income, ethnicity, rural/urban profile) of 15 households and within the three study groups pre-selected (Elderly households, Young families, Young single men). As explained in the previous section where recruitment difficulties were addressed, maximum variation was not always possible. Yet, in each country there is a good variety of cases, despite small biases towards an urban profile (e.g. Portugal and Norway), tertiary education (e.g. Norway and Portugal) and the difficulty to recruit low income households (e.g. UK, Portugal, Norway). In the following we will detail for each country the sample socio-demographic characteristics, in some countries presented with more detail than in others.

### Description of sample and household's characterization in Portugal

Due to the abovementioned decisions (to diversify the sample in terms of income and mobility constraints) we ended up recruiting 3 single young men; 6 elderly households and 6 young families. Ages varied between 19 years old (Young single men) and 89 years old (Elderly households). In terms of gender, Young families' primary participants were all women, and Elderly households' primary participants were divided in 4 women and 2 men. The socio-demographic characteristics of the sample are as follows (Table 1.5.11):

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**Table 1.5.11: Full overview of Portuguese households' socio-demographic characteristics**

Primary participant (pseudonym)	Study group	Gender	Age	Marital Status	Highest level of formal qualifications <sup>b</sup>	Household income			Housing tenure	Urban / Rural
						Subjective Income	€/week after tax	Income level		
Marta	Young families	F	35	Married	Tertiary	Live reasonably	€1000 to €1250	Medium	Owner-occupied	Urban
Vanessa	Young families	F	29	Co-habitation	Tertiary	Live reasonably	€1500 to €2000	Medium	Private-rented	Rural
Josefina	Elderly households	F	81	Widowed	Tertiary	Live reasonably	€1000 to €1250	High	Private-rented	Urban
Emilia	Elderly households	F	89	Married	Primary	Refusal	Refusal	Refusal	Private-rented	Urban
Filipa	Young families	F	36	Married	Tertiary	Live comfortably	€2000-€2500	High	Owner-occupied	Urban
Augusto	Elderly households	M	70	Married	Secondary	Live reasonably	Refusal	Refusal	Owner-occupied	Rural
Manel	Elderly households	M	73	Married	Primary	Live comfortably	€1250 to €1500	Medium	Owner-occupied	Urban
Andreia	Young families	F	33	Co-habitation	Tertiary	Live comfortably	€1250 to €1500	Medium	Owner-occupied	Urban
Carlos	Young single men	M	24	Single	Tertiary	Live reasonably	€500 to €750	Medium	Owner-occupied	Urban
Maria Celeste	Elderly households	F	70	Married	Primary	Difficult to live	Less than €500	Low	Private rented	Urban
Sonia	Young families	F	42	Divorced	Primary	Live reasonably	€1250 to €1500	Low	Owner-occupied	Rural
André	Young single men	M	30	Single	Tertiary	Live reasonably	€1000 to €1250	Medium	Owner-occupied	Urban
Bernardo	Young single men	M	19	Single	Tertiary	Live comfortably	€1500 to €2000	High	Private rented	Urban
Odete	Elderly households	F	65	Widowed	Primary	Difficult to live	€500 to €750	Low	Private rented	Urban
Sílvia	Young families	F	33	Married	Tertiary	Live reasonably	€1500 to €2000	Medium	Private rented	Rural

## Description of sample and household's characterization in Romania

In the Romanian sample, the Age of research participants ranged from 27 to 84 years old (27 to 35 years old for Young single men study group; 28 to 34 years old for Young families study group; 70 to 84 years old for Elderly households study group). Young families' primary participants were all women, and Elderly households' primary participants were divided in 3 women and 2 men.

The following tables describe the characteristics of each household, regarding living area, education, income and work, and marital status, for each study group. All the young single men were employed. Meanwhile, the Elderly households' research participants were all retired. One of them although retired, continues to work in its own company. In the Young families' study group, all research participants were married, 4 of 5 lived with their husbands, and in one family the husband works abroad and comes home up to three times per year. Two of the women worked, one woman was unemployed and two were in maternity leave. In all cases, the husbands were in full-time employment. The characteristics of the households are described in Table 1.5.12

### *Characteristics of households' living situation*

Two out of five young single men lived with housemates, in shared houses in urban areas (Florinel and Zoltan). Ionel and Balanel lived in an apartment where their parents lived previously (parents are the owners of the apartment). One of them (Bogdan) prefers to live alone in a rented apartment with one room. Two of them shared a rented apartment or home with other mates (Florinel and Zoltan). Florinel chose the apartment because it is central and close to what he needs, whereas Zoltan had his own room in the house where he lived. Florinel shared the fridge with his flat mate, whereas Zoltan had his own fridge in his room, and he did not share it with the other mates. All young single men households lived in urban areas very close to shops and supermarkets (a few minutes on foot or by car). Three out of five young men referred going to gym to gain muscular weight, and all of them seemed preoccupied with having a healthy diet. Ionel and Florinel had fridges with temperature display, and Balanel and Bogdan had old fridges. Three out of five had moved the gas stove to the balcony (Table 1.5.13).

In the Young families' study group, two women were pregnant (Amalia and Maria Mirabela) and 4 of them had small children. Amalia had 1 child, Serena had 4 children, Minodora 2 children, Sorina 3 children. Three out of five lived in rural areas (Sorina, Serena, and Minodora). Sorina lived in a new house that was still under construction, Serena and Minodora lived in old refurnished houses. All the households that lived in rural areas went to the closest city for their shopping. Sorina comes to town at least twice per week to buy food from a specific supermarket and usually comes by car or minibus from the village. She goes shopping in the morning and bring her son to help

her with the bags. Serena and Minodora were neighbours in the village where they live and usually if one of the neighbours had to go to the supermarket in the town they would also shop for the other. We had this situation for Minodora - her food (chicken breast) was bought by Serena. Serena had moved the gas stove from the kitchen into the main hall to avoid the smell and water vapours from entering in the house. On the other hand, Minodora didn't have a room designated to be the kitchen; the hall also served as a kitchen. Two out of three families from the rural area had tap water inside the house. The fridges used by families from the rural area had an age ranged between 5-10 years. Serena shared the fridge with her grandmother that lived at the same address, but in another house. Maria Mirabela and Amalia lived in the city. Maria Mirabela moved recently into a new apartment, whereas Amalia recently refurnished her apartment. Amalia lived in a house owned by her parents. Both of them had fridges with temperature displays. For both of them, the most convenient food store was Kaufland (Table 1.5.13).

All the research participants in the Elderly households' study group were from rural areas (Dumitra, Damian/Damiana, and Linalia) and owned their house where they have been living in from 25 years to 64 years. One of the research participants from an urban area had lived on a rented house one year as she had family problems, whereas the other research participant from urban areas was living with his wife in the house that they own for more than 28 years. All the households in rural areas raised chicken in the backyard and grow vegetables. Often, they bought food from the village shops and usually once per month they went to buy food from the closest town supermarket. All households in rural areas switched off their fridges during winter to save on electricity and all of them had old dirty fridges, with shelves covered with newspaper. Furthermore, all households in rural areas had a kitchen used during summer and a kitchen used during winter. Often the winter kitchen had a bed installed and was also used as bedroom. Often the kitchens opened directly to the exterior and often some cooking operations took place outside (Table 1.5.13).

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**Table 1.5.12: Full overview of Romanian households' characteristics**

Primary participant (pseudonym)	Study group	Gender	Age	Marital Status	Highest level of formal qualifications <sup>b</sup>	Household income		Housing tenure	Urban / Rural
						Subjective Income	Income		
Ionel	Young single men	M	30	Single	Tertiary	Medium	533	Parents home, lives alone	Urban
Balanel	Young single men	M	28	Single	Secondary	Medium	311-444	Parents home, lives alone	Urban
Bogdan	Young single men	M	32	Single	Tertiary	Medium	444-666	Apartment (rented)	Urban
Florinel	Young single men	M	31	Single	Tertiary	High	888	Shared Apartment (rented)	Urban
Zoltan	Young single men	M	35	Single	Tertiary	Low	333	Shared house (rented)	Urban
Maria Mirabela	Young families	W	34	Married	Tertiary	Median	888	House (owned)	Urban
Sorina	Young families	W	32	Married	Primary	High	1500	House (owned)	Rural
Serena	Young families	W	36	Married	Secondary	Median	666	Apartment (owned)	Rural
Minodora	Young families	W	27	Married	Secondary	Not given	-	House (owned)	Rural
Amalia	Young families	W	31	Married	Tertiary	High	1111	House (owned)	Urban
Dumitra	Elderly households	W	84	Widow	Primary	Low	93	House (owned)	Rural
Damian & Damiana	Elderly households	M/W	73/73	Married	Primary	Low	277	House (owned)	Rural
Fanel & Fanica	Elderly households	M/W	69/69	Married	Secondary	Medium	666	House (owned)	Urban
Domnica	Elderly households	W	75	Widow	Primary	Low	162	House (owned)	Urban
Linalia	Elderly households	W	73	Widow	Primary	Low	146	Apartment (rented)	Rural

**Table 1.5.13: Information about the Romanian households' living situation**

Study group	Primary participant	Number of people in household	Size in m <sup>2</sup>		Distance and access from supermarkets	Lived in house for / since	Fridge	
			House	Kitchen			Age	Challenges
Young single men	Ionel	1	90	10	300 m on foot from the closest supermarket	birth	<5	
	Balanel	1	65	6.5	500-600 m on foot from the closest supermarket	birth	> 15	
	Bogdan	1	39	5	200m on foot from the closest supermarket	1.5y	>15	Too small
	Florinel	2 adults	50	6	5 minutes by car from the first convenience store and 100 m from the closest supermarket	1y	<5	Shared with housemate
	Zoltan	6adults housemates	100	45	10 minutes by car to first convenient supermarket, 200m by foot to convenient store	4y	<5	Fridges not shared with house mates
Young families	Maria Mirabela	2 adults	68	9	500 m from Penny market, 1 km from agro food market, 1.5 km from Kaufland market	3 days	<1	Temperature display
	Sorina	2 adults, 3 children	140	10	500-600 m from the closest market in the village	4y	<5	Almost empty
	Amalia	2 adults, pregnant, 1 child	65	3.5	500 m far from the closest supermarket	3y	<5	
	Serena	2 adults, 4 children	-	9	500-600 m from the closest market in the village	1y	>5	
	Minodora	2 adults, 2 children	32	8	300 m from the closest market in the village	3y	>5	Fridge almost empty
Elderly households	Dumitra	1 adult	100	9	500 m on foot from the closest convenient store	64y	>20	Fridge almost empty, turned off in winter
	Damian & Damiana	2 adults	200	10	1.5 km on foot from the first convenient store	30y	> 25	Old fridge, turned off in winter
	Fanel & Fanica	2 adults	315	15	1 km on foot from the central market and 400 m from the closest convenient store	28y	>10	
	Linalia	2 adults	100	24	500 m on foot from the closest convenient store	25y	2	Switched off during winter
	Domnica	1adult	60	8	300 minutes on foot, from the closest convenient store	1y	>20	Old fridge

## Description of sample and household's characterization in France

In the French sample the age of research participants ranged from 24 to 77 years old (24 to 30 years old for Young single men study group; 25 to 37 years old for Young families' study group; 71 to 77 years old for Elderly households study group). Young families' primary participants were all women, and the Elderly households were divided in 2 women and 3 men. The tables below describe characteristics of each household, regarding living area, education, income and work and marital status, for each study group (Table 1.5.14). The Table 1.5.15 describes characteristics of households' living situation, regarding households, type of home, kitchen, distance from the supermarket, and fridge's characteristics, for each household category.

Three out of five Young single men lived with housemates, in shared houses in rural areas (Aurelien, Etienne, Vincent). Etienne was the only one who lived in a house where his grandparents previously lived and that was owned by his parents. He was also using his late grand-parents' fridge, which was more than 10 years old. All the others lived in rented houses or apartments owned by owners with no family bond. All but one worked. Etienne was the only in this study group being unemployed. Young single men household in an urban area were all single person households and lived very close to shops and supermarkets (a few minutes by foot or car). All had lived in their current apartment for one year and had one-year old fridge. Households in rural areas were further from supermarkets but yet close by car. Two lived in remote places in the countryside, one in a small hamlet (Aurelien) and one (Vincent) close to the road but far from any habitation, except for an old castle, rarely inhabited. His house was the castle owner's farmer house. With his housemates, they now raise animals (ducks, goats, sheep, hens, donkeys, etc.) and they have 4 dogs and some cats (Table 1.5.15).

In the Young families' study group, only one woman was pregnant, on maternity leave (Amandine) and had a young child. Others had respectively 2 children (Mathilde), 1 child (Julie), 1 child (Mylène) and 5 children (Elodie). Three households lived in city centres of urban areas (Mathilde, Julie, and Mylène). All but one of the women worked. Elodie was the only woman being unemployed. Only one husband (Mathilde's) was currently unemployed. All the other husbands and spouses were full-time employed. Two of them owned their house and Mylène, who was complaining about her kitchen size, was about to move to a new apartment that she will own with her partner. The two remaining households lived in rural area, one in an old farm (Amandine) and in a small city (Elodie). Elodie and her family recently moved to their new rented house in the heart of a small city, to allow children to walk to school and to their extracurricular activities. Amandine lived with her husband and son in their "staff house". They both worked as "special educator" with behaviour troubles' teenagers and lived on their working site. They also owned a house, in a close village, where they go every other weekend. All households lived close to convenient stores or supermarkets and said to have no trouble reaching them by car or foot (Table 1.5.15). In the Young families' study

group, all research participants lived with their partners, either married or as cohabitants.

All of the Elderly research participants were retired. All of them owned their house, where they have been living in from 8 years to 50 years. Yvette & François moved with her husband, 8 years ago, for their retirement time, in a new city (where they previously grew up) to their brand-new house. Sylviane has been living in her farm from the past 50 years. With her husband, they are both retired, but still owned two cows (from their previous farming activities), some ducks, and grew vegetables in a big garden. They all lived with their spouse. Only Sylviane lived with her husband and 45 years old son. They are also the ones with the oldest fridge (more than 25 years old).

Two out of five Elderly households (Bernard & Helene and Yvette & François) lived in urban areas. They are close from supermarkets by car. The 3 others lived in rural areas, in the centre of a small village centre (Gerard & Odile), or in the countryside, far from any housing (Sylviane and Charles & Annie). These two households lived further by car to the closest supermarkets, but still did not state difficulties reaching them (Table 1.5.15).

## Chapter 1.5: Methodology

**Table 1.5.14: Full overview of French households' characteristics**

Primary participant (pseudonym)	Study group	Gender	Age	Marital Status	Highest level of formal qualifications <sup>b</sup>	Household income		Housing tenure	Urban / Rural
						Subjective Income	Income		
Aurelien	Young single men	M	25	Single	Tertiary	Low	850 € / month	Young single men	Rural
Etienne	Young single men	M	30	Single	Secondary	Low	950 € / month	Young single men	Rural
Fabrice	Young single men	M	24	Single	Secondary	Medium	1400 € / month	Young single men	Urban
Simon	Young single men	M	25	Single	Primary	Medium	1200 € / month	Young single men	Urban
Vincent	Young single men	M	29	Single	Secondary	Low	900 € / month	Young single men	Rural
Mathilde	Young families	W	37	Married	Tertiary	Medium	1600 € / month	Young families	Urban
Amandine	Young families	W	27	Married	Secondary	Medium	2600 € / month	Young families	Rural
Julie	Young families	W	28	Cohabitants	Primary	Medium	2500 € / month	Young families	Urban
Mylene	Young families	W	25	Cohabitants	Secondary	Medium	2800 € / month	Young families	Urban
Elodie	Young families	W	31	Married	Primary	Medium	2300 € / month	Young families	Rural
Gerard & Odile	Elderly households	M/W	71/65	Married	Secondary	High	3000 € / month	Elderly households	Rural
Sylviane	Elderly households	W	77	Married	Primary	Medium	1600 € / month	Elderly households	Rural
Charles & Annie	Elderly households	M/W	75/70	Married	Primary	Medium	2800 € / month	Elderly households	Rural
Bernard & Helene	Elderly households	M/W	72/72	Married	Tertiary	High	3000 € / month	Elderly households	Urban
Yvette & François	Elderly households	M/W	74/76	Married	Secondary	High	3500 € / month	Elderly households	Urban

## Chapter 1.5: Methodology

**Table 1.5.15: Information about the French households' living situation**

Study group	Household	Number of people in household	Size in m <sup>2</sup>		Distance and access from supermarkets (nearest)	Lived in home	Fridge	
			House	Kitchen			Age	Challenges
Young single men	Aurelien	6 adults (housemates)	140	20	1 km to the bakery in the village; 3 km to the farm with local producers; 8 min. by car to the supermarket	2,5	N/A	Shared fridge, very full
	Etienne	6 adults (housemates)	220	10	550 m to the convenient store, 8 min. by car to the big supermarket	2	> 10	Shared fridge
	Fabrice	1 adult	50	10	8 min by car from a big supermarket	1	1	N/A
	Simon	1 adult	50	6	2 min by foot	1	1	Small fridge
	Vincent	4 adults (housemates)	280	25	7 min by car to the supermarket, 5 min by car to the convenient store	3	N/A	Old
Young families	Mathilde	2 adults, 2 children (3 & 1 y.)	85	15	10 minutes by car	7	7	4°C and -20°C for the freezer
	Amandine	2 adults, 1 child (2 y.)	120	20	10 minutes by car	2	N/A	N/A
	Julie	2 adults, 1 child (2,5 y.)	170	20	A few minutes by foot to the convenient store	4	2,5	N/A
	Mylene	2 adults, 1 child (6m)	70	12	1 min by foot to the butchery, 5 min by car to the large supermarket	4	4	Fridge indicates 6°C
	Elodie	2 adults, 5 children (12, 10, 6, 3, 2 y.)	100	10	5 min by car to supermarket, 5 min by foot to small convenient stores	1	a few years	N/A
Elderly households	Gerard & Odile	2 adults	300	30	5 min by foot from the first convenient store, 8 min by car to the big supermarket	20	3	N/A
	Sylviane	3 adults	180	30	10 min by car to the big supermarket, 3 km to the convenient store	50	> 25	
	Charles & Annie	2 adults	250	9	9 min by car to the supermarket. 5 min by car to the convenience store	35	10	+10°C
	Bernard & Helene	2 adults	101	12	5 minutes by car	40	2	Thermometer shows 5,4°C
	Yvette & François	2 adults	144	14	10 minutes by foot, 5 minutes by car	8	7	Don't like cold fridge

## Description of sample and household's characterization in the UK

In the UK the 15 households were successfully recruited and within the quotas estimated for each study group (Young families, Young single men, Elderly households). Table 1.5.16 details the final sample of UK households.

The first thing to note is that, for the reasons stated above, the initially anticipated mix of urban and rural experiences was not achieved. The majority of households lived in the ‘nearby city’ subset of the study area. Only two households identified their location as rural (plus one of the withdrawn households) and only one of these falls within an area classified as rural by the government’s rural-urban classification (RUC2011). Further, the two self-identified rural households were located a short distance outside of the originally proposed boundaries of the study area. A second concern to flag is that, in the final sample, only one research participant was from a BAME background, despite efforts to address this underrepresentation as recruitment progressed. The sample was slightly more diverse with respect to income. Four households met the UK government (relative) definition of low income, that is, a combined household income – after tax, before housing costs – below 60 per cent of the national median. As of 2016/17, the median value was approximately £500 per week, making the low-income threshold £300 per week (Department for Work & Pensions, 2018). More subjectively, based on the screening question about having sufficient income to meet outgoings, eight households reported having an income below the level they need to make ends meet. In comparison to the sociodemographic profile, there was considerable diversity of engagements and experiences with food across the 15 households, as will be detailed in the analysis chapters.

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**Table 1.5.16: Profile of British participating households<sup>12</sup>**

Primary participant (pseudonym)	Study group	Gender	Age	Highest level of formal qualifications <sup>b</sup>	Household income		Housing tenure	Location in study area	Urban / rural <sup>d</sup>	IMD 2015 decile <sup>e</sup>
					Relative to outgoings <sup>c</sup>	£/week after tax				
Ryan Langsdale	Young single men	M	20	Secondary	About equal	£500 to £999	Private rented	Nearby city	Urban	2
Susan Dunning	Elderly households	F	78	Not specified	Above outgoings	£500 to £999	Owner-occupied	Nearby city	Urban	8
Laura Cooper	Young families	F	31	Tertiary	Below outgoings	£500 to £999	Owner-occupied	Nearby city	Urban	9
Mary Russell	Elderly households	F	70	Tertiary	Above outgoings	£500 to £999	Owner-occupied	Nearby city	Urban	5
Paul Rothwell	Young families	M	34	Tertiary	Above outgoings	£1000+	Owner-occupied	Town	Urban	3
Kate Buckley	Young families	F	30	Tertiary	About equal	£500 to £999	Owner-occupied	Nearby city	Urban	10
Jean Higgins	Elderly households	F	72	Primary	Above outgoings	£500 to £999	Owner-occupied	Outside	Urban	8
Josh Lovell	Young single men	M	22	Tertiary	Below outgoings	Less than £300	Private rented	Nearby city	Urban	2
Chloe Martin	Young families	F	38	Tertiary	Below outgoings	£500 to £999	Owner-occupied	Outside	Rural	7
Archie Phillips	Elderly households	M	74	Tertiary	Below outgoings	Less than £300	Social rented	Nearby city	Urban	3
Sahib Singh	Young single men	M	23	Secondary	Above outgoings	£500 to £999	Private rented	Town	Urban	2
Alicia Cook	Young families	F	23	Primary	Below outgoings	£1000+	Private rented	Nearby city	Urban	7
Liam Abney	Young single men	M	28	Secondary	Below outgoings	£500 to £999	Owner-occupied	Nearby city	Urban	10
Tricia Riley	Elderly households	F	70	Tertiary	Below outgoings	Less than £300	Social rented	Nearby city	Urban	1
Daniel Thorne	Young single men	M	25	Primary	Below outgoings	Less than £300	Social rented	Nearby city	Urban	1

<sup>12</sup> Source: recruitment screening questions; participant questionnaire. Notes: (a) 'White British' here is a simplified category including participants who self-identified as 'Scottish' and 'English'; (b) primary qualifications=GCSEs or equivalent, secondary=A Levels or equivalent, tertiary=university degree or equivalent; (c) during screening, potential participants were asked if their household income is above or below the amount they need to make ends meet each month; (d) Defra Rural-Urban Classification 2011 for participant's postcode - see Table 1.5.3 for more information on RUC2011 (Jean Higgins reported that she lived in a rural area); (e) DCLG English Indices of Deprivation 2015 for participant's postcode - see Table 1.5.3 for more information on IMD2015.

## Description of sample and household's characterisation in Norway

In the Norwegian sample, the age ranged from the youngest of 23 to the eldest of 74. They had all been living in their current homes for years. Anna had been living in her apartment for 2,5 years, which was the shortest and Inger has lived in her house for 48 years consecutively, which is the longest. Nils stated to have lived in his house for 60 years, but this includes about 14 years altogether of breaks for studies and working in other Norwegian cities or abroad. Apart from the young men who were recruited on the criterion of living alone, all the households comprised a married or cohabitating couple.

The Norwegian sample included nine households from urban areas and six from rural areas. In our sample there were three research participants with secondary education and the remaining 12 research participants had tertiary education. Regarding income there were four households with high income, six with medium, three with low and two who did not give us information about their income. The four households with high income were in the study groups of young families and elderly households. They were all four part of households consisting of two adults where both either worked or were retired. The three households with low income were all in the study group of young single men, which can be explained by them being in an establishing phase of life. They were still in the beginning of their careers. One had just finished their studies, and another held an internship, and the third had secondary education but was planning to start a university degree the following fall.

### *Households*

The sample consisted of several types of housing but was strongly dominated by apartments (seven households) and detached houses (six households). Other types of housing were townhouses and a room in a shared flat. All households, apart from two owned their living space. The last two rented and were two urban, young single men, still in education. The size of the households' living areas varied in shapes and sizes. Apartments ranged from 30 m<sup>2</sup> to 100 m<sup>2</sup> and houses ranged from 120 m<sup>2</sup> to 200 m<sup>2</sup>, with one exception. Georg lived in a single room in a shared housing, with a shared bathroom and a sink in the hallway. His room was about 9 m<sup>2</sup>, including a kitchen space of 1,5 - 2 m<sup>2</sup>. Emma and her husband and children owned a house of 350 m<sup>2</sup> in a rural countryside, which included a kitchen of 25 m<sup>2</sup>. The size of the households' kitchens varied from Georg's kitchen space of about 1,5 m<sup>2</sup> to the largest reported kitchens being 25 m<sup>2</sup> (four households had this kitchen size, and one reported 24 m<sup>2</sup>), but most of the households had kitchens within the range of 8 m<sup>2</sup> to 20 m<sup>2</sup>. See Table 1.5.17 and Table 1.5.18 for an overview if the Norwegian households.

## Chapter 1.5: Methodology

**Table 1.5.17: Norwegian's household characteristics**

Primary participant (pseudonym)	Study group	Gender	Age	Marital Status	Highest level of formal qualifications <sup>b</sup>	Household income		Housing tenure	Urban / Rural
						Subjective Income	Kr/year before tax		
Anna	Young families	F	31	Married	Tertiary	Medium	(Over) 1,000,000	Detached house (owned)	Urban
Camilla	Young families	F	35	Married	Tertiary	High	1,250,000	Apartment (owned)	Urban
Emma	Young families	F	33	Married	Tertiary	Medium	900,000	Detached house (owned)	Rural
Hanne	Young families	F	31	Married	Tertiary	High	1,200,000	Apartment (owned)	Urban
Lena	Young families	F	37	Engaged/co-habitation	Tertiary	Medium	1,100,000	Apartment (owned)	Rural
Bente	Elderly households	F	70	Married	Tertiary	Unknown	Not given	Townhouse (owned)	Urban
Inger	Elderly households	F	70	Married	Tertiary	High	1,000,000	Detached house (owned)	Rural
Kari	Elderly households	F	71	Married	Tertiary	Medium	750,000	Detached house (owned)	Urban
Nils	Elderly households	M	74	Married	Tertiary	High	800,000	Detached house (owned)	Rural
Oda	Elderly households	F	72	Married	Secondary	Unknown	Not given	Detached house (owned)	Rural
Fredrik	Young single men	M	23	Single	Tertiary	Low	800,000 <sup>1</sup>	Shared apartment (rented)	Urban
Georg	Young single men	M	28	Single	Tertiary	Low	296,369 <sup>13</sup>	Dorm room (rented)	Urban
Jon	Young single men	M	28	Single	Secondary	Medium	500,000	Apartment (owned)	Urban
Petter	Young single men	M	29	Single	Tertiary	Medium	500,000	Apartment (owned)	Rural
Roger	Young single men	M	24	Single	Secondary	Low	450,000	Apartment (owned)	Urban

<sup>1</sup> included housemate's income

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<sup>13</sup> Georg has reported NOK 180,000 in salary, in addition to student loans, which may vary some from year to year but calculated for 2018-2019 is NOK 116,369.

## Chapter 1.5: Methodology

**Table 1.5.18: Information about the Norwegian households' living situation**

Study group	Primary participant	Number of people in household	Size in m <sup>2</sup>		Distance and access from supermarkets	Lived in house for / since	Fridge	
			House	Kitchen			Age	Challenges
Young families	Anna	2 adults	181	20	300 m – 5 minutes' walk	2,5 years	N/A	N/A
	Camilla	2 adults, 2 children	98	25	200 m – 3 minutes' walk	6 years	2 years	N/A
	Emma	2 adults, 3 children	350	25	6 km – 10 minutes by car	7,5 years	N/A	Keeping her food system in the fridge (challenged by other members in the family)
	Hanne	2 adults, 2 children	82	8-10	200 m – 5 minutes' walk	2,5-3 years	N/A	N/A
	Lena	2 adults, 1 child and 1 child who lives there part time	68	12	1 km – 5 minutes by car	4 years	6 years	Difficult to get an overview of content
Elderly households	Bente	2 adults	121	20	150 m – 3 minutes' walk	Since 1978	27 years	Old fridge
	Inger	2 adults	200	9	1 km – 10 minutes' walk – 2 minutes by car	Since 1970	14 years	Old fridge
	Kari	2 adults	Unknown	10-12	400 m - 5 minutes' walk	30 years	15 years	Full fridge, fridge leaks water onto floor
	Nils	2 adults	155	15	4 km – 8-9 minutes by car	60 years	1-1,5 years	Nils' wife has a system in fridge that Nils does not know
	Oda	2 adults	160	25	1,2 km - 5 minutes' walk	5 years	5 years	N/A
Young single men	Fredrik	2 adults (housemates)	65	8	290 m - 5 minutes' walk	5 years	8 years	Shared fridge with housemate
	Georg	1 adult	9	1,5-2	350 m – 5 minutes' walk	3,5 years	8 years	Small fridge, unreliable temperature
	Jon	1 adult	32	3	230 m - 5 minute walk	5 years	N/A	N/A
	Petter	1 adult	54	10	3-4 km – 10 minutes by bike	3 years	3 years	N/A
	Roger	1 adult	48	24	200 m – 2-3 minute walk	6 years	6 years	Difficult to finish food before it deteriorates

## Doing the fieldwork in the five countries

### Organizing fieldwork: piloting and meetings with households

All research teams organized three pilot interviews before conducting the ‘real’ fieldwork with the 15 households. After translating the interview guide from English to the local languages of the countries involved (Norwegian, Portuguese, French and Romanian), pilot interviews took place between September and October 2017 (just in time to present some fieldwork feedback in the workshop that was held at Keele in October 2017 to discuss the guide and revising it). The teams made an effort to get three interviews with each target study group (1 elderly, 1 single young man, and 1 young family). Contacts were made through snowball, family or professional contacts, or participating in community groups’ activities where those profiles would be more likely found (e.g. in the UK the researcher approached a knitting group to recruit one elderly woman). The pilots were important, not only to go through the guide but also to give a sense of the fieldwork organization demands. For example, Portugal and Romania had their social scientists’ teams quite far away from the site of fieldwork and they had to organize the meetings in a different way to the other three teams. The French team also had to negotiate issues of distance to the fieldwork, but it was the microbiologist who had to come to the fieldwork site and not the other way around. This made a substantial difference in the sense that the microbiologist was mostly needed in the 2<sup>nd</sup> visit where cooking took place. All the other previous stages could be conducted with the social scientist only at his own pace and control, not being obliged to coordinate visits with microbiologists. Given the Portuguese case was conducted slightly different from the other four cases, some more explanations are needed to justify the team decisions. However, we will also explain how meetings were organized in the other four countries.

In Portugal, pilots were conducted in the first week of October 2017 with three families that corresponded to the study groups selected (Elderly households, Young families, Young single men). In these pilots we tested a way of organizing transdisciplinary fieldwork that worked well. We conducted in one single visit the four stages of observing food practices (shopping-transport-storage-cooking/cleaning). This good experience allowed the team of sociologists in Lisbon and the team of microbiologists in Porto to meet in one single week to conduct three full visits in a row (collapsing the shopping and storage with the cooking and cleaning in one visit) without spending extra budget costs, more time and more bureaucratic paper work (e.g. rebooking accommodation, travelling, filling up forms) in the organization of a 2<sup>nd</sup> visit to Porto with the sociologists who were based in Lisbon (more than 300 km apart). This was an intense fieldwork experience, which was demanding both for the research team and research participants (often the visit lasted between 4 to 6 hours). Yet, it was also fruitful as it allowed testing the methodology, the logistics and also working together in an interdisciplinary way from shopping to cleaning, and exchanging tips, concepts,

and building a common language regarding different methods, data collection and ways of observing practices across all stages of the fieldwork. The drawback was that the sociologists were hardly ever present in the 2<sup>nd</sup> visit failing to observe in greater detail the changes that happened to the fridge contents after two weeks from the first visit. The sociologists had to rely on the observations of the microbiological team when they went to get the temperature loggers in family households. It was not always possible to collect sufficient sociological data in a systematic form by the microbiologist. Typically, these visits were short and quick. Only on one occasion the sociologist was present and a few more questions were asked about the fridge contents. Thus, the 1<sup>st</sup> visit is the core empirical moment of data collection in the Portuguese case.

In the sample's fieldwork (mid-February to the beginning of April 2018) the Portuguese team decided to replicate the logistics and organization of meetings with the families that were tested in the pilots. The organization of the 1<sup>st</sup> and then, 2<sup>nd</sup> visits would be extremely difficult to carry out in Portugal due to bureaucracy, time pressure to use the lab in particular dates and hours, the availability of the microbiological team to analyse the data, and lack of human resources in the sociology team given the sudden health issue of the researcher who was going to collect ethnographic data in Porto. Thus, one core interdisciplinary ethnographic research visit with each household was undertaken, and a second visit (mostly by the microbiologists) was carried out to observe the fridge a second time and retrieve the temperature loggers (usually a fortnight after the 1<sup>st</sup> visit). The 1<sup>st</sup> visits were arranged by the recruitment agency and were held during three days in a week. Due to the amount of microbiological material taken from the kitchen's houses after three weeks in a row of intense fieldwork (9 families), together with the lab availability and logistics, we had to postpone the fourth week of interviews (Maria Celeste, Sónia and André) for a week. The last three families (Bernardo, Odete and Sílvia) were interviewed two weeks after to allow the laboratorial data processing and treatment cope with the huge amount of data collected, and also to allow the sociologists to organize the data collected.

In Romania the first seven visits were performed in one go (shopping followed by cooking). The following 8 meetings were intended to be performed in two sessions (cooking visit scheduled two weeks after shopping), but 3 of them ended as one session because of the distance between the homes and our university (60 – 100 km). In case of two session visits, the 2 weeks gap was not respected for all situations as we had to adapt to the availability of research participants. If we had to schedule a meeting prior to the two-week duration, we came back later to get back the temperature recorder. This happened for one session visits too.

The UK research team conducted two ethnographic research visits with each household, the first primarily focused on shopping and the second on cooking. These appointments were arranged by the recruitment agency and spaced two weeks apart;

in practice, due to postponements of the first or second visit, the interval ranged from three days to five weeks. On the first occasion the research participant was visited at home by one social science researcher, who was joined on the second visit by a microbiologist. Beforehand, all research participants were sent an electronic copy of an information sheet and consent forms. The agency was responsible for preliminary communication with the households, including contact by telephone shortly before each visit to confirm participation.

In France, after conducting the pilots in September 2017, the sample fieldwork with the 15 households began and ended in the first semester of 2018. Two visits were undertaken following the British and Norwegian organization of meetings. The first visit focusing more on shopping and the second on cooking. The French team tried to keep a two-week gap between meetings for the same research participant. This duration corresponded to the time the thermometer had to stay in the household's fridge to record temperature. We adapted our meetings according to the availability of every research participant. If we had to schedule a meeting prior to the two-week duration, we came back later to get back the temperature recorder.

Like in the UK and French cases, the fieldwork in Norway was also split into two meetings with the research participants. The first visit included accompanied shopping and walk-along-interviews during transport and storage in the research participants' homes. The second visit took place at the research participants' home and included a new storage round, with focus on the fridge, and observing the research participants cooking a meal with chicken and salad or other raw vegetables. The Norwegian social science research team made an overview of which dates were available to do the first interview and sent it to the recruitment agency. Lists with households from the recruitment agency, with a date and time for the first meeting were sent. Before meeting the research participants, the assigned researcher would call them to confirm the meeting and to give some more information about the project and the procedure. Similar procedures happened across the other remaining countries.

### Research tools and conducting fieldwork

Before beginning the empirical work, research teams spent time adapting the universal (SafeConsume-wide) fieldwork guide for use in the specific field context, mainly in response to their experiences of using it during pilot research. This experience suggested the guide was helpful as a detailed reference point, but cumbersome to use in the field in its original format. In particular, it was decided to reorganise the guide (while retaining the content) into a series of standalone 'modules' covering the various stages of the research: an initial interview, shopping, unpacking and storage, cooking, washing up and a final interview. Where other country teams needed to translate the guide into their own languages, the UK team benefited from the original document being written in English.

The observation guide was extensive and included questions, things or events to look for during observation, highlighted CCHs, as well as cue points on when and what to take a picture of and reminder to place the temperature logger with the research participants' groceries and later in the fridge. It included themes such as shopping routines (who participates, what are their roles, how often, which outlets, etc.), choice of food (including products, brands, trust, animal welfare, sustainability etc.), and available information about food safety. It included transportation with instructional cues on how to document temperature and time, as well as questions to ask during transportation. It included instructions for how to capture storage data, and various questions and instructions regarding kitchen and cooking, including one page with instructions on the video observation. At the end of the guide was a list of questions to ask the research participants at suitable times, and some questions that are deemed sensitive and thus had to be saved until the cooking and cleaning was done. Several teams used colours to highlight important information in the observation guide. For example, in Norway, the CCHs were marked with red, photo cues in green and key questions and observational instructions in yellow. This made it easier to use the guide while conducting the interviews. In other countries (e.g. UK and Portugal) some changes were made to the wording of the guide to be more intuitive in the geographical setting of the research, as well as to make the modules more 'streamlined' and easy to follow at a glance. In the UK, cue cards were also developed, with simplified keywords able to act as quick-reference prompts during periods of observation. In Norway, prior to the fieldwork, the team purchased clipboards, which were used when writing notes in the store (shopping phase). The Norwegian team also made a list of equipment and documents to prepare and remember for each interview, including what to do with the data after the interview such as where to store them and how to name the files. This list was essential to organize and keep track of all the various elements of the fieldwork as they involved several types of recording equipment, which would need charges or extra batteries, documents such as the observation guide, information letter and various consent forms.

#### *Conducting the fieldwork - households' visits: The first visit/phase*

Apart from Portugal and some households in Romania where fieldwork was one core visit, in general, fieldwork in all other countries it was split in two visits. In some countries, fieldwork began with a visit to research participants' homes (e.g. UK), while in others it started with a meeting in a coffee shop, supermarket or food store (e.g. Portugal). Either at home or in the shop the visit always started with an initial conversation (15-30mins) wherein the social science researcher introduced the project, explained the content and structure of the sessions, answered any questions and asked the research participant to complete a consent form. Next was an introductory semi-structured interview (30-60mins) which focused on the household members, their daily routines and began to explore how the different stages of food provisioning work fit into these routines. This provided an opportunity to build rapport and gave an initial

insight into the household's circumstances and relationships with food, to be explored further in the subsequent research activities. It also served as useful context for the shopping observation, including the character and purpose of *that day's particular trip* and how it sat within the household's wider (often varied) repertoire of ways of doing shopping.

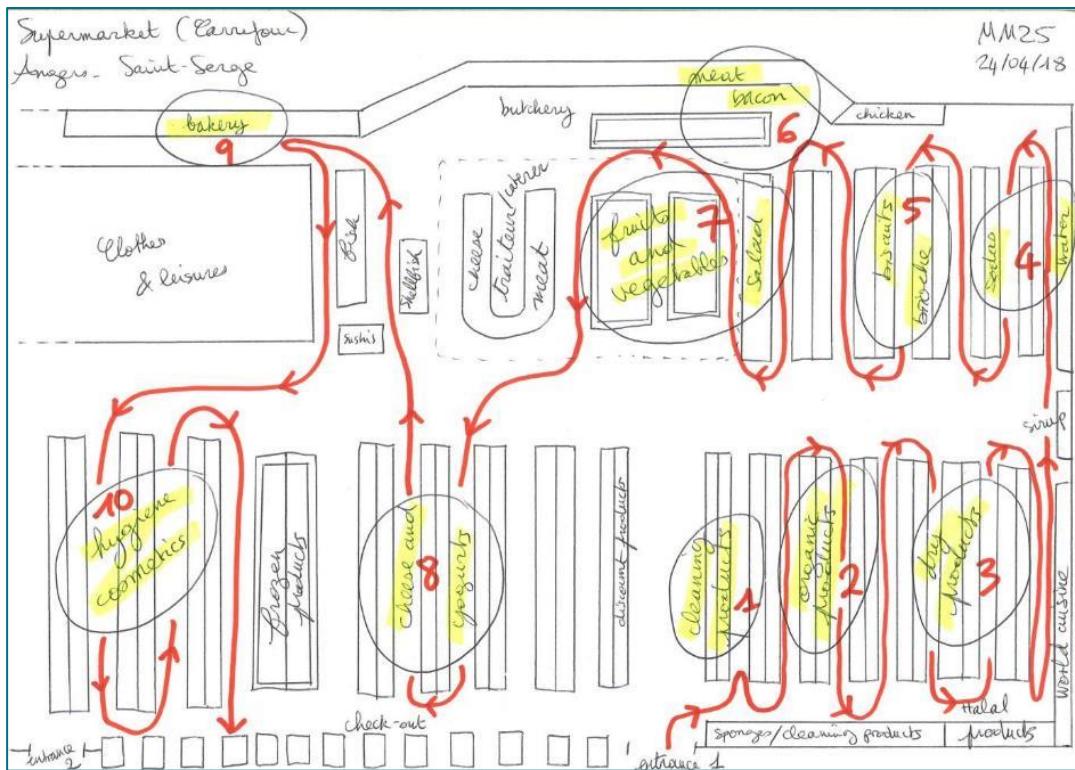
Following the interview, in some countries the researcher left the primary participant's home and accompanied them on a food shopping trip. In the UK, the researcher travelled with the research participant using their usual means of transport: in four cases they walked but otherwise went by car. In other countries, the research team was already inside the shopping place or close by without having to travel to the store with research participants. Across all countries the intention was to follow research participants' usual shopping routines as closely as possible. In most cases this meant going to a single supermarket or local convenience store, but also involved visiting more than one supermarket, market or specialty shop (e.g. France, on one occasion also in Portugal).

Within the shop, the research participant was asked to take the lead, following their usual way around and selecting items they would routinely buy (or consider buying). While the emphasis was on observing the unprompted actions of the research participant, the researcher regularly asked for (mostly retrospective) explanation and clarification of how and why certain selections were made or not made. In addition to what the research participant wanted to buy, the researcher carried a 'shopping list' of food items particularly important to the research, reflecting their association with incidence of foodborne illness in Europe. Towards the end of the observation, for any of the specified goods not covered in the course of the shopping visit, the research participant was prompted to explain and demonstrate how they would usually, if applicable, go about selecting that item.

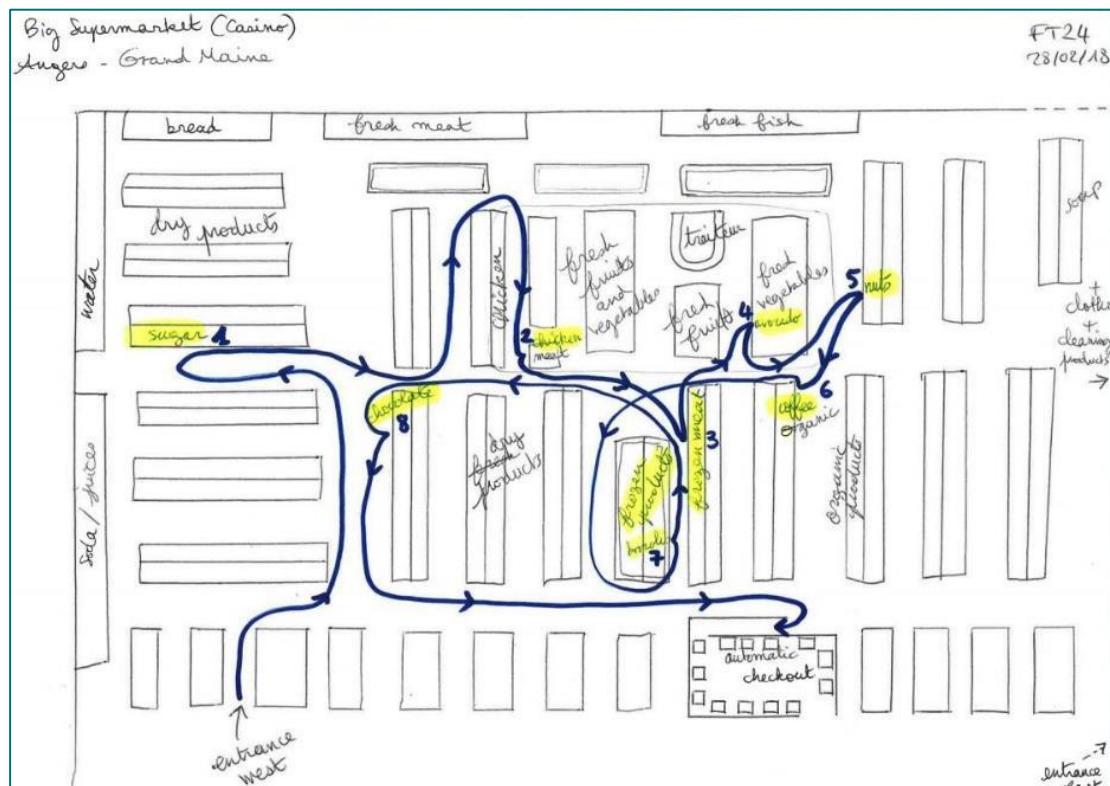
The Norwegian team conducted the shopping tour in a slightly different way to the other countries. The research team conducted two rounds in the store – one where they observed research participants and wrote field notes, and a second round where they engaged in a dialogue with the research participants asking them to reflect on their choices of food products. As stated, prior to the fieldwork, the Norwegian team purchased clipboards, which were used when writing notes in the store. Some research participants seemed uncomfortable with the first silent round, and they may have felt especially aware of being observed during this round. Some thus engaged in a conversation during the first round as well, but the researcher then kept the conversation light and casual, saving the reflections and questions from the guide until the second round.

In all countries social scientists sketched the supermarket tours of research participants. The French and the Romanian teams made these sketches in a systematic way. The French socio-anthropologist systematically made a map of research participants' shopping tour, in every supermarket (Figure 1.5.2). This allowed the

research team to visually remember the succession of every research participant's actions inside the supermarket and their priority while shopping.

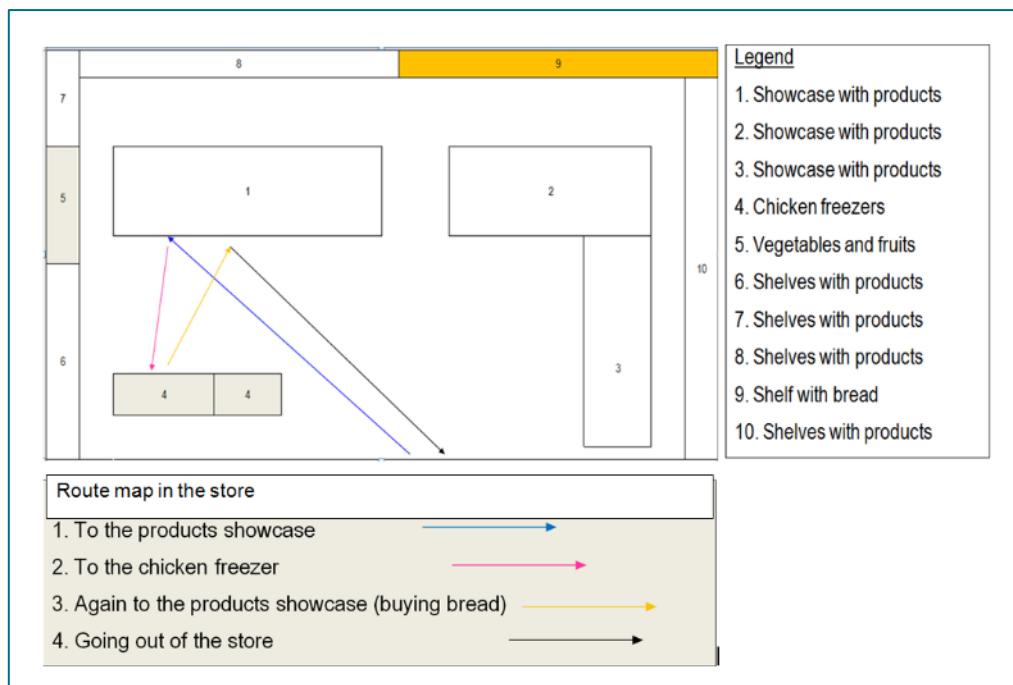


**Figure 1.5.2: Sketch of Simon's shopping tour (France)**



**Figure 1.5.3: Sketch of Fabrice's shopping tour (France)**

Some examples are also shown below from the Romania research team (Figures 1.5.4 and 1.5.5).



**Figure 1.5.4: Sketch of Linalia's shopping tour in a food shop in the village (Romania)**

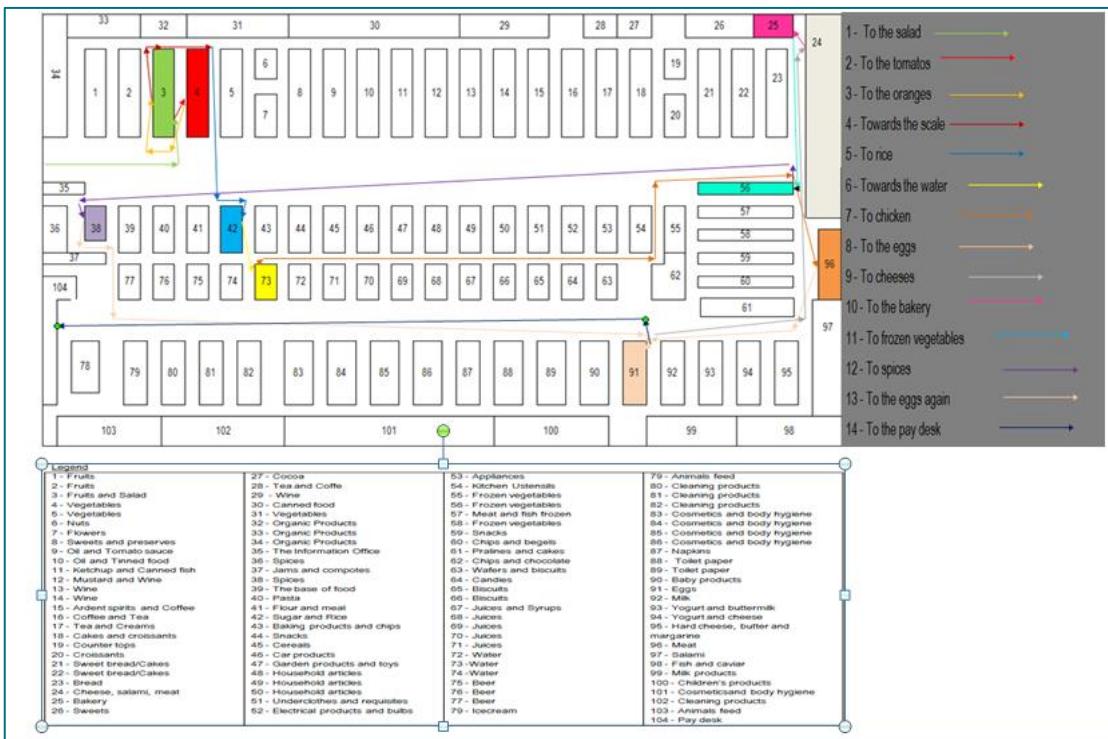


Figure 1.5.5: Sketch of Ionel's shopping tour in a supermarket (Romania)

Temperature records were also collected during the shopping and transport phases. The research teams had temperature loggers, which were placed in the carrier devices with food when research participants were finished shopping. The temperature loggers followed the chicken or other cold food during transportation, and into the fridge when the teams arrived at research participants' homes.

After shopping the researcher returned home with the research participant. In some countries the research team and the research participant used their own means of transport without sharing, while in others the researcher and research participants travelled together and chatted on the way home. To illustrate, the Portuguese research team travelled sometimes in a separate car, and the research participant used their usual means of transport (e.g. car or reduced mobility scooter). Other times, the researcher shared transport with the research participant or walked home together with them. In Norway, most of research participants lived close enough to the store to walk, while others used their cars. The ones driving let the team ride along in their cars with them. One research participant was not followed home by a researcher because he was bicycling to the store. He was asked to take pictures of his fridge and send the researcher, which he did.

In all countries, during the transport, we noted the weather and temperature outside, the duration of transportation, and any potential challenges with transporting food

home from the store while conversing with the research participants. At the research participants' home we observed them unpacking their shopping and we were given a 'tour' of the kitchen and its storage areas. An electronic data logger was placed in the households' fridge in order to take temperature readings at regular intervals (every two minutes) over the following two weeks. While in the other countries a background questionnaire with sociodemographic data was filled in during the shopping and storage phases, in the UK research participants were given a household background questionnaire to complete in their own time before the second visit.

In all countries digital voice recorders, digital cameras and video recorders were used to collect data during this first phase. For example, in Norway, in this first visit, the team used two digital voice recorders with clip-on microphone on both research participant and interviewer, a photo camera and field notes. At the end of the first visit a date and time for the second meeting was decided. While in the UK, throughout the shopping trip (including travel to and from the shops) conversation between researcher and research participant was audio recorded, using a small clip-on microphone and digital recorder. The researcher also took photographs of the food items as they were being considered and selected but was on one occasion asked to stop taking pictures by a member of supermarket staff. Back home, the unpacking process and kitchen tour were filmed using a handheld video camera. In Portugal, inside the supermarket the conversations between the research team and research participants were audio recorded, using a digital recorder. Researchers also took photographs of the food items. All teams used handheld video cameras to film the unpacking process and the kitchen tour.

### *The second visit/phase*

The second phase was composed of preparing a meal with chicken and salad. In Portugal this second phase was merged with the first one (shopping and storage), in Romania this also happened for some households, while in the other three countries it was arranged with research participants a second visit to observe storage (2<sup>nd</sup> round) and cooking. Thus, in some countries (e.g. Portugal) social scientists and microbiologists conducted the fieldwork together across all phases whereas in others (e.g. UK) the social science researcher returned to the research participant's home for a second visit, this time accompanied by a microbiologist. For example, the British team began this second visit with a brief discussion (10-20mins) of the plan for the session, including an introduction by the microbiologist about their role in the fieldwork. The research participant had an opportunity to ask questions and was then asked to complete another consent form confirming their willingness to proceed, especially with the microbiological aspects of the research.

In the countries where a second visit took place (e.g. UK, France, Norway<sup>14</sup>, and in some Romania households), each research participant gave another tour of their kitchen storage areas before cooking began, with main focus being the fridge. Both social science and microbiologist participated asking questions about specific types of food in the fridge and temperatures. This was also an opportunity to ask what had happened with the food bought during the shopping observation and about any items they had felt the need to assess (as still edible or otherwise) since the first visit. We started the cooking session by informing what the microbiologists would be doing and explain that we would be filming but focusing on hands and not including the face and other identifying personal traits. We then set up the cameras and the microbiologists took initial samples. During cooking the social scientist was responsible for keeping the conversation going, aiming at getting the research participant to talk about what they were doing while cooking. The microbiologist was also participating, but to some lesser degree. Conversation was, for the most part, allowed to flow during the cooking activity, with the focus of discussion often switching between the meal being prepared and wider topics, often unrelated to food. However, as with shopping, the social science researcher would intermittently ask for explanation about the food preparation as it unfolded. The microbiologist took samples of chicken and lettuce or other vegetables while the research participant was cooking, always asking politely. This included swabbing surfaces, chopping boards, cupboard handles and so on, taking a used dishcloth (exchanged for a new one) and a small amount of the raw chicken, vegetables and/or salad items. These samples were then tested back at the laboratory for presence of specific pathogens. The microbiologist also took photographs and asked some specific questions set out in the microbiology fieldwork guide. When the cooking part was over, the microbiologist would ask questions about cleaning and ask for a cloth sample. Some research participants ate their meal immediately after cooking, while others preferred to wait until after the researchers had left. In most cases there was an opportunity to observe washing up and cleaning the kitchen, either during the cooking of the meal or afterwards. When this was not possible the research team would ask research participants to simulate how they would usually clean the kitchen. We would sometimes finish questions before their dinner, and other times we would stay while they ate to finish up.

In Norway, some research participants invited researchers to eat with them and on some occasions the research team accepted. Most of the research participants seemed not to mind their presence after a while when doing the observed cooking. Doing the storage round before cooking may have contributed to this, by letting the research

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<sup>14</sup> In Norway, the second visit was arranged between social science researcher and research participant, with considerations to the microbiologists' time schedule. The recruitment agency was not involved in the rest of this process, apart from rewarding the participants with gift cards. One researcher from each discipline met at the participants' house. Before the social science partner shared field notes and other details about the participants with the microbiology partner. Moreover, the team had a short meeting before visiting in order to update each other on what kind of household, how the first round went and if there were any special considerations to think about for the second visit.

participants talk themselves warm and get used to the team being there and asking questions before having to perform in front of a camera.

In the UK, the research ended with a second semi-structured interview (30-60 mins), the focus of which was much more explicitly on issues relating to food safety and foodborne illness, which would have been inappropriate to ask before either observation. Before leaving, the research participant was reimbursed for the chicken, vegetables and/or salad ingredients they had bought for the cooking observation, the completed questionnaire was collected and the data logger retrieved from the fridge. The research participant was reminded that they could still make contact with the research team in the event of any questions or concerns.

In Portugal, the research also ended with a short interview regarding pending questions that were not asked before, namely food safety and foodborne illness, which would have been inappropriate to ask during observation. Similar to other countries (e.g. France), the Portuguese team would leave to the end to answer any doubts or questions by research participants on food safety, bacteria and transmissions. The microbiology team used to explain that usually kitchens have good and bad bacteria, and that is normal. Before leaving, the research participant was given a voucher of 60 euros for their time during the one visit. Two weeks after, the microbiologist visited the households to retrieve the temperature data logger off the fridge and chat a bit about some of the items that were there. In one of these visits the social science researcher was present and a few more questions were asked about how long some foods were in the fridge, how they would check food was not good to eat anymore and how they would reuse some food items.

In most countries, the amount of time spent with each research participant varied between about one hour per visit and up until two, maybe some as much as 2,5 hours per visit. In Portugal, given the visits were merged, researchers would stay with the research participants for about four to five hours. During these visits to the 75 households, some research participants had plenty of time to talk to the teams and showing around their households, while others were busy trying to make social appointments, after school activities with their children, children's bedtime, looking after their pets, etc.

In Norway, the time between the first and second visit varied greatly. From less than a week to about a month due to logistics, such as coordinating timetables with microbiologists, social scientists and research participants, as well as to make sure that the equipment was available. We had enough equipment to do two shopping rounds at the same time but could only do one cooking session per day due to cameras and schedules with the microbiological laboratory.

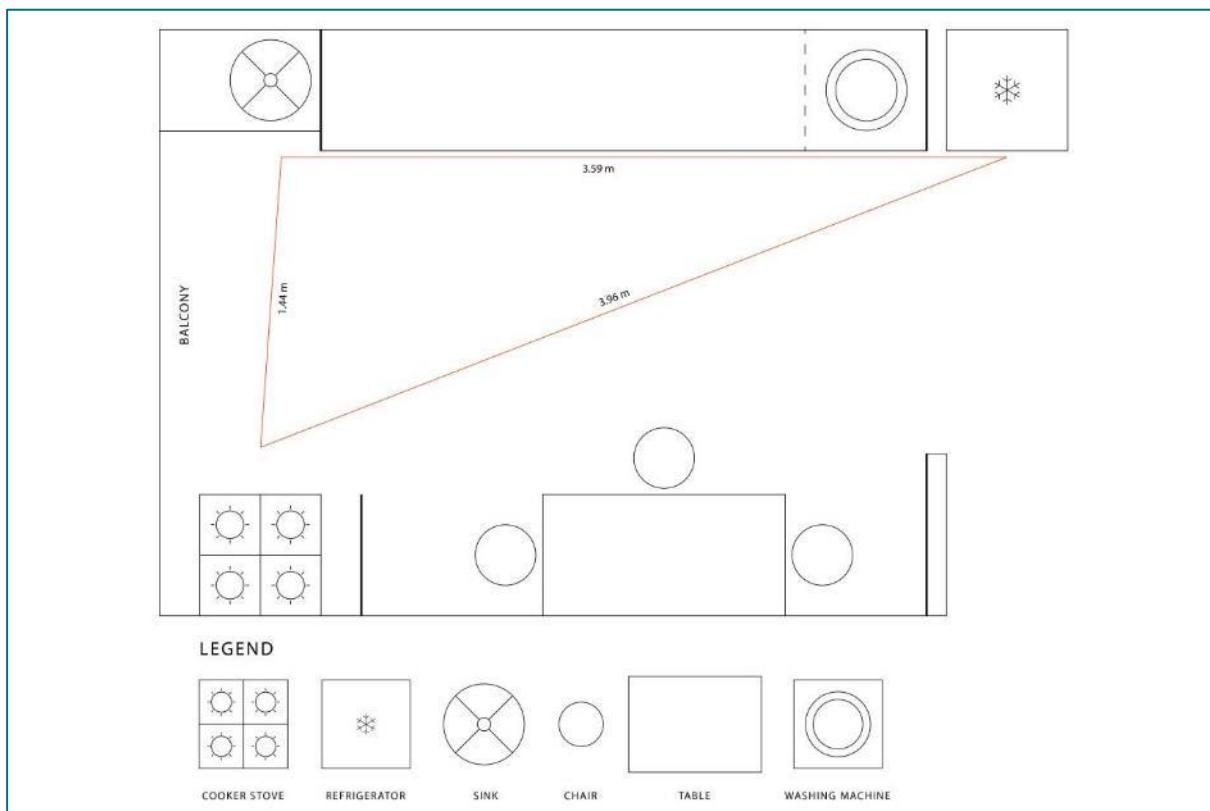
In Portugal, each of the above stages of observation was filmed using just one video camera, hand-held by the social science researcher. The microbiology team was using a camera to take pictures of particular moments for CCHs (e.g. handling chicken, washing vegetables, doneness of the meat). Apart from Portugal that only used one hand-held camera, in all other countries the cooking observation was filmed using two video cameras, one stationary and one hand-held by the social science researcher. Pictures were also taken of the storage and cooking.

In several countries sketching the kitchen organisation was undertaken after the 2<sup>nd</sup> visit. To illustrate, in Romania a sketch of how kitchens had been organized was done in order to visualize the work triangle (gas stove – sink – fridge). The **kitchen work triangle**<sup>15</sup> (Figure 1.5.6) is a concept used by kitchen experts to determine efficient kitchen layouts that are both aesthetic and functional as the primary tasks in a home kitchen are carried out between the stove, the sink and the refrigerator. These three points and the imaginary lines between them, make up what is called the work triangle. The idea is that when these three elements are in close (but not too close) proximity to one other, the kitchen will be easy and efficient to use, cutting down on wasted steps. Our idea is to see if we can relate hygiene mistakes to kitchen organisation, knowing that the rules regarding the working triangle are the following:

- No leg of the triangle should be less than 1.2m or more than 2.7m.
- The sum of all three sides of the triangle should be between 4.0m and 7.9m.
- Cabinets or other obstacles should not intersect any leg of the triangle by more than 30cm.
- If possible, there should be no major traffic flow through the triangle.
- A full-height obstacle, such as a tall cabinet, should not come between any two points of the triangle.

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<sup>15</sup> For more information see: [https://en.wikipedia.org/wiki/Kitchen\\_work\\_triangle](https://en.wikipedia.org/wiki/Kitchen_work_triangle), accessed on 26th January 2019.



**Figure 1.5.6: Sketch of Ionel's kitchen organisation**

### Data management

The fieldwork generated many hours of audio and video footage, as well as photographs, microbiological results, fridge temperature readings and data from the household background questionnaire. To illustrate, in total amounted to over 200GB of data for the UK fieldwork alone. Audio recordings of interviews, and of shopping, cooking and cleaning sessions, were transcribed verbatim by a specialist transcription service. The transcripts were subsequently anonymised, removing names of people and places. To illustrate with the French case, the team systematically recorded every conversation during visits in the supermarket and at the research participant's home. After every meeting, the team systematically transcribed, in French, on a word document, every recorded discussion *verbatim*. The team also added every non-verbal information that could be useful to understand the context of the survey (giving water to child during the cooking observation, opening the fridge, showing something, grabbing something from the floor, looking for products in supermarkets' aisles etc.). For the last 8 research participants' transcriptions, the socio-anthropologist received help from two interim students in sociology, who were already familiar with fieldwork surveys. Their transcriptions were in full compliance with the information details and quality requested. The team therefore obtained high quality documents which faithfully transcribed all the information recorded during meetings.

Each of the teams gathered all the data for from both visits into data documents, one for each household, including the transcribed recorded conversations, photographs taken and field notes made. In addition, screenshots from the videos were included in the data documents to provide a detailed overview of the chronology of cooking and food work taking place during the second visit. The data documents were produced as a means to store anonymised data securely at SafeConsume's sharepoint site and to share field work data with the other work packages in the SafeConsume consortium. Furthermore, the data documents were used to define observations for the risk behaviour map.

*Notes from the field - reflections on transdisciplinary fieldwork: Doing transdisciplinary teamwork*

A unique challenge in the SafeConsume fieldwork was to combine in-depth ethnographic research with microbiological sampling and a more structured model of observation. A strength of this approach was that it allowed for two very different perspectives of the same action, prompting different questions. However, it is unclear whether this was truly transdisciplinary or two parallel research processes. This is likely to have been a particular issue in the UK fieldwork, given that (unlike in other countries) the microbiological work was undertaken by a subcontractor, external to the project, meaning that there was no opportunity to combine both sets of insight in the process of analysis and interpretation of findings.

On the contrary, in the Portuguese, French, Romania and Norwegian cases the two teams worked together across many research phases. In Portugal, this was an excellent opportunity to combine both sets of insight in the process of analysis and interpretation of findings. The cherry on top of the ‘transdisciplinary cake’ was when the microbiologist Paula Teixeira turn to the sociologists and (unprompted) remarked: ‘I think now I’m finally thinking like a sociologist!’ However, the beginning of this process was difficult and slow, with both teams trying to find a space of dialogue and constant compromise regarding some ideas and activities during the fieldwork. Sometimes sociologists would cringe at the very few questions asked by the less experienced microbiologists (with a certain judgemental voice tone or remark, imperceptible by microbiologists) and other times microbiologists would be highly suspicious of the sociological methods used and the data collected in the field: ‘But this won’t answer what we want to know about participants... we need to have a CCTV camera 24 hours on to check exactly what people are ‘really’ doing in their ‘real’ lives... it won’t add anything new to what we already know in our studies’, a frustrated microbiologist sometimes would remark. In France working in a multidisciplinary team was a rewarding experience for both the microbiologist and the socio-anthropologist. Both learnt a lot about their respective work. Christophe, the microbiologist, was happy to learn about ethnographical methodology and to be part of the qualitative surveys. He was totally adapted, at the research participants’ home, to be discrete and to be in restraint not to influence participants’ behaviours. Pierrine,

the socio-anthropologist, also learnt a lot about microbiology, bacteria in food, and the methodology for microbiological samples. She visited Christophe's laboratory and assisted to samples' conditioning and storing. Both researchers developed interest in their colleague's work discipline and found the multidisciplinary research experience thrilling.

### *Establishing the research relationship*

On the first visit with each household, the initial discussion and interview prior to going shopping was helpful in building rapport between the researcher and research participant. It gave the research participant a better understanding of what the research entailed, but also allowed the two to become acquainted and for the interactions between them to 'warm up' and become more relaxed, especially for those research participants who admitted to being initially nervous about the research or unclear what it entailed. During the visit, the research participant typically appeared to 'relax into' the session as time progressed and most commented (unprompted) on having enjoyed the experience. Some research participants expressed a degree of uncertainty about the additional scrutiny of having the microbiologist present, but all gave assurances that they were happy to go ahead with this aspect of the research. Overall, in all countries, research participants commented that they had a nice time having the teams over.

In Norway, some research participants commented that they did things a certain way because the team was there, despite all efforts taken to assure research participants that the team wanted to observe their ways of doing things. The team would then be mindful of asking how they would normally do it if they were not there.

In Portugal, when research participants were unpacking the chicken the microbiology team intervened and discretely asked to take a sample of the raw chicken. At this stage research participants were also curious about all the equipment and the activities of the microbiologists, and often the team had to explain that they were not inspecting the state of cleanliness of the kitchen, this was not what the team was looking after. They were not there to assess if people were clean or dirty. Research participants were happy with such explanations and continued with the tasks at hand.

Both in France and Romania there was no refusal from research participants regarding taking pictures or video or audio recording the activities in the kitchen. Like in other countries encouragement was given to act "as usual" and not to modify their behaviour. In Romania one of the elderly research participants asked several times if she was going to appear on TV in a famous reality show about cleaning dirty homes (Curat, murdar/Prima TV). None of the research participants reported having been hugely disturbed by the researchers' presence and camera, nor by the heaviness of the survey protocol, but the research participants appreciated that cooking sessions took longer than usual. A cooking visit had to be repeated because the respondent (an elderly

woman) refused to cook chicken meat as she was fasting at the time of the visit. Three out of five elderly people complained about loneliness and took the opportunity to talk with investigators about their personal problems (health, children loss, low income, lack of opportunities to socialize). They invited the researchers to come again to talk together. A similar situation happened with the Portuguese team, wherein one of the elderly interviewees blurted to be lonely and feeling depressed at times.

In France, during the cooking observation a few of them asked the team if they had acted in the “good way” regarding food preparation. The systematic answer was that we were not here to judge their practice but to understand their habits. At the end of the second meeting, we asked them what they thought about our meetings, how they experienced them and if it could have affected their behaviour. Two of them (Young single men) answered that they were a bit disturbed by the researchers’ presence and that they just took longer to cook. One of them (Vincent) said that he forgot to cut the salad before putting it in the salad bowl, as he usually does, so he did it later. Apart from these couple of cases, nobody else reported having been hugely disturbed by the researchers’ presence and camera, nor by the heaviness of survey protocol. Some research participants (mostly in Young families and Elderly households) testified that they forgot the researcher/respondent status and felt that they were “shopping with a friend” or that they “just cooked with people around”. Also, in Portugal similar feelings of “shopping with a friend” or “shopping as a family” were voiced by the researchers.

### *Time pressure and impact on fieldwork*

All teams across the five countries found that the limited number of two meetings (due to budget reasons) conditioned the kind of social links that could have been created with participants, and the meetings remained broadly fast and superficial. In fact, a substantial challenge experienced during the fieldwork was fitting the breadth of content agreed in the fieldwork guide into the limited time available with each household, while remaining consistent with conceptual underpinnings requiring detailed engagement and investigation. Several of the above concerns might have also benefited from extended contact time. For example, a greater number of visits might have allowed for observing multiple shopping trips, first without and then with probing questions. The latter would have also demonstrated the similarities and variations between a given households different performances of each stage of food provisioning. The overall timescales for delivery also impacted on recruitment. While the recruitment agency set out to meet targets for recruiting households in particular sub-groups, to some extent these expectations had to be relaxed to ensure that enough households were included within the timeframe. The tight timescales were made more challenging by incidents of ‘miss-recruitment’ (i.e. potential participants that were not ultimately appropriate to the study) and a small number of cancelled or postponed research visits, often with little advance notice.

*Observing normal life*

In undertaking the fieldwork and analysis it was important to recognise the influence of the researchers on the activity being observed. While the intention was to witness ‘normal life’ in each household, the presence of researchers with recording devices and microbiological sampling equipment cannot help but have an effect on the proceedings.

A key question, then, is how typical (for the particular households) were the performances captured by the study? Research participants were asked to take the researcher(s) on a typical shopping trip and prepare a typical meal and were requested not to make any greater effort than usual to clean the kitchen before the visits. In addition, researchers frequently checked with participants how typical particular actions were, or if they had any alternative approaches to that current task that they sometimes used instead (and if so, when and why?).

Another related concern was that the research would prompt participants to be more reflexive about, say, decision making in the flow of shopping and cooking than they would usually be, meaning that something subtly different to routine practice was being observed. Researchers attempted to mitigate this by being careful when and how much to probe for explanations of activities, and following the research participant’s lead and use of language, although this had to be balanced (in real time) against the requirements of a detailed fieldwork guide that sought to understand specific facets of what people do in their kitchens and why. Also, important here was to help the participants to be ‘at ease’ with the situation as far as possible. This included keeping conversation flowing, being open, friendly and explicitly non-judgemental, and playing down any expectations as to the researchers’ status as experts.

## Conclusions

This chapter has described the methodological path followed by the SafeConsume research project. Across five countries, the team carried out data collection that combined social sciences and microbiological methods, namely qualitative data collection (e.g. interviews, observations and video data) combined with pathogens' sampling and fridge's temperature records in 75 households. All teams followed the same interview guide and data collection protocols, not only regarding ethical procedures and data protection, but also regarding the data collected throughout shopping, transport, storage and cooking. The fieldwork and its organization was not always similar across countries. For example, the Portuguese team conducted one single visit where shopping, transport, storage and cooking were all done in one go (4 to 5 hours of visits and interviews with research participants). Yet, the methodological procedures were the same and the data collected is very rich and substantial.

Regarding the study limitations, we have to point out that time was an important factor. All teams agreed that to conduct inter and transdisciplinary work more time is needed to adjust to different languages and ways of doing research. More time was also needed to better understand the justifications of households regarding their practices. Ideally, households should have been visited more than two times in order to create good rapport with the researchers. It would have been very useful to conduct elicited video interviews as a third visit to households' research participants to enquire why certain practices were conducted the way they were reported on video, and whether these practices were habitual in the everyday life food routines of households. Despite these limitations, the data retrieved is vast and rich, which will offer an excellent platform of data transmission and communication to other WPs to contribute to developing analytical and design instruments to better protect consumers from food borne illnesses. The following parts and chapters focus on qualitative data analysis, offering comparative summaries between the five countries and the three study groups at the end of each part.

## PART TWO: THE PARTICIPANTS AND THEIR HOUSEHOLDS

## Chapter 2.1: Introducing the households

This chapter contains a short biographical introduction of the households participating in the fieldwork, including socio-economic background. The households are sorted by country, starting with the Portugal, then France, Romania, United Kingdom and, lastly, Norway. The aim here, is to present the households to make it easier for the reader to go back to biographical details of the people who took part in the study when reading the chapters that follow. Each household is presented by a pseudonym given by us to the person in the household who participated in the fieldwork. In some households, both adults participated in the study. In these cases, pseudonyms of both are presented in the tables below.

## The households from Portugal

Marta	35 years	Young families	Urban	Medium income	Tertiary education
Marta (35 years) lived with her husband Pedro (37 years) and 4 years old son Renato. They were expecting a second son (4 months pregnant). Marta had a university degree in business/economics and Pedro was a police officer (secondary school completed). They lived in a three-bedroom flat with a small 4m <sup>2</sup> kitchen that they had bought about a year ago. It is located in a peaceful neighbourhood in Porto with a mostly aged population. They usually did their shopping on a big supermarket 10min away as it was on their way home from work. Marta was not immune to toxoplasmosis and her son was lactose intolerant.					
Vanessa	29 years	Young families	Rural	Medium income	Tertiary education
Vanessa (29 years old) and her husband João (42 years old) were expecting their first child. They have a cat. They both had professional knowledge of food safety and hygiene as they had degrees in hospitality. Vanessa worked in food catering (for company's staff canteens) and João taught in training programs for hospitality workers. They lived in a two-bedroom flat in a gated condominium located in a rural area near Porto, 5min by car from the supermarket where they usually shop for food. Vanessa was lactose intolerant and had gallbladder problems that restricted her diet.					
Josefina	81 years	Elderly households	Urban	High income	Tertiary education
Josefina (81 years) was a retired nurse (professional degree). Her late husband, who passed away a couple of years ago, was a senior administrative officer, with a university degree. She was born in Mozambique, where she had spent her childhood. She lived "partially alone" so she usually had help for cooking: she had a disabled adult son, who stays with her during the weekend, a daughter who's battling a serious disease and stays at her place when off treatment and another daughter who visits every weekend. She lived comfortably with her income (1000 to 1250 euros) in a large 3 bedroom flat in a posh neighbourhood in Porto that she had rented for the last 4 years.					
Emilia	89 years	Elderly households	Urban	Unknown income	Basic education
Emilia (89 years old) lived together with her husband Francisco (89 years old) and daughter Graça (40s) in a rented flat, where they had lived less than a year. The supermarket where she shopped was 10 min away from home by foot. She is from a small village from the north of Portugal, but her family had migrated to Venezuela, from where they had return four years ago. She had studied until the 6th grade and never worked. Francisco, now retired, ran a grocery shop in Venezuela with lots of employees.					
Filipa	36 years	Young families	Urban	High income	Tertiary education
Filipa (36 years old) and her husband Jorge (30s) owned an apartment where they lived with their 1-year old baby and the family dog. They lived in a three-bedroom apartment in the city of Porto (urban) they bought 5 years ago. The apartment was large and expensive, with a large balcony and kitchen (17m <sup>2</sup> ). They both had university degrees. Filipa worked as a lawyer and Jorge as physical education teacher, sometimes working 2 (and sometimes 3) jobs to help keep up with their lifestyle. They had a supermarket for daily shopping 300m from their home but go by car to a bigger supermarket 1km away for their monthly shopping.					
Augusto	70 years	Elderly households	Rural	Unknown income	Secondary education
Augusto (70 years old) was retired and lived with his wife Helena who was still working. They had lived in the same apartment, which they owned, for the last 19 years. They had an adult son who lived abroad. Augusto had completed secondary education and worked as a support officer in a trade office before retiring. Helena was a civil servant. They lived close to a large supermarket, about 5 minutes away from home by car.					

Manel	73 years	Elderly households	Urban	Medium income	Primary education
Manel (73 years) lived with his wife Matilde (71 years) in an apartment they own, on the first floor of a building in a socially mixed neighbourhood in Porto. They came to the city in 1969, where Manel worked a taxi driver and then a painter and Matilde worked as a cleaner at a factory. They were both now retired and had two adult daughters who immigrated to France. They've both completed primary school. Manel enjoys going in long morning walks before and they go out every day for a mid-afternoon snack.					
Andreia	33 years	Young families	Urban	Medium income	Tertiary education
Andreia (33 years) lived with her partner, Leonardo (30s) and their 8-month baby in their own flat where they had for 10 months. It's 100m <sup>2</sup> two-bedroom with a 7m <sup>2</sup> kitchen, located 400mts away from the supermarket where they usually shop for food. Andreia had a master's degree and worked as childhood psychologist and Leonardo had secondary education and worked as a security guard. Their income (1250-1500) allows the family to live comfortably. They liked going on walks during the weekend and went out for dinner frequently.					
Carlos	24 years	Young single men	Urban	Medium income	Tertiary education
Carlos was 4 years-old and single. He had a master's degree in law and worked as a trainee at a lawyer's office. The internship was not paid but he considers living "reasonably well" with an allowance from his parents (500 to 750 euros/month). He had lived in his own apartment for the last 7 years that he shared with a male friend. It is a large two-bedroom (120m <sup>2</sup> ) with a large kitchen (15m <sup>2</sup> ). The flat was located in a central area within walking distance from many shopping venues. It took him three minutes by foot to go to his usual food retailer. His parents were 59 years-old, both had a bachelor's degree - his father is a lawyer and his mother a geometry/design teacher.					
Maria Celeste	70 years	Elderly households	Urban	Low income	Primary education
Celeste (70 years) lived with her husband José (71 years) and their 44-year old daughter Susana at a rented flat in Porto, a 3/4 minutes walking distance from the small grocery shop where she usually bought her food. They had lived there since 2001. Celeste had worked as a maid in the past but was currently receiving a small disability pension. José used to work as a lithographer and was now retired. Her daughter had a university degree and worked a clerical job at a company's office. They had a low household income (500 euros). Celeste comes from a poor rural family from a village in the north of Portugal and she moved to Porto to work at 17 years old.					
Sónia	42 years	Young families	Rural	Low income	Primary education
Sonia was divorced and lived with her new partner Nelson (40s) and their one-year old child in an apartment she owns and had lived in since 2001 (with her then husband). The apartment had 2 bedrooms and a small kitchen (3m <sup>2</sup> ) and is 5min drive away from their usual food retailer. Sónia was on medical discharge but she would soon return to work at an electrical parts manufacturer. Nelson was unemployed but had previously worked at museum security guard. The household income is low and they lived with some economic restrictions.					
André	30 years	Young single men	Urban	Medium income	Tertiary education
André is 30 years old, single and lived on his own. He had a degree in Human Resources and had an administrative job at a university. His parents lived in a rural area, where André lived until he went to university at 18. He moved to Porto because for work in 2011 and initially lived with his aunt. He considers he had a reasonable income that allowed him to buy the flat where he lived since 2014. The flat had three bedrooms, is big, comfortable and in walking distance of many supermarkets and shops. It also had a garden with an orange tree. He goes to the gym 5 times a week and he plays football with friends regularly.					

Bernardo	19 years	Young single men	Urban	High income	Tertiary education
Bernardo is 19 years old, and single. He was attending university and shared a rented flat with two other male students. The flat was 100m <sup>2</sup> , with 3 bedrooms and 10m <sup>2</sup> kitchen. He had lived in this flat for six months. His parents were both food engineers (bachelor degree) with a comfortable income (1500-2000 euros) that allows for supporting Bernardo as he studies. He lived within walking distance of several supermarkets but he only shops occasionally as he usually brings cooked food from his parents when he visits during the weekend.					
Odete	65 years	Elderly households	Urban	Low income	Primary education
Odete (65 years old) lived alone (her husband had died a few years ago) in a rented three-bedroom house with only her cat. She had reduced mobility and shopping and cooking practices were shaped by her mobility constraints. She goes shopping in an electric mobility scooter which takes about 20 minutes depending on what physical obstacles she finds on the route. She used to sing Fado in restaurants and bars and worked as a seamstress, but her only current income was a small pension. Her daughter, Ana (30 years old), who visits during the weekends with her grandchild and helps her with shopping. She had challenges making by with her low income (500-750 euros) as she had high health expenses, namely from physiotherapy. She feels quite lonely and is prone to feel depressed since her husband died.					
Sílvia	33 years	Young families	Rural	Medium income	Tertiary education
Sílvia (33 years old) lived with her husband Afonso (30s) and their child (4 years old). They were expecting a second child. They lived in a rented three-bedroom house in a rural area, mostly isolated from shops and commercial spaces. They need the car to go shopping and take about 12 minutes to reach their usual food retailer, a large supermarket (6 km away). They lived reasonably with their household income (1500-2000 euros). She had a bachelor's degree and worked as a geographer. Her husband also worked and usually helps with domestic work. Afonso's parents lived nearby, and they help taking care of Rodrigo.					

## The households from Romania

Maria Mirabela & Mirel	34 & nd years	Young families	Urban	Medium income	Tertiary education
Maria Mirabela was 34 years old and lived with her husband Sebastian in a new refurnished apartment. Maria Mirabela was pregnant with her first child and worked full-time as sales assistant at the mall. Maria Mirabela did shopping with her husband and usually they went by foot either to a supermarket located at 1.5 km far from their home (the preferred one) or to a closer one (0.5 km) and sometimes to open market. In their family, the husband was the one who cooked, while she was responsible with cleaning the house. The family had a Yorkshire dog.					
Sorina & Sorin & Iulian & Marian & Aleca	32 & nd & 11, 8 years & 6 months	Young families	Rural	High income	Primary education
Sorina had three kids and was on maternity leave. Before the maternity leave, she had a full-time job as a car washer. Her husband, Vasile worked abroad as a driver and returned home three or four times per year. Her house was new and still under construction. They lived in a rural area, 10 minutes far by car from the closest town. She did not have a car and relied on help of relatives or neighbours for transporting food, and sometimes she used the minibus. She did shopping at least 2 times per week. Her main activities were related to taking care of her children, to grow vegetables and raise chicken and pigs.					
Minodora & Mihai & Gabi & Vica	27 & nd & 8 & 1 years	Young families	Rural	Unknown income	Secondary education
Minodora lived with her husband and two children in rural area in a refurnished old house. Minodora was a house wife, whereas Mihai had a full-time job in constructions. The house did not have a room designated for kitchen, but the hall served also as a kitchen without having current water inside. They did shopping in the nearby town (30 minutes distance by car) monthly and weekly from the village store. Sometimes they were helped with shopping from neighbours, who went to town more often than they were. Minodora main responsibilities were to take care of her children and to raise animals and grow vegetables.					
Amalia & Avram & Rares	31 & nd & 2 years	Young families	Urban	High income	Tertiary education
Before the maternity leave, Amalia had a full-time job as a sales manager for a pharmaceutical company. Her husband worked full-time as a sales manager. She was pregnant with the second child and lived with her husband (Ionut) and 2 years old boy Rares in a modern apartment in Galati. Usually, she did her shopping alone and received help from Ionut only when she had too many items to buy. The food market is just 10 minutes far (on foot) from her home. The chicken meat and vegetables was provided by her parents, who lived in the countryside and raised chickens and grow vegetables.					

Serena & Serban & Ioana & Valerica & Mioara & Andreea &	36 & nd & 5 & 9 & 9 & 3 months	Young families	Rural	Medium income	Secondary education
Serena had 4 kids, the smallest Andreea being 3 months old. She lived in rural area in an old house that was refurnished recently. Before the maternity leave, she worked in textile industry. Her husband, Andrei had a full-time job in the army. Among the improvements made to the house, introducing current water in the kitchen and building a bathroom inside the house were the major ones. She did shopping in the nearby town, which was 30 minutes distance by car. The family had a car and they went weekly for food shopping.					
Zoltan	35 years	Young single men	Urban	Low income	Tertiary education
Zoltan lived in a rented house very close to the main market of the Galati city. He worked full-time as an economist. He shared the bathroom and the kitchen with six other persons. He did his regular food shopping at the end of the week and mostly went by bus. The bus station was very close from his home. He did not share the fridge with other mates, the fridge being in his room. The room was too small for his needs, stable food being often stored on the floor under the table. To earn some extra money, during weekend he was a business coach.					
Balanel	28 years	Young single men	Urban	Medium income	Secondary education
Balanel lived alone in Galati in the apartment owned by his parents who moved in the country side. He liked to cook and watched often TV cooking shows. His friends were often invited for lunch or dinner. He went shopping 2-3 times per week. The supermarket is 10 minutes walking distance from his apartment. He worked fulltime for a car service company.					
Florinel	31 years	Young single men	Urban	High income	Tertiary education
Florinel lived with rent and shared the apartment with a mate in a very nice location of Galati. He received often cooked food from his mother who lived in the country side. He had a car and went food shopping twice/three times per week. His job involved often to travel a lot; thus, he often ate at restaurant. He cooked most of the time at the end of the week. He liked traditional food. Florinel worked as supervisor in a company with vending machines and knew the basics of food storage and hygiene.					
Ionel	30 years	Young single men	Urban	Medium income	Tertiary education
Ionel lived in Galati, in the apartment owned by his parents who moved in the country side. He lived very close to a variety of food stores and did his food shopping every 2-3 days when he returned from work. Although he lived very close to the food supermarket, he went there by car. He liked to cook and tried new recipes from the Internet. He liked to go out with his friends and occasionally even cooked for them.					

Bogdan	32 years	Young single men	Urban	Medium income	Tertiary] education
Bogdan lived alone in Galati and he rented an apartment very close to the market and food supermarkets. He was on diet and avoided eating fats and sweets. His diet was mainly based on chicken and vegetables. During weekends he worked as a photographer and ate out at the restaurants. He had some knowledge regarding on how to cook meat safely. He visited his parents weekly and during weekend was having lunch at his parents' home. The main meal of the day was dinner.					
Fanel and Fanica	69 & 69 years	Elderly households	Urban	Medium income	Secondary education
Fanel and Fanica lived in a very big house with a large yard in a very nice location of Galati. Although both were retired, Fanel was still involved in the family business, as he owned a car workshop. His wife, Fanica was responsible with cooking and cleaning. Fanel rarely helped her in the kitchen and when he did, most of the time he prepared the salad. They had different places from where they bought food and, usually, they went shopping by car. As Fanica had some health problems, once per week, they paid a person who comes to help her cleaning the house.					
Dumitra	84 years	Elderly households	Rural	Low income	Primary education
Dumitra was a widow who lived during winter in a building with two rooms and a hall, which was built at 10 m far from the main house. She lived in rural area and closest town is 15 minutes by car. Only one room was heated and served as a kitchen in the winter. Dumitra was fasting frequently and she cooked most of the times dishes that do not include meat. During winter, the fridge was switched off, the food being stored in the unheated hall. She did not have current water introduced inside the house. Her nephew helped her with food provision from supermarket located in the nearest town. She suffered from loneliness.					
Domnica	75 years	Elderly households	Urban	Low income	Primary education
Domnica lived alone in a hired apartment in a block of flats downtown in a small town. The food stores were located very close from her apartment. She did shop every two days and always chose the cheapest products that she found on the shelves. The apartment did not have current warm water. She worked all her life in a hospital as a nurse and now she was retired. She never had health problems in her life. From spring to autumn, she helped her son to grow vegetables.					
Damian and Damiana	73 & 73 years	Elderly households	Rural	Low income	Primary education
Damian and Damiana lived in a rural area and both were retired. They lived in a building with two rooms and a hall, which was built at 10 m far from the main house. Both rooms were heated, one was used as kitchen and bedroom as well. Also, they had laid out a kitchen used frequently during summer. The fridge was switched off during winter and was placed in an unheated hall. Monthly, the husband went to the closest town and bought basic food. Sometimes, they received food from their children who lived in a town located 60 km far from the village. Damiana was the main responsible with cooking and cleaning the house, whereas Damian with the activities located outside the house: raising animals, growing vegetables.					

Linalia & Leon	73 & 46 years	Elderly households	Rural	Low income	Primary education
Linalia was retired and lived in a big room built at 2 m far from the main house. The room was heated and used as kitchen and bedroom as well. The fridge was not in function during winter, but some food was placed inside. She shared the house with her son who was retired for medical reasons. She grew vegetables and raised a goat. She did her regular shopping at the local food store placed at 10 minutes walking distance from her house. Sometimes, her daughter brought her basic foods from the city. Linalia suffered from diabetes and her son from hypertension.					

## The households from France

Aurélien	25	Young single men	Rural	Low income	Tertiary education
Aurélien (25 years) lived with 5 housemates (25 to 27 years old), in a shared house in the countryside. Everyone cooked mostly for themselves. They had a shared garden where they grow potatoes, tomatoes, bell peppers, but it lacked maintenance. The housemates shared pollute less. He cares about origins of products. He is very busy during the week with his theatre activities and his job as a high school supervisor.					
Vincent	299 years	Young single men	Rural	Low income	Secondary education
Vincent (29 years) lived with 4 housemates in his grandparents' house in a small city / village. He had a garden where he grew potatoes, vegetables and herbs. He was the one responsible for cooking in the household because he enjoyed it. Since he was unemployed (a year ago), he shopped in big supermarkets rather than local shops or organic shops because it was cheaper. He however always tried to choose products that he knew and that came from France.					
Fabrice	24	Young single men	Urban	Medium income	Secondary education
Fabrice (24 years) had lived alone for 1 year, in an apartment in the city outskirts, near a supermarket. He was an employee in an agricultural cooperative. He had special diets because he practiced bodybuilding (gaining and losing weight) 3 to 4 times a week.					
Simon	25	Young single men	Urban	Medium income	Primary education
Simon (25 years) lived alone in an apartment in central middle-town, close to food outlets. He worked as a cashier in a cinema.					
Etienne	30	Young single men	Rural	Low income	Secondary education
Etienne (30) lived with 3 housemates (including his brother). They lived in a house in the countryside, on a farm where they raised animals. He had an agricultural education and established the livestock farming but all the housemates participate in food production. He worked as lorry driver. Etienne spent a lot of time fishing and raising animals in his farm.					
Mathilde	37	Young families	Urban	Medium income	Tertiary education
Mathilde (37 years) lived with her husband Jérémie and their two girls, Jade aged 1 year old and Camille aged 3 years old. They lived in a house in the city. She worked at 80% time as a lawyer assistant, while her husband was currently unemployed.					
Amandine	27	Young families Pregnant	Rural	Medium income	Secondary education
Amandine (27 years) lived with her husband Julien (25 years old) and Nathan their 1-year-old son in their "function house" on their work place, in a renovated farm house, in the countryside, near the village. They both were special needs educators for 6 teenagers, aged between 13 and 17 years old, who lived next door on the farm. She and her family returned to their private house one week-ends (a few kilometres away) every second weeks. She was currently pregnant and on maternity leave, while her husband worked full time.					

Julie	28	Young families	Rural	Medium income	Primary education
Julie (28 years) lived with her husband Romain (28 years) and her child boy Kevin (20 months) in their house in a small city, at walking distance from shops. She worked at home as a saleswoman for generic perfumes. She took care of her son most of the time as her husband was working full time as a truck mechanic.					
Mylène	25	Young families	Urban	Medium income	Secondary education
Mylène 25 (years) lived with her boyfriend Alexandre (25 years) and their 6 months old boy Raphaël in an apartment in the city centre. They will move out to a bigger one in a few weeks. She worked as a special need educator but only worked every other weekend, outside of town, in a living place for special needs teenagers. Her husband worked as a banker assistant.					
Elodie	31	Young families	Rural	Medium income	Primary education
Elodie (31 years) lived with her husband Thomas (32 years) and their 5 children (Lucas, boy of 12 years old; Chloé, girl of 10 years old; Manon, girl of 6 years old; Alice girl of 3 years old; Gabriel boy of 2 years old) in a house in a small village. They moved one year ago in the centre of this village for the children to be able to go to school by foot. She is a full time mother at home and her husband worked in a slaughterhouse.					
Gérard	71	Elderly households	Rural	High income	Secondary education
Gérard (71 years old) and his wife Odile (65 years old) lived in the countryside, in a small village on a very large property, with a pond, a garden where he grew potatoes and vegetables, and fruit trees. They were both retired and hosted their granddaughters at least one weekend a month.					
Sylviane	77	Elderly households	Rural	Medium income	Primary education
Sylviane (77 years) lived with her husband Henri (82 years old) and their son Laurent (45 years old) in their house on their farm in a rural area, a few kilometres away from the centre of their village. They were retired farmers. They still had large gardens where they grew a lot of vegetables and fruit trees. They had 2 cows, hens, ducks, and geese. They tried to be self-sufficient in fresh products (vegetables, fruits and meat).					
Charles	75	Elderly households	Rural	Medium income	Primary education
Charles (75 years) lived with his wife Annie (70 years) in a house in a rural area far from the nearest village. He grew his own vegetables in his garden. They had a big house and a back kitchen they used to wash dirty products. They were both retired. Her wife had a lot of activities outside home.					
Bernard	72	Elderly households	Urban	High income	Tertiary education
Bernard (72 years) had lived with his wife Hélène (72 years) for 53 years in a residential area in central city. They were both retired. He grew herbs in his small garden. They received their grandchildren for school holidays.					
Yvette & François	74 & 76 years	Elderly households	Urban	High income	Secondary education
Yvette (74 years) had lived with her husband François (76 years) in a house in the city, for the past 8 years. They had moved 22 times during their life, because of her husband's work in surgical material. François did everything Yvette did not want to do or could not do because of her arthritis while he could not walk short distance. Yvette and her husband bring their grandchildren in their vacation home on the Atlantic coast every year for holidays. They had them less often the older they get.					

## The households from the UK

Ryan Langsdale	20 years	Young single men	Urban	Medium income	Secondary education
Ryan was a full-time university student, aged 20. He was a competitive cyclist and many of his daily routines and food preferences revolve around his training regime, as well as his studies. Ryan rents a room in a large detached house close to the university campus, which he shares with six other students, all of similar age. Aside from their bedrooms, there was one kitchen and one communal living/dining space shared between the seven housemates. Ryan had his own car and prefers to drive to a large out-of-town supermarket (approx. 3 miles away) but also lived within walking distance of the city centre amenities.					
Susan Dunning, and Peter	78 & 80 years	Elderly households	Urban	Medium income	Education not specified
Susan was 78 and lived with her 80 year old husband, Peter. They were both retired and has a grown-up son, plus grandchildren and great-grandchildren. Susan and Peter own their house, where they had lived for over 40 years. It was in a relatively well-off suburban area, on the edge of the city but well connected to the centre by public transport. This was important to them seeing as they no longer had a car. They tend to do most of their food shopping on foot locally, buying a small amount each day. The local high street was less than 10 minutes' walk away and had a combination of independent shops and small supermarkets.					
Laura Cooper, Andrew and Noah	31, 35 & 9 months	Young families	Urban	Medium income	Tertiary education
Laura (aged 31) and her partner Andrew (35) lived together with their son Noah (9 months) and their two dogs. They lived in a detached house, which they own, on a recently built housing estate in the suburbs. Laura grew up in the area and had family living close by. Andrew worked full-time; Laura was currently on maternity leave but will soon return to work. There was a choice of supermarkets within a short drive. Laura and Andrew were money conscious at the moment – living on one income until she returns to her job – and so she prefers to go to the Aldi discount supermarket.					
Mary Russell, and Bill	70 & 70 years	Elderly households	Urban	Medium income	Tertiary education
Mary lived with her husband Bill; both were aged 70 and retired but keep busy with their respective hobbies, including music and gardening. They had lived in the same semi-detached house for nearly 40 years, in a suburban area on the edge of the city. There were varied local amenities within a couple of minutes' walk and several supermarkets a short drive away. Once a week Mary drove to a large supermarket two miles from their home.					
Paul Rothwell, and Lisa	34 & 32 years	Young families	Urban	High income	Tertiary education
Paul was 34 and lived with his wife Lisa (32), who was pregnant with their first child. They lived in a three-bed terraced house that they own, close to the town centre and numerous large supermarkets. Both Paul and Lisa were currently employed full-time. Paul's work involved a lot of travelling and had brought him into contact with industrial food production processes, which informs some of his food decisions.					

Kate Buckley, Colm and Grace	30, 30 & 6 months	Young families	Urban	Medium income	Tertiary education
Kate was 30 and lived with her husband Colm (also 30) and their six month old daughter Grace. They owned their home, a three-bed detached house in an affluent suburban area. Having a child had impacted on their food routines, being less able to shop and cook together, and making food had a more functional role than before. Colm worked full time; Kate was currently on maternity leave. She varies her shopping between a local Co-op (within walking distance) and two larger supermarkets that she can drive to within about 10 minutes.					
Jean Higgins, and John	72 & 71 years	Elderly households	Rural	Medium income	Primary education
Jean and John were retired couple in their early 70s. They lived together in a bungalow-style detached house with a generous back garden, in a leafy and affluent neighbourhood. The supermarket they visit was a 10-minute drive away. They had two grown up children with their own families, who visit regularly. Jean and John enjoyed food, both eating and cooking, and their social life was organised around food events.					
Josh Lovell	22 years	Young single men	Urban	Low income	Tertiary education
Josh was 22 and both lived and worked full-time with his housemate Warren, the two having met when they studied together. They lived in a rental property, still close to the university campus and a short walk from the city centre and a variety of food outlets large and small. Sport and fitness were central to Josh's life and strictly dictate what he eats, precisely monitoring his intake of nutrients, especially protein.					
Chloe Martin, Joe, Martha and Dylan	38, 34, 2 years, & 9 months	Young families	Rural	Medium income	Tertiary education
Chloe (38) lived with her partner Joe (34), their two young children Martha (2) and Dylan (9 months), and their dog Devon. They bought their home around six months earlier, a bungalow on the outskirts of a rural market town. Chloe was currently on maternity leave but will soon return to work; Joe worked full-time, but his shift pattern varies. They had their two children in quick succession and this had impacted how they eat and their routines more broadly, with less time to enjoy cooking and eating. Chloe was highly conscious about the health effects of what she eats.					
Archie Phillips	74 years	Elderly households	Urban	Low income	Tertiary education
Archie was 74 and lived alone in a housing association flat close to the city centre, where he had been for around five years. He was now retired. Experiences of losing work and the breakup of his marriage had played a major part in his life over recent years, including leaving him with limited income, but also being the catalyst for him to learn to cook, an activity he now takes a great deal of pride in. During the period of fieldwork his oven developed a fault, which he had to wait for the housing association to rectify, leaving him for an extended period (including the cooking observation) without his primary means of heating chicken.					
Sahib Singh	23 years	Young single men	Urban	Medium income	Secondary education
Sahib was 23 and lived in a rented flat with his housemate Amir, close to the town centre and within walking distance of a number of large supermarkets. Sahib doesn't have a car but Amir does, and typically they go shopping together, although they do not share food. The two know each other from university, both being currently on their work placement year. Sahib's routines were largely structured by his work and his fitness regime. He eats a high protein diet, carefully calibrated to match his physical training, but he was also an enthusiastic cook.					

Alicia Cook, David and Lynne	23, 23 & 56 years	Young families	Urban	High income	Primary education
Alicia was 23 and pregnant with her first child. She lived in a four-bed rental house with her husband David (also 23), her mother-in-law Lynne (56), and their dog George. Alicia worked full-time but will soon be going on maternity leave; David was self-employed and currently working nights, restricting the amount of time they can spend together.					
Liam Abney	28 years	Young single men	Urban	Medium income	Secondary education
Liam was 28 and lived alone in the house he owns and used to share with his ex-partner. He lived in the same suburban area that he grew up in, walking distance from a Co-op and a short drive from various supermarkets. Liam worked full time in the public sector. He typically did a big shop at the start of the month, shortly after being paid, and tries to stock up on frozen food for the end of the month, when he usually had very little money left.					
Tricia Riley	70 years	Elderly households	Urban	Low income	Tertiary education
Tricia (70) lived on her own in a one-bedroom housing association flat, where she had been for four years having previously lived in a different area of the city. She lived very close to a Co-op, which she visits most days to buy what she immediately needs. She had no car, but a friend occasionally drives her to a larger supermarket to stock up on longer life items. Tricia was retired.					
Daniel Thorne	25 years	Young single men	Urban	Low income	Primary education
Daniel was 25 and lived alone in a social rented property close to the city centre, having previously lived with his ex-partner. He worked shifts, typically including evenings, in the service sector. He had no car, but lived only a few minutes' walk from a choice of supermarkets. Money was the primary consideration when choosing where to shop and what to buy. There was no oven or hob in his kitchen, so he does most of his cooking using a Remoska mini-oven, which was a gift from a family member.					

## The households from Norway

Anna	31 years	Young families	Urban	Medium income	Tertiary education
Anna was expecting her first child with her husband, Andreas (39 years). Anna moved to Norway from Russia 8 years ago. She worked full time as an accountant, her worked in the food industry. The couple had recently bought a large townhouse and lived in walking distance to the nearest shop. None spear time activities were mentioned except for occasionally having friends over for dinners, travelling on vacations abroad, and working overtime. In addition, Anna's Russian mother came from time to time to live with the family.					
Bente Birger	Both 70 years	Elderly households	Urban	Unknown income	Tertiary education
Bente and her husband, Birger, both 70 years old, lived in a townhouse in the Western part of Oslo. They had lived in their house since 1978, and their kitchen and fridge were bought in 19 years9 years1. Their grandchildren frequently visited them. Bente and Birger were both retired. They had a summer house, where they spend their summers. The closest food store was located less than 200 meters from their house.					
Camilla & Chris	35 and 37 years	Young families	Urban	High income	Tertiary education
Camilla and Chris had two children Christian (3 years) and Carl (7 months) and lived in a large apartment in a gentrified area in Oslo Centrum. Camilla was on maternity leave from her job as a schoolteacher, while Chris was working fulltime as an academic. They were a part of a cooperative farming. Once or twice a month, they travelled to the farm to pick up meat and vegetables.					
Emma	33 years	Young families	Rural	Medium income	Tertiary education
Emma, 33, lived with her family in a large house in the countryside one hour's drive away from Oslo. The household consisted of Emma, her husband Erlend (49), and their three children Ella (11), Even (7) and baby Erik (3 months). She was on maternity leave from her job as an interpreter. They lived in a rural area and kept hens for eggs and meat. Her husband worked full time as sales consultant The two oldest children attended organised sports. They had pets: two cats and two Guinea pigs.					
Fredrik	23 years	Young single men	Urban	Low income	Tertiary education
Fredrik (23) rented an apartment in Oslo centrum with a housemate. He worked as an intern and played field hockey in his spare time. Besides from work, he spent his spear time with friends.					
Georg	28 years	Young single men	Urban	Low income	Tertiary education
Georg was a 28-year-old man who lived in a small dorm in central Oslo. He recently finished his eight years of studies, and was actively looking for a job. Georg's dorm was part of a shared apartment. His room had a bed and a kitchen space, but kitchen sink and bathroom was located in the hall, which he shared with five other residents. His kitchen facility limited his cooking, and he often ate out. He had an unreliable fridge and went shopping for food every day to avoid storing fresh food for too long.					
Hanne	31 years	Young families	Urban	High income	Tertiary education
Hanne (31) lived in a suburb of Oslo with her husband Henrik (32), and her two children Håkon (2,5) and Hedvig (4 months). Hanne was on maternity leave with Hedvig. Henrik was working full time as an engineer. Hanne had a master's degree in biotechnology and thus had some knowledge about bacteria and hygiene etc.					

Inger	70 years	Elderly households	Rural	High income	Tertiary education
Inger and her husband, Ivar (also 70 years) lived in a large house in a rural city south of Oslo. The retired couple lived close to their adult children and young grandchildren. Inger was a caring person where food and cooking played a big part. Her three grandchildren had dinner with Inger and her husband at least twice every week, and Inger made dinner for their parents (her children) as well, which she packed in boxes, naming the family catering "Mum's food boxes".					
Jon	28 years	Young single men	Urban	Medium income	Secondary education
Jon (28) lived alone in a small apartment in the city centre of Oslo. He worked full time as an IT engineer. He was very active in his spare time, doing several leisure activities such as strength training and swimming. He was not particularly fond of cooking alone but enjoyed it when inviting his friends over. Moreover, he loved to barbecue at on his rooftop-terrace or in the park with his friends during the summer.					
Kari Kåre	71 years	Elderly households	Urban	Medium income	Tertiary education
Kari, 71 lived with her husband, 71-year-old Kåre. The couple married in their early forties and both had a child from previous relationships. Both were retired but still lived very busy lives, engaged in organisational work and part of a dancing collective. Moreover, they had a large social network of friends including farmers producing local meat. They lived close to several groceries and supermarket.					
Lena	37 years	Young families	Rural	Medium income	Tertiary education
Lena (37) lived in an apartment with her fiancé, Lars (40 years), her 7-month-old baby, Line. Every other week, Lena's other daughter, Lise (12), lived with them as well. Lena had recently been heavily involved with moving houses, an upcoming wedding and she just got back to work after maternity leave. Lars was now home on paternity leave with Line. Lena was very concerned with hygiene as a consequence of her job as a nurse.					
Nils	74 years	Elderly households	Rural	High income	Tertiary education
Nils was a 74-year-old man who lived with his wife, Nina (age, unknown), in a rural area outside Fredrikstad, a city southeast of Oslo. The couple were both retired and had adult children who had moved out many years ago. They lived about 4 km from their preferred local store and thus used their car.					
Ove & Oda	Both 72 years	Elderly households	Rural	Unknown income	Secondary education
Oda (72) and Ove (72) was a married couple who lived in a detached house in a rural area South East of Oslo. They were retired from work, but Ove still worked a little bit in a creative trade. They did food shopping together, and both cooked but never together. In their garden, the couple had several plants of herbs and vegetables, berries and fruit, and the couple enjoyed picking mushroom in the forest. Ove and Oda said they never throw away food.					
Petter	29 years	Young single men	Rural	Medium income	Tertiary education
Petter was a 29 years year old PhD-student who lived alone in a rural town east of Oslo. He bought a flat some years ago, three km away from his work, which meant that he could use his bike for transportation.					
Roger	24 years	Young single men	Urban	Low income	Secondary education
Roger (24) lived alone in a self-owned flat located in an urban town in a neighbouring county north of Oslo. Roger were planning to start studying next semester, but currently work fulltime at doing manual labour physical job.					

## Chapter 2.2: Introducing the households and their everyday food life

In this chapter, we discuss several topics that have implications for how the participants shape, maintain or change their food practices. This chapter is not linked to any particular CCHs as they are presented in the flowcharts, however, the aim is to situate the households in an everyday food context. These topics discussed here will contribute to interpret the observations of food provisioning and cooking practices in the following chapters.

The chapter is divided in two sections, whereas the first part includes descriptions and analysis of the more general and practical aspects of the food provisioning activities studied in the five countries, while the second part deals with food anxieties and experiences with foodborne illnesses.

The topics we will discuss in the first part include:

1. Household routines
2. Responsibility for food provisioning
3. General food preferences and dietary requirements
4. Learning to cook and changes over life course
5. Challenges in food provisioning

The section is then finished with a summary comparing the patterns found in the various countries.

## Food provisioning activities among the Portuguese participants

### *Household routines*

Household routines were clearly shaped by family composition. The young families usually worked and they led busy professional lives. They had to conciliate work and family routines. Their daily routine was shaped by these factors, as well as all by domestic work, including taking care of their children. However, in these young family households, women did most of domestic chores, having some support from husbands on particular tasks or from a housecleaner, who usually came once a week or twice a month, for instance Filipa (36 years, urban) and Vanessa (29 years, rural).

Elderly households had more time and managed domestic work according to the ebb and flow of everyday life, without much organized commitments around working schedules given they were retired or had never worked outside home in their lives (e.g. the case of Emília, 89 years, urban, Portugal). Some had their daughter's support to do their food chores. This was the case of Odete (65 years, urban, Portugal), who had reduced mobility, but also Emília, having both help to carry heavy items.

Young single men had some leeway to manage domestic work, still it had to be coordinated with their daytime jobs or university studies. Two young men shared a home and also shared domestic work with their housemates (Bernardo, 19 years, urban and Carlos, 24 years, urban). Both brought often homemade meals from their parents' house or grandparents, which was then refrigerated or put in the freezer. The food lasted the whole week until the fridge-freezer got restocked again the following weekend. Shopping was done during the week mostly to buy perishable food that has a short life span (fresh milk, fruit, bread).

Mothers with babies or children (e.g. Marta, 35 years, urban; Vanessa, 29 years, rural; Filipa, 36 years, urban) started the day by looking after their children. For example, when Filipa woke up, she prepared the baby and took him to the kindergarten and then when to her office. She did all the domestic work at home because her husband had 2 or 3 jobs to support their standard of living (he is a physical education teacher). Since the baby was born there were several changes to her working and shopping routines. Before that, she used to leave work, go to the supermarket and then she would still work at home after dinner. Now, she left work, went to the supermarket and picked up the baby at the kindergarten. It was easier for her to go shopping without the baby. She rested a little bit on Sundays and she never cooked dinner that day. They usually ate a prepacked frozen Pizza that goes in the oven on Sunday evenings.

I do almost everything at home. We have a cleaning lady who helps us once a week or every fortnight. I'll take care of the clothes (wash, hang out, pick

them up), I do the cooking, I make the beds, I tidy up and clean the whole house.

(Filipa, 36 years, Young families, urban, Portugal)

Marta (young families) also mentioned she did most of domestic work. Her husband helped her with the shopping, transportation and food storage. Although she had the main responsibility for everyday cooking, her husband sometimes cooked whenever she arrived late from work.

Tomorrow (Wednesday), for example, he will cook because I have a work meeting and I will arrive late home. But most of times it's me.

(Marta, 35 years, Young families, urban, Portugal)

For most young families with children (Vanessa, Marta, Filipa, Sílvia and Andreia) the daily routine during the week was revolves around work and family activities, not changing much the routine patterns. Andreia (33 years, urban, Portugal) explained that her family left the house early in the morning and came back late in the evening.

Int.: Tell us a bit more about your domestic life. Is your family schedule very busy?

Andreia: Currently, with a child, it is. Our routine is always the same: we leave early, we arrive home at the end of the day. We always have time to do something that's missing or do the laundry...we prepare things in advance for the following day. We always pack our girl backpack and our bag. When I have some free time, I iron a little bit. Cleaning properly, only on the weekends. That's when we do deep cleanings.

(Andreia, 33 years, Young families, urban, Portugal)

The daily routine of elderly households were different from young families. They managed to have quality time around their preferences and according to the chores they had. They usually started the day having breakfast.

Int.: So, tell me something, how is your daily routine? You wake up and...?

Emilia: I wake up and prepare my breakfast which is milk with coffee and butter, toasted, well toasted.

(Emilia, 89 years, Elderly households, urban, Portugal)

After breakfast, Emilia prepared soup or some other meal. The food was prepared by Emilia or her daughter if she was at home.

Manel (73 years, Elderly households, urban) and his wife got up around 9 years am. Either he or his wife prepared breakfast. After breakfast, if the weather was not good, they went back to bed. If it was a good sunny day they went for a morning walk. Then

they went home for lunch. Sometimes they had lunch outside in a small restaurant they were familiar with. They had the daily menu.

Josefina (81 years, Elderly households, urban, Portugal) usually had lunch at the restaurant or at the supermarket area. She did that because she hated cooking and food routines. She had a cleaning lady that helped her with cooking. She liked when her sister came to visit because she prepared some Mozambican dishes she loved as they reminded her of her country of origin.

Most elderly households had light meals at night (only a soup, sandwich and some fruit) and they did not have a lot of cooking to do at the end of the day. This was clearly the case of Emília (89 years, Elderly households, urban):

Emília: I eat soup with bread, with cheese, marmalade...

Int.: For dinner?

Emília: For dinner. We never eat a full meal, because I don't like to. We eat, but something lighter.

Int.: What time do you usually have dinner?

Emília: At 8 pm. I warm up the soup and eat with bread and cheese, or cheese and marmalade, and sometimes I have fish fillets and we eat with bread. I eat the soup and a bit of bread and cheese.

Int.: Do you always have soup at dinner, in the evening?

Emília: In the evening yes. We are used to do it in Venezuela.

(Emília, 89 years, Elderly households, urban, Portugal)

Odete (65 years, Elderly households, urban, Portugal) was the only research participant among the Portuguese households who always had light meals both at lunch and dinner. She only cooked when her daughter and family visited her to have either lunch or dinner together. This happened twice a week, on Wednesdays and Sundays.

Odete: This is only when my daughter comes [cooking], on the days she doesn't come...

Int.: Which is usually on the weekends?

Odete: She comes on Wednesdays and Sundays.

Int.: So do you cook on Wednesdays and Sundays?

Odete: Yes, in the evening.

Int.: Sunday's dinner?

Odete: On Sunday it's at lunch time. Dinner is on Wednesday.

Int.: Does that mean that you don't cook regularly?

Odete: I don't. I'm cooking today because you're here, otherwise I wouldn't.

Int.: But how do you feed yourself daily?

Odete: It's mostly fruit, yogurts, milk..., its milk with cereals, milk with soups, milk with cereals, so... it's that.

(Odete, 65 years, Elderly households, urban, Portugal)

In the Portuguese study, we had two young single men who lived with other young men and, in this context, they shared domestic chores and responsibilities, or they had parents' support. Carlos (24 years, Young single men, urban, Portugal) and his housemate has a cleaning lady who came once a week. They had not instructed her on how to clean the house or what particular cleaning products she had to use on certain surfaces (although they provide the cleaning products). Carlos enjoyed his free time by having dinner on Friday and Saturday nights with friends.

I enjoy going for a few drinks, dining out, going out on Friday evenings. On Friday and Saturday I always try to enjoy what I don't have on the week.  
(Carlos, 24 years, Young single men, urban, Portugal)

He usually went to have lunch at his parents on the weekend. Similarly, Bernardo (19 years, Young single men, urban, Portugal) usually went to his parents' or grandmother's home to have lunch. He took this opportunity to bring homemade soup for the whole week that he stored in the freezer. He had to share cleaning chores with the housemates as they did not have a cleaning lady like Carlos did. They washed and vacuumed the floors and occasionally they did a deeper cleaning.

André (33 years, Young single men, urban) the only young man who lived on his own in the Portuguese study, was very close to his parents (he has no siblings). He talked to his mum daily, but enjoyed living on his own and have his private space. He had also a daily gym routine, and since starting this his food habits had changed considerably towards a healthy food diet.

### Role division and responsibility for food provisioning

As stated above, in the young family households, women were mainly responsible for domestic work. Women said that their partners supported or helped doing some tasks. Yet, women had the major responsibility for food provisioning, shopping and cooking. Men in couples helped to transport and carry shopping bags but they were not very aware of what food was lacking at home (this was more controlled by women), although some of them helped with food storage when they arrived home. Marta (35 years, urban) mentioned: "We try to come together for heavy shopping, to help me on transporting it". She told that both members of the couple stored the food away and organised the pantry. However, she had the main responsibility for cooking, albeit both put the dishes in the dishwasher. Cleaning and tidying up the kitchen were mostly tasks taken by her. "In particular, the cleaning of the kitchen I think it's more for me... but I would like to have more help!"

During our fieldwork, Marta's husband was watching TV in the living room. At times he would turn up in the kitchen asking if she wanted some help, to what Marta answered a firm 'No'. At the end of the cooking session he turned up again to take the

dishes off the dishwasher and setting up the table. She said smiling: “When my husband is working, I clean the kitchen after preparing the meals, but he is here, let’s eat and maybe he could clean the kitchen afterwards!”

In Vanessa’s household (29 years, Young families, rural), the food work division was similar. Her husband only cooks sometimes, he sat the table and later put the dishes in the dishwasher. Vanessa is had the main responsibility for food provisioning.

Likewise, Filipa (36 years, Young families, urban) mentioned doing most of domestic work because her husband was working hard and arrived very late (almost every day at 10.30 pm). They had dinner together because she waited for him, but he did not see the baby at night because he was sleeping. Filipa worried this may have a strain on the relationship between her husband and her son later in life: “When he grows up, I don’t know how is going to be...”

In Andreia’s household, her husband Nelson did some tasks, but she was supervising most of the time as quality standards had to be kept high.

Int.: Who is responsible for buying food?

Nelson: My wife.

Andreia: Yes, I am... the food and everything. He goes with me to the supermarket, but basically I’m the one who knows what is lacking [...]. He is responsible for buying beer and cheese!

(Andreia, 33 years, Young families, urban, Portugal)

Andreia was responsible for storing fresh food in the fridge and at the same time she supervised her husband storing dry goods.

Int.: Who stores the food?

Andreia: Both of us. While he stores the dry goods, I store the food in the fridge. Why? Because when we arrive, we have meat from the butchery shop, and I like to store it in separate small bags. He stores the food in the pantry and the beauty products.

Int.: And does he put everything in the right place?

Andreia: Yes, he does.

Int.: He knows the exact place...

Andreia: Yes, but I go behind him.

Int.: To check if he did it?

Andreia: No, to put things in the right place...

(Andreia, 33 years, Young families, urban, Portugal)

In Silvia’s household (33 years, Young families, rural, Portugal), her husband was often looking after their child while she was preparing the meal. Her husband took on a few child caring tasks namely giving the child a bath or playing with him, while Silvia was

cooking dinner. The family then ate together, and her husband finished cleaning the kitchen and put the dishes in the dish washer. They also went together for their monthly “big” shopping, and each went on their own when topping up with small shopping was needed over the week.

Sílvia: Most of the time it is me who cooks. Sometimes it is him.

Int.: And when does this happen?

Sílvia: He only cooks if I arrive late from work. Otherwise it's always me.

Int.: Regarding shopping, do you have help with that?

Sílvia: Yes, with the big shopping. Otherwise, it is me or him who go to fetch something that is needed...

(Sílvia, 33 years, Young families, rural, Portugal)

Regarding the households with young single men, Carlos and Bernardo shared domestic work with their housemates, namely shopping, cooking and cleaning. Carlos lived in his own apartment shared with a friend. He thought domestic work was divided in an equitable way. They both cooked, went shopping and did the food storage. They followed a rota system, alternating between who shops and who cooks according to the days of the week.

Int.: Do you usually cook for yourself or for other people too?

Carlos: For me and my housemate, because I share the house with a colleague, and sometimes I cook, other times he cooks.

Int.: And who's responsible – I don't know if it's fifty-fifty or if it's just you – for the shopping?

Carlos: It's fifty-fifty, we alternate...

(Carlos, 24 years, Young single men, urban, Portugal)

Carlos mentioned that his housemate was more organised when storing the food inside the fridge. Carlos left the eggs in the box bought in the supermarket in the fridge, whereas his housemate did not like to leave the eggs inside the original box. He often removed them and put them in the eggs' container in the fridge. However, Carlos considered them both to tidy and clean.

Int.: Do you tidy up the house?

Carlos: I do.

Int.: Do you tidy up the dishes?

Carlos: Hum, hum (nods his head).

Int.: And does your flatmate do the same?

Carlos: He does. We aren't perfect, but we aren't sloppy. As you can see, the house is not bad for two male students.

(Carlos, 24 years, Young single men, urban, Portugal)

Bernardo (19 years, Young single men, urban, Portugal) also shared an apartment with two housemates. They were all responsible for food provisioning, cooking and cleaning, but on their own. They did not buy food together. Each one had their own fridge shelf and food cabinet and they kept it separated. They often cooked at the same time, but their own meals. Occasionally they cooked a single meal for three. They were all responsible for cleaning the apartment, they washed and vacuumed the floors and sometimes they did a more in-depth cleaning. However, Bernardo thought that his housemates were less concerned with cleaning. He needed to exercise some pressure on them to clean the house, namely, to empty the ashtrays.

For the elderly households the life situations differed with regards to division of food work and food provisioning responsibilities. Some people lived on their own and had help from their daughters for shopping and cooking (Odete and Josefina). In these two households, there were some commonalities. They did not cook a lot when they were on their own and the preparation of meals was more important when they were together with their families. Odete (65 years, urban, Portugal) was living on her own and her reduced mobility affected her shopping, cooking and cleaning routines. Odete had a cleaning lady who came by every week and she went with her daughter once a week to do a big shopping. However, she also said that her daughter did not give her any more help and she felt a little bit sad about this.

Int.: Sometimes, when you're cooking, do you have help in the kitchen?

Odete: I'm going to be honest: my daughter doesn't do anything at my home.

(Odete, 65 years, Elderly households, urban, Portugal)

Josefina (81 years, Elderly households, urban, Portugal) lost her husband a few years ago. She lived on her own, but at the weekend her daughter and her disabled son came to visit. Josefina started her daily routine in the morning with some small top up shopping and she ate at the supermarket or at the restaurant because she did not like to cook. But when she ate at home, she had a cleaning lady who cooked and cleaned the house. Her daughter was very ill, but when feeling better, she stayed sometimes with Josefina, and helped her with food preparation and cooking. Josefina also ordered food from a nearby restaurant to avoid cooking.

In the Portuguese households, there were two elderly couples whose men organised shopping and cooking. Augusto (70 years, rural, Portugal) was retired and he was responsible for food provisioning and meals because his wife was still working. Manel (73 years, urban, Portugal) also had the main responsibility for these tasks but for different reasons: the couple was both retired but his wife did not like to cook. Thus, Manel is responsible for everyday cooking.

Augusto shared the household chores with his wife. Augusto bought most of the food and cooked as well. His wife cooked sometimes and went shopping with him

occasionally. But she was responsible for storing food, cleaning the home and tidying up the kitchen. Augusto explained that his wife thought his cleaning performance were not at a high-quality standard.

Int.: Who cooks in your household?

Augusto: My wife, she cooks, but I cook more than she does.

Int.: Weekdays, weekends is it the same?

Augusto: Yes. I cook more than her.

Int.: What about storing goods?

Augusto: This is usually her. She is more practical, more organized.

Int.: Do you clean the kitchen after cooking?

Augusto: Cleaning dishes is usually me but washing up and cleaning the kitchen is not my speciality. She says I do not clean well.

(Augusto, 70 years, Elderly households, rural, Portugal)

At Manel's household (Manel, 73 years, urban, Portugal), both were retired. His wife did not like to go to the supermarket because it made her feel unwell inside those places with the bright lights and noise. Thus, he went shopping alone most of the time, going by car when he had heavy bags. He was also responsible for storing food and cooking meals, but his wife was responsible for cleaning the house and kitchen. They had a cleaning lady coming by once a week to do the ironing and other domestic chores.

In the Portuguese households, Emília and Celeste (elderly) organised all domestic work without any help from their husbands, despite they would appreciate such help. Emilia (89 years, urban, Portugal) said that her husband never helped with domestic tasks and that she went shopping at the local traditional grocery store because it was close to their home and thus easier for transporting the shopping bags. In Emilia's household, her daughter was responsible for shopping and food provisioning. The daughter still lived with her parents which is common in Portugal because young adults are not able to leave their parents' homes due to housing prices and the labour market precarious conditions. Emilia also did some shopping close to home but due to her age walking long distances was difficult. Emilia and daughter usually went by car for food shopping, but her husband never came along and never helped with domestic tasks.

Emilia: I always prepare the meals. Me or my daughter, we prepare the food.

Int.: Does your husband cook?

Emilia: No, my husband, no!

(Emilia, 89 years, Elderly households, urban, Portugal)

Celeste (70 years, urban, Portugal) went shopping with a shopping cart to assist moving around. Meanwhile, her husband never helped out. Like Emilia, Celeste also had her daughter living with her. Celeste pointed out that her daughter only went shopping when she wanted to buy specific goods for herself.

Int.: Does your husband help shopping?

Celeste: To eat. He helps eating. He never goes shopping. He doesn't want.

Int.: Not even help with the bags?

Celeste: No. I come with the shopping cart and carry everything. I do all the shopping. He doesn't like supermarkets.

Int.: What about your daughter?

Celeste: Sometimes she goes, but rarely. When she wants to buy something for herself she goes with me.

(Celeste, 70 years, Elderly households, urban, Portugal)

### *General food preferences and dietary requirements*

Family composition and the life course situation influenced general food preferences and dietary requirements. As it is explained below, some young families took extra care with the type of food they bought or ate, either because of their children or because they were expecting a child. Elderly households avoided eating heavy meals at night, believing it to be harder to digest and to avoid feeling unwell with bloated stomachs before going to bed. Young single men often turned to meals that were easy to prepare from scratch (using convenience foods such as tomato jars), sometimes buying ready-made meals (e.g. pizzas), and often getting homemade food from their parent's houses (e.g. soup).

Marta (35 years, Young families, urban) was cautious with the food she feeds her family. She had a child and was expecting a baby. She liked to eat everything, but since she and her son were lactose intolerant; they had some digestion problems when waking up in the morning. For this reason, Marta always bought lactose free milk. She also avoided other kinds of food during pregnancy and was more careful, for example, when handling and washing lettuce. She avoided eating salads and red meat outside home, she washed lettuce thoroughly and avoided eating seafood due to not being immune to toxoplasmosis.

Because I am not immune to toxoplasmosis, I avoid seafood even at home. I confess that I ate it sometimes at a party at home but with some fear, so it is unusual to eat it. Actually, my greatest concern is with the salads, fruits, which must be washed by me or by someone who I trust.

(Marta, 35 years, Young families, urban, Portugal)

She also preferred grilled white meat and fish. Like Marta, Vanessa (29 years, Young families, rural, Portugal) was pregnant and, thus very careful with the kind of food she ate. She did not eat raw vegetables and fruit in restaurants. At home she disinfected them well (especially lettuce and strawberries). She ate cooked ham, avoided smoked meats and had stopped eating sushi and seafood all together. She only ate well cooked eggs (boiled or scrambled). These days she mostly white meat (chicken and turkey):

I eat mostly white meat: chicken, turkey. It's a choice. I feel better eating lighter meat. It's not a health option, it's my own option. I don't have any health restrictions which forces me to eat white meat.

(Vanessa, 29 years, Young families, rural, Portugal)

Like Marta, Vanessa was also lactose intolerant. She used a soya-based fat for cooking and buys lactose free yogurts and milk. She had problems with her gallbladder and she could not eat too much fried food, citrus foods before breakfast or drink alcohol.

Likewise, Filipa (36 years, Young families, urban Portugal) was very careful with food when she was pregnant, and some habits still remained from that time. She did not eat red meat nowadays and only ate well cooked eggs because she got used to the taste. Her family did not have major food restrictions.

The young single men in our study usually cooked easy and simple meals. They sometimes bought ready-made meals or frozen food. In these households, Carlos (24 years, urban) was perhaps an exception. He followed a "modern diet" (his own words) since he recently enrolled in the practice of bodybuilding. He often took protein pills and vitamin supplements. He changed his food routines dramatically. Before he never ate fruit and vegetables. Since he started this dietary plan, he always ate soup at lunch and dinner. He started this new diet for "aesthetic" and "not for health reasons", as he explained. Looking good in a fit body was his drive for this major diet and lifestyle change.

In the elderly households, research participants ate lighter meals in the evening. A few mentioned to be careful about what they ate for health reasons. Manel (73 years, urban, Portugal) mentioned that he and his wife needed to have their cholesterol levels under control. For this reason, they had to pay attention to the kind of food they eat.

I have cholesterol, my wife has cholesterol and we pay attention to what we eat. As a rule, I should eat a lot of fish but she (his wife) does not like it. At home we eat healthy food as much as possible.

(Manel, 73 years, Elderly households, urban, Portugal)

Celeste (70 years, urban) explained that her family was careful with what they ate because José, her husband, had a "bacterium" that is "asleep" in his stomach. When José ate too much cabbage the bacterium awakens and "jumps", which makes the stomach to bloat. He never ate lettuce salad for the same reason. Thus, special care was taken when preparing the meals to avoid using too much cabbage, which needed to be very well cooked. Apart from this, she considered their diet to be healthy because all food was homemade, and they never used frozen or ready-made meals.

Celeste: We have a friend who has a bacterium in her stomach... she has done a treatment, but nothing works... the 'bitch' doesn't die... she's asleep... [the same with José] when he eats salads, like the one I've made just now, the bacterium jumps... she's alive, so she jumps...

José: Everything that is green needs to be very well cooked... I can eat soup, but all vegetables need to be well cooked.

Celeste: Salad he doesn't eat because it stirs the bacterium...

José: I also have my stomach pills...

Celeste: Yes, you do... but in my house Thanks God everybody is healthy!

(Celeste, 70 years, Elderly households, urban, Portugal)

### *Learning to cook and changes over life course*

The family of origin had a major influence on research participants regarding the acquisition of cooking knowledge, competence and skills. The role of mothers as cooking teachers was very important for most research participants. Also, particular stages in research participant's life course made them consolidate and improve cooking knowledge and competence.

An interesting aspect was that most men in the elderly households mentioned they learned to cook by themselves (either they left their parents homes in inland rural areas and came to live in the city of Porto on their own); they learned cooking skills from friends at barbecue parties ("tainada" – regional expression from the north of Portugal meaning barbecue like party); or by watching TV cookery programmes (e.g. Master Chef). This was the case of Augusto (70 years, Elderly households, rural, Portugal) who told he learned cooking together with friends when he was young. They would usually go out together, foraging for animals and plants (e.g. mushrooms) and he would cook on those occasions with his friends. He also mentioned the Master Chef TV programme as a learning source.

Int.: Do you cook every day?

Augusto: Almost every day.

Int.: Ah! Where did you learn to cook? With whom?

Augusto: I've been learning... I'm from Trás-os-Montes (inland northern region), and when I grew up I always went for a party and for drinks with friends... a "tainada"... with my friends.

Int.: I do not know what "tainada" is? [the interviewer is from the south, not familiar with such an expression]

Augusto: Don't you know what is "tainada"? A "tainada" is to eat and drink well with friends. Making titbits ['petiscos']. When I was young, if there was someone who had a car and we wanted to eat a rabbit or a hare, we would go with the car and 'Zoom!'... Done! [makes a noise of hitting the rabbit with the car]. It was with the car, not with a shot! (laughter).

(Augusto, 70 years, Elderly households, rural, Portugal)

Manel (73 years, urban) learned to cook on his own when he left his parent's home at 10-years-old to help his relatives in the city. At 14 years old he took his first job as a painter in construction and was already quite independent in cooking. He had to learn by himself and in his own way.

Celeste (70 years, urban) also had to start working when she was young. She started as a housekeeper at 17 years old and she used to make all the meals for a foreign family. She said that she cooked like her mum. The family was from Switzerland and enjoyed Celeste's cooking (traditional Portuguese food from the Northern region). Celeste also learned how to cook different kinds of food with her Swiss boss, mainly cakes and patties.

Int.: Were the cooking habits of this family very different from yours?

Celeste: Well... I cooked almost always like my mother and they loved it. My boss also taught me to make things like cakes and patties, cod fish potato cakes, because in my village my mother did not know how to make cakes... at Christmas my mother would make French toasts ("rabanadas") and Portuguese Vermicelli pudding ("aletria"), nothing else...

(Celeste, 70 years, Elderly households, urban, Portugal)

The young families and young single men reported that their mother was the main influence in the kitchen. They also acquired other food related practices from their mothers, namely food storage and shopping. For example, Filipa (36 years, urban) bought the same washing detergents brands as her mum. She also bought food at the supermarket like her mum usually did. She also learned from her mother to not waste any kind of food. She hardly ever bought supermarket brands due to a perception of lower quality that she admitted being "a prejudice". An exception was tinned tuna and canned mushrooms, where she preferred the supermarket brands as they offer good value for money.

Vanessa (29 years, rural) learned how to cook "the basic stuff" from her mother. Meanwhile, she told that improved her mother's recipes by giving them a sophisticated twist. She also learned how to freeze vegetables from her mother because her grandmother had a garden where they grew vegetables. Her mother harvested, prepared (peeled, sliced and diced) and put them in plastic bags in the freezer. Nowadays, Vanessa mimicked this practice of preparing and freezing vegetables that she bought to use them quickly in her own meals. It was a sort of homemade 'convenience' food, she said.

Bernardo (19 years, Young single men, urban) was the only young man who referred to both his parents' influence. His parents were food engineers and food hygiene was thus always an important matter when cooking for him. He never seasoned the chicken

before cooking it, to avoid too much handling and he paid close attention to hygiene conditions of supermarkets, his dad's influence, he reckoned.

### *Challenges faced in food provisioning*

Some elderly and young family households faced challenges in food provisioning. As reported in more detail in the shopping and transportation chapters, the main obstacles for young family households was to look after their children during shopping and transportation, such as carrying several shopping bags while trolleying the baby stroller. For the elderly households, physical challenges affecting movement sometimes meant needing help from adult daughters when going shopping and carrying heavy bags, including Emília (89 years, urban) and Odete (65 years, urban). Odete's disabilities heavily reduced her mobility, making it difficult to reach food products on the top shelves in the supermarkets as well as to carry bags home (she had limited space in her scooter to transport food).

Young family households had challenges related to work-life balancing which affected food and eating. For some households it was hard to coordinate schedules for dinner time. Filipa's (36 years, urban) husband arrived very late which limited family meals to weekends only. Yet, Filipa often waited for her husband to arrive home to dine together, since she found it important to have a meal as a couple. In the meantime, she had something to drink and ate some bread while cooking, to keep on going until the late-night meal. Her husband brought the leftover dinner for work lunch. Thus, Filipa had to plan every day cooking, preparing something practical, simple and good to eat the following day. She usually made pasta or rice because according to her it did not get spoiled very fast.

If I'm honest with you I'm going to cook chicken today and I still do not know how am I going to do it, because I have a problem: I will start cooking with you and my husband only comes for dinner at 10:30 p.m.

(Filipa, 36 years, Young families, urban, Portugal)

Andreia (33 years, urban) and Sílvia (33 years, rural) also reported the need to plan their meals to avoid spoilage. They also brought homemade lunch to work from leftovers of yesterday's meal. Bringing homemade lunch for work was a popular trend that picked up in Portugal during the economic crisis in 2011-2014. Several people started bringing their own packed lunch for work to save spending money eating out at lunchtime (e.g. restaurant, coffee shops or work canteens). For example, Andreia never made salad for dinner because she thought it was not good to store it overnight and eat it the following day at work. Sílvia mentioned that it was challenging to cook dinner, referring to the following day lunch at work. According to Sílvia, the main challenge was to cook foods that did not spoil easily and which tasted good after reheated in the microwave (lots of working places have microwaves to accommodate this new practice of people bringing homemade lunch to work). This made her prepare

meat more often rather than fish, as the latter did not hold as well as meat. Thus, planning and accommodating this practice can be a challenge.

I can't cook boiled potatoes or grilled or boiled fish. I have to cook rice or pasta, potatoes only if I make a stew. Otherwise, it becomes monotonous. During the week, I have to cook more meat than fish. We always eat fish on Saturday. Since we don't eat it during the week, on Saturday we have two fish meals in a row.

(Silvia, 33 years, Young families, rural)

In this section, we have described how different households and family and practice dynamics mutually influence each other, shaping food habits and routines. Thus, the way research participants managed and organized their time to accommodate domestic work depended on their stage in the life course and on family composition. Yet, domestic routines also influence family dynamics (an aspect that could be developed further in future writing of the empirical material collected under this project).

Young families had to balance and coordinate work and family life, including taking care and looking after their children. In these households, women were often responsible for domestic chores, namely shopping, meal preparation and the overall coordination of food practices. Elderly households and young single men had greater flexibility and leeway to manage and organize food routines and domestic chores. They were less dependent on other family members' schedules and needs (e.g. feeding a baby at regular times) and had some flexibility to reschedule and postpone some tasks. This is because they were either retired (elderly) and not in need of complying with a rigid work schedule; or they (young single men) lived in a more independent and autonomous way (even house sharing) without having to coordinate their routines with their partner's and children's routines.

We have also showed that food preferences and some special diet requirements were more common closely with certain households. The diet requirements in young family households were related to life course stage, namely the woman expecting a child or having young children in the house. In the elderly households, such dietary requirements were influenced by age and health issues.

Regarding learning to cook, the origin family, particularly mothers, played an important role among for most research participants. Although the main influence was the mother, research participants improved their skills throughout life and even changed their ways of cooking. There were a few research participants who said they had also learned how to cook from their fathers, their friends, TV culinary programmes or the boss they were working for at an earlier stage of their working life.

Food constraints and challenges are also shaped up by the type of household study and family structure. Balancing work and family life was a significant challenge, especially in the young family households. This was particularly clear regarding coordinating meal schedules and preparing food for the following day, namely lunch to bring to work. In this case concerns regarding food safety and taste were important. Elderly households face challenges due to age difficulties in the performance of certain tasks that demand higher physical effort, strength or body dexterity (e.g. reaching higher shelves in the supermarket or carrying heavy bags home).

## Food provisioning activities among the Romanian participants

### *Household routines*

In all households with young single men, research participants had finished studying and were in fulltime paid job. Florinel (31 years, urban) worked as a sales manager at a company that was selling snacks through automate vending machines and travelled a lot in his job. When he had time, he would go to the gym, and he enjoyed discussing politics. Bogdan (32 years, urban) lived alone in a rented apartment and worked as a web designer. He also had a part time job as a photographer and had many events to attend, mostly in weekends. Zoltan (35 years, urban) worked for an accounting company and his free time was dedicated to personal development programmes. Balanel (28 years, urban) worked for a car repair shop and loved to cook for his girlfriend, and sometimes for his friends. He also liked to watch cooking show on TV. Ionel (30 years, urban) was employed at a consulting company and worked late evenings. He liked meat (every dish had to contain meat) and loved to cook for his friends.

In the elderly households, all were retired. One of them, Fanel (69 years, Elderly households, urban), although retired had a family business and was still working. His wife, Fanica (69 years) talked about her children and grandchildren, saying that she dedicated her time for cooking large amounts of food to share with them. Eating lunch with all the family members during weekends was a set routine in her family. Domnica (75 years, urban) had to move from the house where she lived for more than 20 years to a rented apartment. In near future, she would move in with her son, when he finished building his new house.

The elderly household, in rural areas were still active in terms of growing fruits and vegetables and raising chickens and other animals. Linalia (73 years, rural) lived with her son who was 46 years old, who was retired because of medical reasons and helped his mother in the household. Dumitra (84 years, rural) had a very nice garden with vegetables, fruit trees and grapes, but she received help from her sons who came from the city at the end of the week. During the summer holiday, her grandsons come and stayed for several days at her house.

None of the elderly research participants mentioned being active in any group or associations.

In the young family households, two of the research participants were pregnant and one of them was still working. Maria Mirabela (34 years, urban) moved into a new apartment three days before our visit and all her free time the last months had been spent on furnishing her apartment. Amalia (31 years, urban) worked as a sales representative for a pharmaceutical company but was on maternity leave; she would return to paid work soon, but she would go back to maternity leave again because she was pregnant. She lived in a newly refurbished apartment with an open kitchen. She

mentioned that the open kitchen did not allow her to prepare dishes involving frying, because she did not like the smell. However, in this way, she said that her family ate healthier, and most of all, having an open space allowed her to spend more time together with her family.

Int.: Does it bother you that you have an open kitchen? ...the smell from the kitchens enters in the other rooms.

Amalia: Yes. There are also some disadvantages. It happens, but overall there are more advantages than disadvantages. I assumed the consequences.

Int.: Do you have in this way more space?

Amalia: Yes, that too, but in this way I can see the all family when I am in the kitchen and they are in the living room. We are all together. When I was a child, my mother was in the kitchen, dad in another room at TV and I was in my room in front of the computer....and I didn't like it. At least in my family I want to be together. It is true that I don't fry food anymore, but this is a way of eating healthier.

(Amalia, 31 years, Young families, urban, Romania)

The daily life of young families from rural areas was focused on tending to their young children's needs. Their husbands on the other hand were spending less time at home because of work. Serena (36 years, rural), Sorina (32 years, rural) and Minodora (27 years, rural) lived in rural areas and were on maternity leave. The entire day was centred on their children's needs. Most of the time, Sorina raised her three children alone because her husband worked abroad and returned home three to four times per year. Thus, all days looked almost the same for Sorina. For Minodora and her husband sharing the care work for their children was limited to the weekends, whereas for Serena and her husband it depended on when he had a free day off from work (Serena's husband worked for the Romanian army). For Serena, this was the opportunity to do food provisioning in the nearby town.

In the young single men households, busy work schedules affected food work rather differently. Zoltan (35 years, urban) claimed that he had no time to cook during the week, so he cooked most of the time during week-ends, Ionel (30 years, urban) cooked almost every day, but he liked to go out with his friends to restaurant for social networking or to cook for them at his home. During the week, he ate his lunch in a hypermarket at the kitchen zone. Florinel (31 years, urban) did not have much time for cooking, because his job took him out of the town, and he would then eat in restaurants. Bogdan (32 years, urban) mentioned that at the end of the week he was always invited to his parents for lunch. Balanel (28 years, urban) said that he liked cooking and sometimes invited his friends to have dinner together in his home, or he went out with them to restaurants. Apart from Florinel and Ionel, all the other single men said that they ate food brought from home for lunch.

All the young family households in rural areas cooked daily or even twice a day as the families were big, the number of children ranging from two to four. Moreover, Sorina (32 years, rural) said that her children were spoiled as she prepared separate dishes to accommodate for their different taste preferences. She recognized that it was a bad habit, but said “they are my children, and mum loves them as they are”.

In the elderly households, cooking was typically done every second day, whereas in households with young single men, dinner was usually prepared almost every day. Bogdan (32 years, Young single men, urban) mentioned that he does not eat food that he had cooked the day before. Even when he left home, his mother used to send him food, but he asked her not to do that anymore, because he threw it away if it was not cooked the same day as he would eat it. However, when it came to soup or sour soup, all research participants intentionally prepared more soup than required, which was served as leftovers in the following two-three days.

For poultry, Romanians have several possibilities to procure the meat. One of them is to slaughter chickens from your own courtyard. Raising backyard poultry is common in rural areas in Romania. A demonstration of this practice was made by Minodora (27 years, Young families, rural) (see Chapter 4.2 Handling and preparing chicken in Romania). While slaughtering is a common practice, the elderly research participants preferred to buy poultry meat instead of slaughtering the chickens they raised. The reason was that poultry meat obtained in industrial farms is easier to be included in an easy-to-chew senior diet because of its softer texture. Meanwhile, poultry meat from own courtyard was consumed by young men (2 out of 5) and young families (1 out of 5) who had parents or other relatives living in the country side. The dishes made with such meat differ from those made with meat from chickens originating from farms and always involve a longer cooking process.

Another possibility for the Romanians, although none of the research participants in this study reported to do this, is to buy poultry meat from chickens raised in courtyards, was to go to grey or black markets. Besides very low prices, buying poultry meat in such places is commonly believed to be healthier than industrial farmed poultry. Meanwhile, industrial produced poultry is safer to eat. This highlights that a common finding in this report that food safety is seldom present at the forefront of what ‘healthy food’ means to people, although unsafe food may seriously affect one’s health. Village shops offer mostly frozen poultry meat, while town shops are selling poultry meat either frozen or fresh. The offer made by super and hypermarkets is diverse, both in terms of how meat is prepared and preserved, and price convenient.

### Role division and responsibility for food provisioning

The ways the research participants divided roles and responsibility varied between and within the three study groups. Three out of five of the young single men lived alone. Out of these, two were living in apartments owned by their parents, and another one, Bogdan (32 years, urban) was paying rent. Florinel (31 years, urban) shared the

apartment with another single man, whereas Zoltan (35 years, urban) shared bathroom and kitchen with other people whom he did not interact much with. All these research participants were responsible for their own food provisioning and did not need any help from anyone else. However, there were two exceptions, Bogdan and Florinel, who received food from their parents who lived in the countryside. In his family, Bogdan was the only son, and his parents were protective of him. This was one of the reasons why he decided to live alone. Florinel mentioned that he did not share the responsibilities of food provisioning with anyone; however, it sometimes happened that he cooked for his flat mate because the flat mate had poor cooking skills. Three out of five of the single men, Ionel (30 years, urban), Balanel (28 years, urban), and Bogdan, mentioned that they liked to cook, but they did not always have the time to do it. Zoltan and Florinel, on the other hand, mentioned that they cook because they had to. Those who loved cooking, liked to test new recipes and were searching for new recipes on the Internet or watching TV cooking shows.

In two out of five elderly households, the food provisioning activities were split between the spouses. Damian (73 years, Elderly households, rural) who lived in rural area in a house with a very large yard said that he was responsible for food provisioning based on what his wife instructed him to buy. He was also responsible for all the activities taking place outside the house, meaning that he was the one who fed the animals and took care of the garden. Linalia (73 years, rural) was responsible for food provisioning and only received help from her son to carry bags from the store. Her son was responsible for bringing woods for fire and for other chores outside the house. Sometimes, her daughter in law brought food to the household from the city too. Dumitra (84 year, rural) was helped in food provisioning by her granddaughter or her sons. Domnica (75 years, urban) was sometimes helped in food provisioning by her son. He lived in a town and brought her basic foods that were cheaper compared to the prices in the food shops where she did her regular food provisioning. Based on the strict instructions he received from his wife, Fanel (69 years, urban) sometimes took care of food provisioning. However, often they went shopping together, while he carried the bags, his wife was in charge of the shopping. Organising the kitchen was here sole responsibility. Sometimes, Fanel helped his wife cooking, meaning that he prepared the salad and cut the fresh vegetables after his wife had washed them.

In the young family households, Maria Mirabela (34 years, urban) shared the responsibility for food work with her husband. While, her husband was responsible for transporting and cooking, Maria Mirabela organised the kitchen and did the cleaning. Maria Mirabela explained that her cooking skills were poor which meant that her husband were in charge with cooking. This was observed during the cooking session, when Maria Mirabela received help and advice from her husband. Serena (36 years, rural) and Minodora (27 years, rural) only shared responsibility for food provisioning with their husbands. Meanwhile, since being most of the time of the year alone with children, Sorina (32 years, rural) was the responsible for all the activities that were

happening in the household. When Sorina's husband returned home from abroad, they shared the responsibility for food provisioning, and sometimes then also for cooking. For instance, Sorina's husband was in charge of the barbecue when they were having reunions with their friends. While Amalia (31 years, urban) had the main responsibility for food provisioning, her husband helped her most of the time for transporting food back home. However, Amalia mentioned that during weekends she did not want to cook, but instead wanted to spend the time with her family or to go out. Occasionally, she would cook something fast for her son in the weekends if there were no leftover from the previous days.

### General food preferences and dietary requirements

Only one the research participant had dietary requirements recommended by physicians. Linalia (73 years, Elderly households, rural) suffered from diabetes and therefore followed a strict dietary regimen. On the wall in front of the table, Linalia had a list of permitted foods to eat when having diabetes. Linalia's son (46 years) suffered from high blood pressure, thus, she also reduced the quantities of salt used for cooking. Reduced consumption of salt was mentioned also by Damian (73 years, Elderly households, rural), claiming that he reduced the amount of salt he ate after seeing a television advertisement in which promoted the reduction of salt, sugars and fats. This campaign also influenced Damian's family, who eliminated consumption of bard from their diets. The same TV advertisement was also mentioned by Fanica (69 years, Elderly households, urban), who said that she was trying to balance her consumption of sugars, fats and salt and not to consume them in excess.

Florinel (31 years, Young single men, urban) tried to limit eating fried food, sweets and bread to eat healthier as he wanted to start going to the gym. While many of his friends exclusively based their diet on proteins, he had replaced the eating sweets with fruits, mentioning that he could not live without them. In the households with young single men, preparing food that could be cooked fast was common. For example, for Balanel (28 years, Young single men, urban) and Bogdan (32 years, Young single men, urban) dinner was ready by rapidly grilling the chicken breast and simply adding some vegetables. Balanel mentioned that he liked cooking dishes containing pasta and dishes that involve cooking in the oven. He loved cooking pasta because he regarded it easy to prepare and cook in different ways. He also loved using the oven, since leaving food in the oven meant he did not have anything else to do than waiting.

Bogdan (32 years, Young single men, urban) had tested different diets to lose weight. He wanted to reduce the number of calories he consumed per day to 1500 kcal/day, claiming that he had a reduced metabolism and a static job. He usually ate milk with cereals for breakfast, only fruits for lunch, but tried to compensate in the evening by mostly eating grilled chicken breast. He developed his own personalized diet by excluding dishes that were fried or contained fats. When he combined his diet with doing sports, he meant the results would be best.

Zoltan (35 years, Young single men, urban) used a lot of herbs in his cooking. He added basil to almost every dish he made. Zoltan was also very cautious regarding sweets.

In Amalia's (31 years, Young families, urban) household everyone loved fried potatoes. However, they were rarely prepared, as Amalia meant fried potatoes were not healthy to eat. During her first pregnancy, Amalia had made changes to the family's eating habits as she had learnt many things that was good or bad for the baby, things that made her changing food habits.

Among the households, one research participant, Florinel (31 years, Young single men, urban), mentioned that he had thought about eliminating meat from his diet but had yet to put this idea into practice. He argued it was too expensive to be vegetarian, and not many people could afford it.

Int.: Have you ever thought in giving up on meat?

Florinel: I thought about it...but it's complicated. In Romania it's expensive.

To be a vegetarian is expensive. Honestly. You must afford it. You must buy specific food, specific fruits and vegetables...and it is hard...especially now when it is difficult with the job.

(Florinel, 31 years, Young single men, urban, Romania)

### Learning to cook and changes over life course

In all the Romanian households, learning to cook was influences by their parents. Ionel (30 years, Young single men, urban) learnt to cook from his mother and still applied lessons learned by watching her cooking at a young age. Meanwhile, he consulted recipes on the Internet. If he liked a recipe, he would cook it frequently. Balanel (28 years, Young single men, urban) cooked the way he has seen cooking being done in his childhood with some adaptations, simpler with fewer sauces and faster as he did not have the same amount of time to cook. Bogdan (32 years, Young single men, urban) started cooking after he left home. He cooked other kinds of dishes compared to the food they ate in his upbringing. His parents always cooked traditional recipes like sour soup, steak, rice, cabbage rolls, he told. In comparison, for others food and eating in childhood years had formed preferences in their adult life. Thus, the dishes he cooked were more modern (e.g. international) Zoltan (35 years, Young single men, urban) started to cook after he left home and recalled that the first soup he made, he received advice from his mother on the phone. Florinel (31 years, Young single men, urban) learnt to cook from his mother and also learned a lot about food as he grew up on a farm. For example, he knew how to check the ripeness and freshness of fruits and vegetables. During the cooking observations, Ionel cooked a dish he had learned to cook from the Internet, whereas Florinel and Zoltan went for more traditional dishes they had learned from their parents. Florinel mentioned that even when he ate at a restaurant, he usually went for dishes that he knew, arguing that he avoided ordering something new which he may not like and which he found pointless to pay for.

Florinel: I am a traditionalist and I don't buy food that I don't know, and I am not even tempted to buy such food. Don't get me wrong but due to the job that I have, I eat frequently in restaurants, and I never order something that I don't know.

Int.: This means that you don't like trying new food products....

Florinel: If I pay money for the food at least I should eat it. If I order something new and I don't like it, I would get up from the table hungry and with the money given.

(Florinel, 31 years, Young single men, urban, Romania)

Few told about any dietary changed in their family home, except for Florinel. He told that when he was a child his parents used to preserve pork by frying it and keep it in jars with lard in a cool room. Nowadays, his parents froze the pork meat, which Florinel thought was healthier and enabled more varied ways to prepare and cook the meat.

In the young family households, learning to cook usually from mothers were mentioned three out of five research participants. Serena (36 years, rural) mentioned that, in her family, her father was better at cooking than her mother. When Sorina (32 years, rural) got married, she also learned cooking skills from her mother in law. Maria Mirabela (34 years, urban) said that in her family, her husband was in charge with cooking. Her husband told that he had learnt to cook from his ex-girlfriend and through experience. Amalia (31 years, urban) did not mention from whom she learned to cook, but instead told that she cooked because she had to do it, which suggested that she had learned it by doing it. However, she often used the Internet for finding new recipes. Minodora (27 years, rural) mentioned that compared with food in her childhood, the dishes cooked nowadays were more diverse.

Interestingly, in four out of five elderly households, learning to cook from their mothers were mention but also learning from daughters in law Dumitra, (84 year, rural) and Domnica (75 years, urban) or daughters Fanica (69 years, Elderly households, urban) and through experience. This suggested that cooking practices were continuously in the making throughout life. Furthermore, diets and way of cooking were changed over time. Domnica said that compared with food habits when she was young, she believed she ate and cooked healthier nowadays. Dumitra told that in the past she ate anything she could find because there were few options available. When her children where young, the only food they ate were food produced in the household. Thus the family ate less meat, because they did not raise enough chickens to slaughter and every day. Many dishes were prepared only with vegetables. However, nowadays, at her old days, she did not eat that much meat, especially not meat from the chicken that she raised but for different reasons. She could not chew it anymore. Similar stories were also told in two other elderly households in rural areas. Damian (73 years, rural) for instance, recalled that when he was young his family ate dishes with meat like poultry only on Sunday. Furthermore, two of the three elderly

households in rural areas used to raise pigs in addition to chicken when they were young, but today they did not do it anymore. Damian mentioned that although they raises pigs in his household, the couple did not eat the bard anymore since they are trying to reduce the amount of fat in their diets. Instead, they gave it to their children. They also mentioned reducing salt in their diets for health reasons.

Fanica (69 years, Elderly households, urban) mentioned that marriage forced her to learn to cook. She recalled the first soup she made after she got married and how many mistakes she has done during its preparation. However, Fanica considered herself as being a very fast learning and a very open-minded person. She was ambitious to learn how to cook and now is an example for others regarding the way she cooks for her family. All the households mentioned that the food they used to eat when they were children was healthier and more natural compared with the present.

### *Challenges faced in food provisioning*

In all elderly household, except for one exception, Fanel (69 years, urban), who still worked, income was low as pensions in Romania are low. Thus saving money was an issue. Thus, in all of these households, shopping was carefully planned in order not to overpass monthly food budgets. For example, Domnica (75 years, urban), who lived in a small town, bought food at reduced price regularly. During the shopping visit, we observed that she gave up buying a jar of tomato paste to not spend more than planned for that day. Another strategy, in the elderly households was to buy food immediately after receiving their pensions. Thus, a real challenge then was not to run about of food over the curse of one month until the next pension was paid. The food they bought included staple food (bread, flour, sunflower oil, sugar, potatoes, etc.). There was not enough room in the food budget to buy delicatessen or to try something new. Low income from pensions also meant other money saving activities, such as turning off refrigerators and only heating one room which was used as kitchen and bedroom during the winter-time. For three out of four elderly households, unplugged their refrigerators during the cold season and stored food in an unheated room of the house to save money. This meant retreating to a wooden stove in the house to keep warm. In these three households, the stove was designed to allow for cooking and served as kitchen, bedroom and living room at the same time.

In all the rural household in this study, cultivated some vegetables and fruits in their gardens and raised chickens for meat and eggs. A few raised pigs too, such as Sorina, (32 years, rural), Serena, (36 years, rural), Minodora (27 years, rural) (a three young families) Damian & Damiana (both 73 years, rural). Thus, they had fresh seasonal food, but also necessary tools to preserve foods produced at home in a traditional way.

For the households in the countryside, a significant challenge was the water supply. Three households out of six did not have water installed in their house and thus, had to carry water in buckets for washing, cooking and maintaining personal hygiene.

Furthermore, due to water shortage at the village level, the water was not available all the time of the day, which meant that storing water in plastic barrels was necessary. In the rural households, kitchen space differed between young families and elderly people. In the young family households, a kitchen was a dedicated room inside all year around. In the elderly households, it depended on the season and the summer kitchen occupied a different space than the winter kitchen. Summer kitchen was built detached from the main house. It was usually equipped with a gas stove and is used during the warm season. Furthermore, in the summer time, some food preparation were performed outside to avoid dirt/mess inside the house, to avoid steam, oil vapours, smells inside and as a means to cook in more comfortable conditions (e.g. more space, moving air to cool them). The winter kitchen was equipped with a wooden stove and had a bed installed (used as bedroom in the winter). In all rural households, except for one Minodora's household (27 years, Young families, rural), the refrigerators and freezers placed in other rooms than the kitchen. Thus during cooking, long trips to bring something from or to put something in the fridge were made. For example, Dumitra (84 year, elderly households, rural), Damian and Damiana (both 73 years, Elderly households, rural) had the refrigerators placed in the main house, where they do not live, and had to walk for approx. 20 m from the kitchen to refrigerator. Households lacking water installed in kitchens or lacking warm water, meant using lots of bowls and buckets in the kitchens.

In four households, Ionel (30 years, young single men); Maria Mirabela (34 years, young families); Florinel (31 years, young single men); and Bogdan (32 years, young single men) in the urban areas, had extended the kitchen to the balcony of the flats to obtain more space. In all these cases the gas stove was placed in the balcony, while the sink was indoors in the kitchen. An exception was the sink in Ionel's kitchen, which had been moved to the balcony opposite to the gas stove, whereas in Bogdan's household, the sink was placed in the balcony close to the gas stove.

Transporting food seemed unproblematic for households with young single men. Travel to the shopping was mostly done by car. Furthermore, small amounts of food were bought, which meant that carrying shopping when walking was seldom strenuous. In this respect, all of these households were located in urban areas where access to grocery stores are better. However, in the two other household types, transporting food were more challenging. Food provision was rather gendered. The women in the household were responsible for most of the food work. Meanwhile, both the young women and elderly women were depended on their husbands, including Amalia (31 years, Young families, urban); Serena (36 years, Young families, urban); Maria Mirabela, (34 years, Young families, urban); Fanica, (69 years, Elderly households, urban); and Damiana, (73 years, Elderly households, rural), or one of their children or another relative, including Sorina (32 years, Young families, rural); and Linalia, (73 years, Elderly households, rural) to help transporting food. In one household, Minodora (27 years, Young families, rural) got help from a neighbour to do

the shopping. Some men in elderly household, did do the shopping on their own, but usually with a shopping list made by their wives, for instance Fanel (69 years, urban) and Damian (73 & 70 years, rural). Damian often took this opportunity to have a small drink and socialize with other men he met in the village shop, which annoyed his wife.

## Food provisioning activities among the French participants

### *Household routines*

All the young single men were employed except one, Vincent, (29 years, rural) who has been unemployed for one year. Previously he worked in a supermarket. Then he tried to open a restaurant with local food from local farms. But he never reached a bank agreement for a loan and had thus been unemployed since then. He lived in a house he inherited from his grandparents after they died two years ago. Here he rented out rooms to four housemates. Among the employed, Aurélien (25 years, rural) was working in 80 percent position as a high school supervisor. While he benefited from all the school holidays, his had a low income with a salary at 800 euros per month. He lived a busy life and spent almost every evening of the week doing theatre activities, performing and training. In the remaining households with young single men, all were in fulltime employment, working in an agricultural cooperative (Fabrice, 24 years, urban); as a cashier in a cinema (Simon, 25 years, urban); and a lorry driver (Etienne, 30 years, rural). Fabrice went several times a week (3 to 4 times) to the gym training as a bodybuilder. He thus watched his diet very carefully. Simon sometimes worked nights and thus ate at 2 PM. He also had some spear time activities (skateboarding, music...). Etienne spent lots of his time fishing and raising animals on his farm. He had tried to become a farmer, to develop his own farm and to produce cheese. Meanwhile, he had not succeed to fully live from his farming. Furthermore, money was an issue. He did not have enough money to pay for certification or to live without salary for a month devoting all his time on the farm. Still, he kept his cheese factory supply in the second kitchen (“arrière cuisine”), but did not use them anymore and nowadays they were full of dirt and spider nets.<sup>16</sup>

The young family households, all consisted of a couple, either married or in a free union, and children, numbers varying from one to five. All the parents were employed except the mother of five, Elodie (31 years, rural), who was a fulltime mother, but her husband worked in a slaughterhouse. In Elodie’s household, the family ate dinner together every weekday. The husband arrived from work at one (13.00), thus he ate lunch later than the children. In Mathilde’s (37 years, urban) household, the husband was current unemployed. He was an artist. Meanwhile she worked 80 percent as a lawyer assistant. Together they had two daughters (1 and 3 years). Julie (28 years, rural) worked from home as a saleswoman for generic perfumes when she could. She cared for her 2,5 years old son at home, while her husband worked full time as a truck mechanic. During the week, she served lunch to her young son, but waited for her husband to arrive from work (14.00) to eat lunch with him. She usually cooked in the

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<sup>16</sup> A direct translated of “arrière cuisine” is back kitchen. It is a second kitchen usually placed in the garage or close to the outdoor areas, typically used for washing own garden produce and for storage.

mornings, even though she ate later. She also waited to eat dinner to when her husband finished working at around ten (22.00) since she did not like to eat alone. While waiting she ate snacks and candies. Amandine (27 years, rural) and her husband both worked and lived on their workplace, as they were both special needs educators. However, they owned a house a few kilometres away, where they went every other weekend. Amandine was pregnant and on maternal leave for her two remaining months of pregnancy. They had one year and a half son. As they lived on her workplace, Amandine was still in contact with special needs teenagers at the caring facility as well as the other staff. Mylène (25 years, urban) was also a special need educator but only worked every other weekend, outside of town, in a care facility for special needs teenagers. Her husband worked as a banker assistant. While she eats lunch at home, her husband usually eats lunch at work, but dinner at home. They planned to move out of their rented apartment in two weeks, into an apartment they bought. Mylène was looking forward to have a bigger kitchen, because the current one was too small for her to cook. They had a 6 months old boy.

In the elderly households, all were in their 70s and retired. Some of them had a lot of activities (like Nordic walking, hiking, associative activities, etc.), such as Bernard & Hélène (both 72 years, urban) while others already had physical troubles that prevent them to even walk from home to local shops in their suburb, including François (76 years, urban). Sylviane (77 years, rural) and her husband were farmers and lived on their farm. They kept 2 cows and a 2 hectare a land where her husband grew maize. They also have ducks and hens and they both grew their own vegetable garden, with which they were almost self-sufficient on vegetables for the year. Gérard & Odile (71 & 65 years, rural) lived on the countryside but in a small village on a very large property. They had a vegetable garden, fruit trees and a pond. Similarly, Charles & Annie (75 & 70 years, rural), lived far from any other house growing vegetables in their large garden. Two households, Bernard & Hélène and Yvette & François (74 & 76 years, urban) lived in the city, both in houses. Bernard grew herbs in a small garden, but Yvette & François did not have any garden. All the elderly household had grandchildren they meet more or less often. Yvette & François brought their grandchildren to their vacation home on the Atlantic coast every year for holidays. The older they got, the less had the children. The grandchildren of Bernard & Hélène spent their school holidays with their grandparents. Charles & Annie were close to their grandchildren but did not see them often. Sylviane (77 years, Elderly households, rural) and her husband lived in the same yard as one of their daughters and thus saw their grandchildren very often. Gérard & Odile have their granddaughters over at least one weekend every month. They also had a ritual for every Odile cooked beef steak with homemade or frozen French fries for lunch every Saturday, a ritual lasting for several decades. Her children also introduced this ritual in their family. Thus, when the granddaughters visited on a Saturday, they expected this meal which they were very excited about.

## Role division and responsibility for food provisioning

In the households with young single men responsibility for food provisioning depended on living alone or sharing home with housemates. Those who lived alone: Simon (25 years, urban) and Fabrice (24 years, rural) had no one to share shopping and cooking with. Meanwhile, Fabrice's sister did his laundry because he did not have a washing machine and she lived conveniently nearby. Among those who lived together with housemates, sharing responsibility for food work varied. Simon usually went to the grocery store every other day to buy meat and food he wanted to eat. Vincent (29 years, rural) lived with five housemates, but he would only shop for him and his girlfriend. The couple used to go grocery shopping together, but after she changed her work schedule at work, she could not come along anymore. Thus nowadays, he would go on his own. Vincent was responsible for cooking in the house he shared with his housemates. He spent at least one hour per day on cooking and cooked six out of seven days for his housemates. He was influenced by his father, who loved to cook, and he learnt a lot growing up with him. Aurélien (25 years, rural) also lived with five people in a big house in the countryside. Each roommate managed their own grocery shopping and cooking, but they shared some common food like milk, butter, oil, rice, pasta, tea, coffee, sugar, flour. Everyone cooked at home, but did not eat together all the time. Some of the housemates ate in their rooms. Each roommate had their own space to stock food and they had written their names on shelves to know to whom the food belong to. Aurélien ate lunch in the canteen at work and thus only needed to cook dinner, when at home. He did the grocery shopping once a week. The household did not have any procedure to monitor the stock of for shared products. If something was missing someone would buy it the next day, especially fresh food. When they organized a big dinner with housemates and friends, one or two persons cooked for everyone. Etienne (30 years, Young single men, rural) and his housemates tried to go shopping together, at least for large provisioning, but it was difficult to organize as they were four housemates. They usually went shopping once or twice a week. Each roommate put 200€ per month for common supermarket provisioning like red meat, starters, cleaning products, appetizer food, pasta, rice, etc. Drinks and alcohols were not included in the common provisioning budget because it was too expensive. For lunch Etienne (30 years, rural) and his housemates sometimes ate at work or bought ready-to-eat sandwiches. On their small farm, they produced a lot of food themselves, such as vegetables, eggs, poultry, but not beef. However, they had to buy poultry because theirs were not grown enough yet to be slaughtered. Etienne had an agricultural education and developed the livestock farming. But all of the housemates participated in food production. They all cooked together, but Etienne did it more often because he was more skilled and enjoyed cooking. In addition to cooking, he also preserved vegetables in jars and pork meat. Etienne cooked more elaborated meals during the weekends, for instance meat stewed with vegetables. In the summer, Etienne and his housemates often barbecued outside.

In the young family households, the women were usually responsible for the food provisioning. Meanwhile, shopping was shared among the adults in the households of Amandine (27 years, rural), Mylène (25 years, urban), Elodie (31 years, rural) and Mathilde (37 years, urban). In addition, Mathilde and her husband shared the responsibility for cooking were shared between the adults. In one the household, Julie's (28 years, rural), she was responsible for all the housework and care work for the young child. Needing to rest when arriving home from work was given as the explanation for why the father did not take part in these household activities. Meanwhile, the couple would go shopping together by car to a big supermarket once a month, to carry heavy things.

In Amandine's household, both husband and wife were responsible for grocery shopping. Meanwhile, the mother went shopping more often than him, during the week. At the weekends or on her day off from, the couple went shopping together to have more hands to carry groceries. However, she had the main responsibility for cooking, because the husband did not like to cook. In addition, she was responsible for cleaning and for dishwashing. At the same time, the husband was responsible for taking out the trash. In Mylène's (25 years, urban) household, husband and wife were both responsible for cleaning the dishes and putting them into the dishwasher. They order groceries together on Sundays using an online food delivery service, which she usually picked up by car on Mondays at the drive-through. They seldom went shopping at the supermarket, because she found the handling the heavy trolley with all the products inside to be troublesome. She had the main responsibility for cooking. Nowadays, she would almost always cook with a Thermomix cooking robot. She did not like to spend time on cooking and using the robot meant spending no more than 30 minutes on cooking per day. In Elodie's household (31 years, rural), the adults were both responsible for grocery shopping, where they went by car once a week. She usually cooked lunch and dinner, while her husband sometimes cooked dinner during the weekends. In addition, he sometimes baked chocolate mousse.

Mathilde's (37 years, urban) household, was the only young family household where cooking responsibilities were evenly shared. Her husband was currently unemployed. Meanwhile, she had the main responsibility for grocery shopping since her husband sometimes bought food she disagreed with. She explained this further as being very careful about the products she bought, which were mostly organic and healthy. When they moved in their home, she started growing a vegetables garden but stopped because she was the only one to take care of it. To avoid having to deal with grass and mud, they had covered it with a synthetic lawn. She always went grocery shopping early in the afternoon on her day off from work, because supermarkets were less busy at that time. Once a week, she went grocery shopping at the organic supermarket, at a large regular supermarket less often and at a drive-through supermarket once a month. She never went to the closest supermarket because it was too expensive and they had less products to choose from. In Julie's (28 years, rural) household, all of the household

chores were carried out by Julie. She went grocery shopping in the morning or in the afternoon, by foot as she did not have a driving license. She always took the couple's son out to let her husband rest at home alone when he arrived from work. Since the husband did not like to go shopping, Julie carried it out on her own. Meanwhile, once a month he would help and the couple would travel by car to a large supermarket to go car grocery shopping.

Among the five young family households, there were a total of 10 children aged between 6 months to 12 years old. 7 children were 3 years old or younger and were not involved in any food provisioning due to their young ages. The three children in Elodie's (31 years, rural) household aged 6, 10 and 12 years did not take part in any food provisioning activities. However, they were involved in activities such as cleaning activities, setting up the table, tidying up the dinner table, putting dishes in the dishwasher, sweeping the floor, etc.

In the elderly households, however, shared the housework more between the couples. In three households, cooking and shopping were shared between husband and wife, including Charles & Annie (75 & 70 years, rural); Bernard & Hélène (both 72 years, rural); and Yvette & François (74 & 76 years, urban). Meanwhile in two households, the responsibility for housework were unevenly shared, including Odile (65 years & Gérhard, 71 years, rural) and Sylviane (77 years, rural). In Charles' & Annie's household, the Charles usually cooked during the week and Annie during the weekend. Annie had lots of activities outside home, thus she did not have meals at fixed time. Charles went shopping to the local supermarket every week, while his wife sometimes went to another one in the city, because she liked products from this supermarket brand. While Charles's wife managed the food stock, he was aware of what they had in the house. He was for instance the only one who fetched food from the freezers. While they used to note down everything they put in the freezer on a paper, they did not do it anymore. In the freezer, there were frozen food stored for more than five years.

In Hélène's household, some household chores were shared between the couple, some were not. Hélène was did the storing and cleaning. Both prepared food depending on other daily activities. Both put dishes in the dishwasher, but Hélène cleaned the kitchen and the dishes by hand. They went shopping together after their retirement. They had a shopping routine and each one of them knew what to get in what shelf. They transport food together by car.

In Yvette's & François' (74 & 76 years urban) household, she had the responsibility for cooking and organizing food (including shopping, menus and storage). Her husband, François, cleaned the dishes, peeled the vegetable among others. He did everything she did not want to do or could not do because of her arthritis. Once a week, they went grocery shopping together by car. Sometimes they went to supermarket on their own. François always went by car because he had difficulties with walking. Yvette, on the

other hand, sometimes popped by the local convenience store when they needed something.

In Gérard's & Odile's (71 & 65 years, rural) household, Odile had always had the sole responsibility for shopping, cooking and cleaning. Gérard would only help her with small tasks or outdoor chores such as gardening. She was also the one of them barbecuing. When they both were still working, he finished earlier than her but never cooked. Sometimes he went to the convenient store by himself, when something was missing or to the bakery to buy bread. Odile made a meal schedule for the week, and shopped groceries according to it. The weekly meal schedule meant that she did not have to put more thought into shopping every day. She always shopped in the morning to avoid the crowd, but never on Mondays, because products were missing in the shelves and there was no fishmonger in the supermarket that day. Rarely, Gérard would accompany her, but then she had to show him where to pick the right products.

In Sylviane's (77 years, rural) household, husband (82 years) and wife lived together with their 45 years old son. She had the sole responsibility for cooking and went grocery shopping every week. On Saturdays, when she went shopping at the supermarket or at the local market, she would often serve the family fish. At the weekends, the adult son would sometimes bake cakes for the family. The husband, on the other hand, rarely cooked, but he would sometimes buy bread from the bakery. Sylviane told that she enjoyed cooking. She usually cooked a dish that the household would eat for several days, such as stews or soups. Then she would just reheat the dish before serving it. She also canned the vegetable from the garden to persevere and to not waste them. She gave vegetables from the garden to her adult children.

### General food preferences and dietary requirements

Preferring local food and local food supply was rather common among the French households. This was the case in three households with young single men: Aurélien (25 years, rural); Vincent (29 years, rural); and Etienne (30 years, rural), in one young family household: Mathilde (37 years, urban), and in three elderly households: Bernard & Hélène (both 72 years, rural); Sylviane (77 years, rural); and Yvette & François (74 & 76 years, urban). In the two elderly household left, Charles & Annie (75 & 70 years, rural) and Gérard & Odile (71 & 65 years, rural), local food was also preferred but here food consumption was adapted more to what was available in the supermarket. In the households with young families, products' origins was less important than value for money.

In the three household with young single men living together in shared housing, all small or large gardens where they grew their own vegetables. Special attention to food such as the origin of food products and appreciating locally produced food was common in these households. In Aurélien's (25 years, rural) household, he and his housemates preferred local food. He said: "I care about origins, yes, I aim to buy

products that do not come from far away. Except for exotic fruits I buy from time to time, there is no local option.” Every Saturday, they went to a farm where they bought vegetables. They all went together using one car to avoid too much pollution, but each of the household members housemates bought vegetables for their own consumption (bringing their own shopping basket). The amount of vegetables they bought varied between the housemates as their needs differed. Some cooked lunch at home and thus bought more than the others, who bought lunch at school/work canteen.

In Aurélien’s household, buying local food was regarded as more important than organic food. Meanwhile, Aurélien did by no means have a strict diet of any sort. It did happen that he ate sweets for example, even though he knew they contained palm oil and lots of sugar, ingredients which he was not outspokenly concerned about for sustainability and health, he just mentioned that processed food was “crap” (*c'est de la merde*). Meanwhile, he preferred eating food prepared by himself. Furthermore, he rather bought meat and cheese from the fresh food counter instead of standard package sizes to reduce wasting food waste and save money. Saving money, homemade food and buying local food and eating healthy were important meanings for Aurélien’s food consumption and also the reason for growing vegetables in the small household garden. Here, the housemates grew potatoes, tomatoes, and bell peppers, but according to Aurélien, it lacks maintenance. In Etienne’s (30 years, rural) household, he and his housemates were more concerned about food quality rather than price when buying food. Meanwhile, the housing was rather cheap. They paid 300€ in total for 4 housemates, which meant not food budget restraints and the men were able to buy the food they liked. They preferred selecting food by the origin when possible, at least for fresh products. Meanwhile, they were unsure about food labels. For instance, for some products labelled as “French”, they were concerned about where the food was produced, since the label did not separate been processed or produced in France. After Vincent (29 years, rural) became unemployed (one year), he rather shopped in larger supermarkets rather than in the local shops or organic shops, to reduce his food budget. Meanwhile, he aimed at buying products that he were familiar with and that were produced in France. His plan to start a restaurant with only local food on the menu relied heavily on his valuation for local products. Meanwhile, it did not work out. Still, he selected food products by their origins when he could. Furthermore, he grew potatoes, tomatoes, carrots, melon, cauliflower, beet, mint, basil among others in his garden. In addition, he had an interest in consuming seasonal products.

In the two households with young single men, the origin of food products were not prioritised. Simon (25 years, urban) followed no dietary or ethical consideration. Furthermore, he did not follow any set food budget. Food was his priority and he avoided buying cheaper brand products. He did not like to keep fresh food too long in the fridge, and thus went regularly to the supermarket often buying what he wants when he wants it. However, his eating habits followed seasons. In the winter he ate more «heavy food», as he described it, and soups. In the summer, he ate more fresh

food and salads. In comparison, Fabrice (24 years, urban), did not change his shopping habits according to the season. He said that he lived rather close the shop, which for him meant that various foods were accessible whenever he wanted it. He did not care about seasonal products. He had a diet composed of rather limited range of vegetables/fruits (e.g. frozen vegetables, avocados and bananas. This was accessible all year long.

Among young family households, concerns about the origin of food products were addressed by only Mathilde (37 years, urban). She used seasonal products when cooking.

Yes, we try to eat according to seasons. In the moment, it is cauliflower, in summer it is more eggplant, zucchinis, tomatoes. Today (in March) I would like to eat zucchinis, but it is not zucchinis season, so I won't eat some.

(Mathilde, 37 years, Young families, urban, France)

Mathilde never bought ready-made products. Instead, she preferred to cook from scratch. Health was also a concern in the household. For instance, the parents avoided serving sweets and other sugary food products to their eldest daughter, or else she would get excited and run around everywhere, they explained. Additionally, Mathilde bought organic food products at the large supermarket, including organic pasta, rice, and baby food.

The majority of the households with young families, were not particularly concerned about the origin of food products, buying organic or local food or eating seasonal foods. Instead, the main concern was food prices. Meanwhile, there were some variations and complexities that need attention. In Amandine's (27 years, rural) household, attention was mainly paid on the food budget and to buying products on sales. The family did not eat organic food, but Amandine bought milk for her child at the organic shop. While they knew that Nutella was made of palm oil, they loved it and thus bought it. She cooked heavier meals in the winter (with dip and cheese for example) and prepared raw salad and more vegetables during the summer. She often browned food and steamed food using a cooking robot. The family originated from the North of France, where French fries is traditional food and thus something they rather often. Meanwhile, French fries was, according to Amandine, the only food she would fry in oil. They never ate fish since none of the adults liked it. Nor, did Amandine know how to cook it. Except for pregnancy, there were no special dietary needs in the household. Meanwhile, Amandine avoided eating fat and sugar and included more vegetables in her diet when because she were in risk of developing pregnancy diabetes. She meant that the family ate more vegetables compared to her upbringing, a dietary change that came with pregnancy.

In Julie's (28 years, rural) household, the food budgetary concerns dominated and discount supermarkets mostly used for shopping. Here, the price tag and not the origin

of food products was examined when Julie did grocery shopping. Meanwhile, she preferred buying foods produced in France to support French producers if she could. For some type of food this never mattered. For instance, she would always buy the cheapest tomatoes no matter where they were produced or whether they were in season. She simply made her choice based on her preference for tomatoes. In Mylène's (25 years, urban) household, the food budget was strictly limited to weekly spending 40 to 45 euros for shopping in the large supermarket. For instance, they bought salmon sometimes, but it was rare and only if they could manage it within their food budget. Meanwhile, they also bought meat from the butchery and a few items from the organic shop, where food is usually more costly.

Mylène: Yes, for a week, we don't go over 40 euros, for food, in this shop, but we don't buy meat here. We buy it in at the butchery, close to our apartment.

Int.: So it is for two adults and one child?

Mylène: Yes, but our child eats purees, he started last month, and it is only 3 spoons of puree. We buy his milk in a pharmacy and his cereals at the organic shop (Biocoop).

(Mylène, 25 years, Young families, urban, France)

Similar to the price focused households above, food budget and buying cheaper store brand food product were the main concern in Elodie's (31 years, rural) household. Five children and two adults in the household, meant that the family spent around 700 euros per month on food, which included a large monthly shopping tour spending between 200-250 euros and small weekly trips spending about 150 euros. While there were no concern for where the food was produced, Elodie cooked every meals from scratch, including the lunch when the children arrived home from school for their lunch break. Furthermore, Elodie, who had the main responsibility for shopping, paid attention to the appearance and freshness when buying vegetables, as well as price per kilo. The children's food preferences were important. Elodie would visit another supermarket to find the food products her children liked to eat, if she could not find it in the first she went to. While there were no special diet in the household, Elodie had made effort to cook more balanced meals, after reading about nutrition on a public health website a few years ago. Nowadays, she included more vegetables in the meals.

In the elderly households, however, food quality and the origin of food was a more common concern. Few followed special diets. Instead, likes and disliked seemed to be the main reasons for avoiding certain foods. One couple, Bernard & Hélène (both 72 years, rural), avoided fatty foods and delicatessen (deli food/ready to eat foods) for health reasons. In Sylviane's (77 years, rural) household, from where the food was produced was very important for food safety reasons. Sylviane, who were responsible for food provisioning in the household, did not like to buy food produced outside of France. She believed the sanitary rules were not the same in other countries, heavily influenced by TV programs on food scandals. For Bernard & Hélène, preferences for organic and locally produced food meant that used several supermarkets, shops and

markets for shopping food. They bought fresh food at a local market on Saturday, organic products once a month in an organic supermarket, regular food products in two different supermarkets, and at meat a local butchery once a while. Furthermore, they avoided buying fruit and vegetables from Spain because they were concerned about the use of pesticides. In addition, they never bought bolognese sauce with meat, but only with tomatoes because they worried about not knowing what part of the meat was used and where it came from. This was adopted after the «mad cow disease» scandal in France in the 1990's. In Yvette's & François' (74 & 76 years, urban) household, meat was bought from a local butchery and fruits and vegetables at a local farmers' market. Recently, Yvette had become increasingly attentive to buying organic food as a result of watching TV-shows about food scandals, consequences on using pesticides among others. The couple did not have any special dietary requirements. Meanwhile, she never bought readymade foods because she hated it but when François went to their vacation home also, he would buy some (croque-monsieur or whole meal). Gérard & Odile (71 & 65 years, rural) rarely ate canned food, but had some at home just in case. Furthermore, they never ate readymade meals like raviolis or cassoulet, because they worried about not knowing what these products contained. Odile were also concerned about the origin of fish, but tried not to worry too much, otherwise they would not have anything left to eat anymore. While they were concerned about their food budget and thus bought lots of sale products, Odile aimed at buying mostly French products although she knew the label «French» did not always mean produced in France. A product could be produced somewhere else but be labelled as "French" if it was merely processed here, she explained. Charles & Annie (75 & 70 years, Elderly households, rural France) were concerned about the origin of food for fresh foods, especially meat. Meanwhile, Charles did not worry about lamb if it was produced in New Zealand or in Ireland. It is not produced any better here, he said. They cared less about the origin for fruit and vegetables. Annie said they had been disappointed with local producers and added that the apples were not so good and rather expensive. Furthermore, they believed that same kinds of apples were cheaper at the supermarket.

### *Learning to cook and changes over life course*

Among young single men, most learnt to cook by themselves or by watching their parents. In Vincent's (29 years, rural) case, he learned from his father in Vincent's case and for Etienne (30 years, rural), he learned from his grandparents (30 years, rural). Fabrice (24 years, urban) learnt to cook by himself at an early age but he wouldn't call it "cooking" because he did simpler cooking. Aurélien (25 years, rural) had cooked since he was a child and enjoyed baking cakes. When he was 16 years, he started to cook more than before. Meanwhile, when he was student, he only prepared readymade meals because he shared a kitchen with a dozen of students and they only had one electric hob to use. When he worked at nursing home as a kitchen staff, he learnt about food safety as well as HACCP methods. Etienne learned to cook for the most part on his own. Preparing his own meals from his own produce, was a pleasure to him. He

told that he got his food habits from his parents and grandparents. They used to buy food from farms and his grandfather used to raise chickens.

Vincent (29 years, rural) learnt to cook from his father:

I learnt with my father, because he is a very good cook, and I always liked that. I always liked watching him to cook, and when I grew up, I was helping him. Then I took my independence early, at age 17 and suddenly I had to feed myself, simply. I think, for the first years I did not like that, and with time, I now like it more, because it comes with convivial moments, to make dinner for friends, and this is something I value. So I learnt by myself, I have cooking books, I look on the internet, when I cook for several persons, I usually ask them what do they want to eat. And if I want to cook something I don't know yet, I just look for it on the internet.

(Vincent, 29 years, Young single men, rural, France)

In the households with young families, the women had mostly learned to cook from their mothers and by living on their own. Most of the men in these household did seldom cook and was thus not asked from where they learned to cook. Mathilde (37 years, urban) started learning how to cook by watching her mother. When she left her parents at the age of 16, she learned to cook on her own. Meanwhile, she only cooked pasta and rice in the beginning, but got bored to always eat the same things. Thus, she bought a cookbook and started cooking diverse dishes. Lately, Amandine (27 years, Young families, rural) cooked more and more elaborated meals than before. She believed because she had a larger kitchen, which was more convenient. Julie (28 years, rural) modelled her housework to her mother's routines with regards to cooking, storing eggs in the fridge and cleaning the house. Mylène (25 years, urban) learnt how to cook by her mother. Nowadays, cooking had become easier with her Thermomix cooking robot, which also her mother had.

In the elderly households, emphasis was put on major life course changes with regards to food provisioning, consumption and conservation. Among the women in the elderly households, Odile (65 years, rural) was the only one to mention that her mother didn't like to cook, thus she learned on her own when she got married, at 20. Others mentioned how food provisioning and food consumption had changed since growing up. During their childhood, in the 19 years50s, none of them had refrigerator at home. Charles & Annie (75 & 70 years, rural) both lived in apartments in Paris in their upbringing. They only had a pantry and a cooler fed with ice when they were young. Annie recalled when the first fridge's arrival in her family. "The first fridge arrived at my parents' when I was 8 or 10 years old. I recall it very well. It was maybe in 19 years56", Annie said. When they got married, they got their first freezer which they used for storing meat for the dogs. Bernard & Hélène (both 72 year, rural) also mentioned other changes since they were children. Growing up on the countryside

there were no fridge at home until they reached 12 years old and no bathroom and running water in the house either. Yvette & François (74 & 76 years, urban) said the same and remembered how their parents had to get water from the well.

When we were young, we only had a pantry. At my parents' we did not even had running water, we had to get water from the well. We did not have the hygiene as now. We had to be careful with our water use. We had to bring water from the well, even though it was not very far, we still had to go. I lived just 15 km away from the city, in a small village.

(Yvette 74 years, Elderly households, urban, France)

Yvette recalled that they rarely eat yogurts when growing up. Yogurts were only sold in pharmacies in a glass jar which they had to return after use. Sylviane (77 years, rural) remembered that her grandmother used to make marmalade in jars with no lid on it. Her grandmother put a piece of baking paper soaked in brandy on the top of the marmalade to preserve it. More recent changes were mentioned in the elderly household. For instance, Yvette told that she used the freezer more often nowadays than 20 years ago. Sylviane remembered that in the countryside a grocer would come to people's houses in the 1980s: "I recall, when the children were young, the grocer came with his van at home, for me to buy groceries. This method of delivery stopped when he retired."

### Challenges faced in food provision

One of the main issues encountered by households was the size of the kitchen and equipment. This was the case for Vincent (29 years, Young single men, rural) who wanted to have a larger kitchen with an oven and a countertop, to be able to cook in good conditions. He had an oven downstairs in the basement. Mylène (25 years, Young families, urban) found cooking troublesome because her kitchen was lacking a countertop. She had to arrange trays on her sink where she placed the food when cutting and preparing them. The tray was unbalanced and while she was cooking a chicken legs fell into the sink because it was not enough room on the tray. Charles (75 years & Annie, 70 years, Elderly households, rural) told that his kitchen is very uneasy to use. It is like a long and narrow corridor, 8-9 meters square, with a big piece of furniture in the middle. Furthermore, the countertop was tiled with broken joints. .

Another issue mentioned was transporting heavy food products such as bottles of water or milk. In Mathilde's (37 years, Young families, urban) household, the solution was to order at the drive-through, where she just had to pick up the products and a delivery man carried the food into her car. Thus she only needed to carry heavy products from her car parked in the courtyard to her home. Amandine (27 years, Young families, rural) went shopping with her husband to have him help carrying groceries. She was pregnant, and thus avoided lifting heavy bags. It was the same for Elodie (31 years, Young families, rural), Mylène (25 years, Young families, urban) and Odile (65 years,

Elderly households, rural) who regularly asked their husbands to transport grocery bags from the car to the house. Husbands were in charge of carrying bottles of milk and water as well as heavy bags. She never shopped at the supermarket, but ordered food online which she picked up at the drive-through, because she did not like to push the supermarket trolley because it is heavy and she can't move it as she wants. Since Julie (28 years, Young families, rural) did not have a driving license, she had to visit the supermarket often thus only bought a transportable amount of products she could carry by foot. Sylviane (77 years, Elderly households, rural) used to buy 2 litre bottles, but thought they were too heavy for her nowadays, even for carrying them from the shop shelved to the trolley and then from the trolley to her car. She thus only bought 1.5 litre bottles as they were more convenient for her to carry.

Among elderly households, two mentioned challenges such as mentioned by 2 research participants were their reduced ability to walk short distance or to kneel in their kitchen to reach the lower cupboards. François (76 years & Yvette, 74 years, Elderly households, urban) had difficulties walking to the closest supermarket by foot. Instead he often took the car, even for short distances. Furthermore, Yvette had difficulties peeling vegetables because of her arthritis. Thus, her husband took over tasks id in the kitchen which she no longer could do because of her hands. To solve the difficulties at kneeling, Bernard & Hélène (both 72 years, rural) had installed drawers instead of cupboards in their new kitchen two years ago. This helped them to see everything at first glance and to just lean forward to reach products.

## Food provisioning activities among the UK participants

### *Household routines*

Previous research has demonstrated how paid work, caring and other ongoing commitments structure daily life, with significant implications for food provisioning activities. There were clear differences in this respect between our three household types. As might be expected, all elderly households were retired. The three mothers of young children – Laura Cooper (31 years, urban), Kate Buckley (30 year, urban) and Chloe Martin (38 years, rural) – were all on maternity leave but soon due to return to paid work, while their partners were all employed full-time. Conversely, Lisa Rothwell and Alicia Cook (23 years, urban) – both pregnant and, like their partners, in full-time paid work – were soon to begin maternity leave. Finally, the five single men under 30 were a mixture of full-time employees and university students.

Daily life for the mothers on maternity leave was centred on the physical and emotional needs of their young children, chiefly their patterns of sleeping and eating. This often meant mothers sacrificing their own need for rest and sustenance, taking advantage of brief moments of respite to eat, have a nap, or catch up on housework. Kate's (30 year, young families, urban) typical day, for example, started around 5am when Grace (6 months old) woke up and needed a feed, followed by play. Later in the morning Grace would take a nap, an opportunity for 45 minutes of "spare time" when Kate either did "bits and bobs" around the house or caught up on her own sleep if she had "a really bad night". Most days Kate arranged to meet friends or family, or she would attend a baby group, "just to kind of get out and a change in environment and all that", but again this had to be coordinated around feed and nap times. Grace was usually in bed for the night by 6pm, time for Kate to "run ragged and get everything tidy, bottle sterilised, start cooking the food" before eating at 7:30pm. She then enjoyed some "chill time" and went to bed any time between 9 pm and 11pm, "depending on how bad the night was before". Chloe (38 years, Young families, rural) noted the repetitiveness of these routines, comparing her life to "Groundhog Day".<sup>17</sup> There was little difference for her between weekdays and weekends, since her partner Joe worked irregular shifts. Laura (31 years, Young families, urban) and Kate – whose partners worked Monday to Friday – both mentioned weekends being somewhat different to the rest of the week, having two adults to share parental responsibilities and doing activities together as a family. In other words, temporalities of formal employment combined with the needs of children structured their household routines.

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<sup>17</sup> A 1993 comedy film in which the protagonist wakes up each morning to realise he is reliving the same day.

For other households in paid employment, their working patterns were the most obvious factor shaping daily and weekly rhythms, in most cases having consistent (or at least predictable) hours that other domestic and social activities were coordinated around. This was the case both for the working single men and the expectant couples in our study. Few raised this as either a good or bad thing, more a taken-for-granted fact of life. It did, however, present particular challenges in Alicia's (23 years, Young families, urban) household, she worked days while her husband, David worked nights. Eating together was particularly affected, with a short window of opportunity between Alicia arriving home and David leaving.

While childcare and employment were widely attested as structuring household routines, a less anticipated finding was the role of extensive fitness regimes had in shaping young men's lives. Ryan (20 years, urban), Josh (22 years, urban) and Sahib (23 years, urban) (all young single men) all participated in sport at a competitive level, exercised daily and to some extent socialised with other people who did the same. Josh, for example, was employed at the same gym that he trained at, as was his housemate Warren. Sahib's commitment to fitness added to his full-time work (on placement from university) to leave little room for anything else – including sleep – on weekdays. As a result, he tended to cook all of his food for the week in one sitting:

...it's a lot easier for me to bulk cook and then portion my food as and when I need it, than cook it every day. Because the lifestyle I'm living right now is, I'm working 40 hours a week and then on top of that I'm gym-ing, I'm running and I'm going to start swimming now. So, all of that and then I'm away Friday night until Sunday night so it's just getting everything done ... I'm probably sleeping about five hours a night. But that's enough for me to function on.

(Sahib Singh, 23 years, Young single men, urban, UK)

Fitness and its association with nutrition were also instrumental in shaping these research participant's preferences for particular foods, as we discuss further below.

In the absence of formal employment or regular childcare responsibilities, daily life in the older households was nonetheless structured by other commitments: hobbies and interest groups, social engagements and domestic work. Mary Russell (70 years, Elderly households, urban) was active in a number of different music-related groups, meaning that although her days differed, the structure was largely the same with various music commitments punctuated by mealtimes at home. By contrast, Susan and Peter Dunning (78 and 80 years, Elderly households, urban) did not mention participation in formal groups or associations, but their days followed recurring patterns of domestic work and leisure, anchored by regular mealtimes and Peter's daily visits to the local shops.

A common strategy, especially among the young single men in the sample, was to intentionally prepare more than enough food for one meal and save it for another time. As already alluded to, this was central to Sahib's (23 years, Young single men, urban) cooking routines, reflecting a combination of his busy schedule of work and fitness training, his awareness and prioritisation of the nutritional qualities of what he eats, and the importance he places on enjoying food. He set aside one evening a week for 'meal prep', cooking several different dishes in one go, storing them in containers in the fridge and then eating them over the rest of the week, varying the combinations he eats each day:

I can give you a list. So, a meal prep for this week, I'd make an onion and tomato base for my scrambled eggs for my breakfast ... I'll make a big container of rice, so I can put that in when I need it. Same with mashed potatoes, so just mashed potatoes, bit of butter, bit of milk and just potatoes, salt, so that's fine. Chicken breast and roasted vegetables, and then there's beef stir-fry, the tomato sauce, some meatballs and some Indian chicken burger type things. So, I'll basically have a certain type of set meal with this. Have it all prepped and then I can just mix it up so I'm not eating the same thing each day. I'll be eating similar, so I'll be eating, let's say I'll have chicken, but one day I'll have it with rice, and the other day I'll have mash.

(Sahib Singh, 23 years, Young single men, urban, UK)

Others, like Liam (28 years, urban) and Josh (22 years, urban) (both young single men), tend to cook double portions of meals, eating one immediately and taking the second to work the following day. Similarly, the two single older people in the sample, Archie (74 years, urban) and Tricia (70 years, urban), both routinely prepared and/or cooked sufficient food for multiple meals. The parents of young children were less likely to batch cook for themselves, but Kate (30 years, urban) and Laura (31 years, urban) (both young families) both mentioned preparing food in advance for their children.

### Role division and responsibility for food provisioning

Another recurring observation in previous research is a tendency for food provisioning responsibilities to fall disproportionately on one household member, in many cases women. This question was most relevant in the eight of our households that might be considered a family unit, i.e. couples with or without dependent children, as opposed to single-person households and shared rental properties.

In each of the retired couple households, food work responsibilities were shared. For the most part, partners had longstanding, clearly demarcated roles although they would not always be observed in practice. Peter (Susan and Peter Dunning, 78 and 89 years, Elderly households, urban) did most of the food shopping in the Dunning household – combined with his daily trip out to pick up a newspaper – although they

sometimes go together. Susan was the main cook, but Peter helped with preparing vegetables. They tended to wash up together in the evening. In the Russell household Mary took sole responsibility for most aspects of food provisioning. She went shopping alone and they unpacked together when she got back. Mary also did all of the cooking. Bill saw washing up as primarily his responsibility, but in reality Mary was often involved:

Int.: So Bill, did you say you tend to take responsibility for [washing up] or do you share it?

Bill: No, I do it, don't I?

Mary: You don't do all of it.

Bill: Not every day all of it, but after tea—

Mary: You do the tea one.

Bill: I do the lunchtime one.

Mary: Yes, sometimes you do the lunchtime ones.

Bill: I do the weekend ones.

Mary: Sometimes. Can you see there's a bone of contention here? No actually you do a lot of the washing up. I do some washing up, you do a lot of it. If I'm cooking or baking I do the washing up then.

Bill: As you're going along.

Mary: As I'm going along.

[...]

Bill: I hate drying, so they get stacked to dry.

Mary: And they dry out on the rack.

Bill: On the rack, just at the end—

Mary: Mary puts them away.

Bill: My excuse is I don't know where they go.

(Mary and Bill Russell, both 70 years, Elderly households, urban, UK)

By comparison Jean and John Higgins (72 & 71 years, Elderly households, urban) were more interchangeable in their roles: both would go shopping and both would cook, although not necessarily together. The main differentiation in roles was who takes primary responsibility for deciding what to eat, which was usually Jean:

And I pick a recipe that I know he's going to be able to hopefully do without too much — But then if I fancy doing it, then I obviously do. The whole of our married life, really, has been like that ... We've never really had men's and women jobs, it's always been a bit of a shared partnership, which works for us.

Int.: And do you also decide together what you're going to cook?

Jean: No, in the main I decide, and then I say, do you fancy that, yes or no, and if there's a compromise, then obviously we do compromise.

(Jean and John Higgins, 72 and 71 years, Elderly households, rural, UK)

There were varied patterns among the younger couples. Laura (31 years, urban), Paul (34 years, urban) and Chloe's (38 years, rural) (all young families) households were similar to the Higgins, at least with respect to cooking. This was usually done by one or the other partner, depending on their respective other commitments on a given evening. There did, however, appear to be a gender difference in the type of cooking. Laura described her partner Andrew as being a more confident cook, prepared to improvise, whereas she tended to follow recipes more strictly. Chloe and Joe (38 and 34 years) were similar:

So I always like to try and follow a recipe, and a method, on Google and things like that. Whereas Joe prefers just to make it—try a recipe once, and then the next time he'll just make it up himself with whatever.

(Chloe Martin, 38 years, Young families, rural, UK)

The situation was very different in Alicia's (23 years, Young families, urban) household. She did all the regular food shopping and cooking, which she enjoyed and felt confident in. Her mother-in-law Lynne (who also lived in the house) did most of the washing up. Alicia's husband David lacked confidence in cooking but would do so around once a month:

I think he enjoys it once he gets going, and once he knows what he is doing, but because I do cook, I just tell people to go away and I will just do it. I don't think I really give him a chance, so he is a bit wary because I am quite precise in what I do.

(Alicia Cook, 23 years, Young families, urban, UK)

In other (non-'family unit') households food work was more of an individual matter. Three research participants – Ryan (20 year, urban), Josh (22 years, urban) and Sahib (23 years, urban) (all young single men household) – lived in rental properties shared with friends, where each tenant was individually responsible for buying, cooking, eating and clearing up after their own food. Josh attributed this arrangement to his personal fitness and nutrition regime, different to that of his housemate Warren; this was similar for Sahib, combined with his preference for eating meat and his flatmate Amir being vegan. Ryan saw it more as a matter of established routine, a legacy of how his group of friends had initially come together in the first year of university:

...that was how it happened last year in halls because we didn't know each other at the start ... and then that was just what we kind of stayed doing all year long.

(Ryan Langsdale, 20 years, Young single men, urban, UK)

That said, ad hoc collaboration was not uncommon: a lift to the supermarket, a loan of some missing ingredient, use of shared crockery, and so on. This looser sharing of responsibilities also applied to some research participants who lived alone. A friend of

Tricia's (70 years, Elderly households, urban) occasionally drove her to a larger supermarket when she needed to stock up on heavier items. Liam (28 years, Young single men, urban), meanwhile, was more creative with cooking when his girlfriend came round to visit, seeing it as a shared activity to enjoy together.

### General food preferences and dietary requirements

Before we saw them shop or cook, most households offered a generalised view of the types of food they prefer to eat or avoid, for a variety of reasons relating to taste, nutrition, health concerns, ethical engagements and cultural expectations. More affective, embodied and socially embedded than preferences in the rational choice sense, these were central to their self-understanding and sense-making regarding how they relate to food, their loved ones and the wider community, as well as forming the backdrop to their decisions about what (not) to eat.

As seen above, three of the young men in our sample – Ryan (20 years, urban), Josh (22 years, urban) and Sahib (23 years, urban) – were heavily invested in fitness, with implications for their diets. This meant seeking to ensure the appropriate balance of protein, carbohydrate and fat corresponding to their individual exercise programmes and fitness goals. In practice, this amounted to eating a lot of chicken breast, being cheap to buy, readily available, high in protein and low in fat. However, a major difference between the three was how this prioritisation of nutritional qualities (and quantities) interacted with their enjoyment of food. Josh (22 years, Young single men, urban) ate the same meals most days, seeing eating as primarily functional, especially during the busy working week. Sahib, on the other hand, placed a high value on quality and variety in his meals and dedicated a full evening each week to his “meal prep”. This distinction, between food as necessary and food as pleasurable, recurred elsewhere in the UK sample. For example:

For me yes, it is a means to an end. Sometimes I do like to go to an expensive restaurant every now and again, if it's an occasion, but it's not something I'll do weekly, purely because for me food is a functional thing. It's something that I need to survive.

(Daniel Thorne, 25 years, Young single men, urban, UK)

At the moment, we're not cash-stretched, so we'll outlay on maybe Morrisons Finest, or the Extra,<sup>18</sup> or whatever it may be, purely because we're massive foodies.

(Paul Rothwell, 34 years, Young families, urban, UK)

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<sup>18</sup> In the UK, most supermarkets have a ‘premium’ range of own-brand foods, with names like ‘Taste the Difference’ (Sainsbury’s), ‘Finest’ (Tesco) and ‘The Best’ (Morrisons).

Chloe Martin (38 years, Young families, rural) was very concerned about the negative health effects of eating certain foods – such as dairy products, which they mostly avoided – and bought organic food as much as possible as she worried about the pesticides used in conventional agriculture. Some research participants, or their household members, had explicit dietary requirements. Mary's husband Bill (both 70 years, Elderly households, urban) was diabetic and so tried to cut down on his sugar intake, while Paul's high blood pressure meant he needed to be careful with how much salt he ate. Sahib (23 years, urban) and Daniel (25 years, urban) (both young single men) both had sensitivity to certain ingredients, causing severe indigestion. Finally, Sahib's flatmate Amir was vegan and so strictly avoided all animal products.

With regard to cooking, much has been made in public debate of an apparent decline in cooking skills and a growing tendency for households to rely on pre-prepared ingredients and ready meals, seen almost universally as a negative development. In our sample, however, all households routinely combined cooking from scratch and use of convenience foods, sometimes during the same mealtime (e.g. using a shop-bought sauce, paste or spice mix with freshly prepared meat and vegetables was particularly common). Differences were more of degree: the quantities and types of ready-made foods used, the frequency of using them, the complexity and variety of the home-made dishes and (by extension) the time spent cooking for a typical meal. Of further interest were the particular circumstances in which, say, 'fresh' and 'processed' foods were more likely to be eaten. Both Daniel (25 years, urban) and Liam (28 years, urban) (both young single men), for instance, talked about using fresh ingredients when they were newly bought, but having a stock of tinned and/or frozen food for when these run out. Doing so helped save money and waste, and demonstrates a capacity for planning ahead. Daniel also had a supply of ready meals for evenings when he was late home from work, reflecting his shift patterns in a local pub. The research also questioned the distinction between the two categories of food. For example, almost all households bought chicken pieces that were ready to be cooked with little additional work: individual breast or thigh portions, often with various undesirable parts of the animal (bones, skin, fat, etc.) already removed.

### Challenges faced in food provisioning

Households identified a number of challenges – i.e. circumstances that *make it difficult to do what they would ideally do* – in relation to food provisioning. One such factor was having insufficient time and energy to cook in the way they would like. As shown above, most households organised routine food work around their other day-to-day commitments, especially paid work and childcare responsibilities.

Second, several households described how they get by with limited financial means. Responding to a screening question during recruitment, eight of our fifteen households said their income was less than they need to make ends meet each month. And four of

these met the UK government definition of low income. Some, like Laura (31 years, Young families, urban) and Kate (YF) (both young families), found themselves in a particular period of earning less (in their cases due to being on maternity leave). In response, both had changed where they regularly went shopping. If money were no object, Laura (YF) said she would buy her food at a more expensive supermarket like Marks & Spencer, where she felt the quality was better. Ryan (20 years, Young single men, urban) would buy more fresh fruit – he particularly aspired to having berries with his breakfast as something he would enjoy but could not afford – and would consider buying what he considered better quality food, for example organic produce or meat from the butcher. Interestingly, although Josh (22 years, Young single men, urban) identified his limited income as an issue, he said he would not necessarily change anything if he earnt more.

Another important aspect of managing on a restricted budget was careful planning. As already seen, Liam (28 years, Young single men, urban) intentionally stocked up on frozen food at the start of the month, after being paid, so that he would have food left at the end of the month when his money tended to run out. Although Liam was the only research participant to explicitly refer to this monthly cycle, a common strategy among those trying to save money was to buy larger packs of meat (typically cheaper per unit weight) and freeze them for future use. Josh, with his high protein diet, bought chicken in bulk from a local butcher. Bought at volume the butcher's chicken was cheaper, and in Josh's view better quality, than that available at even the discount supermarkets. Of course, this required sufficient storage space, not available to all households (e.g. Ryan, 20 years, Young single men, urban) in his shared student house). Archie Phillips (74 years, Elderly households, urban) was perhaps the most committed to careful financial management and meal planning, due to his small pension. This partly reflected having fewer specific demands on his time than some other households. For example, he kept detailed records of his expenditure, generally paying by card and studying his itemised bank statement online. When shopping, Archie took the time to calculate and compare the 'per meal' costs of the items he was considering, especially fresh meat and pre-prepared foods such as quiche or pizza. He could also be flexible with when he went shopping, visiting the supermarket late at night when reduced price goods were more likely to be available.

Third, single person households and some couples reported difficulties in buying and preparing food in small quantities. Archie Phillips and Tricia Riley (70 years, Elderly households, urban) both spoke of the practical and emotional effort involved in cooking and eating alone, and a preference for sharing meals with others. For Archie the opportunities to do so were limited; Tricia regularly made extended visits to a friend in a different part of the country, where they enjoyed cooking and eating together. Daniel (25 years, Young single men, urban) described how his diet has changed since he was growing up, not because his tastes have changed, but because the practicalities of storing, cooking and eating for one require different types of meals:

Maybe the variety has changed a bit. It's not like I don't like a certain dish; it's just whether I've got the resources or the space or even the time to do it. Like my mum would always like cook like a lasagne or spag-bol, you know, fresh, from scratch, whereas these days I'm probably happy to make a ready-meal just because, one, I probably can't be bothered, or, you know, I haven't got the time. And then, of course, it is the space, the storage, afterwards. I haven't got a great deal of room in the kitchen to put huge amounts of meals.  
(Daniel Thorne, 25 years, Young single men, urban, UK)

Sourcing fresh food in appropriate quantities was also a problem. A common complaint was that fruit and vegetables were unavailable (or inconsistently available) to buy individually and that the standard pack sizes were too big for the household's needs. Unlike meat, home-freezing fresh fruit and vegetables was rare. As a result, food regularly deteriorated before it could be eaten, potentially leading to waste. Ryan's (20 years, Young single men, urban) response to this was to buy almost exclusively frozen vegetables:

I usually buy frozen vegetables actually. I don't often buy fresh vegetables because frozen vegetables you can keep for a lot longer and they're cheaper. And, I did a bit of looking online and you don't lose much nutrition from it ... But yes, probably vegetables are probably the only thing that I don't have which is fresh mainly because they go off quite quickly.

(Ryan Langsdale, 20 years, Young single men, urban, UK)

A fourth challenge was in the kitchen itself, including its size, layout and especially appliances. When Daniel (25 years, Young single men, urban) first moved into his housing association flat a few months earlier, the fitted kitchen included no means of heating food. His grandmother gave him a Czech-style Remoska mini-oven – “because she wanted an excuse to buy the bigger, fancier one” – and he had recently bought himself a microwave. Daniel was generally positive about cooking with the Remoska; it was energy efficient, cheap to run, easy to clean and he enjoyed the food he cooked in it. However, he was sometimes put off using it by the time it took to pre-heat before use. It was also difficult to host friends for a meal, as the Remoska was too small to cook for more than about two people. Archie (74 years, Elderly households, urban), who also lived in social rented accommodation, had a fault with his cooker during the period of fieldwork. This had been reported to the landlord but was yet to be fixed after three weeks without a working oven, usually Archie's main means of cooking. In response, he was able to adapt his methods to the (still functioning) cooker-top hob. As already alluded to, Ryan shared his kitchen with six housemates, all using the same cooker and fridge but buying and preparing their own food individually. As such, each housemate had their own shelf in the fridge for all of their food, which concerned Ryan as a potential cross-contamination risk.

While the research has identified a broad set of challenges applicable to a diverse range of households, what stands out is that certain groups are more vulnerable to particular challenges. Time was a concern across the sample, but especially affected those in paid work and/or raising young children. The remaining issues were most acute for those on low income, living alone and in rented accommodation; this meant that, although a breadth of households were affected, research participants such as Archie Phillips and Daniel Thorne faced multiple interacting challenges.

### Learning to cook

Most households (12 out of 15) mentioned initially learning about food at home, from watching and helping their parents and siblings. This ranged from picking up the 'basics', but not necessarily putting those skills into practice until later in life, to taking on a significant responsibility for food provisioning during their teenage years. The latter was especially true for four of the younger people in the sample:

It was something that I had to do really. My dad worked away and my mom wasn't very well ... I sort of got to the age really where I knew how to do things. Like I didn't just chuck things in the oven either. My brother's a chef ... so, he came over every now and again and helped me out.

(Ryan Langsdale, 20 years, Young single men, urban, UK)

Yes, I learnt to cook when I was living with my mom and I wasn't around at meal times because I was out doing whatever like playing football or something, so she got fed up and said cook your own meals because I'm not cooking for you if you're not here. So it was like the easiest thing, probably like tinned spaghetti and stuff like that. And then kind of I just started to get more into like fitness and stuff, realised I need more kind of protein rich meals. Then started like cooking the chicken and meat and that sort of stuff.

(Josh Lovell, 22 years, Young single men, urban, UK)

...as we got older, my mum trusted us to cook a lot more. So, when we all used to live together, because my mum was working late, I used to do the food shopping, because she had been on her feet all day, because she was getting older, I used to cook. So, I just carried on really, nothing has really changed since I moved out.

(Alicia Cook, 23 years, Young families, urban, UK)

...when my parents split up and I went to live with my Dad, I had no choice but to cook for myself ... When I'm saying cooking, I mean, it's not really cooking, it's kind of toast and beans and microwave meals and stuff.

(Liam Abney, 28 years, Young single men, urban, UK)

Others began to cook for themselves on leaving home. Tricia (70 years, Elderly households, urban) and Jean (72 years, Elderly households, urban) both felt their mothers lacked enthusiasm and/or aptitude for cooking, with their own subsequent

learning a reaction to this. Mary (70 years, Elderly households, urban) learnt from her housemates at university; Laura, Kate (30 year, urban) and Chloe (38 years, rural) (all young families) all shared formative cooking experiences with their respective partners on moving in together. Archie (74 years, Elderly households, urban), on the other hand, only rarely cooked while he was married, but had gradually taught himself following his divorce around five years ago. He started by recreating meals that his mother or wife used to cook for him but experimenting by adding different ingredients.

A handful of households recalled formal teaching at school around food provisioning activities, but without necessarily feeling it had stuck with them or helped them. Around half made references to particular sources of inspiration for trying out new procedures or recipes: cookbooks, television, and the internet, including both written and video content. Learning through experience – especially trial and error – was another important method.

## Food provisioning activities among the Norwegian participants

### *Household routines*

In the Norwegian study, the household routines varied both between and within study groups. All the young single men had active lives involving work, studies, sports and friends. Jon (28 years, urban), Petter (29 years, rural), Roger (24 years, urban) and Fredrik (23 years, urban) had worked fulltime. Fredrik's had an internship in an architect firm. Petter was a PhD student. Jon and Roger worked in the IT business and logistics. Georg (27 years, urban) worked part time (60%) besides finishing his studies. Jon and Fredrik played sports actively (Jon did freediving, swimming, running and strength training, while Fredrik played floorball), while Petter went to the gym. Roger was politically active in his community, and all the young men emphasized their social network when talking about how they spend their days. Work schedules, regular exercise, spending time with friends, studies (in Georg's case) and political engagement (in Roger's case) affected food and eating in these young men's life.

In contrast to the single men, caring for children and partners households with young families consist of two parents and all but one had children. Only one couple were expecting their first child. In this couple, both parents work fulltime. In the remaining four households, three women were on maternity leave while their husband or partner worked fulltime, and for the last couple, the man had recently taken over the parental leave while his fiancé started work again (Lena, 37 years, Young families, rural). In all these four households, there were more than one child, which also meant that the needs and time schedules of older children had to be balanced throughout the day. For instance, in Emma's (33 years, rural) household, the mother was at home with baby Erik (3 months). Having dinner ready when the husband arrived from work was coordinated with the 7-years-old son's afterschool sports practice. This meant that she had to take care of a baby, pay attention to and resolve any conflicts between her two other kids, and make dinner at the same time. Similarly, in Hanne's (31 years, urban) household, one child (two years), went to the kindergarten at daytime, while the baby was cared for at home. Shopping was coordinated with picking up the two-year-old in kindergarten to avoid bringing him to the store in the afternoon when he is tired. It becomes quite clear that work and childcare are the two main elements structuring the days of the households, governing when and how to do other tasks such as food provisioning.

Daily life was very different in the elderly households. All comprised a retired couple in their 70s. In three households, one partner still worked a little. For instance, Inger (70 years, rural), still ran a project for her old employer, where she had worked as a social worker. Another example was Ove (72 years, rural), who used to have a workshop making handcrafts, while his wife, Oda (72 years), ran a store where they sold Ove's

creations as well as other products. In periods, it was also combined with a small café. Although the shop was now closed, Ove still made some handcrafts and sold it to interested parties. Similarly, Kari (71 years, urban) still functioned as an examiner at the college where she used to work. Moreover, the elderly households kept busy in other ways as well. For instance, Inger sang at a nursing home twice a week, in addition to being active in her local church. Similarly, Kari volunteered in several organizations, and she and her husband, Kåre (71 years, urban), were active dancers. All the elderly household, had guests and hosted dinner parties with friends and family from time to time, some more frequent than others.

Another aspect structuring the daily life in the elderly households, were the adult children's families and particularly grandchildren. Three out of five had family close by and has grandchildren over for visits and dinners rather often. For Inger, this was a matter of quite set routine of having grandchildren coming over after school, sometimes their parents as well, spending the afternoon together with dinner twice a week. When the parents could not join the dinner, Inger would still cook for them and have her grandchildren bring their parents dinner carefully put in plastic boxes. On the other hand, in Nils' (74 years, rural) and Bente's (70 years urban) household, visits from grandchildren were more of a casual thing, and they thus made sure to have some food at home that their grandchildren liked in case they popped by. The two remaining research participants did not have families living close enough, and visits from grandchildren were less frequent.

Cooking varied between the study groups and social situations. Among the young single men, Fredrik (23 years, urban), Jon (28 years, urban) and Roger (24 years, urban) said they thought cooking alone was boring, but enjoyed it when cooking for or with others. Fredrik and Roger, thus both mentioned that they sometimes turned to quick and simple meal solutions such as preparing crisp bread or pasta with pesto if they did not bother or had not energy to cook for themselves. Meanwhile, both men told they often had a large lunch at work, which also made it less necessary with a heavy dinner in the evening. In contrast, both Georg (27 years, Young single men, urban) and Petter (29 years, rural) said they cooked dinner at home almost every day. In comparison, cooking dinner was a seemingly taken-for-granted everyday activity in the two other study groups. In the households with children, feeding the young ones and to making sure they were healthy, fed and get all the nutrition they need was priorities. In the elderly households, cooking dinner was a part of long lasting eating habits as well as part of the tradition in Norway to have one hot meal a day.

### Role division and responsibility for food provisioning

Three of the five young men lived by themselves. Roger (24 years, urban), Jon (28 years, urban) and Petter (29 years, rural) own their apartments. Georg (27 years, urban) lived alone in a rented condo, but shared bathroom and kitchen with other

residents which he did not know. Fredrik (23 years, urban) rented an apartment with a friend. However, all these men were responsible for food provision for themselves, although sometimes with some help. One such example was that Roger, who sometimes got food from his grandmother, who for instance bought him frozen salmon on offer and sometimes cooked for him - especially if he was ill. Another example is Fredrik. He received food from his parents when they went on vacation and did not manage to finish the food before they left. In four of the households with young men, the research participants responsible for shopping, transporting, storing and cooking food alone. In Fredrik's household, living together as housemates sometimes meant cooking for each other, although they is to a large degree were responsible for their own food provisioning. Although these households included young men living alone, there were a female influence on how they learned to cook and to handle food. For instance, Jon (28 years, urban) had learned most of his food knowledge from his mother and still used her for support and source of knowledge for everything related to food. Another example, was Roger who did not have the food training or support he wanted from his mother, but instead told that his grandmother sometimes cooked for him and helped with some guidance when it came to food and cooking. He also credited his ex-girlfriend for a lot of the cooking skills and preferences he had today.

In the households with young families, the responsibility for shopping food was shared among the adults. However, the men were more often responsible for shopping or carrying the heavy things, although there are various ways to organize this. For instance, when Lena (37 years, rural) was on parental leave she found it difficult to manage the groceries and baby at the same time. Thus, her fiancé Lars (40 years) did the shopping. Another way to organize this was carried out in Chris' (37 years, urban) and Camilla's (35 years, urban) household. Chris was responsible for doing a large shopping once a week, while Camilla does the smaller trips of stocking up. A third way to share the responsibility was found at Emma's (33 years, rural). Emma said that her husband was responsible for buying milk or other drinks because it was heavy for her to carry. However, Emma preferred to do the main shopping herself because she knew what the family needed. She meant that her husband often bought a lot of "wrong" things, which made her annoyed. In Hanne's (31 years, urban) household, she was responsible for shopping and storing food more or less alone. In Anne's and Andreas' household, shopping was usually done together on their way home from work, if not Andreas popped by the shop to stock up by car.

Children were also involved in food provisioning. In Lena's household, the eldest daughter sometimes went to the food store, buying a few items with a shopping list and money given her, Emma told that the children helped her in the kitchen now that they were old enough. She had for instance taught them her fridge system, although she said that her 7-year-old son always put the spread back on the wrong shelf in the fridge, which made Emma going after him to reorganize.

In the elderly households, the role division was for the most part quite gendered. As both Inger (70 years, rural) and Bente (70 years, urban) stated, they were responsible for the household inside, while their husbands was responsible outside. In all five households, the woman was for the most part responsible for food provisioning and organizing the kitchen. However, regarding shopping responsibilities, there were the ways of dividing the work between the elderly households. In two out of five households, the woman was responsible for the shopping, however husbands would join to help carry, especially for larger shopping trips. In two households, the couples organised it such that the woman was in charge of writing the shopping list and unpacking the food after shopping while the men did the actual shopping. One household (Ove and Oda, both 72 years, rural) said that they most often go shopping together.

When it comes to cooking and cleaning, all households with young families reported shared responsibility between the adults. However, in three households the woman did most of the cooking, while in one the man cooked most often, and in the last the couple report to share the responsibility fifty-fifty. The division of work were explained as both preferences and practicalities. In Camilla's (35 years, urban) household, husband Chris (37 years) did most of the cooking because he said he enjoyed it. Moreover, the couple agreed that caring for young children at home, which Camilla did, was more tiresome than being at work. Thus, cooking responsibility fell on Chris, as he was working. In Emma's (33 years, rural) household, on the other hand, she told that she did the most of the cooking although she did not like to do it, but because she had more time than her husband while staying home on parental leave. Furthermore, dinner had to be finished in time for the children's after school activities.

In all of these households, the daily tasks were divided so that the one who did not cook had other responsibilities, such as taking care of children and cleaning up after dinner. For instance, when Chris cooked, Camilla usually sat the table and watched the kids, as well as the clean-up after dinner. Likewise, Hanne (31 years, urban) said that if she needs anything from the pantry located in her son's bedroom while cooking, it was her husband's responsibility to get it for her. Before they had kids, they also had a rule that the one who did not cook did the cleaning. Now, the one who does not give the children a bath did the cleaning because they both had enough to do while cooking anyway. In Lena's (37 years, rural) household, however, sharing cooking and doing the dishes afterwards, often meant more work for less work for her fiancé when she cooked as she usually cleaned up while preparing food, which he did not do.

The elderly household, cooking seemed to follow more traditional gender divisions, than their younger generation. In four out of the five elderly households, the woman did most of the cooking. Meanwhile in three of the households, the men would occasionally cook. For instance, in Bente's household, the husband was in charge of the barbecue when they were at their cabin during the summer. Meanwhile, Bente cooked

most meals all year round. In Nils' (74 years, rural) household, he had given up the grill because he ruined food, but he did like cooking fish and his wife, Nina, told he made a good tenderloin too.<sup>19</sup> Meanwhile, Nina had the main responsibility for cooking. In Kari's (71 years, urban) household, Kåre (71 years), Kari's husband cooked a bit too, but Kari did most of the cooking because, as she said, she was more used to it and had a broader repertoire of dishes. Inger (70 years, rural) told that she did the cooking, while her husband Ivar was given chores. He had to drain water from the boiled rice because Inger was afraid she would get burnt, and he usually tidied after her and did the dishes. In addition, he usually sat close by so they could talk while she was cooking. The exception was Oda's and Ove's (both 72 years, rural) household where divide food work was divided differently. While they both worked they shared the cooking responsibilities. Oda used to do most of the cooking during the weekdays while Ove would be responsible for the dinner in the weekends. Nowadays Ove did most of the cooking because he liked to cook. In all her life Oda had heard that she was bad at cooking. This had affected her confidence in cooking, and nowadays she left it to Ove. Oda still remembered an episode when she was cooking for a family gathering and had prepared too little potatoes. She was still ashamed of it when thinking about it today. She said she rather likes to eat food and to read recipes, than cooking.

In the elderly households, traditional gender roles seemed to be taken for granted. The women were in charge of the food work, organizing the kitchen and cooking. The men did, or accompanied, on the perhaps more physical challenging task, which was the shopping. Some of the men cooked, but for the most part traditionally masculine-associated meaty dishes, such as reindeer casserole, or being in charge of the barbecue. The exception here was Nils (74 years, rural), who had given up the barbecue and rather preferred to cook fish dishes. Furthermore, he baked bread every day using a machine that bakes the bread overnight so it was warm and fresh for breakfast. Some stereotypes were expressed with regard to the men's cooking abilities and others on the differences between the men and the women's food preferences. For instance, Nina comments that Nils was bad at doing two things at a time, making him an ineffective cook. And Nils jokily admitted that when he cooked it had to be something uncomplicated, although Nina countered him by saying that he was OK at cooking, he just did not do it very often. Similarly, Kari (71 years, urban) commented that she cooked more freely and experimented more than her husband, who was much more bound to following recipes.

Regarding what kind of food they cooked, the men were generally described as using more semi-processed products and simple solutions. For instance, Bente (70 years, Elderly households, urban) described how the roles were switched during a period of time when Birger retired and Bente was still working. Birger was then responsible for cooking and Bente says that he made food such as readymade fish cakes and sausages,

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<sup>19</sup> Nina's age is unknown

and boiled potatoes every day. In contrast, she said she cooked from scratch using raw products, making a point that she cooking was the proper way of doing it, and was more concerned with health. Similarly, Nils (74 years, Elderly households, rural) mentioned that he generally used more fat when frying food than his wife because he worried the food would get burnt, suggesting that Nina either was more in control of how to fry food without burning it or being more concerned with health, avoiding excess fat, such as Bente. Similar distinction was present among the young families as well. For instance, Emma (33 years, rural) mentioned pizza and hamburgers as food that her husband cooked. She told she would never prepare hamburgers because the family already ate enough bread at other meals, suggesting concerns for variation, perhaps that bread was not healthy when eaten for every meal or that bread did not count as proper dinner.

I think we eat so much bread, there's often bread for breakfast and bread in packed lunch, and maybe bread for supper. And then we can't have hamburger with bread for dinner. I feel there's so much bread. So, no, not very often. Then it's more like – we get hamburgers at McDonald's sometimes, and that'll do.

(Emma, 33 years, Young families, rural, Norway)

### General food preferences and dietary requirements

Except for the elderly households, few mentioned any specific dietary requirements. In the elderly households, however, some medical issues caused the research participants to mind their intake of fat, salt and sugar. Moreover, some reported to have family members with food allergies, which they were considerate of when buying food. Lastly, avoiding certain foods during pregnancy was mentioned in the young family households.

In most of the households, it was important to eat healthy and for many that meant cooking from scratch. Bente (71 years old, elderly household, urban) said that she did not buy processed food, and she checked the salt and fat content before buying potato chips for instance. Moreover, the food was preferred to be homemade. Young family mother Camilla 35 and 37 years, Young families, urban said that they usually did not buy and eat any processed products anymore. Avoiding processed food was mentioned across study groups. Meanwhile, a few of the young men, for instance, Jon (28 years urban) and Roger (24 years, urban) seemed to be less concern about cooking from scratch. In comparison, Emma (33 years, Young families, rural) said she was embarrassed when buying a bag of ready-made sauce because she thought she should be cooking from scratch. Prior research has suggested that the domestic cook tends to mix processed food products and wholesome foods when cooking. This was also the case in the Norwegian study.

Food quality was a recurring theme in all of the Norwegian households. Meanwhile, food quality is a difficult term to define. In the Norwegian study, it often was referred to as the look, smell or texture of the food. The research participants would typically explain why they chose various types of food, “it looked fine”, which could refer to size, or colour or other qualities. Taste was an important element of quality as well. The research participants were concerned with the food to taste well, regardless of what kind of food it was. Another recurring theme was price. The Norwegian households were often weighing price up against other considerations, such as deciding whether to buy fresh or frozen chicken like Anna (Anna, 31 years, Young families, urban ), or whether to buy organic or not.

The young family households mentioned that children’s diets differed to that of the adults’, and that becoming parents made significant changes to the dinner menu, as children could not eat too spicy food or too much salt and were often more fussy eaters. Thus, a challenge was to make child friendly food, while at the same time make sure the children get all the nutrients they need as well as doing happy family dinners. Camilla and Chris’ (35 and 37 years, Young families, urban) three-year-old son loved pasta, and Chris hoped that his son got the nutrients he needed in the kindergarten as the couple made pasta dishes very often in order for their son to eat.

### Learning to cook and changes over life course

Several sources were mentioned in the households from where they learned how to cook. Some sources mentioned were school, particularly home economics classes and school of domestic science, parents - especially mothers, others in their social networks like friends or work colleagues, cookbooks, “Matprat” (which is a marketing organ for meat, that runs ads on TV and has a website with information and recipes), Internet, such as YouTube, radio, TV, Norwegian food authorities, and through professional lives, education or work experience, as well as general experience through trial and error.

All the households with young single men had left their family home more or less recently to live on their own – and by that having to shop, cook, and organise food for themselves. The young single men mentioned various sources of learning to cook. Meanwhile, their upbringing seemed to function as both a model for how they continued to cook into adulthood or as a model for how they did *not* want to do it. An example of the first was Jon (28 years, urban). He said he has learned a lot from his mother, and still would call her for advice and tips for both cooking and storing food. Two representatives of the latter way of relating to the upbringing were Roger (24 years, urban) and Petter (29 years, rural). They had both taken large steps to develop their diet and food preferences, separate from what they grew up with. Petter described how he got interested in Asian food, an interest which was further sparked by a school

trip to China. However, this was very different from the food he was served at home and thus something he had to figure out by himself. Similarly, Roger had to learn by himself what tastes he liked and how to cook. Roger described his childhood food as a very traditional and unexciting. He grew up with pork chops with potatoes and sauce, fries, and taco, which was what his cooking abilities were limited to before moving out at 18 years old. Later Roger realized it was exciting to try new food and he liked several things that he did not like as a child such as several types of fish, and vegetables like broccoli, cauliflower, and carrots. Roger said his strategy when starting to cook for himself was to not go for traditional dishes and to look for food he could play around with and switch ingredients to change it up. A previous girlfriend was also influential in developing Roger's taste in food. He learned a lot from her, and found a new joy in food as well, as it was something they could do together and for each other. Georg (27 years, Young single men, urban), on the other hand, had learned a lot about food when growing up at a farm, but also developed his skills as an adult. From his upbringing on a farm, he for instance learned how to choose, and store eggs. However, when it came to cooking, he felt he had learned most by cooking for himself and living on his own. Georg said he never used recipes, he rather guessed what flavours would go well together and used a trial and error-method. He said he was inspired by cooking shows on TV and books, but it was rather a matter of what he had available in his cupboards, which he tried to use up before buying new. He also mentioned work experience as a source of knowledge, as he used to work in a cafeteria. Georg worked in a cafeteria where they prepared a range of semi-processed food. This had resulted in him avoiding processed foods as much as possible. Nowadays he preferred to cook as much as possible from scratch. Furthermore, some young men checked recipes online, for instance Fredrik, 23 years, urban and Jon (28 years, urban). Jon also read instructions on sauce packages.

A few young families mentioned learning to cook by their parents. Meanwhile, where they learned to cook seemed to be less reflected upon and a taken for granted thing you do when becoming a parent. In the young family households, becoming parents was a life event which had a clear impact on the families' food work. Hanne summed it up like this:

Well, from the years at university, it was like, you bought what you could afford and if you did get something extra it was a rare occasion. Then you start working, and maybe use more money on food because you can, and then...yes. But now it's more about getting the time – making time to have food on the table, and, it has to be something he [2,5-year-old son] wants to eat, and hopefully something we too want to eat. So it's like, it's a lot more boring food now than before. We never ate fish sticks before.

(Hanne, 31 years, Young families, urban, Norway)

As mentioned earlier, children's diets and taste preferences had changed food in the households with young families. Furthermore, changing children taste preferences, by including more varied taste and making them trying new flavours, meant that cooking in these households were constantly changing, although slowly, as the children became older. Another interesting aspect that was mentioned was to teach children where the food comes from. For instance, Camilla's and Chris' (35 and 37 years, Young families, urban) household, the children came along to pick up food from the CSA farm, and Emma (33 years, rural) thought it was good for her children learn where the meat you eat comes from. In this household, they raised hens which were slaughtered and then eaten at home. Likewise, the parents were teaching their children table manners. Hanne, for instance, wanted her son to eat at the table and to stay at the table until he was done eating. She also taught him to say thank when served dinner and to ask before he leaves the table. Likewise, Lena (37 years, Young families, rural) was opposed to feeding her baby with a bottle of smoothie because it did not teach her to sit at the table and eat proper food.

In the elderly research participant group, getting married stands out as an event that changed food and cooking. Both Bente (71 years old, urban) and Oda explained that getting married was what made them learn how to cook. Oda for instance, had a mother who was very good at cooking but who preferred to do the cooking herself, which meant that Oda did not learn much from her. However, she said that being married for 47 years has improved her cooking skills. Meanwhile, she did struggled with the cooking in her marriage to Ove, who had helped her but. She also used cookbooks a lot, and followed recipes, which she still liked to do, although years of cooking had made her enjoy cooking and Ove had thus taken over most of the food preparation in the household.

Furthermore, getting older also affected eating and cooking. In Bente's (71 years old, urban) household, meals had become healthier. She told that they used to eat a lot of fatty foods when younger because at the time it was considered to be healthy. She used to eat pork fat (flesk) as a spread around Christmas, but would never do it anymore. Now she rather cut the fat off of meat and told that she and Birger instead ate a lot of lean foods nowadays. In Nils's (74 years, rural) household, on the other hand, cooking had not changed much at all. Even when his children were young and both he and his wife was working fulltime, his wife Nina was the one who did the cooking, while he seldom did and never really learned how to cook. He mentioned cooking lessons in the school kitchen when he was in elementary school, but with less practice his cooking skills had never changed for the better. Meanwhile, his diet had changed somewhat. Getting older meat watching his intake of sugar due to his health, which made him eat more light products with artificial sweetening than before. This, however, had resulted in him being quite good at reading product labels in the store. Both he and his wife had also become more aware of food allergies due to a grandchild who has some.

## Challenges faced in food provisioning

In the Norwegian study, most of the households reported to manage fine with food provisioning activities overall. However, through conversations and observations, some circumstances making it more difficult to perform these activities emerged. One of these was to make the daily time schedule work, particularly for families with children. Juggling jobs, children's needs and activities with domestic work and cooking, was challenging and demanded planning from the parents. For instance, when Emma (33 years, Young families, rural) was cooking, she was alone with three children (aged 11 years, 7 years and 3 months) while her husband was sick and stayed in bed. She had to make dinner in time to drive her 7-year-old son to sports' practice, while keeping an eye on the 3-month-old son and resolving conflicts between her two oldest children. Similarly, when Lena (37 years, Young families, rural) was cooking during observation, her baby Line (7 months) cried so much that Lena said she would have given up cooking until her fiancé and older daughter came home, if it hadn't been for the researchers being present.

Although tending to others' needs were not part of daily life in the households of young single men, all mentioned that not having time or energy to cook proper dinner between jobs and activities or socializing happened from time to time. Some then tended to skip dinner and eat bread or crispbread with spread, which is more common as a breakfast or lunch meal in Norway, including Fredrik (23 years, urban) and Roger (24 years, urban). Others said they would buy ready-made meals. Several stated that they found cooking for themselves boring, but enjoyed cooking with friends or girlfriends (Fredrik, 23 years, urban; Roger, 24 years, urban; and Jon, 28 years, urban).

Most of the households had several shops in nearby distances. Meanwhile, for some such as Emma (33 years, Young families, rural); Nils (74 years, Elderly households, rural); and Oda & Ove (both 72 years, Elderly households, rural), shopping would be difficult if not for the car. While issues with carrying heavier bags was observed among the elderly households, living close by meant shopping more often but less at each time. Another challenge, which was apparent during accompanied shopping was product or package sizes. In Norwegian supermarkets, much of the fresh fruits and vegetables are wrapped packaged containing several items. This means that the customers cannot choose which single items or how many they want. They have to buy prepacked packages with a certain quantity. This was particularly an issue in the young single men households, where finishing food before it expired was more troublesome, for instance Fredrik (23 years, urban), Georg (27 years, urban), and Petter (29 years, rural). Similarly, Emma had the opposite problem with reduced price products, which she said never was in large enough quantities to feed her whole family. Furthermore, others found it difficult to evaluate the products properly through the plastic covering, including Inger (70 years, Elderly households, rural), Lena (37 years, Young families, rural), and Nils (74 years, Elderly households, rural).

A third challenge apparent in the Norwegian study was the kitchen infrastructures and appliances. Some of the households had old or small kitchens, or appliances that did not function optimally (Bente, 71 years, Elderly households, urban; Kari, 71 years, Elderly households, urban; and Georg, 27 years young single men, urban). For instance, Georg lived in one room in a shared housing. His room had a small kitchen space and dining table, but the space was small and the bed he slept in was barely one meter across from the kitchen counter. He did not have running water in his room, he had to use a sink in the hallway to wash fruits and vegetables, which he shared with the other residents. Furthermore, his oven was old and only one of the two cooking tops worked, the smallest one. Another example was Inger (70 years, Elderly households, rural). She had a large and nice kitchen, but she stored most of her food in cooling room and pantry in the basement, which meant that she had to go up and down the stairs several times during cooking for instance, to retrieve and put away ingredients, and to store food which would be eaten later. Kari's (freezer was an example of appliances not working optimally. It was leaking water onto the kitchen floor and the bottom of the freezer had a large lump of ice, compromising the space.

Although food prices were important in all of the households, and many reported to select the cheaper brands and reduced-price foods, financial issues did not seem to be a widespread challenge in the Norwegian study. However, one research participant, Roger (24 years, Young single men, urban), said he had to prioritise what kind of food he bought because of his financial situation. For instance, he said he preferred to buy frozen vegetables because fresh ones were too expensive. Moreover, Georg (27 years, Young single men, urban), who was mentioned above with the challenging kitchen infrastructure, had been a student for the past eight years and was looking forward to being able to move to another place with a larger and more practical kitchen.

## Differences and similarities in the food provisioning activities in the five countries

In this chapter, we have described several issues regarding practical ways of organizing daily life and wider food anxieties and food safety beliefs. The following sections summarises and compares the various points across all five countries and the three consumer groups. Table 2.2.3 summarise challenges to do food work mentioned by the research participants.

### Household routines

The first topic was household routines and how the households structure their daily life, in a broader view. The household routines were clearly shaped by household composition and work schedules. The routines thus vary between the three study groups, but are quite similar across the five countries, with minor national differences.

The young men in the sample were the most varied study group. The young men were aged from 20 to 35, which meant that their life situations with regard to work and housing varied greatly. Most of the research participants were in employment, many full-time, some through work placement or internships, some were employed part-time while studying, and a few were full-time students. Only one was unemployed and not in a study program (Vincent, 29 years, Young single men, rural). About half were single person households, the other half were shared households with 2-6 housemates. The daily life in these households was mainly structured around work and/or studies, as well as activities such as theatre, sports and fitness, and socializing with friends. The French households where several housemates lived together, stood out by growing vegetables at home in as part of food provisioning activities.

All the households with children or expecting parents included two adults, married or cohabitating couple. Nine of the household were expecting a baby. About half of the mothers in these household were on maternity leave taking care of an infant and/or expecting a baby or, while the most of the others were working. Only one woman was a full-time homemaker (Elodie, 31 years, rural, France). In one household, the man (Lena's 37 years, husband, Lars, 40 years, rural, Norway) was on paternity leave. Most of the men in the families were in full-time employments, but a few were unemployed. In these households, daily life was structured around the adults work schedules, housework and tending to their children's needs.

Most of the elderly households included at retired couple in their 70s with no depending children. A few were single-households and a few lived with an adult child. Some worked a little, but only Augusto's (70 years, rural, Portugal) wife was still in employment. Daily lives in the elderly households were thus structured around similar daily activities of house and food work, other engagements varied to some degree between the five countries. The Norwegian and British households were similar, in that

they filled their days with hobbies, interest groups and social engagements. However, involvement in work projects and volunteering in the community was more common among the Norwegian households. In the French households too, common activities were physical activities such as hiking, Nordic walking and gardening. Meanwhile, here others had physical challenges and were less physically active. In several of the elderly household, usually in rural areas across all countries had gardens where they cultivated vegetables, fruits, herbs, and some Romanian households raised chickens and other animals as well. These practices were also commonly done in rural households with children as well. Family and grandchildren were also part of the elderly's daily lives, and among both the Portuguese and the Romanian research participants, daughters and daughters-in-law helped with food provisioning activities.

Shopping for food took place in various outlets, on various days during the week and at various times of the day, depending on household composition, financial situation, health considerations and preferences. The households had various strategies for procuring food, ranging from monthly bulk buying to daily top-up shopping, including all sorts of variations and combinations of these. Some of these strategies are elaborated further below under 'Challenges faced in food provisioning' because they are related to the households' financial situation, while the overall patterns and routines for food provisioning are further discussed in part 3. This is elaborated further in the following chapters about shopping, transport and storage. In terms of cooking patterns, some variations between the countries could be observed regarding how often and at what times food was cooked at home which reflected the various meal patterns in these countries. In Romania and France, the households prepared dinner, and sometimes lunch, at home almost every day. In Norway, elderly households and households with children prepared dinner every day. Meanwhile in the single households, some of the young men ate a big lunch at work and thus could turn to simple solutions such as crispbread rather than to cook something for dinner at home. In both the UK and Portuguese households, several prepared larger portions stretched for more than one meal either throughout the week or to bring for lunch at work the next day. The households varied in how they emphasized homemade food versus semi-finished and ready-to-eat meals, and time was an important factor in this regard. Moreover, socializing was also an important factor regarding cooking, particularly prominent among the young men and elderly in all countries, cooking with or for, family, housemates and friends.

### General food preferences and dietary requirements

Another important point in this chapter is the households' general food preferences and dietary requirements. The country sections have emphasised different things, thus making a national distinction visible.

As the UK households included three young men who were invested in fitness, their sample emphasises the health and nutritional aspect of eating. However, all country

households included at least one research participant concerned with sports, fitness, bodybuilding, or weight loss, and these research participants displayed similar preferences and requirements across national borders. They were more concerned with nutrients and finding the right balance between proteins, carbohydrates and fat. This also resulted in them eating less sugar and candy, and more fruits, vegetables, chicken and eggs. Among the Norwegian young men household not concerned with fitness to this extent, the emphasis was put on taste. Some of them enjoyed experimenting with various seasonings, herbs and sauces, and was inspired by other cuisines, such as Chinese and Indian food. The French sample stand out in that the young men added an environmental perspective to food consumption as well as emphasising locally produced food in comparison with the other and grew their own vegetables and fruits and herbs. They mentioned to avoid palm oil and go to the food outlet together in a car to pollute less. The Romanian and the Portuguese research participants emphasised that food should be quick and easy to make and was not oppose buying processed or readymade food. This was also mentioned among some in the young Norwegian and French male households as well.

Among the young family households, emphasis was put on food for vulnerable people (young children and pregnancy) in sense of food safety and healthy eating. The pregnant women across nationality avoided certain foods such as cured meat, raw fish, and undercooked red meat. In Portugal, they also stressed that they were extra careful with salad and raw vegetables and avoided eating this out where they did not control the rinsing. In addition to this, they were careful with eggs and only ate them if well cooked. Overall, the households were concerned with the food being healthy and child friendly, both in terms of taste and food safety. One UK research participant mentions a worry for pesticides and thus preference for organic food. For some research participants it was also important that the food was homemade, and for some it had to be quick and easy to fit into the work – childcare balance of everyday life. Another concern among the young families was financial. Overall, the households seemed to be mindful of money, but this was especially evident among the French and Romanian households, explicitly stating to have a food budget, seeking reduced priced products and buying food at large supermarkets rather than smaller outlets.

The elderly households are distinct from the younger ones by being affected by age and health issues caused by it. Some research participants had dietary restrictions due to medical conditions such as high blood pressure, cholesterol and diabetes, which resulted in a diet with less sugar, fat and salt. This was recurring throughout the sample across nationalities. Reducing intake of fat, salt and sugar was something research participants were concerned with without explicitly stating a medical reason as well. Three research participants in Romania had cut back on salt after watching a TV campaign urging them to do this. Among the Romanian elderly, poor dental health affected the ability to chew food and thus preferred to boil chicken for long to be able to eat it. In Norway, the households were also concerned with being healthy, cutting

off extra fat when preparing chicken and other meats. The Portuguese households emphasised medical health to a larger degree than the others, some eating lighter meals in the evening to avoid digestion issues. Moreover, the elderly households were overall concerned with homemade food as healthy and proper food. France stand out in terms of focusing on local origin due to sanitary reasons and pesticides. Research participants in this category were also concerned with reduced price products. In some countries, such as Romania, France and UK, this was an expression of low income, while in Norway, this may generally be interpreted as an expression of frugality

Moreover, the role of the chicken is quite interesting. The chicken is prominent among the research participants who were interested in fitness and weight loss, due to high protein and low-fat content. This made it also beneficial for the elderly households concerned with their health, cutting back on fat and processed foods. Similarly, the pregnant women in Portugal ate chicken and other white meat but avoided red meat due to safety for the foetus, and some women continued this habit when the pregnancy was over. Another aspect is that chicken is readily available and versatile. It can be featured in many types of dishes and can be cooked quite quickly, making it ideal for the single young men wanting to experiment and the family balancing a busy schedule with work and childcare.

### Learning to cook and changes over life course

When talking to research participants about where they learned to cook and how this has changed over the course of life, the answers are quite similar across the five countries. Several sources were mentioned, however, the most prominent source across all countries and consumer groups, is the mother. Watching and learning from other family members are also mentioned, but the mother is the most evident throughout the whole sample.

Among the young men, moving out from home was a common life course change which made them learn how to cook. Many stated to have learned by themselves, through experimenting, looking at the Internet and trial and error. The young men seemed to take three approaches to cooking. Some had learned from home and cooked the same way as their family, others used their teachings as a basis for upgrading and adjusting to their life style, while a third approach was to distance themselves from the cooking at home and rather find out how and what to cook for themselves. The young families also emphasised moving in with a partner and having kids as changes in life course that made them learn or change how they cooked. Similarly, elderly households added getting married as a way to learn to cook. Moreover, ageing has an impact on how the cooking and diet changes over life course. In general, other ways to learn how to cook was from friends and housemates and other forms of socializing, through school and education, through work experience, cookbooks, TV shows, and Internet.

All in all, this section revealed that there are many similarities between the five countries in how they organise their everyday food lives. The distinctions are first foremost between the three types of households, although there are some national distinctions as well. Especially considering the wider context described in the introduction chapter, which includes markets and governmental characteristics and food histories of the countries

### **Responsibility for food provisioning activities in the household**

This subsection is concerned with how the households organized the food provisioning tasks within the household. Again, there were some national differences, but more striking were variations between study groups. The young men either lived alone or in various forms of shared housing. The overall pattern was that despite most often sharing a kitchen with other housemates, shopping, cooking and storing was to a large degree an individual matter. The country that stood out most here was France, where all research participants living in shared housing reported to have some joint responsibilities, such as sharing basic foods like milk, rice, butter, tea and coffee. Across the four other countries this was only the norm in one shared household, in Portugal. Some research participants sometimes cook for or with their housemates, but this was in most cases exceptions and to a less extent a part of daily life. Moreover, despite being individually responsible, the single men could collaborate on food provisioning, such as driving to the food outlet together. Cleaning was a task that was shared despite having individual food responsibilities. Another pattern across countries was that the single men (at least in Norway, Romania and Portugal) occasionally received food or help with cooking from family members, especially parents and grandparents.

In other households, where members were partners or spouses, an important consideration is the extent to which responsibility for food work was shared between them, and especially the gender dimension to how roles and responsibilities were distributed. There were 45 couples in the study. Thinking first about the young families there were numerous ways of dividing up duties between partners, but the overall trend across the five countries was for either women to have the full or the couples to share responsibilities for food and eating. There were no households where men had the sole responsibility for food work alone. A recurring way of sharing the tasks was that men would assist in shopping and transportation, especially carrying the heavy bags. Women were mostly in charge of organizing the kitchen and storing food, often having responsibility for decision making, while cooking itself was to a larger degree a shared task. The Portuguese young families had the clearest and most consistent gender division of labour: in all cases, women were primarily responsible for planning and doing shopping and cooking; men tended to help with more peripheral tasks from carrying bags to washing dishes or might cook in certain circumstances. The pattern in France was similar, with the exception of one household where cooking was shared more equally. The other countries all had at least one young family household where

the man was the main, or most confident, cook (two in the UK, one each in Romania and Norway) or where responsibilities were shared more or less equally (one in the UK, one in Norway). Meanwhile, also here, women did most of the food work. For some of the young families, children were also involved in food provisioning, such as making smaller shopping trips or assisting in cooking, setting the table and cleaning (see table 2.2.1 and 2.2.2 for an overview of shared cooking and other kinds of food work among the young families).

There was also some variation in the elderly households, where food work was typically done by the women or shared between the spouses, however in varying. In general, responsibilities were more likely to be fixed and long lasting than in the younger families, with a higher incidence of men who never (or extremely rarely) cooked. A recurring distinction across the countries (noted explicitly in Romania, Norway and France) was for tasks to be allocated by whether they were ‘inside’ or ‘outside’ jobs, with men more likely to do the latter. In Romania, there was a clear gender division in responsibility for food provisioning (especially cooking), which were more pronounced than was the case for younger families. However, it should be noted that there were only two couples among the Romanian elderly household, with another where the elderly woman lived with her grown-up son. In the UK and Norway, women typically had main responsibility for food work than in the younger. Meanwhile, here more men contributed than in the countries. Two households in France and two in Portugal reported to have the woman in charge of the food provisioning alone. Moreover, in Portugal two households also reported that the men were responsible for food provisioning (see table 2.2.1 and 2.2.2 for an overview of shared cooking and other kinds of food work among the elderly couples).

Among the single households, a few of the young single men and elderly households had help with shopping and cooking from their children, especially in Portugal and Romania where some had grown-up children living at home. More broadly, elderly research participants living alone gave examples of drawing upon their social network to get help with food provisioning. For instance, one research participant in the UK occasionally got a ride to a larger supermarket from a friend. Moreover, some households in Portugal reported to have hired cleaning personnel to help keeping the house. The elderly households living alone cooked less food for themselves as they rather enjoyed cooking for family and friends.

**Table 2.2.1: Overview of cooking responsibilities among the couples (married or cohabitants) by country**

	Portugal		Romania		France		UK		Norway		N (couples)
	YF	EH	YF	EH	YF	EH	YF	EH	YF	EH	
Shared responsibility for cooking almost equally	-	-	-	-	1	1	1	2	1	-	6
Woman is the main cook in the household	6	2	4	2	4	3	2	1	3	4	31
Man is the main cook in the household	-	2	1	-	-	1	2	-	1	1	8
N (couples)	6	4	5	2	5	5	5	3	5	5	45
(YF= Young families, EH= Elderly households)											

**Table 2.2.2: Overview of shared food work among the couples (married or cohabitants) by country**

	Portugal		Romania		France		UK		Norway		N (couples)
	YF	EH	YF	EH	YF	EH	YF	EH	YF	EH	
Sharing other food work responsibilities, for instance shopping, dishwashing, storage	6	2	4	2	3	3	41	3	3	1	32
N (couples)	6	4	5	2	5	5	5	3	5	5	45
(YF= Young families, EH= Elderly households)											

1 In Alicia's (23 years, Young families, urban, UK) household: her husband David does very little, but his mother (who lives with them) tends to be responsible for washing dishes.

## Challenges faced in food provisioning

The challenges in food provisioning varied a lot between the countries and between study groups, income and household composition. The most striking was the material and structural challenges, which varied greatly among the five countries. In Romania, the rural households lacked a steady water supply, and had to store water in plastic barrels for reserve. Moreover, elderly households in the rural Romania had one summer kitchen with gas stove, detached from the main house, and a winter kitchen, which is a room inside the house with a wooden stove. The winter kitchen also had a bed and the research participants would sleep there in the winter because the stove provided heat. In order to save money on electricity, fridges were turned off and food was kept in none-heated areas of the house. None of the households in the other four countries had comparable challenges of this degree.

Another challenge observed was related to kitchen infrastructure and concerned the placement of kitchen appliances and materials. Among the rural Romanian households, most of them kept the refrigerators and freezers in other rooms than the kitchens. In the urban Romanian households, the kitchens were a designated room inside the home, however, many of the households had extended the kitchen to the

balcony. A gas stove was typically placed on the balcony, while the sink providing water was in the kitchen room.

In relation to lacking basic infrastructure, the overall economic situation in the countries studied and among the households need to be addressed. Poor pensions or low income posed major challenges in food provisioning in many households. This was particularly evident in the Romanian, French and the British study. In Romania, income was particularly a challenge in the elderly households, because pension for the retired is generally low. In France, this was mostly evident in households with children, and in the UK, low income was challenging for about half of the households across study groups. Financial strains made careful planning essential in food provisioning. Most of the households had a food budget they followed, and a common strategy was to buy their food right after receiving their pension or income each month to secure food for the period. A related strategy, then, was to stock up on food until receiving the next payment. For instance, it was observed that the UK households bought large packages of meat typically cheaper per unit weight, and froze them for future use. The Romanian households also stocked up in food when being paid and bought staple food, as delicatessen and trying new food was too expensive. In the UK and France, research participants reported to buy products they perceived as of less quality than preferred, for instance by switching food outlet, buying cheaper store brands, or to give up certain foods. For instance, Ryan (20 years, Young single men, urban), could not afford as much fresh fruit and berries as he would have liked. Furthermore, buying food at reduced price was common among the French households.

The Norwegian households were generally concerned with price as well and many bought products at reduced price. However, the only research participant to explicitly express to limit himself due to financial reasons was Roger (24 years, Young single men, urban), who said he had to make priorities and had to disregard some products in favour of others. The elderly households in Norway were avoided wasting food because they did not like to waste resources. Bente (71 years old, elderly household, urban) said “We are the generation who doesn’t throw food”. Meanwhile, this was more a monetary issue than an environmental concern. Related to this, a challenge with the package sizes was evident, particularly among the UK and Norwegian households. Much of the fruits and vegetables at the supermarket were wrapped in plastic and in bundles. This made some products either unavailable to buy individually, and for many, especially in the single-person households, these standard pack sizes were too big for the households. This resulted in the food often deteriorating before it could be eaten and thus leading to waste of food and money.

In some households, too small or old kitchens made it difficult to store and prepare food, and keep the kitchen clean. This was for instance particularly weighted among the French households where one lacked a countertop and another had a kitchen formed as a narrow corridor. Furthermore, the French study provided example of how

cooking became more feasible after moving into a home with a larger kitchen. For instance, Amandine (27 years, Young families, rural, France) cooked more elaborate meals after moving into a new home with a larger kitchen. In Norway too, some research participants reported to want a larger kitchen or with different layout in terms of storage opportunities, cooking space and waste disposal. Norwegian research participant Georg (27 years, Young single men, urban, Norway) had a kitchen space inside his student housing room, while the sink was placed in a shared hallway, and French research participant Vincent (29 years, Young single men, rural, France) had an oven in the basement. Living in a shared housing as a student or as unemployed meant managing food work in less preferable ways for these young men. Another shortage mentioned in some households, were lacking necessary equipment s or having appliances that did not function optimally. For instance, in UK, Daniel (25 years, Young single men, urban) had a mini oven he got from his grandmother, but was sometimes discouraged to use it because of the time it took to pre-heat, and elderly research participant Archie had a faulty cooker for several weeks while waiting for his landlord to fix it.

Household composition and balancing work life affected food work in everyday life. This was particularly evident among the UK, Norwegian and Portuguese households. In the Portuguese households with children where the men worked late, found it difficult to schedule common meals. This was also observed in UK and Norway, where having the time and energy to cook between work responsibilities and childcare was emphasised. Furthermore, in the UK and Norway, this was also evident among the young single men who balanced work and/or studies with social responsibilities, and leisure time activities such as sports and fitness.

Another evident challenge was health, especially among the elderly households. The challenges related to reduced mobility were particularly emphasised in Portugal, Romania and France, although such challenges are likely to occur in all countries as they for the most part are related to age. Examples of challenges was to walk even short distances, reach higher shelves in the supermarkets, carrying food home, and kneeling to reach lower cupboards at home. Comparable examples were given in the households with young families. Here, shopping and carrying heavy bags in late stages of pregnancy was mentioned as not only challenge, but also something pregnant women should avoid.

A part from reduced mobility, other health issues was addressed. For instance French research participant Yvette (74 years, Elderly households, urban) had trouble peeling vegetables due to arthritis, and the Romanian elderly had trouble with their teeth. For instance, they could not chew chicken meat unless it was cooked long enough. Some households received help from friends or families to shop, transport and cook food, and some had solutions such as installing drawers in the kitchen rather than low cupboards as they had issues with their knees.

## Chapter 2.2: Introducing the households and their everyday food life

**Table 2.2.3: Mentioned or observed challenges that makes it difficult to do food work the way they wished, differentiated on household types and country**

	Portugal			Romania			France			UK			Norway			n
	YSM	YF	EH	YSM	YF	EH	YSM	YF	EH	YSM	YF	EH	YSM	YF	EH	
Limited financial means	1	1	2	1	1	4	2	4	-	4	3	1	1	-	-	25
Kitchen infrastructure, kitchen appliances	1	2	2	-	2	3	1	1	1	2	2	1	1	-	2	26
Water supply	-	-	-	1	2	3	-	-	-	-	-	-	-	-	-	6
Transporting food, difficulties at carrying large packages of food, need of help	-	1	3	-	3	2	-	4	2	1	-	2	-	-	-	18
Package size difficult when eating alone (e.g. price or food waste)	-	-	-	-	-	-	-	-	-	2	1	3	3	-	-	9
Eating alone	-	-	1	-	-	1	-	-	-	1	-	2	3	-	-	8
Time issues/work-family life balances	-	5	-	5	4	-	-	2	-	3	3	-	2	2	-	26
No energy to cook	2	2	2	-	-	1	-	-	-	1	1	-	3	1	-	13
Young children present when cooking/shopping	-	3	-	-	3	-	-	1	-	-	3	-	-	3	-	13
Disabilities, health and teeth issues affecting food work	-	1	1	-	-	5	-	-	2	1	1	2	-	-	1	14
Summary of table: The list of challenges is not exhaustive. Instead, they represent verbalised and /or observable obstacles affecting food work. The following chapters will provide more details about practical challenges when cooking and also accidents that affect how the food work is done. Furthermore, the listed challenges are associated. For instance, poor kitchen infrastructure and limited financial resources go hand in hand. Moreover, the listed challenges have an impact on food safety and needs to be taken into consideration [YSM= Young single men, YF= Young families, EH= Elderly households]																

## Chapter 2.3: Food anxieties and food safety issues

As we saw in the previous chapter, there were many practical and discursive challenges and solutions in households' everyday food lives. This chapter addresses the food anxieties and food safety issues. Some issues are raised by the research participants themselves, revealing to us what they find important, while other topics were specifically asked about. However, the way they understand the questions, and how they frame their answers are also part of situating the research participants within various discourses. The topics covered here are:

1. Food anxieties and food safety issues.
2. Learning about hygiene and safe food handling.
3. Experience with food related illnesses.
4. Issues related to vulnerable people and pets.

The chapter is then rounded up with a summary of the second section, as well as a conclusion, laying the foundation for interpreting the following analytical chapters.

## Food anxieties and food safety issues addressed by the Portuguese participants

Portuguese households expressed some anxieties and safety concerns regarding food. The way families looked and thought about these issues are associated with their household composition and the life course stages.

There were some types of food that most of the households showed concern about: lettuce, seafood, eggs, yogurts, fruits and raw meat (especially red meat). Families tended to think that white meat was safer and less dangerous than red meat. Young families (Marta, 35 years, urban; Vanessa, 29 years, rural; Andreia, 33 years, urban; Filipa, 35 years, urban; Sónia, 42 years, rural; and Sílvia, 33 years, urban) were very concerned with food quality and one expectant mother, Marta) was especially worried about toxoplasmosis because she was not immune to it. Vinegar and leach were used to wash lettuce. Furthermore, Andreia mentioned that pregnancy changed her views about food safety. If she did not used to wash bagged salads before (that often say on the package they are already washed), once she got pregnant these ready to eat salads were always washed with great care.

Andreia: Even the salads that are already washed, ready to eat, I wash.

Int.: And why? Don't you trust them?

Andreia: Yes, I think it's a habit, too. I wasn't like that. I was a bit sloppy, but it's a habit that I've acquired during pregnancy.

Int.: Do you mean pregnancy changed your awareness regarding these matters?

Andreia: Yes, it changed a little bit. Even now, I'm worried because even breastfeeding I can pass something on to the baby.

(Andreia, 33 years, Young families, urban, Portugal)

The majority of families were also very concerned about eggs. When buying eggs in the supermarket they often paid attention to use-by dates on the package and the eggs condition (e.g. if they are broken or not). They also mentioned that they avoid eating eggs when the use by date expired. However, several made and trusted the floating water test to check if the eggs were still good to eat when they doubted their age. According to popular wisdom if the egg floats, then this is a sign that air is trapped inside, the egg is old and not good to eat because it is spoiled.

Yogurts was another product that these households carefully check for the use by date. Vanessa (29 years, Young families, rural, Portugal) always looked for the use by date. Yet, sometimes she ate yogurts 5 days after their use-by date. If the smell and taste were still good, then she did not throw them away.

I eat yogurts five days after the use-by date because I think when they are spoiled it's something you notice well (...) by the taste, the smell. I think you

can tell by the smell. But I don't usually buy large amounts; they never go over the use-by date.

(Vanessa, 29 years, Young families, rural, Portugal)

The Portuguese households also talked about organic food. Younger families and young single men said that organic food is better, but they did not usually buy it because it was very expensive. Vanessa preferred to buy these products, but they were not available in most big retail food chains. Elderly households tended to distrust organic food.

Int.: And the organic products they have here. Don't you buy them?

Emília: No, not really, because I don't know if they are trustworthy...

(Emília, 89 years, Elderly households, urban, Portugal)

Emília's suspicions regarding organic food may resonate episodic scandals that were picked up by the media and tainted the trust of the population on organic food. In 2018 it was broadcasted in the media a study that revealed that some organic food in the Portuguese market exceeded the authorised levels of artificial chemical inputs. Controversy around the scientific validity and sample representativeness of the study emerged after its release. Independently of this, the population remained concerned about organic food and the Portuguese Association of Organic Farmers (Agrobio) had to make clarifications and explain to the population the strict procedures organic food goes through during its certification process. But beyond the issue of organic food (e.g. the price, the certification system), there were other food related activities that the households talked about. Most families said that they only store leftovers for 3-4 days in the fridge and only reheat them no more than two times. Young families and young single men would usually reheat food in microwaves.

The process of cleaning and tidy the kitchen was perceived as very important to food hygiene and to have good cooking conditions. Meanwhile, Vanessa (29 years, Young families, rural) was the only research participant who used different chopping boards, bowls and knifes for different kinds of food. She was also the only one in the sample who used an antibacterial soap to wash her hands. The other research participants usually used the same knife and chopping board for food but some cleaned them during the food handling process. There were some families that used bleach to wash chopping boards, the kitchen top, the fridge and the floor. They claimed it was a good disinfectant to kill germs and bacteria.

### Learning about hygiene and safe food handling

All households said that they never learned food hygiene and safety at school. Some women mentioned to have improved their knowledge during pregnancy searching on the internet, reading websites or through doctor advice. Vanessa (29 years, Young families, rural) learned about safety and hygiene in a training course because she was

working in the food sector. Bernardo (19 years, Young single men, urban) learned some food safety notions from his parents given that they were food engineers. All elderly families mentioned they follow normally the rule of thumb and common sense, also stating that life experiences were important to learn about how to handle food safely.

Marta (35 years, Young families, urban) claimed that the Portuguese do not know more about these issues because there is no information. According to her, people did not follow food safety rules because they were not aware of them. She believed that food safety messages will only be effective if they are disseminated by physicians or health professionals. Also, she believed people needed more information. All women from young families (both expecting a child or already with young children) mentioned that pregnancy was an important phase to learn about food safety. The rules and advice given by health professionals were still followed, even after pregnancy.

Int.: Did you have some food safety advice or recommendations?

Andreia: Yes, got them through the doctor.

Int.: Did the doctor tell you what you could and couldn't eat?

Andreia: I'm still following the advice and I'm still learning because I enjoy researching a lot.

(Andreia, 33 years, Young families, urban, Portugal)

Sílvia (33 years, Young families, rural) also said that she learned some food safety practices from a cousin that has leukaemia. She learned that food should be put in the fridge when is still hot to prevent developing bacteria.

Int.: What do you do with the stew that was made on the previous day and that is leftover?

Sílvia: It goes to the fridge. I put the food, even hot, inside the fridge.

Int.: Really?

Sílvia: Yes, I've been told to do like that... I know that there is this idea that food should get cold before putting it in inside the fridge... but I have a cousin who got Leukaemia and her doctor told her that food once made, if not eaten, should go to the freezer straight away to avoid bacteria to grow. Bacteria will be much less than if they are left in the pan cooling down. This is so that for example soup... if I left it cooling down in the summer in the following day it is a bit off... I always put the soup hot inside the fridge... I rise the fridge temperature, it cools down and never goes off.

(Sílvia, 33 years, Young families, rural, Portugal).

Vanessa (29 years, Young families, rural) and Bernardo (19 years, Young single men, urban) mentioned to always wash hands with soap when they touch food, both before and after handling each ingredient when they cook. Vanessa learned this practice through formal education, when she took a training on food hygiene and safety. She

also mentioned never using wooden spoons in the kitchen because they are less hygienic. Bernardo was taught by his parents.

For instance, I use garlic powder, put it on the meat and then I wash my hands, and then I use the salt. It's not because I think it's contaminated or not, it's a habit. Any little thing and I wash my hands. (...) I don't like mixing things up. I have this habit: whenever I touch something, I wash my hands before touching something else. (...) It's a habit; I can't do it another way.  
(Bernardo, 19 years, Young single men, urban, Portugal).

I'm stricter at work, otherwise I would be crazy at home. But yes, there are some things that I care about also because of my job. For example, I do not use wooden spoons. (...) I only have a wooden chopping board for bread, not for vegetables, meat or fish. (...) Because wood is more porous, harder to clean, and it gets fissures from knives, it's easier to get microorganisms, it's not so hygienic, so I don't use it (...) I use a dishwasher because it reaches higher temperatures, so the dishes get more disinfected and cleaner.

(Vanessa, 29 years, Young families, rural, Portugal)

### Experiences with food-related illnesses

Some households mentioned to have experienced food poisoning and believed they knew what caused it. Other mentioned that sometimes they feel unwell but could not identify the causes. Yet others claimed that they never experienced food poisoning or got sick because of food. One interesting point is that young families referred to have experienced more food poisoning episodes than elderly families or young single men. Vanessa's (29 years, young families rural) partner had indigestion a few days before our kitchen visits. She said he ate too many desserts. When they were sick, they eat boiled apple, tea, grilled meat or fish. Josefina said that she never had food poisoning, but her daughter mentioned that a few years ago she got very ill because she ate seafood at a restaurant. She said that 15 to 16 people ate the same food but only she and another person got sick. She had to go to the hospital to take an anti-histaminic.

Int.: But do you have any allergy?

Daughter: No, I'm not allergic.

Int.: Your mum told us that you had a food poisoning, wasn't it?

Daughter: Yes, I had. I ate seafood... we were 15 or 16 people and only me and my cousin had food poisoning.

Int.: But was it in a restaurant?

Daughter: In a restaurant.

Josefina: Was in [name of place close to Porto], wasn't it?

Daughter: No, in [name of place close to Porto]. We went there for a birthday party and we ate seafood rice and only me and my cousin got sick. It was a very hard experience!

(Josefina, 81 years, Elderly households, urban, Portugal)

Odete (65 years, Elderly households, urban) also mentioned that sometimes she had some difficulties with digestion and she took some medication to help this process. She related this with her age.

So, there are a lot of things that I eat and after a while I have heartburn or a reflux. I have to take medicine to protect my stomach, it's not easy. It's age!  
(Odete, 65 years, Elderly households, urban, Portugal)

Odete also mentioned she had a food poisoning experience with fish (horse mackerel) and she was very fearful of eating farmed fish.

I bought horse-mackerel and it was not good. So now I am afraid, why?  
Because it's all farmed. We think it's fresh but it isn't, she said it was fresh,  
but I'm not sure...  
(Odete, 65 years, Elderly households, urban, Portugal)

Andreia (33 years) and Filipa (36 years) (both urban young families) mentioned that sometimes they felt unwell after eating, but they did not know what kind of food provoked such feelings. Filipa had some gastroenteritis at different times, but she could not identify the cause. She was the one who ate some bread and zips a drink while preparing chicken. This was because her husband arrived late home and she nibbled on something to keep her going until a late-night meal.

Int.: Have you ever had food poisoning in your family?  
Filipa: I had some gastroenteritis. I do not know what caused it, I didn't eat sushi, so it was not sushi, but I had some boring episodes. I also think that I have a reactive organism, anything I eat that is less good, maybe it does not hurt you, but I get diarrhoea or vomits, my body cleans up, and the next day I'm fine.  
(Filipa, 36 years, Young families, urban, Portugal)

Manel (73 years, urban), Emília (89 years year, urban), Josefina (82 years, Urban), Maria Celeste (70 years, urban) and Augusto (70 years, rural) (all elderly households) reported that despite their age, they never had bad experiences with food.

Int.: Do you remember any bad episodes with food?  
Manel: No.  
Int.: In your family?  
Manel: No.  
Int.: Your wife?  
Manel: No, never. We never had anything.  
(Manel, 73 years, Elderly households, urban, Portugal)

Int.: Have you ever had food poisoning?

Emília: If I had? No.

Int.: What about your husband and your daughter?

Emília: No, not really.

Int.: And have you ever felt sick after eating food?

Emília: No.

(Emilia, 89 years, Elderly households, urban, Portugal)

Augusto mentioned that he never got sick with food, but he considered himself quite careful with his health and went to the doctor once or twice a year.

Int.: Have you ever had any food-related illness?

Augusto: I was never really sick.

Int.: Diarrhoea or vomiting?

Augusto: No. I pay attention, I go to the doctor at least once or twice a year.

Int.: To do a check-up?

Augusto: Yes. To see how the body is.

Int.: To see if everything is okay?

Augusto: Because I have an arrhythmia, I have high cholesterol but that does not mean that I consider myself sick.

(Augusto, 70 years, Elderly households, rural, Portugal)

### *Issues relating to pets*

Five households had pets. Filipa (36 years, Young families, urban) and Carlos (24 years, Young single men, urban) had a dog. Vanessa, (29 years, Young families, rural), Odete (65 years) and Josefina (82 years) (both urban elderly households) had a cat and Andreia (33 years, Young families, urban) had a cat in her father's house.

In general pets were fed in the kitchen. Yet, Vanessa put the cat's litter in the bathroom and Odete in a small room near the kitchen. Vanessa also used an anti-bacterial detergent for cleaning floors and surfaces because her cat had some skin allergies. However, she said she did not take special precautions with him because he never jumped on the kitchen counters, was vaccinated and never went out. Vanessa sometimes fed the cat (dry food) when she was cooking. She washed the cat's bowl in the washing machine.

Andreia's father had a cat but she mentioned to never change the cat's litter when she was pregnant because she was not immune to toxoplasmosis. Nowadays, when she changed the cat's litter she put gloves and used a spatula.

Int.: Have you ever had pets?

Andreia: No.

Int.: What about your father's house?

Andreia: My father has.

Int.: And what is it like? Do you touch the cat?

Andreia: No. We do not touch the cat. He is very independent and does not like being touched. We do not usually touch him. When we change his litter we are careful, we take some gloves, we get a spatula to remove the dirty cat litter.

Int.: And when you were pregnant, did you touch the cat?

Andreia: I touched the cat, but I did not change the cat litter.

Int.: Was it a doctor's advice?

Andreia: Yes. Due to toxoplasmosis, it's the risk of toxoplasmosis.

(Andreia, 33 years, Young families, urban, Portugal)

Odete said her cat was very quiet and never came to the kitchen when she was preparing food, only if Odete was drinking milk because the cat loved milk.

Int.: Does he always stay there quiet?

Odete: Yes.

Int.: But doesn't he come here when you are cooking?

Odete: No, only when I am drinking milk. She is crazy about milk. I've never seen a cat so crazy about milk as this one.

(Odete, 65 years, Elderly households, urban, Portugal)

Two families had sick pets. Filipa's (36 years, Young families, urban) dog had a urinary infection and he stayed in the kitchen during the day when she was working. The kitchen floor was easier to clean. When she arrived home, she changed the dog diaper on the kitchen floor. After touching the dog's diaper with urine, Filipa washed her hands in the bathroom with a microbial detergent. Josefina (82 years, Elderly households, urban) had a cat that was sick. He had otitis. She took all the carpets and washed them in a laundry because she was very afraid that her daughter would get sick because she was very vulnerable health wise.

As we have seen throughout this section, the issues of food hygiene and safety were a concern for many families in the Portuguese sample. The way families frame and perceive these matters depends on their household composition and the challenges that arise at each stage of their life course. Young families with children or mothers who were expecting a child showed some anxiety regarding food quality, especially pregnant women who were not immune to toxoplasmosis. Most women with young children said that they always follow medical advice and became more aware and sensitive to food hygiene and food safety issues while they were pregnant. Elderly families tend to follow the rule of thumb when dealing with food and learn with their life experiences. They dealt with food risks mostly employing tacit knowledge. However, there are some foods and food practices that remain a general concern for all families. These are lettuce, yogurts, and not reheating leftovers many times over. Most elderly families consider that they never got sick with food and several young families mentioned they experience some food poisoning episodes. A few families have their

pets with infections or ill. A few pets would get into the kitchen while their owners were preparing food. If they were petted by their owners, the latter would wash their hands before resuming cooking tasks (e.g. Filipa, 36 years, Young families, urban young families).

## Food anxieties and food safety issues addressed by the Romanian participants

Various anxieties about food were reported by the Romanian households and some varied patterns between the household compositions have been identified. Most believed that the food they buy is safe, safety being considered by one of the research participant as directly associated with the food brand and price of the product.

None of the households paid attention to the country of origin of fruits and vegetables from the supermarket. Most of them argued that when the food was out of season, they assumed it had other origin countries than Romania. Buying fruits and vegetables from the local agro food market was associated by most as a place where they could buy more natural and healthier products. However, Sorina (32 years, Young families, rural), believed that the products sold on the local agro food market contains more pesticides compared with similar products in the supermarket. She believed that the store where she does food provisioning had a strict policy regarding the quality of food. She preferred the fruits grown in her garden, but when they are out of season, she preferred to buy them from the supermarket.

A majority of households mentioned that food nowadays contains a lot of additives such as preservatives, but only few of them could give examples of this. Maria Mirabela (34 years, Young families, urban) said she tried to avoid buying food that had more than three additives written on the product label. On the other hand, Ionel (30 years, Young single men, urban) said that it was difficult to find food that did not have additives these days, thus he gave up reading the labels looking for additives. Sorina (32 years, Young families, rural) mentioned that the chicken she raised was fed with forages she bought from the vet the first weeks. She thought these contain chemicals.

Another anxiety mentioned by the young single men and young families was related to fish, cheese and meat products. Balanel (28 years, Young single men, urban) was afraid of eating certain types of fish, cheeses and sausages, especially when eating them in restaurants. He was afraid of being exposed to expired food or insufficiently cooked food, especially fish. His parents had warned him about food poisoning issues. At home, he was watching the colour, odour and other signs, such as presence of pellicle or mould, on the food. Florinel (31 years, Young single men, urban) expressed his worries about frozen fish because he did not have warranty that it was safe for consumption. Sorina (32 years, Young families, rural) was very cautious regarding meat products as she had a bad experience with sausages in the past, whereas Bogdan (32 years, Young single men, urban) was very cautious regarding meat products, because he was afraid to gain weight.

One the other hand, for elderly households, anxieties about food were related mostly to consumption of salt and fats and additives. As mentioned earlier, some research

participants reduced salt and sugar consumption due to health problems, whereas others were interested in following the recommendations of the authorities through TV campaigns.

The overall quality of all food sold on the Romanian market was criticised. Maria Mirabela (34 years, Young families, urban) considered food sold in the East European countries of inferior quality compared with foods from western countries. (This reflects the problem of "double standards", which was presented in mass-media. Eastern EU countries have called on the European Union to address the "double standards" used by food companies in selling identically branded but more inferior products than those in the west).

In a couple of young single men household (Ionel, 29 years, urban), did not use microwaves to heat/reheat foods because they have been told that the microwaves might have negative effects on their health. Meanwhile, one of them is still using the microwave oven, because it was a convenient way to him for heating food (Bogdan, 32 years, urban). The other (Florinel, 31 Years, urban) mentioned that microwave ovens might get you fat, adding that that is why they are used in fast foods restaurants.

Another food anxiety mentioned by pregnant women was eating eggs. Maria Mirabela's (34 years, Young families, urban) physician recommended her to avoid eating eggs, as they might contain *Salmonella* and could harm the baby. Sorina (32 years, Young families, rural) considered that some foods are more perishable than others, especially in case of meat products. She prepared her own minced meat from beef and poultry.

Many research participants mentioned that they washed fruits bought at the market due to the presence of pesticides, however, if picked from their own garden they did not wash them. Sorina said that she never washes the melon if she picks it from her own garden, Zoltan (35 years, Young single men, urban) did not wash apples from the garden, whereas Fanica (69 years, Elderly households, urban) did not wash grapes.

### Learning about hygiene and safe food handling

Television shows and Internet were mentioned as the main source of food safety advice among the young single men and young families. Zoltan (35 years, Young single men, urban) said that he learned how to cook the food safely from television cooking shows. Based on the information he received watching television, made Florinel (31 years, Young single men, urban) giving up using universal seasoning spice mix. However, he said he used a similar type of mix base for meat, but that he does not add too much.

Most of the households mentioned trusting the advices received from the food safety authorities. Meanwhile, one research participants, Zoltan said he had no warranty that the food that he bought was safe. However, when he bought a product, he always looked

at the use-by date and checked the freshness. On the other hand, Sorina (32 years, Young families, rural) believed that the quality and safety of the food that she bought were dependent on the brand. Thus, for several years she had bought the same brands, and so far, she said she had not had any problems.

Amalia (31 years, Young families, urban) said she found advice regarding food safety online. She gave up on asking for safety advice from her parents because she says: "*The rules have changed*". However, consulting many sources of information, she was somewhat confused of not knowing exactly what was right and wrong. She therefore considered that it was very hard to be a parent and to decide what is best for your children these days.

A few households had experienced eating food they thought was risky. Florinel (31 years, Young single men, urban) had an episode in a restaurant where he was served undercooked meat. He gave the dish back to the waiter. However, if a friend had invited him to dinner serving him undercooked meat, he would have reacted differently. He would never tell a friend that the meat was not cooked properly correctly. Instead, he would find a way to reject him gracefully. Similar responses were given by others as well, regardless of the household type.

### Experiences with food-related illnesses

Ionel (30 years, Young single men, urban) said he had indigestion in France while he was visiting his sister. He felt sick after eating shellfish. The symptoms had begun after two hours with nausea and abdominal pain. He didn't search for any medical advices. He just rested and drank a lot of water to hydrate. Another episode of food poisoning was mentioned by Zoltan (35 years, Young single men, urban) after eating cheese at home. He didn't recall from where he has bought the cheese, however he mentioned that he liked to buy cheese directly from the shepherds.

Fanica (69 years, Elderly households, urban) said that it happened that she got ill after eating food, but she meant that the source was never food prepared in her kitchen. Instead she said "If I drop off a piece of food on the stove in my kitchen, I move the pot from the gas stove, clean it and then I continue to cook the food". Balanel (28 years, Young single men, urban) did not like to cook shellfish at home because he worried not knowing when the food would be properly cooked. He recalled a mild food poisoning after eating seafood. From that time he had become very conscious about selecting shellfish dishes. Instead he preferred to eat fried or marinated fish, because he considered to be less risky than shellfish. Serena (36 years, Young families, rural) also reported an episode of food related illnesses. She said that her husband had symptoms associated with food poisoning, but she didn't remember the food that made him ill.

Despite these episodes of illnesses none mentioned searching for medical advices. Some mentioned going to pharmacy to buy pills to reduce the symptoms, others mentioned that they changed the diet when they were ill. When we asked how they would react if her child would suffer from food poisoning, Meanwhile, Amalia (31 years, Young families, urban) mentioned that she would get medical advice if her child showed symptoms of food related illnesses. However if it happens to her, she said "*it depends on the severity of symptoms*".

### ***Issues relating to children/vulnerable people***

Four households had dependent children at the time of the research, with two households expecting a child in the coming months. The birth of the children changed the household routines of cooking and eating of young families. One example was Amalia (31 years, Young families, urban). Although she loved fries, she never cooked it after her son was born for health reasons. "If my son sees that I eat fries, he will also want; therefore, I prefer not to cook them". As mentioned earlier, Maria Mirabela (34 years, Young families, urban) was cautious not to eat eggs during pregnancy as her physician prescribed invoking salmonellosis. Three out of four young families having children mentioned that at least one of their children is allergic to something.

### ***Issues relating to pets***

All the households living in rural areas had pets such as cats and dogs around in the house. However, only two were seen to keep cats inside home. In urban households, only two had pets. Amalia (31 years, Young families, urban) mentioned that she did not like that her cat was walking all over the kitchen and wanted to take some measures in that regard, whereas Maria Mirabela (34 years, Young families, urban) said that she did not have any problem with cooking with her dog in the kitchen. "The dog is on the floor, so I don't have a problem in keeping him in the kitchen", she said.

## Food anxieties and food safety issues addressed by the French households

The France households were careful with fresh products like meat, fish, eggs, deli-food and dairy products. Meanwhile, overall the French households was less concerned food safety compared to food quality. The Elderly households were less concerned about food safety compared to Young families and Young single men.

In the young single men households, a few of research participants mentioned various foods that could be potentially harmful. Vincent (29 years, rural) mentioned several foods be careful with, including eggs, meat, fruits and vegetables, seafood, oysters, as well as all perishable foods. Dry products, on the other hand, such as pasta, rice, and semolina were less concerning to him. Aurélien (25 years, Young single men, rural) was careful with dairy products such as cream and milk as they easily turn sour. He also mentioned jam and told that he had thrown a whole jar after discovering mould. It was a precaution, he said, as he would not take the risk. Meanwhile, if there was mould on fruits, he would rather cut it off and eat the good part. Etienne (30 years, rural), on the other hand, said that he and his housemates were less worried about food safety. They did not cover leftovers in the fridge, although they knew it would be safer to do it. Meanwhile, leftovers were never kept for long and usually eaten the day after. Furthermore, it did happen that men ate foods after use-by-date, but only after smelling and checking if it was still fine to eat. If not, they would not throw it but rather they give it to the hens. However, they would not do this for fish. In fact, eating food after use-by-date was rather common among the French households.

Some of the households, mentioned eating past-date yogurts. Mathilde (37 years, Young families, urban) told she could eat yogurts up to 7 to 15 days after use-by-date. Others told they would only after four days to one week. In fact, Mylène (25 years, Young families, urban) was the only one who mentioned that she never ate past-date products.

My mother always told me that it doesn't matter if we eat past-date yogurts, but I never did it. We did it at home and I was never sick, but we don't do that anymore, no.

(Mylène, 25 years, Young families, urban, France)

Various foods were mentioned to be more risky than others in the elderly households and young families, Amandine (27 years, Young families, rural) avoided eating meat after use-by-date. If the smell was not good, even though the date had yet to pass, she would throw away the meat. Julie (28 years, Young families, rural) would not eat delicatessen, ham or eggs if the smell was weird. Instead, she would throw it away immediately. Sylviane (77 years, Elderly households, rural) mentioned that both meat and eggs can be sources for foodborne illness if they were no longer fresh. Meanwhile, overall, the French households were rather relaxed with regards to food safety.

For instance, we noted a certain tolerability from research participants regarding sanitary and food safety issues in France. Bernard & Hélène (both 72 years, Elderly households, urban) said that they did not care about food scandals, because they were rare and thus isolated cases.

It can happen but I am sure food producers try to clean everything very well because a sanitary scandal is not good for them. They try to make everything square.

(Etienne, 30 years, Young single men, rural, France)

We won't change our habits because of a scandal, it is exceptional".

(Amandine, 27 years, Young families, rural, France)

In France, a recent food scandal received a lot of attention, which involved a large food producer. In December 2017, the Lactalis Company in north-west of France, producing milk powder for babies, covered up baby food contaminated with salmonella. The contaminated products were not immediately removed from sale after the pathogen was discovered, leaving very young children at potential risk from consuming contaminated products for weeks. Mathilde (37 years, Young families, urban) used to buy this brand for her younger daughter. She said, however, that they were not concerned by the contaminated boxes. Instead, she told that they were "still waiting for the reimbursement from Lactalis for the boxes we bought during this period". Her husband, on the other hand, thought that this case was alarming because it was food for babies, who are weaker than other people. However, for most of the research participants who talked about this scandal, their main issue was not young children's risk of salmonella infection, but in the fact that the firm hid these sanitary issues for weeks and kept selling contaminated food. Odile (65 years, Elderly households, rural) said: "It is scandalous, but what do you want us to do?"

Meanwhile some publicized food scandals had an effect on food consumption in the households. Meanwhile, these were mostly food scandals regarding moral or ethical issues related to animal welfare, rearing conditions and environmental effects. In France, food scandals documentaries broadcasted on TV has been followed by a large audience, and was mentioned by the research participants as the cause for avoiding Simon (25 years, Young single men, urban) stopped eating products from the brand, Nutella after watching a TV reportage about palm oil production in the Amazon. He was shocked by the environmental impact it had.

I don't buy Nutella anymore. Before, I was a huge Nutella consumer and when I discovered the palm oil production scandal, this is a brand totally linked to this product, they could change recipe but they do not do it, so I think they are piteous.

(Simon, 25 years, Young single men, urban).

Amandine (27 years, Young families, rural) and her husband were also familiar of the Nutella palm oil scandal, but they still ate some arguing that changing this habit was hard to do. Etienne (30 years, Young single men, rural) did not eat shrimps anymore after watching a TV documentary about how they were produced. “They put a pink dye while cooking them to prevent oxidation and to provoke a chemical reaction to make a nice pink colour”, he told.

Gérard & Odile (71 & 65 years, Elderly households, rural), became concerned about eating ham *after* “we saw some TV reportage about ham production and we do not eat ham anymore.” She added that they had stopped buying packaged ham only, but still bought ham from the butchery when they could see the butcher cutting it. However, Odile was not sure the quality was any better. However, food criticism on TV did not always affect them. “We also saw TV reports on ketchup... well, if we change each time we see a TV report, we won’t eat anything anymore”, Odile said. Charles & Annie (75 & 70 years, Elderly households, rural) had stopped buying meat sold in tray after watching the same TV program. They were simply disgusted by how this meat was produced. Thus, nowadays, they would only meat at the fresh meat counter in the supermarket.

Food anxiety among French households had more to do with quality of the products they bought, and less about safety issues. Mathilde (37 years, Young families, urban) became more concerned about what food products contained after becoming a mother. She started to buy organic food after her first daughter was born. At first, she bought it for her baby but then she started buying and cooking organic food for the whole family. For her, pesticides rather than bacteria was a concern.

If I buy organic carrots, I just rub them with a brush and I will cook them with the skin. Same for zucchinis, if they are organic, I leave the skin, if not, I peel them. I do that to prevent pesticides not bacteria.  
(Mathilde, 37 years, Young families, urban, France)

I am more sensitive to pesticides than to bacteria. I don’t say they are not harmful, it can very serious, but it affects me less, I care less.  
(Mathilde, 37 years, Young families, urban, France)

Aurélien (25 years, Young single men, rural) worried less about food safety, because he believed that standards were high in the French food industry. Meanwhile, he was less confident with the feed for livestock and how feed products are produced. Furthermore, Aurélien was carefully read labels, checking additives such as colouring and antioxidant and paid attention to certificates of origin. Sylviane (77 years, Elderly households, rural) was also concerned about food quality and thus avoided buying low

price products (cheaper food product brand), because she believed that the quality was inferior. She also mentioned additives taste enhancers, which she avoided eating.

I don't buy processed food products. I don't eat them. Maybe once in a while it won't be harmful, but I remain careful. They put a lot of things inside. Taste enhancers for example and other stuff... I never buy pie crust, I do it myself, I transform a lot of products by myself.

(Sylviane, 77 years, Elderly households, rural, France)

Vincent (29 years, Young single men, rural) would rather buy food from at the local farmer, because he thought it was healthier. He preferred to know that the meat he bought came from animals allowed to be outside. He was also concerned about farmworkers working conditions.

Despite the relaxed attitudes towards food scandals described above, a few of the research participants voiced a mistrust in large food production companies, their food products and communication. However, these trust issues were mostly concerning ethical issues such as animal welfare, environmental concerns or health issues such as pesticides and additives. Thus sum up, then some households adapted their consumption after food scandals. Others changed where they bought their foods, for instance going to the butchery for meat, instead of buying packaged meat from the supermarket. A few research participants stopped eating certain product completely to avoid contributing to harming the environment caused by the production.

### Experiences with food-related illnesses

The French households seemed less informed about food pathogens and foodborne illnesses. For instance, when asked about pathogens Yvette (74 years, Elderly households, Urban) mentioned "tourista" (traveller's diarrhoea), before rephrasing and saying that this was probably not a pathogen. Five mentioned salmonella, which might have reflected probably the recent widespread food scandal in France involving the virus. Two mentioned Listeria. "I know listeria, but I think that we don't find it anymore in France, right", Elodie asked (31 years, Young families, rural). Few also mentioned *E. Coli*, but were often unsure about the pronunciation. "The one that comes from cheese, "echezolia" or something", Hélène said (72 years, Elderly households, urban). There were no noticeable differences between the study groups regarding knowledge about pathogens. However, the few research participants who were educated or professionally trained in hygiene seemed to know more than the others. Meanwhile, they were unsure from where they had learned it.

Few research participants spontaneously recalled experiences with food-related illness. Some also recalled episodes with a foodborne illness. The cause of the food poisoning were mostly perceived as something happening outside of home

(restaurants, delivery food, collective catering). “It was because of a delivery pizza, and when we ate a kebab sandwich [...] but never from something I cooked at home”, Amandine said (27 years, Young families, rural). Fabrice (24 years, Young single men, urban) became ill once after eating a sandwich at a fast food restaurant:

Fabrice: I was sick after eating at McDonalds’. It was maybe a Friday night and I had to wait for a few days before going to the doctor. I gave me everything I needed.

Int.: did you take some medication?

Fabrice: Yes but I don’t remember which one. It was 2 years ago.

Int.: Did it change something about your McDonalds’ consumption habits?

Fabrice: Well, at first, it bothered me, but not anymore, and it just happened once...

(Fabrice, 24 years, Young single men, urban, France)

Simon (25 years, Young single men, urban) became sick once after eating a tomato and meat sauce at a friend. His friend told him that he had kept the tomato and meat sauce on the balcony, under the sun, for the whole afternoon and put it back in the fridge afterwards. Mylène (25 years, Young families, urban) became ill twice during her pregnancy after eating kebab sandwich:

I was sick because of a kebab sandwich, when I was pregnant, but I thought it was a gastro enteritis. It was after 3 months of pregnancy. Then I tried again eating a kebab at 6 months of pregnancy and it happened once again. I threw up a lot, I didn’t go to the doctor, it just stopped after a day.

(Mylène, 25 years, Young families, urban, France)

For Charles & Annie (75 & 70 years, Elderly households, rural), were infected by a foodborne illness from eating oysters Charles had picked himself when they were on holidays at the Atlantic coast. “It lasted 2 days, we were very sick, we couldn’t eat anymore”, Charles said.

For some, episodes with food-related illness were followed by changing eating patterns or becoming very conscious about certain kind of food. Julie (28 years, Young families, rural) became ill when she was 12 along with her 2 sisters after a sporting event.

There were containers of hot chocolate and the milk had been contaminated by a bacterium, so me and my 2 sisters we were food poisoned. We vomited one after the other... The doctor came to our home, our dad was not feeling well either. Now I am very careful with distributed food in public event like that, especially for my son. I am very careful with milk now. In the morning, I put it right in the fridge after we’ve used it.

(Julie, 28 years, Young families, rural, France)

Simon (25 years, Young single men, urban) did not eat Asian food anymore after becoming ill from eating at a Chinese restaurant when he was young. François (76 years & Yvette, 74 years, Elderly households, urban) recalled an episode of sickness from when he was 12 years old. He was hospitalized for two days after eating canned sardines canned. He told that this made very careful with canned food. He always checked at condition of the cans. "I do not buy damaged cans. We prefer to buy food in glass jars, so we can see food inside", he said. Some mentioned food-related illness when traveling abroad:

When we went to Mexico, we had some intestinal troubles.  
(Sylviane, 77 years, Elderly households, rural, France)

Yes abroad, when we went to Tunisia, we think it is because of ice cubes and raw vegetables.  
(Hélène, 72 years, Elderly households, rural, France)

A tendency of all these stories of becoming ill, was to explain from where and what food caused the illness although few could know for sure what the source of infection really was. Mathilde (37 years, Young families, urban) linked food-related illness to something she could not control such as the school catering at her daughter's school.

They have been sick with gastroenteritis yes, but not with food poisoning, we cross our fingers... It often on social occasions, they are more in contact with bacteria, because they put everything to their mouth, they touch everything...  
(Mathilde, 37 years, Young families, urban, France)

Only in three households, sourced episodes of foodborne illnesses to something they did wrong when preparing or conserving food, including Vincent (29 years, rural) and Etienne (30 years, rural) (both young single men) and Gérard (71 years & Odile, 65 years, Elderly households, rural) mentioned a food borne illness explained by something they did wrong in the food conservation or preparation. Vincent was once sick after eating meat he had cooked:

Well, I think it is because of the meat I cooked, but we never know exactly. It was pork, and I think it was 4-5 days in the fridge, not 2-3 days like I do now, so it was almost the limit to consume it, but I still ate it because it bothered me to throw it away. I re-heated it the next day, on a pan, to finish it, but that's when I became sick, it was not enough to re-heat it.  
(Vincent, 29 years, Young single men, rural, France)

Etienne was once sick and lost 10 kilos because of something he ate. In his household, the housemates rather regularly experienced some intestinal troubles, but they were not sure they what foods were the cause.

Int.: have you ever been sick because of something you ate?

Etienne: well sometimes, we think about what we ate the prior evening...

Maybe with a left-over it can happen.

Int.: What were your symptoms?

Etienne: Stomach ache, diarrhoea....

Int.: How long did it last?

Etienne: One or two days... Then it was gone.

Int.: Have you been to the doctor?

Etienne: No, it was gone.

(Etienne, 30 years, Young single men, rural, France)

Gérard (71 years & Odile, 65 years, Elderly households, rural) was sick for 8 days after eating chicken liver a few months ago. Odile had cooked the meal and explained that it might had been her fault:

I froze the chicken liver while it was still raw, then one day, I thawed it, cooked it, and froze the rest again. We say that we can freeze again a cooked product. And maybe the liver had remained at room temperature too long, I don't know, it normally never happens. So my husband was sick for 8 days and in bed for 3 days.

(Odile, 65 years, Elderly households, rural, France)

### *Issues relating to children/vulnerable people*

Some households paid special attention to food they gave to their children or grandchildren. Some research participants mentioned that they would never give a past-date product to children, like yogurt, even though they can eat it themselves.

Yes, we can eat past-dates yogurts, me and my husband, we can eat them 4 or 5 days after, but we don't give them to the kids. I am afraid they can be sick with them.

(Elodie, 31 years, Young families, rural, France)

One says do not consume past-date yoghurt. I do not especially agree with that... it depends on the yoghurt... maybe we should not give it to a child, I agree, you have to be careful to avoid weakening their immune system, but I think an adult is big enough to know when a product is bad or not, by smelling, looking at it...

(Vincent, 29 years, Young single men, rural, France)

In some households with young families, food cooked for young children included cooking meat longer to be sure it was well cooked or avoiding certain foods seen as risky for young children to eat. Elodie, a mother of five, did not give her children eggs to eat until they were 10 months old. If she cooked roast pork slices and the meat was

still pink, she re-cooked the slices in the pan until they were cooked well enough for her children.

Annie (70 years & Charles, 75 years, Elderly households, rural) would not prepare beef tartar for her granddaughters. She was not afraid of safety issues of eating beef tartare, but she did not expect her grandchildren to like it. For her, beef tartar was not the same as raw meat, because the meat was ‘cooked’ by the mustard. Other research participants, like Mathilde (37 years, Young families, urban), a mother of two, knew the risks of certain food but still gave it to her children. For instance, she gave her daughters cheese made with unpasteurized milk, against her doctor’s advice, because she considered the product to be of good quality. Furthermore, she said that her daughters had never become sick after eating it. Meanwhile, she peeled vegetables before giving them to her youngest daughter, if they were not organic, mostly to avoid pesticides and less so for hygienic reasons.

Mothers or pregnant women mentioned to make changes to their diet when they were pregnant. Mylène (25 years, urban) was not immune to toxoplasmosis. During pregnancy, she never ate raw fish, she cooked her meat very well, and rinsed vegetables from the garden more than usual. She also peeled apples. After pregnancy, these routines ended and she worried much. If her son’s pacifier fell on the floor she sometimes would only rinse it with clear water. Meanwhile, she paid attention to the foods she gave him. She preferred buying organic food for him and she cooked him compotes and purées from scratch.

Some households adopted new hygiene rules after becoming parents. Julie (28 years, rural) used a disinfectant spray to clean her baby son’s toys once a month. When Elodie (31 years, rural) became a mother, she started paying more attention to cleanliness and hygiene. She wiped her home every day and used bleach to clean once a week.

### *Issues relating to pets*

Ten of the French households had pets, usually one or two cats or a dog, and some had livestock as well.

Vincent (29 years, Young single men, rural) had two cats which slept outside of the house. He fed them every other day. They had a litter on his balcony but did not use it as they went outside.

Sylviane (77 years, Elderly households, rural) had a cat that ate in the kitchen’s corner, next to the fridge. Meanwhile, her cat lived outside during the day and its food was stored in another room.

Yvette & François (74 & 76 years, Elderly households, urban) had a cat, which they shared with the neighbours. It was not allowed to enter in the house and they only fed it some days, always outside.

Mylène (25 years, Young families, urban) had a rabbit she kept outside on the balcony. She fed it with lettuce and vegetables peelings. She said that it was their “compost bin”.

Mathilde (37 years, Young families, urban) lived in a house in the city. The family had one fish in a bowl and one cat which could go everywhere in the house. She said she could not help for it. The cat was fed once a day in a cat bowl on the floor.

Julie (28 years, Young families, rural) lived in a house in a small city. She had one cat, which mostly stayed inside. It could go everywhere in the house and in the kitchen, especially on the countertop. It had its own feeding space, where also the child also used to play. The family dog, however, stayed outside in the garden during the day, but slept inside.

Amandine (27 years, Young families, rural), lived in a big house in the countryside together with her husband, one child, two dogs and two cats. The dogs were mostly outside and were fed in another room than the kitchen. The cats were inside and climbed on everything, especially the table. That was why she kept cleaning surfaces pretty often and also her son's chair to avoid any dirt from the cats.

Charles & Annie (75 & 70 years, Elderly households, rural) had a pedigree cat which ate in the kitchen. The cat food was kept in the fridge, in a special box with the cat's picture on. Their cat was not allowed to go outside, because they worried that it could run away or get diseases. There were two litters in the house. Annie changed the litter every two days and every day, when they took care of their daughter's cat.

Elodie (31 years, Young families, rural) had two dogs, which stayed in their cage inside the house, when they were home alone. She fed them after the family ate their lunch. She put dog food in the garage or outside during spring and summer. They never ate inside the home and they did not go everywhere in the house. She vacuumed every day to keep her house clean.

While, five households had no pets, Etienne's (30 years, Young single men, rural) household had livestock animals in addition to pets. He lived on a farm with three housemates and had cats, dogs, fish, geese, ducks, hens, a female donkey, horses and a goat. They rented some farmland, in addition to the land on the house. Etienne used to make goat's cheese, but he did not have time anymore. In the garden they grew vegetables, nuts, berries and herbs. They had 4 dogs, one from each housemate. The dogs slept and ate in their basket. They were not allowed to go into the kitchen. They also had a cat that ate in the kitchen. Once a year they slathered a pig. Meanwhile, they had stopped raising pigs it because it was too much work. Etienne also went fishing

weekly and kept some fish in a big fish tank in the house. At the time of the survey, he also raised a baby duck in a cage under a lamp in the room at the entrance of the house.

None of the research participant mentioned any issues related to pet regarding hygiene, with one exception. Julie (28 years, Young families, rural) was careful about the risk of zoonosis transmission by (like ticks) for her child, so she cleaned her dog's basket carefully.

## Food anxieties and food safety issues addressed by the UK participants

In articulating their priorities and accounting for their routines, households made explicit or implicit reference to a range of different anxieties they experienced around food. These included ensuring a nutritious diet for themselves or their families, the impacts of intensive production methods from use of pesticides to animal welfare, and concern about environmental damage especially in relation to waste packaging. Here we focus in particular on those that relate directly to food safety and risk.

All households expressed some degree of concern about food safety and took measures to minimise risk of illness. These included efforts to store food under appropriate conditions and for recommended time periods, techniques for monitoring and assessing the changing state of food, steps in meal preparation like washing and thorough heating, and following personal hygiene and household cleaning regimes. Specific measures are considered in more detail in the remaining analysis chapters.

Particular types of food were treated with more caution than others. This was especially true of chicken, along with other raw meats and seafood; eggs and dairy products were also common causes for concern, but some explicitly said they did not worry about them. Few expressed any anxiety about the safety implications of fruit and vegetables. An exception here was Josh (22 years, Young single men, urban), who had heard “horror stories” about people becoming ill after eating “off” spinach.

Several research participants considered themselves to be unusually worried about cleanliness and hygiene, implying anxiety about cross-contamination. Alicia (23 years, Young families, urban), for example, felt she was “obsessed” with having a clean kitchen. In her case visible mess was seen as a potential indicator of hidden threats:

I just don't like to see like crumbs on the side, it really bugs me ... Like, what else is on there? So if it's clear, it's clean, then I'm fine.  
 (Alicia Cook, 23 years, Young families, urban, UK)

Tricia (70 years, Elderly households, urban) said she was “funny about” regularly replacing dishcloths. Paul (34 years, Young families, urban) described his frequent handwashing while preparing chicken as “a bit of an OCD thing”. Similar phrases were used by other research participants in relation to observing date labels and checking meat was fully cooked.

### *Learning about hygiene and safe food handling*

Many of the younger members of the sample, including five of the six research participants under 30 years, had worked in the food industry in some capacity. As a

result, most had undergone formal training or at least had on-the-job experience relating to safe food handling and associated hygiene practices.

Daniel's (25 years, Young single men, urban) training in a pub/restaurant taught him about storing food safely, especially learning to keep raw meat separately from (and not above) vegetables, something that he had begun to observe in his own fridge at home. For Ryan (20 years, urban) and Josh (22 years, urban) (both young single men) it included learning about avoiding cross-contamination at the preparation stage by using separate utensils and surfaces for meat and vegetables. Ryan continued to follow this by having colour-coded chopping boards in his home kitchen. Josh, meanwhile, did not have the "luxury" of multiple chopping boards, but followed the principle of using different implements for meat and vegetables (or else washing them in between uses), including having a pair of kitchen scissors solely reserved for cutting meat:

I know like a restaurant and food tech and stuff it's like red chopping board is for meat stuff like that and they've got the luxury of different chopping boards and whatever. But I would never use the same utensils I just dirtied with meat for anything else. And I've got that specific scissors.

(Josh Lovell, 22 years, Young single men, urban, UK)

Personal hygiene was another part of such training. Paul (34 years, Young families, urban), Josh and Ryan all agreed that working in the food sector had made them more aware about recommended handwashing procedures, but that doing so when cooking at home would be too time consuming. Sahib (23 years, young single men, urban) felt his training in a restaurant kitchen had not necessarily taught him anything new, but generally reinforced what he had already learnt at home, coming from a "very clean household" and regularly watching cookery programmes on television.

Like with cooking more generally, then, many had learnt about food safety during childhood, especially at home. As such, safe food handling practices felt more like "common sense" than something they had to be taught. Josh, for example, felt it was "almost obvious" when cooking meat to cut it in half and check its colour, since cooked food *should* look different to raw food. Similarly, Alicia using separate chopping boards was "normal" to Alicia and so was not something she questioned:

As I say, Mum was a chef, so it's been drilled into me that that was the normal way to do it ... it's just always been the way that I have done it, so it's never really been a problem for me.

(Alicia Cook, 23 years, Young families, urban, UK)

Again, some research participants mentioned learning about food safety more explicitly in school. Kate (30 years, Young families, urban), a primary school teacher,

continued to think about this by teaching children in her class about germs and how they spread.

Another potential source of learning was via traditional and social media. Some research participants made reference to particular food scares that they had first heard about on the news or stories they had picked up through Facebook. However, only a minority could remember specific information or marketing campaigns that had brought food safety issues to their attention. In fact, two research participants cited the same television advertisement from their childhood as underpinning their anxiety around chicken:

Because obviously I have seen the Dettol advert with the chicken where she's wiping the baby's tray thing with the chicken leg, and I'm just like, oh no, I could just imagine it.

(Alicia Cook, 23 years, Young families, urban)

Well, do you remember the Dettol adverts? ... Yes, that was quite scary as a ten-year-old, you could basically die from eating chicken. So, of course, it's widespread that chicken will cause you harm if you don't treat it properly. And it's the most widespread meat available, so you kind of have to treat it with a little bit of respect and be careful.

(Daniel Thorne, 25 years, Young single men, urban, UK)

More broadly, Paul (34 years, Young families, urban) felt that negative information in the media might have a short term effect on what he ate, but it is unlikely to permanently put him off eating something he likes.

### Experiences of food-related illness

Another, more dramatic way that some research participants had learnt about food safety – or at least internalised associated anxieties – was through an unpleasant personal experience of food-related illness. Most research participants had experienced this first hand (mentioned explicitly by 11), the vast majority of cases attributed to eating out or takeaways. Of these, the most extended case was when Ryan (20 years, Young single men, urban) became ill after eating out on holiday. He was ill for 11 days and lost a significant amount of weight, with subsequent consequences for his cycling training.

Only three research participants – all of them young single men – recalled becoming ill from food they had prepared for themselves at home. Josh (22 years, urban) was ill from (he thought) some chicken he cooked; it affected him for around a week and he had to take time off work. Daniel (25 years, urban) became ill the first time he tried roasting a whole chicken for himself, which he thinks was because it wasn't fully cooked. And recently Liam (28 years, urban) became ill after eating some leftover

cooked chicken that he accidentally left in his bag and had been kept at room temperature for two or three days.

Some research participants were explicit about how their experience of illness had impacted on their long term engagement with particular types of food, or with issues of food safety more broadly. Susan (78 years, Elderly households, urban) attributes her more cautious approach to date labels on milk to a childhood experience of illness after drinking milk at school. Laura's (31 years, Young families, urban) experience with prawns made her more worried about seafood in general, although it did not put her off eating prawns. Josh (22 years, Young single men, urban) felt it was his experience with chicken that made him "tighten up" how he handles chicken, taking fewer risks.

### *Issues relating to children/vulnerable people*

Three households had dependent children at the time of the research, with two further households expecting a child in the coming months. As we saw earlier, having young children had a major impact on household routines, in turn affecting how parents shop, cook and eat. Kate and Colm Buckley (both 30 years, Young families, urban), for example, used to cook together for pleasure more often before Grace was born and would have friends over for meals, something that has been more difficult since she arrived. Having children seemingly made parents more conscious of issues relating to food risk, from use-by dates and the possibility of nut allergies to general kitchen cleanliness:

I'd say I do think about it, like I say, more so with having Noah. Yes, I just feel when there's meat around and I don't know I just feel I'm wiping up a lot more and keeping things clean and just generally. I mean I've never been really dirty in the kitchen but yes it's definitely something I do think of quite a lot.

(Laura Cooper, 31 years, Young families, urban, UK)

The same was true for the pregnant women, Alicia (23 years, urban) and Lisa (32 years, urban), with respect to their own diets and the associated risk for their unborn children. Both followed NHS guidelines by cutting out certain risky foods like soft cheeses and cured meats.

Another set of issues concerned how children were taught and the relationships with food to be instilled into them. With the exception of Chloe's (38 years, rural) older daughter Martha – who was beginning to learn not to pick food up off the floor and eat it – the children in the sample were too young to be explicitly learning about food and hygiene. However, now that Grace was starting to eat solid foods, Kate (30 years, Young families, urban) was keen to take small steps towards normalising cleanliness, making a concerted effort to wipe Grace's hands before feeding time.

*Issues relating to pets*

Five of the households had animals living at home: four with dogs and one with a cat. Most pets were allowed in kitchens but were kept off worktops as much as possible. Their food was most often kept separate from human food. Some of the research participants made reference to washing hands after touching the dogs or cat, especially before eating or preparing food. The Dunning family had a sheet which they used to cover the dining table with, specifically because the cat would often jump on the table during the day. They then removed the sheet when they ate at the table.

## Food anxieties and food safety issues addressed by the Norwegian participants

Although most of the research participants had experienced food-related illnesses, they were generally not overly concerned with getting ill, apart from a few exceptions. It is clear among the Norwegian households that although some anxieties and notions are tied up to food safety, there is a multitude of other considerations that the research participants are concerned with in their daily life, which often ranked higher than food safety. The various anxieties about food and the degree of them varied among the different households. This subsection focuses on the various concerns and anxieties related to food provisioning and food production, as well as food safety.

As the section of general preferences and requirements showed, the main food-related concerns in the Norwegian sample were that the food should be healthy, tasty, ideally homemade, and often quick or simple to cook (depending on time and energy).

Some anxieties about food were more directly linked to bacteria, hygiene and illness. For instance, certain food products were more strongly associated with risk of getting ill than others. Two of these foods were shellfish and mussels. These seems to be perceived as something risky to make at home, particularly in the Elderly households. Kari (71 years, urban) had never eaten oysters and said she did not think it was safe to prepare mussels at home. Likewise, Bente (70 years, urban) did not cook crayfish or lobster at home because she was afraid to do it wrong, but never said what could go wrong. Similarly, Nils (74 years, rural) said he did not buy oysters, mussels or clams in the store. He said that sometimes he and his wife would eat it at restaurants but after getting food poisoning once, they became a bit hesitant to eat it again. Other households did not express this kind of wariness but most of them did not make it at home very often anyway. Mussels are for many something to order at restaurants.

Another food that was perceived to have an inherent risk, was chicken. This was common for all households in the Norwegian study. Bente said it was dangerous to eat chicken if still, “because one might get ill”, and Lena (37 years, Young families, rural) said while they had a cupboard with several cloths, she mostly used paper when handling chicken because she could throw paper right away so the chicken would not contaminate other things. Similarly, Jon (28 years, Young single men, urban) stressed the need to cook the chicken thoroughly in order to avoid bacteria and diseases. Due to this, he avoided cooking chicken when he used the barbecue, as he felt inexperienced in preparing it on the grill.

Some other products were also mentioned such as fish, pork and red meat. Fish and pork were mostly mentioned associated with use-by-date and quality, while red meat was related to proper heat treatment depending on whether it was minced meat or a steak. Furthermore, two young men also mentioned rice as a product they were careful

with. For instance, Jon placed boiled rice and rice dish leftovers in a cold water bath after eating, in order to cool it down quick enough to prevent bacteria from growing.

The Norwegian households were also concerned with hygiene and contact with hands. Nils (74 years, Elderly households, rural) said that he never ate fruit and vegetables that had been left unwrapped in the store without rinsing it with warm water first and drying it afterwards because he was concerned that other people might have touched the fruit in the store. Similar views were shared by others. However, many also reported the opposite and said they did not think about this when shopping fruit and vegetables. For instance, Petter (29 years, Young single men, rural) said he was not concerned with it. Meanwhile, he used a special technique when picking loose weight gingers in order not to spoil the gingers for other customers by touching several before choosing one. He used the thin plastic bag provided by the store as a glove to pick gingers, and then turned the bag inside-out while taking it off his hand, leaving the gingers in the bag untouched. Similarly, Emma (33 years, Young families, rural) used a disinfectant on her hands before entering and exiting the store when she had a cold, mostly to avoid infecting someone else.

How to store or wrap the food was another concern. Nina (Nils' wife, Elderly households, rural) said that she had heard different things concerning the use of plastic foil and aluminium foil. She had heard that both could transfer particles to the food, which are not good for you. Nina also said that she used to store leftovers in empty and cleaned plastic boxes from ice cream, but threw the boxes away because she heard that the boxes were not intended for storing food, other than the ice cream.

Another important concern related to food and food safety was evaluation of quality and use-by-date. Besides checking the use-by-date, most of the Norwegian household either used their senses such as looking, smelling and touching, or a combination of senses and certain time rules when evaluating food in the fridge. An example of using both time rules and senses was Roger's (24 years, Young single men, urban, Norway) unopened package of pulled pork. Since the meat had expired over a month ago, he would throw it without any further evaluation. However, if it had been only a few days past the use-by-date, he would have opened it to smell the meat to evaluate. The elderly households were generally less concerned with use-by-date for evaluating food than the others. However, some food products were seen as more sensitive, or riskier, than others. For instance, fish and chicken required more precautions. Other types of food could, however, last way longer than the date labels indicate. Here, eggs were typically given example. Red meat and cheese were also mentioned as foods that got better with time, and thus would need sensory evaluation as the date label were believed to be too conservative. Apart from the sensitive food products, the overall attitude towards date labels thus seemed quite relaxed. On the other hand, scepticism to food products with very long shelf life was also voiced as a concern. Oda (72 years, rural) said she got a bit frightened when she sees products that have a yearlong expiration date.

This relaxed attitude towards food quality and use-by-date might on the one hand be linked to an overall trust in both food producers and food authorities. On the other hand, it suggested that date labels such as “best before” and last “use by” were not

Elderly household would typically prefer Norwegian produced food and were generally sceptic towards food produced abroad but did not always provide a reason other than trusting Norwegian food regulations to be strict, which then equalled being safe, while foreign regulations and circumstances were unknown. Kari for example were very sceptical to food produced abroad, especially meats.

Int.: What is the reason for not wanting to buy foreign meat?

Kari: There are several things. First and foremost, food safety.

Int.: And when you mention food safety and foreign meat, what do you mean them?

Kari: Yeah, for instance they [the supermarket of her choice], well they have it very seldom, but for example food from South America and places like that. And I think that food safety in Norway is very good, and a lot better than in very many other countries, and I don't want to risk becoming ill, that's one reason. [But] if I am in Sweden, I buy Swedish [food].

Int.: Ok, so you can buy Swedish food, but does it have to be Swedish?

Kari: Yes, I even don't buy Danish, but Swedish, I will surely buy.

(Kari, 71 years, Elderly households, urban, Norway)

For Kari, sticking to buying only Norwegian [and when in Sweden, Swedish] produced food, meant that eating fresh vegetables were very limited in her household in winter times. For some, the national regulations in Norway were also used as an argument for why imported food are safe too. Nils (74 years, Elderly households, rural) was not sceptic to food produced abroad because he trusted the Norwegian system for import. Bente (70 years, Elderly households, urban) said that the EU regulations were even stricter than Norwegian, and thus trusted products from EU countries as well. However, she stressed that she did not really care about country of origin, she rather chooses food based on wants and prices.

The distinction between home and abroad, and known and unknown, was clearer when talking about berries and eggs. The general opinion was that Norwegian eggs are safe, while imported ones or eggs bought abroad during vacations are associated with the risk of salmonella. For instance, Lena (37 years, Young families, rural) said that she would never buy eggs in Spain because she said they use antibiotics in production and she is afraid of becoming infected by salmonella. Similarly, imported berries were seen as risky when bought in store, while berries picked themselves in the forest was considered safe. Lena said she perceived the forest berries as clean, cleansed by rain, despite being aware that insects and animals are factors that could contaminate them. She said that they feel closer, as opposed to berries picked by strangers with unknown

hygiene. Interestingly, the term “forest berries” is used by the food industry for certain products, usually for frozen packages of mixed berries. Kari usually bought such products as she believed they were produced in Norway. After checking where the product was produced, she changed her mind.

Kari: I probably haven't been that careful when buying it, and just thought it was Norwegian since it said forest berries, but it isn't, right. And it is mixed a lot.

Int.: What do you think about it now, when it is so many countries, Canada, Serbia, Poland?

Kari: It's not... I don't think it is ok, because then I wonder, how it is really produced?

(Kari, 71 years, Elderly households, urban, Norway)

The distinction between foods produced nationally and abroad was further nuanced when asking the research participants about local food. The main argument for buying locally produced food or food with the label “NytNorge” (enjoy Norway), was to support local and national producers. This was an important argument among most of the households. Another argument was the perception that Norwegian or locally produced vegetables have had more time to ripen or was harvested in their right season, making the taste better than imported equivalents. A third argument was linked to control and safety, saying how it is easier to control the production methods, especially on meat and lettuce when produced in Norway. For some, a general rule of “the more local, the better” seemed to be in play. For instance, Kari said the meat she bought from a local farmer she knows personally tastes particularly good and she trusted him more than larger Norwegian producers. Similarly, Inger (70 years, Elderly households, rural) had a vegetable rinsing routine, where there are different ways to rinse depending on where the vegetables are from. Foreign vegetables were put in vinegar and then rinsed and dried, Norwegian vegetables from the store were rinsed and dried, and vegetables from the farm nearby were left as they were – unless there was dirt on them. However, some research participants expressed again that other concerns, such as price, is a higher priority than to buy locally produced food.

Other concerns mentioned, although by few, were animal welfare and organic food. A majority expressed that animal welfare generally was good in Norway, and this was linked to strict regulations which guarantees that Norwegian producers treat the animals well. Meanwhile, this did not always apply to chicken production. Several told they were willing to pay more for eggs and chicken meat if that could result in less mass production and better animal welfare. The young families were the most concerned with animal welfare among the Norwegian households. For instance, Camilla (35 years, Young families, urban) said they seldom ate chicken because the way chicken are treated by the industry, and if they ate chicken, they preferred organic because believing that animal welfare is better among organic chicken producers. This view was

shared by others. In Emma's (33 years, Young families, rural) household animal welfare was important ethically and a reason for why they raised chicken at home. Meanwhile, they still bought chicken meat from regular producers. Some did not trust that the free-ranged chickens had any better conditions than others. For instance, Roger (24 years, Young single men, urban) said he would be willing to pay more for chicken if the animals were actually free-range but he wanted more information about the issue. Similarly, Lena (37 years, Young families, rural) claimed that all the chicken products available in store were poor on animal welfare.

For organic food on the other hand, the Norwegian households were more divided. On the one hand, organic food was, as mentioned above, associated with animal welfare, sustainability and also more ethical food production in general. On the other hand, some argued that consuming organic food was selfish because there would not be enough food for everyone globally if everyone on earth were to eat organically. Furthermore, some argued that organic food production was unsustainable causing more emissions of greenhouse gasses. Both arguments for and against reflect ongoing mediatised debates on organic food in Norway. Meanwhile, eating organic food was generally not very common among the Norwegian households. For the most part, it was seen as more expensive than conventionally produced foods, while the quality or taste was no different.

The main positive quality of organic food mentioned was less use of pesticides. For instance, Camilla (35 years, Young families, urban) preferred organic fruits and vegetables without thick skins or peels, such as tomatoes. Her main reason was to avoid pesticides. However, she argued that when the skin or peel of fruits and vegetables were thick, production method did not matter because the pesticides will not seep in anyway. Concerns about pesticides was thus a matter of health. Meanwhile, pesticides were to a large degree again associated with the origin of production. Overall, the Norwegian research participants were more concerned with pesticides on imported fruit and vegetables than Norwegian produce and would rinse the fruit and vegetables to get rid of it. This was explained by the research participants with that they do not know which agents that are used abroad and can be linked to the trust in the Norwegian production process, which is more familiar to them. However, several also said that they were not particularly concerned with this. Nils (74 years, Elderly households, rural) thought the fear of pesticides was exaggerated. He said that pesticides on food disappears after about 14 days and therefore is not dangerous for humans to ingest. On the other hand, Emma (33 years, Young families, rural) said that she was concerned about pesticides but that there was nothing to do about it if one wants to eat fruits and vegetables. She did not think it was possible to wash it off the food.

In addition to pesticides, concerns about additives and preservatives were also mentioned. For the most part, additives were associated with processed food such as ready-made meals and cooking from scratch was advocated as the way to avoid these.

Furthermore, added salt was a topic for discussion. For instance, Bente (70 years Elderly households, urban) did not want to buy chicken products with added salt and water and had stopped buying a type of frozen chicken in Sweden because of this. She referred to what the food industry refers to as ‘plumping’.<sup>20</sup> In comparison, Oda (72 years, Elderly households, rural) said she did not think about whether the chicken had added salt or not because she knew that most chicken has added salt anyway. Meanwhile, salt was perceived as something one should not get too much of, due to health reasons. Hanne (31 years, Young families, urban), for instance, was mindful of salt content because her children were too young to have much salt in their diet. In addition, she was paying attention to general health advices to reduce salt. Another argument to avoid salt in chicken was that it was seen as a form of watering out the chicken, making the costumers pay for a lower quality chicken.

The research participants were also asked about the packaging label informing that the chicken is produced without the use of Narasin. In 2014, several researchers warned against consumption of chicken because the use of the medicine, Narasin, in chicken fed, was associated with antibiotic resistance which led to a large fall in chicken consumption in 2015 in Norway. (Forskning.no, 2014). Except for Anna (31 years, Young families, urban), who explained that Narasin was a “special antibiotica fed to chickens so they don’t get sick.” Few explicitly stated to have payed attention to it when selecting chicken and few knew much about what it meant. Kari (71 years, Elderly households, urban) on the other hand said that Narasin was something added to the chicken to make the meat last longer, which was not good for humans to come in contact with, and that makes the preparation at home more difficult. She was unsure if she was correct but would anyway avoid buying chicken produced with Narasin. Similarly, Camilla (35 years, Young families, urban) said the family ate less chicken after seeing the coverage in media, although she was not sure what Narasin was or what it did. Furthermore, she said the packaging label reading “produced without Narasin” did not mean much to her as she thought that other risky ingredients was probably used instead. In the household of Camilla and Chris (37 years), trust in conventional food producers was rather low. As such they were a part of a cooperative farming picked up meat and vegetables.

### Learning about hygiene and safe food handling

The households mentioned several sources for where they learned about hygiene and safe food handling. At the same time, from where they learned specific food safety lessons, such as knowing that chicken needed to be thoroughly cooked or that fruits should be rinsed before eaten seemed to be less clear to the research participants. As in learning to cook, many named their parents or other family members as sources of knowledge on how to treat food and hygiene properly. Furthermore, a few of the elderly

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<sup>20</sup> Plumping, or sometimes referred to as “enhancing” or “injecting,” is the process by which some poultry companies inject raw chicken meat with saltwater.

mentioned school and home economics class as a source, while in two household (Lena, 37 years, rural and Hanne, 31 years, urban, both young families) had learned through their higher education as a nurse and biotechnology. Similarly, Georg (27 years, Young single men, urban) had worked in a cafeteria as a part time or summer job and had learned some things there, and through books about food and the food industry. Other sources were media, such as radio and television cooking shows, and television campaigns. Some research participants mentioned the food safety authorities as well, but the information from the authorities was also reached through media.

### Experiences with food-related illnesses

The majority of the Norwegian households reported to have had food-related illnesses (13 out of 15). Many reported becoming ill by eating food abroad, including Bente (70 years urban); Kari (71 years, urban) (both Elderly households); Fredrik (23 years, urban) and Petter (29 years, rural) (both young men). Bente, for instance, had recently been ill after a cruise trip. She told she probably had become infected by the other guests when going on a crowded bus trip with the other cruise passengers. The majority said they had been ill from food in Norway. Most of them told that they had become ill from eating out, including Emma (33 years, Young families, rural), Nils and Nina (74 years, Elderly households, rural) Roger (24 years, Young single men, urban) or at work (Anna's husband Andreas, 31 & 39 years, young families). A few mentioned that they had become sick from food at home, including Camilla and Chris (35 and 37 years, Young families, urban), Oda's husband Ove (both 72 years, Elderly households, rural). A few never explained how they became ill (Hanne, 31 years, young families and Georg, 27 years, young single men) and some mentioned that this was very long ago. Inger and her husband (70 and xx years, Elderly households, rural) became sick from eating mussels at the age of 18. The research participants who said they had never been ill from food experienced other types of discomfort, such as flu-like symptoms, upset stomach and diarrhoea, but ascribed these symptoms to other things, like common flu or a bad diet with too much junk food.

In most of the cases, the households were not in contact with a doctor or received any medical device. The ones who did were either abroad or in an extra vulnerable situation, such as Emma when she got ill from a hotel restaurant in Norway:

It's a long time ago, it was in 2008 I think. Because [daughter] was born in 2009 years. I was pregnant and that's why I – if not, I wouldn't have been so stressed out from it. But it was a lot of talk about it in the media, everyone who had been at that hotel. [...] I think it was Norovirus, like, someone who was sick had touched some of the food, in a buffet. [...] I was there for work, interpreting for someone who attended an event or something and there were a lot of events there, and typically everyone had lunch and hundreds of people who ate. [...] And I was vomiting and there was some organization

there that was like, not diabetic, but there was something about them, it was like extra dangerous when they got ill. And that's why it made the news, which got me really stressed, first time I was pregnant and "oh my God, this is dangerous", called the doctor and the doctor was like "no, norovirus is boring but not dangerous.

(Emma, 33 years, Young families, rural, Norway)

The households were asked how they would go about cooking if they got ill. The overall rule was that they would cook for themselves, but not for others if they could avoid it. Furthermore, the young single men would adjust the cooking to their physical shape, making something simple if they did not feel well. Some of them, such as Jon (28 years, urban) and Roger (24 years, urban) (both young single men) also mentioned that they may visit their family and have their mother or grandmother cook for them. On a general note, elderly and the young family households would still cook when they got ill, except if they were vomiting. If possible, the other adult in the household would do the cooking, but they admitted that it was difficult to avoid the illness spreading in a family when everyone was so close, especially with children. For instance, Camilla (35 years, Young families, urban) pointed out that last time they had stomach flu, "Chris was lucky to be able to isolate himself in the office so I did [the cooking]...it's a bit different to be a man and sick, and to be a woman with baby", Camilla said.

### *Issues relating to children/vulnerable people*

The young families and elderly households mentioned several considerations regarding children and food. Some concerns were related to food safety such as washing hand wash. For instance, in Camilla's and Chris' (35 and 37 years, Young families, urban) household, three-year-old son washed his hands every day when arriving home from the kindergarten. Emma (33 years, Young families, rural) made sure her two oldest children (7 and 11 years) washed their hands before helping with preparing food. None mentioned avoiding serving certain foods to children due to food safety reasons, but they did however stress the need to handle food properly. Examples of that was to make sure that meat is properly cooked, or as Camilla did, to freeze the fish before preparing sushi for her son because she believes the freezing process removes bacteria. Another example was Lena (37 years, rural), who decided to throw leftovers baby food because it was left on the counter for three hours. Another example was Hanne (31 years, urban) who gently told her son that he could not taste raw chicken "not until they are cooked, you might get ill", when he was helping out during cooking.

### *Issues relating to pets*

Only one of the Norwegian households currently had pets, but some had visiting pets. There were mostly dogs, some cats, and one research participant, Emma (33 years, Young families, rural) had hens and guinea pigs as well. Her main concern related to pets was hygiene. Many stressed that washing hands was even more important after touching or petting the animals, and to clean the kitchen counter if the pets had been

in contact with it. However, for the latter the attitude was more relaxed. For instance, Emma said she only cleans the counter if the cats could have been laying on it for a long time, although she did not like them being there as they could drag dirt with them from outdoors. Likewise, Oda (72 years, Elderly households, rural) said she used to have a dog that would sit on the kitchen counter. She would then wipe the counter with a cloth, saying during the interview that maybe that was not enough, but “nobody died from it”. On the other hand, Inger (70 years, Elderly households, rural) had two dogs visiting from time to time, and she was careful not to let them get close to the food, which she found challenging because they were so big and could reach everywhere in the food preparation areas. She cleaned the counter extra well after the dogs had been visiting.

Pets could also be a source of disagreement. For instance, Emma was rather annoyed with her husband who placed the fake eggs, which are meant to make the hens learn where to lay their eggs, on the kitchen counter:

Now they were dirty so he has taken them inside, he and I are very different. He has placed them here on the kitchen counter, where we eat, and washed them with that dish brush we use to our – (laughs), so I will boil some water and do something [...] ‘cause he has taken them straight from the henhouse, where they have probably pooped and everything, straight in here. I would never have done that.”

(Emma, 33 years, Young families, rural, Norway)

However, pets could also function as a way to exploit all resources from the food. Inger, for instance saved cut-offs from raw chicken pieces, boiled them in some water and stored them to give to the dogs next time they visited. Similarly, Emma feeds vegetable cut-offs to her two Guinea pigs while cooking.

## Comparing and summarising the food anxieties and food safety issues in five European countries

This chapter has described various food concerns and anxieties mentioned in the study focusing in particular on various food safety issues, and how they were dealt with in everyday life. The chapter has also covered several topics experiences with food related illnesses and food safety issues related to vulnerable people and pets in the households, and how the households had learned about food safety and hygiene. The following section summarises and compare this between the five countries and the three study groups.

### Food anxieties

The food anxieties presented in this chapter were many and complex, and while some were explicitly linked to food safety, others were associated with quality, preferences and ethics. Some anxieties were related to treatment of food at home, while others were rooted outside, for instance in production methods. However, the anxieties are intertwined with and affect each other.

The anxieties related to food at home include proper storing and preparation of food, assessment of food in storage, as well as personal hygiene and kitchen hygiene and cleanliness. Proper storage and assessment of food at home were prominent anxieties in all countries. While one of the young single men in France reported to be quite relaxed on how he stored food, the elderly in the Norwegian sample were very concerned with how the food should be stored, and in what material, using various plastic boxes, foils and such to keep food in their fridges. However, although relaxed on how the food is stored, the same young man in France reported to only keep leftovers for one day in the fridge, while elderly households in Norway tended to keep food long after use-by-date. Other households in both the French and other country samples reported to keep food longer. Treatment of leftovers and reheating the food was also an issue. All families in the Portuguese sample were concerned with reheating food, and the young single men and the young families reported to use microwave oven to heat leftovers. In Romania, however, microwave was used by a young single man due to convenience, but the young men in their sample believed the microwave had negative effects on their health, such as making them gain weight.

Another anxiety was kitchen hygiene and cleanliness. This was emphasized among the Portuguese households as being fundamental to a hygienic and good cooking space, and in the UK, several research participants declared themselves ‘unnaturally concerned’ with this. This aspect was not as explicitly talked about among the Norwegian, French or Romanian households. Relating to this, the assessment of food at home was also an important anxiety in all countries. Some types of food were perceived as riskier than others, however, which food varied between the study groups and between the countries. Fish, seafood and meat was perceived as risky across all countries, although some specified it to be raw meat while others did not. Chicken was

mentioned specifically in the UK and Norway as a risky product, while white meat was generally perceived as safer than red meat among the Portuguese households. Moreover, in Norway, some mentioned that red meat and cheese are products that get better with time, and thus have too conservative date labels. Similarly, eggs were perceived in Norway to last much longer than the use-by date indicated. In contrast, eggs were seen as a more risky product in the other four countries, although in Romania it was specified that eggs were risky for pregnant women. Moreover, in Portugal, although many were concerned with the use-by-date on eggs, several also mentioned to use and trust a float-test to check if the eggs were still good when they were uncertain about the quality. The differences in risk beliefs between countries may reflect differences in the real risk, as eggs in Norway do not contain Salmonella, opposed to other countries. The Romanian, Portuguese and French research participants also mentioned yoghurt as a food product they were careful with. However, the degree of caution varied among the households. While some fully trusted the use-by-date, others would rather use their senses to evaluate whether it could be eaten or not, and some would eat yoghurt past the use-by-date themselves but not feed it to their children. The Portuguese households, were the only that emphasized lettuce (especially among pregnant women) and fruits as risky products, however, both Romanian and Norwegian households reported to have certain washing routines on fruits and vegetables based on where the food came from. The more local food, such as from a local farmer or from their own garden, required less washing than when bought at a supermarket. Moreover, some research participants in Norway were careful to always wash fruit from the store which was not wrapped in plastic, because other people may have touched the same fruit. Related to this, some research participants, especially among the French, Norwegian and Romanian sample, preferred buying local food. This could be for health reasons, to secure animal welfare or to avoid pesticides or additives, but also for food safety reasons. Several of the Norwegian research participants told that buying food produced in Norway was safer than imported food. Moreover, the households were concerned with some additives, such as sugar, salt and fats. This was particularly evident among the elderly households, as well as for children, and research participants who either were engaged in fitness or losing weight. Organic food was also a concern, often linked to local production and animal welfare. This was particularly discussed in the French, Norwegian and Portuguese households. In Portugal, there were clear distinctions where the young single men and young families perceived organic food as healthier, although more expensive, while the elderly households were more distrustful to these products.

### **Issues relating to children/vulnerable people and pets**

How concerned and explicit the research participants were about food safety issues varied greatly. In terms of cooking for vulnerable people, this for the most part meant children or pregnant women. Some strategies mentioned was to cook meat longer for it to be properly heated, and to avoid certain type of foods. The food to be avoided was quite similar for the pregnant women across countries. For children it was mentioned

to be more careful with expired food, and to be careful with the amount of salt in their diet. Another aspect with children was to teach them food safety, such as not to touch raw chicken, and to wash hands. A lot of the households had pets at the time of the study, had previously or were sometimes visited by people who brought their pets. There were variations in whether the animals were inside the house and in the kitchen or was kept mostly outside, however the common perception seemed to be that if one cleaned regularly and washed hands after touching the pets, they were not considered to be a food safety problem attitudes seemed overall to be quite relaxed. This was only mentioned in relation to pregnant women and toxoplasmosis.

### Experiences with food-related illnesses

The majority of the households had experienced food related illnesses. Meanwhile, a few mentioned illnesses and digestive troubles but ascribed them to something else than food. Those who explicitly stated to have become ill from food, most reported to have gotten ill from food served in restaurants, public cafeterias or from takeaway food. Few reported to have gotten ill from food they ate and prepared at home, most often placed the cause somewhere out of their control, such as having gotten a bad product from the store. A few ascribed the reason for the illness to something they did wrong during meal preparation. The types of food they got ill from varies, and the degree of seriousness various too. Most did not seek medical help, although some was hospitalized. The effects of the illnesses were also varied. While some completely stopped eating certain foods after getting ill, others may have found it uncomfortable for some time but then resumed to consume the food again. Many reported to be more cautious, however, after being ill.

### Learning about hygiene and food safety

The sources for learning about food safety were many, and common across the various countries. One way to learn was from home, from parents or grandparents. Others had learned at school during childhood or through higher education, and some from work experience, work placements and apprenticeships. Interestingly, none of the Portuguese research participants mentioned that they had learned about hygiene in school and only the elderly Norwegian research participants mentioned school as the source of hygiene learning. Other sources again were cookbooks, and media, both traditional and new such as social media. Many mentioned watching television cooking shows, or information campaigns on television, while other emphasised following the news, particularly during food safety scandals. Internet was also a source for learning. Changes in life course and life experiences were also mentioned as ways to learn. For instance, many women learned more about food safety when becoming pregnant.

## Chapter 2.3: Food anxieties and food safety issues

**Table 2.3.1: Overview of food anxieties and experience of foodborne illnesses mentioned by study group and country**

		Portugal			Romania			France			UK			Norway			N
		YSM	YF	EH	YSM	YF	EH	YSM	YF	EH	YSM	YF	EH	YSM	YF	EH	
General food anxieties	Nutritional worries	1	4	2	3	2	3	2	1	4	1	2	2	-	2	1	30
	Environmental/ethical impact of food consumption (carbon footprint, animal welfare)	-	2	-	-	-	-	1	1	2	2	-	2	3	3	2	18
	Chose organic food because of food anxieties	-	1	-	-	1	-	1	1	2	-	1	-	2	3	1	13
	Worried about foreign food	-	-	1	-	1	-	1	1	3	-	-	1	2	1	4	15
	Worry about chemical substances in food (additives, pesticides etc.)	1	3	3	2	2	1	3	3	4	2	2	3	2	2	4	37
Food safety	Mentioned that chicken was risky food	-	2	3	-	-	-	-	-	-	5	5	4	5	5	5	34
	Mentioned that fruit and vegetables were risky food	2	6	3	-	-	-	-	-	-	1	1	-	-	2	2	17
	Mentioned that eggs are risky food	1	5	1	-	1	-	2	3	2	2	1	2	-	-	-	20
Foodborne illness	Experience of illness (cause by food outside home)	-	3	-	3	-	-	2	2	2	3	2	4	3	2	3	29
	Experience of illness (cause by food in home)	-	-	1	-	-	-	2	1	1	3	2	-	-	1	1	12
	Experience of illness (total)	-	3	1	3	-	-	4	3	3	5	4	4	4	4	5	43
Precaution	Taking precautions because of vulnerability (infants, young children, pregnant, elderly)	-	5	2	-	5	-	-	2	2	-	5	3	-	2	-	26
	Worked in the food industry or professional training in hygiene	-	1	-	1	-	-	2	1	2	4	4	-	1	3	1	20
	Worry about cleanliness and hygiene at home or other people	1	6	5	1	2	1	1	3	2	-	-	-	-	3	2	27
Pets	Having pets, livestock, raising hens	1	2	2	-	3	3	3	5	3	-	3	2	-	1	-	28
	Taking precautions because of pets	-	2	2	-	1	-	1	4	1	-	3	2	-	-	-	16

This table shows how households from different countries are situated within food anxiety discourses. The table shows worries mentioned by the research participants and does not list all concerns they may have had, nor does it say if these worries affect food and eating. N stands for households where food worries, illnesses, precautions and pets were mentioned. (YSM= Young single men, YF=Young families, EH= Elderly households)

PART TREE:  
FOOD  
PROCURING AND  
ORGANISING

In Part 3 of this report, we present the sociological analysis on shopping, transportation and storage, with three chapters on each of these food practice stages. Social science researchers joined participants on one of their routine shopping excursions, in supermarkets, other food shops and local markets. We explored how a typical food shop was organised (e.g. who did it; whether there was an order to the selection of foods; and whether and how trolleys and baskets were used) by following the participants as they went about their normal business. We also asked questions about the selections they made and paid particular attention to the selections of chicken, vegetables and fruit, and salads. These considerations are discussed in the chapter on shopping.

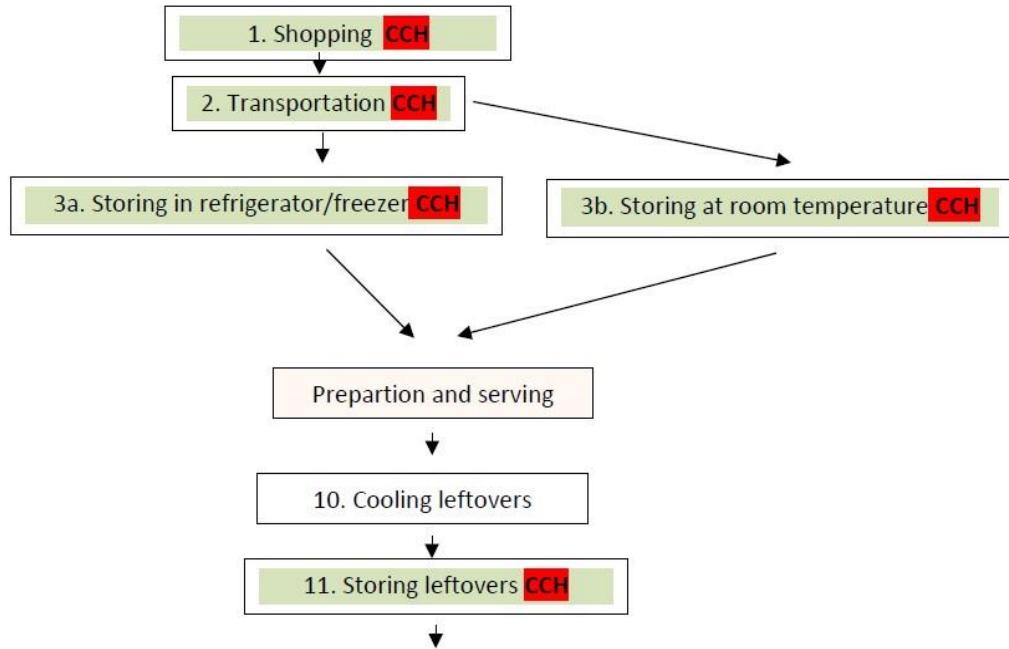
At the end of the food shopping, researchers followed participants back home, observing the transportation of groceries, the route taken and the challenges they might encounter during this activity. In the transportation chapter, we therefore discuss research participants' transportation habits from supermarkets and food shops to their homes, the distance and time taken to travel back home, the means of transportation used, the devices used for carrying the shopping as well as practical challenges and strategies for transporting food.

Finally, researchers observed the storage of foods at research participants' homes, the priorities for storing groceries and the different storage places. In the storage chapter, we present an analysis of the storage devices research participants are using at home, their fridge temperatures and the organization of using the fridge for the storage of food.

The analysis is presented by country. The following country order is used: Portugal, Romania, France, United Kingdom and Norway.

The CCHs that apply to this part of the report are:

1. Food choice: purchasing, eating or serving food with higher or lower presence of pathogens. It refers to the CCHs of PVF 1 in Figure 3.1.
2. Inhibit growth: transportation and storage of foods at temperatures and for durations that permit (or not) the multiplication of pathogens. It refers to the CCHs of PVF 2, 3a, 3 and 11 in Figure 3.1.



**Figure 3.1: HACCP flowchart with the relevant CCHs**

## Chapter 3.1: Shopping

In this chapter, we focus on the diverse criteria used by research participants to select chicken, salad, and fruit and vegetables, while shopping. We focus on shopping routines, whether research participants favoured specific routes through the shop in relation to the purchase of fresh, cool and frozen products, what and how carrier devices were used and the criteria they pay attention to when they buy food.

## Shopping in Portugal

For convenience, we met most of the households at a coffee shop near the supermarket where the shopping would take place. In the initial conversation, the sociologist led the interview and asked the participant about their shopping routines, the household division of work and composition, food and cooking practices. During these conversations, the two microbiologists would also sometimes ask a few questions from the interview guide. At this stage, we also applied the socio-demographic questionnaire. In our sample, nine households went to the shop by car, six usually walked to do their shopping close to their place of residence, and one used an electrical scooter due to her problems with reduced mobility. In this case, we departed from her house (the research team and the participant each using their own means of transport) and went shopping in a supermarket about 10-15 minutes away from home. During our shopping visits, the households went to two leading supermarket chains (Continente and Pingo Doce) and two discount chains (Lidl and Mini Preço). Only one participant (Celeste, 70 years, Elderly households, urban) went to a local grocery store when we were conducting these visits.

### Shopping routines

Although all households shopped at the stores where we arranged to meet research participants, some households made use of different retail food outlets for their daily, weekly or monthly shopping routines. For example, Filipa (36 years, Young families, urban) visited Lidl (discount chain) to do her daily shopping and would go to Continente (a hypermarket) to do her monthly shopping. For Filipa, Lidl resembled a grocery store, where she would buy daily bread and vegetables and, at Continente, she would purchase a larger quantity and variety of foods. Vanessa (29 years, Young families, rural) also went shopping in two different supermarkets: a larger one where she would go twice a month on her way home from work. The other, closer to home, where she would go for top-up shopping (e.g. for milk, bread, eggs, fruit, vegetables). She also bought specific products (e.g. Himalayan pink salt) at a specialized health store (e.g. Celeiro). Most households bought vegetables and bread on a daily or weekly basis, and purchased other products (e.g. pasta, rice, and other dry foods) once a month where they would do a larger shop. Thus, some households in our sample seemed to have a routine of doing a larger shop once a month, topping up with perishable foods during the week.

Sílvia: [...] we do general shopping, monthly shopping.

Int.: OK. At the end of the month?

Sílvia: Yes, nearer to the end of the month, and then weekly we buy what is lacking, certain things... fruit, vegetables, meat, fish, that's what I buy weekly or every fifteen days. I buy bread every day.

(Sílvia, 33 years, Young families, rural, Portugal)

Other households shopped on specific days. Some preferred to do a big shop on weekends. This was the case of André (30 years, Young single men, urban,), Emília (89

years, urban) and Odete (65 years, urban) (both Elderly households). Emília and Odete chose the weekends because they needed help from their family relatives or friends to make bigger and heavier purchases. Emília had some difficulties walking long distances and she went shopping with a friend on the third Sunday of the month. Odete also had reduced mobility and went shopping with her daughter on Saturdays. In this case, she bought greater quantities of particular items, for example, a six-pack of milk. Interestingly, when we went shopping with Odete, she asked us to take the heavier items in our car (e.g. six-pack milk, bottles of water, large packs of detergents), taking advantage of the day of our visit to buy goods she usually would not buy on her own, as they do not fit in her scooter.

Int.: And the shopping? How do you do it... do you do it daily? Odete: I do it on Saturday with my daughter. Since she is not working, she comes to meet me, we go shopping, she does hers and I do mine. She has a car, I go with her, if the weather is nice, she takes the car and I take the scooter, and then she takes my shopping bags in her car...

(Odete, 65 years, Elderly households, urban, Portugal)

But there were also some households who do not like to do shopping at weekends (e.g. Andreia and Celeste). Andreia (33 years, Young families, urban) and her husband preferred to go shopping on weekdays to avoid crowded hypermarkets or supermarkets. Planning and fitting shopping events around other everyday practices (work, parenting, etc.) demanded time managing skills and competences in sequencing practices.

Int.: And the shopping? Is it on Saturday?

Andreia: Normally not. We don't like shopping on the weekend because it's too crowded. We do the opposite, sometimes we leave work, take the baby and go shopping.

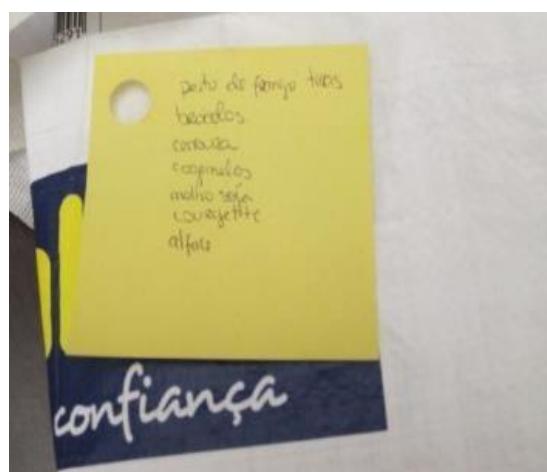
(Andreia, 33 years, Young families, urban, Portugal)

Similarly, Celeste (70 years, Elderly households, urban) mentioned she avoided going to the butcher shop at the weekend because it would be full of people. In these cases, households purposefully organised their shopping events to avoid rush hours and bottlenecks generated within the space-temporalities of shopping practices (when everybody seemed to go buying foods at the same place and time).

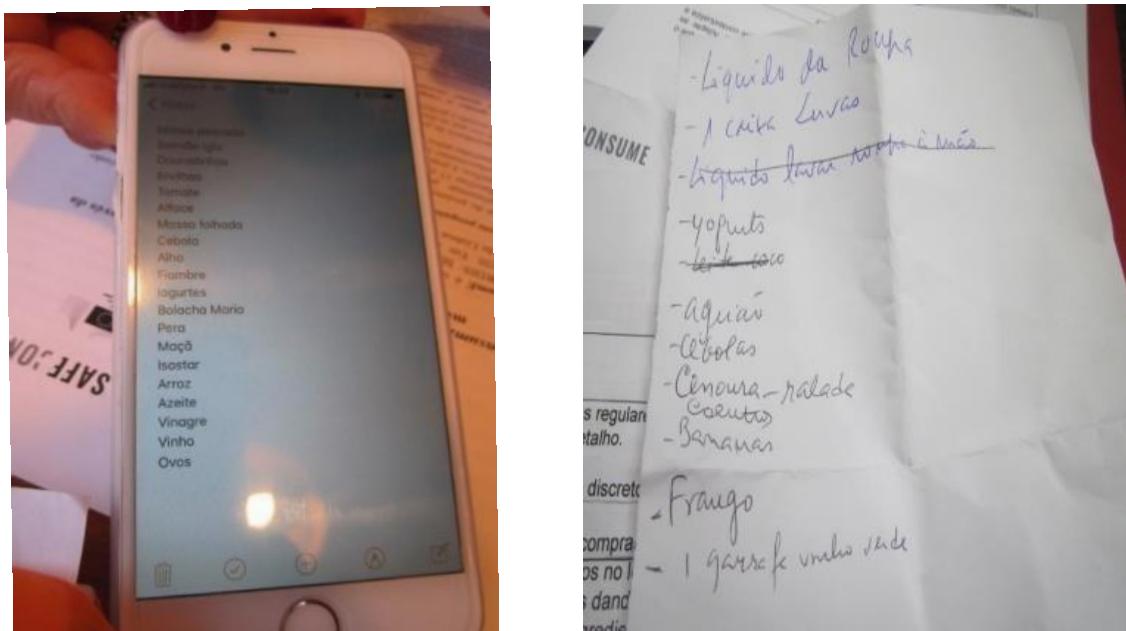
There were also a few households who did not have specific days for doing their shopping. Sónia (42 years, Young families, rural) enjoyed shopping and looking at product discounts, going to the supermarket whenever she needed to buy something: "No, no, it's just any day. I buy what I need and what I do not need. I come to buy one or two things and I take ten or twenty". She mentioned the difficulty of leaving the shop empty-handed: "If I come here, I always have to buy something". Sónia never made up a shopping list. She said she wanted to enjoy what is on sale and special promotions:

"It's cheaper or I want to try something new, that kind of situation". In this case, shopping seemed not to be disciplined by the socio-temporal dynamics of shopping practices collectively shared (e.g. bottlenecks and rush hours) or the sequencing of practices (picking up children and then going shopping), and instead appeared to be a free-flow approach where pleasure, excitement and the thrill of making 'good value for money' purchases or buying new products were paramount. Although Sónia gave the impression that her shopping practices were free-flow and not fixed events, it is likely that they still had to comply with some sort of temporal and spatial orchestration and sequencing, even if the order of the sequences that are loosely locked can be shifted and bent to accommodate the dynamics of social practices.

In our sample we had only three households, Vanessa, Filipa and Augusto (70 years, Elderly households, rural) who prepared a shopping list before leaving home, as they did not want to forget something, it being easier to organise shopping. Making shopping lists also engaged different objects and technologies, from Post-It notes through to a mobile phone and sheet of paper.



**Figure 3.1.1:** Vanessa's shopping list on a Post-It note: chicken breasts, carrots, mushrooms, soya sauce, courgette, lettuce (Portugal)



**Figure 3.1.2: Filipa always did a shopping list on her mobile phone, while Augusto's shopping list was on piece of paper<sup>21</sup> (Portugal)**

### The shopping experience: route taken, ability to find things, physical constraints

Households had different priorities in finding products at the supermarket but most tried to pick fresh foods first and frozen ones last, as they were aware of the importance of the cold chain. However, only a few maintained this during the packing process using specific bags prepared to keep food cool for longer. In our sample, this was not an issue as all households were doing shopping close to their homes (either by foot or by car), with short journeys. The longest journey took about half an hour from the supermarket to home; this was a journey by car, 6km away from home, and during bad traffic conditions in the city of Porto. Moreover, interviews were conducted in the winter when outside temperatures ranged between 7° C and 17° C (see the transportation chapter).

Filipa (36 years, Young families, urban) mentioned that she picked the products in the order of appearance while she strolled the supermarket's aisles; exceptions to this were yoghurt, and fresh and frozen products. These were always the last foods she picked. Andreia (33 years, Young families, urban) did it in the same way: "I leave the frozen items for last [...], it's always the last thing."

There were some households who at the initial conversation mentioned to usually pick the fresh and frozen products at the end, however, during the fieldwork, they did not do so. This was the case of Sílvia (33 years, Young families, rural) and Manel (73 years, Elderly households, urban). Sílvia picked up the frozen products during the middle of the shopping and Manel picked ham and fresh cheese at the beginning. Making two

<sup>21</sup> Augusto's shopping list includes detergent, yogurts, watercress, onions, a box of gloves, grated carrots, coriander, bananas, chicken breasts and a bottle of wine.

suggestions, we speculate why this could occur: this could be an expression of the value-action gap, where people discursively show they follow a norm and are aware of this norm but in practice they do not do it for various reasons; or it could be the artificial effect of shopping during a research process where people are aware of being observed and may not be at their usual ease of doing what they normally do, and this may influence not following their usual routine of picking up products from the shelves. However, even during events that are not observed by researchers, people may not follow the usual norms or paths in supermarkets due to casual circumstances that get in the way and divert attention to other things. Examples of this could be an urgent phone call that obliges them to rush the shopping and skip some norms that are usually followed, or a product on the shelf that distracts them by prioritising other things, or a child that has a tantrum because of an ice-cream, which suddenly changes priorities with parents putting the ‘ice-cream of contention’ inside the trolley to avoid an embarrassing moment inside the supermarket.



**Figure 3.1.3: Having coffee with Sónia while she is looking at the weekly promotions (Portugal)**

In our sample we also observed a few households who had different priorities. Sónia’s (42 years, Young families, rural) priority was searching for promotions: arriving at the supermarket, she would usually look for shampoos, face masks, detergents for clothes and dishes. She said her priorities were attractive packaging and smells.

Sónia: That's it, first I see this part, which catches my attention: promotions!  
 Int.: oh, ok, is where the promotions are? Right here at the entrance?  
 Sónia: Yeah, it's here. So, at the entrance, you have the things that catch most attention. I take it and then I go there and I get the fruits and vegetables.  
 (Sónia, 42 years, Young families, rural, Portugal)

The three single men in our sample just bought a few items not following a specific path or norm for prioritizing food items, just quickly trying to grab the products in need and getting out of the supermarket fast. Carlos (24 years, Young single men, urban) took a trolley and bought a few things in this order: water bottle, jar of tomato sauce, chicken, lettuce, apples, milk and olive oil and Bernardo (19 years, Young single

men, urban) only bought chicken, lettuce and tomato sauce, the ingredients needed for the cooking session that would follow the shopping event. In this regard, Bernardo was an exception within our sample as he was shopping on purpose for this research cooking event, and not particularly following his usual shopping routine.

Most households used a shopping cart or a trolley. We observed that young families with children had more items to carry when they went shopping (including the baby stroller). Andreia used the baby stroller to carry products; something that was not unusual when she goes shopping. There were also two contrasting cases: Bernardo brought the products cradled in his hands and Odete (65 years, Elderly households, urban) put the food items inside her electric scooter that she skilfully manoeuvred along the supermarket aisles she knew by heart. Sometimes, during fieldwork, the researchers helped Odete collect some products located on higher shelves, as they were not within easy reach for her. On one occasion, Odete was struggling to call the attention of the butcher at the butcher's counter of the supermarket as the bell was outside her hand's reach; the research team helped her by ringing the bell and the butcher, who was inside, came promptly outside to the counter. She also planned the supermarket route according to her reduced mobility condition, choosing aisles that are easier to manoeuvre with the electric scooter and avoiding areas where the scooter could get stuck or block the passage of other customers. Thus, in this case, the alliance between scooter and the supermarket layout greatly configured Odete's shopping priorities, potentially bypassing what could be deemed as 'good' shopping practices regarding food safety.



**Figure 3.1.4: Odete carrying the products in her electric scooter (Portugal)**

In our observations we also noticed that all six Elderly households in the sample faced some sort of physical constraints when they do their shopping. As we explained, Emília (89 years, urban) usually went to the shops with a friend on the weekends and, during the week, her daughter and the housekeeper helped her to carry the heavy bags or large items. Celeste (70 years, urban) grabbed a shopping cart to facilitate moving around in

the supermarket, thus avoiding carrying too much weight on her own. She also complained about not having much help from her husband when doing the shopping. Similarly, Josefina (81 years, urban) fetched a shopping cart to help with mobility and transportation of heavy items. The young single men were the ones in the sample who did not seem to face many physical challenges: they did not usually buy many products and they lived within walking distance from the supermarkets. Bernardo even carried the items in his hands, dispensing with the need for shopping carts or baskets. Bernardo usually brought home food from his parents' house or his grandmother's farm, which defeated the need to do a big shop in supermarkets.



**Figure 3.1.5: Carlo's basket with a few products (Portugal)**

### Selecting fresh, raw chicken in Portugal

Considering the way households chose chicken, two main groups may be identified. Households who buy packed raw chicken (6) and those who get the chicken from the butcher's counter of the supermarket (7) or from a butcher's shop in the high street (2). We can also find differences inside these two groups. In the first group – households who buy packed raw chicken – there were three young families, Marta (35 years, urban), Filipa (36 years, urban) and Andreia (33 years, urban), two young single men Carlos (24 years, urban) and Bernardo (19 years, urban) and one Elderly households Josefina (81 years, urban), and all had different reasons for choosing packed chicken. To illustrate, the team went with Marta to the supermarket on a Monday. She said that it was the wrong day to buy meat in the supermarket because it is not usually very fresh on that day. She was a little bit worried because there was no date on the packaging, and said: "I hope the chicken isn't too bad."



**Figure 3.1.6: Chicken chosen by Marta from the packaged section without the use-by date label (Portugal)**

Andreia bought packed chicken to cook during our visit but she said that this was an exception. She does not trust packed chicken from the supermarket a lot, and she thinks that the supermarket can swap the use-by dates and she only trusts it if the producer has packed it.

Andreia: I always buy meat at the butcher's shop, it's an exception buying packaged meat. Only if it has to be something quick.

Int.: And why?

Andreia: I don't know, first because I don't know how long it has been packaged. Some chicken come from the producer and in that case, I know that they probably haven't been breaching the use-by date. This one might have been repacked today.

Int.: Ah, so the one you don't like...

Andreia: Repacking...

Int.: ... are they packed at the supermarket?

Andreia: When I buy packaged [meat] I usually get it from the producer.

Int.: The one you don't like are the ones, which are packed here?

Andreia: Yes, those I don't buy.

Int.: You don't trust the date?

Andreia: No. Because this could be repacked yesterday and they put the day after on the label to pretend it is fresh, right?

(Andreia, 33 years, Young families, urban, Portugal)

Andreia's suspicion may be due to a few mediated incidences of alleged supermarket malpractices regarding labelling, namely with respect to swapping use-by dates. This has tarred trust in some of the supermarkets regarding some products. Yet, there were also households who preferred to buy packed chicken, it being their first choice (Filipa, Josefina; Carlos and Bernardo. Filipa and Bernardo were very careful with use-by date. Bernardo mentioned also other reasons: the appearance of meat (chicken's colour), price, organic (because of the taste) and origin (he preferred nationally bred chicken). Josefina preferred packaged chicken because in the supermarket butchers they did not sell chicken legs, and she preferred to buy legs because of taste and because they have more meat than wings.



**Figure 3.1.7: Filipa searching the use-by date label and selected package with the longer date (Portugal)**

Also, households who bought chicken directly from the butchers did so in different ways. Augusto (70 years, rural) and Odete (65 years, urban) (both Elderly households) did it because they liked to buy whole chicken and they could ask the butcher to remove the skin. Augusto never bought free-range chicken because his wife did not like it.

Augusto: Look, I'm going to buy chicken at the butcher.

Int.: Let's go.

Augusto: Do you know why? Because I tell them to take the skin off, because after cutting, you cannot take it off, right?

(Augusto, 70 years, Elderly households, rural, Portugal)

Vanessa (29 years, rural) and Sónia (42 years, rural) (both young families) said that it is easier to buy chicken at the butchers because they do not have the right cutting equipment and tools (e.g. good knifes) at home. They can also ask for the meat to be sliced, saving them time. She usually bought chicken/meat on special offer and trusted the quality would be fine.

Int.: Are they often promoting meat?

Sónia: Many times. And I buy it. But sometimes I give up, because there's a lot of people buying the meat, you have to wait a lot of time, there's only one butcher.

(Sónia, 42 years, Young families, rural, Portugal)



**Figure 3.1.8: Chicken on sale with various discounts and promotions (Portugal)**

Sílvia (33 years, Young families, rural), Emília (89 years, urban) and Manel (73 years, urban) (both Elderly households) bought chicken at the butchers but preferred free-range chicken. Sílvia also asked the butcher to cut the wings off because she thinks they are full of chemicals.

Int.: Which chicken will you take?

Sílvia: I don't know, free range, small. I will take it without the wings. If I take the wings, it's chemicals after chemicals.

Int.: Are there more chemicals on the wings?

Sílvia: Yes.

(Sílvia, 33 years, Young families, rural, Portugal)

Emília preferred free-range chicken which she would buy at a local butcher because of the quality. She doesn't trust packed chicken from the supermarket. She also preferred chicken produced in Portugal.

Int.: And what about chicken, do you usually buy it?

Emília: Yes, but I buy this one, free range.

Int.: At the local butcher?

Emília: Yes.

Int.: You choose this one, chicken tights raised in Portugal.

Emília: Yes.

Int.: For some reason?

Emília: Well, because I think it's better.

(Emília, 89 years, Elderly households, urban, Portugal)

### Selecting vegetables and salad

Regarding the selection of vegetables and salad, there were also two different groups: those who buy packaged salads and vegetables and those who do not like to buy packaged products. There were also a few households for whom whether vegetables were packed or not was not an important selection criterion. This is the case of Filipa

(36 years, Young families, urban), where organic was an important criterion when buying vegetables, independently of the packaging. She never bought canned mushrooms. She only bought fresh and organic ones:

I prefer organic vegetables. Given the choice, which I not always have, I prefer organic vegetables. But I don't buy just organic. (...) I want to believe they are healthier, they don't have pesticides or fertilisers, like the ones that are used in non-organic vegetables.

(Filipa, 36 years, Young families, urban, Portugal)

Filipa bought packed and pre-washed salad. Her package contained: rocket, purple lettuce and beet lettuce. She gave more importance to the colour and size than the origin of the salad. Andreia (33 years, Young families, urban) also liked to buy packed salad with different kinds of lettuce. She said that it was one of the advantages of buying packaged products, as it would probably be more expensive to buy the different types of salad separately. Sónia (42 years, Young families, rural) bought packed lettuce and tried to choose the packages stored in the small shelves at the supermarket. In her opinion, they were not so easily damaged and smashed.



**Figure 3.1.9: Lettuce is labelled 'Pingo Doce - Always fresh Salads' (Portugal)**

Augusto (70 years, Elderly households, rural) always bought packed vegetables and salads and paid special attention to use-by date labels. For example, he bought packed watercress but he did not buy the cheaper one on promotion with a shorter use-by date.

Int.: Do you buy packaged watercress?

Augusto: Yes, I buy this.

Int.: And now I see there is a package with a pink sticker and it's cheaper, would you buy it?

Augusto: No, do you want me to explain why I do not buy it?

Int.: Yes. Maybe I'll learn something...

Augusto: This one even looks good, usually looks pretty good, but it's near the end.

Int.: Right.

Augusto: Sometimes it may even look better...

Int.: What are you looking for in these products?

Augusto: The use-by date is next Monday.

Int.: And that one?

Augusto: It's today. In my land we usually say: "Let them eat it!"

(Augusto, 70 years, Elderly households, rural, Portugal)



**Figure 3.1.10: Augusto picking the watercress packages (Portugal)**

Emilia was one of the research participants who bought packed and unpacked vegetables. She usually bought unpacked lettuce, packed mushrooms and always preferred to buy packaged carrots. She usually bought unpacked lettuce because she could see the colour of the leaves, which are good indicators of freshness.

Int.: How do you choose lettuce?

Emilia: By looking at the leaves.

Int.: How?

Emilia: If it is fresh, the leaves are green, then it is good. (She takes some leaves from the lettuce and observes them carefully)

Int.: Do you usually buy packed lettuce or like this?

Emilia: Like this, fresh...

(Emilia, 89 years, Elderly households, urban, Portugal)

Emilia chose packed mushrooms because there were no other options in the supermarket, yet she was indifferent as to whether mushrooms were packaged or not. However, regarding carrots, she preferred the ones that are packaged because she believed them to be cleaner.

Int.: Regarding the carrots, is it the same?

Emilia: Carrots, I always take those packed. I always want it packed.

Int.: Why?

Emília: I prefer. They are cleaner. I prefer the packed ones.  
(Emília, 89 years, Elderly households, urban, Portugal)

Carlos (24 years, Young single men, urban) bought unpacked lettuce and salad, and his main reason was taste. He does not like the taste of packages that mix different kinds of lettuces and vegetables. Also, Odete did not like the taste of packed and prewashed salads.

Int.: What about those packed salads?  
Odete: I don't like them.  
Int.: No? Don't you buy it?  
Odete: No.  
Int.: Why? Don't you like it?  
Odete: No, I don't, because when I eat them it tastes like cuttlefish. Int.: Cuttlefish?  
Odete: Salads remain a long time inside closed packages and I can't...I prefer to wash the lettuce, the onions, tomatoes and make my own salad.  
(Odete, 65 years, Elderly households, urban, Portugal)

Celeste (70 years, Elderly households, urban) is another participant who did not like packed vegetables or salads and only bought these products from the local grocery store instead of supermarkets. She believed vegetables from supermarkets were not of very good quality and considered vegetables from the grocery shop as 'organic food' because local farmers produced them and they would not use manure and chemicals. Interestingly, in an informal conversation with the owner of the shop we later found out that his produce is not sourced from local farmers. Celeste also does not trust the quality of the lettuce all year round. When it is possible, she takes a bus to go to a local market where local farmers sell their products. Here she would buy fresh seasonal products, like tomatoes and other vegetables that she freezes.

### Selecting fruit

Most households preferred to select and buy fresh fruits while in season. For some research participants, the origin was an important criterion. Some preferred to buy nationally sourced fruits to help the national economy and local farmers. Strawberries were the only fruit that some households bought in their own packaging and two households bought frozen berries. Filipa (36 years, Young families, urban) usually bought a mix of frozen berries (blueberries and raspberries) for making cakes on the weekends, and Carlos (24 years, Young single men, urban) bought them for milkshakes. Filipa bought packaged strawberries because they do not sell in another form in the supermarket near her home: although she preferred to buy fresh fruit in local markets, due to time issues she did not go there often. Carlos never bought strawberries out of season. He thought it was weird seeing strawberries on the cold product shelves, stating: "It's not very natural to see strawberries in the cold area (...) because normally that kind of fruit, sold out of season, are grown in a greenhouse and are not natural."

For Augusto (70 years, Elderly households, rural) and Carlos it was very important to help national agriculture. Augusto usually bought bananas from Madeira (a region in Portugal) because he considered them tastier and he believed he was helping the producers.

Int.: Here are bananas from Madeira. Why do you prefer those?

Augusto: First because they are Portuguese, and the quality has nothing to do with the others. Did you eat some bananas from Madeira and did you eat these? These are floury and the ones from Madeira are hard. These [non-Madeira bananas] taste like flour. (Augusto, 70 years, Elderly households, rural, Portugal)

Carlos also chose apples from Portugal. On that day, they had a nice appearance and the price was good.

Int.: Tell me one thing... these apples they have something here... which is this label...

Carlos: It is the quality label.

Int.: So this label tells you something?

Carlos: It is produced in Portugal...

Int.: And the fact that it's produced in Portugal...

Carlos: It is a sign of quality.

Int.: Do you think it's a sign of quality?

Carlos: I do.

Int.: And do you look for Portuguese products?

Carlos: Yes, I mean, unless it's much more expensive than normal, but I like contributing to the economy.

(Carlos, 24 years, Young single men, urban, Portugal)

Augusto and Josefina (81 years, Elderly households, urban) never bought out-of-season fruit.

Int.: Can I ask you a question? Those sliced honey melons and watermelons, do you like them?

Augusto: I'm a fan of buying fruit of the season.

Int.: You buy fruit of the season, as a rule.

Augusto: Melon, for example, I do not buy now [it was out of season].

(Augusto, 70 years, Elderly households, rural, Portugal)

Emília (89 years, Elderly households, urban) never bought overripe fruit (namely bananas) and Manel (73 years, Elderly households, urban) never bought fruit on special offer.

Int.: What about bananas?

Emília: Bananas... I don't like to take them because I don't like overripe fruit.

Int.: Do you take them green?

Emília: Yes.

Int.: Really? Always?

Emília: Always

Int.: Why?

Emília: Because I like bananas half green.

(Emília, 89 years, Elderly households, urban, Portugal)

This tendency of consumers to get green or half green bananas has already been picked up by retailers and it is common to find under-ripe bananas on supermarket shelves that people buy, take home and wait a couple of days before they eat them. This seems to be a convenient alliance of interests between retailers and consumers, wherein retailers sell bananas that have longer shelf lives whilst avoiding food waste, and consumers, who either have developed a taste for bananas that are not ripe (harder texture at the bite and less sweet) or do not mind waiting a couple of days for bananas to reach their premium edible quality.

#### *Paying, packing and leaving the shop*

Most households used reusable bags for shopping and only a few were very concerned with the maintenance of the cold chain from supermarket to home (see also Chapter 3.2 on transportation). It is important to bear in mind though that all research participants' homes were within easy reach of the shops visited, and were reached either on foot or by car. Households did not show they followed a particular order when putting foods on the conveyor belt at the check-out.



**Figure 3.1.11: Products without a specific order on the conveyor belt (Portugal)**

Exceptions were Augusto (70 years, Elderly households, rural), Sílvia (33 years, rural) and Vanessa (29 years, rural) (both young families), who put the chicken inside a

separate plastic bag. Sílvia explained this was to avoid leaking of liquid from the chicken to other foods. She also followed an order for put foods on the conveyor belt. First came the heavy items, followed by the lighter items, so that, she explained, storage in her bags was easier. She had multiple bags to store different categories of products. For example, cleaning products were all put inside a separate bag. Vegetables were also put inside their own specific bag, different from the bag for the meat. And dry foods had also their designated bag. Moreover, she explained that during the summer she always brought a thermal bag for cold or frozen products.

Int.: Why do you put the chicken in this bag?

Silvia: It goes in a separate bag to the other foods because the poultry sometimes has a liquid... [To avoid leaking to other foods] (...) In the summer I bring a thermal bag for the frozen foods, to take chilled products, to take the meat...

Int.: So, you have all these bags... the meat bag, the vegetables bag...

Silvia: Yes, I put the vegetables together in this bag.

Int.: Ah that one is the bag for dry foods...

Silvia: Yes! And the detergents and disinfectants are all put inside this bag.

Int.: And now, do you have more bags or not?

Silvia: No...

Int.: OK. Let's go?

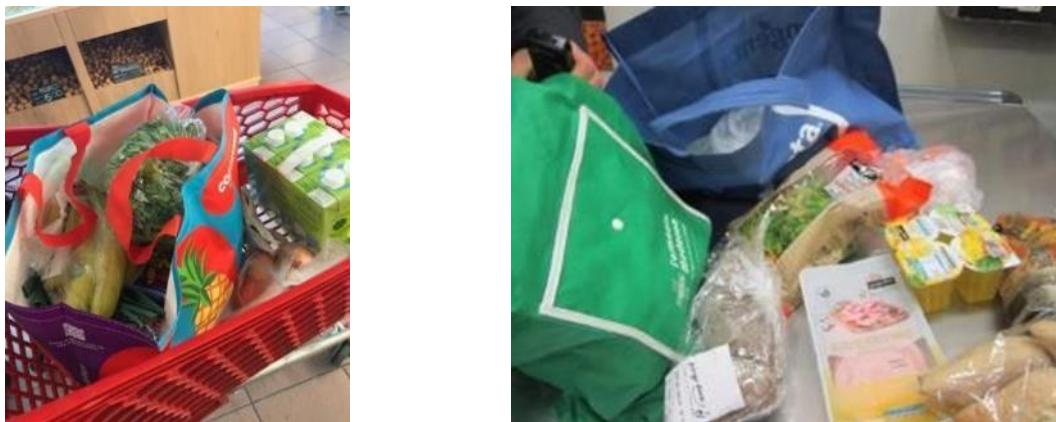
Silvia: Let's go.

(Silvia, 33 years, Young families, rural, Portugal)

Andreia (33 years, Young families, urban) used a paper bag for dry goods. She separated the food into these main categories: dry and frozen products.



Figure 3.1.12: Andreia uses a paper bag (Portugal)



**Figure 3.1.13: Example of shopping and packing fresh products in Portugal**

In the case of Odete (65 years, Elderly households, urban), who had reduced mobility, the supermarket cashier helped her with storing foods inside the bags, putting heavier items at the bottom and lighter ones at the top, but without separating the packaged chicken from other fresh foods (e.g. vegetables). Most households put the heavy and larger sized items below and the weightless foods above. In most cases, light and fresh products were on top, with dry foods placed at the bottom (e.g. rice, paste, cans, milk packs).

Int.: I was wondering if you have any order to put the shopping in the cart.

Augusto: I have. Usually it's my wife who does this, but the heavier things below, and the lighter ones on top.

Int.: Why?

Augusto: Well... you won't put the chicken underneath!

(Augusto, 70 years, Elderly households, rural, Portugal)

There was only one participant in the sample who carried the products cradled in his hands: Bernardo (19 years, Young single men, urban) bought only three items (packed chicken, lettuce and tomato sauce) and said he did not need a bag because home was only 2 minutes walking distance from the supermarket.



**Figure 3.1.14: Bernardo carrying his shopping (Portugal)**

### Summary of shopping in Portugal

To sum up, households carried out their shopping practices in various ways. The selection of location to shop was shaped by priorities relating to food quality, but the social, spatial and temporal contexts of shopping practices were also taken into consideration. Some households avoided rush hours and preferred shopping during the weekdays, while others organised their shopping days in accordance with different family rhythms, the sequences of co-existing practices and other factors. Food selection criteria also varied, some according to the participating household's socio-economic status. Some households experienced economic constraints, and took advantage of promotions whilst always being on the look-out for good value for money opportunities. Others had busy working lives and looked after young children and struggled to find the time to shop in what they considered ideal conditions (e.g. in local food markets that are a bit outside their daily paths of work-school-home). In the case of elderly households, the main constraint was the fact that their bodies could not move fast or carry heavy products. Several households were concerned about the quality of food, which included the origin of production, whether products had or did not have chemicals, and whether they were fresh or not. A few households preferred to buy national products to support Portuguese agriculture. Others would buy organic for health reasons. It was also shown that research participants questioned the retail practices of large supermarkets (e.g. food labelling), and in some instances, preferred to buy in small retail outlets, as they trusted food better in such places. Regarding storing foods at the check-out, they would often prioritize packing heavy items at the bottom and lighter items at the top of bags, but apart from very few exceptions (Silvia, (33 years, Young families, rural), research participants did not pay much attention to the categories of products that were being stored together inside the same bag. They were often seen storing meat (e.g. chicken) together with other fresh foods, namely vegetables.

## Shopping in Romania

In most cases (14 out of 15), the shopping visit started at the entrance of the supermarket, the village shop or the open market where the research participants did their regular food shopping. We asked them about the method of transportation they used or would normally use. Five out of 15 cases arrived at the retail location using their personal car, one used the bus (Zoltan, 35 years, Young single men, urban), another research participant, Sorina (32 years, Young families, rural), was brought by car by a relative from the village she lives in, while the rest of the research participants walked from home. Amalia (31 years, Young families, urban) walked on this occasion, but she usually used the car and shopped together with her husband.

With one exception, the observation took place at a single supermarket. Nine out of 15 research participants went to Kaufland (supermarket)<sup>22</sup>. Balanel (28 years, Young single men, urban) went to Penny (discounter) and Domnica (75 years, Elderly households, urban) went to Profi (supermarket). On the other hand, Fanel (69 years, Elderly households, urban) went to a local food store and to the local food market to buy poultry and vegetables but said he preferred going to Kaufland, if he needed something else besides meat. With the exception of Dumitra (84 year), the three elderly households in rural areas (Damian, 73 years, Dumitra and Linalia, 73 years) went shopping in the local food store in their village.

### Shopping routines

At the entrance to the market, research participants were asked to explain what kind of shopping they were going to do. Most of the research participants from urban areas would do shopping several times per week (Table 3.1.1), young families from rural areas said they went weekly, whereas elderly from rural areas monthly, when they received their pensions. The time spent doing shopping in supermarkets ranged between 10 minutes and one hour, whereas shopping in the village took about 5 minutes. Young families coming from the village to towns preferred the supermarkets located at the entrance of the town.

Int.: Do you come only to Kaufland for doing your shopping?

Minodora: Yes.

Int.: Why do you prefer Kaufland?

Minodora: Because it is convenient, it is at the entrance of the city (meaning that it is easier for her to return to the village).

(Minodora, 27 years, Young families, rural, Romania)

Most shopping visits involved only the researcher and the participant. There were 2 exceptions to this: Sorina (32 years, Young families, rural), who brought her 11 year old boy to the supermarket to help her with the bags, and Serena (36 years, Young

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<sup>22</sup> Food retailing in Romania is dominated by 6 supermarket chains: Kaufland, Lidl, Carrefour, Penny, Profi and Auchan.

families, rural), who was accompanied by 3 family members: her 1-month old daughter, her 10 years old daughter, and her husband who always has the responsibility of driving from the village to the market. Serena shopping visit to the supermarket is dependent on the availability of her husband, because he is the only one who has a driving licence. However, six more research participants (three from the Elderly households group and three from the Young families group) specified that they usually don't go shopping alone. If he has to make provisions for 2 weeks, Fanel (69 years, Elderly households, urban) goes to the supermarket with his wife, Fanica (69 years). Linalia (73 years, Elderly households, rural) is helped by her son when she has heavy bags and Dumitra (84 year, Elderly households, rural) is helped by her nephew. Maria Mirabela (34 years, Young families, urban) goes with her husband at the supermarket, Amalia (31 years, Young families, urban) comes with her husband only when she has to buy substantial quantities of food, whereas Minodora goes with the entire family to the supermarket, because she needs help with the bags.

Int.: How often do you come to shopping?

Amalia: I think once a week.

Int.: Do you buy large amounts of food when shopping?

Amalia: I prefer. I think we buy considerable quantities once or twice a month. But ... there are products that we have to buy frequently. At least fruits and vegetables ... we cannot afford to buy them only once a month.

Int.: When do you have more things to buy, do you bring your husband with you?

Amalia: Yes ... or, if it seems to me that I bought more than I can carry, I call him to come and help me.

(Amalia, 31 years, Young families, urban; Romania)

**Table 3.1.1: Frequency of shopping**

Living area	Participant	Frequency of shopping	Time spent (minutes)	Company during shopping session
Urban	Ionel (30 years)	2-3 twice per week	20	0
	Balanel (28 years)	2-3 times per week	15	0
	Florinel (31 years)	2-3 times per week	50	0
	Bogdan (32 years)	2-3 times per week	20	0
	Zoltan (35 years)	weekly	56	0
	Maria Mirabela (34 years)	2 times per week	20	0
	Amalia (31 years)	weekly	59	0
	Domnica (75 years)	2-3 times per week	10	0
	Fanel and Fanica (both 69 years)	2-3 times per week	15	0
Rural	Sorina (32 years)	Two times per week in the city, rarely in the village and only for products that were forgotten to be bought from the city	20	1
	Minodora (27 years)	Weekly in the city and almost every day in the village to buy food such as bread		0
	Serena (36 years)	Weekly	22	3
	Dumitra (84 years)	Monthly in the city, weekly in the village	15	0
	Damian and Damiana (both 73 years)	Monthly in the city, weekly in the village	5	0
	Linalia (73 years)	Weekly in the village	5	0

### The shopping experience: route taken and ability to find things

Only one participant from those interviewed used a shopping list. This was Amalia (31 years, Young families, urban) who had a list on her mobile phone. She said that she used the shopping list when she did not have much time available for doing shopping. When she was asked if the shopping list was classified into different categories, she said it was not. Therefore, even when having a shopping list, Amalia was not able to rapidly find all the products that she wanted.

Amalia: I have a shopping list.

Int.: Are you using a list with things that you need to buy from the supermarket?

Amalia: Not always. When my time is limited, then I use a list...when I need to be organised.

Amalia: Yesterday I should have done the shopping list based on product types... not to have to move all over in the market.

Int.: Usually, do you make a shopping list?

Amalia: No, I spend a lot of time going up and down each isle and then I remember what I need.

(Amalia, 31 years, Young families, urban, Romania)

A clear distinction was observed between her and the other research participants related to shopping around the isles and decision making. The others felt that they did not have to use a shopping list because they shop frequently and the risk of forgetting something was low. Despite declaring that he does not need a shopping list, it was funny when Florinel (31 years, Young single men, urban) decided to make tours around the isles to remember the things he needed to complete his shopping. He told to investigators that looking around helped him to remember missing items.

Sorina (32 years, Young families, rural) said she did not need a shopping list because: "the list is in my head". She looked in the supermarket strictly for the food that she needed.

The shopping list is in my head. I make the plan with what I need to buy from home. Every time I go shopping, I have the shopping list in my mind, all the things that I need to buy are printed there (she points to her head).

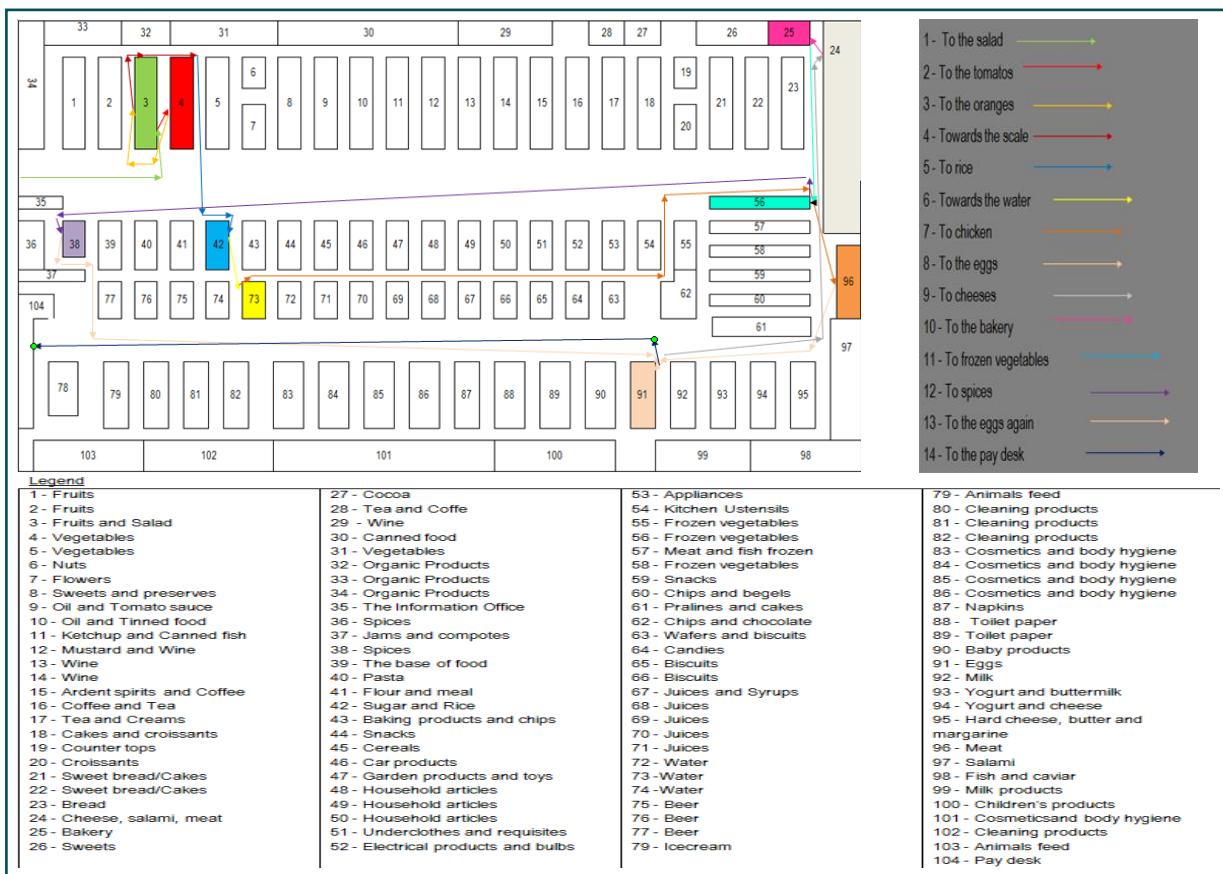
(Sorina, 32 years, Young families, rural, Romania)

Two out of the five Young single men used a systematic approach to shopping, going up and down each isle to ensure that nothing was forgotten, or they looked for something else they might need or would like. However, most of the research participants just looked for the products that they needed. All research participants were familiar with the market or shop layout, knowing the route for finding the food that they needed.

As 10 out of 15 research participants went to Kaufland for their food shopping, Figure 3.1.15 presents the layout of this supermarket. At the entrance of this retailer is placed the isles with fresh fruits and vegetables, whereas the isles with meat and dairy products are positioned in the middle of the shop. Every participant followed the layout of the shop, therefore the fruits and vegetables were taken first and put in the trolley. However, Bogdan (32 years, Young single men, urban) said that he selects the products that needs refrigeration at the end: "First the fruits... I try to leave to the end the cold products such as cheese, olives...meat...not to carry too much long in the shop getting warm."

Florinel mentioned that he would have no problem in selecting poultry first if the isle with meat would have been at the entrance of the shop, on the contrary: "Yes, why not, in this case, I don't have to walk around through the store to take the poultry".

On arrival at the supermarket, the research participants began by selecting a trolley or basket. Zoltan (35 years, Young single men, urban) left his backpack at entrance of the supermarket in the dedicated compartment for keeping personal things. None of the research participants had a specific strategy for placing the food in the trolley or basket. However, all of them paid attention not to place food on top of other food.



**Figure 3.1.15: Layout of Kaufland market and the route followed by Ionel when shopping (Romania)**

Amalia had problems finding some products that she needed because the market layout had recently changed. She asked the researchers several times if they saw the mustard. Ionel (30 years, Young single men, urban) had a favourite brand for seasonings and as he couldn't find it in the isle dedicated for seasonings, he sought out the help of the shop floor assistant. Serena (36 years, Young families, rural) had difficulties in selecting the items that she needed because she had her baby in her arms. Sorina had problems in selecting chicken as the brand she preferred to buy was missing. She did not like to spend too much time shopping, and when she saw that the chicken brand she usually buys, was missing, she was confused and did not know what to choose.

## Selecting fresh, raw chicken in Romania

In this section we examine in detail how our households went about selecting chicken. We directly observed 14 research participants buying fresh chicken. In addition, we saw two research participants Zoltan (35 years, Young single men, urban) and Amalia (31 years, Young families, urban) considering buying chicken, but eventually deciding not to do so on that occasion. These two research participants were not looking for chicken but nevertheless explained some of their priorities and procedures when doing so. Instead of selecting chicken, Zoltan bought minced pork meat, whereas Amalia selected minced pork combined with beef meat.

### *Product type and quantity*

With these exceptions, all other research participants preferred buying chicken regardless of the study group they belonged to and most of them did not prefer to buy whole chicken. Amalia (31 years, Young families, urban) said "I don't buy chicken from the supermarket because I know it contains a lot of hormones.... however, if I have to, I prefer chicken legs, I don't like chicken breast because it is too dry".

Most of the retailers from the city where research participants bought their chicken offered a wide selection of raw chicken products: whole chickens, breast fillets, wings, thighs and legs (with or without bones and skin), available pre-diced or pre-seasoned, free range, organic, corn fed or otherwise, and in a variety of different sizes and quantities. Most research participants knew in advance which type of chicken product they wanted and went straight to the relevant subsection of the poultry isle or cabinet, tacitly rejecting the other options and immediately narrowing down the field.

All Romanian research participants chose only raw chicken from the market, without any other seasonings and did not mention anything about any criteria related to free range, organic or corn fed. Most research participants bought as much as they needed for one or two dishes. Yet, when asked what happens if they were not going to cook the entire chicken that they bought, most simple mentioned that they would put the chicken in the freezer and cook it when they needed it next .

Most of the research participants said that they chose the chicken parts depending on the dish they wanted to prepare. The young families and young single men preferred buying chicken breast, chicken legs, or chicken wings, and only packaged products. The association of buying whole chicken was related with preparing more complex dishes like sour soups. For example, Balanel (28 years, Young single men, urban) said he avoided buying whole chicken because he doesn't know how to cook sour soup.

Int.: Usually, what do you buy?

Balanel: Chicken legs deboned or even with bone, chicken wings I prefer them grilled with vegetables...the chicken breast I prefer grilled.

Int.: Whole chicken?

Balanel: No way, I can't prepare sour soup, so no way whole chicken...  
(Balanel, 28 years, Young single men, urban, Romania)

Four out of the 5 young single men preferred buying chicken breast deboned. Florinel (31 years, urban) and Bogdan (32 years, urban) chose chicken breast because they were interested in gaining muscular weight. More than this, Bogdan was a big fan of chicken legs with skin that he considered to be very tasty. However, being on a diet, he currently only ate chicken breast: "...I love the chicken skin...but I think I will give up on it..."

Amongst the young families, Maria Mirabela (34 years, urban) preferred the deboned chicken legs whereas, Serena (36 years, rural) and Sorina (32 years, rural) selected chicken breast and chicken legs. Maria Mirabela chose deboned chicken legs without skin saying that she doesn't like the skin of the chicken. At the time of our interview, Minodora (27 years, Young families, rural, Romania) slaughtered a chicken, but she put it in the freezer and cooked only the deboned chicken breast bought from the market by her neighbour Serena.

A different pattern was observed amongst the elderly households living in rural areas. None of them mentioned specific chicken parts they preferred. We assume that their selection was based on the type of product available at the village shop. Usually, village shops prefer to make available supplies of frozen whole chicken because it lasts longer. The two elderly households from the city preferred fresh chicken. Fanel (69 years, Elderly households, urban) had a favourite local shop which sold a large variety of fresh chicken. His wife, Fanica (69 years) said that they used to buy poultry from Kaufland, but when a shop assistant from the assisted service zone told her that the poultry was not from Romania, she stopped buying from there: "...I've asked the shop assistant if the poultry has Romanian origin, and when she told me that is not Romanian...I have never bought from there up to know, although the poultry was cheaper...."

For two research participants from the group of young single men, size of the chicken had a significant influence on buying decisions. Bogdan said: "the bigger the chicken, the more meat it has on it", whereas Ionel (30 years, Young single men, urban) said he preferred buying small portions, otherwise he had to freeze the meat for the next day.

### *The role of brands in selecting chicken*

Six out of 15 research participants mentioned that they have a favourite brand for chicken (Table 3.1.2). Balanel (28 years, Young single men, urban) said that he chose poultry based on commercials he had seen on TV: "I choose the chicken based on the commercials.... I'm going to look for some chicken breast because it is easier to cook." Ionel (30 years, Young single men, urban) often bought chicken and pork because these are basic foods in his diet. He chooses the "Cocorico" brand. Sorina (32 years, Young families, rural) mentioned that she has a favourite brand of chicken, however, during the fieldwork shop, the type of product she wanted was not available. Therefore, faced with this situation, she needed to buy another product. She scanned another

alternative, looked carefully at the label and finally she selected a tray with chicken breasts and a tray with chicken legs (picture below). She said that she was not completely sure that she made the right decision, and then added that it had a very nice yellow colour and looked nice.

...I knew that the chicken that I used to buy it was placed in this area, now I see that they changed it and it is missing. I see another brand "Puiul familiei". I don't know how good it is. I guess I will choose the chicken breast...but yet...it's not what I wanted...I see that has a nice yellow colour and looks pretty nice."

(Sorina, 32 years, Young families, rural, Romania)



**Figure 3.1.16: Sorina scanning alternatives when selecting chicken (Romania)**

**Table 3.1.2: Shopping habits in selecting chicken among the Romania households**

Study group	Participant	Type of chicken	Favourite brand	Expiry date	Sensory judgement	Other criteria for selecting chicken
Young single men	Ionel (30 years)	Chicken breast deboned	Yes	Yes	-	Size
	Balanel (28 years)	Chicken breast, chicken legs deboned, chicken wings	From commercial	Yes	Blood vessels and skin colour	
	Bogdan (32 years)	Chicken breast	No	Yes	Colour, blood vessels	Size
	Florinel (31 years)	Chicken breast deboned	No	Yes	-	Longest shelf life
	Zoltan (35 years)	Chicken wings	Yes	Yes	No	Longest shelf life
Elderly	Dumitra (84 years)	Whole chicken	No	No	No	
	Damian & Damiana (both 73 years)	Whole chicken	No	No	No	
	Fanel & Fanica (both 69 years)	Chicken breast boned, chicken legs	Yes	No	Colour	
	Linalia (73 years)	Whole chicken, chicken legs	No	No	No	
	Domnica (75 years)	Chicken legs	No	No	No	
Young families	Maria M. (34 years)	Chicken legs deboned	Yes	Yes	Colour, blood vessels	
	Sorina (31 years)	Whole chicken, chicken legs, chicken breast	Yes	Yes	Colour	
	Amalia (31 years)	Chicken legs	No	Yes	Colour	
	Serena (36 years)	Chicken legs, chicken breast	No	Yes	Overall appearance	Longest shelf life
	Minodora (27 years)	Chicken breast deboned, whole chicken	No	No	No	

### *Date labels*

Three out of the 15 research participants (2 Young single man and 1 Young families) looked consistently at the use-by dates of the chicken. Florinel (31 years, Young single men, urban) said that, when he looks at the use-by date, he makes an internal calculation to see if he will be able to prepare the chicken before the date expires, and he therefore chooses the product with the longest shelf life. Although Zoltan (35 years, Young single men, urban) did not buy chicken but pork during the shopping session, because pork is his favourite meat, he said that he usually selects the products that are located at the back of the shelf because those products have later dates compared with the products that are located at the front. Zoltan did the same thing with other perishable goods, not only with raw meat. Serena (36 years, Young families, rural) said she payed attention to the dates listed to ensure that she would not buy a product that had an expiry date of the day of purchase or the day after.

Although mentioning that the use-by date is important when selecting chicken, none of the other research participants paid attention to it during the shopping visit. However, when the research team later asked questions about the use-by date, they were more focused on it.

### *Cost*

In most cases, cost played a significant influence in narrowing down options. Bogdan (32 years, Young single men, urban) said that he pays attention to price: after comparing the prices of different yet similar products, he chose a product of a medium price: “I am looking for chicken that is bigger and economical. I don’t choose the cheapest product... but something in between... somewhere in the top of the lowest three prices.”

The income level was also reflected in the price research participants paid for chicken products. For example, Dominca (75 years, Elderly households, urban) mentioned clearly at the beginning of the shopping session that she buys the cheapest products she can find in the market. Thus, when selecting chicken legs, she chose the unwrapped product from the assisted service zone of the market.

### *Sensory judgement*

Checking chicken during selection involved sensory assessment that was typically based on colour characteristics (see Table 3.1.2). Usually, Fanica (69 years, Elderly households, urban) has responsibility for selecting meat, and she uses her eyes when doing so. When buying beef, she would look for a light red colour in the meat, and she would smell the meat only if it has, what she described as a ‘dark red’ colour. Fanica said she was aware that at the shop in the Central Market did not show the use-by date, and even if it was shown, she did not trust it. However, she knew that the shop sells fresh raw chicken, as she has bought here chicken there over several years and had

never experienced problems. She said that the salesman knew her very well and made recommendations to her about which type of poultry was freshest:

Int.: How do you choose the meat that you buy?

Fanica: The meat is chosen using the eye. If I want to buy beef, I look at its colour, it should be light red. If the colour is dark red, the beef is not fresh.

Int.: Usually, do you smell the meat before buying it?

Fanica: Usually yes...but only if it has the dark red colour.

(Fanica, 69 years, Elderly households, urban, Romania)

Three out of the 15 research participants made visual assessments of the quality of the chicken they were buying. Bogdan (32 years, Young single men, urban), Maria Mirabela (34 years, Young families, urban) and Balanel (28 years, Young single men, urban) said that they were not only looking at the colour of the chicken skin but also at the colour of the blood vessels. They avoided buying chicken where the colour of blood vessels was dark. On the other hand, Sorina (32 years, Young families, rural), whose preferred product was not available, and who consequently looked at the different brands, looked at the packages of two products and finally chose the product with the most appetising colour. When Domnica (75 years, Elderly households, urban) was asked how she evaluates the freshness of the poultry, she said: "as long as the poultry is sold on the market, I assume that the product is fresh." With the exception of Sorina, the Romanian research participants selected chicken and added this to the trolley or basket with little apparent deliberation or hesitation.

### Selecting fruit

Bogdan (32 years, Young single men, urban) was the only research participant to choose fruit based on their dimensions. He chose bigger apples because, he said, it helped him to clean his teeth. He also mentioned selecting bigger bananas because the bigger they were, the more fruit was inside and the thinner the peel. Florinel (31 years, Young single men, urban) said he did not buy berries from the market. He preferred the ones from the countryside, while Zoltan (35 years, Young single men, urban) said he did not consume berries or frozen berries at all. In season, from time to time, he would buy raspberries and only those sold in punnets. Domnica (75 years, Elderly households, urban) only bought fruits from the local market, and she said she likes to touch the fruits and vegetables. Although living very close to a local food market, Fanica (69 years, Elderly households, urban) mentioned buying fruits from Kaufland, as it carried a large diversity and the apples tasted delicious.

### *Loose or packed items*

The preference of Romanian research participants for loose or packed fruits was dependent on the type of fruit. Most of the research participants preferred buying loose fruit, an exception being Sorina (32 years, Young families, rural), who selected one pre-packaged bag of apples. She said that she wanted to avoid giving her children products

that had been touched by too many hands as happens in supermarkets with loose fruits. As it was summertime, Amalia (31 years, Young families, urban) bought punnets of raspberries, saying that at this time of the year, she bought them twice a week because her son loves them.

### *Sensory judgement*

All the research participants who bought fruits selected these on the basis of their texture and colour. Ionel (30 years, Young single men, urban) selected 2 loose oranges. He preferred them not too soft because this to him meant that they were spoiled, but also not too hard, because then they were unripe. Florinel (31 years, Young single men, urban) likes pomegranate and said he would touch them to assess their freshness, although he does not always get it right. He accounted selecting a pomegranate that looked fresh on the outside but was in fact spoiled on the inside. Zoltan (35 years, Young single men, urban) carefully examined the oranges to avoid selecting bruised, overripe or spoiled items.

### *Reference to price*

The research participants were split in two, with those who pay attention to the prices of fruit, and others who chose fruits based on their quality and not their price. In the first group were the elderly research participants. For example, Dumitra (84 year, Elderly households, rural) bought loose apples considering the lowest prices in the market. Money represented a key concern for Domnica (75 years, Elderly households, urban) when choosing what to buy and she would buy more fruits and vegetables from the market if she had more money. Amalia (31 years, Young families, urban) bought a punnet with raspberries, and she recalled that the product was more expensive compared with last time. Bogdan (32 years, Young single men, urban) said that he was not interested in the price of fruits and vegetables that he bought, but later he mentioned that he bought fruits from the supermarket because they were cheaper compared with those from food market. In addition, he considers buying frozen berries a waste of money because, in his opinion, "those fruits have no taste and it isn't worth buying them".

### *Other factors*

Sorina (32 years, Young families, rural) did not like to buy fruits from supermarkets because she claimed that she did not know whether they were treated with chemicals. She is afraid as she has children and she does not want them to get sick from fruits that are treated with chemicals. She preferred fruits that she grew in her own garden. However, she still bought a pack with apples:

Int.: Do you buy fruits from the market?

Sorina: I don't prefer buying fruits from the market, I prefer those grown in my yard. Fruits from the market are full of pesticides and I'm afraid giving them to my children who are small.

Int.: Is the only thing that worries you?

Sorina: Yes, the children, because I don't want them to get sick... there are different kinds of bacteria that might harm them.

(Sorina, 32 years, Young families, rural, Romania)

Amalia (31 years, Young families, urban) bought raspberries and strawberries from the supermarket until the fruit they grew in the countryside was ripe. She said that her family eats apples grown by her parents in the countryside. But it also happened that she would buy red apples called Starkrimson because her son liked those. On the other hand, she herself preferred green apples. Bogdan (32 years, Young single men, urban) preferred buying fruits from the market because compared with the food market, the supermarket was open until late. He also liked the large variety found at Kaufland, but was not satisfied with the quality compared with the quality of fruits available on the food market.

### Selecting vegetables and salads

All the research participants living in urban areas mentioned that buying vegetables from the market comes with the advantage of selecting the vegetables that they like. For instance, Bogdan (32 years, Young single men, urban) preferred buying vegetables from the supermarket because compared with the food market, here he could choose the vegetables that he liked the most. Maria Mirabela (34 years, Young families, urban) likes the Iceberg salad as she can find it all the year in the market.

### *Varieties, size, waste and provenance*

Balanel (28 years, Young single men, urban) selected few loose cucumbers and put them into a plastic bag. He said he especially likes small cucumbers because they are not bitter. He also picked a tray with cherry tomatoes because they "are the only ones that still taste good". Bogdan (32 years, Young single men, urban) said that he usually eats green leaf lettuce. He said that compared with Butterhead Boston lettuce, the leaf lettuce it is tastier. Zoltan (35 years, Young single men, urban) liked a specific variety of potato, claiming that they are tastier, have a better consistency and when he makes fries, he uses a smaller amount of oil. Florinel (31 years, Young single men, urban) preferred the bigger potatoes because these took less time to peel. He usually would not purchase cucumbers from the supermarket unless it was winter. He preferred those sold at the food market. Amalia (31 years, Young families, urban) liked to buy small red onions because she does not use much onion when cooking and she said she wanted to avoid food waste. Fanica (69 years, Elderly households, urban) bought fresh lettuce and seasonal vegetables only from the food market saying that these were fresher. Her husband, Fanel (69 years) took lettuce, green onion leaves and radishes from a local

producer without hesitation because he knew the quality of the products. Also, he grabbed a bag with potatoes that he often buys, with little hesitation.

### *Loose or packed items*

Most of the research participants preferred buying loose lettuce. When he did not have time to go to the food market, Florinel (31 years, Young single men, urban) bought lettuce from Kaufland. He preferred buying loose vegetables, because he can see and touch them. For instance, he preferred the loose lettuce because he could look closely for pale leaves. However, he bought tomatoes packaged in containers because they are smaller and tastier. He also selected some loose red bell peppers and mentioned that he preferred the ones that are harder. Balanel (28 years, Young single men, urban) selected a lettuce that was prepacked with little hesitation because he liked to buy it fresh from the local market, but at this time of the year he could not find it there. He also bought loose cucumbers and pre-packaged cherry tomatoes. He liked a specific variety of cucumber called Cornichon, because they are smaller than the Fabio type, and can be consumed during a single meal. Bogdan (32 years, Young single men, urban) also liked loose vegetables and fruits and considered them fresher compared with those packaged. He said that although they are brought from other countries, consumers are more likely to select loose items from the isle compared with those packaged. Ionel (30 years, Young single men, urban) looked for packaged cherry tomatoes. Zoltan (35 years, Young single men, urban) bought 2 punnets with cherry tomatoes and said that he bought tomatoes even if they are loose. He also preferred buying loose mushrooms. He said that these are tastier and he could choose the items that he wanted.

Maria Mirabela (34 years, Young families, urban) looked at a lettuce before putting it into a plastic bag. She carefully examined vegetables before choosing them. During winter, she also consumed tomatoes, although she was not very satisfied with their quality in terms of how they taste. She selected a plastic box with rucola and another one with baby spinach. She enjoyed combining vegetables such as rucola and baby spinach when preparing salads. Sorina (32 years, Young families, rural) preferred to purchase tomatoes in punnets because they are smaller and tastier. Big tomatoes in general are hard. She put a plastic bag over her hands to ensure that she did not touch the punnets with tomatoes with her hands. She did the same thing with cucumbers.

### *Sensory judgement*

Each participant mentioned freshness in selecting vegetables. However, freshness was perceived differently by each participant. Some used texture for evaluating freshness, others colour or smell. Ionel (30 years, Young single men, urban) chose the tomatoes by colour and consistency, “they have to be mellow, but not too soft”. Bogdan (32 years, Young single men, urban) liked the tomatoes to be well ripened and he liked to touch them to be sure that they are soft. He liked to examine the colour of the tomatoes but thought the lighting in the supermarket made it hard for him to see them clearly.

Int.: You select the tomatoes based only on their consistency? Bogdan: Yes. I like them dark red. The light from the market can make the tomatoes look ripened and attractive. Some of them can be seen in the shadow...but...anyway...I know that they are full of chemicals. I'm pretty sure about this."

(Bogdan, 32 years, Young single men, urban, Romania)

Also, Bogdan chose the cucumbers on the basis of size (medium) and texture (hard), and explained that big red bell peppers are more flavoursome than those of other sizes. Florinel (31 years, Young single men, urban) bought a melon. He said that he bought one several days ago that was very tasty. Usually, he looked at the tail of the melon to check its freshness. He said the tomatoes he had bought were not ripe but he took them because he had no other choice, and "all the tomatoes in this period are like this". Zoltan (35 years, Young single men, urban) bought cherry tomatoes from Kaufland. He said that cherry tomatoes are tastier than other tomatoes and have a longer shelf life. Maria Mirabela (34 years, Young families, urban) liked to buy because she loves its bitter taste. Amalia (31 years, Young families, urban) bought tomatoes depending on the price. However, she also selected them on their 'natural looks', avoiding those that gave her the impression that they were sprayed. Serena (36 years, Young families, rural) selected a tray with cherry tomatoes because she did not like how the loose ones looked. Domnica (75 years, Elderly households, urban) said that during this time of the year (it was May), the tomatoes were hard and had no taste, and although red, the peppers did not have an intense colour; an indication that they were not ripe.

The inspection of leaves was mentioned by all the research participants as a criterion to evaluate the freshness of the lettuce.

### *References to date labels and price*

Zoltan (35 years, Young single men, urban) was the only participant who checked the date label on the punnet of cherry tomatoes and realized that the product had no date on the label. He took it anyway. Bogdan (32 years, Young single men, urban) chose a big pepper saying that it had a lot of flesh on it, and even if it was expensive, it was worth the price. Florinel (31 years, Young single men, urban) looked at the price of the items that he bought. He said that he would still occasionally buy tomatoes when they were more expensive.

### *Paying and packing*

After paying, Florinel (31 years, Young single men, urban) took the shopping trolley to front of the car and put everything in shopping bags that he bought. However, the melon was put in a re-used bag that he had it in the car. Zoltan (35 years, Young single men, urban) took the backpack left at the entrance of the market and started to organise the food that he bought in two bags that he bought from the supermarket. He also used his backpack for storage of some sweets.

Sorina (32 years, Young families, rural) placed goods from the trolley onto the conveyor belt. In doing so, she grouped the things together that she would like to pack together. Therefore, vegetables and other things were stored in one bag and poultry and meat products in another bag. On the other hand, Bogdan (32 years, Young single men, urban) put the heaviest items on the bottom of the bag and did not seem bothered putting vegetables and meat in the same bag. In addition, Ionel (30 years, urban), Balanel (28 years, urban) (both Young single men), Maria Mirabela (34 years, urban), Amalia (31 years, urban) (both Young families) and Domnica (75 years, Elderly households, urban) all used the same bag for meat and vegetables. Bogdan, Domnica and Linalia (73 years, Elderly households, rural) put what they bought in re-used plastic bags. Domnica was the only research participant who declared that she did this often because she wanted to save money. Amalia and Damian (73 years, Elderly households, rural) were using reusable shopping bags: she had a cloth bag with her, and he was carrying a plastic woven tote bag.

## Shopping in France

Except Julie (28 years, Young families, rural), whom we met at home and from where we walked to the shop, we met all the research participants at the supermarket where they drove by car. We also met Aurélien (25 years, Young single men, rural), Sylviane (77 years, rural) and Charles (75 year, rural) (both Elderly households) at their place and followed them by car to the supermarket.

### The shopping experience: shopping lists, time taken to shop, use of trolleys and physical constraints

Research participants did not all have a shopping list: 5 of them made a written shopping list and 10 of them did not have one. Two Young single men had their list recorded on their phone. Aurélien (25 years, rural) had a list on his phone, to be sure not to forget anything. He preferred a recorded list to a paper list, as he would always loose his paper list. On this list, he only recorded what he should not forget. In the evening, he planned to cook crêpes and did not want to forget ingredients for this. Fabrice (24 years, urban) wrote his groceries list on his cell phone but remembered without looking what he needed to buy. Three research participants had their list written on a piece of paper. For Simon (25 years, Young single men, urban) it was a reminder. At the end of the tour he checked his list: "Then I check my list...good, good... Ah! I need bread!" Mathilde (25 years, Young families, urban) had a list of required groceries in her bag but never looked at it. She bought what she found interesting and looked at her list at the end of the shopping tour to see if something was missing. Charles (75 years, Elderly households, rural) always went shopping with a list of groceries to be sure "not to forget half of it". One participant, Elodie (31 years, Young families, rural), made lists to stick to the menus of the week: "the day before I go shopping, I make a schedule, I ask others what they want to eat and then I make my list." Other research participants has virtual lists in their mind. Julie (28 years, Young families, rural) remembered what she wanted to buy without a list. For Julie "it's in my head. Since I manage my stocks, I know what I have at home." If they did not have a lot to buy, they did not use a list. This was the case for Gérard & Odile (71 & 65 years, Elderly households, rural) and Yvette (74 year, Elderly households, urban).

Most of the young men and elderly research participants tried to spend as little time as possible in the store. Young single men declared to like short shopping (Simon, 25 years, urban) or try to go fast (Etienne, 30 years, rural) and even declared that they did not like shopping (Fabrice, 24 years, urban and Aurélien, 25 years, rural). Fabrice said "Yes. Because supermarkets, I do not like spending time in them. Mostly, I know what I want, I go for what I want and then I come out". Elderly men also preferred also not to spend too much time in the shop. Charles spent 35 minutes and likes quick shopping.

When I go shopping, it goes off. My wife goes there alone because, I do not know if all women are like that but she has to move past all the shelves! Ah,

as if I needed that! And we'll go back to the other! Me, it's not my thing. [He laughs].

(Charles, 75 years, Elderly households, rural, France)

Bernard & Hélène chose a little supermarket to go fast.

Int.: Are you trying to shop fast?

Bernard: Yes, that's why we go to a small shop.

Hélène: ...we do not like hanging around.

Bernard: We do not like shopping, we have something better to do. It's not our passion.

(Bernard & Hélène, both 72 years, Elderly households, urban; France)

Some research participants chose the time to go shopping to avoid the crowd or to ensure there was product choice: "There are a lot of retirees at this time of the day (morning), that's why after around 11am, it's not worth it", Bernard said.

Mathilde went shopping in the afternoon because there were fewer people in the shop. Odile always shopped in the morning, and never on Mondays, because products would be missing from the shelves on this day and there was no fishmonger in the supermarket. Some research participants chose a time that was easier for them: this was the case for families with children. Mathilde and Elodie tried to shop without children, for instance, when their husband could take care of them (Mathilde) or when the children were at school (Elodie). Elodie usually shopped in the afternoon with her husband when the kids were at school. He pushed the trolley while Elodie chose the products. He helped her with unpacking at home too.

Most research participants used a trolley in the supermarket. Sylviane (77 years, Elderly households, rural) said she would always use it because she had to buy water bottles. They had brought grocery bags with them to the supermarket, except Fabrice, who forgot, and Etienne, who did not use any. Mathilde even brought her own paper bags to re-use them for her vegetables. Among those who brought bags, Mylène (25 years, Young families, urban) and Sylviane (directly put their groceries in their bags in the trolley, whereas Elodie, Gérard & Odile and Bernard & Hélène did not put products in their grocery bags).

Gérard & Odile, Bernard & Hélène and Sylviane directly put fresh products in cooler bags in their trolley. Sylviane put a cold block in her cooler bag and Odile said she would do so whenever she had to buy frozen products. While shopping in the supermarket, Vincent (29 years, Young single men, rural) and Simon organised their trolley by keeping fresh products apart. Simon also put heavy products in the front, and the fragile ones on the top so as not to crush them. Similarly, Odile organised her grocery bags in the trolley not to damage fragile products. She stored heavy products in a part of her shopping trolley Vincent put fruits and vegetables apart on the little baby seat in

the trolley because he would have to weight them. “I am going to weight them [tomatoes]. I usually put them aside in the meantime, on the little baby seat [of the trolley].” While shopping, Sylviane organised her trolley by separating food products from cleaning products, because she was afraid that they could leak. Mylène and Elodie put all products from their trolley in their caddie without any special order. Elodie said she would order products in her bags in her car.



**Figure 3.1.17: Sylviane’s trolley with products directly placed in cooler and grocery bags (France)**



**Figure 3.1.18: Bernard’s & Hélène’s trolley with yogurts in their cooler bag and other groceries directly in the trolley (France)**

Research participants, Charles, who did not have so many things to buy took a basket instead of a trolley. Simon explained that he was single so he usually bought only a few things once a week and took a basket into the supermarket. But once a month he used to buy more things and would take a trolley. Yvette brought her own shopping bag and did not use any of the shop’s carrier devices. Julie (28 years, Young families, rural) was

the only research participant who went shopping by foot, and she used her 20 months old son's stroller to put groceries in while shopping.

Some research participants would use the drive-through whenever they had a big volume of products, to avoid carrying the bags because the staff directly put them in the car trunk (Gérard & Odile), or because they had difficulties in controlling the trolley when it was heavy (Mylène). Amandine (27 years, Young families, rural) was pregnant so she avoided carrying bags and her husband would do it for her. However, during the shopping fieldwork she had little to buy so she took her grocery bag herself. Elodie's husband and Mylène's partner would help them to transport the heavy bags from the car to their home. Julie used to shop with her 20 months old son, so she used to go shopping with the stroller where her son stayed quiet and did not run everywhere. Sylviane used to buy bottles of water (they could not drink the water from their well because it was not sanitary controlled) and she no longer took 2 litres bottles because they were too heavy for her now. She only bought 1.5 litres bottles. She remembered that in the past the grocer would come to her home with his van. Yvette had arthritis and did not use any of the shop's carrier devices because they were too heavy. So she brought her own shopping bags and took only four items. She did not buy a 500g packet of cereals because it will be too heavy to carry.

### Three considerations: price, organic and local, and expiry dates

Price was a spontaneous concern for some of the research participants. They used different strategies to spend less money. Vincent (29 years, Young single men, rural) was used to buying products that were on sale and that had short expiry dates. He prepared for shopping with the promotions catalogue. When he found low prices on products with short expiry dates, he tried to buy as much as possible. He froze them after purchase and prepared them at a later date. Even if Vincent was conscious about his budget, he never bought low priced products. Mylène (25 years, Young families, urban) was also very careful with her budget, though she did not buy more if it was on sale. She had tried to wean herself off brands, but she had found it hard to change her habits. Odile (65 years, Elderly households, rural) too, studied the promotions catalogue before going shopping. She would write what interested her on her shopping list: "And I look at the products that are 20% cheaper and I often take note of these... If it corresponds to what I usually take, I will buy it."

Sylviane (77 years, Elderly households, rural) sometimes bought meat at a reduced price, for instance, when it was reduced by 30%. Because of its short expiry date, she would cook this meat the same day. Other research participants were not confident purchasing budget products and preferred buying products from distributor brands which, in France, has prices that are at an intermediate level. Sylviane thought that budget products were low quality: "There is quality and quality. To eat I never buy the

budget goods." For Charles some products deserved a higher price. Sugar, he thought, was acceptable at a low price, but meat deserved a higher price:

Int.: Do you buy economy goods?

Charles: it happens yes, it depends, there are low-priced goods and low-priced goods...

Int.: how do you tell the difference?

Charles: I don't know, it depends, if it's meat I don't buy those at a low price, that's why now I go to the butcher shop in SB, at least we're sure to ... because we do not know how ...

Int.: you would rather make quality choices anyway?

Charles: yes, anyway, because the economy offerings, it's not always ... And we do not take them. It would be sugar I would take, but products ... On the contrary, distributor brands are not bad.

(Charles, 75 years, Elderly households, rural, France)

Among Young single men, no one was a regular consumer of organic products. Fabrice (24 years, urban) was used to buy organic coffee because he loves it. Simon (25 years, Young single men, urban) sometimes bought more expensive foods, like organic products, and in that case, he would buy less. Vincent was very conscious about his food budget and could not afford organic products or local ones. Nevertheless, he did look at the origin of products and would choose French products. Among young families, Mathilde (37 years, Young families, urban) was the participant we met in an organic shop. She preferred buying "Label Rouge" (Red Label, which is a quality label for foods in France) for meat. The other families were not regular consumers of organic products. Among the elderly people, Gérard & Odile, Sylviane and Charles & Annie (70 years) had seasonal vegetables in their gardens. Gérard & Odile went to a local producer to buy poultry and vegetables. Sylviane also bought French products. Charles avoided Spanish products because of the belief that they contain pesticides. Yvette & François (74 years, Elderly households, urban) was also increasingly inclined to buy organic products.

We already saw that some research participants were used to buy products close to the expiry date and managed them by freezing or cooking them the same day. On the contrary, Mathilde did buy products with short expiry dates. Even as Mylène had to pay attention to food prices and her food budget, she did not eat any product beyond their use-by date. In contrast, Elodie (31 years, Young families, rural) sometimes ate yogurts 4 or 5 days after their expiry date but never gave these to her children. One elderly participant; Sylviane, tried to buy products with the longest expiry date, because she could keep them longer at home. She disliked waste. Like Elodie, she ate yogurts after the date but not meat. Gérard & Odile said they did not care about the dates on food products and acknowledged eating custard 8 days after the expiry date. She always ate her cheese before the expiry date because she did not buy more than she needed.

## Selecting fresh, raw chicken

The young single men in the study bought fillets and declared that they almost never prepared whole chicken. Among men with housemates, two prepared whole chickens, and one cooked fillets. Two households among five prepared whole chickens. The elderly research participants prepared whole chicken, except Bernard (72 years, Elderly households, urban), who cooked thighs.

### *Price, origin and brands*

Price can be a main factor. Aurélien (25 years, Young single men, rural) usually bought chicken fillets on sale or with an interesting price, to cook for all his housemates. For the cooking session, he bought his chicken in a supermarket. He chose the chicken fillets by weight, in large packages, to save money, because he would cook for all his housemates on the night of the shopping.

All research participants chose at least French origin. Even if they first looked at the price, they also tried, like Aurélien, to choose the best value for money, did when buying a large package of French fillets. For some research participants, origin and brands were very important criteria to choose chicken. Etienne never bought the cheapest chicken, he preferred quality labels and bought the more local ones. He knew label represent better quality, and surmised that other chicken is allowed to grow too fast and killed too young:

Etienne: I know how chickens are produced.

Int.: So, does that have an effect on the product you are going to buy?

Etienne: Yes, a lot.

Int.: And what are you avoiding?

Etienne: All the first prizes, which is top budget already. That's why I prefer to buy whole chicken because I see the chicken, how it is made.

Int.: We see the beast.

Etienne: Yes, we see the beast, yeah. After that remains a red label anyway that one.

Int.: What are you looking at? French poultry?

Etienne: In Vendée.

Int.: Do you give importance to labels?

Etienne: A little more, yes. We know that we give the best quality labels to non-labels. And then, when you shoot them it's different, they are older chickens on a label.

Int.: Yes, they are younger than those who are killed quickly.

Etienne: If you want in three months a chicken, a chicken chick, you cut it down and people eat it. He is 3 months old. For me, a chick that I have at home, in 3 months, it is not edible.

Int.: it is too small.

Etienne: Oh yes!

Int.: How do they make them grow so fast?

Etienne: They overfeed them! They give them soybean meal to make them fat.

(Etienne, 30 years, Young single men, rural, France)

Labels gave some reassurance. Mathilde was appeased to buy labelled quality products, like Red Label for meat.

Int.: Are labels important for you?

Mathilde: I do not know that reassures me (laughs).

(Mathilde, 37 years, Young families, urban, France)

Another example was Vincent (29 years, Young single men, rural), who often eats chicken and ended up choosing a French 1,5 kg chicken. He looked first for special offer packs with short expiry dates and, as he did not find them, he chose a standard chicken from a distributor brand he knows well. He checked the brand, the product origins and the weight, not the price. He did not consider a Label Rouge chicken from Loué because he knew its price would be higher. Finally, he did find a special offer chicken with the red label, but proceeded to buy another chicken, finding the offer interesting.

Some research participants always bought the same brand. This was the case with Fabrice (24 years, Young single men, urban) who looked for meat as he practiced sport. He always bought the Le Gaulois chicken fillets brand and chose the heaviest fillets in the tray. Some brands guarantee no antibiotic has been used during breeding. Elodie (31 years, Young families, rural) tried to find chicken without antibiotics. Four elderly research participants bought chickens from farms. Gérard & Odile (71 & 65 years, Elderly households, rural) usually bought meat at a local poultry producer, 10 km away from their place. They considered his products to be of good quality and not more expensive than supermarket products. Yvette also preferred to buy a good farm chicken, usually at a producers' cooperative rather than in the supermarket:

Int.: Do you eat chicken?

Yvette: Yes, but in principle I prefer a good farm chicken.

(Yvette, 74 years, Elderly households, urban, France)

Some research participants, like Odile & Gérard bought a whole chicken and froze some parts to eat them later, as a whole chicken was too much in quantity to eat at once for 2 people.

Int.: And when you buy a chicken you buy a whole one?

Odile: Oh yes yes yes. And I cut it up in pieces and put them in the freezer because with just two of us, a whole chicken...

(Odile, 65 years, Elderly households, rural, France)

And finally, a multiple-criteria choice:

I do not like to take things with no brand, I try to look at where it's raised. If it's raised outdoors, if it's local. After that I'm not very well informed so I do not know too much. I look at the price per kilo. So, I'll take that. The Gaulois, chicken aiguillettes.

(Simon, 25 years, Young single men, urban, France)

Charles (75 years, Elderly households, rural) had no specific criteria to choose a whole chicken. It must look fresh and he checked the packaging and use-by dates.

### *Sensory judgment*

Elodie (31 years, Young families, rural) did not look at labels and she preferred yellow chicken. Vincent (29 years, Young single men, rural) bought a lot of 'close to use-by date' products at the supermarket, but when they were in his fridge, he did not notice the dates anymore, because he either ate them quickly or froze them. He looked at the appearance of the meat and smelled it to check it was safe to eat it. Etienne (30 years, Young single men, rural, France) sometimes bought whole chicken or chicken fillets, but rarely chicken legs. However, he preferred to buy whole chicken because he could inspect the quality of the animal that way. When they looked at chicken in the supermarket, Odile (65 years, Elderly households, rural, France) spoke about an empty prepared chicken weighting in at 1,1 kg as not being a "real chicken". She and her husband were both from the rural world, he had personally grown up on a farm, and that was why he felt he could say this. The bones of farm yard chicken would not easily break in half, like those coming from the supermarket do. Sensory characteristics made chicken edible or not. Amandine (27 years, Young families, rural) had been disappointed with whole chickens before: sometimes when she had bought one and opened it, it had a bad odour and she had to throw it away. Gérard (71 years, Elderly households, rural) was not satisfied by the brownish colour of certain meats in trays. Gérard said maybe this was not linked to meat quality, but he nevertheless did not want to buy them.

### *Other selection criteria for chicken*

Amandine (27 years, Young families, rural) used chicken leftovers for dinner or for the next day, or she put it in her child's food. None of the French research participants used to buy frozen chicken. When the chicken was frozen, it had been bought from a farm, the butcher, or prepared at home and thereafter frozen at home.

Vincent (29 years, Young single men, rural) was used to put products on sale that he had bought in the freezer, and he would prepare them within 3 weeks. Another strategy was to buy the day of consumption: Simon (25 years, Young single men, urban) never bought meat in advance; he bought it the day he wanted to eat it, and went to the little grocery store, next to his apartment. He did not have the habit of freezing food.

**Table 3.1.3: Overview of selecting chicken in France**

Study group	Household	Type of chicken meat selected	Favourite brand or labels	Considering the expiry date	Sensory judgement used	Place of purchase, origin
Young single men	Aurélien (25 years)	Fillets	None - On sales, in large packs	Short date products		Supermarket / France
	Vincent (29 years)	Whole chicken	Distributor brand (Auchan), certified origin.	Short date products	Appearance and smell	Supermarket / France
	Fabrice (24 years)	Fillets	Medium brand (nor first price, nor most expensive)"			Supermarket / France
	Simon (25 years)	Fillets	"Le Gaulois", free range, local	Never buys in advance		Supermarket
	Etienne (30 years)	Whole chicken, frozen at home			Appearance	Home reared
Young families	Mathilde (37 years)	Fillets	Quality label (label rouge)			Supermarket
	Amandine (27 years)	Whole chicken	Quality label (poulet fermier)			Supermarket
	Julie (28 years)	Whole chicken	Distributor brand (Casino)			Supermarket
	Mylène (25 years)	Chicken thighs				Local butcher
	Elodie (31 years)	Fillets	Distributor brand (Repère)			Supermarket
Elderly households	Gérard & Odile (71 & 65 years)	Whole chicken, frozen at home				Local farm
	Sylviane (77 years)	Whole chicken	From a local cooperative		Appearance (the plumpest)	Supermarket / Local area
	Charles & Annie (75 & 70 years)	Whole chicken				Local farm
	Bernard & Hélène (both 72 years)	Chicken thighs, frozen at home	Quality label (label rouge)			Local butcher
	Yvette & François (74 & 76 years)	home	Quality label (poulet fermier)			Local butcher

## Selecting fruit and vegetables

### *Local and seasonal products*

Two young single male research participants (Vincent, 29 years, rural and Simon, 25 years, urban) looked at the products' origins to choose fruits and vegetables. They explained that they try to eat local products and not to buy imported products whenever it is the season in France. For Vincent it was not logical to import products from abroad that these could be grown in France and he also did not see the point of growing products in France to export them instead of consuming them ourselves. However, Vincent bought kiwi and bell peppers from respectively New Zealand and Spain because he says that they are not much produced in France. Similarly, Simon bought some Spanish bell peppers because there were no other choices and he said he did not care about the origin of avocado. Mathilde (37 years, Young families, urban) did not look at the origins because she has total confidence in this organic supermarket's products, she knows products would not come from far away, like south of France or Spain. Sometimes she bought processed compotes made with fruits not available fresh at the time.

In contrast, Fabrice (24 years, Young single men, urban) did not care about the origin of fruits and vegetables in general. Julie (28 years, Young families, rural) did not look at products' origins, just at prices. She bought tomatoes from Morocco. Elodie (31 years, Young families, rural) did not care about the products' origins, she heard that Spain has the same criteria for pesticides than France. Meanwhile, she spoke of her children's specific tastes and she looked for prewashed packaged spinach for the soup because they liked it very much.

Vincent and Simon said they try to buy seasonal products. Vincent did not buy nectarines because they all come from Spain, and because the production in France will start within 2-3 weeks. Instead he bought some pears. Mathilde always bought seasonal vegetables, so she decided to buy leeks in February. Mylène (25 years, Young families, urban) did not buy tomatoes because it was not the season for them. She rarely bought fresh vegetables, she rather bought them canned or frozen.

### *Products from the garden*

Among the elderly research participants, four preferred buying fruit and vegetables at the local market or grow them in their own gardens. Most of the elderly research participants had products from their own gardens. Charles (75 years, Elderly households, rural) had just planted cucumbers and tomatoes. He usually grew green beans. Sylviane (77 years, Elderly households, rural) produced fruit and vegetables in her garden. She also preferred to buy fruit and vegetables at the market from a local producer. Sylviane did not like apples or vegetables from the supermarket. At the supermarket, she bought a bag of oranges, because she regularly ate some and she did

not have any in her garden. Sylviane tried to eat according to the seasons. They also ate some summer vegetables in winter because Sylviane stored them in the freezer. Charles also always ate season's products, but he sometimes bought tomatoes in winter for a change. For elderly research participants who did not have a garden: Yvette & François (74 & 76 years, urban) and Bernard & Hélène (both 72 years, urban) mostly bought their fruits and vegetables at the local market. Odile (65 years, Elderly households, rural) seldom bought frozen, but would occasionally buy frozen fries and vegetables at "the time when there are none in the garden, cauliflower is also true."

### *Various motives for selection fruits*

Simon (25 years, Young single men, urban) explained he also bought fruits and vegetables according to his desires. He bought small cherries because it was the season for them and he liked eating them, but did not purchase courgettes because he had bought some in the past few days and did not feel like eating some this time. Odile (65 years, Elderly households, rural) did the same; she bought fruits and vegetables according to her mood when she was in the supermarket and looked at the shelves. Some research participants chose a special variety of fruits or vegetables because they liked them more. Mathilde (37 years, Young families, urban) did not like Granny Smith apples. She eventually selected Idared apples. Mylène (25 years, Young families, urban) bought Golden Delicious apples. Mathilde looked the panels positioned on the apple shelf, which give recommendations of the best apples for different uses. She looked for apples to make compote for her daughter.

Vincent chose vegetables according to the producers' brand. He knew which brand was of better quality. He said:

I shall take tomatoes 'Prince de Bretagne', it's a brand, but whenever there are some « Salvéole » I try to take some 'Salvéole', it is of better quality. .... This is my job [to know about fruits and vegetables brands], I was a supermarket manager for two years ... so 'Salvéole' and 'Prince de Bretagne' are good products but 'Salvéole' is a bit better. And it comes from France... there are very few pesticides, even if not organic, it is more respectful of the product.  
(Vincent, 29 years, Young single men, rural, France)

Simon (25 years, Young single men, urban) bought a specific brand of little cherries because he found them delicious last time.

### *Organic products*

Simon (25 years, Young single men, urban) and Aurélien (25 years, Young single men, rural) decided to buy some organic fruits and vegetables in a regular supermarket. When selecting avocado, Simon said he did not care about the origin but decided to buy organic avocado. Both Aurélien and Simon bought organic bananas because they

were of an interesting price. Vincent (29 years, Young single men, rural) said he used to buy organic fruits and vegetables in the past, but since he is unemployed and had less money to spend, he could not do so anymore.

Bernard & Hélène (both 72 years, Elderly households, urban) bought organic bananas, not regular ones because they have too much pesticides on. They only bought organic bananas, however. Bernard said, “We choose them because they are the least treated. Banana is the most treated fruit in the world, if our information is good.”



**Figure 3.1.19: Mathilde selecting apples at the organic shop (France)**

Mathilde (37 years, Young families, urban) regularly goes shopping at “Biocoop” supermarket, which specializes in organic products. Gérard & Odile (71 & 65 years, Elderly households, rural) ate organic products from their garden. They could buy organic products in regular supermarkets if they were not too expensive compared to regular products. Odile sometimes bought organic beets because they are less expensive. She tried to verify what she said and noticed that they are not less expensive than the regular ones, but she said she would still continue to buy them. Sylviane (77 years, Elderly households, rural) sometimes bought organic bananas. In her garden, Sylviane used as little pesticide as possible on vegetables.

### *Packaging versus loose*

Few mentioned research selecting products according to their size. Mathilde (37 years, Young families, urban) preferred big leeks because there is more to eat. Odile (65 years, Elderly households, rural) usually bought 3 or 4 onions at a time because, if they did not eat them quickly, they would go to waste. Charles (75 years, Elderly households, rural) selected cucumbers that were not too big because big ones have more seeds.

However, several either preferred packaged vegetables or buying them loose. Vincent (29 years, Young single men, rural) bought packaged kiwi and packaged bell pepper in plastic pouches. Similarly, Simon (25 years, Young single men, urban) bought packaged avocado, bell peppers and bananas. Vincent also bought packaged carrots (plastic bag) and mushrooms (tray). Simon chose cherries packaged in 350g trays. Fabrice (24 years, Young single men, urban) selected avocados packaged in a net rather than the loose avocado and those packaged by two in a tray. He said he could touch the fruits in the net to check them. Amandine (27 years, Young families, rural) bought packaged mushrooms. Mylène (25 years, Young families, urban) bought packaged bananas.

Vincent bought loose tomatoes (but he looked at the brand on the cardboard box in which the tomatoes were displayed) and loose pears. Mathilde bought loose leeks and loose apples. Julie (28 years, Young families, rural) bought a loose bunch of radishes, loose cucumber and loose tomatoes. Mylène bought loose avocado and loose apple. Elodie (31 years, Young families, rural) bought loose bell pepper and loose mushrooms because mushrooms in trays were not cheaper and loose ones looked fresher. Odile put the cucumber in a plastic bag that she would reuse at home, to put fish in, for example, to prevent odours. She avoided buying fruit and vegetables pre-packed because of having to discard the packaging, and she was not sure of the recycling. While looking at packed plantain, she said:

Yes, but you realize the mess? With all this disposable packaging? I think it's huge, it's the only one I buy packaged because, yes, the bins are filled quickly then!

(Odile, 65 years, Elderly households, rural, France)

### *Sensory judgement*

Aurélien (25 years, Young single men, rural) felt the fruits and smelt them to know if these were too soft: "Whenever I buy clementine, I will palpate them a bit, to check if they aren't a bit soft. On fruits and vegetables, I will always palpate a bit, smell, to check."



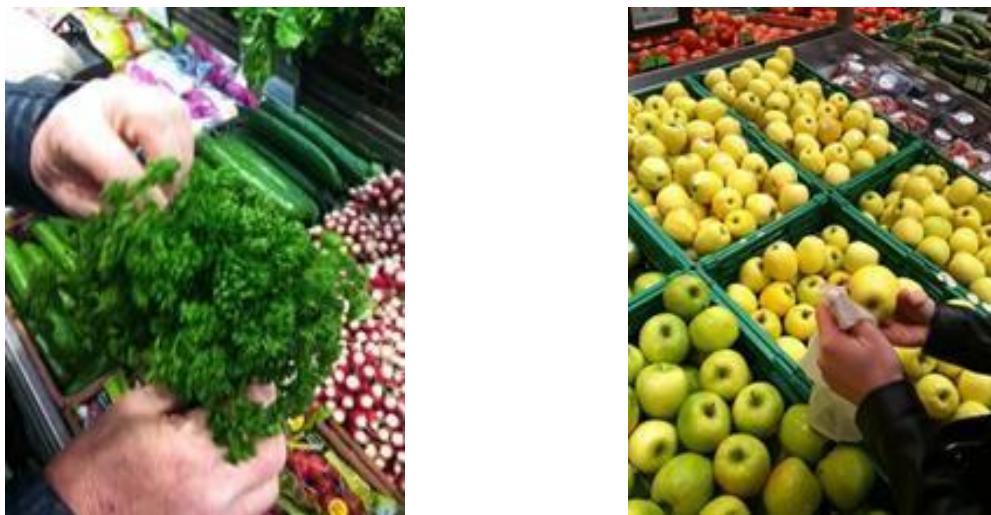
**Figure 3.1.20: Vincent tested firmness of pears (France)**

Vincent (29 years, Young single men, rural) tested the firmness of pears and kiwi before choosing them. Fabrice (24 years, urban), Simon (25 years, urban) (both Young single men) and Mylène (25 years, Young families, urban) pressed avocados to check the ripeness. Fabrice wanted them soft and not too hard whereas Simon explained he was not going to eat them immediately and selected them not too soft. He also checked their colour. Mathilde (37 years, Young families, urban) did not buy mangoes because she found them too hard and anticipated they would be too acidic once cooked in compote for her daughter. Julie (28 years, Young families, rural) felt cucumber to check they were not too soft. She said she would also do it for avocado, but not for other fruits and vegetables. Odile (65 years, Elderly households, rural) tested fruit and vegetables with her hands to make her selection.

Vincent chose carrots in the back tray, less accessible, because they looked better. The ones in the front had some black spots. He checked the mushroom packages to see if there was mould before buying it. He visually inspected strawberry trays and finally did not buy any because he concluded that there was mould in every tray. Amandine (27 years, Young families, rural) bought white mushrooms and checked if they were not damaged through the plastic. Mylène inspected apples to avoid damaged ones. She found them a bit too green but said it was not a problem because she was going to cook them. Elodie (31 years, Young families, rural) bought mushrooms and red bell peppers and chose them by appearance and freshness. Odile bought oranges in a net. She looked through it to spot the rotten ones. She bought a cucumber and checked the extremities to see if there was evidence of rot.

Charles (75 years, Elderly households, rural) felt a lemon, he inspected it carefully to check there are no blotches. He eventually took a pack of lemons. Charles chose the reddest tomatoes but found them too pale. Bernard chose non-withered parsley.

Int.: So how do you choose your parsley? You took a bouquet at random?  
 Bernard: Not at random, because that one I find a little faded, you see.  
 (Bernard, 72 years, Elderly households, urban, France)



**Figure 3.1.21: Bernard selected his parsley, looking for firmness (left); Mylène inspected the appearance of apples (right) (France)**

Charles bought a pineapple. He tried to test its ripeness by smelling it - but he could not smell anything - or by pulling on the leaves. Charles complained fruits are generally not ripe. Meanwhile, Simon bought the same cherry brand as previously because he found them delicious. Sylviane (77 years, Elderly households, rural) did not like apples or vegetables from the supermarket. Sylviane thought they just tasted of water. She sometimes bought apples from the local market, which were pretty much natural, from a local producer. In the supermarket, she felt, the apples are too big and too shiny.

#### *Reference to date labels (or other safety info)*

Odile looked at the date of packaging on the fresh products when there is some.

Odile: And on the other hand, I look at the date, this one is the 9 (plantain), and I think it's been a while since they are there.

Int.: Packaging date, it's been a week, 6 days... Do you think it's a lot? Because they come from far away?

Odile: That's true, well I'll take them anyway.

(Odile, 65 years, Elderly households, rural, France)

#### *Reference to price*

Aurélien (25 years, rural) and Simon (25 years, urban) (both Young single men) bought organic bananas because they were at an interesting price (€1.99 per kg in the case of Simon). Vincent (29 years, Young single men, rural) was once disappointed by fruits he bought which were on sale and not ripe enough and which then got rotten at home before ripening. So he now rarely bought fruits on sale. Regarding carrots, Vincent took

'washed carrots' because they were less expensive than 'sand carrots'. He compared prices per kilogram before buying strawberries, but eventually did not buy any because of their poor quality. Simon selected the cheapest bell peppers, from Spain. He bought small cherries at €2.50 for a 350g tray but he explained the main reason for choosing them was because he knew they tasted good. On labels, Julie (28 years, Young families, rural) only looked at the prices of fruits and vegetables and she bought the cheapest tomatoes. Mylène (25 years, Young families, urban) bought the cheapest bananas. Elodie (31 years, Young families, rural) said she did not always look at the price, but sometimes yes, she would take the cheapest. Charles (75 years, Elderly households, rural) bought 3 cucumbers as a special offer, because they eat a lot of crudités (a French starter of fresh finger vegetables usually served with a dipping sauce). He hesitated because he saw on the internet a better special offer in another supermarket. Mathilde (37 years, Young families, urban) did not take mushrooms because they were too expensive (€9.95 in the organic supermarket against €3.99 in another supermarket), although she knew these blond mushrooms tasted very good. Etienne (30 years, Young single men, rural) would never buy berries in supermarkets because they were too expensive. He said he grows them or goes to a producer. Vincent no longer bought organic fruits and vegetables because he was unemployed and earned less money. Mylène did not buy organic fruits and vegetables because of their expensive, and she also found prewashed, pre-cut leeks too expensive.

### *Other selections*

Fabrice (24 years, Young single men, urban) took a pack of pecan nuts from the retailer's brand (Casino) because he likes pecan nuts and he knew this brand product contained pure pecan nuts and not a nut mix. He was also used to purchasing avocados because he considered this to be good fat for his diet. Mathilde (37 years, Young families, urban) did not take any grapefruits because she did not like white ones and there were only white ones. She did not buy pineapple and nuts because she already had some at home. Julie (28 years, Young families, rural) decided to buy radishes as soon as she saw them because she loves them. Mylène (25 years, Young families, urban) bought one red onion without knowing what she would do with it. This was the only fresh vegetable she bought.

### *Berries from the shop, garden or the field*

Berries were not so popular among the young men. Aurélien (25 years, rural) ate berries in summer. He ate strawberries from his father's garden without washing them. When he bought red berries at a supermarket, he would wash those. Vincent (29 years, rural) did the same. Fabrice (24 years, urban) rarely ate berries, he never bought them, and said he only ate them cooked in pies that he did not bake himself during family vacations in summer. Price could be a barrier. Vincent ate strawberries, blackberries, raspberries. He compared prices per kilogram before buying strawberries. He finally did not buy strawberries because there was mould in every tray he looked at. Etienne (30 years, rural) ate berries but never bought them in supermarkets because of the

expense. He grew strawberries; they had around 90 plants in their garden. One of his friends was a vegetable grower and gave him some plants.

Two young families picked berries in the countryside. Julie (28 years, Young families, rural) sometimes ate strawberries and raspberries that she bought from supermarkets. She had no patience to wait and ate them without first washing them, but she would wash them for her child. When she picked berries in the countryside, she picked them high up, because of the risk of dog or animal urine. Elodie (31 years, Young families, rural) and her family sometimes ate whole berries, strawberries, raspberries, blueberries, blackcurrants. They used to pick them in fields when they lived in the countryside. Now they bought them from supermarkets in punnets or loose. Mathilde (37 years, urban) sometimes bought frozen strawberries, whilst Julie would never buy frozen berries.

Two elderly couples picked berries in the countryside or bought them from farms. Bernard & Hélène (both 72 years, Elderly households, urban) ate berries (mainly strawberries and blackberries) in summer that they bought at a local market, or that they picked at boarders of fields in the countryside. They were careful not to pick berries too close to fields with pesticides. They bought their strawberries at a farmer's where they had to pick them. They picked strawberries only to make jam. They did not necessarily wash berries that they picked in fields before eating them, because it was a pleasure to eat them in the field. They were careful not to pick them too close to the ground.

Yvette & François (74 & 76 years, Elderly households, urban) sometimes ate berries they bought at the local farmers' market, but Yvette did not like currants and blackberries very much because the seeds got stuck in her teeth. Three elderly research participants grew berries in their garden. Gérard & Odile (71 & 65 years, Elderly households, rural) grew strawberries, raspberries, currants, and blueberries in their garden. They did not buy any at the supermarket because they thought they were very expensive there (15 euros per kilograms for strawberries). Sylviane (77 years, Elderly households, rural) ate strawberries, currants and blackcurrants. She currently had strawberries, blackcurrant and currants in her garden. They had a lot of fruit. Sylviane washed berries before eating them, to remove soil and sand. She usually makes jam with it. Last year Sylviane made 90 jam jars in one day. She gave some to her children and they eat their jam within the year. Charles (75 years, Elderly households, rural) ate strawberries from his garden and he washed them before eating. He also ate currants grown in his garden. Other berries, not from his garden, were treated with pesticides, according to him. Charles had plenty of raspberries and currants in his freezer from his garden, so he would not buy any.

### Selecting salad - narrowing down options (e.g. particular varieties)

Some research participants, including the three elderly households Gérard (71 years), Charles (75 years, rural) and Sylviane (77 years, rural), grew salads in their gardens and never or rarely bought salads.

For some, variety and size was important for selecting salad. Vincent (29 years, Young single men, rural) chose salad according to the variety (Feuille de Chêne Blonde). Simon (25 years, Young single men, urban) bought Lamb's lettuce as he had planned, because in this season (spring) he would buy Lamb's lettuce or rocket, whereas he would buy iceberg lettuce in winter. Mylène (25 years, Young families, urban) would buy Lamb's lettuce or rocket. Mathilde (37 years, Young families, urban) preferred Lamb's lettuce but it was not in season. She said she found Butterhead lettuce tasteless. She eventually went for an oak leaf lettuce. Amandine (27 years, Young families, rural) always bought iceberg lettuce, because it was more convenient to wash. Elodie (31 years, Young families, rural) bought Sucrine (Little Gem) lettuce, because it was convenient. Etienne (30 years, Young single men, rural) did not know salad varieties. He chose a red oak leaf lettuce out of its aspect. Bernard (72 years, Elderly households, urban) usually bought oak leaf salad at this season. He also preferred chicory: "It's the most expensive but I love the taste of it. It is true that it is a bit tasteless the other salads, while chicory, I think it tastes." Mathilde chose a small lettuce head because she was the only one in the family to eat salad.

Some selected packaged salad others preferred to buy it loose. Simon, Fabrice (24 years, Young single men, urban), Julie (28 years, Young families, rural) used to buy pre-washed packaged salads in bags. Mylène explained she had no salad spinner, she bought rocket salad in a tray (not prewashed). Elodie bought packaged whole lettuce heads (not prewashed). She sometimes bought prewashed salads in a plastic bag when they were in a hurry.



**Figure 3.1.22: Simon choosing prewashed packaged Lamb's lettuce (France)**

Etienne very rarely bought prepacked green salad. He would usually buy a whole, unpacked lettuce. Aurélien (25 years, Young single men, rural), Vincent and Mathilde bought whole, unpacked lettuce. Amandine bought whole packaged iceberg lettuce. She said she never bought prewashed packed salad. Most elderly research participants did not buy salads in bags. Charles (75 years, Elderly households, rural) never bought fresh-cut packaged salads because they were all treated, not that it was so important, but this was a principle for him. And he was not interested. Sometimes, Bernard (72 years, Elderly households, urban) bought Lamb's lettuce or Arugula (Rocket) in a bag. Yvette (74 years, Elderly households, urban) never bought salad in plastic bags, she found it disgusting because it was full of moulds because of the humidity.

#### *Sensory judgement and quality*

Vincent (29 years, Young single men, rural) checked the leaves, in the salad's core, to take the most beautiful of the 3 salads available. Etienne (30 years, Young single men, rural) selected lettuce without wilted leaves. He liked crunchy salad. He also selected the variety with the lightest and “fluffiest” leaves. Elodie (31 years, Young families, rural) chose lettuce by its appearance and would not select those with faded leaves. Mathilde (37 years, Young families, urban) said the baby spinach was already too big, she liked only very young shoots. Mathilde chose a small, nice looking lettuce head.



**Figure 3.1.23: Etienne inspecting lettuce leaves (France)**

Simon (25 years, Young single men, urban) selected packaged salad by looking through the packages to choose the one without too much humidity and no mould. Odile (65 years, Elderly households, rural) said she checked the salad's thickness if she bought one: "I had taken this one, red oak leaf, and in general see when it's ... there I feel if it's thick or if it's only three leaves that fight in a duel". Odile grew her own salads and was demanding of quality: "The difference between a well-headed lettuces you press is hard, and here it is not hard. And this one, it's almost up, it should not be sold that one, it should not have come here". Charles (75 years, Elderly households, rural) was not going to buy green salad today because he had some in his garden. In any case he would not buy the salads on display during shopping because, according to him, they did not look nice. Bernard & Hélène (both 72 years, Elderly households, urban) usually bought their salad at a local market on Saturday, when they could choose their salad. Bernard touched the salad on the market stall while talking about them even though he did not buy some. He explained which visual criteria helped him to choose his salad: "The tail should be completely green if it were torn from the garden."

#### *Date labels (or other safety info) and price*

Simon (25 years, Young single men, urban) checked the use-by date for the packaged salad because he did not want waste. Odile (65 years, Elderly households, rural) rarely bought salad in plastic bags. She usually bought whole fresh salads, and they were also less expensive. She never buys RTE mixed salad. She thought the supermarket cuts and prepares this kind of salad to use the damaged vegetables they have on their shelves, and to avoid throwing them away.

#### *Paying and packing*

At the conveyor belt, Mathilde (37 years, Young families, urban) put delicate products like salad at the end to not smash them. Elodie (31 years, Young families, rural) started with frozen products, then fresh products, and after that she did not care. Sylviane (77

years, Elderly households, rural) first put down dry products, then her cool bag, without removing fresh products from it. The cashier removed them one by one when Sylviane scanned them. Odile (65 years, Elderly households, rural) liked to put all her groceries in a special order on the conveyor belt before they passed in front of the cashier, to be ready to receive and organise them in her grocery bags. She also liked to pay when she was done packing her groceries. She was annoyed because this was not the case today.

At the checkout, Odile, Hélène (72 years, Elderly households, urban) and Sylviane stored dry products in grocery bags and fresh products in cool bags. Sylviane put newspaper at the bottom of her cool bag to prevent stains and leaks. Aurélien (25 years, rural), Vincent (29 years, rural), Fabrice (24 years, urban) (all Young single men), Mathilde and Charles (75 years, Elderly households, rural) did not have cooler bag because, they said, they had a very short journey back home. However, Mathilde said she would bring one in summer and Charles had one in his car in case he had frozen products. Nevertheless, Vincent and Mylène (25 years, Young families, urban) put dry products and fresh products in different grocery bags to facilitate storage at home. Elodie did not have cooler bags but 2 big cool boxes in the car trunk, one for frozen products and the other for fresh products. However, in summer, Elodie would use cooler bags.

After the checkout Charles put the heaviest products at the bottom of the bag. Fabrice forgot his grocery bag and bought one (the cheapest) at the checkout. Etienne (30 years, Young single men, rural) had no bags; what he bought he put directly in his van. Odile stored products like bottles in her trunk in a plastic box, and she put grocery bags next to it. Sylviane directly put grocery bags, cool bag and bottles in her trunk. Charles put the shopping bags below the rear seat of the car, because it would not be secured in the boot. Bernard (72 years) & Hélène put grocery and cooler bags in the trunk, being careful of beers. Elodie put fresh and frozen foods in cool boxes in her trunk and grocery bags next to them. Yvette (74 years, Elderly households, urban) packed her 4 products in her shopping bag and put it on the passenger seat of her car.

The research participants often picked up fresh food at the beginning or in the middle of their shopping tour (see Appendix C for an overview of the French research participants' shopping route). Hélène started picking up fish, because the fishmonger was the first booth when we entered the supermarket. Frozen products were bought at the end of the shopping by one young man (Vincent) and two families (Mylène and Elodie). Fabrice had two stops to buy frozen products: frozen meat at the beginning because it was close to the fresh meat shelves and was less expensive than fresh beef meat. He bought other frozen products at the end (Broccoli) because he had forgotten to buy them before. Only Mathilde, on purpose, came back at the end of her shopping tour to fresh products, located at the entrance of the organic shop, in order to put them in her basket as late as possible, just before paying.

## Shopping in the UK

Each shopping visit started out from the research participant's home.<sup>23</sup> We travelled to the shop(s) together using the method of transport they would normally use. For three households, having no car of their own, this was on foot. In addition, Sahib Singh (23 years, Young single men, urban) walked on this occasion, but his housemate has a car often used to travel to the shops together. The remaining 11 households went by car. Journey times were short: walking took between two and 15 minutes and most car journeys were less than 10 minutes. One exception to this was with Archie Phillips (74 years, Elderly households, urban); due to bad traffic, our drive to the supermarket (just under 6km) took 30 minutes.

In most cases the observation took place at a single supermarket: one of the 'big four' leading chains (seven households), a smaller 'discount' chain (three households), or a local branch of Co-op Food (two households)<sup>24</sup>. The other three research participants each visited multiple shops for our observation, but this included a further large supermarket (Sahib), two discount supermarkets (Sahib and Josh) and a Co-op (Susan, 78 years, Elderly households, urban), as well as an independent butcher (Josh, 22 years, Young single men, urban) and bakery (Susan).

On the journey, research participants explained what kind of shopping trip this was going to be. Four were doing their regular 'big shop', meaning they were stocking up on staple items to last for one or two weeks until the next time, although most would also 'top up' from smaller outlets in the interim. At the opposite end of the spectrum, three elderly households tended to do their shopping several times a week, providing for more immediate needs. The other eight were doing something of a 'medium-sized' shop, topping up in between their own main shopping trips and/or buying food for specific purposes or occasions.

Most shopping visits involved only the researcher and the lead participant. There were three exceptions to this: Kate Buckley (30 years, Young families, urban) brought her six-month-old daughter Grace; Sahib's flat mate Amir met us at one supermarket, drove us to another and then back home; and Susan Dunning was joined by her husband Peter (80 years), who has primary responsibility for shopping in the household.

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<sup>23</sup> Please note that in the UK, the distinction between urban and rural is not so clear. in our study, the only research participant assigned as rural was Chloe (38 years, young families, rural). Consequently, distinction between urban and rural in the sociodemographic details of research participants in the text, has to be read with this in mind.

<sup>24</sup> Food retail in the UK is dominated by four supermarket chains: tesco, sainsbury's, asda and morrisons. however, the past decade has seen dramatic growth in the market share of two 'discounters': Aldi and Lidl. Co-op food is a national brand shared by a network of independent regional cooperative societies for their food retail outlets.

## Shopping patterns and routines

Before considering specific issues relating to selecting particular foods, there were some broader patterns and differences in how research participants coordinated the overall process of shopping and navigated around the shop itself. A clear distinction was between those using a shopping list to guide their decision making and those doing without. Five research participants were observed using a shopping list: Kate (30 years, Young families, urban), Sahib (23 years, Young single men, urban) and Jean (72 years, Elderly households, rural) all used a handwritten paper list; Paul (34 years, urbans) and Laura (31 years, urban) (both Young families) each had a list on their mobile phone. Two others – Josh (22 years, Young single men, urban) and Peter Dunning (80 years, Elderly households, urban, Susan's husband) – alluded to using a list for bigger shopping trips but not for the smaller 'top-up' shop that we observed.

The majority of households, then, did not routinely use a shopping list. Some simply felt they did not need to. Mary's (70 years, Elderly households, urban) shopping list was "up here" (meaning in her head), reflecting the similarity of their food needs from one week to the next. Several research participants, including Ryan (20 years, Young single men, urban) and Alicia (23 years, Young families, urban), described a systematic approach to shopping, going up and down each aisle, to ensure that nothing was forgotten. Chloe (38 years, Young families, rural) seemed to actively enjoy the freedom of wandering around the supermarket without a list, taking her time and making the most of a rare break from her two young children.

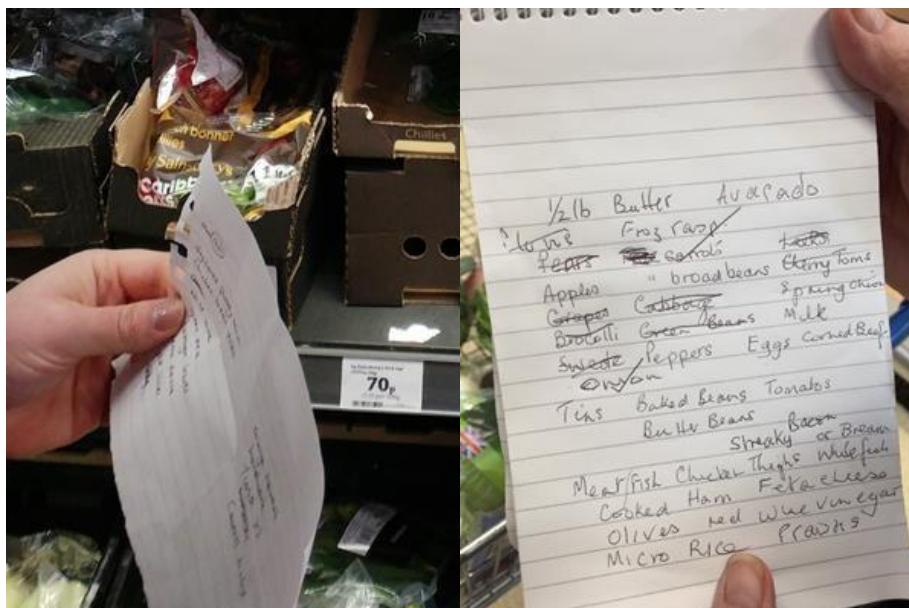
For those who did use a shopping list, doing so was the result of time spent in planning and preparation, from checking existing items in stock at home, to anticipating the household's food requirements over the coming days. Kate described going to great lengths in this respect. She would begin by planning specific meals for the week ahead, sitting down with her husband Colm and taking into account his evening commitments:

So, if Colm's having a late night at work ... I'll try and choose food that can either go in the slow cooker now or is really quick, you know, like a stir fry that I can just kind of whack up. So, we usually sit down at some point before a Saturday when I'm writing my list and kind of say what days he'll be out or what day he's got things on or whatever. And then try and plan around that.

(Kate Buckley, 30 years, Young families, urban, the UK)

Her shopping list was then structured according to the meals she had planned. While several other research participants also bought ingredients specifically for use in particular meals, Kate went further by noting the corresponding date of each meal on the shopping list, which she used in conjunction with product date labels to help ensure the food would still be good to eat when the day of cooking came round. If she needed to visit more than one shop for the ingredients, she used coloured highlighter pens to

indicate which items were to be bought from where. Finally, Kate took a pen with her to the supermarket and edited her list as she went around. Again, while it was common for others to cross items off their paper list, or in Paul's case, check them off on his mobile phone app, Kate's system had another element, circling items to identify them as unavailable and therefore potentially requiring a trip to a different outlet.



**Figure 3.1.24: Shopping lists in use: Kate Buckley, left and Jean Higgins, right (UK)**

During our visit, Kate followed the shopping list closely and for the most part only visited the sections of the shop that she needed. Others were more flexible. Laura, for example, made a point of going down all the aisles in the supermarket to look for anything else they might need or would like. She suggested this was a difference between her approach to shopping and that of her partner Andrew, who was more inclined to stick to the list. This meant there was a degree of spontaneity to her shopping, for instance, when picking up fruit that was not on her list and that she felt might be good for her young son Noah to try. Similarly, although Sahib (23 years, Young single men, urban) was shopping for ingredients for specific recipes, he explained that he was also looking for any reduced-price items that he might be able to incorporate into one of his meals.

These examples begin to allude to a related aspect of shopping: the route taken around the physical space of the shop. As already noted, for those without a shopping list, taking a systematic approach to navigating the shop was part of a strategy of remembering what to buy. However, it was also common for those with shopping lists to do the same, walking alternately up and down the aisles, following the layout of the shop<sup>25</sup>. In the vast majority of supermarkets visited, perishable goods such as fresh

<sup>25</sup> In the smaller supermarkets, including the discounters and the Co-ops, it was common to walk along each and every aisle in turn. In the larger 'big four' supermarkets there were often areas dedicated to non-food items, which were typically avoided completely.

fruit and vegetables, meat and dairy products were located close to the entrance, and therefore, were visited early-on in most research participants' routes around the shop, meaning that these refrigerated items were often in the trolley or basket for the longest.

### Selecting fresh, raw chicken in the UK

In this section we examine in detail how our households went about selecting chicken. We directly observed 11 research participants buying fresh chicken. In addition, we saw two research participants - Sahib (23 years, Young single men, urban) and Archie (74 years, Elderly households, urban) - considering buying chicken, but eventually deciding not to do so on that occasion. The remaining two research participants were not looking for chicken but explained some of their priorities and procedures when doing so.

Although this section details the strategies used in choosing chicken, most striking across the sample was the lack of time spent deliberating about which of the available options to buy. First, decisions concerning the specific cuts of meat (whole chicken, breast, thighs, etc.) and the quantities required were in most cases already made and often effectively 'devolved', for instance, to recipes, to available means of cooking and storage, to established routines, etc. Second, when selecting between comparable chicken products – i.e. of the same type and quantity – only a minority of research participants noticeably compared use-by dates as a basis for decision making. Third, detailed inspection of the visible quality or condition of the chicken was also limited.

Nevertheless, even if active decision making was more of an exception than the rule, there were varied strategies employed by different research participants in selecting between available options. The fact that they were typically performed without hesitation suggests they were well practised, highly routinised, and so required little conscious deliberation.

#### *Product type and quantity: narrowing down options*

The retailers we visited, especially the larger supermarkets, offered a wide selection of raw chicken products: whole chickens, breast fillets, wings, thighs and legs (with or without bones and skin), available pre-diced or pre-seasoned, free range, organic, corn fed or otherwise, and in a variety of different sizes and quantities (see Figure 3.1.25). However, most research participants knew in advance which type of chicken product they wanted and went straight to the relevant subsection of the poultry aisle or cabinet, tacitly rejecting the other options and immediately narrowing down the field.



**Figure 3.1.25: A selection of raw chicken products on sale (UK)**

Many were able to articulate at least some of the reasons for selecting a particular variety of chicken, often in retrospective conversation. Chicken breast fillets were the most popular option for our research participants<sup>26</sup>, including Kate (30 years, Young families, urban) and Alicia (23 years, Young families, urban). Both had gone shopping with specific recipes in mind, a regular part of their respective meal repertoires, and therefore had no cause to question which type of chicken to buy. Kate's recipe involved stir-frying chicken in small pieces; mini breast fillets therefore meant less preparation was required. Alicia, meanwhile, planned to cook whole breast portions wrapped in bacon, but another recipe or meal occasion might have prompted her to buy thighs or drumsticks: "...it's because I know what's going to happen; it's going to be chicken wrapped in bacon ... It entirely depends on the meal, really, and who's there to eat it."

Another rationale for eating chicken breast was its health benefits over other cuts of chicken. This was an important consideration for three of the young men in the sample Josh (22 years, urban); Sahib (23 years, urban); and Ryan (20 years, urban) who were heavily invested in fitness. Sahib, for example, said he enjoyed all different varieties of chicken, but when he was training he would eat mostly breast meat, as it is high in protein and low in fat. Others referred to preferences of taste and texture. Daniel, one

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<sup>26</sup> All research participants bought breast fillets except Jean (72 years, Elderly households, rural) who bought thighs and Daniel who got a mixed pack of thighs and drumsticks (legs). Nobody bought a whole chicken during our shopping visits.

of the few research participants not to buy chicken breasts on our shopping visit, described his enjoyment of thighs and drumsticks:

Just because I think there's more flavour, and I like the skin as well. Like if I did a chicken breast, a diced chicken breast, I don't think I would enjoy it as much as how I would enjoy this.

(Daniel Thorne, 25 years, Young single men, urban, UK)

Daniel's experiences also drew attention to physical and technical constraints on which products could be bought and eaten. He had no conventional cooker and was therefore limited by what he could cook in his counter-top mini oven, ruling out cooking a whole chicken<sup>27</sup>. Relatedly, in some cases cold storage capacity restricted the quantities that could be bought. Alicia, in buying enough for a meal for two, explained that she would sometimes buy a larger pack and freeze any surplus portions, but had limited freezer space at the moment.

Finally, cost was an important factor articulated in narrowing down options. Josh, in regularly buying chicken breasts from the same butcher's shop, had frequently noticed all manner of different products on the neighbouring shelves – including a range of marinated chicken – but said he had never deviated from buying plain breast fillets and applying his own seasonings, seeing this as a more affordable alternative. Several research participants referred to the expense of premium options, including free range, organic or corn-fed chicken. Chloe (38 years, Young families, rural), who places strong importance on feeding her family organic produce wherever possible, felt it was worth cutting back in other areas of expenditure, such as going on holiday, to prioritise food. Daniel and Ryan aspired to being able to eat these products due to perceptions of quality and ethical concerns and felt they might do so if they had more money. Others, like Archie (74 years, urban) and Jean (72 years, rural) (both Elderly households), questioned whether the additional cost would be worthwhile:

The chicken now I'm buying six at a time, for £6 ... and it tastes lovely ... rather than paying £6 for two, what they call free range or something. Is it really doing anything for your well-being, your body, your nutrition and your blood and your general well-being?

(Archie Phillips, 74 years, Elderly households, urban, UK)

The above discussion shows the breadth of issues that impinged on selection of chicken. However, it is worth restating that the majority of research participants picked up the chicken they usually buy with very little hesitation. Rather than informing a conscious decision in the moment of purchase, these concerns and priorities had been incorporated into practical routines (cf. Watson and Meah, 2013; Jackson, 2015).

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<sup>27</sup> Living alone also made smaller portions of chicken a practical choice, as Liam attested, less likely to result in waste than buying a whole chicken.

Only three research participants noticeably deliberated between different varieties of chicken during the shopping trip itself. In the first two cases, this was triggered directly by their preferred item being unavailable. As seen, Chloe prioritises buying organic food, which for most foodstuffs drastically narrows down her options from the outset. On our shopping visit, there was no organic chicken on sale. Instead, after hesitating briefly to scan the alternatives, she selected a small pack of free-range chicken breasts. While this was a compromise for Chloe, the fact that they were more expensive than the regular packs of chicken and had some form of certification seemed to reassure her about their origins and quality despite not being certified organic, a sort of proxy indicator in the absence of detailed information: “I go by price as well, so if it's expensive and it's saying free-range, then obviously you're paying for a premium.” (Chloe Martin, 38 years, Young families, rural).

On another shopping observation, Sahib was looking for minced chicken to make into burgers, but again none was available in either of the two supermarkets we visited. As a possible alternative he found some chicken thighs and deliberated for a moment about asking the on-site butcher to mince them, but felt it was too late in the day to request this (noting that the butcher appeared to be clearing up) and decided to use lean pork mince instead. In the third example, Jean’s experience of her plans being disrupted was far more subtle: she initially intended to look for thighs on the bone, but noticed some appealing-looking boneless thighs which prompted her to reassess: “I was looking for boned thighs, but they’re probably quite a lot more expensive. They don’t have to be boned. They look quite nice actually.”

Similarly, we observed only one participant actively deliberating about the quantity of chicken they wanted to buy while at the supermarket. Archie routinely buys packs of chicken breast fillets, prepares individual portions wrapped in foil and freezes them. During our shopping visit he spent just under a minute considering the merits of a four-pack and six-pack of chicken breasts, including working out the price per portion which was similar for both packs. Archie settled on the larger pack; it was unclear why, but he alluded to the fact it would last him for more meals.

Having seen how a breadth of available choice was narrowed down to particular varieties and quantities of chicken, we now go on to consider the finer detail of how selections were made, between one particular pack of chicken and another.

### *Date labels*

Although most research participants felt it was important to observe use-by dates in relation to chicken, there was considerable variation in how date labels were used during shopping (if at all).

In fact, the majority of research participants selected their chicken without obviously taking date labels into account. As researchers we did not want to prompt any

unspontaneous reference to this information, but took opportunities to ask for clarification later in the visit. In a couple of cases, research participants suggested that they would normally take notice of use-by dates, even if they had not done so on this occasion. Archie (74 years, Elderly households, urban), for example, reconsidered his selection of chicken breasts, following our discussion just before reaching the checkout, contemplated exchanging it for a longer-dated pack, and ultimately decided not to buy any chicken after all. Others were unconcerned by use-by dates at the stage of buying chicken but were more likely to refer to them when assessing food at home. In part this reflected two (seemingly contradictory) approaches to sourcing and storing raw meat: buying for specific meals within a short timeframe; and home freezing, allowing food to be kept indefinitely without compromising safety (although some felt quality was adversely affected by lengthy freezer storage). Both strategies were common among our sample and often used in combination. For example:

I would presume that it would have a couple of days on it, otherwise, it would be in the reduced section anyway. So, I know that we're having that tomorrow night, and then if we don't have it tomorrow night, it'll probably go in the freezer anyway. So, yes, it doesn't really matter what date is on it.  
 (Alicia Cook, 23 years, Young families, urban, UK)

Alicia's comment also suggests a degree of trust in retailers to provide food of an acceptable standard and to clearly identify short-dated items.



**Figure 3.1.26: Liam compares the date labels on packs of chicken breasts (UK)**

Only four research participants noticeably referred to use-by dates in the course of selecting chicken. Liam (28 years, Young single men, urban) and Mary made a concerted effort to compare labels on different packs of chicken and choose one with a later use-by date. Liam's approach was to visually scan the various packs arranged on the shelf, looking specifically for any differences in the expiry dates (Figure 3.1.29). The first packs he saw were dated 10th and 11th June, but further along he found another dated 13th June; satisfied with the longer shelf life, he added it to the trolley. Mary went further, lifting up the immediately visible packs to look underneath and behind them in search of any with a later use-by date. This was something she did with a number of different types of perishable goods, not only with raw meat. On our subsequent visit, Mary explained that she would always try to buy products with the latest possible best-

before or use-by date, even if she were buying chicken intended for immediate use, to ensure optimal freshness:

Mary: The trick that you saw me do ... when you saw me go right to the back [of the shelf], so I managed to get one which is a whole seven days, 14th of March this was.

Int.: So that's something you do even though you know you're going to be kind of using it the same day? You still kind of go for the longer date?

Mary: I still— yes, yes. The fresher the better really.

(Mary Russell, 70 years, Elderly households, urban, UK)

Ryan (20 years, Young single men, urban) and Kate (30 years, Young families, urban) were less inclined to proactively search for later dates but were simply concerned that the chicken would still be in date when they intended to eat it. For Ryan, who was stocking up on several packs of chicken breasts, this meant a cursory check that he had time to use one pack before the use-by date, since he planned to freeze the rest. He reflected that he might have looked more extensively had that not been the case:

I saw the date on those ones was the 23rd. Two thirds of those are going to be frozen anyway. So that was fine. If it was closer to say the 20th or something like that I might have had a fiddle around for some others.

(Ryan Langsdale, 20 years, Young single men, urban, UK)

Similarly, Kate was buying ingredients for a specific meal the following Monday; she made a point of checking the use-by date was later than this but did not look any further.

Incidentally, the approach of delving beneath and behind (as demonstrated by Mary, was not limited to searching for longer-dated items. Chloe did the same when selecting chicken, but her concern was with how well the respective packs had been kept refrigerated:

Either one at the bottom or one at the back. They'll be the coldest. It's like, you don't know if someone's changed their mind, put it back after it's been in their basket.

(Chloe Martin, 38 years, Young families, rural, UK)

### *Sensory judgement*

A second approach to selecting between largely identical packs of chicken was through close inspection of the product inside the packaging. Unlike fruit and vegetables, assessed using varying combinations of bodily senses (see below), any sensory assessment of chicken during shopping was mainly reliant on sight. As was the case with date labels, there was little inspection and judgement of chicken observed during our shopping visits: these skills were again more likely to be used in the course of stock

management and food preparation within the home. For the most part, chicken was selected and added to the trolley or basket with little deliberation or hesitation.

There were, however, some exceptions. Josh (22 years, Young single men, urban) and Kate (30 years, Young families, urban) each took a moment to compare alternative packs of chicken breast fillets. Both explained that they were trying to choose a leaner option, containing less fat. For Josh in particular there was only limited scope to make this judgement, since only the top layer of his large (4kg) pack of chicken was visible through the transparent film cover. That said, Josh and Kate each managed to identify an option they were happy to buy, rejecting others in the process.



**Figure 3.1.27: Mary inspects two packs of chicken breasts, comparing their colour (left); Tricia searches for fresher-looking chicken, avoiding any with signs of discolouration (right) (UK)**

Two further research participants – Mary (70 years, Urban) and Tricia (70 years, urban) (both Elderly households) – made visual assessments of the quality of the chicken they were buying (Figure 3.1.30). As already discussed, Mary began by looking for packs of chicken with a later use-by date. This left her with two packs to choose between. She did so by holding them side-by-side, comparing their appearance and selecting the one that she felt looked a more appetising colour, although the difference between the two was minimal. Tricia took a similar level of care. Like Mary she reached to the back of the cabinet to find more options for comparison, although she did not appear to be primarily concerned about use-by dates, perhaps because she tends to visit the shops daily and was buying chicken to eat the same day. Instead she was looking for a quality that was difficult to articulate, but that “to me, I don’t know, it just looks fresher” (Tricia, 70 years). In particular she was wary of any portions of chicken marked by visible “white bits”, which she considered a possible sign of deterioration, although she was unsure about this.

### Selecting fruit, vegetables and salad in the UK

As with fresh chicken, observations of fruit and vegetable selection were in general marked by a lack of time spent surveying the available options and actively deliberating

between them. With some notable exceptions, selections were typically made with little hesitation. In many cases the range of available options were immediately narrowed down to a particular type of product – such as a whole round lettuce or a bag of prewashed mixed salad leaves – either due to what research participants usually buy as a matter of course, or what was required for a specific purpose. This is similar to what was observed with chicken. It would seem the choice of which type of salad, vegetables and fruit to buy is not made on each successive visit to the shop, but is “devolved” to a combination of past experience and expectations (individual and shared) about what is appropriate for a particular meal or occasion.

Bodily senses were more commonly used than written information (date labels) to assess the freshness and ripeness of produce in the process of selection. However, unlike for chicken, the interest in these indicators seemed more closely related to either enjoyment or longevity of the goods (the latter with respect to avoiding waste), rather than a concern with becoming ill.

### *Lettuce and other salad leaves*

Only three research participants bought lettuce or other salad leaves during the UK shopping observations: Mary (70 years, Elderly households, urban), Paul (34 years, Urban) and Kate (30 years, urban) (both Young families). Josh (22 years, urban) and Daniel (25 years, urban) (both Young single men) bought baby leaf spinach – commonly used as a salad ingredient – but intended to eat it as a cooked vegetable instead. In other cases, salad was either not something they routinely buy, or they did not want or need to buy any on this occasion. Some of these other research participants described the type of salad they prefer and how they would go about selecting it if they were to buy it. Further insights into this were gained during the cooking observation, when most households prepared some form of leafy green salad.

The two main ways of buying salad were as a whole head of lettuce or as a bag of pre-cut (usually also pre-washed) salad leaves. Kate, for example, bought a bag of mixed salad leaves, explaining that she prefers this over a whole lettuce as the pack includes a variety of flavours. Mary bought a pack of two sweet gem lettuces. Paul selected an individual iceberg lettuce on this occasion, but he sometimes buys pre-cut salad leaves. There was not necessarily a strong reason for choosing one over the other, but he acknowledged the added convenience of the pre-cut option on busier evenings:

Sometimes it's just whichever way I walk in. If I walk past and its there, I'll pick one up and grab it or if I'm feeling a bit—you know what, we want it for tonight; it's quick, it's easy. Haven't got time to prep it—bang, we'll just shove it straight in the trolley.

(Paul Rothwell, 34 years, Young families, Urban, UK)

Of the three research participants, Paul put the most effort into assessing and deliberating over these salad items. First, he compared the date labels on the individual

lettuces, noting them some had best before dates that were two days later than the others. After narrowing it down by the date, he then inspected the lettuce for visible signs of decay:

I'm just looking for no brown horrible bits and just make sure that it's not too grubby or anything like that and the date's good.  
 (Paul Rothwell, 34 years, Young families, Urban, UK)

Later in the same shopping visit, Paul also added a pack of ready-to-eat rocket leaves to the trolley, which his wife Lisa (32 years) had asked him to buy specifically. This time he reached straight to the back of the fridge and had what he described as a “good old dig”, before bringing out a pack. He checked the best before date, which he was happy with, although there were some other packs visible with a slightly later date. Kate was at the other end of the spectrum when selecting her bag of salad leaves, not noticeably weighing up the options, inspecting the quality or comparing date labels.

For the cooking visits, five research participants used a whole lettuce and six used pre-cut leaves (see Part 4).

### *Vegetables and fruit*

During the shopping observations, 14 out of 15 research participants bought fresh vegetables and/or fruit other than salad leaves. The only exception was Susan Dunning (78 years, Elderly households, urban), whose husband Peter (80 years) would normally buy fresh fruit and vegetables on his regular Saturday visit to the discount supermarket, rather than on one of their daily trips to the local shops.

Some types of fruit and vegetable were available to buy in a range of different varieties, especially in the larger supermarkets. It was rare, however, for research participants to spend time deliberating between these varieties: many had a go-to product that they would buy, without requiring justification in the moment. Some routinely bought the same products as a matter of course. Mary (70 years, Elderly households, urban), for example, went straight past a row of different pears and apples to pick up the two types of apples she normally buys. Similarly, without hesitation, Alicia (23 years, Young families, urban) added a pack of red skin potatoes to the trolley, a variety that she and her husband David (23 years) have “taken a liking for ... for some reason”. Others had discovered ingredients that fit well in particular recipes. Laura (31 years, Young families, urban) picked up button mushrooms without considering the alternatives, since they are “just ideal” for the sauce she regularly makes. Kate (30 years, Young families, urban) would normally buy frozen peas except when making the particular dish she had in mind, which she had found works better with fresh, shelled peas. Another shorthand was to use brand labels or forms of certification to narrow down options and identify appropriate products: Chloe (38 years, Young families, urban) prioritised buying organic vegetables wherever possible for health reasons; while Paul

(34 years, Young families, urban) said he was willing to pay more for organic or premium range tomatoes and peppers as they taste better.

On the whole, little attention was given to date labels on fruit and vegetables during shopping. Nobody checked dates consistently and only six out of 14 research participants ever noticeably did so: Tricia (70 years, urban), Mary (70 years, urban) and Jean (72 years, rural) (all Elderly households); Paul and Kate; and Sahib (23 years, Young single men, urban). Moreover, four of these only checked dates for isolated items. For example, Jean looked at the best before date when considering a pack of lemons that were reduced in price. Mary and Paul were the only two who used date labels as an explicit part of a strategy for selecting the freshest fruit and vegetables. Both took time to pick up and look at numerous packs of the same type of produce, comparing the labels and usually selecting one with the latest available date.

The use of sensory judgement to assess freshness and ripeness – especially sight and touch – was much more common than using date labels for the same purpose: this was noticeably done to some extent by 12 out of 14 research participants. Only Archie (74 years, Elderly households, urban) and Laura (31 years, Young families, urban) showed no obvious signs of doing so, although Laura explained that if she were buying apples, pears or bananas then she would be more inclined to inspect them visually and possibly by touch. It is also worth noting that the senses were more widely used in relation to fruit and vegetables than similar methods of judgement were in selecting raw chicken. However, for the most part this was only done for specific items and/or it was a matter of checking the viability of produce that had already been provisionally selected. It was rarely a primary approach to choosing between multiple possible items of fresh produce. Sahib made the most extensive use of his senses. For most of the fresh fruit and veg that he considered, Sahib spent time examining the produce, both visually and by touch, and comparing between the available options. He learnt this from shopping with his family when he was younger:

They've got dates on them, but I don't really tend to check the dates. Like, with a cucumber, you can tell by its feel ... So with tomatoes, I'd rather go for a firmer tomato. It's just— it's something that you've been brought up doing.

(Sahib Singh, 23 years, Young single men, urban, UK)

For example, Sahib wanted to buy two pineapples: one already very ripe and another that would keep for longer. He picked up the fruits and inspected them, looking for the colour and feeling how firm they were. He then turned them upside down to look for any signs of mould on the bottom. In a similar way he wanted to buy a melon that was ripe but not overripe. He first squeezed the melon to see how firm it was. He then held it up to his ear and shook it, explaining that he was listening for any loose seeds or moisture moving around, which would indicate that the flesh had started to break down inside.

Certain items were more likely to be assessed with the senses for ripeness and freshness, including by research participants who would not do this for other items. The recurring examples here were avocados and especially bananas. Avocados were squeezed to assess ripeness, with riper fruit expected to be less firm. Bananas were judged mainly by colour but also by firmness, with riper fruit again being associated with a softer consistency and progressively turning from green to yellow to brown.

### *Packaging*

Another recurring theme in observing the selection of salad, vegetables and fruit concerned the packaging (if any) that goods were displayed and sold in. In many of the food outlets in the UK fresh produce was available to buy both ‘loose’ – where the customer determines the amount of a given item they would like and usually self-packs these in a disposable plastic bag – and pre-packed, most often in some form of plastic-based packaging. For some items, e.g. onions and apples, it was common to have a choice between loose and pre-packed goods, especially in larger supermarkets. For other items, such as cucumbers, leafy salad (whether whole lettuces or pre-cut leaves) and organic-certified produce of any kind, it was rare to find them available without packaging.

This broad issue can be divided into two separate concerns: with the availability of goods in appropriate quantities for the households, and with the advantages and disadvantages of the packaging itself. First, a number of research participants opted for loose fruit and vegetables over pre-packed explicitly because they could buy the amount they needed and avoid waste. Paul (34 years, Young families, urban) picked out two loose lemons rather than buying a full net “because we won’t use the net”. Daniel (25 years, Young single men, urban) selected a single aubergine and Mary (70 years, Elderly households, urban) bought a single sweet potato, explaining that if she bought a pack of them she might forget to use them before they went bad. Kate (30 years, Young families, urban) picked the specific amounts she needed of carrots, onions and apples because they do not get through many of these items in her household and “I don’t like wasting things”.

Despite seeking to do so, some research participants were unable to find items on sale in the quantities they would like, again increasing the likelihood that food would end up going to waste. Daniel, for instance, selected a pack of mushrooms, but explained that he might end up throwing some away because of the quantity in the pack:

So, I will probably not use all those within the week just because obviously it’s quite a big pack and— I might eat them but then a few might end up in the bin, so that’s unfortunate but just how it is sometimes I suppose.  
 (Daniel Thorne, 25 years, Young single men, urban, UK)

If they were available loose, he said he would buy a much smaller quantity. The same was true for both Daniel and Paul when buying onions. Tricia (70 years, urban) and Archie (74 years, urban) (both Elderly households and living alone), by comparison, decided not to buy bananas and apples, respectively, because on this particular shopping trip they were only available in larger quantities than they could manage on their own.

Second, research participants had different perspectives on the benefits or otherwise of packaged fruit and vegetables. Several research participants had an aversion to the idea of the produce they buy having been touched by other people's hands while on display in the shop. Packaging was seen as protection against this and therefore a more hygienic option:

It's not the best thing, but I do tend to buy stuff that's ready packaged. So, fresh tomatoes and stuff. You just don't know where people have been.

[...]

Like tomatoes, I would get in a packet because other people touching food really puts me off.

(Alicia Cook, 23 years, Young families, urban, UK)

Yes, it's a balance between hygiene and packaging really isn't it? Because you see some places where you know people use tongs, and some people do not use tongs. So, you think well has somebody touched that one before me?

... Some people with fruit, people in some areas pick up individual bits of fruit, have a look at it and put them down.

(Peter Dunning, 80 years, Elderly households, urban, UK)

Another advantage of packaged foods was the ease, speed and convenience of picking them from the shelf and adding them to the basket or trolley: "And, as I said earlier, I'll probably go for the package because I'm too lazy to get the loose ones" (Mary Russell, 70 years, Elderly households, urban, UK).

On the other hand, some research participants noted a rising use of plastic packaging over their lifetime and saw this as potentially having negative environmental consequences. For instance:

It's all in the news now, isn't it, in the minute, about plastic packaging? My family would go to the corner shop with my mum when I was younger, where we used to live, and you'd put your veg in a brown paper bag. Why don't they still do that?

(Chloe Martin, 38 years, Young families, rural, UK)

Since this whole thing's come out with plastics I do prefer to buy things with less packaging, just because you see how it can damage the environment

and that sort of thing. I'm not like a massive Greenpeace person but where I can help I will do.

(Daniel Thorne, 25 years, Young single men, urban, UK)

These perspectives were not necessarily held in isolation from each other. Several research participants, including Susan (78 years, urban) and Mary (70 years, urban) (both Elderly households), Chloe and Daniel were clearly conflicted over the positive and negative aspects of plastic packaging.

## Shopping in Norway

The Norwegian sample displayed a broad variety in shopping routines. Some went shopping every day, while others did a main shopping trip once a week and used smaller trips to top up. For the majority of the research participants, the shopping routine involved a trip to Sweden for border shopping every once in a while. This trip was used to stock up on products that are cheaper in Sweden than in Norway, such as meat, cheese, flour and alcohol. Moreover, several of the Norwegian research participants reported to buy chicken meat in Sweden, both frozen and fresh, because they perceived the chicken in Sweden as cheaper and they could find larger packages, suitable for bulk buying. A common strategy was to buy large quantity of food and to freeze portions of the products that needed to be kept fresh.

### Selecting chicken

The Norwegians chose a variety of chicken products, including filets of breast or thighs, minced or shredded chicken meat, frozen chicken (both filets and thighs), whole chicken (both raw and grilled), and grilled chicken wings. The research participants slightly favoured fresh filets and frozen chicken, but otherwise, their preferences were varied.

Several criteria informed the type of chicken product that was selected. The most reported criteria in the Norwegian sample was package size and price, especially amongst the young men. They were not concerned with expiry date in store, because as Jon (28 years, Young single men, urban) put it “I trust the store”. However, they were generally concerned with the meat being good quality. For instance, both Fredrik (23 years, urban) and Georg (28 years, urban) (both Young single men) avoided minced or shredded chicken meat. Fredrik said: “I imagine that it’s like, they collect all the excess stuff and chop it, ground it and... [...] It’s the worst meat you get”. Similarly, Jon avoided the low-priced brand of chicken because “I don’t know if that’s the case now, maybe not as much salt, but I have an impression that they add salt, to get the weight up”. The other two study groups; young families and elderly people, expressed several criteria in addition to price and package size. One such criterion was expiry date. As Anna explained:

[D]ate. I always look at date because the chicken can suddenly get really bad, really fast. And we have experienced that it can go bad before the ‘best before’ date. So yes, it was three days before ‘best before’ so it was completely – smelled awful.

(Anna, 31 years, Young families, urban, Norway).



**Figure 3.1.28: Chicken fillets selected by Norwegian households**

Another criterion was purpose. For instance, during the observed shopping, Kari (71 years, Elderly households, urban) bought chicken for two different dishes. She selected minced chicken meat “to make it simple because it is today and it’s hot and everything”. However, when selecting chicken for a Cesar salad she was going to make for some friends, she wanted the chicken product to be of good quality because “then I’m going to cook it and then use it cold, no sauce.”

Another criterion mentioned was time available to cook. For instance, Anna said she would buy a warm grilled chicken:

If I don’t have dinner at home and am hungry and have to eat something, like, really quick [...] if I don’t have much time, or if I don’t have preparation time, then I can buy this fresh so I don’t have to thaw them. But if I was buying for, say tomorrow, then I could buy frozen and thaw it. [...] So it’s different dishes to cook.

(Anna, 31 years, Young families, urban, Norway)



**Figure 3.1.29: Anna told that she would select grilled chicken if she wanted something fast to cook (Norway)**

Despite the notion of chicken as a sensitive product, some research participants reported buying chicken from the reduced-price shelf, if available. For instance, Bente (70 years, Elderly households, urban) said she always looked at the shelf with reduced priced products with short expiry date and sometimes planned her dinners according to what she found: “And if there is a chicken in there that expires today, I would take it with me [...] I’ll freeze it if I don’t get to the store early enough to cook it that day. So, I either use it that day or freeze it”. Similarly, Camilla (35 years, Young families, urban), who was concerned with animal welfare, reported to sometimes buy a whole, organic chicken from the reduced price cold shelf at her local store.

Other criteria and concerns when selecting chicken in the store were place of origin, which was often associated with brand, taste, health, and production method, amount of work required, familiarity and practicality. For instance, Emma (33 years, Young families, rural) said she did not want a whole chicken, implying it was too much work: “I’m not used to buy raw, whole chicken [...] so then I thought that I would have to cook it in the oven and put garlic in it, inside, and the kids are sceptical and ask: what is this?”. Hanne preferred chicken thighs finding them tastier and practical:

I always buy chicken thigh filets now [...] because they are a bit better. It’s a bit more, it’s fat on them. It’s juicier meat. So that’s, I think they are better regardless if you are – like, using them in a wok or in a casserole or in tacos or soups.

(Hanne, 31 years, Young families, urban, Norway)

## Selecting lettuce

There were a variety of lettuce products in the Norwegian sample, such as Rucola, Crispi, Romano, Iceberg, Heart lettuce, Lollo, baby leaf and various packaged mixes of several types. The research participants were observed when picking out lettuce in the store, and although a few research participants were thoroughly inspecting the product and looking at more than one package before selecting, most of them were quite quick. The research participants who spent longer looking at the lettuce before choosing did not give more or different criteria for selecting than those research participants who were quicker. It seemed that most research participants find it easy to select lettuce is a product that quickly.

All research participants mentioned inspecting the lettuce visually by looking when making a selection. Some were looking at the colour or other physical aspects of the lettuce, while others paid more attention to the packaging labels, such as expiry date. Others again reported to have paid attention to both. A good quality lettuce was described as green, fresh, nice, long lasting, crispy, and healthy. A lettuce of bad quality was described as of short durability, see-through (indicating that it had been frozen), brown, collapsed, and with brown liquid in the package. Some, like Nils, selected a type he liked to eat (74 years, Elderly households, rural).



**Figure 3.1.30:** Left shows Nils' selected fresh lettuce. Hanne found lettuce with poor quality (Norway)

The criteria for choosing the types of lettuce varied. Camilla (35 years, Young families, urban) summed up the most common criteria in the Norwegian sample when she explained why she chose a Crispi lettuce: "Yes, it's the one I always buy, really. Because it is crispy and tasty, and comes from Lier". Habit and familiarity, texture, taste and place of origin are the most used criteria among the Norwegian sample when selecting lettuce. Only one participant mentioned a preference for a specific brand as a factor when selecting. When picking out lettuce during the accompanied shopping, Bente (70 years, Elderly households, urban) explained: "[...] it's probably a bit more expensive, but they are so good and Bama has good, nice quality so...but I think that also, it's a good brand". However, although most research participants did not mention brand name, Bente's reasoning, which rests on familiarity and past experiences with the brand, are similar to the arguments used by other research participants to explain their choices of certain types of lettuce.

Another criterion for selecting lettuce was health. Both Anna (31 years, urban) and Lena (37 years, rural) (both Young families) mentioned "healthy" as a reason to choose their preferred type of lettuce. Moreover, some research participants said they chose packages of mixed lettuce as a way to get variation, which also indicates a concern with health. Purpose was also an important factor. For instance, Kari (71 years, Elderly households) was looking for a specific type of lettuce, Romano, because it was recommended for the dish she is going to make, a Caesar salad. Similarly, Hanne (31 years, Young families, urban) said: "it depends on what we are using it for, but it often needs to be quick and easy" when selecting a pre-rinsed and cut mix of lettuce." Other criteria affecting selection are package size and durability. For instance, Petter explained:

I have a tendency to buy ready-made [mixed lettuce] packages because if I was to start buying several different types of lettuce, they'll go bad. So rather than to make the lettuce myself. It's – it's the amount really.  
(Petter, 28 years, Young single men, rural, Norway).

For some, trying a new product also had an impact. For instance, Emma had planned to buy two types of lettuce but then got excited when she spotted a new type she had not seen before:

This is new, black cabbage mix. Yes, we have to try that. [...] I was going to buy baby leaf and heart lettuce. But then I discovered the new black cabbage. And then I thought like, that is too much, too much lettuce. So I put this [the baby leaf] back and took the black cabbage mix instead.  
(Emma, 33 years, Young families, rural, Norway)

### *Pre-rinsed and cut lettuce*

Whether or not the lettuce was pre-rinsed and cut, was generally not a primary concern when the research participants selected lettuce, although several expressed that it is practical because it takes less time and less work to prepare.

The overall impression is that the research participants chose lettuce using other criteria first. Moreover, some said the pre-rinsing was not important because they would rinse the lettuce before eating it anyway, and some stated the opposite, that they did not always rinse the lettuce regardless. Others again said they adapted according to the label, not rinsing if the lettuce was pre-rinsed but would rinse it if it was not. Jon is an example of this:

I would rinse that [Iceberg lettuce]. [...] But had, if I was going to the park during the summer and wanted to bring lettuce, then I would choose one of the ready-made mixes, and then I would eat it as is without rinsing.  
(Jon, 28 years, Young single men, urban, Norway).

However, two research participants had not noticed the labels informing that the lettuce was ready to eat. For instance, Petter (28 years, Young single men, rural) stated: "I just kind of took that for granted".



**Figure 3.1.31: Petter read the information of a package of pre-rinsed lettuce for the first time. It said 'washed and ready to eat' (Norway)**

On the other hand, some research participants did not favour the packages with pre-rinsed and cut lettuce. For instance, Anna, who was pregnant at the time of the interview said:

You have to be extra careful with lettuce, even if it says it is rinsed. It may be poorly rinsed [...] so it's a question about who rinses and how and equipment, right [...] I'm a bit sceptical anyway because I don't like it being cut. Because, then, like I said, the process starts again.  
 (Anna, 31 years, Young families, urban, Norway)

Similarly, Lena (37 years, Young families, rural) said that pre-cut lettuce was probably more expensive and had shorter durability than other types because lettuce keeps best when still attached to the stem. Moreover, despite finding that pre-rinsed lettuce is nice because it is less hassle, Emma added: "Well, now I have time to cut the vegetables myself, but yes...it's to make it easy and to eat more vegetables. It's just that, I would prefer to buy whole vegetables and cut them myself. But I, because it's, then it's not as processed." (Emma, 33 years, Young families, rural, Norway). It thus seems that Emma thinks she should do as much work herself, when she has time for it. Her concern with making home-made food became even more evident when she explained that she was embarrassed to buy a ready-made pack of sauce.

Georg (28 years, Young single men, urban) was an exception in this sample, as he was the only one who used pre-rinsed as a criterion when selecting lettuce. He explained this preference with his living conditions: "[...] and it's a bit, like, the space I have. I

don't have time to dry lettuce, and I don't trust the sink out there..." Georg lived in shared housing accommodation where he had no access to running water in his private space. He shared a sink in the hallway with five other people he did not know.

It is interesting to note that compared to chicken, price did not seem to be as important when selecting lettuce. Otherwise very price concerned Lena commented: "We are having it [the lettuce] with the chicken, so I thought it's more fresh and green and healthy and from Lier, it was win-win. Didn't even look at the price" (Lena, 37 years, Young families, rural).

### Selecting vegetables and fruit

Similarly, to the selection of lettuce, the time and care the research participants took to examine vegetables and fruit when selecting varied most noticeably between persons, but also between the various types of food products. Some were quick and barely took a glance at the product, or quickly turned the product around to look at it from several angles before placing it in their carrying device. Others were more careful. They lifted the products, turned them around in their hands, inspected several different ones, touching the surfaces, and squeezing before making their choices. They were overall more careful when inspecting fruits than vegetables, however, this could also be due to a distinction between soft-skinned and hard-skinned food products. Tomatoes and peppers were among the most carefully inspected vegetables, and lime, lemon, and oranges were among the least carefully inspected fruits.

Through the preliminary analysis of the selection of chicken, lettuce, fruits and vegetables, the criteria used by the Norwegian research participants could be divided in three. However, it is important to note that this is not a hierarchical list. The research participants used criteria from all categories and mixed them and weighted them differently according to needs, preferences, principles, and products. Firstly, there were the circumstantial concerns, such as season, place of origin, production and price. Most of the research participants preferred Norwegian vegetables when they were available. For instance, during the observed shopping trip, Kari discovered that the store is selling Norwegian cucumbers.

Now I see that there's Norwegian cucumbers here. I think there is a large difference in taste of Norwegian cucumbers and those imported cucumbers you get the rest of the year [...]. I think those [imported] often are a bit bitter tasting.

(Kari, 71 years, Elderly households, urban, Norway).

Similarly, Inger said she preferred Norwegian vegetables in season.

I think that, I think sustainability, that regarding that it is wiser to have products produced nearby here or in Norway, because it doesn't have to travel so far. So that's the reason.

(Inger, 70 years, Elderly households, rural, Norway)

Secondly, the research participants were concerned with the physical look and texture of the products. For instance, when selecting sweet potatoes, Georg (28 years, Young single men, urban) picked them up one by one, turned them over to look at the whole vegetable and stroked his thumb over the surface. He explained: “[I]ts mostly to make sure that they’re not, like, that there’s a lot to cut off. It’s like, it’s stupid to buy something where you have to cut off half of it”. Similarly, Hanne explained that she also looked at the size and shape when evaluating sweet potatoes.

I just think, I think some of them have started to shrink in there [...] that they looked like they’d been there too long and getting dry. So I took for the ones that look the nicest and that might be easiest to peel and cut [...] easy to hold and nice to cut.

(Hanne 31 years, Young families, urban, Norway)

Thirdly, the more social circumstances, such as taste preferences, habit, food tradition, and coordinating with food products at home and planned meals and uses. For instance, when evaluating peppers, Emma said:

They look so similar anyway. We usually have these sweet-pointed peppers, we do. The kids like them better and think it’s - it’s easier to...yes. And then I have a big yellow pepper at home, so that’s like why.

(Emma, 33 years, Young families, rural, Norway)



**Figure 3.1.32: A selection of sweet potatoes inspected by Georg (Norway)**

When observing and interviewing the research participants, it also became clear that these various criteria are affecting each other, and are used in the research participants’ negotiations. For instance, Lena (37 years, Young families, rural) found a two-pack of red peppers in the store, where one of the peppers had gone off: “I don’t say, or what I could do, is to say that I can buy them, but I will only pay 2 kroners [NOK], is that okay? And then use the fresh-looking one, I can do that.” Similarly, Bente settled for what she

called 'B quality' bananas because they are cheaper than the other options. However, she said:

[I]t was conscious, because they are, it's b quality on them, but it's, you can't tell the difference [...] There you got, there's for example [points to brown spot on banana peel] but it doesn't look like this on the inside. [...] when we eat bananas, me and my husband, we get bananas from a cooling cupboard. Then we get them from there and then it doesn't matter with such a spot, on the outside, on the inside there's nothing. These are just as nice as the others.

(Bente, 70 years, Elderly households, urban, Norway).

Another example is Kari's reflection when she realised the type of lettuce she was buying for her Cesar salad came from Spain, when overall, she preferred Norwegian vegetables:

It's made, where does it say? Spain. But a great deal of these products are foreign at this time of year. It's very hard to get Norwegian lettuce and Norwegian vegetable products this time of the year.

(Kari, 71 years, Elderly households, urban, Norway)

### *Packaged versus loose*

The Norwegian research participants varied in their views on the plastic film used to wrap fruits and vegetables. Anna and Georg both preferred loose fruits and vegetables over the individual wrapped products in plastic, but for different reasons. Anna was originally from another country and moved to Norway a few years ago. She said she was not used to the extensive use of plastic that she found in Norway, and was concerned with the price.

No, no, I'm not used to it, we don't, I'm not used to it. It's usually loose and then, often price per kilo. Like one cucumber, you don't buy one cucumber. [...] Or you buy one cucumber but it's loose weight, not in this package. So it was a shock for me that all cucumbers are perfect, it's the same size and like, cost per unit. [...] I buy at the Turkish store because they have loose weight. So it's like, maybe 15 kroners per kilo.

(Anna, 31 years, Young families, urban, Norway).

Georg (28 years, Young single men, urban) did not mind the plastic packaging in itself but was also concerned with price, as well as control over the amount bought. When asked what he thought about plastic he responded: "Everything is more expensive when it is wrapped. Ehm and that I can't control how much I want." However, Kari did not mind the plastic and saw it as a safety measure, saying there was no point in rinsing vegetables wrapped in plastic film.



**Figure 3.1.33: Bananas in plastic bag (Norway)**



**Figure 3.1.34: Loose apples (Norway)**



**Figure 3.1.35: Fruits and cucumbers wrapped in plastic bag (Norway)**

No, it's wrapped and the wrapping is automatic so then again, what in the world are you going to achieve by rinsing it? [...] I have heard and from what I have read is that to rinse, unless it is things you want off such as dirt and sand and stuff, you don't achieve anything other than making it wet.  
 (Kari, 71 years, Elderly households, urban, Norway).

Moreover, some found the plastic wrapping to be practical. For instance, Petter (26 years, Young single men, rural) said he sometimes bought apples bundled and packed in a plastic bag because it is practical when he wants to buy a few apples at once.

Moreover, the plastic bag relieves him from the thought that other people may have touched the apples before him.

### Summary shopping in Norway

To sum up, this chapter shows how the Norwegian research participants were coordinating, negotiating and evaluating continuously throughout their trip to the store. They needed to manage several physical objects, such as shopping lists, phone, baby strollers, children, backpacks, and in-store carrier devices, such as baskets or trolleys. Moreover, they had to have some overview over what they already had in store at home, in their fridges and pantries, as well as plans of what food to make, sometimes even several meals in advance. They were mindful of preferences, diets and other concerns for both themselves and their other family members or dinner guests. They drew on a great variety of knowledge and prior experiences when shopping for food. They were flexible when unforeseen things occurred, such as an unexpected offer or bargain, or when the store was out of stock of the product they were originally looking for, or when they made discoveries of new products or new information about familiar products. Emma expressed some of this complexity while looking at some vegetables in the store:

I think about what we're going to eat for, what we're having for dinner and stuff. And then it's so hard to – then I have to know what we're having, like chicken filet, but then we can use the filet and we can use that black cabbage mix for it. And I already have a turnip. Yes, at least we're getting onion. And potatoes. Oh kohlrabi! I love that!

(Emma, 33 years, Young families, rural, Norway).

## Summary – shopping habits in 5 countries

### *Shopping routines*

In every country, shopping routines varied among research participants. Some of them often went shopping in small supermarkets to top up or to buy fresh products several times a week; others did “medium size shopping” in between trips to other supermarkets; while some went occasionally to big supermarkets, where they stocked up on staple items for two weeks or more. The places visited for shopping were convenience stores, supermarkets, discount supermarkets, organic supermarkets and local markets. Specialist shops, like bakeries, fishmongers and butchers, were also visited. In Norway, there were also research participants who regularly went shopping at the Swedish border, because this was considered cheaper for products like meat, cheese, flour, alcohol, etc. They even bought chicken in Sweden, both frozen and fresh, because they perceived the chicken in Sweden to be cheaper, and they could find larger packages suitable for bulk buying. Not buying chicken in Norway might increase the risk of presence of *Campylobacter* (CCH food choice for poultry), but on the other end buying frozen chicken would result in a reduction of this risk. A common shopping strategy across the countries was to purchase larger quantities of food and to freeze small portions of the products. In Romania, frequency of shopping depended on the place of residence. Most of the research participants from urban areas would do their shopping several times per week, young families from rural areas would go weekly, whereas elderly households from rural areas would go for a big shop on a monthly basis when they received their pensions.

The time to go shopping was also a criterion for some research participants. In Portugal, selection of shopping place is shaped by priorities regarding food quality, but also take into account the social, spatial and temporal contexts of shopping practices. Some households avoid rush hours and prefer shopping during weekdays, while others have to organise their shopping days according to different family rhythms, the sequences of co-existing practices and other factors. The same pattern was observed in France, where some research participants, especially the elderly households and young families, chose their hour to go shopping to avoid the crowds in the shop and to avoid line ups of customers at the till. Some elderly French research participants even mentioned avoiding shopping for fresh products on Monday mornings, because, with shops closed on Sundays, they did not expect to find really fresh produce on the first day of the week whilst the fishmonger’s stall would not be stocked enough. This strategy to get the freshest produce may have some impact on the CCH of food choice, particularly for Ready-To-Eat foods with regards to the presence/numbers of *Listeria monocytogenes*. Some young families also chose a moment when their spouse was at home so they would not have to go shopping with their children.

### *Shopping lists*

Few research participants used shopping lists (only 3 in Portugal, 1 in Romania, 5 in the UK and 5 in France). Most of those who did use them said they did so to not forget something or to stick to their meal planning for the week. It did not prevent some to adapt their shopping routes in different aisles and some also bought products other than the ones planned for.

### *Shopping tours*

The route taken by research participants whilst shopping in supermarkets varied among research participants and in accordance with the shop's layout. Some research participants just followed the supermarket's shelves and picked up items as they went, with no specific prioritisation, while others cared about buying fresh and frozen products at the end of the shopping. Following the shop's layout was the pattern for every participant in Romania, and therefore the fruits and vegetables were selected first and put in the trolley. This was also the case for the majority of French research participants. In the UK, research participants also always followed the shop's layout, going up and down the aisles. In the vast majority of supermarkets visited, perishable goods, such as fresh fruit and vegetables, and meat and dairy products, were located close to the entrance, and were therefore visited early-on in most research participants' routes around the shop, meaning that refrigerated items were often in the trolley or basket the longest.

In Portugal, however, most households tried to pick fresh foods first and frozen foods last, demonstrating awareness of the importance of the cold chain. Only a few shoppers maintained cold chain practices during the packaging process when using specific bags that keep food cold for longer (see below). In our sample this was not an issue, as all households were doing shopping close to their homes (either by foot or by car), with relatively short journeys (the longer journey lasted about half an hour from the supermarket to home). These short journeys between the supermarket and research participants' homes suggest the risk of pathogen growth during transportation is very low, regardless of food packaging practices for refrigerated and frozen foods (CCH "inhibit growth" at transportation step). Researchers in Portugal noticed that whilst some households mentioned that they usually pick the fresh and frozen products at the end of their shopping trip, they did not do so during the fieldwork. In Romania, only one participant, Bogdan (32 years, Young single men, urban) said that he selected the products that needed refrigeration at the end. In France, one participant, Mathilde (37 years, Young families, urban), actually came back to fresh products at the end of her shopping tour, to put them in her basket as late as possible before leaving the shop. Research participants also selected frozen products at the end of the shopping tour, especially amongst those who did not carry cooler bags and they were in the majority.

### *Carrier devices*

Inside the shops, research participants mainly used the shop's carrier devices, such as trolleys and baskets. Some research participants used different vehicles, like baby strollers (one young family in Portugal and one in France did this) or electric scooters (one elderly participant in Portugal did so) to put products in. Some did not use any bags or carrier devices (one in Portugal: Bernardo, 19 years, Young single men, urban) or used their own reusable shopping bags (both Elderly and Young family households) in France. In France, since July 1st 2016, supermarkets are no longer allowed to put on display single use plastic bags for groceries. They can sell reusable grocery bags, made of plastic (and of a better quality than single use plastic bags), paper or fabric. Clients can buy them if they forget to bring their own, but it is common that people bring their own bags to the shop when they go shopping. One participant, Mathilde (37 years, Young families, urban), even brought her own paper bags to re-use them to put her vegetables inside, at the organic shop. Some research participants in France were observed to directly put fresh products in cooler bags in their trolley while shopping: 3 elderly research participants did so, and one also brought a cold block in her cooler bag.

### *Challenges while shopping*

The main challenges mentioned during shopping were for research participants who couldn't find an item on the shelves, or because they had trouble reaching high shelves or pushing heavy trolleys. Elderly research participants and pregnant women also faced challenges while carrying heavy water or milk bottles. In Portugal, for example, Emilia (89 years, urban) and Odete (65 years, urban) (both Elderly households) choose the weekends to go shopping because they needed help from their family relatives or friends to carry bigger and heavier purchases, or because they had difficulties walking long distances. In France, some research participants would go to the drive-through whenever they purchased a big volume of products in order to avoid carrying the bags, as shop staff directly put them in the car trunk (Gérard & Odile, 71 & 65 years, Elderly households, rural), or because they had difficulties in controlling the trolley when it was heavy (Mylène, 25 years, Young families, urban). In Romania, one participant had trouble reaching the shelf because she was shopping with her baby in her arms.

### *Selection of products*

In all countries, the selection of products is based on a variety of criteria: origin, production, visual appearance, colour, price, localism, seasonality, whether items are loose or packed, place of shopping, size, weight, texture, brand, taste preferences, habits, etc. Some criteria were more important than others in the shopping observations and in the research participants' discussion. The majority of research participants selected products as a matter of routine, with little obvious reflection or deliberation.

### *Selecting chicken*

Chicken products were varied and research participants expressed interest in the origins of chicken produce, breeding conditions and weight. In France, however, origins and breeding conditions (farm, free-range) were dominant concerns. All research participants here prioritised French origin when selecting chicken. Some went to local farms to buy chickens and freeze them. Even those who cared first about price nevertheless chose the best value for money among French raised chickens. Absence of antibiotics in breeding was also mentioned. In Romania, no research participants mentioned criteria such as free range, organic or corn fed.

A main concern across the countries was the specific cuts of chicken (whole, fillets, legs, wings, etc.) that were for sale and that research participants were looking for. Most of the research participants said that they chose chicken cuts depending on the dish they wanted to prepare. In Portugal, for instance, product selection was guided especially by the piece of chicken and the quantity. In the UK, first decisions concerning cuts of meat and necessary quantities were in most cases ‘devolved’ to planned recipes, available means of cooking, storage, and established routines around these. In Norway, the most reported criteria were package size and price, and these were dominating amongst young single men in particular.

In Portugal, differences of products concern the shopping place, whether at the supermarket (packed raw chicken) or from the butchers (in the supermarket or in the city). The choice of chicken at butchers concerned free-range chicken and was an important criterion for 3 research participants. In Portugal, only one participant, Bernardo (19 years, Young single men, urban), mentioned other reasons too, including the meat’s appearance (especially colour), price, whether it was organic (because of the taste) and origin (he preferred chicken that was nationally bred).

Choosing chicken cuts, like fillets, was more frequent among young single men (for example, in Romania and France) and this was explained by their youth and lack of understanding know how to prepare a whole chicken. One of the French research participants bought whole chicken to see what the animal looked like and to assess its quality.

Sensory judgment was also used in the selection of chicken. In Romania, such judgement was mainly based on the colour of the chicken. Three out of the 15 research participants made visual assessments of the quality of the chicken they were buying (regarding colour, skin and absence of blood vessels).

In the UK, only a minority of research participants noticeably compared use-by dates as a basis for decision making. Detailed inspection of the visible quality or condition of the chicken was also limited. And finally, cost was an important factor articulated in narrowing down options. Several research participants referred to the expense of

premium options, including free range, organic or corn-fed chicken, and Daniel and Ryan (both young men) aspired to being able to eat these products due to perceptions of quality and ethical concerns, and felt they might do so if they had more money.

In Norway, other criteria and concerns when selecting chicken in the shop were: place of origin, which was often associated with brand; taste; health; production method; amount of work required; and familiarity and practicality. As remarked in the UK, the majority of research participants picked up the chicken they usually buy with very little hesitation. Rather than informing a conscious decision in the moment of purchase, these concerns and priorities had been incorporated into practical routines. We also note that consuming chicken was part of the diet of 2 young single men in Romania and one in France who did bodybuilding and were interested in eating chicken to gain muscular weight.

### *Selecting salad*

The main differences while choosing salad is about packed salad or loose salad. In Norway, most research participants bought packed salad. All research participants mentioned visual sensory inspecting when selecting lettuce. Some were looking at the colour or other physical aspects of the lettuce, while others paid more attention to the packaging labels, such as expiry date. Others again reported to have paid attention to both. A good quality lettuce was described as green, fresh, nice, long lasting, crispy, and healthy. A lettuce of bad quality was described as short durability, see-through (indicating that it has been frozen), brown, collapsed, and with brown liquid in the package. Whether or not the lettuce was pre-rinsed and cut was generally not a primary concern when the research participants selected lettuce, although several expressed that it is practical because it takes less time and less work to prepare. In addition to practicality, purchasing pre-rinsed lettuce or green salads might reduce the risk of presence of bacterial pathogens (CCH Food choice for salad ingredients) because in some countries the rinsing treatment includes a disinfection step with e.g. chlorine. Meanwhile, reducing food risk was seldom mentioned as a reason for selecting pre-washed lettuce. In Romania, however, only one bought a packed salad. He usually bought it fresh from the local market, but at this time of the year he could not find it there. Some research participants did not like the taste of different mix packed-salad (in Portugal) or were concerned by the conservation, with possible presence of humidity and mould (in France). Price was not a criterion for lettuce in Norway and research participants spent little time looking at the lettuce before choosing it. It seems like lettuce is a product that most research participants find easy to evaluate quickly.

### *Selecting fruit and vegetables*

Fruit and vegetables were mostly selected by research participants according to sensory judgment regarding firmness, visual appearance, evidence of mould and spots, and supposed freshness. Considerations also referred to packed and loose products. Some Norwegian research participants, saw packed items as a safety measure, saying there

was no point in rinsing vegetables wrapped in plastic film. Others found the plastic wrapping to be practical and prevented people from touching the apples beforehand. However, in Norway and France, some participants did not like packed products because they could not choose the amount of fruits or vegetables to be bought, there was no opportunity to check the quality of the product, or packaging was rejected for sustainability and ecological reasons. Selection of items also depended of the type of products available in the shops; whether these were packed or not put constraints on consumer selections. In France, research participants mostly bought loose items. Only organic products were packed in plastic trays. French research participants used plastic or paper bags to put their loose fruits or vegetables in. Some even took them back to the shop to re-use them while others found a purpose for them at home.

### *Date labels*

In Norway, young families and elderly research participants seemed to be more careful with expiry dates. In Romania, three participants (2 Young single men and 1 young family) out of the 15 research participants looked consistently at the use-by date of the chicken. In the UK, only four participants noticeably referred to use-by dates during the course of selecting chicken. While in France, some research participants were used to buy products close to their expiry date in large quantities and managed them by freezing or cooking on the same day. This shows that a higher risk at shopping step (CCH food choice) might be balanced by participants' practices at the food storage step.

### *Price*

Common among countries was the importance of price checking before choosing a product, or in the choice for products on sale (due to short use-by dates). In Romania, in most cases, cost played a significant influence in narrowing down options, especially for chicken. For example, Dominca (75 years, Elderly households, urban) mentioned clearly from the beginning of the shopping session, that she bought the cheapest products she could find in the market. In France, price was a spontaneous concern for some of the research participants in all categories. They used different strategies for spending less money (e.g. by purchasing products that were on sale and that had short use-by dates, and looking at supermarket catalogues before shopping to gain knowledge of the best offers). In the UK and France, research participants seemed used to checking price per unit before buying products, and more of them would buy organic products if they could afford them. In Norway, only person mentioned prices as a criterion for chicken.

### *Local products*

We note a tendency for choosing local products among research participants, for various reasons. In Portugal, a few households preferred to buy national products to support Portuguese agriculture and to help the national economy and local farmers. In Norway, most of the research participants preferred Norwegian vegetables when they were available and one of them mentioned the importance of sustainability in this

choice. In the UK, one participant said she liked to know the country of origin of fresh produce, preferring to purchase British-grown fruit because ‘you can’t beat it for taste’ but would also buy out-of-season fruit from elsewhere when she needed to. In Romania, this criterion was also a concern for one participant (Fanica, 69 years, Elderly households, urban, Romania) who refused to buy chicken because the poultry was not from Romania. In France, most of the research participants were careful about buying French products and most of them care about seasonal products, as well as about sustainability and taste reasons. Charles (75 years, Elderly households, rural) avoided Spanish products because he said that they have pesticides. Some participants preferred buying local French products than organic ones, because locality was an even a larger proof of quality. This was also the case for 3 elderly and 2 young single male research participants, who grew vegetables in their garden, and they mainly favoured seasonal products. In contrast, the only 3 participants who did not care about the origin of products did so for economic concerns (they favoured low prices) and one participant Elodie (31 years, Young families, rural) did not care about the products’ origins because she heard that Spain has the same criteria for pesticides than France. Buying local chicken has some consequences for the risk of presence of pathogens (CCH Food choice) because their prevalence in chicken meat varies among European countries.

### *Lack of confidence in supermarket products*

Among research participants in different countries, we noticed a similar pattern: some lacked confidence in supermarkets and budget products. In Norway, some participants avoided the low-price brand of chicken or shredded meat because of poor quality or lack of transparency in the chicken preparation and treatment. In Portugal, it was also shown that some research participants suspected the retail practices of large supermarkets (e.g. in labelling food and messing with use-by dates), and in some instances preferred to buy from small retail outlets, as they trusted food better in such places. However, as shown later, some Portuguese households in the sample considered hygiene practices of small retailers regarding chicken less trustworthy than in larger supermarkets, showing that trust is a complex relation and highly context specific. In France, some participants were not confident in budget products because of their assumed low quality, with references made to chicken growing too fast and slaughtered too young. In Romania, some research participants mentioned the fear of the presence of hormones in chicken sold in supermarkets and the suspicion of chemical treatment of fruit and vegetables sold in supermarkets. However, in Norway and the UK, participants seemed to have relatively high levels of trust in supermarkets and the products they sold.

**Table 3.1.4: Summary table of mentioned and observed criteria for selecting salad & vegetables**

		Portugal			Romania			France			UK			Norway			N (mentioned or observed)
		YSM	YF	EH	YSM	YF	EH	YSM	YF	EH	YSM	YF	EH	YSM	YF	EH	
Circum- stantial aspects	Date label	-	2	1	1	-	-	1	-	1	2	2	3	1	2	1	17
	Price	-	1	-	2	4	2	4	4	2	2	-	2	2	3	1	29
	Brand	-	-	-	-	1	-	3			-	1	-	-	-	1	6
	Variety	-	1	-	3	2	-	2	4		2	4	2	1	-	1	22
	Production method	1	-	-	-	-	-	2	1	3	-	2	-	-	-	1	10
	Place of origin	1	-	1	2	2	1	2	1		-	-	1	-	1	3	15
	Packaging (plastic, paper, none)	2	4	4	3	3	-	3	4	1	1	3	2	1	1	-	32
	Processed (pre-cut, pre-rinsed, pre-mixed etc.)	-	3	-	-	1	-	2	4		-	1	-	2	1	-	14
Physical aspects	Look (colour, signs of ripeness)	3	5	4	5	5	2	3	3	3	5	5	3	5	4	4	59
	Texture	1	2	-	5	3	-	-	1	2	3	3	4	4	2	3	33
	Size	-	3	1	4	2	1	-	1	2	1	2	2	2	1	-	22
	Smell	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
Social aspects	Taste preferences	2	3	1	2	2	1	-	1	-	1	2	1	2	2	4	24
	Habit, familiarity, prior experience	-	1	1	2	2	2	-	1	2	-	3	1	1	3	3	22
	Intended use, coordinating with food products at home	-	-	1	2	1	1	-	2	3	1	2	-	-	2	2	17
	Convenience, mood, desire	1	2	-	5	2	1	1	4	2	1	2	1	1	3	1	27
	Nutritional, health (other?) reasons	1	-	-	-	1	-	-	-	-	3	1	-	-	2	-	8

The table gives an overview of what was mentioned or observed during the shopping tour with the households. Since motivations may vary from day to day, the table does not provide information of persistent selection criteria of the participating households.  
[YSM= Young single men, YF= Young families, EH= Elderly households]

## Chapter 3.2: Transportation

In this chapter, we show how research participants manage the transportation of groceries from supermarket to home. We discuss the distance and time taken, the number and kind of carrying devices used, and the surfaces they are in contact with during transportation. We are also interested in the outdoor temperature while transporting groceries, to focus on the possibility of inhibiting pathogen growth especially in raw poultry, fresh vegetables and fruits (PVF), raw eggs, and ready-to-eat foods.

## Transportation in Portugal

### Distance, time, means of transportation and temperature

In the Portuguese sample no pattern was observed differentiating urban and rural participants regarding the distance or the time taken to get to the supermarket from home. The four households in rural areas lived in close proximity to an urban area, and thus to big supermarkets usually located at the outskirts of the city. Some households from urban areas lived further from the supermarket they visited for the research observation than was the case for rural households (e.g. Marta; Emília). As discussed below, the main differences occurred between study groups.

**Table 3.2.1: Overview of distance, time spent, means of transportation and outdoor temperature among the Portuguese households**

Living area	Households	Study groups	Distance to food outlet (km)	Transport time (mins)	Means of transport	Outdoor temp. (°C)
Urban	Carlos (24 years)	Young single men	0.3	3	Walk	9
	Bernardo (19 years)		0.2	2	Walk	13
	André (30 years)		0.5	10	Walk	13
	Marta (35 years)	Young families	3.0	10	Car	15
	Andreia (33 years)		0.4	2	Car	10
	Filipa (36 years)		0.3	1	Car	7
	Josefina (81 years)	Elderly households	<1	15	Walk	14
	Emília (89 years)		6.0	34	Car	17
	Manel (73 years)		1.0	3	Car	12
	Odete (65 years)		2.0	10	Electric scooter	16
	Celeste (70 years)		0.8	25	Walk	9
Rural	Augusto (70 years)	Young families	4.0	9	Car	14
	Vanessa (29 years)		2.0	6	Car	17
	Sónia (42 years)		1.0	4	Car	15
	Sílvia (33 years)		6.0	12	Car	16

Table 3.2.1 shows that three elderly households spent the most time transporting food (Josefina: 15 mins; Celeste: 25 mins; Emília: 34 mins). Compared to other families, Josefina and Celeste had to walk a lot to go shopping, which took more time than going by car. Two young single men (Carlos: 3 mins; Bernardo: 2 mins), three young families with children (Sónia: 4 mins; Andreia: 2 mins; Filipa: 1 min) and only one elderly participant (Manel: 3 mins) travelled less than five minutes.

Considering all households, the distance between home and shops varied from 150 metres to 6 km; all three young single men walked 500 metres or less to the supermarket (Carlos: 0.3km; Bernardo: 0.15km; André: 0.5km) and two young families drove a similar distance (Andreia: 0.4km; Filipa: 0.3km). The fieldwork took place between February and the beginning of April 2018, when the exterior temperatures varied between 7 and 17 degrees Celsius.

Most households bought food in the supermarket and more than half went by car (nine households). All the young families with children went by car, sometimes using the baby stroller to help carrying the bags in the supermarket. Only two elderly households and all three young single men walk to go shopping. This last group does not appreciate spending time shopping and usually buy very few ingredients. In the sample, there is also a woman (Odeete, elderly household) with reduced mobility who uses her electric scooter to move and carry the shopping bags.



**Figure 3.2.1: Odeete with her electric scooter (Portugal)**

### Packing and carrying the shopping

Six households used one shopping bag (three Young families and three Elderly households) and seven used more than one bag (one Young single men, three Young families and three Elderly households). We found no visible association between the form of transportation and the number of carrying devices. People who went by car might just take on bag, and people who walked might carry one or two bags. However, if a participant did a big shop bringing several bags, then the car was paramount for transportation.

**Table 3.2.2: Type of carrying devices among Portuguese households**

Study groups	Research participants	No. carrying devices	Type of carrying devices
Young single men	Carlos (24 years)		No information
	Bernardo (19 years)		None: used hands
	André (30 years)	2	Reusable carrier bags
Young families	Marta (35 years)	3	Reusable carrier bags
	Vanessa (29 years)	1	Reusable carrier bag + thin plastic for chicken + thin plastics to vegetables
	Sónia (42 years)	1	Plastic bag from supermarket
	Andreia (33 years)	2	Reusable carrier bags. Cooler bag + plastic bag
	Filipa (36 years)	1	Reusable carrier bags
	Sílvia (33 years)	4	3 Reusable carrier bags + 1 bag for chicken
Elderly households	Josefina (81 years)	2	Reusable carrier bag and supermarket cart
	Emília (89 years)	1	Plastic carrier bag from store (she forgot her reusable bags)
	Augusto (70 years)	2	Reusable carrier bags (he separates chicken from other kinds of food)
	Manel (73 years)	1	Reusable carrier bags
	Odete (65 years)	1	Backpack
	Celeste (70 years)	2	Reusable carrier bag and supermarket cart

Most families used reusable bags when shopping (11) and only Sónia preferred to buy plastic bags at the supermarket because she could use them for the waste bin. Sónia also used the same plastic bag to carry different kinds of goods without following a specific order: magazines, lettuce, frozen potatoes, chicken and other products. Emília bought a plastic bag at the supermarket but this was an exceptional situation: she usually brings her own bags but forgot them this time. Celeste keeps and reuses all the bags but never uses a thermal bag because it adds a cost she is not willing to pay.

Int.: Don't you use thermal bags?

Celeste: No, no. I take this [talking about her reusable bag]. So I will not spend money.

(Celeste, 70 years, Elderly households, urban, Portugal)

Other participants like André never use thermal bags because the supermarket is very near the apartment. Andreia is the only participant who uses a thermal bag for frozen products all year round as chilled food needs to be maintained within the cold chain. Sílvia only uses these bags in the summer to keep meat, chilled and frozen foods cool.

Int.: Do you usually bring those cooler bags?

Andreia: Yes, we always have those in the car. Thermal bags and those big ones.

(Andreia, 33 years, Young families, urban, Portugal)

**Table 3.2.3: Carrying devices' contact with other surfaces during transportation among the Portuguese households**

Study groups	Households	Does carrying device touch ground outdoors during transportation?	Where is it placed at home?
Young single men	Carlos (24 years)	No	Chicken directly to fridge
	Bernardo (19 years)	No	Bernardo did not store the shopping because he only bought things he would cook immediately
	André (30 years)	No	Kitchen table
Young families	Marta (35 years)	Car boot	Kitchen table
	Vanessa (29 years)	Car boot	Kitchen table
	Sónia (42 years)	Back seat of the car	Kitchen table
	Andreia (33 years)	Car boot	Kitchen counter
	Filipa (36 years)	Floor in the lift	Kitchen counter
	Sílvia (33 years)	No	Kitchen counter
Elderly households	Josefina (81 years)	No	Not registered
	Emília (89 years)	Not observed	Kitchen counter
	Augusto (70 years)	Car boot	Not observed
	Manel (73 years)	Car boot	Kitchen counter
	Odete (65 years)	No	Kitchen counter
	Celeste (70 years)	Not observed	Not observed

Only a few households felt it was important to maintain the cold chain during the transportation phase and often only in the summer (Filipa and Sílvia). On the other hand, some participants kept the chicken separate from other foods during transportation (Augusto, Sílvia and Vanessa).

Most participants travelling by car used the car boot to transport food bags. Vanessa leaves the empty shopping bag in the car door, so she does not forget to take it. She only washes the bag between shopping trips if it gets soiled with liquid. Only one family used the back seat of the car for shopping bags (Sónia).



**Figure 3.2.2: Sónia put the groceries at the back seat of the car (Portugal)**



**Figure 3.2.3: Vanessa put the shopping bag in the car boot (Portugal)**

Families usually put the shopping bags on their kitchen counters when they arrived home and then unpacked the food. As will be explained later, unpacking and storing food was not always done straight away (see the storage section).



**Figure 3.2.4: Andreia unpacked the food on the kitchen counter (Portugal)**

### Challenges and strategies for transporting food

The households with the greatest challenges in transporting food were elderly households and young couples with children. Both faced obstacles but for different reasons. Some elderly households had problems with mobility and walking long distances (Emília, 89 years, urban and Josefina, 81 years, urban) and had developed strategies to help them. For example, Josefina used a supermarket trolley to help with carrying items while she shops while Celeste brings her own trolley from home to help with mobility and transportation. Celeste complained that her husband does not help her with shopping. She also explained that her daughter only goes with her when she has something to buy, she helps Celeste by carrying the trolley. Sometimes when she wants to buy more products and the bags are heavy, she goes shopping twice a day.

In Emília's situation, she always needs help from her daughter or husband with shopping (they usually go by car). When she goes walking to the supermarket she often gets lost on the way. She moved to her apartment recently and when she walks alone always takes a piece of paper with her address and phone number on it. Odete (65 years, Elderly households, urban) also had some challenges during transportation due to her reduced mobility condition. She used her electric scooter to help during the journey. She sat on it and accommodated the shopping bags inside the front basket and also between her legs.

Young families faced different challenges. They had to carry several bags and also take care of children at the same time, two practices that co-existed with one another and often competed for attention from both parents. In Filipa's (36 years, urban) case, she had many bags and equipment to carry home and this is part of her normal routine (the baby car, the shopping bags, the case from the office). She has a lift that connects the car park to her apartment, which helped her to avoid walking some distance carrying all these objects.



**Figure 3.2.5: Filipa used the shopping bag to hold the lift door open, while she goes back to the car to pick up more items (Portugal)**

Another response to transportation challenges for families with babies was to use the baby stroller to help carry food, as Andreia's (33 years, urban) case well illustrates.



**Figure 3.2.6: Andreia with the baby stroller to help with shopping (Portugal)**

She did not take a basket or shopping trolley because it was difficult in the small supermarket aisles to navigate the stroller and the trolley at the same time. She carried the food in her hand, using the upper part of the body to keep the items from falling. At the same time, she was pushing the baby stroller with the other hand. She had empty bags inside the stroller that she would use later during check out.

Most families with children leave the shopping bags in the car boot ready for future shopping journeys in order to avoid forgetting them. When juggling several activities at the same time, these pre-emptive measures help coordination and management of busy everyday lives and their dynamic practices.

## Transportation in Romania

Interesting differences were noticed between rural and urban participants regarding transportation, which are discussed briefly in this chapter.

### Distance, time, means of transportation and temperature

Taking into consideration that the interviews started during winter and ended up during summer, the outdoor temperature during the interviews ranged between -7 and 32°C degrees. The temperature was registered using weather apps on the researchers' phones.

**Table 3.2.4: Overview of distance, time spent, means of transportation and outdoor temperature among the Romanian households**

Living area	Households	Study groups	Distance to food outlet (km)	Transport time (mins)	Means of transport	Outdoor temp. (°C)
Urban	Ionel (30 years)	Young single men	0.3	5	Car	3
	Balanel (28 years)		0.5	7	Walk	5
	Florinel (31 years)		3.0	7	Car	32
	Bogdan (32 years)		0.2	5	Car	23
	Zoltan (35 years)		4.0	20	Walk	28
	Maria Mirabela (34 years)	Young families	2.0	15	Walk	8
	Amalia (31 years)		0.5	10	Walk	26
	Fanel & Fanica (both 69 years)	Elderly households	4.0	10	Car	-3
	Domnica (75 years)		0.2	3	Walk	32
Rural	Dumitra (84 years)		7.0	20	Walk/car	-3
	Damian & Damiana (both 73 years)		0.5	10	Walk	-7
	Linalia (73 years)		0.5	10	Walk	6
	Sorina (32 years)	Young families	10.0	15/45	Car/minibus	21
	Serena (36 years)		45.0	30	Car	25
	Minodora (27 years)		45.0	30	Bus/car	25

Although the urban participants' closest food outlets were between 150 and 500 metres from where they live, many of them (Zoltan, Florinel, Maria Mirabela, Fanel) preferred to go shopping elsewhere, further away, due to the larger variety of food. Participants in rural areas had their closest food shop between 300m and 1.5 km from their homes. However, as young families from rural areas preferred to buy food by going into the closest city, the distance travelled ranged from 10km to 45km, the journey time being less than an hour by car.

Journey times depended on the mode of transportation. Journeys on foot lasted up to 10 minutes for participants living in urban areas and up to 20 minutes in rural areas. Although some participants lived very close to food outlets, they preferred going

shopping by car because they usually shopped when returning from work or needed the car for carrying heavy bags. For example, Bogdan said he rarely goes on foot to buy food from the market.

Int.: Usually how do you transport the food that you buy?

Bogdan: Usually I come by car. I am comfortable. But today I came on foot.

Int.: How often do you come to shop on foot and not by car?

Bogdan: The last time when I came on foot to the supermarket was 2 months ago.

(Bogdan, 32 years, Young single men, urban, Romania)

It was interesting to notice that most of the elderly households in rural areas said that they go to the closest city to buy food once per month when they receive their pension. They also rely on relatives to buy them food from the city when coming into the village. Dumitra is helped by one of her nephews with shopping and transportation of food. Her nephew goes once per month into the town and buys food for Dumitra. The same situation was noticed for young families living in rural areas. Minodora is helped by her neighbour to buy food for her when going shopping by car in the town.

### Packing and carrying the shopping

Table 3.2.5 shows the participants and their mode of transportation, associated with the number of carrying devices they used to transport food from the store to their homes.

**Table 3.2.5: Number of carrying devices among the Romanian households**

Living area	Research participants	Study groups	Means of transport	No carrying devices
Urban	Ionel (30 years)	Young single men	Car	1
	Balanel (28 years)		Walk	1
	Florinel (31 years)		Car	2
	Bogdan (32 years)		Car	1
	Zoltan (35 years)		Walk	2
	Maria Mirabela (34 years)	Young families	Walk	2
	Amalia (31 years)		Walk	1
	Fanel & Fanica (both 69 years)	Elderly households	Car	3
	Domnica (75 years)		Walk	1
Rural	Dumitra (84 years)		Walk/car	1
	Damian & Damiana (both 73 years)		Walk	1
	Linalia (73 years)		Walk	1
	Sorina (32 years)	Young families	Car/minibus	2
	Serena (36 years)		Car	1
	Minodora (27 years)		Bus/car	Not recorded

When participants from rural areas bought food from the city, they went by minibus or personal car, or the car of relatives or neighbours going to town to buy food. When buying food from the village, elderly participants bought fewer items because they could not carry a lot of things, they could not afford to buy all they needed, and/or they did not find what they needed. For example, Linalia (elderly household) said that if she must buy many things, she takes her son to help her carrying the bags. Usually, she said she doesn't carry too many things because she has diabetes.

Int.: How do you deal with food transport? Who helps you?

Linalia: I usually do not buy much, and when I have to pick up many things,

I take my son who lives with me to help me with the bags.

(Linalia, 73 years, Elderly households, rural, Romania)

Sorina said that she sometimes takes advantage of the car driven by her sister-in-law to go shopping to town usually in the mornings when her sister-in-law goes to work. If she cannot find someone from her village that has a car to help her with the transportation of bags, she buys less.

Int.: Usually what is the mode of transportation?

Sorina: Usually I come with my sister-in-law that has a car. When she goes in the morning to work she brings me also. I go to food outlets, she goes to work. Usually, when she is free, we come together, and then I buy more things than I usually buy. Now, I will not buy so many things because the bags will be heavy, I will buy less things.

(Sorina, 32 years, Young families, rural, Romania)

Sorina placed the food that she bought in two plastic bags, but said that she always transports the poultry and meat products separately from the other food that she buys from the store (Figure 3.2.7).



**Figure 3.2.7: Examples of types of food transported in a bag (Romania)**

Int.: I saw that you bought 2 bags and I was wonder how are you going to use them.

Sorina: I put always the meat in a separate bag and in the other bag the other products.

(Sorina, 32 years, Young families, rural, Romania)

Fanel transported poultry meat in a bag and the lettuce in the other bag. When asked why he did not use another bigger bag for all the food, he explained that it is not hygienic to do that. On the other hand, Domnica did not seem worried transporting meat and other foods in the same bag.

The number of carrying devices ranged between one and three and was not always associated with the mode of transportation. Three out of five young single men had a car and most of the time went shopping when returning back from work. They used the car, even if the distance between the food outlet and their home was short and even if they did not have many things to buy.

During the interviews six out of nine urban participants used plastic carrier bags bought that day from the store (Table 3.2.8). Two of them, Bogdan and Domnica brought plastic bags from their home when shopping, whereas Amalia preferred bringing and carrying food using a cotton bag. She said that nowadays it is fashionable to use cotton bags for carrying food (Figure 3.2.8). Only two participants from rural areas used reusable bags and those were both from elderly households (Damian and Linalia).



**Figure 3.2.8: Examples of types of reusable bags used by participants (Romania)**

Bogdan said that he always has plastic bags in the car, just to be sure that he will have a bag available to carry the food that he buys from the store.

Int.: Usually do you buy a plastic bag from the store?

Bogdan: No, usually I bring my own plastic bag from home. I don't want to collect at home too many plastic bags. I have plastic bags even in my car.

(Bogdan, 32 years, Young single men, urban, Romania)

Participants that went shopping by car not only transported food in the bags they bought from the store, but also loose in the back seat of the car or in the luggage compartment. For example, Serena transported lettuce separately from the other food, explaining that lettuce is fragile. The bread that was bought that day was stored in the back seat of the car, where she sat with her baby.



**Figure 3.2.9: Example of transporting food in the luggage compartment (Romania)**

Domnica preferred transporting the bag in her arms, although the bag was not heavy. She said that the distance from the store to home is small, so she felt better carrying the bag that way (Figure 3.2.10).



**Figure 3.2.10: Example of transporting the bag containing food (Romania)**

Table 3.2.6 shows, for each participant, if the carrier devices that they used for transportation from the store to home came into contact with other surfaces.

**Table 3.2.6: Carrying devices' contact with other surfaces during transportation among the Romanian households**

Living area	Households	Study groups	Does carrying device touch ground outdoors?	Where is it placed at home?
Urban	Ionel (30 years)	Young single men	No	Counter top
	Balanel (28 years)		No	Table
	Florinel (31 years)		No	Kitchen floor
	Bogdan (32 years)		No	Kitchen floor
	Zoltan (35 years)		No	Bed
	Maria Mirabela (34 years)	Young families	No	Floor entrance, counter top
	Amalia (31 years)		No	Floor entrance, chair
	Fanel & Fanica (both 69 years)	Elderly households	No	Table
	Domnica (75 years)		No	Table
	Dumitra (84 years)		No	Table
Rural	Damian & Damiana (both 73 years)		No	Table
	Linalia (73 years)		No	Table
	Sorina (32 years)	Young families	Floor of the minibus	Table
	Serena (36 years)		No	Chair/Counter top
	Minodora (27 years)		No	Table

Only one participant, Sorina placed the plastic bags on the floor of the minibus. Before arriving to the minibus, she took a taxi from the market to the bus station to be sure that she would not miss the minibus. In the taxi, she held the bags in her arms. The minibus had no seats free, therefore Sorina put the two bags on the floor. When arriving home, she put the bag on the table that she used for preparing and eating food. The other participants were not seen putting the carrier devices on the ground as the distance from the market to their home was short and the bags were not heavy. When arriving home, nine of 15 participants placed the bags on the table in the kitchen. Amalia and Maria Mirabela used the lift to reach the floor where they live and, when entering the house, both put the plastic bag containing food on the floor entrance. Then, they took their shoes off and put the bag on the counter top in the kitchen (Maria Mirabela) or on the chair (Amalia). Florinel again used the lift to reach his floor and, when entering the apartment, he took his shoes off holding the bags in his hands and put them on the kitchen floor. He said that he always puts the bag on the floor close to the fridge because he immediately transfers the food from the bags into the fridge. Similar behaviour was noticed for another young single man, Bogdan.

### Challenges and strategies for transporting food

Most participants did not express any challenges with transporting food, regardless of living in an urban or rural area. When asked whether they struggle with transportation, Dumitra (84 year, Elderly households, rural) said that she is usually helped with shopping by one of her nephews. All the elderly households in rural areas said that sometimes their sons or relatives transport them food from town to the village where

they live. Even Domnica (75 years, Elderly households, urban) said that sometimes her son transports food from the city where he lives to his mother's home. She said that, compared to villages, urban shops have a wider diversity of food at lower prices.

Serena (36 years, Young families, rural) found it difficult to carry her baby in her arms while shopping and so advised her husband what to pick up. Although pregnant, Amalia (31 years, Young families, urban) was not worried about carrying a heavy food bag. When shopping in the town, Sorina (32 years, Young families, rural) takes her son to help her with the bags. However, during the visit into the food market, her son didn't carry anything. When she goes shopping, Sorina leaves her one-year-old baby with her grandmother. She does the shopping quickly in order to reach home as soon as possible, explaining why she takes a taxi.

## Transportation in France

### Distance, time, means of transportation and temperature

Most of the participants went shopping by car, even the urban ones (Table 3.2.7). Only Julie, who lives in the centre of a small city, walked to the supermarket with her child in a stroller. In this French area, road traffic is fairly easy, and all participants took less than ten minutes to get home after shopping. Even participants living in a rural area drove only seven to ten minutes to go shopping. All of them came directly back home after shopping at the supermarket. Bernard & Hélène stopped at the bakery on the way back home. It took one minute for his wife to buy bread and he did not even turn off the engine.

**Table 3.2.7: Overview of distance, time spent, means of transportation and outdoor temperature among the French households**

Living area	Households	Study group	Distance to food outlet (km)	Transport time (mins)	Means of transport	Outdoor temp. (°C)
Urban	Fabrice (24 years)	Young single men	1.0	4	Car	-1
	Simon (25 years)		4.0	6	Car	20
	Mathilde (37 years)	Young families	5.0	10	Car	12
	Julie (28 years)		1.0	8	Walk w/stroller	3
	Mylène (25 years)		1.4	5	Car	-1
	Bernard & Hélène (both 72 years)	Elderly households	1.0	5	Car	5
	Yvette & François (74 & 76 years)		0.9	5	Car	3
Rural	Gérard & Odile (71 & 65 years)		5.0	8	Car	16
	Sylviane (77 years)		8.0	10	Car	8
	Charles & Annie (75 & 70 years)		8.0	9	Car	16
	Aurélien (25 years)	Young single men	6.0	10	Car	6
	Vincent (29 years)		5.0	8	Car	22
	Etienne (30 years)		6.0	10	Van	17
	Amandine (27 years)	Young families	6.0	10	Car	1
	Elodie (31 years)		6.0	10	Car	11

The fieldwork took place at the end of the winter and during spring 2018 which was warm. Table 3.2.7 shows the outside temperature during transportation. The lowest was -1°C. The highest temperatures we recorded were from 20°C to 22°C.

## Packing and carrying the shopping

In France, since 1st July 2016, supermarkets are no longer allowed to offer single use plastic bags for groceries.<sup>28</sup> They can sell reusable grocery bags (in plastic, but of good quality), paper bags or fabric bags, for a few cents. Customers can buy them if they forget to bring their own. Table 3.2.8 shows the participants, the number of carrying devices they used to transport their groceries from store to home, and where they placed them.

**Table 3.2.8: Number of carrying devices and their contact with other surfaces among French households**

Living area	Households	Study group	No. carrying devices	Type of bags		Place bags are stored for transportation
				Shopping bag(s)	Cooler bag(s)	
Urban	Fabrice (24 years)	Young single men	0	0	0	On the floor on the passenger side
	Simon (25 years)		3	3	0	In the boot
	Mathilde (37 years)	Young families	2	2	0	In the boot
	Julie (28 years)		0	0	0	In her child's stroller
	Mylène (25 years)		3	3	0	In the boot
Rural	Bernard & Hélène (both 72 years)	Elderly households	2	1	1	In the boot
	Yvette & François (74 & 76 years)		1	1	0	On the passenger seat
	Gérard & Odile (71 & 65 years)		3	1	2	In the boot
	Sylviane (77 years)		2	1	1	In the boot
	Charles & Annie (75 & 70 years)		1	1	0	Below the rear seat
Rural	Aurélien (25 years)	Young single men	1	1	0	In the boot
	Vincent (29 years)		2	2	0	In the boot
	Etienne (30 years)		0	0	0	In the boot
	Amandine (27 years)	Young families	1	1	0	In the boot
	Elodie (31 years)		2	0	2	In the boot

Only three participants out of 15 did not bring any bags to the supermarket. Fabrice used a basket from the shop to carry items in the supermarket and bought a plastic reusable bag in the supermarket to carry his groceries to his car. Etienne (shopped with a trolley and, after paying, put them back in the trolley to take them out to his van. He then stacked them on top of his fishing equipment, in the boot. Julie went to the supermarket with her child in the stroller and put groceries at the bottom of the stroller, where she usually puts them. If shopping for more items she would bring a bag to hang on the stroller handle.

Etienne stacked his groceries on top of his fishing equipment (Figure 3.2.11 left) Julie carried her groceries in the child's stroller (Figure 3.2.11 right)

<sup>28</sup> <https://www.economie.gouv.fr/particuliers/sacs-plastiques-interdiction>



**Figure 3.2.11: Grocery transportation among French research participants (France)**

Most of the participants brought one or two grocery bags to transport their groceries back home. Yvette bought only four items and had only one shopping bag. She does not use any of the shop's plastic shopping baskets in this supermarket because she thinks they are too heavy even when they are empty. She has arthritis, so she brought her own shopping bags to fill as she went round the shops, and then also to carry her groceries home.

#### *Use of cooler bags*

No young single men brought a cooler bag for shopping and four mothers out of five did not use a cooler bag. Three participants bought frozen products and used a classical bag to transport them: Vincent (29 years, rural); Fabrice (24 years, urban) (both Young single men); and Mylène (25 years, Young families, urban). They did not feel that it is absolutely necessary to have a cooler bag, but did have strategies to keep frozen products at ambient temperature for less time, for example by buying them at the end of their shopping trip:

Yes, we always take frozen products at the end and we go pay, it is strategic, we do not have cooler bags because we do not think of it.

Mylène (25 years, Young families, urban, France).

Only one other young family, Elodie (31 years, Young families, rural) used two cooler bags, one for fresh products, and one for frozen products. Meanwhile, all the elderly participants had cooler bags in their cars. Four of them used them for storing fresh products. Odile (65 years, rural) brought two cooler bags with icepacks inside and one ordinary shopping bag. She organised her bags as she shopped. She never shops without cooler bags. If she forgot her cool bags she said she would buy some at the supermarket.



**Figure 3.2.12: Use of cooler bag while shopping (France)**

Charles had a cooler bag in his boot but did not use it on the occasion of our visit as he did not buy frozen products:

Int.: Do you use cooler bags for your classic shopping?

Charles: yes I have one in the car but...

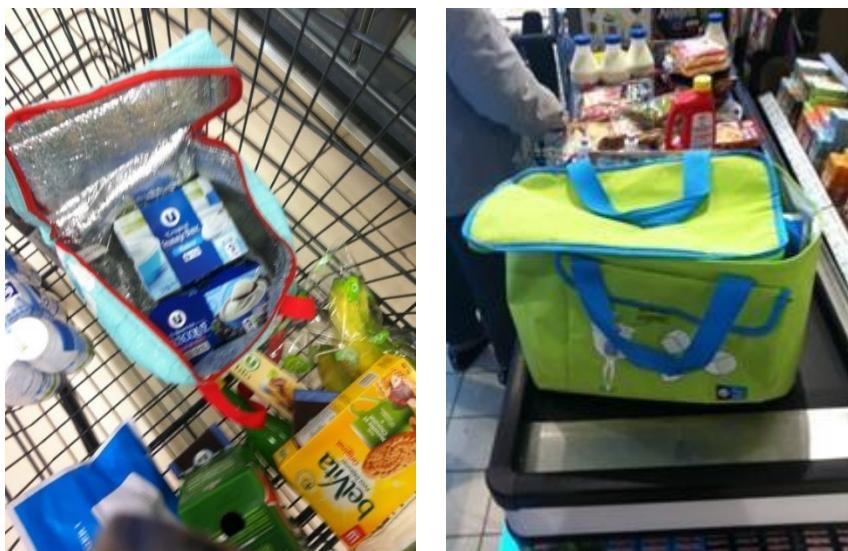
Int.: and you did not take it today?

Charles: no need, there was no ice, no frozen

Int.: it's just for your frozen food, and if you bought meat or ham or... Charles: no I do not put it in there, there is no need, for me there is no need, have you noticed how long it takes to go home? Even if it's hot, then in the car we put the air conditioning. In general, I park in the basement, it keeps the car cool.  
(Charles, 75 years, Elderly households, rural, France)

#### *Separating dry groceries from fresh products while shopping and packing them*

Some participants organised their groceries in the trolley during shopping, separating fresh products from dry goods. They also organised their groceries on the conveyor belt at the checkout to help in bag packing. Vincent (29 years, Young single men, rural) put dry products first on the conveyor belt in order to keep them together in the first grocery bag, and then fresh and frozen products to put them together in a second grocery bag. While shopping, Hélène (72 years, Elderly households, urban) put yogurts directly into a cooler bag that she did not zip during the shopping. She then put them back in the cooler bag once the cashier had scanned them. Sylviane (77 years, Elderly households, rural) put dry goods on the conveyor belt first, and then her cool bag, without removing the fresh products from it. The cashier removed these items one by one as she scanned them. During shopping Sylviane also separated non-food products (like detergent) from food products because she was afraid they might leak and contaminate the food.



**Figure 3.2.13: Separating groceries in different bags while shopping, left Hélène (and right Sylviane (France)**

#### *Transporting from store to home*

Most participants stored their purchases in their car boot while they drove home from shopping; only two put the bags on the passenger seat or on the floor: Yvette, 74 years, Elderly households, urban); and Etienne (30 years, Young single men, rural). Etienne's car boot was full of his fishing equipment (inflatable boat, fishing rods, baskets, etc.) so he put his bags on the floor on the passenger side and some items on top of his equipment in the boot.

Odile (65 years, Elderly households, rural) places articles in a box, then fresh products in a cooler bag and frozen products in another cooler bag. Heavy water bottles are at the front to be easily picked up (Figure 3.2.14 left). Aurélien (25 years, Young single men, rural) puts his only grocery bag in the boot and his milk packs next to it (Figure 3.2.14 right).



**Figure 3.2.14: Grocery transportation among French research participants (France)**

Mathilde (37 years, Young families, urban) put grocery bags in the boot (Figure 3.2.15 left). Bernard (b72 years, Elderly households, urban) put bags in the boot with beers aside (Figure 3.2.15 right).



**Figure 3.2.15: Grocery transportation among French research participants (France)**

Some car boot were cluttered and there was not much room for provisions. One examples was Amandine (27 years, Young families, rural) (Figure 3.2.16)



**Figure 3.2.16: Amandine needed room to store the stroller (France)**

Fabrice (24 years, Young single men, urban) did not have a big bag, he put it close to him on the floor of the passenger seat (Figure 3.2.17 left). Charles (75 years, Elderly households, rural) put the shopping bags below the rear seat of the car, because it would not be secure in the boot (Figure 3.2.17 right).



**Figure 3.2.17: Grocery transportation among French research participants (France)**

## Transportation in the UK

This section details how participants in the UK transported their food home from the shops. This includes the mode of transport used and time taken, and any challenges faced in the process. In general journey times were short and uneventful: 10 minutes or less in all but two cases. Very few participants felt they faced any difficulties in carrying their food home. However, this partly reflected how participants' shopping routines have evolved to avoid or minimise the likelihood of encountering practical difficulties, implying that potential challenges at least featured as a factor in how they went about shopping.

### Distance, time, means of transportation and temperature

The outdoor temperature during the UK shopping visits ranged from -2°C at the coldest to +22°C at the warmest. This reflects the fact that the main body of fieldwork was conducted between February and June, with an additional visit undertaken in August. When the weather was discussed on the shopping visits this was usually only in casual conversation: it was rarely mentioned as a major challenge faced in shopping, whether preventing access or raising concerns about keeping food cool in transit. The main exception to this was Kate Buckley whose initial shopping observation was postponed due to heavy snow near her home and rescheduled for the following week.

**Table 3.2.9: Overview of distance, time spent, means of transportation and outdoor temperature among the UK households**

Living area	Households	Study groups	Distance to food outlet (km)	Transport time (mins)	Means of transport	Outdoor temp. (°C)
Urban	Susan (78 years)	Elderly households	0.9	10	Walk	8
	Mary (70 years)		3.4	10	Car	3
	Archie (74 years)		5.6	20	Car	13
	Tricia (70 years)		<0.1	2	Walk	22
	Ryan (20 years)	Young single men	5.6	9	Car	10
	Josh (22 years)		2.2	10	Car	14
	Sahib (23 years)		3.7	10	Car (lift)	21
	Liam (28 years)		4.5	7	Car	17
	Daniel (25 years)		1.2	5	Taxi	15
	Lena (31 years)	Young families	3.3	8	Car	3
	Paul (34 years)		3.0	5	Car	-2
	Kate (30 years)		6.6	17	Car	8
	Alicia (23 years)		4.0	8	Car	13
Rural	Chloe (38 years)	Elderly households	1.7	4	Car	11
	Jean (72 years)		3.7	10	Car	10

We anticipated that rural participants might live further from their chosen food outlets than urban participants, but this was not the case. There was substantial variation

among urban participants, who lived between 70m and 6.6km (average: 3.4km) from the food outlets they visited, while the distance for the rural participants ranged from 1.7km to 3.7km (average: 2.7km). The journey time home from the shops averaged 9 minutes in the urban areas and 7 minutes in the rural locations. The two journeys that took the longest were both urban participants, with Kate and Archie's journeys taking 17 and 20 minutes, respectively. This partly reflected the distances they travelled but also the fact that both were delayed by traffic on their way home.

There are four important caveats here. First, for the reasons outlined in Part 1 (methodology), rural recruitment proved difficult in the UK and so only two rural households were included in the sample. Second, the recruited households classified as rural were by no means remote: they lived in developed locations that were well connected to larger urban centres. Third, a number of the urban residents lived in suburbs on the outskirts of the city and most had access to their own independent transport. And fourth, as a result, urban participants typically had a choice of several different supermarkets and they did not necessarily frequent their nearest outlet for regular shopping. In other words, the living circumstances of the urban (especially suburban) and rural research participants were not starkly different from each other.

Most participants (11) drove to and from the food outlet(s) for the observed shopping trip. Of these, all used their own vehicle, except for Jean who was driven by the researcher but would normally go in her own car. However, for smaller shopping trips many of the same participants would visit local shops on foot, often to 'top up' on short-life products such as bread and milk. Six participants (Ryan, Josh, Liam, Laura, Kate and Mary) explicitly mentioned walking to their local branch of Co-op Food for this purpose.<sup>29</sup>

For the observed trip, four participants went to the shops on foot, although two of these returned home by other means. Susan and Tricia walked both to and from the local shops. They tend to go shopping daily and only buy food in small quantities for their immediate needs, making it manageable to carry. These daily trips are supplemented by less frequent trips to larger supermarkets. Susan's husband Peter goes once a week, on the bus, to stock up on bulkier items; Tricia gets a lift from a friend to a larger supermarket for the same purpose, but on a more ad hoc basis. Sahib and Daniel both walked to the shops but then came home by other means, reflecting the fact that they were doing their regular 'big shop', stocking up on food for a longer period (7-10 days) than Tricia or Susan. Sahib walked to the first supermarket but then got a lift from his flat mate to a second store, and subsequently got a lift home. Daniel walked to the supermarket and took a taxi home. It is notable that none of the participants who

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<sup>29</sup> In addition, Jean and Alicia referred to visiting their local (within walking distance) Co-op Food branch to 'top up' but it was unclear whether they would walk or drive when they do so. Similarly, Paul or his wife visit a nearby petrol station and corner shop "if we were out of milk", but again it was unclear if they would walk or drive.

walked had their own car. Two were on low income (Daniel and Tricia) and two were in elderly households (Susan and Tricia).

All 15 UK participants returned straight home after doing their shopping. However, as we saw in Chapter 3.1 (shopping), three participants visited multiple shops: Susan, Josh and Sahib. This meant that, although their journey times home from the final store they visited were short (each taking 10 minutes), some of the food that they bought in the first store had been ‘out’ for significantly longer. For example, the chicken that Josh bought first in the independent butcher’s shop remained in his car while we visited the supermarket and then returned home, a total time of approximately 30 minutes. Similarly, the items Sahib bought in the first supermarket we visited were then in his flat mate’s car for around 45 minutes before we made it home, having been to another supermarket on the way back.

### Packing and carrying the shopping

Most participants brought their own shopping bags from home. Others bought new carrier bags at the shop: Sahib (23 years, Young single men, urban); Jean (72 years, Elderly households, rural); Chloe (38 years, rural) Laura(31 years, urban) (both Young families) and some used a combination of new and existing bags: Tricia (70 years, Elderly households, urban); Paul, 34 years, Young families, urban); Josh, (22 years, urban); and Ryan(20 years, urban) (both Young single men). Only one Mary (70 years, Elderly households urban) used an insulated cool bag for chilled items. The number of bags used by participants varied from 1 to 5 (average: 2.5). There was no clear pattern to this, other than the simple observation that those buying more items tended to need more bags. Nine participants used 1-2 bags. This included the two who walked home from shopping – Susan used one bag; Tricia used two – but it was also true of more than half (7 out of 13) of the participants who drove or were driven home (Table 3.15).

**Table 3.2.10: Number of bags used, by mode of transport**

Number of shopping bags	Driving (including lifts and taxi)	Walking
1-2	7	2
3-4	5	0
5	1	0
N	13	2

When driving home, including Daniel (25 years, Young single men, urban) who took a taxi, shopping bags were in most cases placed in the boot of the car, along with any loose items, for example a large pack of nappies and a sack of dog food (Laura), and drinks bottles: Kate (30 year, Young families, urban); and Liam (28 years, Young single

men, urban). The exceptions to this were Josh and Paul, both of whom loaded their shopping onto the back seat. Paul explained that this was because we were travelling in his work van, with “chemicals and stuff in the back”, and so he wanted to keep his food purchases separate from these.



**Figure 3.2.18: Shopping packed in the boot of the car (left: Ryan; below: Kate) and the back seat (right: Paul) (UK)**

### Practical challenges and strategies for transporting food

In general, UK research participants reported very few problems in relation to transporting their food home. Most were satisfied with the availability and location of retail outlets, means of access and so on, and nobody expressed strong concerns that their chilled or frozen food might be out of cold storage for too long. However, this general sense of satisfaction is partly the result of how their shopping routines have evolved to avoid or minimise potential challenges.

First, practical issues were most apparent for participants without a car. As seen, Tricia (70 years, Elderly households, urban) buys food daily from her local Co-op Food, which is less than 2 minutes' walk away. Less frequently she gets a lift to a larger discount store to stock up on heavier items which she feels she wouldn't be able to carry on foot. Tricia was clear that it would be impractical to visit the larger store and do a 'big shop' on her own, since she would find it difficult to carry the food home. While this practical challenge was a decisive factor in how she shops, it also brought advantages: "I'll go to the Co-op and if I'm quite honest I prefer that. I prefer the freshness of getting stuff that way."

Peter and Susan Dunning (78 and 80 years, Elderly households, urban) used to have a car, but no longer do. As a result, they now buy food on a daily basis in small quantities from the shops within walking distance. Peter also goes by bus to buy bulkier items at a discount supermarket:

Because we don't drive any more, we tend to do our shopping in small loads ... You know, handfuls rather than carloads full. So we tend to have shopping as and when we need it on a daily basis ... Except Saturday mornings I do Lidl because it's on the bus route. I get the bus through to the bottom, I can get off by Lidl, I can get on straight back again. So two big bags, no effort.  
(Peter, 80 years, Elderly households, urban, UK)

Peter and Susan's approach to shopping was, on the one hand, a matter of necessity due to the lack of a car. On the other hand, just like Tricia, they did not see this as a problem. Peter saw his daily trips to the local shops as a good source of exercise, while the convenience of the bus route to and from the supermarket made his Saturday trips feel like "no effort".

Conversely, Josh uses his car because he feels it would be challenging to carry his shopping on foot. He has a high-protein diet as part of his fitness programme and likes to buy his food in bulk, for example the chicken he routinely picks up from an independent butcher's shop on the other side of the city centre:

There's another butcher in town as well ... I know a lot of students go there because they can't— they don't drive or whatever. So, they walk into town, but it's actually hell, walking back with possibly ten kilos of stuff in bags, on your hands. (Josh, 22 years, Young single men, urban, UK)

Second, another potential challenge for those driving to and from the shops was getting caught in traffic. This happened on the way home from two of our shopping observations – affecting Kate (30 year, Young families, urban) and Archie (74 years, Elderly households, urban) – which incidentally took place at the same supermarket, close to the city centre and major transport routes.<sup>30</sup> For most participants traffic was not mentioned (or witnessed) as a major problem for food shopping. Again, however, for at least some participants this was because their routine shopping patterns included measures to avoid traffic, shaped by previous experience. Archie, for instance, explained that he would often go shopping later in the evening, after 9pm, specifically to avoid the busyness of the early evening. For similar reasons, Alicia tends to go shopping early on a Saturday morning:

We did try going every day and just getting what we needed. But it was just like, oh, too much hard work because obviously I finish work at four most of the time so then by the time I'm ready to go out it's work traffic so you just

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<sup>30</sup> Although these journeys home took significantly longer than for other participants (recall Table 3.14), neither of them lasted longer than 20 minutes.

get stuck in the traffic. So, I usually try and do my big shop at a weekend like Saturday morning first thing because we're both usually up quite early. We usually just try and get it done first thing in a morning when it's still a bit quiet.

(Alicia, 23 years, Young families, urban, UK)

Others, including Mary (70 years, Elderly households, urban) and Chloe (38 years, Young families, rural) avoided going to certain supermarkets because access roads were felt to be busier.

Third, while getting food home and refrigerated quickly was not raised as a key challenge, all participants went directly home from the shops (and most said they would always do this), with some specifically linking this to the temperature food was kept at. Ryan (was most explicit about this:

Int.: So would you always go straight home after the supermarket?

Ryan: Yes ... I like to get the stuff back, get it in the fridge. Usually come out just to do the shop, or I'll do the shop at the end of my day out.

(Ryan, 20 years, Young single men, urban, UK)

Finally, as seen earlier (cf. chapter 3.1 on Shopping), some of the young families in the sample had faced new challenges in going shopping since their children had been born. However, these mostly related to the scheduling of shopping trips and/or the practicalities of doing shopping with children present. Having children did not seemingly present new difficulties with respect to transporting food.

## Transportation in Norway

The density of food stores is very high in Norway compared to the rest of Europe. There are 464 food stores per million people in Norway. In comparison, there are 196 food stores in France per million people, 137 in Portugal and 97 in the UK (Norwegian Ministry of Agriculture and Food, 2011). However, food store density varies between urban and rural areas in Norway. Thus, among the Norwegian participants the urban/rural dimension affected transportation of food. We anticipated that longer distances between home and food outlet among rural participants would produce some other considerations or challenges than what their urban counterparts faced. However, family composition seemed to play a larger part in transportation than living area.

### Distance, time, means of transportation and temperature

**Table 3.2.11: Overview of distance, time spent, means of transportation and outdoor temperature among the Norwegian households**

Living area	Research participants		Distance to food outlet (km)	Transport time (mins)	Means of transport	Outdoor temp. (°C)
Urban	Bente (70 years)	Elderly households	0.2	3	Walk	-4
	Kari (71 years)		0.5	5	Walk	25
	Anna (31 years)	Young families	0.3	5	Walk	-7
	Camilla (35 years)		0.2	3	Walk w/stroller	-3
	Hanne (31 years)		0.2	5	Walk w/stroller	-3
	Fredrik (23 years)	Young single men	0.3	5	Walk	-4
	Georg (28 years)		0.4	5	Walk	-4
	Jon (28 years)		0.2	3-4	Walk	25
	Roger (24 years)		0.2	3-4	Walk	21
	Petter (29 years)		3.5	10	Bicycle	28
Rural	Emma (33 years)	Young families	6.0	10	Car	-3
	Lena (37 years)		1.0	5	Car	14
	Inger (70 years)	Elderly households	1.0	2	Car	14
	Nils (74 years)		4.0	8-9	Car	23
	Oda & Ove (both 72 years)		1.2	5	Car	25

The registered outdoor temperature during these interviews spanned from -7 at the coldest and up until 28 degrees at the warmest. This reflects that the interviews started in February, and ended in June 2018. The temperature was registered by using weather apps on the researchers' phones.

The urban participants lived between 150 and 450 metres from their local food outlets, while the distance for the rural participants varied between 1 and 6km. The average distance to food outlets varies greatly between the urban and the rural participants.

For the urban participants, the average distance rounded up is 264 metres. For the rural participants, the average distance is almost ten times as much, rounded up to about 2.8km. However, the time spent on transporting food does not differ as much. The urban participants spent between three and five minutes transporting food, resulting in an average of just over four minutes. The rural participants spent between two and ten minutes transporting food, resulting in an average of just over six and a half minutes. The distance and time spent on transporting food is partly estimated by the participants, and partly estimated using digital maps.

The Norwegian sample is split along the urban/rural dimension when it comes to means of transportation, or vehicle. All of the urban participants walked between the store and home, while the rural participants used some sort of vehicle. Most of them travelled by car, but one also used a bike.



**Figure 3.2.19: Pictures show different transportation means: top left shows rural-living Emma and her car, top right is rural-living Petter's bike. Down to the left is urban-living Camilla walking with baby stroller, and down to the right is Anna (Norway)**

However, this separation based on transportation means is not clear-cut. Several participants said that they would adjust their transportation method to what and how much they are buying. For instance, rural-living Oda and Ove said they sometimes walk to the store rather than driving, depending on how much they are planning to buy. During accompanied shopping, they were also buying food to bring to their cabin, which they were travelling to the following weekend, and some food for when they got back home. Rural-living Petter was the only participant riding a bicycle on the accompanied shopping, with a back pack to carry the groceries in. He says he sometimes drives to the store, depending on what kind of food he needs.

It happens (...) especially if I go shopping right after work, I'll just take a backpack to put the food in. But sometimes I discover that I need something in the evening and then I'll typically use the car (...) if I'm buying something very heavy or large

(Petter, 29 years, Young single men, rural, Norway)

Similarly, rural-living Lena, said that she may walk to the store rather than driving if they need a few, light-weight products: "Yes, sometimes I shop while I'm walking with the stroller but then it's more ehm if we're lacking coffee or zalo [detergent] and cheese."

Lena's walks represent a supplementary kind of shopping. The car is the main transportation means, while the walks can be seen as something extraordinary, used for smaller trips to top-up. However, for the urban-living, Camilla, the opposite is the case. They have a car, but parking is an issue in their surrounding areas, so it is only used when the family drives to the community-supported agriculture (CSA) farm to pick up food. If she needs stores with more selection or different kinds of stores than the outlet closest to her, Camilla will just walk to one of the two shopping centres, which are located about five minutes' walk from her home. As Camilla has so many stores in walking distance, the family's car represents a potential obstacle in their everyday shopping routine, which is made clear by Camilla saying "but we would have to park anyway" when she is asked if they ever use the car to buy food, apart from going to the CSA.

### Packing and carrying the shopping

Table 3.2.12 gives an overview of the urban and rural research participants and number of carrying devices they transported home from the store. As mentioned above, all the urban participants walked and all rural participants drove their car with the exception of Petter (Young single men), who usually bicycled. This suggests the number of carrying devices is associated with how the research participants transported food from the shop to their homes.

**Table 3.2.12: Number of carrying devices among the urban and rural households**

Number of shopping bags	Urban	Rural
1-2	8	1
3-4	1	5
N	9	6

Apart from Kari, who had three, all of the walking urban participants had one or two bags. In comparison, four out of the five rural participants who drove a car to the store had four bags. Oda and Ove had only three. Petter only had one bag and travelled by bike. The rural participants lived further away from the food outlets than the urban ones, which may lead to them going shopping less often and buying more at a time. Another factor is that since they drive a car to the store, it is easier to transport more

goods on each trip, than if they were walking the same distance carrying all the goods by hand.

The participants mostly used either reusable carrier bags in nylon or other soft fabrics, or the plastic carrier bags provided by the store, and combinations of these. Two also used backpacks (Kari and Petter), and the some of the young families also used the baby stroller to place the bags in. For an overview of what types of carrying devices the three study groups used, see Table 3.2.13. Jon and Georg used plastic carrier bags from the store when we observed them, but said that they would normally bring a reusable bag. Jon had left his reusable bag at work and said this happens from time to time. Georg, on the other hand, had brought his bag but forgot his wallet. While he went to retrieve the wallet from home, the shop assistant packed his products in a new plastic carrier bag.

**Table 3.2.13: Type and number of carrying device among Norwegian households**

Study group	Households	Type of carrier device
Young families	Anna (31 years)	Plastic bag (brought from home)
	Camilla (35 years)	Reusable bag, placed in baby stroller
	Emma (33 years)	Reusable carrier bags + plastic bags from store
	Hanne (31 years)	Plastic carrier bags from store
	Lena (37 years)	Plastic carrier bags from store
Elderly	Bente (70 years)	Reusable carrier bags
	Inger (70 years)	Reusable bags + plastic bag from store
	Kari (71 years)	Reusable bags + backpack
	Nils (74 years)	Plastic carrier bags from store
	Oda & Ove (both 72 years)	Reusable bags + thin plastic bag from store
Young single men	Fredrik (23 years)	Plastic carrier bags from store
	Georg (28 years)	Plastic carrier bags from store
	Jon (28 years)	Plastic carrier bags from store
	Petter (29 years)	Backpack
	Roger (24 years)	Plastic carrier bags from store

Out of the 15 participants, ten used the plastic bags provided by the store to transport food. Of those ten, two used the plastic bags in combination with reusable carrier bags they brought from home. One participant, Anna, also used a plastic bag from a store, but she brought it from home. The store brand on the bag did not match the store she went shopping in.

**Table 3.2.14: Carrying devices' contact with other surfaces during transportation**

Living area	Research participants		Contact with surfaces during transportation	Where is it placed at home?
Urban	Bente (70 years)	Elderly households	Store floor	Kitchen counter
	Kari (71 years)		None	Kitchen counter
	Anna (31 years)	Young families	None	Entrance floor
	Camilla (35 years)		Baby sleeping bag in stroller	Kitchen table
	Hanne (31 years)		None	Entrance floor
	Fredrik (23 years)	Young single men	None	Kitchen floor
	Georg (28 years)		None	Entrance floor
	Jon (28 years)		Not recorded	
	Roger (24 years)		Floor of lift in home building	Kitchen counter
Rural	Petter (29 years)		Not recorded	
	Emma (33 years)	Young families	Shopping trolley, car boot	Heated entrance floor, kitchen chair
	Lena (37 years)		Shopping trolley, car boot	Living room floor, kitchen table
	Inger (70 years)	Elderly households	Shopping trolley, car boot, ground outside	Living room floor, kitchen table Pantry floor
	Nils (74 years)		Shopping trolley, car boot, ground outside	Entrance floor, some placed on kitchen counter
	Oda & Ove (both 72 years)		Car boot	Kitchen counter

Table 3.2.14 shows whether the carrying devices came into contact with any surfaces during transportation and where they are placed in the participants' home on arrival. Almost half of the participants, six out of 13 (two participants are missing data), placed the bags somewhere during transport and then placed them in the kitchen areas where they cook or eat, such as kitchen table or kitchen counter. The contact points of the carrying devices vary. Some were placed in the boot of the participant's car during transport, while others were temporarily put down on the floor in the store or the floor of a lift. The three pictures below show how Roger's shopping bag first rested on the bench in the store while he packed his groceries (Figure 3.2.20). Then it was placed on the floor in the lift in his building and finally it was placed on the kitchen counter inside his apartment while he put away the newly bought food (Figure 3.2.21).



**Figure 3.2.20: Left: Bag resting on bench while packing groceries. Right: Bag placed on the floor (Norway)**



**Figure 3.2.21: Bag placed on the countertop in the kitchen (Norway)**

The remaining seven participants (a slight majority) either carried the items without letting them touch anything else before being placed on a kitchen counter or table, or they let the items touch something but placed them on the floor once inside the kitchen. Emma explicitly stated that she avoids placing the bags on the kitchen counter, and therefore she puts them on the kitchen chairs. Carrying many shopping bags often meant more contact with surfaces, which indeed suggests the practical challenge of carrying bags in both hands, the need for having a hand free and the need for a rest. The rural participants driving a car to the store were more exposed, or vulnerable, in this sense, as their bags were placed inside the car, and thus automatically had one contact point before reaching home. Furthermore, the overview shows that the elderly participants were more likely to place carrying devices on their kitchen counter or kitchen table, regardless of whether or not they had any contact with surfaces during transportation. This could be that the elderly participants were more prone to place the bags in a comfortable height for further storing of the food, to avoid bending down, as they would have to do if placing the bags on the floor.

### Practical challenges and strategies for transporting food

The majority of participants did not explicitly express any food safety challenges with transporting food, regardless of living in an urban or rural area. When asked whether they struggle with transportation due to, for instance, weight of the goods or the physical environment such as roads or stairs, most participants said they had no problem transporting food home from the store. One example is Fredrik, a young single

man living in an urban area. He shares an apartment with a friend, and the apartment is located on the fourth floor. There is no lift in the building.

It's strange, you get used to the stairs. (...) I usually don't buy so much stuff when it's only for me, kinda. Only one bag. (...) It has no influence. If I want to buy the food then...then I just need to find out how to get it there [home]. But I have never experienced it being a problem. I have actually never experienced that.

(Fredrik, 23 years, Young single men, urban, Norway)

Similarly, Bente (70 years, Elderly households, urban) claimed to have no trouble with transporting food products from the store to her house, explaining that she often goes shopping with her husband so they can carry shopping between them. However, during observations of the participants shopping, it was clear that there were some challenges with keeping the shopping bags away from other surfaces that could bring dirt and bacteria into the kitchen, as the discussion above shows. Bente was shopping alone on our visit, and did not manage to keep the bags off the store floor. For instance, Bente placed the tote bags on the store floor while using both her hands to zip up her jacket. The bags were later placed on the kitchen counter when she arrived home. Likewise, Roger (24 years, Young single men, urban) placed his bag on the floor of the lift in his building and then placed the bag on the kitchen counter in his home. Moreover, Kari (71 years, Elderly households, urban) bought more food than originally planned because she was tempted by reduced priced products, and thus carried two heavy tote bags and one backpack, in warm weather and uphill. Although she did not explicitly say she had problems with this, her breath got heavy while walking home, suggesting it was straining.



**Figure 3.2.22: Picture of Kari with two tote bags and a backpack with groceries (Norway)**

The one study group that did explicitly report challenges with transporting food home were the mothers with infants or young children. For example, Lena, said:

When I was home with her [baby Line], I got so tired from carrying everything up all the stairs and everything, I had her and groceries and everything. So Lars [fiancé] did the shopping. (...) He manages to go shopping with her. I couldn't carry that much. It's heavy.

(Lena, 37 years, Young families, rural, Norway)

Lena's solution was to let her fiancé, Lars (age), do the shopping while she was on maternity leave so she would not have to carry bags with food as well as her baby and equipment for her. Another solution was to sign up for a meal box scheme:

So we ordered these "Godt levert" [meal box scheme]. What a luxury! To have good products straight home and everything, and then they are packed in these cooling packages and everything. Perfect products. Completely fresh stuff from chicken to tit and tat, it was like locally produced (...).

(Lena, 37 years, Young families, rural, Norway)

However, Lena had to stop the meal box scheme because she thought it got too expensive. Hanne (Young families) had similar experiences:

Then I'll put like milk, if I have bought like two kilo potatoes or, yes, the heavy things underneath there [bottom of the stroller], to make it easier for me to push the stroller. (...) But it gets very heavy to kinda drag everything home. Like, if you're getting different, like milk and eggs and diapers and, yes potatoes and meat and apples and oranges, and right, it gets quite heavy. (...) So it has been practical to shop at Kolonial.no [online food store].

(Hanne, 31 years, Young families, urban, Norway)

Both Lena and Hanne say that shopping with baby and stroller is challenging because it is heavy and necessitates them to take care of the baby at the same time. While Lena delegated the shopping responsibility to her fiancé while she was on maternity leave, Hanne, who is on maternity leave now goes shopping as part of a daily stroll with her baby Hedvig (age), to avoid bulk buying and carrying heavy bags.

Emma (33 years, Young families, rural), brought up another challenge with combining transportation of food with children and family life, which is related to temperature. Emma explained how she could previously do the shopping first for fresh food, and then go to pick up children at school and kindergarten. However, she was stressed about having had fresh food waiting in the car while picking up her kids, so she adopted a new strategy. She has begun to go on single-purpose shopping trips for certain goods rather than to combine the shopping of fresh food with picking up children:

Back then I could buy food at Meny [large chain of stores], and drive first to SFO [after school programme], and then that would take some time, and then drive up to the kindergarten, then I'm all like "we have to hurry now because we have goods in the car", and then I start to think about fish and stuff. But

I think I would avoid those things. I'd rather do like I did yesterday, that I go to only buy fish.

(Emma, 33 years, Young families, rural, Norway)

Although many of the Norwegian sample seemed not to have reflected much around the physical aspects of transporting food, several reflected more around temperature and food transport. However, this varied. While young urban man Fredrik, for instance, reported not to have any concerns with food and temperature, saying "No, it simply doesn't occur to me. But it could just be me being, like, inattentive" (Fredrik, 24, Young single men, urban, Norway), others displayed strategies to avoid exposing food to sustained periods of time at warm temperatures. One example is Emma who avoided transporting cold or frozen food if she had other errands to run after shopping: "Of course, I never buy ice if - like ice cream, can't buy that. Then I have to know I'm going straight home". Others mentioned the same:

Ehm, the only thing I think about is how much time I've got. If I'm meeting someone after for instance. Or if I have bought something frozen I go straight home.

(Georg, 28 years, Young single men, urban, Norway)

Oda: It has never, I don't think we ever have come home and something that wasn't supposed to thaw has started thawing.

Ove: But when we are out shopping other places, buying other things and re doing something, we don't buy food until we come home, so it's not left in the car

Oda: Yes, the food, food is the last thing we do.

(Oda, 72 years, Elderly households, rural, Norway)

Another strategy was various measures to keep the chilled or frozen products cool for as long as possible during transport:

We put all the frozen goods together so they touch, and then we have, if we remember this [cooling] bag, but it works to put them together

(Ove, 72 years, Elderly households, rural, Norway)

Ehm, and these frozen goods, I always put in a bag and then I wrap that bag into the blanket. Because then it keeps the cold much better than if you put it in the car, for example. The air-conditioning is broken now so there's no help from that either

(Nils, 74, Elderly households, rural, Norway)



**Figure 3.2.23: Nils has wrapped the bags with food laying in his car trunk, in a leopard-patterned woollen blanket, in order to maintain the cold temperature while driving home (Norway)**

These strategies were used both for transporting food over longer distances, such as after shopping for food in Sweden, and when travelling to or from cabins, and for transporting food home from the local store. They represent some strategies to avoid spoiling the food during transportation, although the participants' focus may have been on preserving quality in terms of taste and texture (for instance preventing ice cream from melting), rather than being specifically conscious measures to ensure food safety.

## Summary – transportation routines in five

Most of the transportation during the interviews was short. In Portugal, elderly households took longer travels between the supermarket and home (three particular households travelled 15-34 minutes). For the others, time was less than 12 minutes. In Romania, transportation lasted 5 to 20 minutes for urban participants, and 10 to 30 minutes for rural. Although the urban participants have the closest food outlet between 150 and 500 metres from the place where they live, many of them, including Maria Mirabela (34 years, Young families, urban); Zoltan (35 years, urban); Florinel, (31 years, urban) (both Young single men); and Fanel (69 years, Elderly households, urban) prefer to go shopping in a different food outlet due to the larger variety of food. Participants that lived in rural areas have the closest food shops between 300m and 1.5km from their homes. However, as young families from rural areas preferred to buy food by going to the closest city, the distance ranges between 10km and 45km, the shopping distance being less than one hour by car. In the UK, transportation from supermarket to home took two to 20 minutes for urban participants, four to 10 minutes for rural ones. The journey time home from the shops averaged nine minutes in the urban areas and seven minutes in the rural locations. The two journeys that took the longest were both urban participants, with Kate (30 year, Young families, urban) and Archie's (74 years, Elderly households, urban) journeys taking 17 and 20 minutes, respectively. This partly reflected the distances they travelled but also the fact that both were delayed by traffic on their way home. In France, participants went to relatively close shops. Even participants living in a rural area drove only seven to 10 minutes to go shopping. All of them came directly back home after shopping at the supermarket. In Norway, the urban participants lived between 150 and 450 metres from their local food outlets, while the distance for the urban participants varied between 1 and 6km. It took less than 10 minutes for all the participants.

### Means of transport

More than half of the research participants used their car for shopping, except in Norway, where the shop density is higher and the majority walked. Depending on the country, the study group (Young single men, Young families, Elderly households) and the location (urban/rural), participants mainly drove by car or walked to go shopping. In Portugal, all young families drove by car and half of the young single men and half of the elderly households drove. The other half walked to the shops. In Romania, four out of nine urban participants went shopping by car, and four out of six rural participants went shopping by car. It was interesting to notice that most of the Romanian elderly households in rural areas said that they go to the closest city to buy food once per month when they receive their pension. They also rely on relatives to buy them food from the city when coming into the village. In the UK, most participants (11) drove to and from the food outlet(s) for the observed shopping trip. However, for smaller shopping trips many of the same participants would visit local shops on foot, often to 'top up' on short-life products such as bread and milk. For the observed trip, four participants went to the shops on foot, although two of these returned home by other means. In France, most of the participants went shopping by car, even the urban ones,

except one urban young mother who walked with her child in a stroller because she had no other choice, not owning a car. In Norway, all the urban participants walked to the store and back, and all the rural participants used some sort of vehicle, such as a car or bike. However, this separation is not clear-cut. Several participants said that their means of transport would vary depending on what they were buying.

### Bags and cooler bags

Very few research participants used cooler bags to transport fresh products in all observed countries. In Portugal, most households used reusable bags when they went shopping (11) and only Sónia (42 years, Young families, rural) preferred to buy plastic bags at the supermarket because she could use them for the waste bin. Seven households used one shopping bag (three young couples and four elderly households) and six used more than one bag (one single man, three young couples and three elderly households). Only one participant, Andreia (33 years, Young families, urban) had a cooler bag that she uses for frozen products all year round. Another, Sílvia (33 years, Young families, rural) only uses these bags in the summer to keep meat, chilled and frozen foods cool. Only a few families felt it was important to maintain the cold chain during the transportation phase and often only in the summer: Sílvia and Filipa (36 years, Young families, urban) and. In Romania, during the interviews, six participants out of nine from urban areas used plastic carrier bags bought that day from the store. Only two participants from rural areas used reusable bags and those were from elderly households: Damian (73 years, rural) and Linalia (73 years, rural). The number of carrying devices ranged between one and three and is not always associated with the mode of transportation. No cooler bag was used during these interviews. In the UK, the number of bags used by participants varied from one to five (average: 2.5). Nine participants used one or two bags. Only one, Mary (70 years, Elderly households, urban) used an insulated cool bag for chilled items. Only three French participants out of 15 did not bring any reusable bags to the supermarket. No French young single males brought a cooler bag for shopping and four mothers out of five did not use any cooler bag. Three French participants bought frozen products and used a regular shopping bag to transport them: Vincent (29 years, rural); Fabrice (24 years, urban) (both (Young single men); and Mylène (25 years, Young families, urban). They did not feel that it was absolutely necessary to have a cooler bag but instead had strategies to reduce the time frozen products were kept at ambient temperature, for example by picking them up at the end of their shopping trip or by piling them all together to keep them cold. Only one, Elodie (31 years, Young families, rural) used two cooler bags, one for fresh products, and one for frozen products. On the contrary, all the French elderly participants had cooler bags in their car. Four of them used them for storing fresh products. Even one (Odile, 65 years, Elderly household, rural) brought an icepack in her cooler bag.

Out of the 15 Norwegian participants, ten used the plastic bags provided by the store to transport food. Of those ten, two used the plastic bags in combination with reusable carrier bags they brought from home. In Portugal, some participants stored the chicken

separately from other foods during the transportation phase: Sílvia; Augusto (70 years, Elderly household, rural); and Vanessa (29, Young families, rural, Portugal). It was the case also in Romania for Fanel (69 years, Elderly households, urban) and Sorina (32 years, Young families, rural). In Portugal, most participants put the shopping bags on their kitchen counters when they arrived home and then unpacked the food. Ten Romanian participants put the bags on the table or the counter top when they arrived at home. The majority of the Norwegian participants either carried items without letting them touch anything else before being placed on kitchen counter or table, or they let the items touch something but placed them on the floor once inside the kitchen.

### Challenges and strategies for transporting food

Research participants rarely reported challenges in food transportation. The Portuguese participants facing the most challenges were those in elderly households and young families with children. Elderly participants had some problems with mobility and walking long distances: Emília (89 years, urban) and Josefina (81 years, urban) and they used some strategies to help them. Young families faced different challenges. They had to carry several bags and also take care of children at the same time. Most Romanian participants did not express any challenges with transporting food, regardless of living in an urban or rural area. In general, UK research participants reported very few problems in relation to transporting their food home. Most were satisfied with the availability and location of retail outlets, means of access and so on, and nobody expressed strong concerns that their chilled or frozen food might be out of cold storage for too long. However, this general sense of satisfaction is partly the result of how their shopping routines have evolved to avoid or minimize potential challenges. French participants only evoked challenges while transporting heavy items like bottles of milk or water (generally sold in a pack of 6x1.5L bottles). While most used their cars, they sought help to carry these items from car to home, typically from a male partner. Only Mylène (25 years, Young families, urban) adapted her shopping according to what she can carry in her son's stroller. The majority of Norwegian participants did not express any food safety challenges with transporting food, regardless of living in an urban or rural area. When asked whether they struggle with transportation due to, for instance, weight of the goods or the physical environment such as roads or stairs, most participants said they had no problem transporting food home from the store. However, the one study group that did explicitly state challenges with transporting food home were the mothers with infants or young children. Although the majority of the Norwegian sample seemed to have no trouble with the physical environment when transporting food, several seemed to reflect more on issues around temperature and food transport, however this varied between them.

## Chapter 3.3: Storage

This chapter describe storage priorities and fridge temperature in five countries. The chapter gives an overview of storage items (fridge, freezer, pantries, cupboards, cooling cupboards, cellars) in the households, how these were managed and where different category of food items were placed. The description of storage will be analysed in more detail in the course of the project. The chapter starts by describing the unpacking routines when returning home from grocery shopping observed among households in the 5 countries.

## Storage in Portugal

### Unpacking food: priorities

In general, the unpacking process in young family households with children was very slow. When participants arrived home, they usually had other tasks to do, namely looking after children, pets, or themselves. Thus, storage was not an immediate priority. Once arrived home, Filipa (36 years, Young families, urban) prepared some barley to drink and then changed the dog's diaper on the kitchen floor (at the time the dog had a urinary infection). After 15 minutes, the food still remained on the kitchen counter and not inside the fridge, e.g. tomatoes, salad. Another example was Sónia (42 years, Young families, rural) who started cleaning and chatting away with the research team, forgetting about storing food in the fridge, when arriving home. Then, when the cleaning tasks were over, she looked at the shopping bag, remembered all about it and started storing food in the fridge and cupboards.

Arriving home from grocery shopping seemed to follow a different pattern among the young single men. Carlos (24 years, urban) did not prioritize cleaning and hygiene during the food preparation process, but when he arrived home, he put the chicken into the fridge even when he intended to cook it straight away. Somehow, storing chicken in a cold temperature immediately after arriving home was something that Carlos was concerned about, demonstrating that participants may have different priorities regarding food safety, and they prioritize according to what they perceive to be appropriate standards of practice. On the contrary, Bernardo (19 years, Young single men, urban), particularly concerned with hands washing while preparing chicken did not store the food when arrived home, because, he explained, only bought "things to cook immediately".

Regarding the elderly households, there were two participants, Augusto (70 years, rural) and Celeste (70 years, urban) whose first action arriving home was to take off his shoes and then storing food. While in some countries (e.g. Italy, Denmark, Germany, Romania) taking the shoes off once you arrive home is a normal practice, in Portugal this is not considered a normalized practice, and some families may do it, while others do not.

Overall, across the 15 households, unpacking food and storing it was not a big priority, having to juggle several other tasks that got on the way (e.g. cleaning, looking after pets and children, chatting, eating a snack or having a drink).

### *Unpacking order*

Most participants put the shopping bags on the kitchen counter when they arrived home and several showed a plurality of ways of organizing food in the fridge, even when they did not seem to have a particular order and organization for food storage (Figure 3.3.1). This was a common pattern across many households, not being specific to a particular target group. Marta (35 years, Young families, urban) mentioned not having a specific order for food storage. During our visits, she stored first the detergent, then

the fruits in a container on the kitchen bench and finally the vegetables on the bottom shelf of the fridge. She stored the chicken in the first shelf of the fridge.

Int.: Is it the first thing that you store or not [talking about detergents]?

Marta: I don't have any specific order.

(Marta, 35 years, Young families, urban, Portugal)

Odete (65 years, Elderly household, urban) also did not show to have a particular order for unpacking. First, she took the carrots off the bag, then the spices and the tomatoes. The fresh ingredients, including the chicken, stayed on the kitchen counter as they were going to be cooked.

Andreia (33 years, urban) and Sílvia (33 years, rural) (both Young families) started unpacking dry foods (e.g. bread, rice, pasta) before the chilled ones. Manel (73 years, Elderly household, urban) was one of the few participants who first started storing chilled food (e.g. vegetables and yogurts) instead of prioritizing the storage of dried foods.



**Figure 3.3.1: Putting the shopping bag on the kitchen counter when arriving home was common in the Portuguese households**

### Storage locations

We identified different storage locations across households. The most important were: the fridge, the freezer, cupboards, pantries, kitchen drawers or sometimes the kitchen bench to keep fruits (e.g. Marta) (Table 3.3.1). Eight households had a pantry where they stored some food. The ones, that did not have a separate room, stored it in kitchen cupboards or drawers. Marta was the only one who had two freezers.

**Table 3.3.1: Storage locations among Portuguese households**

Research group	Participant	Fridge	Freezer	Pantry	Chest Freezer
Young single men	Carlos (24 years)	1	1	0	0
	Bernardo (19 years)	1	1	1	0
	André (30 years)	1	1	1	0
Young families	Marta (35 years)	1	1	1	1
	Vanessa (29 years)	1	1	0	0
	Sónia (42 years)	1	1	0	0
	Andreia (33 years)	1	1	1	0
	Filipa (36 years)	1	1	1	0
Elderly	Sílvia (33 years)	1	1	0	0
	Josefinha (81 years)	1	1	1	0
	Emília (89 years)	1	1	1	0
	Augusto (70 years)	1	1	0	1
	Manel (73 years)	1	1	1	0
	Odete (65 years)	1	1	0	0
	Celeste (70 years)	1	1	0	0

Odete had reduced mobility and this meant that she could only stand up and walk with the help of crutches. Thus, the high shelves or high cupboards could not be used due to the difficulty of reaching them. Hence, she occupied all bottom cupboards to store kitchen tools, equipment and some food. However, given the small size of the kitchen, she needed to use extra space for storage (e.g. rice, pasta) in a cupboard located in the living room. She got the crutches and took the bag of rice to store in the living room's cabinet.

Odete: [...] Now I'm going to grab the rice.

Int.: The rice is somewhere else. Do you have the pantry here, right?

Odete: No, I have the things here in the... [living room]

Int.: Oh, OK.

Odete: It's more convenient this way, it's more practical.

(Odete, 65 years, Elderly household, urban, Portugal)

This is an atypical situation as most participants can reach all the storage spaces in their kitchens (either by themselves or with the help of a small ladder, bench or chair). Others even had extra room in the pantry (8 households). However, Odete needed more kitchen storage space close to the floor and not to the ceiling, an area difficult to reach for someone with reduced mobility.

### *Food locations*

Observation on how food was stored in the 15 Portuguese households had in view the food categories: 1) fruits, 2) vegetables, 3) meat and fish, 4) eggs, 5) other kind of chilled/frozen food and 6) dry food.

### *Fridge: contents and organization*

In most households, vegetables and sometimes fruits (last drawer), yogurts, cheese, ham, milk (usually opened), some drinks, juices and sauces (on the fridge's door) and leftovers were kept in the fridge. During the fieldwork, we observed that households organized their fridges according to different orders. Some seemed to have a systematic way of organizing the fridge according to some sort of logic and others organized the fridge at random, storing food contents according to the available space on the shelves or fridge's door. Having or not a systematic organization of the fridge was not related with the target group under observation. Yet, there was a peculiar feature regarding leftovers and food waste. Only participants with children (Young families) had leftovers that were spoiled inside the fridge. When opening the fridge and inspecting its content Marta (35 years, urban) realised she had spoiled sausages and eggs, Filipa (36 years, urban) removed spoiled chorizo (Figure 3.3.2), and Sónia (42 years, rural) noticed based on the smell that the soup was not good to eat anymore. Another pattern, despite very small numbers, in all the households of young families, eggs were stored in the fridge.



**Figure 3.3.2: Spoiled chorizo in the Filipa's fridge (Portugal)**

Among young families with children, only Andreia usually follows a systematic organization of the fridge according to an order that considers fridge temperatures, at least for the case of eggs.

Int.: Do you have an order to store food in the fridge?

Andreia: Yes, I do. I like to have the soups with the beers and drinks to chill [Top shelf]. Then [second from top shelf] here I always have cheese, ham and open packages that are in stand by [to be used], the smoked ham, sauces and that sort of thing... Then here [third shelf from the top] I have yogurts and eggs. Before I used to put the eggs in here [space in the fridge's door dedicated to store the eggs] but they seemed to get frozen, so I took them out

of that space and I like to store them here [close to the yogurts]. In here [bottom shelf] I always have a Tupperware with homemade soup and also some meals' leftovers in Tupperware, and in the bottom drawer I put all the vegetables...

(Andreia, 33 years, Young families, urban, Portugal)

Andreia had enough and appropriate storage space to separate foods and she knew that different foods needed different temperatures. She also stored food according to the categories of items (Figure 3.3.3). Eggs were always put on the same shelf together with yogurts. Yogurts were always on the same shelf and were not stored in other places. Leftovers were always put on the same shelf, at the bottom and not elsewhere.



**Figure 3.3.3: Fridge organized according to temperatures and categories (Portugal)**

The other research participants (14) had also their own ordering principles that underpinned the organization of the fridge. A few (2) organized food according to the layout of the fridge and the space to store its contents; others had the fridge organization shaped by the rhythms of shopping in everyday life, looking at end by dates and putting the older items at the front and moving the newer items to the back (mimicking supermarkets), others organized items according to foods that were more often used in cooked dishes.

In our sample there were two young single men who were sharing the house with roommates, and they had to take advantage of every single small space available in the fridge: Carlos (24 years, urban) and Bernardo (19 years, urban). There were also 3 households (Vanessa, (29, rural); Sónia (42 years, rural) (both Young families); and Emília (89 years, Elderly households, urban) without specific shelves allocated to different kinds of food. The most paradigmatic case was Sónia. She did not seem to have a systematic organization inside the fridge. We saw meat sauce and tonic water on the same shelf as yogurts. The rice leftovers on a plate were dangling on top of a yogurt and a box of eggs, taking advantage of the shape, size and weight scripted in the materialities of those foods (Figure 3.3.4). In Table 3.3.2 and Table 3.3.3 are collected information related to participants' fridge.



Sónia has ice leftovers dangling on top of a box of eggs and yogurts



Emília stored food according to the spaces left in the fridge and the height of shelves

**Figure 3.3.4: Space organization of fridges: (Portugal)**

**Table 3.3.2: Fridge information among Portuguese households**

Households	Brand	Age	Participant knowledge of		Type of temperature display	Comments	Shelf material
			Fridge temp.	Ideal temp.			
Marta (35 years)	Indesit	9	No	No	Temperature dial control labelled 1 through 6 / set at 2.5°C.	Sets temperature lower in summer time. "Feels the temperature with the hand."	Open wire shelf
Vanessa (29 years)	Samsung	1	Yes (5° C)	Yes (5°)	Temperature dial control labelled 1, 3, 5, 7°C / set at 5°C.	Knows that the temperature should be at 5°C because of her work. She doesn't have a specific organization for different food products, stores where there is space.	Plastic shelves
Josefina (81 years)	Built in fridge	> 4	No	No	Temperature dial control labelled 2, 4, 5, 6, 7°C / set at 6°C.	The daughter sets the temperature of the refrigerator. She does not know how to use it. Eggs and butter outside the refrigerator. She doesn't have a specific organization.	Plastic shelves
Emília (89 years)	Samsung	-	No	No	Temperature dial control labelled 1, 2, 3, 5, 7°C / set at 7°C.	No organization.	Plastic shelves
Filipa (36 years)	Samsung	5	Yes (2°C)	No	Digital temperature control labelled 1, 2, 3, 5, 7°C / set at 2°C.	She knows the temperature of the refrigerator because it has a digital display. She sets the temperature of the refrigerator low because she and her husband like the drinks to be very cold. No organization.	Plastic shelves
Augusto (70 years)	LG	4	Yes	No	Digital display	Sets the temperature low because it is how he likes his beer. No organization.	Plastic shelves
Manel (73 years)	Built in fridge	>8	No	No	Temperature dial control, set at minimum.	Sets temperature lower in summer time. No organization.	Plastic shelves
Andreia (33 years)	Samsung	1	Yes (3°C)	No	Temperature dial control labelled 1, 2, 3, 5, 7°C / set at 7°C.	Still working out how to work with the new fridge. The temperature is automatically adjusted to the outside temperature, but food sometimes gets too cold, close to being frosted. Systematic organization of the fridge	Plastic shelves
Carlos (24 years)	Miele	>8	No	No	Temperature dial control labelled 0, 1, 2, 3, 4 / set on 3.	Does not change the temperature setting in the fridge. Always puts the meats at the top on one side and the yogurts on the same shelf but on the other side. But not always follows this rule.	Open wire shelves

Households	Brand	Age	Participant knowledge of		Type of temperature display	Comments	Shelf material
			Fridge temp.	Ideal temp.			
Celeste (70 years)	Samsung	18	No	No	Mid-point between cold and colder (no number).	Her husband does not know the temperature, he is the one to set the temperature in the middle. Vegetables always inside the vegetable drawer at the bottom. Meat at the bottom shelf.	Plastic shelves
Sónia (42 years)	Built-in fridge	≥8	No	No	Temperature dial display 1 to 5, is set on 1.	Yes, adjusts the temperature of the fridge to 1 in the winter and 2 (lower temperature) in the summer to keep things colder. Some organization. Dairy products at the top (1 <sup>st</sup> shelf). Meat is always defrosted inside the fridge, never outside because it gets spoiled quicker.	Plastic shelves
André (30 years)	Built in fridge	>8	No	No	Temperature dial display set on 3.	Summer used to put either on 2 or 4, can't remember anymore... now always on 3. Cheese and ham are always put on the same shelf. Butter in the fridge but hardly ever used, only for mashed potatoes.	Plastic shelves
Bernardo (19 years)	Built in fridge	2-5	No	No, but maybe 6-7° C	Temperature dial display set on 2.	Thinks that the top shelf is the one that is colder. Shares with his flatmates, has two shelves where everything is stored.	Open wire shelves
Odete (65 years)	Whirlpool	13	No	No	Temperature dial control, set at medium.	The daughter sets the temperature for her.	Open wire shelf
Sílvia (33 years)	Samsung	5	Yes (5°)	Yes (5°)	Temperature dial control labelled 1, 2, 3, 5, 7°C / set at 5°C.	In summer she sets to lower temperature (3°C) Puts the eggs outside the refrigerator during winter time. Butter is also outside.	Glass

**Table 3.3.3: Fridge temperatures among Portuguese households**

Households	Data logger	No of readings	No of min.	No of hours	No of days	Max temp. (c°)	Min temp. (c°)	Average temp. (c°)	Mode	Median	Total time with T < = 6°C (Frequency)	Total time with T > 6°C (Frequency)
Marta (35 years)	2694986463	1843	18430	307.2	12.8	12.0	2.0	5.0	5.0	5.0	264.7h (86.2%)	42.5h (13.8%)
Vanessa (29 years)	2429684365	1881	18810	313.5	13.1	7.5	0	4.5	5	4.5	309.2h (98.6%)	4.3h (1.4%)
Josefina (81 years)	2700606112	2029	0	0.0	0.0	9.5	4.5	7.1	7.0	7.0	29.0h (8.6%)	309.2h (91.4%)
Emilia (89 years)	4038765263	2029	20290	338.2	14.1	9.0	4.0	5.4	5.0	5.0	295.0h (87.2%)	43.2h (12.8%)
Filipa (36 years)	4041890487	358	358	6.0	0.2	6.5	1.0	3.5	4.0	3.5	5.6h (94.1%)	0.4h (5.9%)
Augusto (70 years)	1358760623	1992	19920	332.0	13.8	5.5	2.5	3.8	3.5	3.5	332.0h (100.0%)	0.0h (0.0%)
Manel (73 years)	1358482102	2025	20250	337.5	14.1	12.0	6.5	8.8	9.0	9.0	0.0h (0.0%)	337.3h (100.0%)
Andreia (33 years)	2694986463	2034	20340	339	14.1	6.0	-0.5	3.2	3.5	3.5	339.0h (100.0%)	0.0h (0.0%)
Carlos (24 years)	2429684365	2033	20330	338.8	14.1	7.0	-1.0	4.5	5.0	5.0	332.3h (98.1%)	6.5h (1.9%)
Celeste (70 years)	4038765263	2016	20360	339.3	14.1	9.0	2.0	4.8	5.0	5.0	280.0h (82.5%)	27.2h (8.0%)
Sónia (42 years)	1358760623	2019	20190	336.5	14.0	12.0	7.0	8.0	8.0	8.0	0.0h (0.0%)	336.5h (100.0%)
André (30 years)	1358760623	1551	23265	387,8	16.2	6.0	1.5	4.1	4.5	4.5	387.8h (100.0%)	0.0h (0.0%)
Bernardo (19 years)	2429684365	2035	20350	339,2	14.1	9.0	-0.5	4.9	6.5	5.5	239.8h (70.7%)	99.3h (29.3%)
Odete (65 years)	2700606112	2018	20180	336.3	14.0	11.5	6.0	9.1	9.0	9.0	0.2h (0.0%)	336.2h (100.0%)
Silvia	2694986463	2025	20250	337.5	14.1	8.5	3.0	5.6	6.0	5.5	287.2h (85.1%)	2.1h (14.9%)

### *Freezer*

Most participants stored meat, fish, leftovers and frozen products bought at the supermarket in the freezer. Across all households, there were participants who froze different kinds of food (meat, fish, bread, raspberries, vegetables, leftovers). There was a variety of orders, some research participants being very systematic in separating meat and fish and others mixing up within the same space different foods. For example, Vanessa (29 years, Young families, rural); Carlos (24 years, urban), Bernardo (19 years, urban) (both Young single men) and Odete (65 years, Elderly household, urban) froze several products without following an order. Food was stored in the available space inside the freezer. Carlos and Bernardo tend to mix everything (e.g. meat, fish fingers and vegetables) whereas Odete mixed some foods but was adamant in separating fish and meat.

The participants who organized the freezer according to a systematic order were Andreia (33 years, urban), Filipa (36 years, urban) and Sílvia (33 years, rural) (all Young families, rural): they had a specific order to store food in the freezer and they tried to organize the freezer contents. For Andreia and Filipa, the freezer was a very important food location. One of the reasons was that they were breastfeeding, and they considered to be very practical and safe freezing breast milk. Andreia stored meat in the first drawer, which was already divided into small bags and made meals preparation easier. In the second drawer, she stored frozen vegetables and a frozen salmon in its plastic package. In the third drawer stored breast milk, ice cream and iced lemon cubes. As she explained:

I also have an order here in the freezer that I like to have. Here as I told you, I always have meat that is in its separated compartment. I usually separate the meat in bags already thinking about the meals [she shows meatballs in a bag, beef steaks in bags, etc.]. Here I have vegetables and moved fish here because in this drawer [she shows the last drawer] I have breast milk... so I moved it here, I also have lemon ice cubes and an ice cream, but I will move those to the chest freezer later.

(Andreia, 33 years, Young families, urban, Portugal).

Filipa organized foods in her tall standalone freezer unit so that fish and meat had their own separated drawer. She froze bread for the week divided into different plastic bags. The top drawer was for ice cream, ice cubes and meals leftovers. The second drawer was for breast milk (stored next to baby soup) as she was still breastfeeding. The third drawer was for meat, the fourth was only for fish (at the time she had cod fish). The last drawer was for vegetables and meals leftovers in plastic boxes. She mentioned to hardly ever changing this order, only leftovers could be accommodated in different drawers because they had no risk of contamination and do not smell. She tried to write the dates in the breast milk packages and raw meat bags and packages.

### *Pantries, drawers and cupboards*

Regarding pantries, eight participants used them to store food. Here they stored dry goods: rice and pasta, cookies, coffee, olive oil, vinegar, canned food, cereals, sauces. It was easier for participants who had a pantry to organize and store dry food because they had more space and a specific place to do it. Bernardo (19 years, Young single men, urban) was the only one who used the pantry to keep cleaning products and the cupboards to store the food. The reason was that he lived in shared accommodation and space was reduced. Participants without a pantry used the available space (cupboards and kitchen drawers) inside the kitchen. Sílvia (33 years, rural) and Andreia (33 years, urban) (both Young families) did not have a pantry so they stored dry foods in a cupboard and in kitchen drawers: milk (unopened), juice, mayonnaise (unopened), pasta and different kinds of rice, cereals. These two research participants did not store opened butter or chocolate-hazelnut spread in the fridge because it gets very hard and difficult to spread on bread, so they preferred to leave these items at room temperature in winter. In the summer they were stored in the fridge.



**Figure 3.3.5: Storage outside the fridge (Portugal)**

Sílvia: [...] And I have Nutella [here] now, but not in the summer.

Int.: But is Nutella opened now?

Sílvia: It is.

Int.: OK.

Sílvia: Otherwise it will go hard as a rock.

(Sílvia, 33 years, Young families, rural, Portugal)

### *Chicken*

We observed what the 15 research participants did with chicken once they arrived home from shopping, and also where they stored usually the eggs. As we could see, in most households, the chicken was not stored in the fridge because it was going to be cooked it immediately after buying it. Only four participants had the habit of arriving home and store the chicken in the fridge while they started cooking preparations, and that happened across all study groups (Table 3.3.4).

**Table 3.3.4: Storage of chicken among the Portuguese households**

Research group	Participant	What kind?	Stored (where and how?)	Thawed?
Young single men	Carlos (24 years)	Chicken thighs, packed	Fridge	No
	Bernardo (19 years)	Packed chicken, breasts	Kitchen counter, directly to cook	No
	André (30 years)	Unpacked chicken	Kitchen counter, directly to cook	No
Young families	Marta (35 years)	Packed chicken, filets	Fridge (first shelf)	No
	Vanessa (29 years)	Packed chicken, breasts	From the bag directly to the frying pan	No
	Sónia (42 years)	Unpacked raw chicken, pre-sliced in halves	Kitchen counter, directly to cook	No
	Andreia (33 years)	Chicken breasts	Kitchen counter, directly to cook	No
	Filipa (36 years)	Packed chicken	Fridge	No
	Sílvia (33 years)	Whole chicken, free range	Kitchen counter, directly to cook	No
Elderly	Josefina (81 years)	Chicken thighs, packed	Kitchen counter, directly to cook	No
	Emília (89 years)	Chicken thighs, packed	Kitchen counter, directly to cook	No
	Augusto (70 years)	Packed chicken (whole, slices at home)	Fridge	No
	Manel (73 years)	Whole raw chicken (unpacked)	Kitchen counter and then freezes part of it	No
	Odete (65 years)	Chicken thighs (unpacked)	Kitchen counter, directly to cook	No
	Celeste (70 years)	Whole raw chicken (she slices at home)	Sink, directly to cook	No

### *Leftovers*

Most households stored leftovers inside the fridge for 2-4 days as, according to their claims, the food started to smell bad. Besides, most mentioned not liking to reheat food because of taste and health reasons. In general, they stored leftovers (e.g. soup or other meal's dishes) in plastic containers with lids on and reheat them on microwaves.

Int.: And how do you check how long leftovers have been in the fridge?

Carlos: Usually... this [leftovers] is from Monday... so about 3 to 4 days max.

Int.: OK. And then do you reheat in the microwave, or in the pan...?

Carlos: Yes, yes, in the microwave. And I only reheat it once.

Int.: OK.

Carlos: This is to be eaten at the moment, you can't reheat it again. No... we are very careful with that.

(Carlos, 24 years, Young single men, urban, Portugal)

There were only two participants who never stored warm food inside the fridge, letting it cool completely. Households with young families usually take leftovers in a lunch box to eat at work the following day. Home-made meals taken to work became very popular in Portugal during the economic crisis to avoid spending money eating out. This practice seemed to be rooted in everyday life even after the crisis. If they had to throw away food to the bin was because they were unsure whether it was good to eat, or even to reheat in the microwave. They also worried about the taste.

There were some participants who would freeze leftovers, particularly soup. In the case of Josefina (81 years, Elderly households, urban), she froze some special dishes from Mozambique (prawn and chicken curry) that her sister prepared one dinner.

There was only one participant, Emília, (89 years, elderly, urban) who had several plastic containers without a lid in the fridge with leftovers inside. There was also a pan inside the fridge with leftovers. During our fieldwork, we saw leftovers on plastic boxes, cod fish pies with bean rice, and a cod fish dish she made the day before for her daughter's dinner. Emilia explained that she would reheat this dish on a low heat adding olive oil, garlic and pepper (Figure 3.3.6).



**Figure 3.3.6: Leftovers inside a metal pan in Emilia's fridge (Portugal)**

## Storage in Romania

### Unpacking food: priorities

Most of research participants stored the food right away after arriving home from the store. We observed some differences between urban and rural people regardless of the education level, income, or age. Most of the research participants who lived in rural area put their bags on the table and transferred the food from the bag on the table, whereas 4 out of 6 participants from urban area living in apartments left their carrier devices containing food on the floor entrance or on the kitchen floor.

On the other hand, the household composition had an impact on prioritization the unpacking of food. We had a participant from a young family with 3 kids and a baby of 1 month, Serena (36 years, rural), whose first priority when arriving home was to feed her baby girl. Serena left her husband in charge with unpacking of food. However, her husband seemed not to know how to handle this. He took out the poultry from the bag giving it to Serena, although she was holding the baby in her arms. She gave back the poultry to her husband saying to him to put it on the kitchen counter. Then, she left the baby on the kitchen sofa and put the poultry into a bag because that product had to be given to their neighbour. The food that they bought remained in the bag, because when they arrived home, the fridge had been started to be defrosted by Serena's mother-in-law. Meanwhile she told that she usually cooked the food that she bought that day immediately.

Serena's husband took out from the bag the chicken tray and gave it to her wife. She said that he should put the chicken on the counter top. Therefore, Serena's husband took back the poultry as she was holding the baby in her arms.

Serena: Put them on the counter top!

[...]

Serena: Put them on!!!

(Serene, 36 years, Young families, rural, Romania)

Sorina (32 years, rural), who had 2 children and 1 baby girl, never took her baby when going to the food store. When she went to town for buying food, Sorina left the baby with her mother. When she arrived home, Sorina rapidly put the carrier devices on the table, took out from the bag all the food that she bought, and rapidly washed the chicken and vegetables that were immediately transferred in the fridge. She moved very fast, because as she said, "the baby starts crying if she is missing more than 2 hours".

### *Unpacking order*

All participants from Romania unpacked the frozen or cold food before storing stable goods. All the 15 Romanian participants put the carrier devices containing food on different places such as tables, kitchen floor, chair, bed or counter top before storing

them (Table 3.3.5). In most cases the places where they put the carrier devices were positioned close to the fridge (12 out of 15 cases) and provided to the participants a better overview of the items before storing them into the fridge. Based on the information presented in

Florinel (31 years, urban) and Bogdan (32 years, urban) (both Young single men), after arriving home they put directly the carrier devices on the kitchen floor close to the fridge (Table 3.3.5). Florinel said that in this way he transferred faster the food from the bag into the fridge. However, the counter top was closer to the fridge, but it did not have space where to put the bags. Another thing that Florinel did, was to make space in the fridge before placing the food that he bought. On the other hand Bogdan put the carrier device on the kitchen floor, but then he took out the vegetables and fruits from the bag and transferred them on a tray placed on the counter top and then moved them into the fridge.

Zoltan lived in a shared house. He had his own room, and most of the food that he bought was stored in his room. However, the room was too small for his needs, thus, after he arrived home, he put the food on the bed and then moved the food from the bags in the fridge. Meanwhile, six households out of 15 took the food out from the bag and left it on the table: Balanel (28 years, Young single men, urban); Linalia, (73 years, rural); Domnica, (75 years, urban); Fanel (69 years, urban); Damiana (73 years, rural); (all Elderly households); and Sorina (32 years, Young families, rural). It should however be pointed out that although in 5 out of 6 cases mentioned above, the shopping and cooking session was made in the same day, but it is characteristic for Romanian people to buy food as much as they need for 2-3 days. Therefore, we considered that this type of unpacking should not be considered an outlier.

Table 3.3.5, several ways of unpacking after placing the bags on different places were considered:

- To put the cold food in the fridge and then the other food in designated storage places;
- To wash hands and then to transfer the food in the fridge combined with placing food on the counter or table, if the food is going to be cooked immediately;
- To put all the food from the bags on the table or kitchen counter and then to prioritize storage of food based on their outage;
- To put the food on the table as is going to be cooked immediately

**Table 3.3.5: Ways of unpacking among the Romanian households**

Households	
Florinel (31 years, Young single men, urban)	Bogdan (32 years, Young single men, urban))
Three bags with food placed on the kitchen floor. Made space into the fridge to put the food; Put the cold products in the fridge. Dry goods in the cupboard.	One bag placed on the kitchen floor. Took out the vegetables and bananas and puts them on a tray placed on the counter top. Placed the tray in the fridge. Put the cool products in the fridge.
Zoltan (35 years, Young single men, urban)	
Two bags with food placed on the bed. Coolest products in the fridge or freezer. Fruits were transferred from the thin bag into a bowl kept on the floor. Removed the carrots and peppers from the thin bag and transferred them into the fridge.	
Amalia (31 years, Young families, urban)	Maria Mirabela (34 years, Young families, urban)
Put the bag on the floor entrance. Took shoes off. Put the bag on the chair. Put the cold food in the fridge. Dry goods placed on counter top and then transferred to their designated places.	Put the bag on the floor entrance. Took shoes off. Put the bag on the kitchen counter. Washing hands. Transferring some of the cold food in the fridge. Food that was used soon for lunch was left on the counter top.
Sorina (32 years, Young families, rural)	
Put the bag on the table. All the food placed on the table. Chicken and vegetables were washed and then transferred in the fridge. Dry good transferred to their designated places.	Put the bag on the chair. Took out the chicken and left it on the counter top as it was going to be cooked that day. Dry goods were left into the bag.
Balanel (28 years, Young single men, urban), Linalia (73 years, rural), Domnica (75 years, urban), Fanel (69 years, urban), Damian (73 years, rural) (all Elderly households) Minodora (27 years, Young families, rural)	Dumitra (84 year, Elderly households, rural)
Left the bag on the table. Took the food out of the bag and put on the table as it follows to be cooked.	Left the bag on the table. Took the food out off the bag and transfer to their designated places.
Ionel (30 years, Young single men, urban)	
Left the bag on the kitchen counter. All the food from the bag was placed on the kitchen counter. Cold products were placed in the fridge. Other foods such as vegetables that followed to be cooked that day remained on the counter top.	

## Storing food at home

In this section, based on data collected from participants' houses, we have systemized which were the places where the research participants stored food, what type of food did they stored, and how they stored the food. The places where Romanian people

stored food were: fridges and freezers, kitchen counters and tables, pantries, cellars, drawers and cupboards and other places (floor). The category of cheese is an important food for Romanians, recent studies indicating that every Romanian eats cheese at least 2-3 times per week.<sup>31</sup>

### *Storing devices*

Table 3.3.6 presents the number of storage devices used by the research participants. We have chosen to distinguish pantries from cellars because pantries are located inside or outside kitchens when thinking about apartments, whereas cellars are placed underground. Three out of four households located in rural area had a cellar. If not having a cellar, the summer kitchen or unheated room from the house served as pantry during winter. For example, Linalia (73 years, Elderly households, rural), kept the barrels with pickles in the summer kitchen saying that “it is really cold out there” as it was an unheated room during winter. Both young families from rural areas did not have a pantry. Minodora (27 years, Young families, rural), did not have a pantry inside because the house had only two rooms, and the hall served as a kitchen. Minodora stored the cans into an improvised cellar in the water pump house. Damian (73 years, Elderly households, rural), on the other hand, had two houses in the yard. During winter, to save money with the heating system, he lived in the smaller house that had two rooms and a hall, therefore some of the rooms of the other house served as a pantry.

We noticed a different storage pattern for those living in apartments in urban areas. If the apartment was reorganised, the pantry was eliminated to make more space. This situation was met for Maria Mirabela (34 years, urban), Amalia (31 years, urban, (both Young families) and Bogdan (32 years, Young single men, urban). However, the participants said that they don't miss the pantry, as they have a lot of cupboards in the kitchen to store everything they'd like. Florinel (31 years, Young single men, urban) had the pantry in the kitchen, whereas Balanel (28 years, Young single men, urban) and Domnica (75 years, Elderly households, urban) had the pantry in the hall, outside kitchen. These pantries were filled not only with food, but also with pans, pots, lids, and sometimes with shoes.

A different situation was identified for Ionel (30 years, Young single men, urban), who lived in an apartment situated at the ground floor of the building. Inside the apartment he made a connection to have access to the basement. It was an unusual situation because the access to these basements where people can store different things such as food is made using another entrance. Fanel (69 years, Elderly households, urban) used the garage as a pantry during winter.

Most of elderly participants from rural area switched off their fridges during winter and stored the food in the coolest room that they had in the house. For example,

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<sup>31</sup><https://republica.ro/branza-cu-paine-romanii-incep-sa-invete-regulile-consumatorilor-zprofesioniști-de-branțuri-fine>.

Damian & Damiana (both 73 years, Elderly households, rural)) said that he unplugs the fridge, when the temperature inside house is extremely low.

Int.: Do you switch on the fridge during winter?

Damiana: No, the fridge is switched on only during summer. During winter it is cold, therefore there is no need to turn it on. Even if it was plugged in, as the temperature in that room is too cold, the fridge would not have functioned at these low temperatures.

(Damiana, 73 years, Elderly households, rural, Romania)

With one exception (Fanel), for all the other elderly participants, the fridge had more than 25 years since it was bought and was small. Four out of five households of elderly group had the freezer integrated in the fridge. Each participant said that the fridge works properly. Domnica said that fridge is working properly as long as the fridge forms ice crystals.

Int.: How can you tell that your fridge is working properly?

Domnica: Based on the ability of forming ice crystals...and then I realize that I need to defrost the freezer.

(Domnica, 75 years, Elderly households, urban, Romania)

On the other hand, Fanel had on the other hand, a big cooling cupboard in the summer kitchen that was turned on during summer. He had many storage devices (Table 3.3.6) as his wife cooked large portions that she shared with her two children and grandchildren.

As the Table 3.3.6 shows, most of the Romanian participants had no more than one fridge with an integrated freezer. Usually, Romanians do not buy large quantities of food, or food that would be stored for months in the freezer. Participants like Fanel and Damian, who are still making large provisions for winter time, is decreasing in Romania. Households mostly preferred to buy food more often and considering that the distance between the market and the household was small, they thought that buying food more often prevented the risk of food spoilage.

**Table 3.3.6: List of storage devices in the Romanian households**

Study group	Households	Fridge	Freezer			Cooling cup-board	Pantry	Cellar
			Integrated to fridge	Vertical	Chest			
Young single men	Ionel (30 years)	1	1	0	0	0	0	1
	Balanel (28 years)	1	1	0	0	0	1	0
	Florinel (31 years)	1	1	0	0	0	1	0
	Bogdan (32 years)	1	1	0	0	0	0	0
	Zoltan (35 years)	1	1	0	0	0	0	0
Young families	Maria M. (34 years)	1	1	0	0	0	0	0
	Sorina (32 years)	2	2	0	2	0	1	1
	Amalia (31 years)	1	2	0	0	0	0	0
	Serena (36 years)	1	2	0	0	0	0	1
	Minodora (27 years)	1	1	0	0	0	0	1
Elderly households	Dumitra (84 years)	1	1	0	0	0	1	1
	Damian & Damiana (both 73 years)	1	2	1	0	0	1	1
	Fanel and Fanica (both 69 years)	1	1	0	3	1	0	0
	Linalia (73 years)	1	1	0	0	0	1	0
	Domnica (75 years)	1	1	0	0	0	1	1

Four out of five young single men group lived in apartments and only 2 of them were having pantries located either in the kitchen or in the hall of the apartment. The temperature of these pantries was not cooler compared with other rooms of the apartment. Regarding the young families, all the participants who lived in urban area (Amalia and Maria Mirabela) eliminated the pantry to make more space in the apartment. All the things that would have been stored in the pantry were stored in cupboards or drawers. In four out of the 15 households, the fridge was placed outside kitchen. For example, Dumitra had the fridge in another house situated in the same courtyard.

**Table 3.3.7: Fridge temperatures and kitchen size in the Romanian households**

Participant	Number of days	Average temp. (°C)	Start temp. (°C)	Max. (°C)	Min. (°C)	Stop temp. (°C)	Stdev (°C)	Kitchen size (m <sup>2</sup> )
Ionel (30 years)	16	<b>4.75</b>	19.2	19.2	1.6	3.4	1.38	10
Dumitra (84 years)	21	<b>9.5</b>	16.2	16.8	3.3	8.7	3.21	9
Damian and Damiana (both 73 years)	14	<b>12.3</b>	7.8	18.2	4.8	18.2	3.3	10
Fanel and Fanica (both 69 years)	14	<b>4.8</b>	4.9	22.2	1.1	4.2	3.2	15
Balanel (28 years)	14	<b>3.11</b>	19.6	22	-0.3	3.1	1.89	6.5
Linalia (73 years)	21	<b>3.5</b>	16.9	19	-1.7	2.1	3.79	24
Maria Mirabela (34 years)	14	<b>4.3</b>	22.7	23.9	2.7	4.5	0.66	9
Sorina (32 years)	14	<b>1.8</b>	22	22	-3.1	10	3.46	10
Domnica (73 years)	14	<b>6.4</b>	29.4	29.4	2.7	5.9	2.58	8
Amalia (31 years)	14	<b>8.15</b>	26.2	26.2	2.2	10.4	2.41	3.5
Bogdan (32 years)	14	<b>8.3</b>	32.6	32.6	4.9	5	2.14	5
Florinel (31 years)	14	<b>4.6</b>	26.2	28	0.9	7.9	1.87	12
Serena (36 years)	14	<b>5.7</b>	23.7	33.4	0.5	8.8	3	9
Minodora (27 years)	14	<b>3.8</b>	30.1	30.1	-1	7.4	2.03	8
Zoltan (35 years)	16	<b>5.3</b>	24	27.2	-0.5	0	2.56	45

Four participants had a fridge with temperature display and all of them were from urban areas. The average temperature in the fridge ranged between 1.8 °C and 12.3 °C (Table 3.3.7). The highest average temperatures were recorded for Dumitra and Damian, however it should be pointed that the temperature was measured in the room where they stored food during winter, as the fridge was turned off. The size of the kitchen varied between 3.5 m<sup>2</sup> to 45 m<sup>2</sup>. However, the kitchen with the surface of 45 m<sup>2</sup> was a shared kitchen.

From Table 3.3.8 it can be seen that the research participants stored a variety of foods in the fridge. Similar type of products was observed in many households such as sauces like ketchups, mustard, mayonnaise, eggs, milk and dairy products (cheese, yoghurt, and cream), fish can in oil, liver pate, vegetables, margarine, jars with compote and jams.

Most of the food stored in the fridge was kept in the original packaging even after they were opened. Bulky food items such as fruits and vegetables were stored in the fridge in thin plastic bags as brought from the store. However, Bogdan said that he always takes off the plastic bags from the vegetables, because the vegetables cannot breathe if stored in plastic bags. On the other hand, he considered that storage of apples in those thin plastic bags extended the shelf life of apples.

I never keep in the fridge the vegetables in the thin plastic bags brought from the store, because the vegetables can't breathe. However, if I keep the fruits such as apple in those plastic bags, there is no problem...on the contrary they last for long.

(Bogdan, 32 years, Young single men, urban, Romania)

Another observed pattern was the use of newspaper in the fridge to protect the shelves of the fridge from dirt or from scratches. Three out of five young single men used the newspaper in the compartment dedicated for fruits and vegetables, whereas 2 out of 5 elderly participants from rural area used newspaper on the shelves of the fridge to avoid the dirt. When looking at the storage of meat products and cheese, we noticed that Balanel (28 years, Young single men, urban) and Damian (73 years, Elderly households, rural), once they opened the package of meat products and cheese, they stored them unpacked in the same plate.

**Table 3.3.8: Food in the fridges in the Romanian households**

Food category	Vegetables	Fruits	Meat	Cheese	Other food
Items	Potatoes, parsnip, carrots, celery, cabbage, onions, mushrooms, pepper, tomatoes, radishes, lettuce, garlic, parsley, dill, melon.	Banana, apples, grapefruit, oranges, lemons	Chicken, salami, bacon, ham, sausages, minced meat	Salted cheese, cream cheese, grated cheese, Telemea cheese, sliced cheese	Mustard, jars with jams, eggs, yoghurt, margarine, pudding, pickles, eggs, liver pate, fruits and nuts mix, wine, beer, tuna can in oil, mayonnaise, olives, ketchup, apple juice, bread, compote, vinegar, oil, tomatoes pasta, tomato juice
Packaging materials	Original wrapping, no wrapping, loose, bowls (after manipulation), plastic bags, plastic boxes with lids, thin plastic foil	Original wrapping, no wrapping	Original wrapping, plastic bags, loose bags, no wrapping	Original, plastic bag, No wrapping	Original packaging, No wrapping

**Table 3.3.9: Food stored at room temperature/kitchen in the Romanian households**

Food category	Vegetables	Fruits	Meat	Cheese	Other
Items	Garlic, onions, potatoes, carrots, melon	Bananas, apples, oranges	Chicken legs, pork meat	Grated cheese	Eggs, bread, honey, unopened sauces and condiments, jam, canned food, nuts, grain, flour, cereals (rice, beans)
Packaging materials	Loose, original packaging, plastic bags, boxes with lid				

It was interesting for us to observe that participants who lived in the apartments and do not have a pantry, or the pantry was placed inside the kitchen, tended to store in the fridge vegetables such as potatoes and onions during summer. For example, Florinel said that he keeps the potatoes in the fridge because, having more than 30 °C in the apartment, the potatoes will spoil faster, whereas Balanel (28 years, Young single men, urban) kept the onions in the fridge, regardless the season. Elderly participants who lived in rural area used the pantry for storing onions and potatoes. On the other hand, even if their fridges were switched off during winter, some of them stored other vegetables as celery, parsnip, carrots in the fridge.

Int.: I have seen that you put the potatoes in the fridge....

Florinel: I keep them in the fridge during summer...but only for few days.

Usually, during winter, I keep them in the pantry.

(Florinel, 31 years, Young single men, urban, Romania)

We have met two cases in rural areas where two participants from the elderly group having their fridges switched off kept the cheese and raw meat at room temperature and the meat was loose in a pot or plate (Table 3.3.9). The visit was made during winter, and the outside temperature was negative, and in the unheated room the temperature ranged between -7 °C and 1°C.

We have identified different rules for storage in the fridge as presented below: Ionel (30 years, Young single men, urban) applied a rule only for storage of meat that he kept on the lowest shelf to be close to freezer. Zoltan (35 years, Young single men, urban) said that he stored the vegetables and fruits in the dedicated compartments, eggs were stored on the fridge door, while the pans with leftovers were stored on the lowest shelf. In Florinel's fridge, pots were placed on the shelf that was high enough to accommodate them. Bogdan (32 years, Young single men, urban) kept vegetables in the upper shelf of the fridge, on a plate. Amalia (31 years, Young families, urban) said that usually on the highest shelves of the fridge stores jars, while on the lower shelves keeps pots with food, if any. Fanica (69 years, Elderly households, urban) stored on the upper shelf of the fridge foods that were served at breakfast, whereas fruits and vegetables were stored in the dedicated compartments. Most of the

participants kept on the fridge door eggs, ketchup, mustard, milk, bottles with drinks and in dedicated compartment keep vegetables and fruits.

### *Freezer*

Three out of 15 households possessed an extra freezer that it was not integrated with fridge. Sorina (32 years, rural) raised pigs and slaughtered them during winter, and raised chickens for meat and eggs. Having 3 kids and being a family where “*every dish has to contain meat*” she needed extra storage place. Therefore, she had 2 chest freezers to be able to store all the meat (Table 3.3.6). Fanel (69 years, Elderly households, urban) had 3 chest freezers (Table 3.3.6). He said that each freezer was designated to store a type of product. One it was used to store meat, one for vegetables, and one for fruits. Fanica (69 years) said that she felt safer to use the products that she prepared herself. Also, in those freezers she stored food for her children. Similarly to Sorina, Fanel slaughtered a pig during Christmas time. Damian (73 years, Elderly households, rural) had a vertical freezer with 6 compartments where he stored meat and meat products, poultry, bacon. It was interesting to find out that even the salami or liver pate was stored in the freezer. The other households did not have too many food items stored in their freezers. Eggplant, sour cherries, ice cream, chicken, butter with garlic, pastry were some examples of food found in the households’ freezers.

### *Pantries, drawers, cupboards*

Most of the Romanian research participants had cupboards and drawers in the kitchen to store food. Food was stored most of the time in the original package opened or unopened. Opened foods stored in drawers or cupboards were flour, pasta, oil, sugar, rice, snacks, tea, salt, condiments, and honey. Food stored unopened, most of the time included canned food such as jams, compote, juices, sauces, however, once opened, they were transferred to fridges. On the other hand, some items were transferred from their original package and moved to plastic boxes with lids. For example, Maria Mirabela (34 years, Young families, urban) preferred to move the condiments that she bought into the boxes saying that was more convenient for her. Serena (36 years, Young families, rural) preferred to transfer the flour that was stored originally in sacks into plastic bowls as much as she needed for a couple of days, whereas Zoltan (35 years, Young single men, urban) transferred the bulky olives that he bought from the assisted zone area in plastic boxes covered with lids and then put them in the fridge.

### *Other places for storing food*

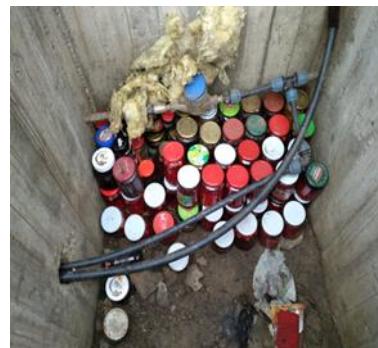
We have met 2 households, where the food was stored on the floor (Figure 3.3.7). For example, Linalia (73 years, Elderly households, rural), who lived in rural area stored the potatoes under bed, and eggs, onions and margarine under the table. Zoltan (35 years, Young single men, urban), who shared the house with other mates, stored most of the food in his room, where his fridge was placed. Therefore, fruits or food that could be stored at room temperature were kept on the floor of his room.



**Figure 3.3.7: Examples of storing food on the floor (Romania)**

### *Cellars*

Where they existed, cellars were not very much in use because they were difficult to be accessed by the elderly participants who were own them. Existence of refrigerators and freezers determined people to give up using the cellars, even if they had one. On the other hand, young people as Minodora (27 years, Young families, rural) and Ionel (30 years, Young single men, urban) (extended the food storage capacity in their homes with cellars. Minodora improvised a cellar in the water pump house (Fig.3.3.8). She was young and she managed to go in and out without using a ladder.



**Figure 3.3.8: Cellar type storage place improvised in the water pump house (Romania)**

Ionel, who lived in a town apartment at the ground level of the building, made a direct connection between his kitchen and the basement of the building, where he stored goods as potatoes.

### *Repackaging*

We didn't ask the Romanian participants about repackaging, but some things have been noticed during the fieldwork. Two participants repacked food before putting it in the fridge. After she arrived home, Sorina (32 years, Young families, rural) opened the package with chicken legs, rinsed them with water, then packed them into a thin plastic bag and put them in the fridge. She said she applied the same procedure every time she bought poultry. Zoltan (35 years, Young single men, urban) repackaged the olives because he thought that keeping them in a plastic casserole covered with lid was safer.

### *Leftovers*

Ten out of 15 participants had leftovers in their fridge (Table 3.3.10). Leftovers were represented by soup, cabbage rolls, and trays with steak, pasta with nuts and sugar, cakes. In most cases, the soups were stored in the pot (covered with lid) that was used for preparing the dish, and one participant, Amalia (31 years, Young families, urban) stored the soup in glass bowls covered with plastic lid.

**Table 3.3.10: Number of Romanian households storing leftovers in the fridge**

Study group	No. of participants having leftovers in the fridge
Young single men	2
Elderly households	3
Young families	5

## Storage in France

### Unpacking order

Most research participants started to unpack frozen products, then fresh products that went in the fridge and in the end, they placed intermediate moisture foods in the cupboards. Two participants used their garage as an alternative or complement to the fridge for fruits and vegetables. Another one started unpacking bread before placing the fresh products in the fridge. Two participants did not start to place food in the freezer, but they were going to freeze fresh products (vegetables or meat). One of them had his freezer in a room below the kitchen. Before storing food, he placed everything on the countertop and made a distinction between fresh foods (in particular fresh meat) he planned to eat before the use-by-date and those he had to freeze to eat them later. This participant (Vincent) often bought food according to special offers and not from what he planned to cook and eat. Other participants directly placed food items from the carrier bags to the storing places.

I first place fresh food, always fresh first. I put everything on the counter top and then it depends on the place I have and on what I shall do... I choose what I shall keep [in the fridge] and what I shall get down [to the freezer]. I shall keep the chicken. Sometimes, I freeze all my meat, I do it at once, but this time, as it is for Wednesday, the use by date is OK so I keep it in the fridge.

(Vincent, 29 years, Young single men, rural, France)

Methods of unpacking of the French participants were (Table 3.3.11):

1. Storing in the freezer first, then in the fridge and lastly in the cupboards;
2. Storing fresh products in the fridge first, then fresh products in the freezer;
3. Storing in the fridge first, then in the cupboards for research participants who did not use freezer;
4. Storing first fresh products in both the fridge and a cool room (the garage)
5. No strict order

**Table 3.3.11: The ways of unpacking food among French households**

Study group	Households	Unpacking order
Young single men	Aurélien (25 years)	Unpacked and stored fresh product. Then placed dry goods in the cupboards
	Vincent (29 years)	Unpacked fresh products first. Put them on the counter top. Decided what goes in the fridge and in the freezer. Stored first products in the fridge and then went down to store the others in the freezer
	Fabrice (24 years)	Unpacked and stored directly products first in the freezer, then in the fridge and lastly in the cupboards
	Simon (25 years)	He put his carrier bag close to the fridge and stored fresh products first. Then he unpacked and stored dry goods in cupboards “little by little”.
	Etienne (30 years)	Transferred everything from his van to his kitchen table and first put fresh products directly in the main fridge. Then dry goods in the cupboards
Young families	Mathilde (37 years)	Started to unpack the salad placed in the fridge, then fruits and vegetables placed in the garage. She continued with yogurts and leeks stored in the fridge. Then dry goods in the cupboard.
	Amandine (27 years)	Started unpacking immediately, by putting products in the fridge first and in cupboards afterwards.
	Julie (28 years)	First bread close to the cooking plates, then fresh cut salad, cheese, drinks in the fridge. Lastly cakes in the cupboard and washing up with soap under the sink
	Mylène (25 years)	Started with the products that go in the freezer, then the fridge, then the cupboards with sweet products before salty ones
	Elodie (31 years)	Started putting products in the freezer, then products in the fridge and lastly in the cupboard.
Elderly households	Gérard & Odile (71 & 65 years)	First fresh products in the fridge, then dry goods in the cupboard and in the end fresh leeks in the freezer.
	Sylviane (77 years)	Directly stored fresh products in her fridge. Then dry goods in the cupboards.
	Charles (75 years)	Started with fresh products stored in the fridge. Then, because the fridge was full, he continued to place fruits and vegetables in his garage.
	Hélène (72 years)	Immediately put fish in the freezer before doing anything else. Then fresh products in the fridge.
	Yvette (74 years)	First fresh products in the fridge. Then dry goods in the cupboards. Yvette did not store some dry goods because her husband will use them soon.

Research participants unpacked and stored foods immediately once back home. “We store everything before [going to the toilettes or taking a coffee] .... Shopping is a duty I do not like. I get rid of it quickly as possible”, said Mylène (25 years, Young families, urban). However, Simon stored immediately fresh products and then dry goods ‘little by little’.

## Storing devices

The storing devices of research participants from France are collected in Table 3.3.12.

**Table 3.3.12: Storing devices in the French households**

Research group	Participant (no. of persons in the household)	Fridge	Freezer	Pantry	Others
Young, single men s	Aurélien (25 years) (6)	2	1		
	Vincent (29 years) (6)	1	2		
	Fabrice (24 years) (1)	1	1		
	Simon (25 years) (1)	1	1		
	Etienne (30 years) (4)	2 <sup>a</sup>	4		1 <sup>b</sup>
Young families	Mathilde (37 years) (3)	1	1	1 <sup>c</sup>	
	Amandine (27 years) (3)	2	1		
	Julie (28 years) (3)	1			
	Mylène (25 years) (3)	1	1		
	Elodie (31 years) (7)	2	1	1 <sup>c</sup>	
Elderly	Gérard & Odile (71 og 65 years) (2)	1	2	1 <sup>d</sup>	1 <sup>e</sup>
	Sylviane (77 years) (3)	1	1	1 <sup>f</sup>	
	Charles & Annie (75 & 70 years) (2)	3	2	1 <sup>c</sup>	2 <sup>e,g</sup>
	Bernard & Hélène (both 72 years) (2)	1	1	1 <sup>c</sup>	
	Yvette & François (74 & 76 years) (2)	1	1	1 <sup>c</sup>	1 <sup>d</sup>

a) One fridge used only for fish bait to prevent mixing them with food, b) cheese cabinet for cheese ripening, c) garage, d) back kitchen, e) cellar, f) room of the house different from the kitchen, g) little room beside the garage.

Elderly households had the highest number of storage devices and all had storage places in addition to the kitchen. The five elderly households interviewed in France lived in large houses, either in rural or urban areas. They had the highest number of storage places per persons in the household (23 for 11 persons in total, compared to 13 for 19 persons for families and 17 for 18 persons for young single/with roommates). Etienne, who also had roommates and Charles & Annie had a particularly high numbers of food storage devices. Both lived in large houses in remote places in the countryside.

*Fridge temperature***Table 3.3.13: Fridge temperatures in French households**

Research group/Participants		No. days	Mean temperature (°C)	Temp Min (°C)	Temp Max (°C)	Std deviation
Young man	Aurélien (25 years)	10	8.3	6.2	11.7	1.1
	Vincent (25 years)	2	6.9	3.5	9.2	1.6
	Fabrice (24 years)	14	7.2	5.9	11.3	0.7
	Simon (25 years)	28	5.6	1.5	9.4	2.1
	Etienne (30 years)	22	3.7	1.3	9.2	1.3
Young families	Mathilde (37 years)	14	5.1	2.3	15.6	1.1
	Amandine (27 years)	11	7.2	4	11	1.4
	Julie (28 years)	16	7.5	6.3	11.3	0.7
	Mylène (35 years)	15	7.5	5.7	13.4	1.4
	Elodie (31 years)	14	4.4	0	9.1	1.6
Elderly	Gérard & Odile (71 & 65 years)	20	7	4.1	12.8	1.2
	Sylviane (77 years)	93	4.8	0.3	13.8	1.9
	Charles & Annie (75 and 70 years)	23	6	-0.5	8.6	1.6
	Bernard & Hélène (both 72 years)	15	5.1	3.9	7.5	0.5
	Yvette & François (74 & 76 years)	28	8.2	7	10.5	0.5

The temperature of refrigerators recorded for research participants is summarized in Table 3.3.13. Most research participants did not know their fridge temperature and several did not know what the recommended temperature for fridge was. Julie thought it could be 16-17°C and then changed her mind for 2-3°C. Gérard & Odile did not know the meaning of the adjustment scale. Elodie did not know her fridge temperature but paid attention to refrigeration power adjustment. During the interview, she noticed it had been accidentally moved by a pan she had put in the fridge. Sylviane's fridge was very old (over 25 years old), the temperature regulation device had been changed and since then, she cannot adjust her fridge temperature. Aurélien (25 years, rural) had never noticed the sicker that indicates the coolest zone in the fridge. Some participants adjusted their fridge according to food sensory requirements. Yvette didn't know her fridge temperature and she and her husband adjusted it to the minimum because they didn't like cold fridge and did not want their butter to be too hard to spread it on toast in the morning (Figure 3.3.9). To meet the same requirement but without increasing the fridge temperature, Bernard & Hélène used to store overnight little pieces of butter at room temperature, in a closet (Figure 3.3.10). Simon didn't know his fridge temperature and did not want his fridge to be too cold because he did not like to drink juices too cold. Elodie had a second fridge cooler than the main one, only for drinks and for her husband's yogurt, because he liked them very cold.



**Figure 3.3.9: Yvette's fridge adjusted to the minimum refrigeration power to keep butter soft and easy to spread on toast (France)**



**Figure 3.3.10: Little pieces of butter in Bernard & Hélène's cupboard to keep it soft without having to increase the fridge temperature (France)**

Few participants had thermometer and devices to indicate the adequate temperatures in their fridge. Mathilde (37 years, Young families, urban) had a thermometer inside his fridge indicating 4°C. Temperature was displayed on the door of Mylène's (25 years, Young families, urban) fridge indicating 6°C. Charles had a thermometer in his fridge indicating 10°C, but he was not sure the thermometer was right, he knew the fridge temperature should be around 4°C, maximum 6°C. Bernard & Hélène (both 72 years, Elderly households, urban) had a thermometer in his fridge indicating 5.4°C. Elodie (31 years, Young families, rural) and Mathilde had a sticker indicating that the fridge was at the right temperature. Bernard & Hélène had an alarm when the fridge temperature was too high.

Energy saving was mentioned by Simon (25 years, Young single men, urban) who knew from his father it was an energy waste to adjust the fridge temperature too cold. Charles did not want the refrigeration power adjusted to the maximum because it was unnecessary and a waste.

**Table 3.3.14: Storage of food in the fridges of the French households**

Foods	Items	Packaging materials
Fruits and vegetables	Salads (lettuce, chicory), cucumber, mushrooms, bell pepper, lemon, avocado, tomatoes, bananas, melon, spinach, cooked beetroot, mandarins, carrots, leek, zucchini, garlic, onion, celeriac, dry tomatoes, dry plums, preserved lemon, cherries, potatoes, butternut, radishes, pears, parsley, laurel, thyme.	In their original plastic pouches (fresh cut salad), in their plastic bag closed or open, in a paper bag, outside the bag on absorbent paper, no packaging (directly in the vegetable container), specific closed plastic boxes (either unwashed or washed), in closed plastic bags after washing, in a special net (for salad), in the salad spinner (for salad).
Meat & fish	Chicken filets, chicken carcass, bacon dices, ham (cooked and dry), Escalope cordon bleu, salami, knackis, paté, skewers, andouillettes, andouille, blood pudding, red meat, minced meat (beef, pork), herring, salmon	In their original package (paper, plastic pouches, glass jar) or in an open dish (thawing meat) or in a glass box with a lid (thawing meat, delicatessen).
Cheese, yogurt, and spreads	Cheese (fresh, ripened, grated), yogurt, dairy cream, butter, margarine	Original package (boxes, trays, pouches, sachet). Yogurts with or without their cardboard package.
Ready to eat dishes	Pan cakes, gazpacho, fougasse, coleslaw, tahini, rice pudding, creamy puddings, fried potatoes (thawing), soup, cod preparation, nems, croquet monsieur, cheese puffs.	Products in their original package (plastic pouches, plastic trays, plastic pots, boxes, paper, glass jars). Glass jars for homemade soup.
Other	Eggs, soy milk, coco milk, sauces, mustard, pizza dough, puff pastry dough, fresh pasta mayonnaise, pickles, olives, fruit juice, wine, beer, soda, drinking water, jam, compote, honey, maple syrup, hazelnut oil, baker yeast, rennet, duck fat, cat food, medicines, food complement (alga), glue.	Eggs in their egg boxes or in the fridge egg compartment or in a bowl. Glass bottles or glass jars, cans, plastic boxes. Integrated container for drinking water.

In Table 3.3.14 are collected the type of food that households stored in their fridges. Fabrice (24 years, urban), and Aurélien (25 years, rural) (both Young single men) stored food in the fridge as they can, without any specific order, where they find place. Charles (75 years, Elderly household, rural) did not agree about the way his wife, Annie (70 years) stored foods in the fridge and there did not seem to be any specific order. Other participants had diverse ways of storing foods in the fridge (Figure 3.3.11). Only Sylviane (77 years, rural), Yvette and François (74 & 76 years, urban) (both Elderly households) referred to the coolest shelf of the fridge and used it to store meat and/or delicatessen. Odile (65 years, Elderly households, rural) knew the lowest shelf is the coolest part of the fridge but did not use this to organise food storage in the fridge, she said she would rather follow her habits, and she put meat on the top shelf. Vincent (29 years, Young single men, rural) always stored meat on the top shelf, because he knows fruits and vegetables are in the bottom compartment. He followed the order, fruits and vegetables, cheese, then meat. Among French research participants, leftovers were stored in diverse part of the fridge. All participants used the bottom compartment for

fruits and vegetables, except Yvette & François who put cheese, and Aurélien who put drinks in it (Figure 3.3.12). They stored fruits and vegetables in their garage (Yvette & François) or in the kitchen at room temperature (Aurélien). Mathilde (37 years, Young families, urban) and Odile removed cardboard package of yogurts out of hygiene. Elodie (31 years, Young families, rural) did not remove the cardboard package of the most recent yogurts to be sure her children will pick the old one first.



**Figure 3.3.11: Bernard and Hélène's fridge with delicatessen (in their paper package) in the plastic box on the coolest shelf of the fridge (France)**



**Figure 3.3.12: Aurélien fridge shared with his roommates (France)**

Research participants had diverse strategies to store fruits and vegetables to prevent rotting and in the same time to prevent them from desiccation. They often opened the plastic package, and/or placed them on absorbent paper in boxes or directly in the bottom drawer. Regarding shelf life, several participants mentioned they could eat past date products, but only for yogurts.

#### *Cool room, pantry and cellar*

In two households with young families and in all the elderly households, foods were stored outside the kitchen. It could be in the garage, in a cellar, a “back kitchen” or a “storage room”. These rooms were used because of the extra space they offered but also because temperatures were cooler than the kitchen but not as cold as the fridge.

François (76 years, Elderly household, urban) said, "Here we have the garage, here are the potatoes, this is cool and ventilated. You'll see, these are stuffs with no risks and they stay in a cool place". Furthermore, he told about the leftover in the garage: "This is a dish from yesterday, by this time it is not needed [to put it in the fridge], we have about 6-7 degrees here in the garage". Mathilde also stored food in her garage (Figure 3.3.13):

And here [in the garage] I also store fruits and vegetables. Here bananas from Biocoop, hazel nuts, nuts, cherry tomatoes.... I do not like to put fruits and vegetables in the fridge. My partner loves his fruits cold, so he puts his clementine in the fridge, but I really don't like this. So, I eat the ones that are here".

(Mathilde, 37 years, Young families, urban, France)



**Figure 3.3.13: Fruits and vegetables in Mathilde's garage (France)**

Food stored in these rooms were shelf stable foods (cans, unopened jars of sterilized vegetables, unopened jams, rice, pasta, flour, biscuits, fruit juices, bottles of water, wine, beer, alcoholic drinks, UHT milk, baby foods, pickles), potatoes, onions, garlic, herbs, vegetables and fruits (pumpkin, carrot, zucchinis, cucumber, leeks, pears, strawberries, pineapple, clementine), bread, but also not shelf stable food was stored; eggs for some participants, and leftovers from two participants (a cooked dish in his pan and a quiche). Charles (75 years, Elderly households, rural) used to put cheese in the garage to ripen, but not in summer because it was too hot. Several elderly research participants stored home-made food products such as apple juices, jars of vegetables, pickles, jams, wine bottled by themselves. Food items were stored alongside cleaning products, laundry detergent, drugs, cat litter, ants repellent, pet foods and bird foods.

#### *Room temperature/kitchen*

In kitchens foods were stored in cupboards, open shelves, in drawers, on the counter top, on kitchen devices (fridge, oven), and sometimes on the floor for bottles (Table 3.3.15). Compartments below the sink, drawers, and cupboard or open compartments were usually used for garbage bins, cleaning products and cleaning devices, devices used to package food (aluminium foil, plastic film, and freezer bags) and baking paper. Storage was more or less strictly organized, with strong organizations found in the

three categories studied. For instance, Vincent's (29 years, Young single men, rural) cupboard, which he shared with roommates, was divided in parts: one for pasta, rice, with old pack before new packs; one part for canned food; one for olive oil and vinegar; one for breakfast products; one part for flour, sugar; one part for sauce. Plastic film, aluminium foil, cooking paper, plastic bags, and sponges and garbage bags were stored in a drawer, well put in order. Vincent stuck to his storage habits, and for instance, he stored his eggs on a little oven in the kitchen and had to remove them each time he used the oven. Odile stored her spices by alphabetical order in a drawer in the kitchen (Figure 3.3.14). In contrast, Aurélien (25 years, Young single men, rural) discovered during the interview, open packages of perishable foods that should have been in the fridge.



**Figure 3.3.14: Spices in one of Odile's drawers (France)**

**Table 3.3.15: Food stored at room temperature in the kitchens of the French households**

Food category	Items	Packaging materials
Fruits and vegetables	Hot peppers, bell peppers, zucchini, Shallots, onions, garlic, radishes, butternut squash, carrots, garlic, orange, pear, avocado, lemon, apple, kiwi, clementine, nuts, almonds, banana, coconut, canned sweet corn, canned beans,	In bulk, unpackaged, cans for canned vegetables
Meat & fish	Dry salami, dry sausage, and canned tuna.	Unpackaged (cured meat), cans (tuna)
Cheese, yogurt, and spreads	Butter	Closed plastic boxes
Ready to eat dishes	Canned prepared dishes, cream pudding	Cans
Other	Eggs, milk powder, UHT milk, infant formulae, flour, dry yeast, vanilla, maize starch, food colouring for cakes, bread crumbs, grounded hazelnuts, potato flakes, rice, pasta and semolina, couscous, bulgur, polenta, lentils, quinoa, seeds for salad (sesame, flax, mustard), onion confit, dry mushrooms, tomato sauce, honey, maple syrup, jams, compote, tea, herb teas, coffee, cocoa, oil, candies, chocolate bars, chocolate spread, sugar, bread, breakfast cereals, biscuits, brioche, salt, spices, dry herbs, mustard, vinegar, stock cubes, pickles, water bottle, soda, wine, alcoholic drinks.	Cans, glass jars, plastic boxes, plastic and paper bags, aluminium package, glass and plastic bottles.

Simon (25 years, Young single men, urban) had a specific plastic box for bakery products to prevent them from drying, another, Fabrice (24 years, Young single men, urban), stored porridge in a plastic box because he observed that it keeps longer this way. Etienne (30 years, Young single men, rural) stored bread in a specific bag. Dry sausages were hanged by Amandine (27 years, Young families, rural) to let them dry and to preserve them (Figure 3.3.15), whereas Etienne kept dry salami in a box made of metallic nets to protect it from flies.

Bernard & Hélène (both 72 years, Elderly households, urban) kept little pieces of butter (salted and unsalted) in separated closed plastic boxes in a cupboard at room temperature for the morning to be able to spread it on bread (softer). This storage habit was not observed among other participants.

Fruits and vegetables were most often placed in open bowls, open boxes, baskets, placed on the counter tops or on shelves. Figure 3.3.15 gives example of fruit storage: from right Sylviane (77 years, Elderly households, rural) hanging of hot pepper from her garden to dry them; Julie's fruit basket (28 years, rural); and Amadine's (27 years, rural) display of fruits and avocado (both Young families).



**Figure 3.3.15: Fruit storage (France)**

#### *Repackaging - open packages*

Besides food packages with lids or caps (such as those for bottles of sauces and condiments), open packages (pouches, trays...) of foods were closed with rubber rings, clothespins, clips, wrapped in cling films or aluminium foil. Foods sold in paper as delicatessen were kept in their original paper package that could be re-folded. The food or the whole open package could also be transferred into plastic or glass boxes. Mathilde (37 years, Young families, urban) put ham in a dedicated box. Bernard & Hélène (both 72 years, Elderly households, urban) placed pieces of frozen foods in closed glass boxes to thaw in the fridge. Figure 3.3.16 shows examples of leftover storage, from left: open soup box closed with a clip (Yvette & François, 74 & 76 years, Elderly households, urban); and frozen fish thawing in a box placed in the fridge (Bernard & Hélène)



**Figure 3.3.16: Storage of leftovers (France)**

However, few open packages were observed. Meanwhile, in Aurélien's (25 years, Young single men, rural) household (including several housemates) open jam and open olive can was stored (Figure 3.3.17, left), and in Fabrice's (24 years, Young single men, urban) household open bags of pre-washed rocket salad at. Cherries in syrup was stored in an open bowl in the fridge of Julie's (28 years, Young families, rural) (Figure 3.3.17, right). Mathilde (37 years, Young families, urban) intentionally left plastic bags of vegetables open in the fridge to prevent them from rotting.



**Figure 3.3.17** **Figure 3.3.17:** Storage of Sweet leftovers (France)

Some participants said they would never leave food open in the fridge, due to safety concerns. Whenever open food was found, participants explained it was from somebody else in the household (husband, roommate). Other reasons could be convenience (grated cheese transferred from the open pouches to a plastic box) or strong smell of the food (open cheese package transferred to a closed plastic box).

I am much more careful about storage [of foods] than my parents. I put everything in boxes or I cover them with plastic film. I don't use aluminium, I don't like it, it doesn't cover properly. It [plastic film] is hermetic, not aluminium.

(Elodie, 31 years, Young families, rural, France)

I put cling film over open packages. I am concerned when I see water in a plastic package (in such case she would normally transfer the food in a plate).  
(Amandine, 27 years, Young families, rural, France)

### *Leftovers and food prepared in advance*

For their meals, Aurélien's (25 years, rural) roommates and Fabrice (24 years, urban) (both Young single men) used to cook large amount of food for 2-3 days and stored it in the fridge. Sylviane (77 years, Elderly households, rural) prepared soup for 3 days and stored it in the fridge. Mathilde (37 years, Young families, urban,) and Bernard & Hélène (both 72 years, Elderly households, urban) prepared French dressing in advance and kept it in the fridge for a week or month. Mathilde prepared food for her young daughter in advance and stored it in individual portions in the freezer. She also stored meat stock in small portions in the freezer using an ice cubes tray. In contrast, Aurélien preferred to cook food just for one meal. "For me this is a dish a day", he said.

Bernard & Hélène consumed readymade mayonnaise when they were alone because a home-made mayonnaise portion would be too much for them and they would have to throw the leftovers.

In Elodie's (31 years, Young families, rural) fridge, a couscous leftover was found in a plastic box. It came out that it was a "second generation leftover". It was from her daughter's lunch with her nanny who brought back the left over to Elodie. The couscous

came from a leftover of a meal prepared by Elodie who used some of it for her daughter's lunch box.

All participants said they won't keep leftovers for more than 2-3 days in the fridge. Sylviane (77 years, Elderly households, rural) said she would throw away leftovers after 4-5 days in the fridge, and that thank to this precaution they have never been ill. However, during the interviews, Charles (75 years, Elderly household, rural) discovered several pots, boxes of leftovers forgotten in the fridges and he did not remember what it was.

In the fridge, leftover of cooked foods was stored in plastic or glass boxes with lid, in big glass jars (Sylviane's soup), in the pan, pot or pressure cooker used to cook, wrapped in aluminium foil (croque monsieur leftover). Boiled eggs were placed in a bowl or in the eggs compartment. Dressing prepared in advance was stored in a glass jar with a lid. Salad leftovers (salad washed and not consumed immediately) were stored in plastic bags, in plastic boxes of in the salad spinner. Half eaten fruits were wrapped in an aluminium foil (avocado in Fabrice's case) (Figure 3.3.18, left), while melon in Etienne's (30 years, Young single men, rural) case was kept on a plate (Figure 3.3.18, right).



**Figure 3.3.18: Storage of avocado and melon (France)**

Leftovers were stored mostly in the fridge, sometimes in the freezer: Mathilde (37 years, Young families, urban,) and Gérard & Odile (71 & 65 years, Elderly households, rural)). Yvette & François (74 & 76 years, Elderly households, urban) and Charles & Annie (70 years) stored some leftovers in the garage. François explained that the garage is cool enough in this season (March) (Figure 3.3.19). Charles said to his wife Annie to put the leftover (a quiche) in the garage because it was too hot to go in the fridge but she didn't agree, the temperature is being too warm in May. Food leftovers found during the interviews were couscous, fried chicken, meat and pasta, rice, soup, meat stock from home prepared meal, meals for the babies, boiled eggs, half eaten fruits, salad, home-made chocolate cakes, half eaten croque monsieur, quiche.



**Figure 3.3.19: Figure 3.3.19: Leftover from the day before in the garage in winter (March) (Yvette & François,)**

## Storage in the UK

### Unpacking food: priorities

In the UK we observed 14 out of 15 households unpacking food on their return home from shopping.<sup>32</sup> Of these, 13 participants unpacked and put away their shopping as soon as they got home. The only exception to this was Archie Phillips (74 years, Elderly households, urban). He unpacked his shopping bag, laying his food out on the counter and putting some items away: a tub of ice cream into the freezer; coleslaw and cheese into the fridge. However, he explained that he wanted to sort through the existing items in the fridge before putting the rest of his food away, which he would do after the researcher had left: he was yet to eat and wanted to sit down with a drink and a snack before carrying on.

Kate Buckley (30 year, Young families, urban) explained that she usually unpacks straight away, but this is dependent on whether or not her daughter Grace needs attention, such as being fed or changed. On this occasion Grace fell asleep during the car journey and was still asleep after being carried inside, allowing Kate to get straight on with unpacking. By comparison this was less of a concern for the other two households with young children during our visit, since Laura and Chloe's respective partners were at home looking after the children.

### *Unpacking order*

Unpacking began in broadly the same way for all households. On arriving home, shopping bags were carried through to the kitchen and initially placed on the worktop or floor. Beyond this, the households varied in their approaches to unpacking. Much like in other countries, there were two main points of variation: (1) emptying shopping bags onto a kitchen surface before putting items away, versus unpacking directly into storage places one item at a time; and (2) whether or not priority was given to putting away frozen and/or chilled items before others. In practice, most households used a combination of approaches or changed partway through the process of unpacking. This means that clear distinctions between them are difficult to draw, but they do fit into five broad groups.

First, there were five participants who unpacked food directly from the bags into their designated storage places: Kate Buckley (30 year, urban) and Chloe Martin (38 years, rural) (both Young families); Josh Lovell (22 years, urban) and Daniel Thorne (25 year, urban) (both Young single men; and Tricia Riley (70 years, Elderly households, urban). It should be noted that Tricia and especially Josh had only a small number of items to put away on this occasion.

Kate began by unpacking raw meat, vegetables and dairy products into the fridge; she then put fruit in the fruit bowl, long-life items in the pantry and soap in the cupboard

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<sup>32</sup> We were unable to observe unpacking for one participant: Sahib Singh (23 years, Young single men, urban).

under the sink. As seen earlier, she had intentionally packed her two shopping bags so that one had (mostly) fridge items and the other had only non-fridge items. Chloe followed less of an obvious system – mostly putting things away as they came to hand – but she did make a point of putting chicken in the fridge before other chilled items. Daniel, like Kate, tended to pack similar items together while at the shop, but explained that he did not follow a specific order when unpacking:

I have no set order when it comes to putting things away, I mean generally when I've actually gone to the shop or things like that normally it's in the right bag where it needs to go anyway. So, I'll just pick this one up, for instance...

(Daniel Thorne, 25 years, Young single men, urban, UK)

Josh started unpacking by getting his bulk-bought chicken ready to go in the freezer. He sorted the chicken into separate one- or two-fillet portions in small freezer bags, before taking them out to the freezer in the garage. He later explained the importance of “getting it straight in the freezer, frozen straight away” after a previous experience of illness which he attributed to chicken. He then unpacked the remaining items from his rucksack, putting broccoli and spinach into the fridge and leaving his sauce out on the side. Tricia also separated some of her chicken portions for freezing – she wrapped two fillets in foil and left one in the pack to go in the fridge – but unlike Josh, she did this after unpacking the rest of her items, most of which went in the fridge.

Second, there were two participants who laid all the shopping items out on kitchen surfaces before starting to put them away: Jean Higgins (72 years, Elderly households, rural) and Alicia Cook (23 years, Young families, urban) (Figure 3.3.20). Jean grouped food together on the worktop according to where it would be put away: for example, chicken, fish and prawns were to go in the freezer; vegetables and cooked meats were to go in the fridge. Alicia unpacked both her shopping bags onto the worktop, but did not appear to group them together by storage location. However, she did then proceed to put all the fridge items away first, before putting bakery products and long-life items in the pantry.



**Figure 3.3.20: Jean (left) and Alicia (right) lay out their items on the worktop (UK)**

The rest of the participants used some form of ‘hybrid’ of the first two approaches. The next two categories closely resembled the second in that most of the items were taken out of the bags and placed on a surface before being put away, but in the process selected items were put directly away.

Third, then, there were three elderly households whose primary approach was to lay the food out on the surface, but some specific chilled or frozen items were put directly away. Susan Dunning (78 years, Elderly households, urban) was most explicit that she would always pack away frozen food before anything else. She started to unpack her shopping bag on to the kitchen worktop, but as soon as she got to her two frozen items (pizza and chips) she took them to the freezer. She then returned to the task of emptying her shopping bag before putting the remaining items away in the pantry. Archie Phillips (74 years, Elderly households, urban) began by spreading out his shopping on the worktop to “double-check what I have”. When he reached the tub of ice cream (the only frozen item he had bought) he put it directly in the freezer, explaining that this needed to happen “immediately”, before then continuing to lay out other foods (including fridge items) on the surface. Mary and Bill Russell both (70 years, Elderly households, urban) were slightly different in that they unpacked together. Bill’s approach was to empty all the shopping bags, grouping food together on different sections of the worktop close to where it would then be put away. Simultaneously, though, Mary began by taking milk directly from one of the bags to put in one of their two fridges, in the corridor adjacent to the kitchen. She then started packing away as Bill was still emptying the bags, before he joined in with putting things away.

Fourth, there was one further participant – Laura Cooper (31 years, Young families, urban) whose primary approach was to lay food out on the surface, grouping things together by where they are stored, but who put some items directly away. Unlike Susan, Archie and the Russells, however, these were non-food items: bleach and bin bags. Aside from these, Laura waited until all the bags were empty before packing food away, starting by putting various packs of fresh chicken and beef in the freezer, then putting most of the other chilled items in the fridge.

Fifth, the final group of participants – Ryan Langsdale (20 years, urban) and Liam Abney (28 years, urban) (both Young single men) and Paul Rothwell (34 years, Young families, urban) had a more fluid approach, switching between laying items out and putting things directly away.

### **Storing food at home**

Across the UK sample, most household kitchens were made up of the same basic elements, although there were variations in the detailed composition. In terms of food storage, all homes had at least one fridge and freezer, a variety of cupboards and

counter-top storage spaces, with some also having larger pantry-style walk-in cupboards.

There were commonalities and some key differences in where and how particular foodstuffs were stored. All households, for instance, stored raw chicken (and other meats) in the fridge. Most of them also stored chicken in the freezer. For some, like Josh Lovell (22 years, Young single men, urban) and Jean Higgins (72 years, Elderly households, rural), the freezer was where most of their chicken was routinely kept, having a supply ready to be defrosted when needed. Some would buy several packs in one go, putting some in the fridge for use in the following days and the rest in the freezer (e.g. Ryan Langsdale, 22 years, Young single men, urban). Others initially refrigerated chicken but then froze any surplus, either immediately after using part of a packet: Alicia Cook (23 years, Young families, urban); and Mary Russell (70 years, Elderly households, urban) or when its use-by date was approaching: Sahib (23 years, Young single men, urban); and Susan Dunning (78 years, Elderly households, urban). Those who bought cooked meats and dairy products universally kept them in the fridge, with the exception of Daniel Thorne (25 years, Young single men, urban) who stored butter at room temperature on the kitchen worktop.

By contrast, there was a clear divide between the 9 participants who kept eggs in the fridge and the 6 who kept them at room temperature (on the worktop, on the windowsill or in a cupboard). And approaches to storing fruit and vegetables varied widely, both by type of item and from household to household.

### *Fridges*

We now consider in more detail some of the common means of storage and how they were used by our participants. All homes in the UK sample had at least one fridge, but some had two or more. The number of fridges ranged from Ryan's student home (22 years, Young single men, urban) – with one fridge shared between seven housemates – to Mary (70 years, Elderly households, urban) and Paul (34 years, Young families, urban) each having three fridges for their two-person households (although in both latter cases one of these was currently unused).

Most participants had some systematic way of dividing their food within the fridge(s), irrespective of whether or not this was strictly observed in practice. An immediate distinction here is between those living as a single-family unit (including living alone) and the three who lived in shared accommodation with housemates: Ryan (22 years, Young single men, urban), Sahib (23 years, Young single men, urban) and Josh (22 years, Young single men, urban). In each of these cases food was bought, prepared and eaten individually. This raised the question of how storage space was divided between household members. Sahib and his flatmate Amir had the most straightforward arrangement. Each had their own separate fridge, although Sahib did use some of the space in Amir's fridge. By contrast Josh and Warren shared one fridge and used whatever space was available:

Int.: Do you have specific spaces in there that are yours?

Josh: No, not really. We kind of know— know what each other has bought or where we have been.

(Josh Lovell, 22 years, Young single men, urban, UK)

Sahib and Josh were both seemingly satisfied with these arrangements. Ryan, however, found his situation less satisfactory. Each housemate had their own allocated shelf within the shared fridge, keeping all of their chilled food on the same shelf. This presented potential issues with both the varying temperature within the fridge and the potential for cross-contamination of pathogens between different types of food. Ryan initially had the top shelf, until he suspected that it was not cool enough and negotiated to move to the bottom shelf:

So, I was having my chicken stored at the top of the fridge, and I noticed that it was going out of date before the use-by date, a day or two before. It was discolouring and it smelt awful. And so I changed— so, I assumed that it was the temperature of the fridge, so I turned it up a bit and turned it up a little bit more and then it— and then I froze everyone else's stuff at the bottom of the fridge. And so then people had a go at me for that and I was like, 'but my things are going off'. So, I then bought myself a thermometer to go in the fridge and I put it at the top of the shelf and, yes, it was about six degrees, so it was too warm. So, then I turned it and I turned it until it got to about the right temperature, so about two degrees, and then again I started to freeze everyone's stuff, the stuff at the bottom. So, then we moved it the bottom and it was about minus two, so there was a temperature difference in our fridge. So, we don't store anything at the— we only store things like butter and sauces at the top now.

(Ryan Langsdale, 22 years, Young single men, urban, UK)

While this had mitigated the temperature problem, Ryan was conscious that organising the fridge in this way still constituted a potential cross-contamination risk. However, he felt that he was unable to challenge this since an alternative setup would be likely to cause more immediate issues:

Ryan: The problem being at university is obviously I'd like to keep all the meats on the bottom shelf and so that there's no chance of it contaminating anything below. But obviously you can't. Everyone wants to have their own shelf. And you can't convince six other people to all keep all their meat on one shelf, all their veg on another shelf and all their whatever on another shelf, because they won't have any of that.

Int.: So, why is it – just to jump in – why is it that that would be problematic for—?

Ryan: People would start using other peoples' things, I think, or we'd— say I had three packets of chicken in there and someone had bought exactly the same two packets of chicken. There'd be arguments about who's used whose or things like that. It's just not really practical.

(Ryan Langsdale, 22 years, Young single men, urban, UK)

As Ryan alludes, allocating fridge space by household member was not the only way. In most households, specific sections of the fridge were allocated to specific types of food. Many kept raw meat in or near the bottom of the fridge. Again, some participants understood this in terms of temperature:

Yes, apparently that's the coldest part in that fridge. It says it's the coldest part, but who knows. To be fair, things do tend to get frozen in there if you leave them in there".

(Alicia Cook, 23 years, Young families, urban, UK)

Others saw it as minimising risk of cross-contamination from raw meat to other items:

Probably like I mentioned before I'm putting all the fresh fruit, vegetables and that on the top shelf. Just cos I don't like having the meat above it where there is the potential for it to drip down.

(Daniel Thorne, 25 years, Young single men, urban, UK)

...just in case it drips through and gets everything else— especially like with chicken. So, I definitely don't want that all over everything else.

(Josh Lovell, 22 years, Young single men, urban, UK)

And in Mary and Bill's household both explanations were used:

Bill: In the fridge, they [raw meat] go in the very bottom of the fridge and they [cooked meat] go higher up. So, if anything leaks it leaks into the bottom part of the fridge and not through everything else.

[...]

Mary: So, these always go in the bottom. Theory being it's cool.

(Mary and Bill Russell, both 70, Elderly households, urban, UK)

In some other households Paul; Tricia (70 years, Elderly households, urban); Sahib, efforts were made to store raw meat separately from other items although not necessarily by keeping it at the bottom of the fridge. For example, Sahib's raw meat was in the middle of his fridge, in a plastic carrier bag.

I try to stop that cross contamination. So right now, I've got cooked meat, because I've just cooked that meat. That meat will not go on the same shelf as the one that's got the raw meat. So once that raw meat comes out of the fridge, I'll anti wipe— I'll antibacterial wipe that shelf, just to kill off any germs that come from that. That's not going to be on the same shelf anyway, but that's just something I'm going to do. So that's the cross contamination between that and that. I keep my vegetables away from raw meat as well. So, I've got that veg drawer at the bottom. It's just keeping everything away from each other".

(Sahib Singh, 23 years, Young single men, urban, UK)

However, in practice not everyone maintained a strict separation between raw meat and other items. Before starting cooking on the second visit, Archie's (74 years, Elderly households, urban) unopened pack of chicken was sitting on top of an open packet of cooked ham in the middle of the fridge. He did, however, discard this ham as he felt it smelt bad, although this was unrelated to the chicken. In other case, although Josh was careful to put his raw meat in the bottom of the fridge and most vegetables on higher shelves, when we arrived for the cooking observation his defrosting chicken was sharing the very bottom section with a pack of spinach and a tub of butter.



**Figure 3.3.21: Defrosting chicken sits close to spinach and butter (UK)**

### *Freezers*

Again, all participants had access to at least one freezer. These came in different shapes and sizes: upright freezers, combined fridge-freezers, and chest freezers that open from the top (Figure 3.3.22). Most were situated in kitchens, but others were placed elsewhere in the house: Ryan (22 years, Young single men, urban); Mary (70 years, urban); Jean (72 years, rural (both Elderly households) or in the garage: Paul (34 years, Young families, urban); Josh (22 years, urban); and Liam (28 years, urban) (both Young single men). In contrast to how fridges were used, participants didn't tend to have a set system for organising their frozen food. Food was often placed simply where there was available space. In the chest freezers food was placed on top of other items. However, in two of the shared houses (Josh; Ryan), housemates had their own allocated spaces.



**Figure 3.3.22: Inside Liam's chest freezer**

### *Kitchen cupboards and drawers*

Kitchens varied considerably in the amount of fitted cupboard and drawer space they provided. These were most commonly used for storing 'dry goods' and long-life foods such as tins, jars, cereals, snacks, rice, pasta, spices and so on. Most households had separate cupboards for crockery and cookware, and further cupboards for cleaning products, conventionally the cupboard under the sink.

As in Norway, despite being stored in room temperature while being unopened, once the condiments and canned food are opened, they were in most cases moved to the fridge for storage. There were, however, some exceptions to this. Notably, Daniel had several open, not-quite-empty containers of mayonnaise in his food cupboard.

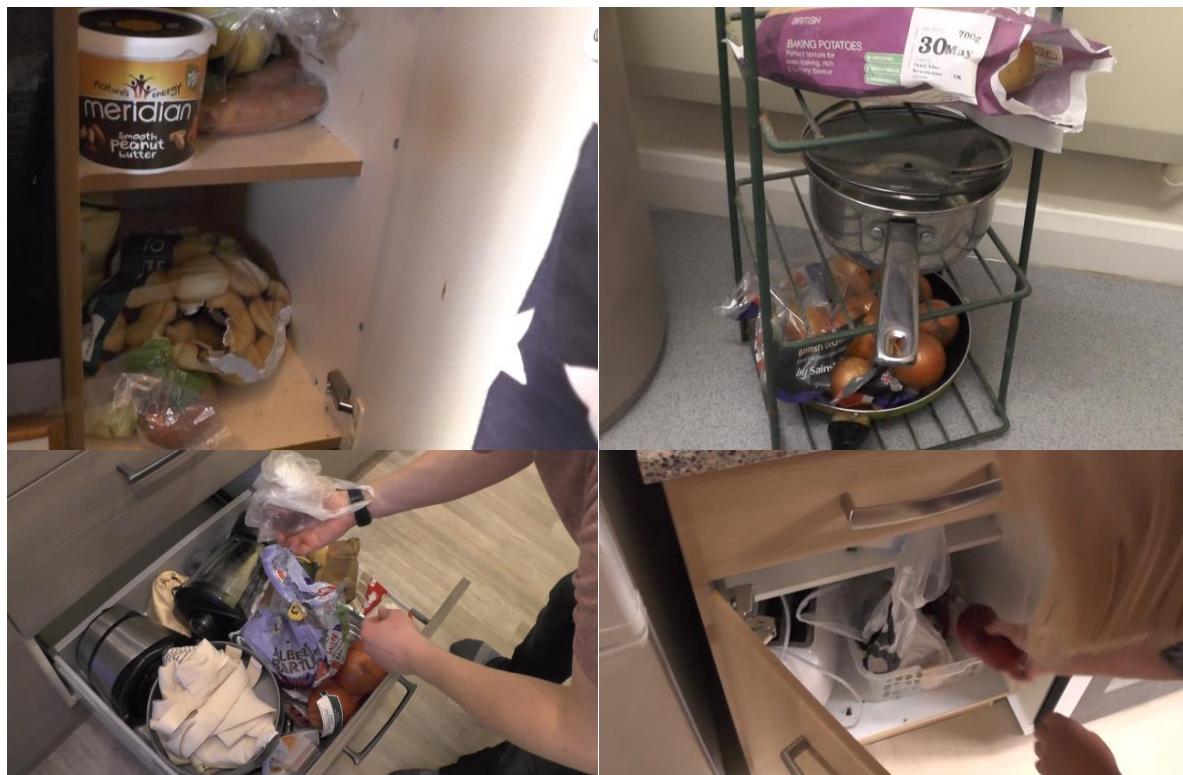
### *Pantries*

Three households had walk-in pantries adjoining their kitchens: Susan Dunning (78 and 80 years, Elderly households, urban), Kate Buckley (30 year, urban) and Alicia Cook (23 years, urban) (both Young families). In all three cases these were the main place for storing food that wasn't refrigerated or frozen, especially long-life items such as tinned food, unopened jars of preserves and sauces, packets of biscuits and so on. In other words, they were used in more or less the same way as kitchen cupboards. None of the three households used the pantry explicitly as a cool storage space. Alicia, for example, explained that her pantry can get warm as it has a window letting sunlight in.

### *Counter-top and other storage spaces*

Most households in the UK had some items of food that didn't get put 'away' as such, but remained present on the worktop or other kitchen surfaces. Recurring items in this category included eggs. Of the six households that stored eggs at room temperature (as opposed to in the fridge), four kept them 'out' either directly on the worktop: Daniel

(25 years, urban); Josh, (22 years, urban) (both Young single men), or on top of another item on the worktop such as the microwave (also Josh), a metal trivet (Liam, (28 years, Young single men, urban) and a plastic container: Mary (70 years, Elderly households, urban) (Figure 3.3.23). Ryan (22 years, Young single men, urban) stored eggs in the cupboard; Alicia (23 years, Young families, urban) kept some in a dish on the windowsill and a further carton in the pantry. Other items to be kept out on kitchen surfaces included supplies for making tea and coffee, bottles of squash or other drinks, fruit and bread.



**Figure 3.3.23: Figure 3.3.23: Varied approaches to storing potatoes and onions: Chloe (top left), Archie (top right), Paul (bottom left) and Tricia (bottom right) (UK)**

Finally, there were also a number of ‘miscellaneous’ storage spaces which were either designed for a specific item or represented a novel or idiosyncratic use of another storage space. Fruit bowls and baskets were not only a common place for keeping ‘sweet’ fruits such as apples, bananas and oranges Susan (78 years, urban); Mary (70 years, urban); Tricia, (70 years, urban) (all Elderly households); Sahib, (23 years, Young single men, urban); Josh; and Paul (34 years, Young families, urban) but also – less frequently – were used for ‘savoury’ items like tomatoes and fennel: Kate (30 year, Young families, urban); and Archie (74 years, Elderly households, urban).

Onions and potatoes were an example of items that were stored in numerous different ways, seemingly lacking an accepted ‘home’ in the contemporary UK kitchen. While every participant kept at least some (often most) of their fresh vegetables in the fridge, it was comparatively rare to refrigerate onions and potatoes. Instead they were kept in a variety of places. Kate had a designated fabric bag for onions and potatoes, hanging

in the pantry. Others stored one or both items in kitchen cupboards with a diversity of other foodstuffs, some with little obvious connection to fresh vegetables: in a narrow cupboard with bananas and tubs of peanut butter: Chloe (38 years, rural); in a small overhead cupboard with long-life items such as cereals, snacks, and tins: Laura (31 years, urban) (both Young families); or pasta, rice and flour (Sahib); and in a larger all-purpose food cupboard including eggs, bread, bananas, and more of the above long-life items (Ryan). Perhaps more surprising locations for onions and/or potatoes included: a kitchen drawer containing assorted kitchen appliances (Paul); the bottom of a cupboard with an electric toaster (Tricia); a rack for storing pots and pans (Archie; and on top of a kitchen stool (Josh).

## Storage in Norway

### Unpacking food: priorities

Most informants prioritized to store food right away when they got home from the store. This was expressed explicitly from several of them, in addition to our observations. Some of the reasons given were usually to avoid the food getting warm, make sure not to forget doing it later, for instance Jon (28 years, Young single men, urban) and pregnant woman Anna (31 years, Young families, urban), or to just get it over with Inger (70 years, Elderly household, rural). The priorities when arriving home after the store did not seem to differ neither along the urban/rural dimension, education dimension, income dimension nor the kitchen situation. The one factor that seemed to have an impact was the family composition. Except for two participants, who claimed to always wash their hands before doing anything else when they arrive at home, Bente (70 years, Elderly households, urban); and Inger, only young families with babies had to make storing food their second priority. The clearest example was Emma (33 years, Young families, rural), who had baby Erik with her during the accompanied shopping. Erik started getting uneasy already when being placed in the car after shopping and started crying on the way home, visibly stressing Emma who was driving. She tried to reach back to him in the baby seat to comfort him but she did not manage to calm him down. When Emma arrived home, she ran in with baby Erik and put him down on her down jacket, which she had placed on the hallway floor with heating. She then set the laundry machine on an extra rinse and ran back out to the car and carried the bags with groceries into the house, which were also placed on the heated floor. Emma took out the frozen food and placed it in the freezer. Then she turned her attention to Erik and fed him for about 30 minutes while the remaining food was left in the plastic carrier bags on the heated floor. After breastfeeding her baby, Emma stored the remaining cold food in the fridge. After that, Emma changed Erik's diaper, before storing the dry goods. Emma commented on her priorities like this:

Emma: We'll just take the cold [food] now. Because I prioritize diaper over the things that go in drawers and such.

Int.: Yes, right, there is a list of priorities here. First freezer goods, (...) and then cold goods, then food and then food for you – or we'll see about that

Emma: Yes, that's right. (...) I feel this was quite representative. (...) Yes, something that makes me have to – other children or, "oh, the hens don't have water, I have to run to them" or there's like always something. But I prioritize getting the food in quite quickly. Like pretty much.

(Emma, 33 years, Young families, rural, Norway)



**Figure 3.3.24: Picture of Emma leaving the shopping bags on the heated floor to care for baby Eric (Norway)**

Similarly, Lena explained how she would manage to bring both baby and groceries from the underground garage, and up to their apartment in the fourth floor, without elevator in the building:

Lena: Now I would have carried her [referring to baby daughter] and some of the groceries upstairs, and then gone back down to get the rest. Actually, I would put her in a playpen so she is safe. Or, yes,...I don't think I can manage, there are four bags. I can't get all of them with me now. But can I ask you to carry two bags, or should I?

Int.: I'll do it (laughs). But it's interesting to hear how you would do it if I wasn't here.

Lena: Then I would prioritize the bag with chicken. I would bring that up first [with the baby].

(Lena, 37 years, Young families, rural, Norway)

Both Lena and Hanne (31 years, Young families, urban) who also was shopping with babies less than 12 months had to tend to their children, such as undressing the outdoor clothing, giving them water to drink and placing them on a baby rug or in a baby chair before unpacking the food they just bought. Camilla (35 years, Young families, urban) was the only mother who kept her baby strapped to her body while unpacking.

### *Unpacking order*

All participants except one unpacked the frozen or cold food before storing dry goods. Inger (70 years, Elderly household, rural) was the only participant to store dry goods first, which most likely was because of how the house was built and how the storage

spaces were organized. When coming home from the store, Inger entered the house through the basement entrance. Most of her food was stored in the basement, where she had a large pantry and a walk-in cooling cupboard. In the basement, she unpacked all the food in the chest freezer to get an overview and stored the dry goods in the pantry which was right next to the freezer. She had to go through the pantry to get in the cooling cupboard. The fridge and daily freezer was upstairs, in the kitchen, which was at the end of her storing tour.

There were five patterns of unpacking food when arriving home after the store in the Norwegian study. The first was to place food directly from the carrier device to their designated place. There were two households in the Norwegian sample who did this: Fredrik (23 years, urban): and Georg (28 years, urban) (both Young single men) went shopping every day. Georg usually went shopping right before he will cook the food, and thus left the food on kitchen table or counter until he started cooking, meaning that his shopping routines sometimes enabled him to skip the storage part. He said that he would prioritize the food that needed to be stored cold if he were not to start cooking quite soon after arriving home. Furthermore, his fridge did not function well, and thus he often bought and cooked food right after as part of his food provision practice.

**Table 3.3.16: The ways of unpacking food in the Norwegian households<sup>33</sup>**

Study group	Household	Unpacking order	Notes
Young single men	Fredrik (23 years)	<ol style="list-style-type: none"> <li>1. Food are placed in fridge and freezer straight from the shopping bags</li> <li>2. Food that belong in other places stored</li> <li>3. Food that will be used later the same day for dinner is left on the kitchen table because the fridge is full</li> </ol>	First pattern
	Georg (28 years)	<ol style="list-style-type: none"> <li>1. Store cold food in fridge</li> <li>2. Store remaining food</li> </ol> <p>Or</p> <ol style="list-style-type: none"> <li>1. Place food on kitchen counter, ready to be cooked</li> <li>2. Cook food</li> </ol>	
	Roger (24 years)	No registered order. Some food is placed on the kitchen counter before put in their rightful place while other is put directly in fridge.	Fifth pattern
Young families	Anna (31 years)	<ol style="list-style-type: none"> <li>1. Food placed on kitchen counter</li> <li>2. Cool products in fridge</li> <li>3. Frozen food in freezer</li> <li>4. Dry goods</li> </ol>	Second pattern
	Camilla (35 years)	<ol style="list-style-type: none"> <li>1. Places bought food on kitchen table</li> <li>2. Place food in fridge</li> </ol>	Second pattern
	Emma (33 years)	<ol style="list-style-type: none"> <li>1. Frozen food</li> <li>2. Baby's basic well-being</li> </ol>	Third pattern

<sup>33</sup> We did not observe the unpacking of Jon (28 years, urban) and Petter (29 years, rural) (both Young single men)

Study group	Household	Unpacking order	Notes
		3. Feeding baby 4. Place food on kitchen table 5. Cold food in fridge 6. Change baby's diapers 7. Dry goods	
	Hanne (31 years)	1. Baby's basic well-being 2. Cold/frozen food 3. Dry goods placed on kitchen counter and then distributed to their designated places  If in hurry: 1. Frozen/cold food 2. Pick-up son in kindergarten (with baby) 3. Remaining food	Fourth pattern
	Lena (37 years)	1. Baby's basic well-being 2. Wash hands 3. Place food on kitchen table 4. Cold food in fridge 5. Dry goods + out of fridge storage	Second pattern
Elderly households	Bente (70 years)	1. Placing bags on kitchen counter and take out the products 2. Placing frozen shrimps to thaw by the sink 3. Place cool food in fridge 4. Place vegetables and fruit in cool cupboard	Second pattern
	Inger (70 years)	1. Wash hands 2. Take food out of carrier bag and place them on the chest freezer in basement 3. Place dry goods in pantry 4. Cool products in cooling room 5. Remaining in fridge	Second pattern
	Nils (74 years)	1. Food products taken out of the bags and placed on the kitchen counter 2. Food placed into the fridge (Most often step 1 is done by Nils, and step 2 by his wife, Nina) 3. Remaining food placed in cupboards and drawers	Second pattern
	Kari (71 years)	1. Placing frozen goods in freezer cabinet in fridge 2. Place all cool food products on kitchen counter to get an overview of what she has 3. Distribute cool goods in fridge 4. Reorganize fridge to make room for new food - some products are moved to non-cool places	Third pattern
	Oda & Ove (both 72 years)	1. One carrier bag placed on kitchen counter 2. Oda holds the other bag in her hand, picks up food and place them on the counter as well 3. Ove then places the goods in the fridge 4. Then this is repeated with the bag laying on kitchen counter	Fifth pattern

The second pattern was to place the food somewhere to get a proper overview of the items before storing them, and the ones who used a combination. There were six participants in the Norwegian sample who did this.

The third variant of unpacking was to place frozen goods are placed directly from the carrier device, while the fridge food and dry goods are stored in-between. This was observed with two participants. Kari explained her way of unpacking. Kari started by placing the frozen vegetables in the freezer beneath the fridge. When she was done with the frozen goods, she systemized all the newly bought cool products on the kitchen counter before placing them in the fridge.

Kari: I put them on the counter before I place them in the fridge, before I put them in the fridge, yes. (...) Know what I got. That's what I'm doing now

Int.: Yes, so now you're systemizing, do you usually get an overview of what you got?

Kari: Right, yes, I get an overview of what I got.

(Kari, 71 years, Elderly households, urban, Norway)

The fourth way of unpacking was to store both frozen and fridge food directly from the carrier device and into freezer and cooler devices, and the dry goods are stored in-between before being placed in their spaces (4<sup>th</sup> variant). This way of storing was only observed at one participant, and it resembled the strategy describes above. We have chosen to distinguish between them, however, as it may say something about how the participants viewed and distinguished between chilled and frozen products. The way described above prioritize frozen food over chilled, but the way observed at Hanne's groups the two categories together. Hanne represented the forth pattern. She was very conscious of storing the cold and frozen products first, which can be explained that she sometimes has little time to do shopping and storage, and thus is used to prioritize.

I always put things in their place, but sometimes I may run in and toss in the chicken and the milk, and then the things that can be left in room temperature is left in room temperature until we get back again [from the kindergarten]. But I always make sure to place the cool products in the fridge first.

(Hanne, 31 years, Young families, urban, Norway)

The fifth variant was a mixed, or perhaps a random, way of unpacking. Some food was placed on counter and some food was placed directly into the fridge, but the food was from all categories; frozen, cool and dry goods. There seems to be no system or rule for how the unpacking was done, except for the order in which the food was picked up from the carrier device. This way of unpacking was observed at two participants:

Although most participants said they store food right after arriving home, the sample revealed examples when this does not happen. For instance, Jon forgot to store food while having the researcher following him home, remembering it at the end of the first visit. Similarly, Anna said she sometimes forgets about the food for a shorter period of time before remembering to store it. However, she said it is not more than 15 minutes before she remembers again. Hanne explained that she once forgot a plastic package

with fresh, raw chicken filets in them, in the baby stroller, which she used to transport the food home with. The chicken was left in the stroller until the next day, and she just had to throw it as it was no longer deemed edible.

### **Storing food at home**

For this section we have systemized all the mentioned or observed food at the informants' home after what kind the food, how it was stored, and where it was stored. We identified six places where people store food: fridge; cooling cupboards; kitchen counter or table; pantries, drawers and cupboards; and freezers. The category of cheese & spread is an important one in the Norwegian food day, as open sandwiches make out a large part of the Norwegian diet. Table 3.3.21 gives an overview of what food is stored where, with what materials involved and some reflections or explanations from the participants.

#### *Storing devices*

Table 3.3.17 shows the number of storing devices among the Norwegian participants, grouped after study group. We have chosen to distinguish pantries from cupboards and drawers in the kitchen because pantries may be used for long-term storage as they often are located outside the kitchens. Another point was that pantries traditionally are located in cellars or basements, meaning the temperature was a little lower than room temperature. The pantries of Inger (70 years, rural), Oda & Ove (both 72 years, rural) (both Elderly households) and one of Camilla's (she has two) are examples of this. However, Camilla's (35 years, urban) other pantry, and Hanne's (31 years, urban) (both Young families) were both located in their apartment, holding the same room temperature as the remaining rooms.

**Table 3.3.17: Storing devices in the Norwegian households**

Categories	Households	Fridge	Freezer	Cooling cupboard	Pantry
Young single men	Fredrik (23 years)	1	1	0	0
	Georg (28 years)	1	1	0	0
	Jon (28 years)	1	1	0	0
	Petter (29 years)	1	1	0	0
	Roger (24 years)	1	1	0	0
Young families	Anna (31 years)	1	1	0	0
	Camilla (35 years)	1	2	1	2
	Emma (33 years)	1	2	0	0
	Hanne (31 years)	1	2	0	1
	Lena (37 years)	1	1	0	0
Elderly households	Bente (70 years)	1	3	1	0
	Inger (70 years)	1	2	1	1
	Kari (71 years)	1	2	0	0
	Oda & Ove (both 72 years)	2	3	0	1
	Nils (74 years)	1	1	0	0

Table 3.3.17 suggest that the number of storage devices seems to increase with age, or depending on life situation.

**Table 3.3.18 Fridge temperatures in the Norwegian households**

	Number of days	Mean temp., °C	Temp Min, °C	Temp Max., °C	Std. Deviation, °C
Anna (31 years)	14	4.7	2.0	10.0	1.62
Bente (70 years)	14	6.8	5.0	10.5	0.48
Camilla (35 years)	14	5.5	2.5	8.5	0.84
Emma (33 years)	14	4.9	2.5	7.5	0.61
Fredrik (23 years)	12.4	4.0	-0.5	6.5	1.19
Georg (28 years)	14	5.9	3.0	9.5	1.13
Hanne (31 years)	14	3.6	0.0	7.5	0.91
Inger (70 years)	14	8.8	3.5	13.0	1.65
Jon (28 years)	-	-	-	-	-
Kari (71 years)	14	7.0	2.0	10.0	1.27
Lena (37 years)	14	5.0	3.0	10.5	1.14
Nils (74 years)	14	7.4	5.0	12.0	0.76
Ove & Oda (both 72 years)	14	3.1	-4.0	22.0	1.27
Petter (29 years)	14.0	1.2	-4.0	8.5	1.84
Roger (24 years)	14.0	8.0	6.0	10.0	0.63
Average	13.9	5.4	1.9	10.4	1.1

The young men own one fridge and one freezer each, totalling of 10 storage devices. The freezers in all five cases were integrated with the fridge. The participants from young families group had typically increased with a second freezer in addition to the integrated one, and two out of five had one or two pantries for food storage as well. The total number of storage devices among the young family sample was 17 devices. Camilla was the participant with most storage devices, as she had a cooling cupboard as well as two freezers, one fridge, and two pantries, whereof one was in the apartment and the other in the basement. Among the elderly participants, there was a total of 21 storage devices distributed on the five participants. The main patterns were that the elderly participants had two or three freezers each, as well as two out of five have cooling cupboards, and two out of five have pantries.

**Table 3.3.19: Fridge temperatures, kitchen size and kitchen statements in the Norwegian households**

Study groups, households		Aver. fridge temp.	Kitchen size	Kitchen statement
Young single men	Fredrik (23 years)	4	8 m <sup>2</sup>	My fridge is old
	Georg (28 years)	5,9	1,5-2 m <sup>2</sup>	My fridge is old My kitchen has looked the same for decades My kitchen is too small for my household
	Jon (28 years)	-	3 m <sup>2</sup>	My fridge is old My kitchen has looked the same for decades
	Petter (29 years)	1,2	10 m <sup>2</sup>	None
	Roger (24 years)	8	24 m <sup>2</sup>	None
Young families	Anna (31 years)	4,7	20 m <sup>2</sup>	My fridge is old
	Camilla (35 years)	5,5	25 m <sup>2</sup>	My kitchen is too small for my household
	Emma (33 years)	4,9	25 m <sup>2</sup>	None
	Hanne (31 years)	3,6	8-10 m <sup>2</sup>	My kitchen has looked the same for decades
	Lena (37 years)	5	12 m <sup>2</sup>	My fridge is old
Elderly households	Bente (70 years)	6,8	20 m <sup>2</sup>	My fridge is old My kitchen has looked the same for decades
	Inger (70 years)	8,8	9 m <sup>2</sup>	My kitchen has looked the same for decades
	Kari (71 years)	7	10-12 m <sup>2</sup>	My kitchen has looked the same for decades
	Nils (74 years)	7,4	15 m <sup>2</sup>	My kitchen has looked the same for decades
	Ove & Oda (both 72 years)	3,1	25 m <sup>2</sup>	None

Table 3.3.20 shows that the Norwegian households stored a variety of different foods in the fridge, including some outlier items such as sourdough starter and dog food. However, for the most part, the same food items were observed in several households, giving an overview of a normal Norwegian diet these days. This includes a variety of vegetables, meat, cheese, eggs, spread, and milk products, as well as some fish and fruit.

The food stored in fridge was for the most part kept in their original packaging while being unopened. Items that were bought in loose weight in the store, and carried in thin plastic bags from the store, were usually left in these bags in the fridge. This was typical for vegetables and fruits.

One interesting pattern emerged when looking at how the meat products were stored. All unopened meat products observed in this study were kept in their original packaging. However, after they were opened, it was common to move them over into plastic containers with lids, or to put the meat and the original packaging in a plastic bag.

**Table 3.3.20: Food in fridge in the Norwegian households**

Food category	Items	Packaging materials
Vegetables	Potatoes, parsnip, carrots, beetroots, celery, leaf cabbage/kale, yellow onions, red onions, shallots, leek, rutabaga, sweet potatoes, mushrooms, cauliflower, broccoli, asparagus, pepper, chili, ginger, lemon, lime, tomatoes, radishes, lettuce, avocado, canned corn (opened), garlic	Original wrapping, no wrapping, loose, bowls (after manipulation), plastic bags, plastic boxes with lids,
Fruit	Melon, pears, oranges, apples, water melon, grapes	Aluminium foil, original wrapping, loose weight plastic bag from store (thin), plastic foil
Meat & fish	Pickled herring, smoked salmon, sausages, chicken, bacon, minced meat, sliced lamb leg, meatballs, shredded pork meat, pork chops, cured meat, boiled ham, turkey spread, salami	Original wrapping, plastic bags, zip-lock bags, plastic boxes with lid
Cheese & spread	Cheese spread, soft cheese, hard cheese, canned mackerel in tomato sauce, liver pate, caviar, topping salads	Original, plastic bag, custom-made lids (for liver pate and canned mackerel)
Other	Milk, butter, eggs, yoghurt, sour cream, cream, juice, jarred olives, condiments (mostly opened), parsley, bread, sourdough starter, yoghurt starter, dog food	Original packaging, loose. Outliers: plastic box with lid (only eggs for travelling), plastic bag (only homemade bread).

### *Cooling cupboards*

Three participants in the Norwegian sample had special refrigerators for storage of vegetables and fruit (8-10 °C) (cooling cupboards). Inger (70 years, Elderly household, rural) had a large walk-in cooling cupboard with a temperature of 8 °C. She used it as a second fridge and stored most things that she could have stored in fridge as well. She said she placed things in the cooling cupboard because it keeps well in there and because it has more space than her fridge. Participant Bente (70 years, Elderly households, urban) had two identical fridges, where the second fridge had adjusted temperature to 7 °C in order to use it as a cooling cupboard. She said that she stored things in there that she might as well have stored in a cold cellar, somewhere between fridge and room temperature. The third households was Camilla's (35 years, Young families, urban), where an old wine cabinet was used as a cooling cupboard. She used it mostly to store vegetables when they got large quanta from the CSA farm they bought food at.

The materials for storing food in cupboards were the same as for in fridge and out of fridge. None of the Norwegian participants said they repackage or handle food differently when placing them in the cooling cupboards.

**Table 3.3.21: Food stored in cooling cupboards in the Norwegian households**

Food category	Vegetables	Fruit & berries	Meat & fish	Cheese & spread	Other
Items	Cauliflower, broccoli, peppers, cucumbers, celery, potatoes, sweet potatoes, onions, carrots, rutabaga, tomatoes, lettuce, sugar snaps	Strawberries, oranges, "fruit"	Smoked salmon, sausages, chicken, meat spread: ham, turkey		Eggs, milk, yoghurt, sodas, juice, wine, beer, condiments, jam, pickled cucumbers, sauces, sausage bread, potato bread
Packaging materials	Loose, original packaging, plastic bags, boxes with lid				

### *Room temperature/kitchen*

**Table 3.3.22: Storage at room temperature (in the kitchen) in the Norwegian households**

Food category	Vegetables	Fruit & berries	Meat & fish	Cheese & spread	Other
Items	Cucumbers, tomatoes, garlic, avocado, red onions, lime	Bananas, apples, mangos	-	-	Bread, honey, unopened sauces and condiments, butter, jam, canned food, nuts, grain, flour, cereals
Packaging materials	Loose, original packaging, plastic bags, boxes with lid				

What and how much the participants stored outside the fridge when it comes to fresh food varied in the Norwegian sample. For instance, elderly participant Kari had strong opinions on what vegetables to be stored out of fridge and not, while young man Fredrik stored everything in the fridge because it kept the kitchen tidy.

Meat, fish, cheese or other spread were generally stored in the fridge in other places in the kitchen, as long as they were fresh products or opened. Canned food, however, could be stored at room temperature, but was then for the most part moved to the fridge when opened. An exception was Inger, who used her cooling room for storing all kinds of food, including meat and dairy products. Food stored in room temperature seems to require more explanation than when placed in fridge.

### *Pantries, drawers, cupboards*

All the Norwegian participants had cupboards and drawers in the kitchen to store food, and three households: Camilla (35 years, urban); Hanne, (31 years, urban) (both Young families); and Inger (70 years, Elderly household, rural) also had pantries with room temperature as well. Typical food stored in these places are unopened canned food, such as canned vegetables, canned fruit and canned meat, dry goods such as bags of semi-produced soups, casseroles and sauces, flour, icing sugar, rice, pasta, tea, coffee, olive oil, spirits, chocolate, juice boxes and smoothies, unopened condiments.

The food was usually stored in original packaging in these places. However, some items were moved to boxes with lids for instance. Examples of this are Georg (28 years, urban), who placed flour in plastic boxes after experiencing having flour beetles, Roger (24 years, urban), who stored coffee in air-tight box because he had learned from his grandmother that it is kept better this way, and Fredrik (23 years, urban), who kept all semi-produced powdered products (soups, sauces, spice mixes etc.) in a box because he did not want them to clutter (all Young single men).

One pattern observed in the Norwegian material was that despite being stored in room temperature while being unopened, once the condiments and canned food were opened, they were moved to the fridge or cooling cupboard for storage.

### *Repackaging*

Most participants did not repack any food before it was opened and most food was still kept in original packaging and wrapping, even after opening. This can be because a lot of the packages were made to contain the food after opening, participants did not think that the food keeps better if repackaged, or they thought it is too much job.

There seemed to be three main reasons for repackaging. One was to repackage food in order to keep them better. An example of this was Kari (71 years, Elderly households, urban), who put most things into plastic boxes. However, this was also observed with other participants. A second reason was to buy food in large quanta, freeze it, and then thaw little by little typically in plastic boxes. Petter (29 years, Young single men, rural) and Oda and Ove (both 72 years, Elderly households, rural) did this when buying large packages of cheese slices or meat spread in order to avoid the food from getting spoiled or inedible before they manage to eat it. Another reason for repackaging was because the original packaging or wrapping was deemed impractical. This could either be because it was difficult to close again, or because it took up too much space in the fridge.

## Summary – storage habits in 5 countries

This chapter described storage practices across all five countries. We note some strong similarities in the way participants handle food storage and their access to storing device. All the participants had access to at least one fridge and one freezer within the 5 countries. Other storage places were observed: cupboards, pantries, kitchen drawers, cellars, countertop, table, cooling cupboards. These storage devices could be placed in the kitchen, in another room (for pantries mostly), or even, more rarely, in another house situated in the same courtyard, for Dumitra (84 year, Elderly households, rural) – for her fridge).

The numbers of owned storage devices varied among countries. All homes in the UK sample had at least one fridge, but some had two or more. The number of fridges ranged from Ryan's (22 years, Young single men, urban) student home – with one fridge shared between seven housemates – to Mary (70 years, Elderly households, urban) and Paul (34 years, Young families, urban) each having three fridges for their two-person households (although in both latter cases one of these was currently unused). In Norway, the number of storage devices seemed to increase with age or depending on life situation. The young men own one fridge and one freezer each, totalling of 10 storage devices. The young families had typically increased with a second freezer in addition to the integrated one, and two out of five had one or two pantries for food storage as well. Among the elderly participants, there was a total of 21 storage devices distributed on the five participants. The main patterns were that the elderly participants have two or three freezers each, as well as two out of five have cooling cupboards, and two out of five have pantries. In France, the maximum observed was 3 fridges in an elderly household: Charles (75 years, rural) had them in his garage. Elderly households had the highest number of storage places per persons in the household: 23 for 11 persons in total, compared to 13 for 19 persons for young families and 17 for 18 persons for young single males. While in Portugal only one participant, Marta (35 years, Young families, urban), had two freezers, most of the Romanian informants had no more than one fridge with an integrated freezer. Usually, Romanians do not buy large quantities of food, or food that would be stored for months in the freezer. The number of people like Fanel (69 years, urban) and Damian (73 years, rural) (both Elderly household), who were still making large provisions for winter time, is decreasing in Romania. People preferred to buy food more often and considering that the distance between the market and the household is short, they thought that buying food more often avoids the risk of food spoilage.

### *Unpacking priorities*

In four countries, France, Norway, Romania and the UK, the households generally unpacked and stored food right after arriving home. They usually started with fresh products then dry ones. In Norway, one of the reasons given was usually to avoid the food getting warm, make sure not to forget doing it later or to just get it over with. Only

young families with babies had to make storing food their second priority. However, only in Portugal, overall across the 15 households, unpacking food and storing it away was not an immediate priority, having to juggle several other tasks that got on the way (e.g. cleaning, looking after pets and children, chatting, eating a snack or having a drink). Only a few of participants did start with storing chilled food (e. g. vegetables and yogurts) instead of prioritizing the storage of dried foods, like others mainly did. Two elderly participants, Augusto (70 years, rural) and Celeste (70 years, urban) firstly took off their shoes and then stored the food. In Portugal, most participants did not store the chicken in the fridge when they come back from the shop if they are going to cook it immediately after buying it. Only four research participants had the habit of arriving home and stored the chicken in the fridge while they started cooking preparations, and that happened across all target groups.

### *Storing food in the fridge*

The food storage in the fridge varied greatly among participants and within countries. We could not define a common pattern neither among categories nor among countries. In Portugal, some participants seemed to have a systematic way of organizing the fridge according to some sort of logic and others organize the fridge at random, storing food contents according to the available space in the shelves or fridge's door. For those who followed a rule of organizing, some did according to an order that considers fridge temperatures for particular items (e.g. eggs); to the layout of the fridge and the space to store its contents; to rhythms of shopping in everyday life, looking at end by dates and putting the older at the front and moving the newer items to the back (similar to supermarkets); and finally, to foods that are more often used in cooked dishes. In the UK, in most households' specific sections of the fridge were allocated to specific types of food. Many kept raw meats in or near the bottom of the fridge. Again, some participants understood this in terms of temperature; others saw it as minimising risk of cross-contamination from raw meat to other items, by putting it at the bottom of the fridge to prevent it from leaking over other food products. In France, only three elderly households organized their food in the fridge according to temperature and referred to the coolest shelf of the fridge: Sylviane (77 years, rural); and Yvette & François (74 & 76 years, urban) (both Elderly households), where they used it to store meat and/or delicatessen. Odile (71 & 65 years, rural) knew the lowest shelf is the coolest part of the fridge but did not use this to organise food storage in the fridge, she said she would rather follow her habits, and she put meat on the top shelf. Vincent (29 years, Young single men, rural) always stored meat on the top shelf, because he knows fruit and vegetables are in the bottom compartment. All informants used the bottom compartment for fruits and vegetables, except Yvette & François who put cheese, and Aurélien (25 years, Young single men, rural), who put drinks in it.

A particular use of fridge was noticeable among Romanian participants. In Romania, most of elderly people switched off their fridges during winter and stored the food in the

coolest room that they had in the house. For example, Damian (73 years, Elderly households, rural) said that he unplugged the fridge, when the temperature inside house was extremely low. Even if their fridges were switched off during winter, some of them, stored other vegetables as celery, parsnip, carrots in the unplugged fridge. On the opposite, we observed that people who lived in the apartments and did not have a pantry, for example Florinel (31 years, urban) and Balanel (28 years, urban) (both Young single men) tended to store in the fridge vegetables such as potatoes and onions during summer, because outside is too warm.

### *Storage habits*

The way to store food products also varied among countries and participants. In Norway, the food stored in the fridge was for the most part kept in their original packaging while being unopened. Items that were being bought in loose weight in the store, carried in thin plastic bags from the store, were usually left in these bags in the fridge. This was typical for vegetables and fruits. In Romania, most of the food stored in the fridge was kept in the original packaging even after they were opened. Bulky food items such as fruits and vegetables were stored in the fridge in thin plastic bags as brought from the store. Some participants used newspaper in the fridge to protect the shelves of the fridge from dirt or from scratches, or in the compartment dedicated for fruits and vegetables. In France, most of participants unpacked their products before putting them in the fridge (for example yoghurts' cardboard and vegetables plastic bags). Some elderly participants put some special plastic cover in the vegetables compartment to prevent it from dirt and to wash it more easily.

The Norwegian participants stored a variety of different foods in the fridge, including some outlier items such as sourdough starter and dog food. We also observed cat food and medication (like vaccines) in the fridge of some participants in France. In Romania, we also found medicines, candles, perfumes, cosmetic creams in the fridge.

In general, raw and fresh food products were placed in the fridge in every country.

### *Fridge temperature*

The range of average temperatures in fridges in all countries together with minimum and maximum temperatures are given in Table 3.3.23.

**Table 3.3.23: Ranges of temperatures in refrigerators**

	Average	Maximum	Minimum
Norway	1.2 – 8.8 (5.4)	6.5-22	-4 - 6
Portugal	2.2-9.2 (4.5)	5.5- 12	-1 – 7
France	3.7-8.3 (6.3)	7.5-15.6	-0.5 - 7
UK			
Romania*	3.1-12.3 (5.7)	16-33	-3.1 – 4.9

\*Some not fridge, but the room as fridges were unplugged in the wintertime

In Norway, the average of households' fridge temperature was 5.4 °C. The average was between 1.2 °C and 8.8 °C. The maximum temperature in the fridge varied from 6.5 °C to 22 °C, and the minimum between -4 °C and 6 °C. Five households' fridge were in average above 6 °C during the monitoring process.

In Portugal, the average of households' fridge temperature was 5.48 °C. The means varied from 3.2 °C to 9.1 °C. The minimum registered temperature in the fridge was -1°C whereas the maximum was 12 °C. Seven households fridge temperature (out of 15) was above 6 °C during more than 24 hours. During the whole observation, 2 fridges were above 6 °C during more than 300 hours.

In Romania, the average of households' fridge temperature was 5.75 °C. The average temperature during the observation (more than 14 days) varied from 3.1°C to 12.3°C. The maximum registered varied from 16 °C to 33 °C whereas the minimum varied from -3.1 °C to 4.9 °C. Five households' average temperature of fridge was above 6 °C. We should note that in Romania, the highest average temperatures (9.5 °C and 12.3 °C) were measured (at elderly persons) in the room where they store food during winter, as the fridge was turned off. Some households increased fridge's temperature in summer and decreased it or turned it off in winter.

In France, the average of households' fridge temperature was 6.3 °C. The mean varied from 3.7 °C to 8.3 °C. The maximum registered varied from 7.5 °C to 15.6 °C and the minimum from -0.5 °C to 7 °C. Eight households had an average fridge's temperature above 6 °C. Some households, especially the elderly households, adjusted their fridge according to food sensory requirements (for the food not to be too cold, like butter or juice) and because of seasonal reasons (they decreased it during winter).

The highest average temperature for a household's fridge was found in Romania (12.3 °C) and the coldest in Norway (1.2 °C). In France was noted that some elderly households did not know the meaning of the numbers on the temperature dial control. They were sometimes labeled from 1 to 5, or 1 to 7, and some households thought these numbers meant degrees.

The impact of these average fridge temperatures on the growth of a pathogen able to grow at low temperatures as *L. monocytogenes* (CCH "inhibit growth" for the step storage in refrigerator), can be illustrated by simulations using "Combbase predictor" (<https://www.combbase.cc/index.php/en/>). In non-acid foods with a high humidity, e.g. cooked meat left over, some ready-to-eat foods (RTE), the pathogens would multiply by a 100-fold within 17 days at 1.2 °C, 11 days at 3.1 °C, 6 days at 6 °C, between 3.5 and 4 days in the range of 8.3-9 °C, 2 days at 12.3 °C. The risk then depends on the storage duration of the leftovers or of the RTE by consumers.

### *Freezer*

All of the households in all countries had access to at least one freezer, either integrated in the fridge or outside of the fridge, as a chest freezer or a vertical freezer. In Portugal, most households stored meat, fish, leftovers and frozen products bought at the supermarket in the freezer. Some of them were very systematic in separating meat and fish and others mixing up within the same space different foods. For two mothers breastfeeding, Andreia (33 years, urban) and Filipa (36 years, urban) (both Young families) was a very important food location, because they considered to be very practical and safe freezing breast milk. In Romania, three households owned an extra freezer, as they needed more storage space, to store meat for the family, some of them slaughtering a pig in winter. One exception is an elderly participant in Romania, Fanel (69 years, Elderly household, urban), who owned 3 chest freezers to store different kind of products in each of them: one was used to store meat, one for vegetables, and one for fruits. In the UK, most households also stored chicken in the freezer in addition of putting it in the fridge. For some, Josh Lovell (22 years, Young single men, urban) and Jean Higgins (72 years, Elderly households, rural), the freezer was where most of their chicken was routinely kept, having a supply ready to be defrosted when needed. Some would buy several packs in one go, putting some in the fridge for use in the following days and the rest in the freezer (e.g. Ryan Langsdale, 22 years, Young single men, urban).

### *Cool room, pantry and cellar*

All households had one or several pantries or cupboards to store food, either in their kitchen or in another room, depending on the kitchen layout. Cooling cupboards, cellars (usually underground), garage were cold places also used to store food. These storage locations were usually used to store dry goods and shelf stable foods. In France, we also observed leftovers for two elderly participants (a cooked dish in his pan and a quiche).

In Romania, a different storage pattern was identified for those living in apartments in urban areas: if the apartment was reorganised, the pantry was eliminated to make more space. Because lack of room to store food items in Romania, some households, for example, Linalia, (73 years, Elderly household, rural) who lives in rural area stored the potatoes under bed, and eggs, onions and margarine under the table and Zoltan (35 years, Young single men, urban) shared the kitchen with other mates. However, most of the food that he had was stored in his room that is tidy for his needs. Therefore, fruits or food that can be stored at room temperature were kept on the floor of his room or under the table.

However, various storage locations were noticed. In Romania, one household, Minodora (27 years, Young families, rural), did not have a pantry inside house because the house has only two rooms, and the hall served as a kitchen. Therefore, Minodora stored the cans into a cellar improvised in the water pump house that was considered by us as being

inappropriate. In France, some food items were stored alongside cleaning products, laundry detergent, drugs, cat litter, ants repellent, pet foods and bird foods in the garage.

In general, we noticed, in every country, that once food products like canned food or condiments stored at room temperature are opened, they were moved in the fridge for storage. We noticed some exceptions, for one UK participants Daniel (25 years, Young single men, urban), who stored several open, not-quite-empty containers of mayonnaise in his food cupboard; and for one French participant (Aurelien, 25 years, Young single men, rural) who had some opened jams and canned olives, probably because one of his roommates forgot them, he said.

### *Storage at room temperature/kitchen*

Some households did not store some food items in the fridge for convenient reasons. In Portugal, two households with young families did not store opened butter or chocolate-hazelnut spread in the fridge because it got very hard and difficult to spread on bread, so they preferred to leave these items at room temperature in winter. An elderly woman (Josefina) also stored butter outside the fridge. In France, we noticed the same habits at an elderly household, Bernard & Hélène (both 72 years, Elderly households, urban) who are used to store overnight little pieces of butter at room temperature, in a closet, to be able to use it in the morning on their toast. Cheese was sometimes stored at room temperature for one French participant, Charles (75 years, Elderly household, rural) to ripen, but not in summer because it is too hot. In the UK, one case was noticed about Daniel Thorne (25 years, Young single men, urban) who stored butter at room temperature on the kitchen worktop. In Romania, some foods were not stored in the fridge, for logistical reasons. Two elderly households in rural areas having their fridges switched off kept the cheese and raw meat at room temperature and the meat was loose in a pot or plate. The visit was made during winter, and the outside temperature was negative, and in the unheated room the temperature ranged between -7 °C and 1°C.

### *Storage of leftovers in the fridge*

Most Portuguese households stored leftovers inside the fridge for 2-4 days as, according to their claims, afterwards the food started to smell bad. Besides, most mentioned not liking to reheat food because of taste and health reasons. In general, they stored leftovers (e.g. soup or other meal's dishes) in plastic containers with lids on and reheat them on microwaves. There was only one participant, Emília (89 years, Elderly households, urban) who had several leftovers inside plastic containers without lids, and in their original casserole with the previous meal leftovers (89 years, Elderly households, urban). There were some Portuguese households who would freeze leftovers, particularly soup. Only among households with children (three households) there were leftovers spoiled inside the fridge (chorizo and soup).

Ten out of 15 Romanian households had leftovers in their fridge. In most cases, the soups were stored in the pot (covered with lid) that was used for preparing the dish, and only one participant, Amalia (31 years, Young families, urban) stored the soup in glass bowls covered with plastic lid.

Most French households had leftovers in their fridge. Some cooked especially in advance for their future meals or future meals of their family (2 to 3 days in advance). In that case, they pack these dishes in individual portions, and one even freezes these preparations. Others prefer to cook just for one meal. All French informants said they won't keep leftovers for more than 2-3 days in the fridge. Within this storage duration, a cold adapted pathogen as *Listeria monocytogenes* would multiply by less than a 100-fold at temperatures of 10°C or below, according to Combbase simulations (<https://www.combbase.cc/index.php/en/>) for a non-acid high humidity food as cooked meat left over (CCH "inhibit growth" for Poultry left overs at the step "storage in refrigerator"). However, during the interviews, one elderly participant discovered several pots, boxes of leftovers forgotten in the fridges and he did not remember what it was. In general, in France, cooked leftovers were stored in plastic or glass boxes with lid, in big glass jars, in the pan, pot or pressure cooker used to cook, wrapped in aluminum foil (croquet-monsieur left over). Salad leftovers (salad washed and not consumed immediately) were stored in plastic bags, in plastic boxes or in the salad spinner. In France, leftovers were stored mostly in the fridge, sometimes in the freezer. Two elderly families stored some leftovers in the garage (in March, cold season, and even in May to cool it).

### *Cooling and reuse of leftovers*

Only two Portuguese households never store warm food inside the fridge, letting it cool completely. One elderly French woman cooled the quiche in her garage (in May), to avoid storing in the fridge a hot dish but her husband disagreed with this practice.

Portuguese households with young families usually take leftovers in a lunch box to eat at work the following day. Home-made meals taken to work became very popular in Portugal during the economic crisis to avoid spending money eating out. This practice seemed to be rooted in everyday life even after the crisis. If they must throw away food to the bin, it is because they are unsure whether it is good to eat, or even to reheat in the microwave. They worry about the food taste of leftovers. As presented in the previous paragraph, some French households planned their meals and cooked in advance. We identified a "second generation leftover" in a French young family from the daughter's lunch with her nanny. It has been supplied first by the family to the nanny.

## PART FOUR: FOOD PREPARATION

In this chapter, we present the sociological analysis on cooking. This is done with reference to the CCHs identified, in the CCH flow charts, in the transdisciplinary analysis. Research participants were asked to prepare a meal of chicken with vegetables (this could be a salad, cooked vegetables or both) and invited to cook a dish with chicken that is commonly made by them, and with which they already had some familiarity. In the methodology, it was explained that these cooking sessions were done in the presence of the research participant(s), a social science researcher and a microbiologist. Please refer to the methodology for an explanation of the transdisciplinary working model (Appendix B), which includes the fieldwork guide.

We start this chapter by discussing the order of cooking and then move to the ways in which chicken is handled prior to cooking. We then move on to discuss the handling of vegetables. Practices of cooking chicken are discussed later in the chapter, and will include an account of how cooks checked for doneness in chicken. The analysis is presented by country. The following country order is used: Portugal, Romania, France, United Kingdom and Norway. An analysis of comparative similarities and differences is presented in the conclusion of each subsection. The CCHs that apply to this part of the report are:

- Handling and preparing poultry (PVF5)
- Washing fresh vegetables and fruit (PVF7a, PVF7b)
- Handling and preparing fresh vegetables and fruit (PVF8a; PVF8b)

See Figure 1.1.2 in Chapter 1.1 for an illustration of the CCHs flowchart.

## Chapter 4.1: The order of cooking

In this chapter, we introduce the order in which the research participants prepared the chicken and vegetable dish. In the two next chapters, a detailed analysis of the preparation of chicken (chapter 4.2) and vegetables (chapter 4.3) will be discussed. This chapter describes and discusses the order of the various tasks of cooking done by the research participants and how cooking tasks were ordered around heating the chicken. The analysis in this chapter is related to the 6<sup>th</sup> CCH step, cooking poultry, but also associated with the PVF 7a & 7b and PVF 8a & 8b – washing & handling and preparing fresh vegetables and fruit – before or after preparing chicken, which highlights that the risk of cooking chicken before vegetables is higher because the potential for contact between and contamination from chicken and salad ingredients is greater.

Cooking is a sequential process, which is often split into parallel lines, each involving a specific food ingredient which in the process of preparation are united towards the end when the meal is ready to serve and eat (Jacobsen, 2014: 181). In this chapter, we provide a few examples of analysis applying the Observer XT software and using Gantt. These examples are based on the French and the Norwegian fieldwork. The chapter will only briefly provide detailed in-debt analysis of sequences of cooking, and instead give a more broad-based overview of the tasks and steps performed by the research participants. In addition, we have included detailed descriptions of the cooking order among the research participants in Appendix D.

The sequence by which a meal is put together involves a myriad of different tasks done more or less stepwise, intermingled or at the same time. This chapter discusses the circumstances and contexts of when cooking is done in a more or less stepwise procedure and when it intermingles with other food preparation or other household activities.

## The cooking order among the Portuguese research participants

In the Portuguese sample families cooked chicken in several different ways and according to a variety of recipes. Research participants fried chicken in a frying pan (4 cases); roasted chicken in a tray in the oven (1 case); used the cooking robot Thermomix to shred and cook chicken (1 case), but the majority (9 cases) cooked chicken in a pot (e.g. stew, curry). They employed a diversity of skills and knowledge to perform the practice of cooking chicken. A few families choose to fry chicken in a frying pan, but they did it in different ways. For example, Vanessa (29 years, Young families, rural) and Sílvia (33 years, Young families, rural) fried the chicken but they seasoned it with wine. Vanessa also prepared different vegetables (e.g. broccoli, courgette and carrots) as a side dish to the main chicken dish. Sónia (42 years, young families, rural) seasoned chicken with a ready-made barbecue sauce she bought at the supermarket and then roasted the chicken in the oven with pre-packed frozen potatoes. Manel (73 years, Elderly households, urban), Odete (65 years, Elderly households, urban), Carlos (24 years, Young single men, urban) and Bernardo (19 years, young single men, urban) preferred to stew the chicken in a pot (Figure 4.1.1). However, Odete did it with beer and a dried onion soup in a package, and Celeste (70 years, Elderly households, urban) boiled the chicken first. One interesting aspect was noticeable. Households cooked in disparate ways and used a mix of fresh ingredients and ready-made foods, shortcircuiting stages of food preparation and cooking with the handy use of convenience foods (e.g. ready-made sauces, frozen potatoes already peeled and cut, onion soup) or technologies (e.g. the cooking robot Thermomix).



**Figure 4.1.1: Stew chicken made by Carlos (Portugal)**

There were also some families that made more time consuming and laborious dishes with chicken (comparing to other research participants), having to use and touch more tools, gadgets and kitchen equipment (which may multiply the chances of unsafe food handling). Some also showed to have regional or international cooking influences. For

example, Augusto (70 years, Elderly households, rural) cooked chicken curry with an African flavour. Andreia (33 years, Young families, urban, Portugal) and Emília (89 years, Elderly households, urban) cooked chicken with regional or national influences. Andreia made “frango à brás” (shredded chicken cooked with eggs and shoestring potatoes sticks). The traditional Portuguese dish is usually made with dried salted codfish, but in Porto they adapted this traditional dish and make it with chicken as a variation. This variation is not very commonly found in the south of the country, where dried salted codfish is the usual ingredient. Such cooking cultural variations (regional and international influences within the same country) may also affect different ways of handling food safely.



**Figure 4.1.2: Andreia preparing “frango à brás” with raw eggs beaten (Portugal)**

Emília lived in Venezuela practically all her adult life (having recently returned to Portugal due to the crisis in Venezuela) and usually mixes recipes and ingredients from both countries. She prepared a sauce with yogurt and mayonnaise for the chicken and used mushrooms and strawberries in the salad. Such combinations of ingredients are uncommon in “traditional” Portuguese cuisine.



**Figure 4.1.3: Emília preparing the chicken’s sauce (Portugal)**

### Intermingled cooking

Families often did different actions when they were cooking chicken. Most of them were related with kitchen and food issues: cleaning, unpacking food and then storing it in the fridge and cupboards or taking dishes from the dishwasher. Sónia (42 years, young families, rural) cooked in two different stages: first she cooked the chicken, after

she cleaned the sink and the utensils and then she prepared the salad. Sílvia (33 years, Young families, rural) prepared chicken and then cleaned the sink and after prepared rice. Odete (65 years, Elderly household, urban) stated that she was always cleaning and tiding up when she cooked: “this is a habit, tiding up while I’m cooking”.



**Figure 4.1.4: Odete cleaned the sink while she cooked (Portugal)**

While waiting for the chicken to be ready, some families used this available time to do other activities. Emília (89 years, Elderly households, urban) put some of the products she bought (yogurts and a cabbage) in the fridge.



**Figure 4.1.5: While waiting for the chicken to be ready, Emília stored some products in the fridge (Portugal)**

There were some research participants who were preparing meals and at the same time doing activities not related to cooking. For example, Augusto (70 years, Elderly households, rural) usually cooks and watches TV at the same time and Bernardo (19 years, Young single men, urban) listens to music when he cooks. These practices coexist together and collaborate with one another, not disturbing the flow of action. However, there are other practices that coexist but are in conflict or compete for different levels of attention, time, and care. For example, Silvia had her child in the kitchen and had to pay attention to what he was doing and touching while she was cooking. Sometimes this can be distracting to the cooking tasks at hand. In the next section this will be explored further, when practices overlap and instead of cooperating, they actually clash with one another as they request more attention regarding safety, care and time.

## Overlapping cooking practices

It is common that practices overlap with other events or activities taking place alongside cooking, and this is especially the case with families that have children. Most of these non-cooking related actions were associated with taking care of children. This was the case of Marta (35 years, urban) and Sílvia (33 years, rural). Sometimes, not only children but also pets interfere in the flow of cooking, this was the case of Filipa (36 years, urban). For example, Marta's son was playing in the kitchen during cooking and sometimes she had to give him attention and interrupt her actions. Sílvia also had to pay attention to her son beyond cooking. Her son was in the kitchen during the whole cooking process and sometimes she had to interrupt the meal preparation to look after him (e.g. interrupt a cooking task to give him a glass of water).



**Figure 4.1.6: Sílvia fills up a glass of water to give her son (Portugal)**

Before starting to cook Filipa took two boxes of her daughter's soup from the freezer. She put one on the fridge, and the other one on the kitchen counter to thaw in open air. She also changed the dog's diaper in the kitchen, as the dog had a urinary infection at the time. After completing these tasks, she started cooking the chicken in the Thermomix robot. She made a chicken lasagne. During the time the chicken was cooking in Thermomix, Filipa drank tea, cleaned the sink, talked to the researchers, checked the phone that laid on top of the kitchen counter and, at some point, someone rang the bell: her baby daughter arrived with her grandparents. She went to open the door and some minutes after she arrived to the kitchen with the baby and introduced the daughter to the researchers, the dog also jumped around barking with the excitement at the arrival of the daughter. Filipa calmed down the dog by tapping her affectionally. Before she resumed cooking by checking Thermomix (checked the time), she washed her hands and dried them in a tea towel she only used to dry hands. As Filipa was using the cooking robot the interruption was not troubling too much the sequence of cooking tasks as they were delegated to Thermomix. When Thermomix beeped signalling the conclusion of the cooking task (shredding the chicken and cooking) then interruptions to the flow of cooking resumed again. Just before starting a new step in lasagne preparation, she checked the recipe in the machine that is embedded in the cooking robot, in a digital form. She struggled to find the recipe, apparently there were two recipes, but she only found the one with fresh mushrooms. She had to improvise and use a can of mushrooms as she did not buy fresh ones. She

added “I’m lazy! I have a can of mushrooms, so I’ll put that! It will do!” The recipe also required an onion of 150gr, but she grabbed one onion without checking the weight: “I was looking for an onion of 150gr but I’m not lucky. Any onion would do! It doesn’t matter”. She peeled the onion and then washed it, cut it in pieces and inserted in Thermomix. We asked whether she always washed the onions. She retorted that the onion come from the ground, is dirty, so it is better to wash it. She peeled a carrot and washed it, cut it in pieces and inserted in the robot. Then she opened the can of mushrooms, peeled some garlic, opened a can of tomato sauce, olive oil and inserted all these ingredients in the machine, and finally hit the ‘Start’ button. Cooking was once more delegated to technology and Filipa could insert other activities within the time of cooking. Chatting to the researchers, looking after the child, looking after the dog, and tidying up the sink.

In Andreia’s case (33 years, urban), her husband was taking care of their baby while she was cooking. While preparing the meal Andreia took the dishes from the dishwasher and stored them in cupboards. It was during multitasking that she unintendedly dropped raw chicken (that slipped off her hands) on top of a cleaned glass container she had just removed from the dishwasher. This accident and the hastiness to solve the problem of placing the raw chicken in a safe place made her carry out a series of unconscious risky food handling practices that would possibly be averted if the accident did not happen. After touching the chicken and without washing hands she moved a series of small cups and other tools that were already placed on top of the chopping board and kitchen counter in order to make space to put the chicken. Distractingly she then stored the hand-touched (and potentially contaminated) items in the cupboards without washing them again (as they were, in her mind, cleaned from the dishwasher machine). The invisibility of microbes and of their traces may have paid an important part in judging the dirtiness/cleanliness of hands, objects and tools. If the chicken was visibly dirty and everything it touched made things visibly dirty, then the touched items would be possibly washed again. This happens with melted chocolate, for example, that whatever it touches it makes things coloured in brown. In this case, the invisibility of microbes tricked Andreia as the items did not look dirty. Moreover, because of the fact that those objects touched by the ‘invisibly dirty hand’ were being removed from a dishwasher machine, they were perceived as cleaned.



**Figure 4.1.7: Andreia emptied the dishwasher while cooking the meal (Portugal)**

To sum up, in this section we analysed how the practice of cooking chicken is performed across families. There are different ways of cooking chicken, some making use of convenience food and technologies to speed up preparation, others employing more laborious techniques to cook chicken (e.g. instead of quickly frying chicken in a pan they prepared a lasagne, ‘frango à Brás’ or a chicken curry in the oven or in a pot) and having to use more kitchen equipment, gadgets or tools. This may potentially increase the chances of cross contamination as research participants use more tools and have to follow more steps in a recipe of preparing chicken. Particularly if research participants do not wash hands and tools in between cooking steps and tasks. However, technologies such as the cooking robot Thermomix may shortcut a few steps in a laborious recipe (e.g. a lasagne) and reduce the number of times people handle ‘risky’ foods. This was clearly the case of Filipa who averted handling chicken directly by inserting and cooking it in the cooking robot. We have also observed in the cooking sessions how research participants brought their tacit knowledge and cultural experiences, e.g. the case of Emilia (89 years, Elderly households, urban), which reflected her transnational migrant life when producing a dish. Such cultural variations (regional, national and transnational) may affect different ways of handling food safely. This cultural aspect, found within the same country, and sometimes even within one single region, are important to bear in mind when offering recommendations on food safety and hygiene norms.

Cooking practices may divert from a linear sequence when they are interrupted by nonrelated cooking tasks. Cooking practices are interrupting by a variety of interferences, namely someone ringing the door, a phone call, a dog or a baby that needs attention, an accident that happens and diverts the course of action. Cooking practice may also intermingle with other practices or overlap. For example, Filipe was doing several other tasks (from cleaning the sink, to zipping tea) while the Thermomix robot was cooking chicken. We have noticed that the six families with children that we observed in the cooking sessions had to deal with more interferences and interruptions while they were cooking. They seemed to juggle more practices at the same time (e.g. feeding the family, looking after children and pets). Their partners sometimes helped them negotiating and handling these practices, but not in all cases as some male partners work long hours and arrive very late for dinner.

## The cooking order among the Romanian research participants

Different cooking methods were applied by the Romanian research participants and differences between study groups have been observed. Most of the elderly research participants chose to boil the chicken, whereas frying and stewing was the cooking option preferred by most of the young family group and young single men group. See Appendix D for an overview of the stages taken by the Romanian research participants from the point of start cooking the chicken to serving the meal they prepared.

### *Cooking methods in the Romanian households*

Among the Romanian households, the type of cooking varied between the study groups. Therefore, most of the elderly (4/5) preferred to boil the chicken, and in all the cases, the chicken was overcooked by purpose, in order to facilitate the chewing process, as all of them have denture problems. Dumitra (84 years, rural), Damiana (73 years, rural), Linalia (73 years, rural) (all Elderly households) specified during cooking that they are boiling the chicken until the meat is easily removed from the bones in order to be softer and easier to chew.

Most of the young families (3/5) preferred to stew the chicken, as being a convenient way to cook healthy for their children, whereas the young single men group adopted mixed cooking techniques. Two of the young single men applied two types of cooking in the same dish, boiling and frying: Ionel (30 years, urban) and Bogdan (32 years, urban) (both Young single men), whereas the others preferred just boiling: Zoltan (35 years, urban), Florinel (31 years, urban), just frying (Balanel, 28 years, urban), or just roasting (Zoltan). Twelve households prepared the chicken before preparing the salad Dumitra; Damian and Damiana; Linalia; Balanel; Bogdan; Florinel; Zoltan; Maria Mirabela, (34 years, urban); Serena (36 years, rural); Sorina (32 years, rural); Minodora (27 years, rural) (all Young families); and Domnica (75 years, Elderly households, urban), whereas Fanica (69 years, Elderly households, urban) washed all the vegetables needed for salad preparation before chicken preparation, Amalia (31 years, Young families, urban) washed only the lettuce before starting to cook the chicken, while Ionel cut the lettuce and left it into a bowl containing water before handling and preparing the chicken.

### **Preparing chicken and salad separately**

Among the Romanian research participants, four out of fifteen prepared the chicken and performed tasks associated with preparing chicken without preparing vegetables in between. For example, Fanel (69 year, Elderly households, urban, Romania) was helped by his wife, Fanica (69 years) who prepared the chicken schnitzels. Preparing and cooking the chicken schnitzels involved a lot of work. She used a chicken breast that was rinsed first with water in the sink, and then she deboned it using a knife, putting the bones in the bag that contained the chicken, whereas the chicken breast was put in into the sink. After that, she cut the chicken breast into fillets, pounded them

with a chicken hammer on the cutting board. Every utensil that she used for handling chicken was transferred into the sink and rinsed with water. Fanica took out the frying pan from the oven (placed below the gas stove) and put it on the gas stove. Then, she brought a bottle of oil from the cupboard, poured oil into the pan and then put the bottle back in the cupboard. After that, she took out the box with bread crumbs, opened it using hands and put them on a plate placed on the counter top. She brought eggs from the fridge, cracked them, leaving the shells into the sink, and then threw them in the garbage bin. She washed her hands after cracking because she touched the egg white. Fanica was often seen rinsing hands after touching the chicken or after touching something that might have contaminated her hands, therefore we assume that this was the reason for which the informant rinsed hands after cracking the eggs.

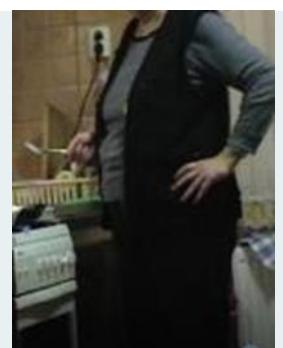
When she realized that the eggs were not enough to prepare all the schnitzels, she fetched another egg from the fridge and cracked it in the same plate and repeated the same movements. Afterwards, she added salt over eggs and beat them with a fork. Then, she took every piece of chicken fillet and dredged it into bread crumbs (Figure 4.1.8), shook the excess and dipped them into the eggs mixture and transferred them into the pan containing hot oil. She used her hands to dredge the fillets with bread crumbs and eggs. During frying of the schnitzels, she dredged the other fillets with bread crumbs, removed the forming scum from the pan with the fork, turned the schnitzels on the other side several times, and pressed the meat with the fork claiming that this is a way she can be sure that the meat was heated properly inside. In between these tasks she left the fork resting on the edge of the brim or kept it in her hands. In addition, she took the cloth from the sink and wiped the surfaces near the gas stove, counter top and the edge of the sink several times. She also touched her hair, nose and lips while frying of the chicken.



Fanica dredged the fillets with bread crumbs



She removed the scum from the pan with the fork



Between turning sides of the chicken she kept one hand on her hip joint

**Figure 4.1.8: Fanica prepared chicken schnitzels (Romania)**

She removed the formed foam with the fork by bumping it on the brim of the sink. When she decided that the chicken was done, she removed the schnitzel from the pan with a fork, left it for 3-4 seconds above the pan to eliminate the excess oil and then

placed it on to a glass bowl that she collected from the cupboard below the counter top. Then, the glass bowl was transferred to the gas stove (Figure 4.1.9).



Fanica left the schnitzel on the fork for a couple of seconds to remove the excess oil

She left the first batch of schnitzels on the gas stove

**Figure 4.1.9: Fanica fried the schnitzels in two batches and transferred them to a glass bowl (Romania)**

Similar to Fanica, the research participants who cut the chicken breast or chicken legs in bigger pieces usually turned every piece 2-3 times when frying the chicken in a pan. Whereas those who fried or stewed the chicken that was cut into smaller pieces stirred and moved the chicken pieces in the frying pan more frequently.

In addition to Fanica, four other households out of fifteen prepared the salad after they finished cooking the chicken: Minodora; Ionel (30 years, Young single men, urban); Linalia (73 years, Elderly households, rural); and Maria Mirabela (34 years, Young families, urban). Minodora (27 years, Young families, rural) was a good example. Soon after she received the tray with chicken breast fillets (from her neighbour who bought it in the city at her request), she put it on the table. Mica, for whom Minodora was the marriage witness, was involved in the first part of cooking, as she was visiting her that day. Mica knew very well where Minodora keeps all the utensils needed for cooking because they are used to help each other. During that day, Mica was responsible for cooking the chicken, while Minodora was responsible with slaughtering a home reared chicken and with cooking the rice. Thus, Mica brought the utensils needed for chicken preparation, a knife and a bowl. She removed the foil from the tray and transferred the chicken pieces into a pot containing water. She rinsed every piece of chicken and after that, she eliminated the excess water by pressing the excess water with her hands. Then she started to cut the chicken breast on the cutting board with the knife. The cutting board was stored outside the house on a shelf placed on the porch, covered with blankets to protect the utensils from dust and from cats and dogs and, before use, it was rinsed with water from the exterior reservoir (Figure 4.1.10).



**Figure 4.1.10: Mica, Minodora's neighbour, helped rinsing the slaughtered chicken (Romania)**

After that, she repeated the operation of washing the chicken pieces, but at the end she transferred the chicken pieces to a plate, again removed the excess water from the chicken into the pot and after she covered the plate with another plate to protect it from flies (Figure 4.1.11).



**Figure 4.1.11: Mica finalised the chicken rinsing and protected the chicken from flies by covering it with a plate (Romania)**

Mica added oil into the pan. She added the cut pieces of chicken breast with her hands into the hot pan and fried the chicken pieces in two batches. We observed that she left enough space between the pieces in the pan. In less than one minute, she turned the chicken pieces on the other side. The meat got stuck in the frying pan and got ripped when she wanted to turn chicken pieces once again. So, Mica pushed the piece a little bit to be able to detach it from the frying pan and to turn it on the other side. When she wanted to turn the last piece of meat (from the pan) on the other side, she was interrupted by the children, who were crying because her son didn't want to share the toys with the little baby. She took the toy from her son with one hand while still holding the fork in the other hand and gave the toy to the little baby. Back by the frying pan, she turned the chicken pieces in the pan several times using the fork to be sure that the chicken would not get stuck again. When she had to fry the second batch of chicken pieces, she put the fork aside and preferred to put the meat with her hand into the pan. The fork was used only to move the pieces of meat into the pan (Figure 4.1.12).



**Figure 4.1.12: Mica moved the chicken pieces in the pan and turning sides (Romania)**

### Heating the chicken in the oven while preparing the salad

Two research participants used the oven to cook the chicken (Amalia and Zoltan) and both prepared chicken with potatoes, which freed time to prepare the salad. Amalia started the cooking process with handling, washing and rinsing the lettuce and then prepared the chicken, and at the end she peeled and washed the potatoes. Zoltan (35 years, Young single men, urban) began by cutting and washing the chicken, then he peeled potatoes and seemed to wash them carefully. Amalia (31 years, Young families, urban) covered the bottom of an oven tray with baking paper to protect it, placed the potatoes on the tray, seasoned them and later placed the chicken pieces over the potatoes. Before placing the tray into the oven, she covered the tray with aluminium foil. Zoltan followed the same steps up to a point. He didn't use the baking paper, he added water to be sure that the potatoes would get properly boil and he didn't cover the tray with aluminium foil. Time needed for roasting was mentioned by Zoltan as the reason for why he started preparing the chicken and potato dish before the soup and the fish salad. While the chicken was roasting in the oven, Zoltan prepared the soup and only at the end he prepared the fish salad. Amalia was cutting lettuce, tomatoes, cucumbers and onions to prepare the salad she intended to serve with the meat, while the chicken was roasting in the oven. After she finished preparing the salad, she took a toothpick to poke the aluminium foil covering the oven dish to leave the steam out of the dish, but she didn't look at the chicken saying that she knew that the chicken it was not ready, yet. She evaluated the need to keep the chicken longer in the oven taking into consideration her personal experience. Immediately after putting the glass baking dish in the oven with chicken and potatoes, Zoltan started to prepare another dish, which was a chicken soup. He put the chicken with water into a pot to boil it. Then, he peeled off the vegetables, washed them and cut them on the cutting board. When he

had finished cutting the vegetables for the soup, he checked if the meat for the soup was cooked and added the vegetables. Zoltan applied a stepwise procedure to his cooking by organizing the activities needed for preparing the three dishes efficiently. After he put the chicken with potatoes in the oven, he started to prepare the second dish. He prepared the third dish (tuna salad) only when he finished adding into the pot all the ingredients for the sour soup. He rarely intermingled the cooking activities.

### Cooking the chicken while preparing the vegetables

Three out of fifteen Romanian research participants: Balanel (28 years, Young single men, urban); Serena (36 years, rural); and Sorina (32 years, rural) (both Young families rural) fried the chicken while preparing vegetables. This meant that preparing salad was intermingled with stirring and turning the chicken from one to the other side in the frying pan. These three research participants started preparing the salad during the frying/stewing of the chicken. For example, as soon as Sorina started to stew the chicken in the frying pan, she took out lettuce from the bag, cut it leaf by leaf by removing the stem and put it into bowl containing water. Then, she decided to have a look on the chicken and turned it on the other side, leaving the fork on the plate placed near the gas stove (Figure 4.1.13).



**Figure 4.1.13: While Sorina was stewing chicken, she went to the garden to fetch some vegetables. In between cutting the vegetables, she turned the chicken in the pan (Romania)**

As she wanted to use onions to prepare the salad, she went outside in the garden and picked some green onions and pepper, which she rinsed in cold running water. She washed the lettuce leaf by leaf and did a second wash of the vegetables brought from the garden. She realized that she needed cucumbers and tomatoes that she had in the fridge (placed in another room) to prepare the salad. She wiped her hands with a paper towel. Before bringing the other vegetables from the fridge, she turned the chicken pieces on the other side once more. She brought the tomatoes and cucumbers from the fridge, cut them and then checked the doneness of the chicken, saying that she left it frying for too long and told that her son would let her know that “she didn’t pay

attention not to overcook the meat". She left the stewed chicken in the frying pan until it was served and continued with cutting the vegetables on the cutting board after washing the vegetables several times (see Chapter 4.2). At the end, she added salt and olive oil and mixed the salad using two forks (Figure 4.1.14).



**Figure 4.1.14: Sorina finalised preparing the vegetables (Romania)**

None of the Romanian research participants mentioned doing something wrong when intermingling the cooking chicken with preparing salad, except for Sorina, who mentioned that the chicken was cooked for too long.

### Frying chicken while tending to children

Three of the young families had a child present in the kitchen during cooking. Sorina's (32 years, Young families, rural) cooking session started by bringing her baby daughter in the kitchen who was standing in the baby walker. Sorina said that she usually cooks with her daughter in the kitchen. She cut the chicken on the cutting board, pushed slowly the go cart to stop the infant crying and because the baby didn't stop, she took the baby in her arms. Sorina brought some toys from another room to try stop the baby from crying, left again the baby in the baby walker and started to debone the chicken. As the baby wanted to be in her mother arms, because, as Sorina explained "she doesn't see exactly what I am doing and also because she is sleepy", she decided to feed her and take her to sleep. In this time, the deboned chicken was left on the table for 15 minutes (Figure 4.1.15). Then, while she continued to cook alone, her sons came in the kitchen only to ask if the lunch was ready.



**Figure 4.1.15: Sorina carried her baby girl in her arms (Romania)**

On the other hand, as mentioned previously, Minodora (27 years, rural) fried the chicken having two children present in the kitchen, a baby girl of about one year old and a little boy of three years old. The boy stayed most of the time in the kitchen, moving from the table where he coloured in a colouring book (the table where the chicken was handled and cut) (Figure 4.1.16), to the baby girl who was standing in the baby walker placed in front of the door of the room placed next to the kitchen. The kitchen served also as a main hall, because all the entries in the other rooms of the house are made through the kitchen. Minodora took the baby in her arms when she started to prepare the rice with vegetables (frying of the chicken was finished). She mixed the pot while handling the baby in her arms, she played with her and left her in the baby walker. As the baby started to cry soon, she took her in the arms again and mixed again the rice in the pot with the fork, while holding with the other hand the baby. She stood in front of the gas stove with the infant in her arms for about 10 minutes, while cooking rice at the same time. She mixed the pot, added water and tasted the rice to check if it was properly cooked, then she took the baby to sleep. As Mica (the person for whom Minorora was the marriage witness) was visiting Minodora that day, she asked her to continue cooking the rice, while she was tending the baby.



**Figure 4.1.16: Minodora had both her children in the kitchen while cooking. Her toddler was sitting by table playing, while her baby was on her arms (Romania)**

Although, Serena (36 years, rural) had a new born baby of 3 weeks, the cooking process was not overlapped with tending to the baby, because the husband usually takes care of the infant. Serena was helped in the kitchen by her 10-year-old daughter, who helped her mum by bringing green onions from the yard, peeling them and rinsing them in water, and by giving the chicken skin leftover to cat and dog.

Tending to babies and cooking activities overlapped often. This meant that mothers often had to tend the baby while cooking with one hand, as was the case with Sorina, or delegated someone else to continue the cooking (Minodora) or involving the older children in some parts of the cooking activities (Serena).

## Summing up the order of cooking among the Romanian households

Three patterns of cooking were noticed: stepwise, intermingled and overlapped. Often, they have not been applied exclusively, but intermingled. In the overview with the description of the cooking order among the Romanian households (see Appendix D) it can be seen that most of the Romanian research participants intermingled between several tasks when cooking. For instance, washing up, tidying, tossing waste and tending to children were done in between cooking and heating of chicken and vegetables. Three research participants fried/stew the chicken and prepared the salad in between stirring the frying pan: Sorina (32 years, rural); Serena (36 years, rural) (both Young families); and Balanel (28 years, Young single men, urban). Twelve of the households performed a more stepwise cooking procedure by concentrating the efforts of preparing and heating chicken separately from preparing salad/vegetables: Ionel (30 years, urban); Bogdan(32 years, urban); Florinel (31 years, urban); Zoltan(35 years, urban) (all Young single men); Maria Mirabela (34 years, urban); Amalia (31 years, urban); Minodora (27 years, rural) (all Young families); Dumitra (84 year, rural), Damiana (73 years, rural), Fanica (69 years, urban); Linalia (73 years, rural); and Domnica (75 years, urban) (all Elderly households).

For the young women who cooked while tending to their babies, meant that cooking tasks were overlapping with caring activities sometimes holding their baby on their arm amidst cooking tasks: Sorina (32 years, rural); and Minodora (27 years, rural) (both Young families).

## The cooking order among the French research participants

Among the French households, a majority (8/15) cooked a whole chicken in the oven. Cooking a whole chicken was typically done in the elderly households (four) and less common for younger study groups (two Young single men and two Young families). Five cooked chicken breast fillets (three Young single men and two young families) and only two cooked chicken legs (one Young family and one Elderly households) (see Appendix D for an overview of the French households cooking steps and Appendix E for further description of cooking method and preferences). The heating method among the French households affected the order of cooking.

### Preparing chicken and salad in separate steps

Among the French households, 13 of 15 prepared the chicken before preparing the salad. Meanwhile, most prepared the two dishes separately and cooked the meal in stepwise performance. Mylène (25 years, Young families, urban) is a good example. She started with salad preparation, by washing it and putting in a bowl. Afterwards, she prepared the vegetables for the chicken meal. She cooked the whole hot meal with a cooking robot (called “Thermomix” from the brand Vorwerk). The robot, which is currently popular among families, can shred, cut, mix, stir, cook, etc. It is typically used to save time. She said that she does not have room enough in her kitchen to properly cook. Mylène and her husband were soon to move out of the apartment. She told that she was looking forward having more space in the kitchen to cook in the new flat they had bought. She followed a recipe on the “Thermomix” application on her smartphone, which instructed her to cut an onion and shred it in the robot. Then, she peeled the carrots and put them in the robot together with frozen leeks, water, white wine, olive oil, and stock cubes. Finally, she put the chicken legs in the upper part of the “Thermomix”, to cook all at once, by steam. She positioned the chicken legs to “ensure that steam would circulate properly”. And adjusted the cooking time on the robot. Then she collected the empty packages and threw it in the bin on the balcony. She fed her rabbit with carrots’ peeling and washed the tray where she cut vegetables with the sponge. She had to wait until the robot signalled that the cooking was finished.



**Figure 4.1.17: Mylène checked the ingredients she needs for her recipe (France)**



**Figure 4.1.18: Mylène’s “Thermomix” cooking robot (France)**



**Figure 4.1.19: Mylène fed the rabbit on with some rucola leaves (France)**

Another French household, Fabrice (24 years, Young single men, urban) also prepared the meal stepwise and more or less uninterrupted by doing other tasks. In addition, he had a short cooking preparation, starting with cooking the chicken and followed by a very quick salad preparation, consisting of opening the salad plastic bag.



**Figure 4.1.20: Visualization of Fabrice’s cooking preparation, with The Observer XT (France)**

As we can see on the graph above, the abscissa axis shows the chronology of food preparation at Fabrice's. The different colour lines in the ordinate represent diverse actions like “non-food actions” (when Fabrice talks with the researchers, or when he just stands still), “chicken preparation” in yellow (when he cuts, touches, fries the chicken), “washing / wiping hands” in blue, “salad preparation” in green and “cleaning surfaces / cutting board” in dark blue. The bottom line also shows interaction with the bin, in red, which happens twice in this observation. The whole preparation lasted 22 minutes (as shows in the time scale on the top). The chicken preparation (yellow line)

happened from minute 1 to minute 20. Fabrice started by cutting chicken fillets, then fried them in the pan, while regularly watching them and flipping them until he judged that they were cooked enough (minute 20). During cooking, Fabrice talked with the researchers, stood still and searched for spices (in pink), he wiped his hands twice on hand towel after touching raw chicken (in blue) and put the cutting board in the sink (dark blue). Except for these tasks, his cooking performance did not intertwine with other tasks. To summarize, he started with chicken preparation and when he was totally done with chicken he opened the salad package.

He started to prepare the chicken fillets followed by preparing a simple side dish. He first cut the chicken fillets on his cutting board and fried them in a pan with oil, without leaving the stove. He flipped the pieces regularly to “at least cook them twice on each side”. He rinsed his hands with clear water after touching the raw chicken. He explains that he is eating chicken daily for his bodybuilding diet, when he is in a 3-weeks “gaining period” followed by a 3-weeks “normal diet” period, to put his body to rest. In addition to the chicken, he had leftover rice he had cooked the day before, which he wanted to re-heat to eat with the chicken fillets. At the end of the cooking, he simply opened a plastic bag of pre-cut and pre-washed salad and put it on his plate to eat it with his chicken. He never washed or rinsed the salad, and told that he was not used to wash it. He stood by the stove and the frying pan during all the time while frying the chicken. He told researchers that he mostly eats in front of his TV, on his couch, with his plate on his legs.

In addition to Fabrice, Bernard (72 years, Elderly household, urban) heated the chicken legs separate from the vegetables. Meanwhile, he cooked with his wife, Hélène (72 years) and was in charge of cooking chicken while his wife was doing all of the other preparations. She washed the salad first, she then prepared the potatoes to cook them in her electric steamer, which didn't work as first. Then she cut the beetroots she already had cooked during the morning. In between preparations, she cleaned the countertop a bit, she tidied up after her husband and she threw the vegetable peel in the garbage bin. She sat the table, verified the cooking for potatoes, prepared the salad and brought everything on the table. Meanwhile her husband was standing next to the wok pan to regularly stir the chicken legs (talking with the researchers). They prepared the meal next to each other as their countertop also included a sink on one side and the stove on the other one.



**Figure 4.1.21: Hélène gently pushed her husband to access a drawer (France)**

#### *Heating the chicken in the oven and separate steps of food preparation*

Most of the French households heated the chicken in the oven. This cooking method enabled the research participants to do other cooking tasks, for instance preparing salad while the chicken was cooking. For two of the young single men, this also meant less intensive food work and time to do non-food activities. Vincent (29 years, young single men, rural), had planned to do so, but had to change the order of food preparation at the last minute because he had forgotten to turn on the oven. He started with chicken preparation by washing his hands with soap and lukewarm water over his dirty dishes in his sink. He then prepared the chicken to put it in the oven. However, he forgot to turn on the oven. The oven was placed down stairs because there was no space in his kitchen for it. After preparing the chicken, he thus went downstairs to do turn the heat of the oven. While waiting for the oven to become hot he started to prepare the salad, first cleaning the sink and countertop and then quickly cleaning the salad, which was stored on his countertop. He cut away the salad core and kept the good leaves. He quickly washed the lettuce for a few seconds and drained it water by shaking it in the colander. After preparing the salad, he put the chicken into the hot oven. While the chicken was cooking, he chatted with the interviewers. In the meantime, he also smoked a cigarette on his balcony and washed his hands when he returned to the kitchen. He sat the timer and went down stairs to check. He checked the chicken every 20 minutes and he watered it to keep it moist.

For the other households cooking chicken in the oven meant preparing salad and other side dishes while the chicken was cooking. Amandine (27 years, Young families, rural) cooked the chicken in the oven and fried potatoes, but started preparing the cucumber salad by peeling the cucumbers and shredding them in a vegetable shredder. She washed her hands with soap and warm water after handling the cucumbers. Then she prepared the chicken. She read the recipe on the back of the plastic cooking bag she had bought to cook the whole chicken. She put the chicken in the bag and poured the spices and some water over. She closed the bag and mixed water with spices over the chicken and put it in the oven. Then she adjusted the timer on her phone. She washed her hand with soap and warm water after touching raw chicken. While the chicken was in the oven, she fried potato slices in a pan. She peeled them over the bin and shredded

them in the vegetable shredder to save time. Then she started to prepare the iceberg lettuce by removing the core and the outer leaves of the lettuce and by cutting the leaves in the bowl. In between preparations she cleaned hands and the countertop and put the utensils, vegetable shredder and dishes in the dishwasher. Then she sat at the table while her husband gave their little son his dinner. The adults (Amandine, her husband and researchers they invited for dinner) usually eat when the baby is at sleep. She finished preparing the cucumber by seasoning the dish and putting it on the dining table. Then she started frying the potato slices in a pan with oil. To be sure they were cooked, she put a slice in a plate and checked its doneness with the fork and knife. The cucumber salad was served while the chicken was about to be done. When finished, she cut the chicken before serving it on the table. The chicken was ready in the middle of eating the starter, the cucumber salad. While her cooking task intertwined with each other, preparation of chicken and vegetable dishes was done separately.

For some households, heating the chicken in the oven also enabled doing various cooking tasks in different rooms as well as outdoors, in the kitchen, in an “*arrière cuisine*” (room equipped with a sink, behind the kitchen), garage and gardens: Odile (65 years, rural); Charles (75 years, rural); Sylviane (77 years, rural); and Yvette & François, (74 & 76 years, urban) (all Elderly households).<sup>34</sup> Yvette and her husband were preparing food together for lunch. Yvette had thawed whole chicken overnight. She seasoned it and put it in the oven. The next step was to prepare the potatoes. Her husband peeled them in the *arrière cuisine*. They liked keeping dirty ingredients in the *arrière cuisine*. They washed dishes in the kitchen’s sink. Yvette cleaned in between cooking tasks. She and her husband were equally responsible for cleaning surfaces and kitchen, and according to him they were both obsessed with cleanliness. She cooked the potatoes in a pan with fat and salt, while her husband rinsed the salad in the *arrière cuisine*. He carefully washed leaf by leaf. While he was rinsing ingredients in the *arrière cuisine*, she cooked the food in the main kitchen. She sat the tables, checked the cooking chicken in the oven and served the meal. They invited the researchers to eat with them (Figure 4.1.22).



**Figure 4.1.22: Cleaning salad in the sink *arrière cuisine* and the served meal in Yvette & François' household (France)**

<sup>34</sup> A direct translated of “*arrière cuisine*” is back kitchen. It is a second kitchen usually placed in the garage or close to the outdoor areas, and typically used for washing own garden produce and for storage.

In Odile & Gérard's household, Odile usually did the cooking and shopping. However, on this occasion, they were preparing a whole chicken in the oven together. They started to prepare the chicken and the side dishes while the chicken was in the oven. Gérard grabbed rosemary from the garden to put in the chicken. Afterwards, he went to his garden to pick a salad head and some potatoes. His wife washed them in the garage sink, where they usually clean vegetables from the garden to remove the dirt. She cleaned the salad head in several water baths and put it in a bowl, ready to be served. Then she washed and peeled the potatoes from the garden. She dried them in a towel and left them before cooking. She did a bit of cleaning in kitchen, while waiting for the chicken to cook. After 20 minutes they took the chicken out of the oven to turn it on the other side. They did the same 20 minutes later. Then, 10 minutes before the chicken was finished, Odile laid an aluminium sheet over the chicken to prevent it from roasting too much.

During cooking, Odile stayed in the kitchen and gave Gérard small tasks to do. He went to the garden twice to grab some herbs and vegetables (Figure 4.1.23). Odile said she loved to cook, which had meant being responsible for food work in the family.

Odile: I love [cooking], but when I hear women saying their husband cooks, [I] would like it too.

Int.: Has your husband ever cooked?

Odile: Never, he has never cooked... Even when I used to work, my husband got back home before me, but he never prepared a meal. His excuse was that I love cooking.

(Odile, 65 years, Elderly households, rural, France)



He digs out potatoes



He chooses a salad and cuts its foot to collect it

**Figure 4.1.23: Gérard was doing outdoor garden activities as part of food preparation (France)**

Gérard's wife put the salad's leaves in the salad's spinner's colander part in the sink of the "arrière cuisine", she peeled off potatoes' skin with just a knife, because they are fresh, and she put them in the new glass bowl (Figure 4.1.24).



**Figure 4.1.24: When Gérard came back from the garden, his wife took over; by washing the salad indoors (France)**

Sylviane heated the chicken in the oven in a dish with tarragon, shallot, and garlic pieces put underneath the chicken skin, olive oil, water and frozen tomatoes. After putting the chicken in the oven, she started preparing vegetables; thawing green beans in a pot, collecting salad from her garden, washing the salad head in the *arrière cuisine* (Figure 4.1.25). She picked two salads she wanted and cut the salad's foot and separated the leaves while she placed them in the basin with water for the first bath:



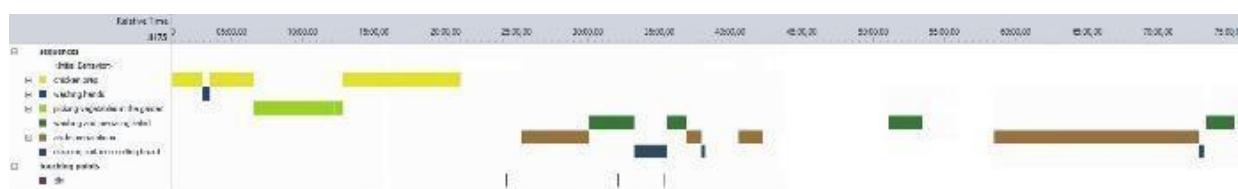
**Figure 4.1.25: Sylviane was picking lettuce from her garden, which she washed in the *arrière cuisine* (France)**

After these tasks, she checked the chicken in the oven, turned it in the dish before putting it back in the oven. Then, she cooked the thawed green beans. She added some potatoes and shook the pot to mix vegetables without using any utensils. Then, she turned to the salad preparation again, preparing the salad dressing in a big bowl with onions and vinaigrette so it will be ready to serve it when her husband comes back home. After 1h30 of cooking, she took the chicken out of the oven, where she had kept it warm until lunch time. She cut the chicken in different parts with scissors and a knife before serving it, mentioned that it was easier because “I do not like cutting poultry very much” (Figure 4.1.26).



**Figure 4.1.26: Sylviane used a scissor to cut the chicken (France)**

Charles roasted the chicken in the oven for 2 hour and 50 minutes (spent the longest time observed to cook his chicken). The figure below visualises his cooking steps.



**Figure 4.1.27: Visualization of Charles's cooking preparation, with The Observer XT (France)**

The graph above shows the food preparation at Charles'. He started with "chicken preparation" (in yellow), as the chicken had to cook to go in the oven for a long time. The first small blue bar represents Charles washing hands, in between the chicken preparation. The green line "picking vegetables in the garden", shows him going to his garden to get some herbs and salad and then returning to finish the chicken preparation and put it on a spit that he struggled to place in the oven. He and his wife had some difficulty in setting the oven timer on, since it is a new oven and they didn't know how to use it. The graph's brown line is "preparation of the side dishes". He sliced the bread he bought at the supermarket with a special slicing machine. The dark green line represents the "washing and preparing salad". He started washing the salad collected from his garden in several steps. He first sorted through the leaves and placed them in a basin of water in his garage sink. In between, he cleaned the surface in the kitchen (dark blue line), while the salad was left in the water bath. Then he dried the salad and put it in a new water bath. He went to grab a wine bottle in the cellar ("preparation of the side dishes" in brown), then he finished drying the salad and he rinsed strawberries. After talking with the researchers, he finished preparing vinaigrette (vinegar and oil) for the salad, while waiting for the chicken to finish cooking. At the end, he steam-cooked the green beans from his garden, to serve them warm with the chicken. Charles thus intermingled between various cooking tasks

preparing the salad and the side dishes. Meanwhile, preparing the chicken and the vegetables dishes was done in separate steps.

Other households did not cook elaborate meals such as Charles and thus did not intermingle the cooking of vegetables dishes in a similar manner. Etienne (30, Young single men, rural) prepared a whole chicken very rapidly before putting it in the oven. Salad preparation was also rapid, something he did while the chicken was baking in the oven. The figure below visualises the various cooking steps he did during the meal preparation.



**Figure 4.1.28: Visualization of Etienne's cooking preparation, with The Observer XT (France)**

On the graph above, bars indicate the time and duration of different actions. Pink bars indicate action non related to food. Yellow bars indicate chicken preparation (on the left-hand side) and serving of the cooked chicken (on the right-hand side). Light blue bar indicates usage of soap and/or water. Grey bars indicate drying hands. Green bars indicated salad handling and blue salad washing. The dark blue bars represent preparing and cooking vegetables. He started with the chicken preparation, pouring oil, butter, herbs and water on the chicken in its dish and put it in the oven. While the chicken is cooking, after talking for a while with the investigators, he prepared the salad, which he got from a friend who works in a vegetable market sale. He separated the salad's leaves from the salad's core, washed it quickly in a bowl and cut some onions to put in it. He checked the chicken in the oven once during the cooking. His whole cooking preparation was very quick (16 min in total including pause and talking with researchers).

### Preparing salad/vegetables while cooking chicken

Aurélien started preparing the chicken fillets, followed by a quick salad preparation while chicken was cooking. Aurélien also cleaned utensils and the countertop in between actions: before starting washing the salad and at the end of salad preparation, while checking on the chicken cooking in the pot.

Aurélien: Yes, I like kitchen to be clean because I have worked as kitchen staff during summer for 5 years.

Int.: where?

Aurélien: In a nursing home, and so I learnt...

Int.: You know hygiene rules.

Aurélien: Yes, I know about the temperatures, 64°C, I know all that. So that is why I keep a clean countertop.

(Aurélien, 25 years, Young single men, rural, France)

He prepared a chicken recipe he once did for the Christmas dinner for his roommates, a Spicy Chicken with crème fraîche and mixed peanuts. He will cook some rice later, before dinner. He cooked for his roommates and some friends who would come over later that evening, and thus told he presumably spent more time cooking than if he would eat alone or with his girlfriend. He stood by the stove for almost one hour, checking and stirring the chicken to be sure it cooks properly and to add ingredients (peanuts, crème fraîche, spices, etc.).

Once the chicken dish preparation was finished, he left it cooking in the pan, answered the phone and started cleaning the cutting board and utensils. Then he took a different cutting board on which he prepared the lettuce. He washed and drained the lettuce leaves and put them in a bowl, which he stored in the fridge. After preparing the salad he checked the chicken cooking. He then started to clean the counter top and wash the utensils but stopped to check again on the chicken and stirred the preparation. He eventually finished washing the utensils before ending the chicken cooking. He stayed in his kitchen during all the cooking preparation, next to the stewing pan, regularly checking and stirring the chicken pieces.

Simon (25 years, Young single men, urban) cooked chicken fillets cut in pieces with rice, zucchinis and pepper bells aside. As many of the young male research participants, preparation of salad was done at the end of cooking and by opening the salad plastic bag with no prior washing, serving it with the chicken, rice and vegetables. The vegetables he cooked for the meal were prepared more or less at the same time as cooking the chicken. He started by washing his hands with dish soap. Then he cut the chicken fillets and the vegetables, on the table in his living room (he has a small kitchen). He rinsed his hands under running water and started cooking food, putting rice in a pot with boiling water, then the vegetables in a pan with fat and then chicken pieces in another pan with no fat. He transported the pieces of chicken and vegetables from the living room to the kitchen in a large glass bowl. He had two pans but only one handle. Thus, he changed the handle each time he stirred chicken or vegetables. He was using the same wooden spoon to stir the preparations. After cooking rice, vegetables and chicken separately, he put everything in the same glass bowl he previously had put raw chicken in. When finished cooking, he served the cooked food

together with the salad from the plastic bag. During the heating of chicken, he stood by two the frying pans, cooking several foods at the same time.

Mathilde (37 years, Young families, urban) cooked chicken fillets pieces with coconut milk and rice. She started by washing her hands with soap and fetching a cutting board, chicken fillets and a knife to cut the chicken in pieces. She put the cutting board in the sink when she was done cutting the chicken and started washing carefully her hands with soap, taking care to clean under her fingernails, as she does not like to touch raw meat. “I am washing hands with hot water. I don’t like very much handling meat, this disgusts me a bit.”

Then she cut an onion and started frying it in a large pan, while the chicken pieces were marinating in spices and olive oil. She added the chicken pieces and coconut milk to the pan with the frying onions and left it simmering by putting a lid. While the chicken was cooking, she washed the salad. After preparing the salad, she checked the simmering chicken dish by to find out if it was cooked enough. While Mathilde did the cooking, her husband took care of their two children upstairs. She said they usually did it like this when she was cooking.

Elodie (31 years, Young families, rural) performed several food preparation tasks intertwined with each other. Moreover, she was one of the few research participants who prepared the salad before cooking the chicken. She started by putting on her apron and washing her hands, wrists and rubbing firmly the skin between her fingers. She used to work in a fast food restaurant and told she was familiar with hygiene rules. She fetched every ingredient (chicken, potatoes) she needed and put them on the countertop. She first put the potatoes in the oven and then started frying onion. In the meantime, she started washing the salad heads, and stirred the onion regularly in the pot to prevent burning. She regularly checked the potatoes in the oven and stirred them with a spatula. She didn’t set the timer on for potatoes, but instead checked their colour. When she was done washing the salad, she cleaned the salad spinner and the knife with water and detergents. She finished the vegetable preparation and started the chicken preparation.

She turned over the cutting board she used to cut the onion before putting the chicken on it. She was making two preparations: one chicken fillet cut in pieces for her two younger children, and 5 chicken fillets cooked in paper “papillotes” for her husband, herself and 3 oldest children. She opened the “papillotes” paper covered with spices with her hands as a first step of preparing the chicken fillets. Then she removed the chicken fat.

When the chicken was placed in the pans, she rinsed her hands with clear water after touching chicken. She cooked all of the preparations at the same time in different pans. She regularly checked the frying chicken, increasing or decreasing the temperature. In

the meantime, she cleaned all the dishes (salad spinner, knife, cutting board, sink, countertop...). While chicken was frying, she threw the waste which was left on the countertop in the garbage in the garage. She sets the table while continuing checking the frying chicken.

She finished the salad by seasoning it. She checked the chicken fillets cooking in the papillotes by cutting a fillet to check the inside colour. She did not check doneness of the chicken pieces she prepared for her children. “For me, they are cooked long enough”, she said.



**Figure 4.1.29:** Elodie prepared different chicken dishes, chicken pieces in a pan and chicken fillets cooking in paper “papillotes” in another one (France)

### Cooking while tending to children

Julie (28 years, Young families, urban) cooked the chicken in the oven and fried vegetables during that time. She also had to tend to her 2,5 years old child, who was playing around.



**Figure 4.1.30:** Visualization of Julie’s cooking preparation, with The Observer XT (France)

She started with the chicken preparation (in yellow). She had to put it in the oven for more than one hour, so she preferred to prepare it first. She followed a new recipe. First she prepared tomatoes, onion and garlic that she placed beside the chicken in the dish. Secondly, she poured cream and spices that on top of the chicken. Before putting it in the oven, she gave a glass of water (“non-food actions”) to her 2,5 years old son who she was supervising alone, like every day (Figure 4.1.31). She also removed the cat from the countertop twice where it loves to go and stay.



**Figure 4.1.31: Julie gave a cup of water to her young son (France)**

She then placed the chicken dish in the oven and started preparing the vegetables, by cutting and cooking zucchinis (light blue line on graph). While they were cooking in a pan, she started to prepare the salad in a plastic bag: she made the vinaigrette (vinegar plus oil) and just poured the bagged salad in the salad bowl without washing it, because, according to her, it is already pre-washed. She then cleaned the cutting board and countertop with detergent, while the zucchinis were still cooking and the chicken was in the oven. She stood in her kitchen during the cooking preparation, checking on the chicken once in one hour, and frying vegetables while the chicken was in the oven. Her child was playing around in the living room. At the end of the cooking preparation, she had to run over to him to put him down as he was climbing on the couch.

All 4 other families had children in the house but the spouses took care of them in another room or on another floor during the cooking preparation, like they often do. They thought that it is simpler to cook with no children around in the kitchen. Julie also tried to forbid access to the kitchen to her child, which is not always simple because the kitchen is open on the living room.

### Summing up the order of cooking and heating among the French households

Among French households, we could not describe a particular pattern of actions for preparing chicken and salad related to study groups. To summarise, the majority of research participants (12) cooked side dishes while the chicken was cooking (in the oven or in a stew). Among them, we find three Young single men, three Young families and three Elderly households. Only 3 separated chicken preparation from salad or side dish preparation. Fabrice did not prepare any side dish and stayed close to the stove while the chicken was cooking and finally opened a salad in plastic bag at the end of preparation. Mylène started with cleaning the salad and then placed the chicken legs in her cooking robot to cook them along with vegetables. Bernard stayed close to the stove when cooking chicken legs while his wife was preparing side dishes and salad.

The majority of households (13/15) started with preparing the chicken before side dishes and/or salad preparation. Only two research participants (Mylène and Elodie,) started with salad preparation and continued with chicken preparation. One

participant (Mylène) started following her recipe for cooking chicken legs after washing the rucolla salad. The other one, Elodie, started by washing salad in her sink and continued by cooking chicken fillets in her pan that she would serve to her 5 children while they were still warm.

Various actions during chicken cooking are more common among research participants who cooked chicken in the oven. It allowed research participants to make other aside preparations, without standing next to the chicken cooking. They however regularly checked on the cooking, flipping the chicken in the dish (Odile and Sylviane) or watering the chicken in the dish to keep it moist (Vincent and Etienne).

We noticed three types of served food among research participants: chicken and salad only; chicken, salad and one or two side dishes; chicken, salad, one or two side dishes and a starter.

Only two prepared just chicken and salad, as they were asked by the researchers in the project. A large number prepared chicken (7/15), salad and one side dish to eat with chicken. The side dish was either vegetables or potatoes or rice. Two out of fifteen prepared two side dishes. And four prepared chicken, salad, one side dish and a starter. It is interesting to note that all four households invited the researchers to stay for lunch or dinner. They usually did not eat that many dishes during a normal day, but as they had guest, they added a starter. One of them also baked an apple tart (Bernard & Hélène), which they only do when they have guests (see table 4.1.1., next page).

**Table 4.1.1: Number and type of dishes prepared by French research participants**

Study group	A chicken dish and salad			
	Only	Side dish	Side dish and starter	Two side dishes
Young single men	Fabrice (24 years, urban) Etienne (30 years, urban)  Aurélien (25 years, rural) Vincent (29 years, rural)			Simon (25 years, urban)
Young families		Mathilde (37 years, urban) Julie (28 years, rural) Mylène (25 years, urban)	Elodie (31 years, rural)	Amadine (27 years, rural)
Elderly households		Gérard & Odile (71 & 65 years, rural) Yvette & François (74 & 76 years, urban)	Sylviane (77 years, rural) Charles (75 years, urban) Bernard & Hélène (both 72 years, urban)	

## The heating the chicken and cooking order among the UK research participants

Just over half the UK households (8) cooked their chicken in a pan on the hob. In each of these cases they used chicken breast fillets. The most common way to do this, especially among the Young single men, was to fry the chicken in small pieces (6 households), sometimes with onions or cured meat such as bacon or chorizo. There were further variations within this method: after starting by stir-frying the chicken, Kate (30 years, Young families, urban) and Susan (78 years, Elderly households, urban) then added a sauce and let the chicken and other ingredients simmer and continue to cook; Ryan (20 years, urban), Sahib (23 years, urban) and Liam (28 years, urban) (all Young single men) all stirred in sauce or other flavourings at or near the end of cooking; Tricia did not add sauce or seasoning to the chicken. The two other research participants who cooked chicken in a pan (i.e. those not frying it in small pieces) used somewhat different approaches. Laura (31 years, Young families, urban) 'butterflied' her fillet – flattening it out – then seasoned it and fried it whole, turning it over part way through cooking. Archie (74 years, Elderly households, urban), whose oven had broken at the time of the observation, used an innovative approach that adapted his usual way of roasting chicken breast fillets, seasoned and wrapped up in a foil parcel with butter. He created his foil parcel as usual but instead cooked it in a foil-lined frying pan, turning the parcel over every five minutes.

Four research participants cooked their chicken in the oven. Two of these, Paul (34 years, Young families, urban) and Jean (72 years, Elderly household, rural), each cooked whole chicken thighs, roasting them in a dish layered with other ingredients such as potatoes, tomatoes and cheese (Jean), and sweet potatoes, peppers and chorizo (Paul). Alicia 'butterflied' and marinated her chicken breasts before roasting them whole. Josh seasoned chicken breasts and roasted them whole.

Finally, three research participants used 'alternative' technologies for cooking. Mary (70 years, Elderly households, urban) placed her chicken breast fillets (whole) in a dish, which she covered with cling film and cooked in the microwave. Daniel (25 years, Young single men, Urban) who does not own a conventional oven, roasted chicken thighs and drumsticks in a Remoska mini-cooker, which heats from above using an electric element. And Chloe (38 years, Young families, rural) cooked her whole chicken in an Instant Pot electric pressure cooker (Figure 4.1.32).



**Figure 4.1.32: alternative cooking technologies: Daniel's Remoska minicooker (left); Chloe's Instant Pot pressure cooker (right) (UK)**

Most households alternated between periods when they were focusing on one particular aspect of the meal (such as cooking chicken) and periods of multi-tasking. In general, frying chicken required more ongoing attention than other methods such as roasting in the oven. (See appendix D for an overview of the differing approaches to sequencing).

### Cooking the chicken and preparing the salad separately

Two UK research participants fried chicken with few interruptions, at least initially. Both cooked their chicken fillets in small pieces, using a combination of first stir-frying and subsequently simmering in liquid.

Susan (78 years, Elderly households, urban) began preparation of her sweet and sour chicken dish by first laying out ingredients and equipment and then – sequentially – mixing a homemade sauce, cutting chicken into pieces and chopping an onion. After around 15 minutes she was ready to start cooking. She heated oil in a frying pan over the gas hob and then added her chopped onions to the pan, which she stirred continuously with a slotted spoon for around 2½ minutes. She then added a little more oil and the chicken pieces to the pan. Again, she stirred continuously for around 4½ minutes until she was satisfied the outside of the chicken pieces had changed from pink to a white colour. At this point her approach to cooking the chicken and onions changed. She added her sweet and sour sauce to the frying pan and then, after stirring it in, left the mixture to simmer for a further 15-16 minutes, only stirring intermittently during salad preparation (Figure 4.1.33).



**Figure 4.1.33:** Susan stir-fries her chicken (left) and then leaves it to simmer while she prepares the salad (right) (UK)

Similarly, Kate (30 years, Young families, urban) began by getting out many of her ingredients from the fridge and pantry, cutting up bacon, onions and fresh tarragon, and measuring out wine and crème fraîche for the sauce. Next, she focused her attentions on stir-frying, first the bacon pieces for a little over 3 minutes, then opening her pack of chicken mini-fillets and adding them straight to the pan. She stirred the chicken and bacon mix for around 10 minutes, doing very little else during this period: only throwing away packaging, washing her hands, briefly checking the recipe on her phone, boiling a kettle, and taking a drink of water, each lasting just a few seconds at a time. After this she added onions to the pan, which she stirred briefly but then turned her attention to preparation of carrots and green beans. She added white wine and peas, and continued with preparing the other vegetables, initially leaving the chicken mixture to simmer. However, unlike Susan, once the carrots and beans were cooking (in a pan of boiling water), Kate became more attentive to the chicken mixture, stirring for extended periods with few interruptions (Figure 4.1.34).



**Figure 4.1.34:** Kate stir-fries chicken and bacon (left), leaves it to simmer briefly (middle) and then returns to frequent stirring (right) (UK)

### “Multi-tasking”: cooking the chicken while preparing the vegetables

In contrast to Susan and Kate, others more consistently multi-tasked, alternating frequently between stirring or turning chicken in the frying pan and preparing other parts of the meal, especially salad vegetables. This was true of the four remaining research participants who pan-fried chicken in small pieces: Ryan, Sahib, Liam (all young single men) and Tricia.

Ryan (20 years, Young single men, urban) and Tricia (70 years, Elderly household, urban) each prepared their chicken breast fillets – cutting them into smaller pieces – as a discrete step at or near the beginning of the overall meal preparation process. Liam (28 years, Young single men, urban) was only slightly different in that he cut his chicken while also running a bowl of hot water to wash dishes, requiring his partial attention in between moments of cutting. Sahib (23 years, Young single men, urban) prepared his chicken before the observation began, again making it separate to the rest of the food preparation and related tasks, although we did not directly witness this taking place. However, once they started to fry their chicken pieces, all four switched repeatedly and seamlessly between attending to the chicken and other preparation activities.

After cutting the chicken and adding it to the frying pan, Liam (28 years, Young single men, urban) carried out all other tasks of food preparation, including some washing up, while the chicken was cooking. In between stirring and/or turning over his chicken pieces, he chopped mushrooms and added them to the pan, sliced peppers and arranged his salad ready for the cooked chicken and mushrooms to be added. Similarly, Tricia did most other tasks while the chicken was cooking, while intermittently returning to her pan of chicken for relatively short periods of stirring. These tasks included: peeling and chopping half a red onion, wrapping the remaining half an onion in foil and returning it to the cupboard, slicing chorizo, and beginning to prepare her lettuce. At this point, the frying pan was removed from the heat while she finished the salad. Ryan had relatively little to prepare after beginning to fry his chicken, but he still cut, washed and mixed his salad, as well as cooking pasta, between stirring the chicken. And Sahib did much of his sauce and salad preparation before starting to cook the chicken, but he remained active with other tasks during the chicken cooking, in between turning over the chicken pieces with tongs approximately every two minutes. These tasks included: frequently stirring his homemade tomato sauce (which was also cooking on the hob), mixing together salad ingredients, preparing an avocado and combining with fresh lemon juice and seasonings, clearing away ingredients and washing dishes (Figure 4.1.35).



**Figure 4.1.35: Sahib attends to chicken (left), tomato sauce (middle) and avocado (right) (UK)**

Much like the above, Laura (31 years, Young families, urban) and Archie (74 years, Elderly households, urban) used the time that the chicken was cooking to prepare salad ingredients. The difference was that, although still using a frying pan over a hob, their whole breast fillets required less ongoing attention than was needed by others in frying small pieces. For Laura and Archie, this attention mainly consisted of turning over the chicken portions at regular intervals to ensure even cooking. Archie, for example, repeatedly set a timer and turned over his foil-wrapped chicken breast every five minutes. In the intervening period this allowed him, for the most part, to focus on other activities (including salad preparation, but also conversation) without having to actively monitor and respond to the status of the chicken. However, it is interesting to note that the chicken was still able to interrupt despite this carefully planned approach to cooking: one minute after turning over the chicken portion for the third time, Archie noticed a ‘crackling’ sound coming from the pan, prompting him to stop and open up the foil parcel and perform an unscheduled check on how the chicken was cooking. This also prompted him to turn down the temperature setting on the hob.

### Preparing vegetables alongside other methods of cooking chicken

In contrast to the frying pan on the hob, the other methods of cooking chicken that we observed required very little attention, and in most cases only at pre-planned intervals. This was especially true for the four research participants who cooked chicken in the oven. From a combination of experience and following instructions, they knew how long the chicken should take to cook in the oven and were able to leave this to happen while they got on with other activities. Jean (72 years, Elderly households, urban), Josh (22 years, Young single men, urban) and Paul (34 years, Young families, urban) each set the integrated timer on their oven to prompt them when to act; Alicia (23 years, young families, urban) followed essentially the same approach but noted the time on the clock rather than setting the timer.

In all four cases, the time taken for chicken to cook was split into two or three main periods, marking when action was required either with the chicken or with other vegetables. After cutting and seasoning, Josh added his potato wedges and then

chicken breasts to the oven, in separate roasting dishes, and set a timer for an initial 12 minutes. When prompted by the timer, he removed both roasting dishes from the oven. He turned over the chicken pieces and stirred the potatoes, before returning both to the oven and setting the timer for 6 minutes, this time marking when he needed to begin preparing and cooking his side of broccoli. On beginning the broccoli preparation, he set the timer for a further 6 minutes, indicating when the chicken and potatoes would be ready to eat. Alicia's approach was similar, but she left the chicken undisturbed for the whole cooking period. After an initial 20 minutes she took out the potato wedges, stirred them and returned them to the oven. She then waited a further 10 minutes before beginning preparation of her salad, as the chicken and potatoes continued to cook. Another 10 minutes later she turned off the oven and opened the door, signalling that cooking was finished, barely pausing from her salad prep to do so (Figure 4.1.36).



Figure 4.1.36: Alicia very briefly pauses salad prep to open the oven door (UK)

Both Paul and Jean cooked chicken thighs, combined in a roasting dish with vegetables and other ingredients. Paul initially prepared his vegetables (sweet potatoes and peppers) and mixed them in the roasting dish with garlic, beans, chorizo, orange juice and vegetable stock. He then laid his chicken thighs on top, added the dish to the oven and set the timer for 40 minutes. The timer prompted him to remove the dish from the oven and brush each thigh portion with an oil and paprika glaze. He returned the dish to the oven and set the timer for another 10 minutes, using this time to prepare his salad ingredients. Like Alicia, Paul was still in the process of salad preparation when the timer went off. He turned off the oven and finished preparing the salad before removing the dish from the oven around 4 minutes later.

Jean and John Higgins (72 & 71, Elderly households, urban) worked in tandem. They were the only UK household to do so on the occasion of our visit and, from wider discussions, cooking together with partners or housemates was rare among our sample. To begin with, John trimmed fat from the chicken while Jean washed and sliced potatoes and arranged them in a roasting dish. John added the chicken thighs on top of the potato slices and then, while he washed his hands, Jean poured oil over the chicken and put the dish in the oven. John set the timer for 25 minutes. Unlike Josh, Alicia and Paul, they began salad preparation immediately, using a food processor to finely chop carrots and cabbage to make coleslaw. For John, the timer was his signal to rinse the chopped cabbage (which had been salted to draw out moisture) and tomatoes, while Jean removed the roasting dish from the oven. She added olives and then John's washed tomatoes in between the chicken thigh portions, seasoned with herbs and vinegar and arranged cheese pieces on top, before returning the dish to the oven. John set the timer for a further 30 minutes, while Jean mixed together the coleslaw ingredients with a dressing she had previously prepared. There was then a period of waiting before the timer sounded again and the cooked chicken and vegetables were removed from the oven.

Finally, of the three ‘alternative’ methods of cooking chicken, the pressure cooker was the closest to oven cooking in terms of the minimal attention required from research participants. After adding the stock, chicken and chopped onions, and setting the programme going, no further intervention was required from Chloe (38 years, Young families, rural) until it was finished, when she opened a valve to release pressure, before the cooker could be opened and the chicken removed. Chloe used this time to fry bacon, to wash and cut salad ingredients and to assemble the salad in bowls, as well as doing some washing up. Daniel (25 years, Young single men, urban) began by putting chicken pieces into his pre-heated Remoska cooker. While the chicken cooked, he too prepared his salad ingredients and washed dishes, without actively doing anything with the chicken. However, given the Remoska’s lack of timer and temperature controls – it is either on or off – Daniel had to be a little more attentive than Chloe did, lifting the lid and checking on the progress of cooking a total of four times. Mary cooked her chicken breasts in the microwave. This had the shortest overall cooking time of all the chicken we saw being cooked (10 minutes). While this gave Mary (70 years, Elderly households, urban) time to prepare her coleslaw, she did not start on her other salad ingredients until the chicken was finished cooking. However, this was intentional as she and Bill prefer the chicken to be served cold when eating it with salad. As seen with Archie (74 years, Elderly households, urban) earlier, Mary too was interrupted in unanticipated ways by the chicken. First, she was cooking an odd number of breast fillets (three), which was different to both her usual experience (she would normally cook two) and the options covered in the microwave instructions (two or four) which she checked before cooking. As a result, she estimated that the chicken would take 10 minutes, but initially set it for 9 minutes so that she could check on progress. Second, Mary was prompted to check on the chicken early, after only around 5 minutes, because of an unexpected sound she heard coming from the chicken.

## Extended down time

The above table and discussion demonstrate the different ways that cooking chicken and preparing other ingredients were sequenced. Research participants had individually different approaches, but the ways of cooking appeared to account for most variation. What the analysis so far does not capture are the periods of inactivity (or little activity) that some research participants experienced while waiting for chicken to cook.

This was most apparent for those cooking chicken in the oven. They all had extended periods of waiting when the chicken was in the oven and they were not actively involved in food preparation or related tasks. In each case this period of ‘down time’ was marked out by their use of the oven timer or clock. For Alicia, Paul and Josh this time fell before preparing salad; for Jean it was after the coleslaw was made. In the context of our visit we used this as an opportunity to discuss some of the wider issues surrounding food preparation and food safety. In other circumstances, research participants told us they would use this time for other activities, whether for relaxation or keeping on top of household work.

For others, periods of waiting were less structured and/or did not afford the same opportunity to leave the chicken and concentrate on something else entirely, again partly reflecting the different cooking methods. Often these moments of relative down time were used for tidying up, putting things away, washing dishes, and so on. They were also, again, a chance to talk, sometimes in relation to the subject matter of the research and other times about entirely different topics. Ryan, for example, had several periods while his chicken was frying, but before beginning salad preparation, when he could step away from stirring the chicken for a few minutes at a time. At one point he told us in detail about an unpleasant experience with foodborne illness. Similarly, towards the end of frying his batches of chicken, Sahib had finished much of the salad preparation and briefly sat down to talk about wider food experiences. Archie, now retired, spent the series of five-minute periods between turning over his chicken parcel moving back and forth between salad preparation tasks and sharing stories from his childhood and career.

## Caring responsibilities and other kitchen activities

A surprising observation in the UK sample, compared with both previous studies and our own pilot fieldwork, was that none of the parents spent time attending to children while in the process of cooking (during our observation). This is partly a function of the study groups chosen as the focus of the research and of the specific households recruited. Only three households in the UK sample had dependent children and these ranged in age from 6 months to 2 years. Chloe’s was the only family to have a child over 1 year old. This means that most of the children had only recently started eating solid food and parents were often still eating separately from their children, after they had

gone to bed. Furthermore, each of these three households had both parents living together and present on the occasion of our cooking observation. The cooking sessions occurred when children were either already in bed or in the process of being put to bed, by partners. However, as we saw in chapter 2.2, the cohort of families with young children reported substantial alterations to their shopping, cooking and eating patterns as a result of having children.

On a similar note, whereas previous research has emphasised how cooking often coincides with numerous other household activities, this was not typically the case on our visits. Several research participants commented how they would normally spend periods of down time doing other tasks, or relaxing, but on the occasion of our visit they simply talked to the researchers in these periods. Two households (Mary, Jean) had brief, unanticipated visits from family members or friends during cooking, but disruption was minimal.

While we are confident that what we observed represented a somewhat ‘typical’ cooking experience we are also conscious that a given household has a range of different (also typical) experiences. It was apparent that our visits had to some extent (and understandably) been scheduled to coincide with a relatively stress-free case of typical cooking. For example, all three mothers in the sample explained that their partners sometimes work late or have other evening commitments outside the home, but our visit was on an occasion when they were present. Research participants who share a kitchen with one or more housemates – in Ryan’s case six other people – might otherwise be in the kitchen at the same time, but this was not the case during our visit.

### Summing up the UK order of cooking and heating

For most research participants in the UK there was a mixture of periods of concentrating on a specific aspect of cooking, periods of multi-tasking and periods of down time. However, there were key differences in how long these periods lasted and how clearly they were defined. These differences largely reflected cooking methods: frying chicken in small pieces generally required more ongoing attention; cooking in the oven allowed extended down time and a dedicated period of salad or vegetable preparation. In nearly all households, chicken was prepared before salad, with salad preparation happening while the chicken was cooking. This was true of all research participants other than Sahib, who prepared most of his salad before frying the chicken.

## The cooking order among the Norwegian research participants

Among the Norwegian households, 14 people fried the chicken in a frying pan or a wok. Only Anna, roasted chicken (three legs) in the oven. Fredrik (23 years, Young single men, urban) fried pieces of thigh fillet in the frying pan. Afterwards, he roasted them in the oven on top of a vegetable and potato oven dish. Emma (33 years, Young families, rural) and Oda (72 years, Elderly households, rural) fried pieces of chicken fillet and later added the fried chicken to a gratin dish cooked in the oven. Chris (37 years, urban), Lena (37 years, rural) (both Young families), Jon (28 years, Young single men, urban) and Nils (74 years, Elderly households, rural) had the fried chicken in a stew or casserole. Bente (70 years, Elderly households, urban) added water to the chicken thigh pieces in the frying pan to let the simmer. Petter (29 years, rural) and Roger (24 years, urban (both Young single men) made wok dishes with fried chicken, vegetable and sauce.

For all the households preparing the chicken and vegetable meal was a highly complex enduring, including several, intermingled and often interrelated tasks. See a summary of the stages taken by each of the research participant cooking the chicken and vegetable meal in Appendix D.

### Preparing the chicken and the vegetables in separate steps

Among the Norwegian households, some fried the chicken with few if any interruptions or doing anything other in between. For instance, Nils (74 years, Elderly households, rural) only left the frying pan to clean the plastic bowl where the chicken had defrosted in the fridge. Nils prepared a creamed chicken casserole with rice and a side salad. He used a pre-cut and pre-cooked chicken product he had bought across the border, which he took out of the freezer in the morning to defrost it for two hours in room temperature, before putting it in the fridge until he started cooking. He told that the chicken did not need to be cooked before eating it. “You could have prepared a chicken salad with it”. However, he “prefer to fry it a bit”, Nils told. Despite cooking a pre-cooked and pre-cut chicken product, Nils performed various tasks when frying the chicken, and some tasks were repeated several times.

Nils started cooking by getting the frying pan from the cupboard next to the oven, removing the paper cloth from the pan, which was there to protect the pan surface. He placed it on top of the stove. He walked to the fridge to fetch margarine and the precooked chicken, which was stored in a plastic bowl. He found a butter knife from the cutlery drawer and turned on the stove. He had some margarine in the frying pan and realised that he had turned on the wrong cooking plate when the display on the stove was flashing. After some struggling with the touch screen buttons, he managed to turn on the correct cooking plate. He used the butter knife to swirl the margarine around in the pan and poured the pre-cooked thawed chicken from the plastic bowl into the quickly heated frying pan. He pulled out a drawer filled with cutlery to fetch a

spatula. He used this to stir the chicken pieces and to place them evenly out in the frying pan. Nils added more margarine to the frying pan twice using the same butter knife as before. He scraped the knife on the side of the frying pan to get rid of the excess margarine and placed the butter knife on a little tablecloth beside the margarine package on the kitchen counter. He stirred the chicken pieces in the pan by using the spatula to move the pieces around. He pushed the pieces evenly around and left the spatula resting on the edge of the frying pan. He repeated the following process three times: moving the chicken pieces around, sometimes scooping some pieces on the spatula to toss them over on the other side, often followed by pressing a few of pieces down on the frying pan and then evenly placing the chicken in the pan before letting the spatula rest on the edge of the pan (Figure 4.1.37).



**Figure 4.1.37: Nils was repeatedly moving the chicken around in the frying pan using a spatula (Norway)**

Nils left the frying pan to bring the plastic bowl that contained the chicken earlier over to the sink to rinse it in water. He turned the tap on and flushed the bowl two times. He checked the temperature of the water with his finger and added some detergent into the bowl. He washes the bowl using a brush. After turning off the tap and leaving the brush in the sink, he found a towel and dried the bowl. He stirred the chicken a last time before deciding that it was properly cooked. He used the spatula to put the chicken in the same plastic bowl he previously had washed (Figure 4.1.38). He placed the bowl on the counter top close to the sink and left it there until he was finished preparing the salad and the creamed stew sauce. He then added the chicken pieced to the sauce and heated them in the sauce for about 16 minutes.



**Figure 4.1.38: Nils used the spatula to scope the chicken pieces into the plastic bowl when they were fried enough (Norway)**

The repeated stirring and moving the chicken pieces in the frying pan was done by most of the Norwegian research participants, who cooked pieces of chicken fillet (breast or thigh) in the frying pan. Meanwhile, most research participants left the frying chicken much more often than Nils did. After frying the chicken, he put it aside and prepared the salad. Usually, Nils' wife, Nina did the cooking. She had told Nils that “when you cook something [...], you have to manage doing several things together. You men never manage to do two things at the same time”, Nils said. Nils admitted that he had not cooked a lot when he and Nina had young children. “I have to admit that the kitchen, has not been my thing, right.”

Jon (28 years, young single men, urban) also prepared chicken and salad separately. He followed the recipe on an Indian Tikka Masala kit, which included Indian masala sauce, mix for Indian Tikka Masala, marinade, rice and coconut milk. The recipe on the back of the packaging gave precise instruction of the cooking steps. He never prepared any vegetables, but took out already cut lettuce, onions and pepper from yesterday's tacos dinner from his fridge.

Anna (31 years, Young families, Norway) roasted chicken legs in the oven, which she had marinated using mayonnaise and pierced with pieces of garlic underneath the skin. While the legs were roasting, she prepared salad and boiled potatoes. “I usually start with the chicken, because it takes the longest time”, she said.

The three examples suggest that cooking the chicken and vegetable dish separately depend on the cooking time (Anna), the recipe (Jon) or the level of insecurity/experience in cooking (Nils). Meanwhile, cooking chicken and salad separately is also advocated as safer way of cooking by some of the Norwegian research participants: Chris (37 years, Young families, urban); and Inger.

Inger (70 years, Elderly households, rural) prepared “salad, chicken and in addition I think we will have focaccia [...] I baked it this morning. [...] I wonder if I should boil rice as well.” Inger was preparing a meal for five people including her husband, three grandchildren and herself. In addition, she prepared food for her daughter, son-in-law

and her daughter-in-law, which she packaged in several plastic boxes for them to pick up later when picking up their children. She has named the weekly family cooking and catering “Mom’s food boxes”. Inger completed preparing the salad before the chicken. In fact, she also washed up, wiped surfaces and stored the serving plate and all the boxes with salad before she started to prepare the chicken. She said she often prepared the food in that order, but “it depends a bit on how much time I have and stuff, or I do it the other way around. But I always do only one thing. I don’t cook the chicken...I don’t go about frying the chicken and making the salad at the same time.” For Inger, preparing chicken and vegetables separately had to do with “the scare you have got in relation to...It might be stupid... to lots of bacteria and stuff.” While Inger admitted that her mother was “very hygienic and careful”, she mentioned that “the talk” about bacteria had increased in the media.

### Preparing the chicken while preparing the vegetables

Seven of the Norwegian research participants fried the chicken while preparing vegetables. This meant that they switched between stirring the chicken pieces in the frying pan and cutting the vegetables. For instance, Chris (37 years, Young families, urban) juggled between the frying chicken and preparing the salad. He was preparing a chicken stew in the frying pan with vegetables, pasta and sauce with cream, curry and tomato paste. Chris said he usually prepared the vegetables before the meat, and he prepared everything before he started cooking, “so that it doesn’t get cold”. In the dish he prepared, everything went in the same pan almost at the same time. Thus, he decided to prepare everything before the heating. “I usually have a reason for why I do what I do”, he said.

He started cooking by collecting two wooden cutting boards, one for the vegetables and the other for chicken meat. He told he usually did this when cooking both vegetables and meat to avoid contamination. After cutting the chicken followed by cutting the vegetables for the chicken pan, Chris started frying the chicken. Meanwhile, his cohabitant, Camilla (35 years) reminded him that he had to remember to prepare a salad. Thus, Chris intermingled between frying the chicken and preparing the salad. After stirring the chicken pieces in the frying pan, Chris cut the avocado in two, using the knife he has used on vegetables. He and Camilla agreed to use only one half, leaving the other half for their son, Carl (2,5 years). After cutting the avocado, Chris turned to stir the chicken. Then, using a spoon from the drawer, he put the avocado in the salad bowl (Figure 4.1.39).



**Figure 4.1.39: Chris prepared avocado for the salad while stirring the frying chicken pieces (Norway)**

He threw the avocado skin in the wet organic waste bin and stirred the chicken a little more. Then he turned to the cutting board with vegetables and cut a mango in half, cutting vertical and diagonal cuts into the halved mango, peeling the dices of mango over the salad bowl using the vegetable knife (Figure 4.1.40).



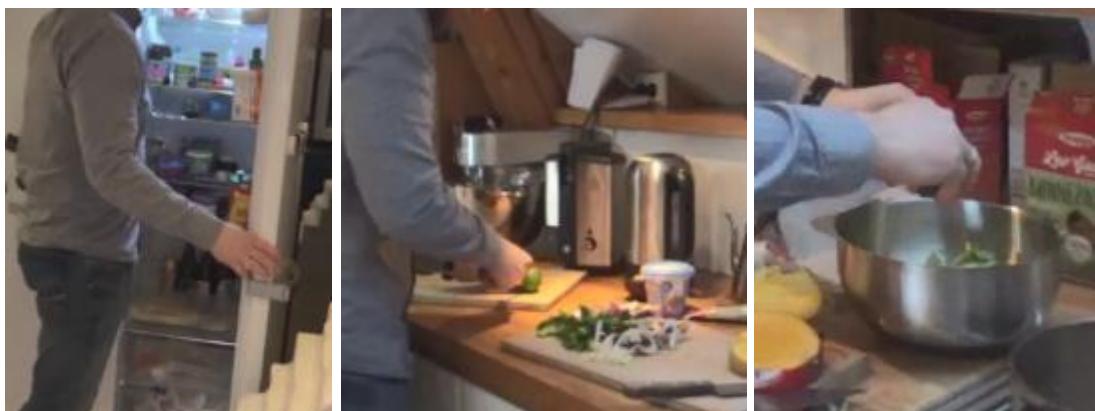
**Figure 4.1.40: Chris tossed the avocado skin, turned to stir the chicken followed by cutting a mango for the salad (Norway)**

He turned to the frying chicken and stirred the pan before cutting the other halved mango the same way as the first. After that he went back to the chicken for another round of stirring (Figure 4.1.41).



**Figure 4.1.41: Chris stirred the chicken again, continued cutting the mango and did yet another stirring of the chicken (Norway)**

Going back to the salad, Chris decided to fetch a lime in the fridge. He cut the lime in two on the cutting board designated for the chicken, using the knife he cut the chicken with earlier. He then squeezed the lime over the salad (Figure 4.1.42).



**Figure 4.1.42: Chris found a lime in the fridge, cut it on the cutting board and with the knife used for chicken, squeezed the lime juice on the salad (Norway)**

Chris realized that he had used the wrong knife and said: “now it got bacteria on it. I used... That was actually pretty bad”. He ended up tossing the salad and started making a new one, admitting that “it might be that because you’re here that I’m more watchful of it, so it might be I hadn’t discovered that error had you not been here. And then I would have used [the salad].” While he added that accidents might happen in his kitchen, he expressed being relaxed about food risk by saying that, “we’re still here, so”. Moreover, he had never thrown out a salad before because of food safety issues. If it had happened that he had switched knives before or used the cutting board for meat for cutting vegetables, he never said. He was not the only participant that pointed out that they did something wrong when switching between cooking tasks.

Georg (28 years, Young single men, urban) realised that when he started cutting the vegetables, he had just touched the chicken breast fillet when putting it into the marinade. He too did various cooking tasks intermingled (see figure 4.1.43, next page).

After preparing marinade for the chicken, George opened the packaged of chicken breast fillets moved one fillet into the bowl with marinade. He did nothing for a few seconds before he started to chop the yellow pepper using the same knife as he had used for opening the package of chicken. He realised that he had not washed his hands after touching the chicken, and left his room to do so, in the toilet of the shared apartment. He continued cutting vegetables using the same knife as before, added spice to the marinade and put some oil into the frying pan, fetching garlic followed by cutting off the peel and tossing the peal in the garbage bin.

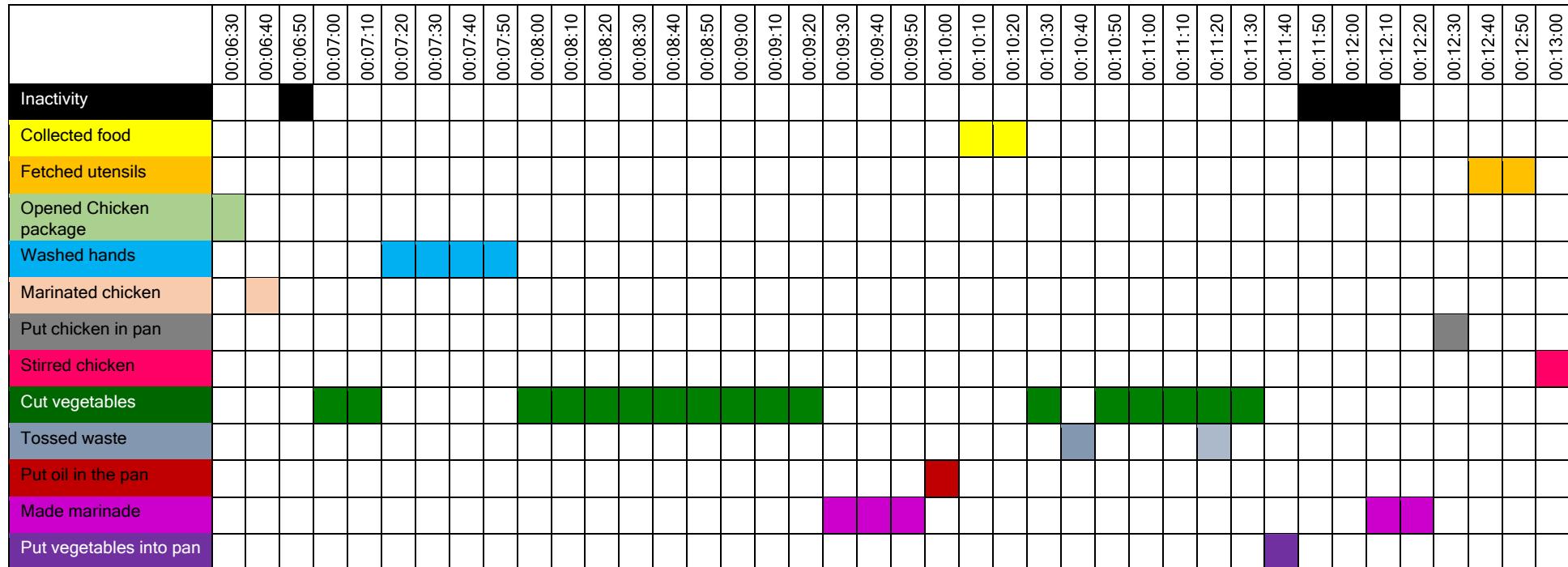


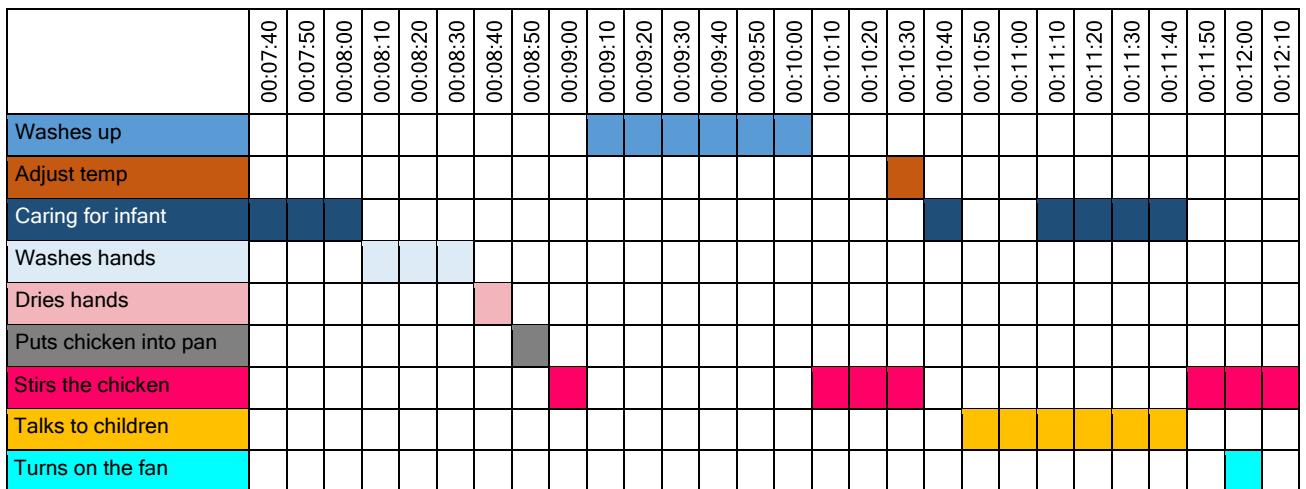
Figure 4.1.43: Gantt chart of Georg's cooking activities (06.20-13.00) (Norway)

### Frying chicken while tending to children

Four of the young families and one of the elderly households had a child or children present when cooking. Inger's (70 years, Elderly households, rural) granddaughter arrived while she was at the end of the cooking of chicken. Chris (37 years, Young families, urban) had his two children around (Christian, aged 3 and Carl, aged 7 months), but his cohabitant Camilla (35 years) tended to the children. However, for Emma, Hanne and Lena cooking meant caring for their children admits cutting chicken and vegetables, frying, stirring, washing up. Hanne (31 years, Young families, urban, Norway) involved her two and-half-year-old son, Håkon in the cooking. For instance, he was allowed to stir the sauce while he was sitting on his chair in order to reach up to the kitchen counter. Meanwhile, baby Hedvig (4 months) was laying on her baby rug on the floor. When Hanne was cutting the chicken fillet, Hedvig cried, and Håkon was asked if he could give her the pacifier. During the cooking, Hanne had to care for Hedvig ten times, sometimes just talking to her, giving her the pacifier, putting her in a chair and having her on her arm. For Emma and Lena this was no different. Lena's (37 years, Young families, rural, Norway) daughter Line cried constantly and was put in the baby strap when Lena did most of the cutting of vegetables making it hard for her to see what she was doing (Figure 4.1.44).



**Figure 4.1.44: Lena strapped 7-month-old, Line, to her chest when cooking (Norway)**



**Figure 4.1.45: Gantt chart from Emma's cooking and caring activities  
07.40 to 12.10 (Norway)**

Figure 4.1.45 illustrates what Emma (33 years, Young families, rural) did over the course of 4.5 minutes while frying the chicken (red). After cutting the chicken fillet on the cutting board, baby Eric (4 months) started crying. He laid in a small day bed placed on the kitchen floor. Before she had the chance to wash her hands, she comforted him by talking to him and adjusting his blanket (see also chapter 4.5, pp 46) (dark blue). After washing and drying her hand (light blue and pink), she put the chicken pieces into the frying pan (grey) and stirred it with a spatula (red). She washed the cutting board and knife (blue), stirred the frying chicken (red) while adjusting the temperature on the stove (brown). Eric started to cry again and Emma left the stove to care for him (dark blue) and asked her two older children (boy aged 6 and girl aged 7) to take care of Eric (orange). She carried Eric to the living room to play with his sister and brother (dark blue/orange). She hurried back to the stove to stir the frying chicken (red) while turning on the fan (turquoise). Emma tended to her baby 17 times while cooking. At one point, Emma cared for her infant, comforting and rocking him on her arm, while fetching milk and liquid margarine, resetting the temperature on the stove and stirring the frying vegetables for chicken dish (Figure 4.1.46).



**Figure 4.1.46: Emma carried 3-months-old, Erik, while stirring vegetables for the chicken dish (Norway)**

## Summing up heating and the order of cooking among the Norwegian research participants

Among the Norwegian research participants, thirteen prepared/cut chicken before preparing/cutting the salad/vegetables: Anna (31 years, urban); Chris (37 years, urban); Emma (33 years, rural); Hanne (31 years, urban) (all Young families); Fredrik (23 years, urban); Georg (28 years, urban); Petter (29 years, rural); Jon (28 years, urban); Roger (24 years, urban) (all Young single men); Bente (70 years, urban); Kari (71 years, urban); Nils (74 years, rural); and Oda (72 years, rural) (all Elderly households). Two prepared the salad/vegetables before preparing and cooking the chicken: Inger (70 years, Elderly households, rural); and Lena (37 years, Young families, rural). All but one (Anna) fried the chicken in a frying pan (14/15). In most of the households (9/14), frying the chicken was followed by another heating process when the fried chicken was included in a stew, casserole, oven dish or wok.

It is possible to differentiate between three patterns of cooking; the intermingling, the overlapping and the stepwise cooking performances. These cooking patterns are not mutually exclusive, which means that the cooking procedures could start off as a stepwise procedure, become more intermingled as pans and pots were boiling necessitating doing different tasks at the same time. Meanwhile, intermingling between chicken preparation and raw vegetable preparation is associated with more risks than switching between other cooking tasks (cooking rice and chicken or cutting vegetables for the hot dish and raw salad). The overview of the order of cooking in the Norwegian households shows that most intermingled between several tasks when cooking. For instance, washing up, tidying, tossing waste and tending to children were done in between cooking and heating of chicken and vegetables. Two research participants prepared salad before cooking chicken (Inger and Lena) Moreover, many (4/15) fried the chicken and prepared salad between stirring the frying pan (Bente, Chris, Georg and Hanne). Others (9/15) heating chicken separately from preparing salad/vegetables (although washing up, tidying, tossing waste and washing hands were often intermingled in between) (Anna, Emma, Fredrik, Inger, Jon, Kari, Nils, Oda and Roger). This was also true for Anna, who were the only one of the Norwegian research participants who roasted the chicken in the oven. For the women who cooked while caring for their young children, meant that cooking tasks were overlapping with tending to their baby (Emma, Hanne and Lena).

## The order of cooking in five countries – a summary

The order in which a meal is put together may vary from menu to menu, the kind of chicken product, type of vegetables, cooking skills, kitchen facilities, recipe instructions, habits and routines as well as meanings and understandings of how to cook. In addition, cooking performances takes place within households and thus within various social contexts, where cooking for others and tending to other household needs affect how cooking is performed. Thus, cooking may be performed more or less stepwise, intermingled and overlapping as other household necessities need attention.

The chapter has discussed various cooking steps and procedures the research participants took, referring to how the order of cooking, preparing and cooking chicken before fresh vegetables, is considered to increase the risk of contamination from poultry to raw vegetables dishes. Most of the research participants in this study cooked the chicken before preparing the salad (see table 4.1.2). Meanwhile, preparing and cooking chicken was mostly done in a stepwise procedure. Few intermingled with the preparation of vegetables and other household chores. A stepwise procedure can be explained:

1. as a matter of cooking skills, or lack of such. For instance, Nils (74 years, Elderly households, rural, Norway) was not confident in his abilities to cook and said that doing more than one thing at the same time was challenging. Similarly, the French participant Fabrice (24 years, Young single men, urban), said he didn't know how to cook chicken in the oven. Both research participants cooked chicken in a frying pan, flipping and watching the chicken until they decided that it was finished.
2. by following a recipe. For instance, Jon (28 years, Young single men, urban) and Kari 71 years, Elderly households, urban) in Norway both followed recipes quite carefully while cooking, which instructed them to a stepwise cooking procedure and thus to fry the chicken without doing much in between.
3. the type dish prepared. For instance, Romanian woman, Fanica (69 years, Elderly households, urban) prepared chicken schnitzels from scratch and carefully fried the schnitzels one by one while removing the foam produced in the pan by the frying egg and bread crumble mix. Furthermore, the aim of achieving evenly fried chicken was also associated with close monitoring and few tasks done while cooking.
4. the way the cooking task starts. The UK discussion points out that cooking may start as a focused activity with no disruptions, it may at some point become intertwined with other cooking tasks. This was the case when Susan (78 years, Elderly households, urban) prepared sweet and sour chicken. After stir-frying the chicken for some minutes, her attention switched to other cooking tasks when adding the sauce to let it simmer.

5. to handle food safely. For instance, Inger (70 years, Elderly households, rural) in Norway, explicitly stated that she never cooked chicken and vegetables at the same time due to bacteria concerns.
6. by the choice of heating method for the chicken. For instance, heating the chicken in an oven or in a cooking robot, robot, the Thermomix, boiling the chicken either the chicken was cooked alone or together with vegetables (or other ingredients) often freed time to do other tasks. Starting with the chicken made more sense to the research participants who used the oven, microwave or Thermomix robot or boiled because of the time it took to cook the chicken. For instance, Mylène (25 years, Young families, urban) in France used the Thermomix cooking robot to cook both vegetables and chicken, allowing her to tidy and to other tasks while the food finished.

For many of the French elderly households, baking or roasting a whole chicken in the oven was their preferred method of cooking. Furthermore, long cooking time was argued as a safer way to cook chicken among these households (see chapter 4.4). Furthermore, among many of the French elderly couples cooking and food work involved moving between several spaces; the garden, the garage, the back kitchen (“arrière cuisine”) and the main kitchen. Roasting the chicken in the oven, made it possible to collect vegetables growing in the garden, rinsing them properly in designated and separate spaces to preparing and cooking the chicken. Among the Romanian elderly research participants, many preferred to boil the chicken for long in order to be able to chew the meat.

Although 65/75 households prepared and cooked chicken before preparing raw vegetables, stepwise cooking procedures often meant cooking the chicken and raw vegetables separately, and, thus, in a safer manner than intermingling between cooking task. This will be discussed further in the next paragraph.

One fourth of the households intermingled cooking tasks of chicken and raw vegetables. This was typically done when frying the chicken while prepared salad in between. Intermingling between various tasks indeed suggests a complex set of skills, bodily competences and manoeuvres performed during cooking. It can also be associated with the modern cultural appraisal of business. Sullivan (2008) argues that there is a connection between time pressure, practices of consumption and class status in modern western societies. Most households combined several tasks during cooking including cleaning, tossing waste, tidying and stirring different pots.

Apart from Portuguese households, all who prepared salad, did it while cooking chicken fried their chicken. One possible explanation is that this way of heating the chicken takes less time and thus necessitates preparing both dishes within a short time frame. In the Portuguese case, the opposite happens. Cooking chicken in a pot for a stew or a roast in the oven takes a while, so people take advantage of this ‘dead’ time

to prepare the salad while the chicken is cooking. A few made in their own words mistakes when intermingling between chicken and vegetable preparation.

Two Norwegian households, Chris (37 years, Young families, urban) and Georg (28 years, Young single men, urban) made mistakes when juggling between chicken and salad preparation. Chris ran back and forth between the chicken in the frying pan and cutting vegetables for the salad, when he suddenly used the knife and cutting board where the chicken had been cut to half a lime. While Georg was waiting for the frying pan to get hot enough and for the chicken breast to marinade, he started cutting the vegetables with the same knife used for the chicken and without washing hands. Romanian woman, Sorina (32 years, Young families, rural) prepared salad immediately after putting the chicken in the frying pan, and decided to pluck an onion in the garden, rinse it in water and collecting tomatoes and cucumbers from the fridge, when realising that the chicken was overcooked. Accidents also occurred when doing other tasks as well. Portuguese woman, Andrea (33 years, Young families, urban) for instance, unintendedly dropped a piece of raw chicken on top of a clean glass container she had just removed from the dishwasher. After removing the raw chicken piece, she rushed to store away the cleaned dishes that were on top of the kitchen counter without washing her hands in between. In the Portuguese discussion, it is pointed out that Andrea probably would not have done this if it wasn't for the accident.

The chapter has discussed actions done at the same time or overlap. Most did certain tasks simultaneously. Typical tasks done at the same time, was stirring the chicken in the frying pan while adjusting the temperature on the stove or putting on the fan. Two hands enable doing different tasks at the same time or seemingly simultaneously. British woman, Alicia (23 years, Young families, urban), for instance left the chicken undisturbed for the whole cooking period, roasting it in the oven. In the middle of salad preparation, she barely paused to turn off the oven and to open the oven door (see Figure 4.1.36) by just an arm stretch and few other bodily movements. An in-depth analysis of the activities of the hands will provide more details of the role hands play in handling food safely. This chapter focuses mostly on the overlapping or multitasking of tending to young children when cooking chicken.

Among the young families in this study, 10/25 had their children present when cooking the chicken. In some households care work and food work was divided between the spouses (8/25). In most cases the woman cooked while their partners took care of the children (7/8). For many of the cooks in this study, tending to young children meant interrupting cooking tasks and multitasking. In six Young families, three Romanian and three Norwegian, food work was heavily intertwined with tending to young children. Cooking tasks were interrupted by infants crying on numerous occasions and some mothers ended up carrying their children while stirring pots and pans with the other arm. The Norwegian mother, Emma (33 years, rural) tended to her infant 17 times during cooking. Comparing these six cases shows that the number of

interruptions depended on how often their infants cried and needed care. But mothers were also interrupted by older children asking for a glass of water or needing attention and activation. French mother, Julie (28 years, rural) was, for instance, interrupted by her 20-month-old son climbing on the couch and quickly had to put him down to avoid any accidents. These examples demonstrate clearly the social contextual embeddedness of cooking. Cooking is done in social situations where caring, talking, teaching, negotiating, pleasing, and disciplining, loving family members is also carried out. Furthermore, they also reveal that being a good parent challenges handling food safely. Norwegian mother Emma (33 years, rural) did not wash her hands after touching raw chicken when tending to her infant (see also chapter 4.5, pp 46). Romanian mother, Sorina fed her 6-month-old daughter and took her to sleep, while the deboned chicken was left on out in the air for 15 minutes.

Although men's time in routine housework has increased and women's has decreased during the last 40 years, gender division of housework such as cooking persists in most Western countries (Kan, Sullivan, & Gershuny 2011). In most of the couples in this study (elderly households and young families), food work was either done by the woman or shared among the spouses. None of the men in this study was solely responsible for the food work (except for the men who lived by themselves). While safe food handling certainly is a part of caring for young children among mothers in this study (see chapter 2.3), the immediate attention young children need might challenge cooking food in a safe way. The French mother, Julie, fetching her 20-month-old son is a good example of how the immediate danger of a fall from the couch is prioritized above safe cooking. While Julie was about to finish cooking when her son climbed on the couch, she would probably run to fetch him in the middle on chicken preparation with raw chicken on her hands.

A further in-depth analysis of complexity of these cooking situations is necessary to provide more insight into what the circumstances are, why they occur and the risk they potentially produce. The two tables below summarize the order of cooking differentiated by household type, cooking method and country.

**Table 4.1.2: Overview of cooking order differentiated on household types and country**

	France			Norway			Portugal			Romania			UK			N (75)
	YSM	YF	EH	YSM	YF	EH	YSM	YF	EH	YSM	YF	EH	YSM	YF	EH	
Started with chicken preparation	5	2	5	5	4	4	3	5	6	4	4	4	4	4	3	63
Started with salad (raw vegetable dish) preparation	-	3	-	-	1	1	-	1	-	1	1	1	-	-	2	12
Cooking chicken and salad separately	4	3	5	2	3	4	2	3	4	4	3	5	1	3	1	47 <sup>1</sup>
Cooking chicken while preparing salad	1	2	-	1	2	1	1	3	2	1	2	-	3	1	4	24

<sup>1</sup>Two British and two Norwegian men did not prepare salad. [YSM= Young single men, YF= Young families, EH= Elderly households]

**Table 4.1.3: Cooking order - stepwise and intermingled cooking - where the chicken was cooked by country**

	France		Norway		Portugal			Romania			UK			n
Cooking chicken in the...	oven, robot or micro- wave	frying pan	oven, robot or micro- wave	frying pan	oven, robot or micro- wave	frying pan	boiling pot, stew	oven, robot or micro- wave	frying pan	boiling pot, stew	oven, robot or micro- wave	frying pan	Pressure cooker	
Cooking/preparing chicken first, before preparing salad (raw vegetable)	7	4 <sup>2</sup>	1	12	2	3	9	1 <sup>1</sup>	5	6	5	7	1	64 <sup>2</sup>
Preparing salad first, (raw vegetable dish) before preparing/cooking chicken	2	1	-	2	-	1	-	1	1	1	1	1	-	10
N	9	5	1	14	2	4	9	2	6	7	6	8	1	74
Cooking chicken and salad separately	9	3	1	10	1	2	6	2	3	7	4	-	1	49
Cooking chicken while preparing salad	-	3	-	4	1	2	3	-	3	-	1	7	-	
N	9	6	1	14	2	4	9	2	6	7	6	8	1	75

<sup>1</sup>One Romanian roasted parts of the chicken in the oven and boiled the rest for soup. <sup>2</sup>One French separated preparing chicken and vegetables between them.

[YSM= Young single men, YF= Young families, EH= Elderly households]

## Chapter 4.2: Handling and preparing chicken

In relation to the preparation of chicken, we here home in on the work that was done prior to cooking, or more precisely, the heating of chicken (CCP steps 4 and 5, Figure 1.2). We present a nuanced analysis of the facets of preparatory work with chicken before cooking-by-heating, including:

Discussion of activities around the type of chicken that is used for cooking, and any associated practices, such as defrosting and/or storage of chicken prior to handling.

Discussion of the work of unpacking the chicken where, in accordance with the theories of practice methodology adopted, we focus especially on the uses of hands, kitchen tools, and other materials (e.g. packaging and wrapping materials). Discussion of whether raw chicken is washed and how this is done.

Discussion of what happens to the chicken between the work of unpacking and the cooking/heating stages. Is the chicken handled by the work of cutting and trimming, and how is this work done? We also discuss whether and how the raw chicken was seasoned prior to heating.

The first point relates to the management of the pathogenic content with respect to potential likelihood of being infected by pathogens. The type of chicken that was purchased and handled will affect the need for subsequent handling activities, such as cutting and trimming. The other points focus on a set of possible sub-tasks, which open up ‘opportunities’ for cross-contamination, where pathogens move between food stuffs, and in this case especially from chicken to other foods and possibly straight into the human body through fingers, tools and foods. It may be argued that, where the chicken that is cooked harbours harmful pathogens, each additional handling task adds to the chance that cross-contamination may occur.

## Handling and preparing chicken in Portugal

Households use several ways and methods to handle and prepare chicken and salads/vegetables. In this chapter we are going to analyse these various ways but especially paying attention to two moments or sequences in the practice of handling chicken and of handling salads and vegetables when preparing a meal with chicken and salad/vegetables:

1. The first sequence is whether they prepare chicken first or not (in the flow chart, this is the difference between 7a and 8a on the one hand, and 7b and 8b in Figure 1.1.2 on the other). This sequence can have food safety consequences if people handle chicken first and then start preparing vegetables without washing their hands, kitchen tools and surfaces in between the two tasks. According to food safety norms there is less potential for cross contamination if research participants prepare salads and vegetables first and then the chicken next.
2. The second sequence is to note if research participants wash their hands when they start handling salads/vegetables (independently of it being after or before handling chicken) and whether research participants wash salads and vegetables themselves.

During our visits we observed that Portuguese research participants bought different kinds of chicken (packed or unpacked; whole chicken, sliced chicken, just thighs or breasts) and salads (pre-washed, unpacked, packed, fresh vegetables). Regarding chicken, some research participants prepare chicken seasoning before handling chicken (e.g. opening the package and prepare chicken) while others do the opposite; they prepare the seasoning only after unpacking and touching chicken. In the Portuguese sample, we noticed a distinctive pattern across all 15 cases analysed regarding chicken handling. Several families (10/15) washed chicken before cooking while one third did not wash it (5). With the exception of one research participant (Carlos, 24, Young single men, urban), all families prepared chicken before handling salad, and all washed the vegetables and salads used. Thus, the usual preparation sequence is: chicken preparation and handling followed by salad/vegetables preparation. If hands and tools are not adequately cleaned in between these tasks, the cross-contamination risks are higher, and this includes the cross contamination from raw chicken to raw salads/vegetables.

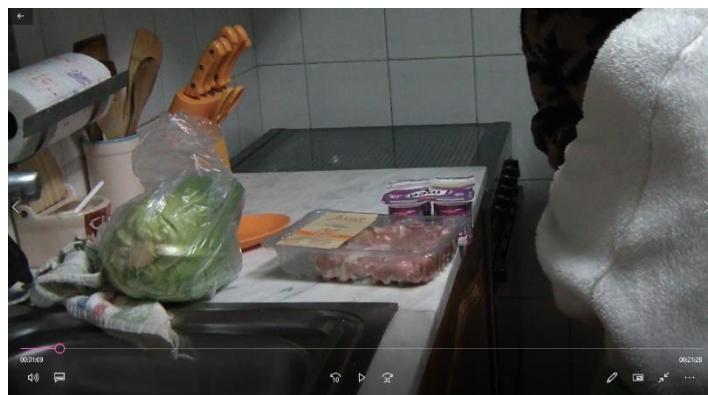
In this section, and following the sequencing order of most research participants, we first analyse the handling of chicken and then the handling of salads and vegetables.

### Unpacking chicken

The chicken cooked by households was bought on the same day of meal preparation. Nobody had chicken already in store at home. Eight households bought packed chicken, six got chicken at the butchery in the supermarket and one participant bought

it at a local butchery store. When they arrived home, most households did not put the chicken inside the fridge (only four research participants did so), but most placed the plastic bag with chicken on the kitchen counter. Even the households who stored it in the fridge for a few minutes before meal preparation, placed it on the kitchen counter when they removed it from the fridge. See Table 4.2.1 for an overview of features and storage of chicken in Portuguese study.

The households that bought packaged chicken usually cut the package with a knife and then take the chicken out with their hands. Vanessa is the only research participant in the sample who never touched the chicken with her hands throughout the whole process from unpacking to placing it on the frying pan. The knife was usually used to cut onions and garlic, although they rinsed it under water when they changed tasks. However, no video or photo records were captured of research participants using detergent to wash the knife in between tasks. There was only one research participant who cut the package with scissors. Households who did not buy packed chicken usually removed it from the plastic bag with their hands. Table 4.2.1 provides an overview of the kind of chicken participants cooked and where this was stored prior to the start of the cooking.



**Figure 4.2.1:** When Emília arrived home, she put the chicken on the kitchen counter (Portugal)



**Figure 4.2.2:** After shopping, Carlos stored the chicken inside the fridge for a few minutes before meal preparation (Portugal)

**Table 4.2.1: Features and storage of chicken in the Portuguese households**

Study group	Households	What kind	Stored (where and how?)
Young single men	Carlos (24 years, urban)	Packed chicken, thighs	Fridge. He put the package on kitchen counter and cut it with a knife
	Bernardo (19 years, urban)	Packed chicken, breasts	Package on kitchen Counter
	André (30 years, urban)	Unpacked chicken (sliced)	Plastic bag on kitchen counter. He opened the plastic with hands and put it in a plastic bowl inside the sink
Young families	Marta (35 years, urban)	Packed chicken, fillets	Fridge (first shelf)
	Vanessa (29 years, rural)	Packed chicken, breasts	Plastic bag on kitchen counter
	Sónia (42 years, rural)	Unpacked chicken (sliced at the butcher)	Plastic bag on kitchen counter. She opened it with her hands and put it in a plastic bowl
	Andreia (33 years, urban)	Unpacked chicken, breasts	Plastic bag on kitchen counter
	Filipa (36, urban)	Packed chicken, breasts	Fridge. She put the package on kitchen counter
	Sílvia (33 years, rural)	Unpacked chicken, free range (sliced at the butcher)	Plastic bag on kitchen counter
Elderly households	Josefina (81 years, urban)	Packed chicken, thighs	Kitchen counter (unpacked here)
	Emília (89 years, urban)	Packed chicken, thighs	Kitchen counter and sink (unpacked here)
	Augusto (70 years, rural)	Packed chicken (entire, he slices at home)	Fridge (in a plastic bag). Unpacked in kitchen counter
	Manel (73 years, urban)	Unpacked chicken (free range)	Plastic bag on kitchen counter (then he froze the leftovers)
	Odete (65 years, urban)	Unpacked chicken, thighs	Plastic bag on kitchen counter. Unpacked in sink
	Celeste (70 years, urban)	Entire chicken (cut in pieces)	Plastic bag on kitchen counter

## Tools used for unpacking and handling chicken: Unpacking chicken

The main tools used to remove chicken from packages or plastic bags are knives, scissors and hands. Marta (35 years, Young families, urban), for example used a knife (see Figure 4.2.3) Vanessa (29 years, Young families, rural) and Carlos (24 years, Young single men, urban) put directly the chicken in the frying pan with the minimum direct handling. Vanessa uses the bag to carefully remove the chicken avoiding touching it, and Carlos opens the pack with a knife and after preparing the salad grabs the pack with both hands and with a knife removes the chicken from the package directly to the frying pan. Tools like a wooden spoon were used to stir the chicken. Households who cut or washed the chicken, or carry out both actions, used more tools (e.g. forks, knifes, wooden spoons, often touching the chicken with their hands).



**Figure 4.2.3: Marta unpacked chicken with a knife (Portugal)**

## Handling chicken: cutting and trimming

See Table 4.2.2 for an overview over methods and tools for handling and preparing chicken in Portugal. After removing the chicken from the package, households who cut the chicken, but did not wash it (Andreia and Filipa), did it on a plastic chopping board with a knife. For example, Filipa after cutting the chicken with a knife on the chopping board and touching it with her hands put it directly inside the cooking robot Thermomix and did not use more tools to handle the chicken. After touching chicken, she quickly rinsed her hands under water.

Andreia was removing the dishes from the washing machine just before handling the chicken. However, she had a small accident when taking the chicken out the bag as it slipped into a glass bowl she just had removed from the dishwasher. She quickly grabbed the chicken out the cleaned bowl with her hands and placed it on the chopping board. However, the chopping board was still with a few items that were taken from the dishwasher: a small glass and two Tupperware containers. To make space for the

chicken, she placed it on the chopping board with the right hand while with the left hand she moved the small Tupperware containers to the kitchen counter. At this instance, the free right hand grabbed a cloth and cleaned both hands. After this she continued storing away the dishes that were on the chopping board and without washing her hands, grabbed a knife and started cutting the chicken that was on the board. After chopping the chicken, she quickly rinsed her hands and dried them in the same cloth previously used to wipe her hands after handling the raw chicken.



**Figure 4.2.4: Andreia's chicken accident (Portugal)**

Some of the Households s that washed chicken without having to cut it (Marta; Sónia; Sílvia; and André), put the chicken in a plastic bowl and washed it directly under water in the sink. There were other participants (Odete and Emília) who washed it directly on the sink without any container. In these cases, the process was performed with both hands, without using other tools.

In another group, one research participant (Augusto) bought a whole chicken and chopped it up at home, while three households (Manel; Celeste; and Josefina) asked the butcher to chop up the chicken on their behalf. These four elderly households used more tools during the handling process: they used and handled a plastic bowl, a chopping board, one knife and one dish (Manel and Augusto used a dish). Afterwards they used the same tools to slice garlic and onion. However, in between these tasks they rinsed the tools and board quickly under water without using any soap.

Augusto bought a whole chicken and sliced it at home. He put the chicken on the plastic chopping board and started to cut it, first in a half and then in small pieces (with both hands and one knife). He put the chicken pieces on a dish and removed the chicken skin. He put the sliced chicken pieces back on top of the chopping board that will be washed after he cooked the chicken.



**Figure 4.2.5: Augusto bought a whole chicken and cut it at home (Portugal)**

Manel, Celeste and Sílvia bought a chicken that was sliced by the butcher at the shop, but they removed the skins and fats at home. Manel put the chicken directly on the kitchen counter. He started to take one piece and put it on the plastic chopping board. Here he removed skins and fats with a knife and put them on a dish where he put also the onions peels. He repeated the same action for each piece. Then he put the chicken pieces without skins in a plastic bowl to wash them.

Int.: Are you taking the fats?

Manel: Yes, exactly. This chicken has a lot of fat. I like to take out all the fat.

(Manel, 73 years, Elderly households, urban, Portugal)

After taking the chicken from the plastic bag, Celeste put it on a plastic bowl together with a chorizo. She removed the skins directly on the kitchen counter without any container. After this, she washed the chicken. Sílvia bought packed thighs and removed the skins before washing and cooking the chicken.

## Chapter 4.2: Handling and preparing chicken

**Table 4.2.2: Methods and tools for handling and preparing chicken in Portugal**

Study groups	Participants	Did they wash it?	Did they cut it? (how, where)	Tools used	How did they season it?	Did they wash hands?
Young single men	Carlos (24 years, urban)	No	No, chicken legs	Wooden chopping board, knife, pan, wooden spoon	Garlic, onion, laurel, olive oil, tomato sauce	No, first prepared salad then the chicken
	Bernardo (19 years, urban)	No	No	Knife, chopping board, pan, wooden spoon	Onion, olive oil, salt, tomato sauce	Rinsed his hands with water before and after handling chicken
	André (30 years, urban)	Yes, in a plastic bowl with running water, stirring by hands	No	Pan, plastic bowl, soup spoon	Olive oil, onion (frozen), vegetable mix (frozen) garlic, mushrooms, salt	He washed his hands with detergent before cooking but not after handling chicken.
Young families	Marta (35 years, urban)	Yes	No	Frying pan	Olive oil and salt	She washed her hands in the beginning when she was preparing to cook
	Vanessa (29 years, rural)	No	No. From the plastic bag directly to cook (she never touched it)	Frying pan	Olive oil and salt	She washed hands after handling chicken with anti-bacterial soap
	Sónia (42 years, rural)	Yes. in a plastic bowl with running water, stirring by hands	Chicken was already cut	Bowl, oven tray, plastic chopping board, scissors	Barbecue season to bake chicken. Wine, onion, garlic and salt on oven tray	After handling chicken Without soap
	Andreia (33 years, urban)	No	She cut by knife on a plastic chopping board used before to slice onion and garlic, wooden fork used to put the meat in the pan	Knife, plastic chopping board, wooden fork and frying pan	Garlic, onion. Olive oil, Coconut milk and salt	After handling chicken without soap

## Chapter 4.2: Handling and preparing chicken

Study groups	Participants	Did they wash it?	Did they cut it? (how, where)	Tools used	How did they season it?	Did they wash hands?
Elderly households	Filipa (36 years, urban)	No	She cut it with a knife on a plastic chopping board	Knife, plastic chopping board, Bimby (thermomix)	Salt and pepper. Directly to Bimby	No
	Sílvia (33 years, rural)	Yes, in a plastic bowl with running water)	Chicken was already cut	Plastic bowl, chopping board, frying pan and spoon	Garlic and onion, olive oil and salt	Yes
	Josefina (81 years, urban)	Yes	She cut it with a knife on a chopping board	Chopping board, knife	-	-
	Emília (89 years, urban)	Yes, washed by hands in the sink	No	Scissors, knife, plastic bowl, plastic chopping board, frying pan	White wine, salt, garlic, olive oil	No
	Augusto (70 years, rural)	Yes, piece by piece was washed by hands in the sink	Yes. He cut it on a plastic chopping board with a knife	Knife, plastic chopping board, dish, pan	Garlic, onion, curry, coconut milk	Yes, with detergent and running water
	Manel (73 years, urban)	Yes, in a bowl with running water)	Chicken was already cut but he took off the small skin and fats on a plastic chopping board with a knife	Plastic chopping board, dish, pan, knife, bowl, wooden spoon	Onion, olive oil, salt	Rubbed his hands with water after handling chicken
	Odete (65 years, urban)	Yes, in the sink in running water	No	Knife, pan	Beer, salt	She washed hands before cooking and rubbed her hands with water after handling chicken
	Celeste (70 years, urban)	Yes.	Chicken was already cut but she took the skin off on kitchen counter	Knife, plastic bowl, pan	Onion, chorizo and salt	No

## Chicken and cleanliness practices: washing or not washing chicken

As explained, in the Portuguese sample we have noticed a distinctive pattern across all 15 households analysed regarding chicken handling. Several households (10, about two thirds) washed chicken before cooking, while one third did not wash it (5). Given the potential consequences for consumers' food safety, namely the risk of cross contamination and the spread of microbes through water droplets if kitchen hygiene is not high (e.g. cleaning the kitchen surfaces adequately), in this section we divided the analysis into two main groups: one group that did not wash chicken before cooking, and another one that washed chicken during the preparation of the meal.

### *Households who did not wash chicken*

Only 5 households did not wash chicken during its handling and preparation. In these households, we had 3 young families and 2 young single men living with roommates. Carlos (24, Young single men, urban) did not wash chicken because of time and opportunity. His justification for not washing chicken were not related to food safety. He explained that he was going to cook chicken thighs and he believed there was no need to wash them, as they come packaged. There are also some households who did not wash chicken, but they could not explain exactly why they did not do so. It was part of their routines and performed in an automatic way, struggling to find a reason for it. However, a few had reasons related with trust in the provisioning system and how chicken is handled in the shops. For example, Filipa never washed chicken that comes from the supermarket but always washed chicken she bought directly from the butcher, something she did occasionally. She saw the butcher touching the chicken in the shop and when she arrived home, she rinsed the chicken under cold water to clean it before putting it in the pan. However, if the chicken was frozen she did not wash it as she believed the freezing process 'kills everything'. Thus, if it was a fresh chicken from the supermarket and a frozen chicken she did not feel the need to rinse it under water. If it was from the butcher shop she washed it because it was not 'sanitized', as she explained:

Int.: Why do usually wash chicken from a butcher's shop?

Filipa: Because I have the idea that packaged chicken from the supermarket has already been sanitized whereas the chicken from the butcher not. They cut there. When it comes with skin, I ask to remove it. But they do not wash it there and I wash it [during handling of chicken]. If it is frozen, no. I think it gets water crystals and I always heard that freezing kills everything..."

(Filipa, 36 years, Young families, urban, Portugal)

Filipa removed the chicken from the package with her hands and along the handling process she did different actions without washing her hands and put some food on the same surfaces without cleaning, increasing a risk of cross contamination. For example, she cooked the chicken in her cooking robot Thermomix. The cooking robot's cap was lying near the chopping board where she cut the raw chicken. She grabbed the chicken package with the left hand and with her right hand touched the cooking robot,

explaining how it works. She put the chicken package in the trash, she filled the water container, picked up some packed bread and dropped it on a plate that was standing near the raw chicken as she was handling it. She then ate the bread without washing her hands or the plate between any of these steps.



**Figure 4.2.6: Filipa cut the chicken near the bread she was eating (Portugal)**

Andreia did not wash chicken but thought she should do it without having a “strong” reason for it. One aspect became revealing: these five households did not usually wash chicken but for them it was hard to explain why they did that, reinforcing the habitual and routine features of food preparation. The presence of the research team (sociologist and microbiologists taking samples in the kitchen) may have opened some doubts in Andreia about her chicken handling practices. However, it was pork that she was more concerned about.

Int.: Do you usually wash meat or fish?

Andreia: No... normally I don't wash chicken. Maybe I should wash all [meats]. But normally I only wash pork. They say pork is more sensitive to bacteria and such things.

(Andreia, 33 years, Young families, urban, Portugal)

Andreia washed her hands with cold running water, dried her hands with a towel, put the chicken inside the pan and stirred it with a wooden fork. Like Filipa, Andreia has done a lot of actions without washing her hands or, sometimes, just quickly rinsing with water. When she started handling and preparing chicken, she opened with her hands the plastic bag containing the chicken, touching it for some seconds. She touched the cupboards and opened the fridge to grab an onion which she started cutting. She did not wash her hands. Then she peeled the garlic and onions. She started preparing chicken (sliced it with a knife on a chopping board) and after this she put the sliced chicken directly in the pan with the help of a wooden fork.



**Figure 4.2.7: Andreia put the sliced chicken in the pan with the help of a wooden fork (Portugal)**

Vanessa (29 years, Young families, urban) worked in the food catering business and displayed a good articulation of hygiene and safety knowledge during the cooking process. She was the only one in the sample that never touched chicken with her hands and who prepared salad before handling chicken. Vanessa dropped the chicken breasts directly onto the frying pan using a plastic bag as protection. She washed her hands with anti-bacterial soap and dried them on a hand-towel. She also added Himalayan pink salt to the chicken with a small spoon without touching the salt with her hands. She took a plastic fork from the drawer and stirred the chicken. Thus, her hands were never in direct contact with the chicken, and the tools/objects (forks, water, cloths, plastic bag) were always mobilized as a shield between her own body and the chicken's body.



**Figure 4.2.8: Vanessa's careful handling of chicken without touching (Portugal)**

Bernardo (19 years, Young single men, urban) and Carlos were also part of the group of households who did not wash chicken. However, they did not wash it for different reasons. Bernardo had some food safety notions (his parents were food engineers) and Carlos did not wash chicken because it was convenient and avoided wasting time. For example, along the handling process, Bernardo washed his hands several times. In

contrast, Carlos did all the actions without washing his hands once. He started handling food without washing his hands, he then peels garlic and onions without washing his hands, and he used the same knife for raw chicken, onions and garlic.

#### *Households who washed chicken*

Most households washed chicken before cooking (10 households). Among them, all elderly households were included. There were also 3 young families and one single young men households.

These households could not give a clear reason why they washed chicken before cooking. They tended to say it is out of habit, others said chicken is a meat that gets spoiled very fast or they have learned to handle chicken from their mothers and mimicked her ways of handling chicken. They did not usually wash other kinds of meat, only chicken. They could have different reasons for washing chicken (e.g. the place of shopping; to avoid chocking in small bits of bones at the table) but they never wash steaks, for example. As an illustration, Josefina always washed chicken or asked someone to wash it.

Int.: Do you usually wash chicken?

Josefina: Yes, I do. I feel some disgust [at chicken, the touch]

Int.: Do you wash all the meats or only chicken?

Josefina: No, no. Steaks, no... (...) When I go to the butcher, I ask to take all the skin. Meats and these kind of things, I need to go to the butcher, not to the supermarket.

(Josefina, 81 years, Elderly households, urban, Portugal)

Emília washed chicken but she did not have a “strong” reason for doing it.

Int.: Why do you wash chicken?

Emília: Because chicken needs to be washed.

Int.: And a steak, do you wash it too? Emília: No, only the chicken.

(Emília, 89 years, Elderly households, urban, Portugal)



**Figure 4.2.9: Emilia washed chicken under running water and took the skin off. During this process she touched the water tap constantly (Portugal)**

Int.: Do you also wash chicken breasts?

Augusto: I think I always wash. Everything is washed in the house.

Int.: Do you also wash steaks?

Augusto: No. But this I wash, because these are broken pieces and there is always bits of bones...

(Augusto, 70 years, Elderly households, rural, Portugal)



**Figure 4.2.10: Augusto washed the chicken with cold water to remove little bits of bones (Portugal)**

Celeste removed all the skin with a knife because she believed that it has many hormones and is bad for health.

Celeste: I don't like the skin. It has a lot of hormones.

Int.: From what?

Celeste: I don't know. They inject the chickens or something like that. In one month they weight a kilo or two, its all hormones. And I always take the skin. I don't take it when it's to bake. But when we are eating, we remove the skins.

(Celeste, 70 years, Elderly households, urban, Portugal)



**Figure 4.2.11: Celeste washed each piece of chicken one by one and rubbed the chicken in her hands (Portugal)**

As she proceeded, the unwashed chicken was on the counter and then she put it in the blue bowl. At the same time, she opened and closed the water tap several times. She explained that she always washed the chicken because it was in the hands of everyone in the butcher shop. Sónia believed chicken gets spoiled very fast:

Int.: Do you always wash chicken? Sónia: Yes. Why?

Int.: Just curious...

Sónia: Ah, some people don't wash it, isn't it?

Int.: Do you usually wash all meat? Or only chicken?

Sónia: No, I don't wash beef.

Int.: No?

Sónia: No.

Int.: And why do you wash chicken?

Sónia: I don't know. Chicken gets spoiled very fast. I don't know, it's a habit, for no reason in special.

(Sónia, 42 years, Young families, rural, Portugal)



Figure 4.2.12: Sónia washed chicken in running cold water (Portugal)

To sum up, there were different beliefs and meanings that shaped the practice of washing chicken. The first observation is that, in general, households washed chicken but did not wash other types of meat (e.g. beef). The exception was Andreia (33 years, Young families, urban) who was concerned about bacteria in pork and washed it (yet, interestingly, did not wash chicken). A few did not have a specific reason for washing chicken. It's something of a habit and was linked to the ways their mothers handled chicken and what they have learned from their families. However, when they had justifications for washing chicken these were related with the following aspects: the place of shopping (if it was the supermarket they tended not to wash it and trusted the retailers' hygiene and cleaning practices, while if it was picked from the butcher they tended to wash it); the small pieces of bones that may be found in chopped chicken and the risk of chocking when eating the chicken meal at the table; the perception that chicken has hormones, spoils rapidly or its slimy texture. In this latter case hormones and microbes that make it spoil are invisible while the sliminess can be felt in the hand through touch. Interestingly, all the elderly households washed chicken; we could speculate if this was a generational pattern in the Portuguese institutional food setting. The activities of inspection of food hygiene and safety in restaurants, canteens, and the national food market in general became particularly strong when ASAE (Economic and Food Safety Authority, which is part of a police body under the Ministry of Economy) was created in 2005, at the aftermath of a series of food safety scandals in the country. At the time, ASAE had a very forceful activity denouncing and closing down several commercial establishments that did not conform to food safety norms. Such strong action was frequently picked up by the media, contributing to demonstrating how the State was closely supervising the safety of food market and protecting public health. Moreover, supermarkets campaigns on TV also showed to the public how safe were their practices, strictly following very rigid food safety norms, standards and protocols. On the contrary, a series of bad news surfaced over the last years on the lack of hygiene and safety of small butcher shops, which could explain these variations in trust on the provisioning system, shifting according to the food retail outlet. Next, we will look at the ways our sample of households prepared chicken, namely seasoning.

## Seasoning chicken

Most households braised and seasoned chicken with onion, garlic, salt and olive oil. There were some households that made the seasoning preparation before handling chicken: Andreia (33 years, Young families, urban); Carlos (24 years, urban); André, (30 years, urban); Bernardo (19 years, urban), (all Young single men); and Celeste (70 years, Elderly households, urban) and others did it after this process Josefina (81 years, urban); Odete (65 years, urban) (both Elderly households); and Sónia (42 years, Young families, rural). There is another group that intermingled these actions: Augusto, (70 years, rural); and Manel (73 years, urban) (both Elderly households).

The first group started to peel onions and garlic on a plastic chopping board and then put some olive oil in a casserole or frying pan. While they stewed the onions and garlic, they started to handle chicken. The second group started to handle and prepare chicken and then seasoned it. For example, Sónia baked chicken in the oven. After washing chicken, she peeled garlic and onion and she put them directly in the oven tray together with white wine. She also seasoned chicken with a barbecue sauce and laurel directly in the oven tray using both hands.



**Figure 4.2.13: Sónia seasoned chicken with a barbecue sauce directly on the oven tray (Portugal)**

In the third and last group, research participants started peeling garlic and onion and then they chopped these to a certain point, interrupted this action and shifted to washing chicken and then came back to finish off chopping garlic and onion. Finally, they put olive oil in a pan and then the chopped garlic and onions.

All the groups used the same tools (knifes and plastic chopping boards) to accomplish both processes (handling and seasoning chicken). There was only one research participant who changed the knife during all these actions (Andreia), but she did this because the knife was not sharp enough. The main difference among households in the handling of utensils is the number of times that hands and tools were washed. We will explore further the activity of washing hands whilst handling of chicken.

## Washing hands while preparing chicken

Regarding washing hands while handling chicken we encountered two different situations: households concerned about cleaning hands (and also utensils) during the handling of chicken (10 households), and others not washing hands (or cleaning utensils) while preparing chicken (5 household). Within the group that washed hands during food preparation, we also found some variations. Vanessa (29 years, Young families, rural) was the only one in the sample washing hands after handling chicken with anti-bacterial soap. Augusto (70 years, rural). Odete (65 years, urban) (both Elderly households) and André (30 years, Young single men, urban) did it with dishwashing detergent. Both Augusto and Odete washed their hands or the utensils and sink several times. For example, Augusto washed his hands frequently and Odete was constantly washing the sink and the kitchen counter. We believed that in the case of Odete she was especially aware of the presence of the research team and of being closely observed, despite our efforts to make our presence welcoming and relaxed so that she was at ease while performing cooking. It was noticeable that she wanted to display a good impression regarding cleanliness and hygiene in her kitchen.



**Figure 4.2.14: Odete washed her hands with cold running water and soap for 8 seconds and dried them with a cloth she used several times to clean the kitchen counter (Portugal)**

There was another group washing hands after handling chicken but without soap: Sónia (42 years, rural), Andreia (33 years, urban) (both Young families), Manel (73 years, Elderly households, urban) and Bernardo (19 years, Young single men, urban). Two participants washed their hands before starting food preparation (Marta, 35 years, Young families, urban) and André (30 years, Young single men, urban). Manel was the only one in the sample who cleaned his hands in a kitchen paper, the other participants cleaned their hands in a hand-towel. They usually used hand-towels in different situations: to clean hands after hand washing and to clean hands directly without washing them in running water before.

Carlos (24 years, Young single men, urban), Filipa (36 years, urban), Sílvia (33 years, rural (both Young families), Celeste (70 years, urban) and Emília (89 years, urban) (both Elderly households) did not wash hands. Celeste never washed her hands after handling chicken but she had an interesting reason for doing that. She believed she was constantly washing her hands because she washed chicken under running water and her hands got washed during the process.

Celeste: Cooks always have their hands washed.

Int.: Why?

Celeste: They have always their hands under water.

(Celeste, 70 years, Elderly households, urban, Portugal)

Celeste also cut the chicken directly on the sink and used the same cloth to dry her hands and clean the surfaces, the same bowl and knife to put and cut different kinds of food (e.g. chicken, vegetables, and salad). Sónia hardly ever washed hands while handling chicken and salad. She also used a lot of kitchen tools and equipment without washing them (e.g. scissors, knifes and the same bowl for seasoning chicken and potatoes).

## Handling and preparing chicken in Romania

The habit of washing poultry meat that Romanians was confirmed during the cooking visits paid in 15 households. Whether young or elderly, the Romanian household believed they were washing germs from the chicken, making the meat safer. We believe that elderly people, who have been used to wash meat when slaughtering chickens from their courtyards, kept the habit for poultry meat bought in shops, while young people took the habit from their parents. Then, there is no advice coming from the Romanian food safety authorities trying to change this habit of Romanian consumers, so most of the Romanian consumers do not think that they are doing something wrong and risky when washing poultry meat.

As cooking poultry meat takes some time, most of the households (13/15) were washing the lettuce after washing chicken and prepared it as salad just before serving the meal to maintain its crispness. Most (9/15) chose to prepare the salad while waiting for the chicken to be heated, whereas the others (6/15) prepared the salad after ending the chicken heating. Most of them used the same cutting board for chopping chicken and vegetables. Washing the cutting board between chicken and vegetables was observed in few cases, most of the time the cutting board being rinsed only with water between chopping chicken and vegetables.

### The ways of unpacking chicken and the tools used

All the Romanian participants used fresh chicken. See also Table 4.2.3 for an overview of chicken used, unpacking and tools used. Most preferred buying prepacked chicken (13/15), but two preferred buying unpacked chicken because believing that it was fresher than deboned chicken (Fanel), or cheaper (Domnica). Although more than a half of the participants (8/15) started with the whole chicken, only few cooked the entire chicken (Zoltan; Florinel), most of them used chicken breast, chicken legs and chicken wings. Most mentioned that if not cooked entirely, the chicken was stored in the freezer until future use. Most of the households who bought chicken breast fillet (packed in plastic trays with modified atmosphere) bought a well-known brand on the Romanian market and the chicken was deboned. Half used deboned chicken for heating (7/15), while the others prepared the chicken with the bones. However, two research participants who started from the whole chicken and prepared chicken with potatoes in the oven (Zoltan; Amalia), used the chicken legs with bones, whereas the chicken breast was deboned first and then cooked in the oven.

## Chapter 4.2: Handling and preparing chicken

**Table 4.2.3: Overview of unpacking of chicken among the Romanian households and tools used**

Study group	Household	Type of chicken package	Ways of opening	Where were the chicken placed next	Tool used	What happened to the tool
Young single man	Ionel 30 years, urban	Plastic package, modified atmosphere	Using a knife to cut the plastic, used hands to rip off plastic cover	Plastic cutting board	Knife, Plastic cutting board	Left on the cutting board
	Balanel 28 years, urban	Plastic package, modified atmosphere	Using a knife to cut the plastic, used hands to rip off plastic cover	Plastic cutting board	Knife Plastic cutting board	Nothing. He used another knife to cut the chicken after washing it
	Florinel 31 years, urban	Plastic package-whole chicken	Took the chicken out of the bag using his hands	Wooden cutting board		
		Plastic package modified atmosphere –breast fillets	Using a knife to cut the plastic, used hands to rip off plastic cover	Wooden cutting board Plate	Knife Cutting board	Knife used for cutting the chicken.
	Bogdan 32 years, urban	Plastic package	Using a knife to cut the plastic, used hands to rip off plastic cover	Put on a plate and then on the wooden cutting board	Knife and a cutting board	Nothing. He used another knife to cut vegetables.
Elderly Households	Zoltan 35 years, urban	Plastic package	Using a knife to cut the edge of the plastic bag	Put it on a plate	Knife, plate	Nothing. He used another knife to cut vegetables
	Dumitra 84 years, rural	Plastic package	Using a knife to cut the edge of the plastic bag	Dried first on paper towel, then on a cotton towel and afterwards placed on the cutting board	Knife Wooden cutting board	The knife was used for cutting vegetables

## Chapter 4.2: Handling and preparing chicken

Study group	Household	Type of chicken package	Ways of opening	Where were the chicken placed next	Tool used	What happened to the tool
Older adults	Damian & Damiana 73 years, rural	Plastic package	Using a knife to cut the edge of the plastic bag	Moved to the wooden cutting board by hand	Knife, Hands, Cutting board	The knife was left on the cutting board and used for cutting chicken
	Linalia 73 years, rural	Plastic package	Using a knife to cut the edge of the plastic bag	Moved to the cutting board by hand	Knife, Wooden cutting board	The knife was used to cut chicken and vegetables
	Domnica 75 years, urban	Plastic bag from the market	Using a knife to cut the edge of the plastic bag	Bowl	Knife, wooden cutting board	Knife was put on the cutting board, but later since it was not sharp enough
	Fanel and Fanica 69 years, urban	Plastic bag from the shop	Using a knife to cut the edge of the plastic bag	Inside sink	Knife	Used the same knife to cut the vegetables
Young families	Maria Mirabela 34 years, urban	Plastic package, modified atmosphere	Knife to cut the plastic, rip open with his hands	Plastic cutting board	Knife Cutting board	The knife was put on the cutting board to cut the chicken
	Sorina 32 years, rural	Plastic package, modified atmosphere	Used hands to tear the plastic cover	Bowl	Bowl	
	Amalia 31 years, urban	Plastic package	Use hands to open the plastic bag	Wooden cutting board	Cutting board	Cutting board was used for cutting the chicken
	Serena 36, rural	Plastic package	Used knife to cut the plastic foil and then hands	Wooden cutting board	Knife, Cutting board	Knife and cutting board were used to cut the chicken
	Minodora 27 years, rural	Plastic package	Used hands to tear the plastic cover	Pot	Pot	

Most of the households used a knife (12/15) to open the package of the chicken. However, the ways applied were dependent on the type of chicken they bought. For example, Florinel used two types of chicken, whole chicken and chicken breast fillet prepacked in plastic container for cooking. To open the package of the whole chicken, he used only hands, and didn't seem worried that his hands touched the chicken. Then, he put the chicken on the cutting board and the package was left near the sink. On the other hand, when he opened the tray with chicken fillet, he used a knife to make a hole at one of the container's edges and then teared the plastic using hands, hands that touched the inside part of plastic foil, and, thus, the chicken. Another thing related to potential contamination of the working surface was that the inside part of the plastic foil touched the counter top, whereas the plastic foil of the whole chicken was initially left near the sink and then thrown into the garbage. Preoccupied with handling the whole chicken and the chicken breast fillets, handling the packaging seemed to be overlooked by Florinel.

A characteristic in most of the households (8/15) was the placement of the containers, trays, packages with chicken close to the sink, anticipating somehow, the next stage in chicken preparation. Amalia took out the chicken from the fridge and rubbed her nose with her hand, manipulating with the other hand the packaged chicken and leaving it on the cutting board. She teared the chicken package, using hands and then placed it on the cutting board finishing the unpacking procedure by rinsing fingers with cold water for 2 seconds and then rinsing the sink.



**Figure 4.2.15: Handling a whole chicken and chicken breast fillets, Florinel seemed to overlook the packaging (Romania)**

Cutting board was the most used utensil for placing the chicken after opening (9/15), but plate (Zoltan), bowl (Sorina; Domnica), inside the sink (Fanica), and table (Dumitra; Damiana; Sorina) were also used by the households to place first the chicken. For example, Bogdan put the chicken on the wooden cutting board. Then, he took a plate from the cupboard under the kitchen counter and opened the chicken package with a knife. He took out the chicken being careful not to touch the chicken with his hands and transferred it onto the cutting board by dexterously pushing the chicken from the bottom of the package out of it. The chicken wrapping was thrown

into the garbage after he rolled it and crumpled it in his hands. As his feeling was that he touched the inside of the packaging, he wiped his hands with paper towel.



**Figure 4.2.16: Bogdan unpacked the whole chicken and threw away the wrapping (Romania)**

Zoltan left the package of chicken on the brim of the sink, opened the package with a knife, threw the cut piece of package into the garbage and then rinsed his hands. After, he took the chicken out of the bag, using his hands, and transferred the whole chicken onto a plate that was too small for the chicken. This participant was not concerned about rinsing his hands because he touched the chicken but did rinse the knife before cutting a piece of chicken for the microbiologist.



**Figure 4.2.17: Zoltan left the chicken on the brim of the sink and transferred the chicken from the package into the bowl by hands (Romania)**

Fanica put the bag containing chicken breast on the cutting board, cut with a knife the bag and then left the knife inside the sink while wiping her nose with the backhand. Then, she put the chicken breast inside the sink to prepare it for the washing procedure. Elderly people from rural area didn't perceive any danger in unpacking or handling the chicken. All of them used the knife for cutting the chicken, placing it from the table on the cutting board. The same knife was used for cutting vegetables. However, as Dumitra performed most of the cooking activities outside the house, she started with cutting the chicken on the table placed outside the house, she took out from the plastic package the chicken, threw the package in the garbage bucket and then she went inside to prepare it. Elderly people from rural households didn't rinse or wiped their hands after unpacking the chicken.



**Figure 4.2.18: Dumitra used a knife to open the package, carried the chicken in her left hand while she threw the package into the garbage (Romania)**

Similarly with the other studied households, young family households did not consider food safety issues when unpacking the chicken. For example, Maria Mirabela had the chicken in a plastic container covered with plastic foil. She used directly a knife to make a hole at one of the edges and then, she used hands to remove the plastic foil. Sorina, Amalia and Minodora, used only hands to open the chicken package. Maria Mirabela, Amalia and Serena placed the chicken directly on the cutting board placed close to the sink. On the other hand, Minodora placed the chicken into a pot to fill it further with water to prepare the chicken for the next step. Sorina had an inappropriate sink in the kitchen and a tap that had only hot water, therefore, she filled a plastic bowl with water using tap water from the bathroom and placed the chicken pieces. For most of the research participants, the knife used to open the chicken package was used further for chopping the chicken.

### Not washing chicken before cooking

Two participants (Bogdan, 32 years, Young single men, urban, RO and Serena, 36, Young families, rural) did not wash the chicken before preparing and heating it. Although he did not work in a sector related to food industry, Bogdan seemed to know more about food safety than the other participants, as he was able to mention even the temperature that meat should reach in order to have the pathogens killed. However, he mentioned that washing or not washing the chicken depended also on how he decided to prepare the chicken. As that day he wanted to prepare a dish that involved two types of heating: boiling and frying, he mentioned that washing was not essential in this step because, as far as he knew, the inside temperature of the chicken had to be 80°C to kill the microbes that might cause illness, and during boiling, these germs were killed anyway. Although Bogdan knew that pathogens were killed by heat, he believed that washing chicken meat that is going to be fried would help in removing pathogens and this will reduce the risk of not being able to correctly fry the meat. Anyway, the dish he chose to cook involved two heat treatments as he fried the chicken breast after boiling it. He explained it was better to do like this to reduce the time for frying. Bogdan was cautious when handling the raw meat, washing his hands each time after touching the meat and wiping them either on a paper towel or on a clean cloth towel. He had only cold water in the kitchen because he had a water heating system only in the

bathroom. When wiping the hands on the paper towel, it once happened that it was not thrown away and subsequently reused.

Int.: You did not wash the chicken. Why?

Bogdan: I am going to put it in water anyway.

Int.: OK, so you usually do not wash chicken.

Bogdan: No...I wash it only when I fry it. If I boil it, I do not wash it.

Int.: Aaaa, now I understand. In the situation you have chicken legs or breast fillets, do you still not wash the meat?

Bogdan: Yes, I don't wash it and I have never had problems. As far as I know, it has to attain a specific temperature. I mean 80 °C to kill those microbes that can make you ill. And as long as I boil the chicken... but when meat is fried, this is another situation.

Int.: When meat is fried, what?

Bogdan: It is possible to not reach the centre. It is possible to have the chicken fried only on the exterior and inside to not reach the right temperature.

(Bogdan, 32 years, Young single men, urban, Romania)

Unlike Bogdan, Serena said that she leaves the chicken in warm water, only when she wants to defrost it. Therefore, she did not take into account that defrosting the chicken using warm water might increase the probability of development of harmful bacteria.

Int.: Usually, do you wash the chicken?

Serena: Now, I don't wash it, I wash it only when I take out the chicken from the freezer.

Int.: You always do that?

Serena: Yes.

Int.: What is the reason for doing this?

Serena: I don't know, I just use warm water to defrost the chicken. I leave it in warm water.

Int.: This is how you defrost the chicken?

Serena: Yes.

(Serena, 36 years, Young families, rural, Romania)

### *Scalding the chicken before washing, over an open flame*

Two research participants scalded off the chicken before washing it. After wiping the chicken with hand towel as described earlier, Dumitra (84 years, Elderly households, Rural) took the chicken and scalded off the light "hairy" feathers, using the flame from the gas stove and then she transferred it into a stainless-steel bowl. She always followed this procedure before washing because, as she said: "*the chicken gets another taste*". She went outside, washed a plastic bowl with detergent using a sponge, and then filled it with water and placed the chicken in it. She washed the chicken two times, carefully, both on the inside and outside; however, in the final water she added salt to make the chicken taste better.



**Figure 4.2.19: Dumitra scalded off the chicken on the gas top before washing it in bowl of water (Romania)**

Int.: Do you always scald off the chicken before preparation?

Dumitra: Yes... it has another taste.

Int.: Therefore, the only reason for which you scald off the chicken is because of the taste?

Dumitra: Yes, it doesn't have that taste of... I wipe it with a paper towel, but it still has small feathers...and I am afraid that it will remain like this...

(Dumitra, 84 years, Elderly households, rural, Romania)

On the other hand, Minodora was the only participant who slaughtered chicken from her own yard. After slaughtering, holding the chicken by the feet, she placed it into a plastic bowl, then added boiled water to it. Once the chicken's feathers were soaked thoroughly (less than 2 minutes), she removed the chicken from the water and placed it into another bowl and plucked the chicken. After that, she removed the chicken, placed it in the plastic bowl used previously, rinsed it with water and went inside to scald off the chicken over the gas flame. The whole process of plucking was performed with the bowl placed on the porch. When she entered inside the house, she placed the bowl on the table used for handling food, the same table that was used by her three years old boy to colour into a colouring book. Regarding the scalding off the chicken, Minodora stabbed a fork into the chicken head and scalded off. She used the fork to protect herself from burning. After that, she took the chicken by its feet and scalded off. When asked why she did like this, she mentioned that everyone did the same in the area she lived. She also explained that another reason was to remove some light "hairy" feathers from the chicken and also that the chicken can be opened easily.

Int.: Why do you scald off the chicken?

Minodora: Scalding...because this is the tradition in this area?

Int.: Do you scald off because it gets a better taste, when you boil the chicken?

Minodora: We want to remove the light hairy feathers from the chicken. [...] And I can chop it more easily when it is scalded off.

(Minodora, 27 years, Young families, rural, Romania)



**Figure 4.2.20: Minodora scalded off the chicken over a gas flame (Romania)**

After she scalded off the chicken, she went again outside and started to cut anatomically the chicken to remove intestines. She started to cut the chicken legs and wings and then she cut the breast to allow the removal of the intestines. The intestines were left on the porch. After this operation, she washed the chicken twice with cold water brought from the exterior reservoir and transferred the chicken pieces on a plate. Again, all the washing procedure was performed on the porch. To wash the bowl that contained the eviscerated chicken, Minodora used only cold water and hands. With the same water she washed also her hands and the knife. After leaving the plate on the table inside the kitchen, she took the intestines from the porch and threw them into the garbage bin and then washed her hands with cold water.



**Figure 4.2.21: Minodora rinsed the chicken she had slaughtered out on the porch (Romania)**

#### *Washing chicken before cooking*

The households who washed the chicken can be classified in two groups: one who washed the chicken before cutting it: Ionel (30 years, urban); Balanel (28 years, urban) (both Young single men); Domnica (75 years, urban); Dumitra (84 years, rural); Fanica, 69 years, urban) (all Elderly households); Maria Mirabela (34 years, urban); Minodora (27 years, rural); and Amalia (31 years, urban) (all Young families) and the other who washed the chicken after cutting it. Most of those who used the whole chicken firstly cut anatomically the chicken and then washed it. Two research participants (Amalia, and Dumitra) washed the whole chicken first and then chopped it in big pieces. For example, Amalia believed that it was hygienic to wash the chicken before cooking it, so she diligently did the washing for 3 minutes, taking out the

remaining feathers in the meantime. As these actions took place in a small round sink, the chicken touched several times the surface around the sink contaminating it. She also declared that for hygiene reasons she threw away the first boiling water, when she boiled chicken meat.



**Figure 4.2.22: Amalia washed carefully the whole chicken with running water (Romania)**

Dumitra took the chicken out of the bag it was commercialized and shook it for 1 minute in the air as a way to remove the excess water potentially existing on the carcass. She did this outside and was looking in the sun light to see better the water and places where small feathers are still present. Then, she went inside the house and put the chicken on a cutting board and started to wipe the chicken with a hand towel and then with a paper towel. When the she was asked why she did this, she explained that she was preparing it for scalding off feathers and she wanted to remove the water from the surface of the chicken. She said that she always followed this procedure. Then, Dumitra washed the whole chicken in a bowl of water.



**Figure 4.2.23: Dumitra used a hand towel and a paper towel to wipe chicken surface (Romania)**

Balanel and Ionel bought chicken breast without skin for the cooking session. They both washed the meat after cutting it into strips. Balanel rinsed the cut meat strip by strip splashing around the sink and the wall, while Ionel put the strips into a bowl, poured water to cover the meat, stirred the meat with the water, and then threw away the water by inclining the bowl with the left hand and pressing the meat with the right hand. Balanel further cut the meat into cubes on the same cutting board previously used to cut the meat into strips and not washed afterwards. Balanel and Ionel washed their hands every time after touching the meat, the first one with cold water and the second one with warm water.

Florinel (31 years, urban) and Zoltan (35 years, urban) (both Young single men) bought a whole chicken for cooking, the first for boiling it and serving with aioli and polenta, the second for baking it together with potatoes. After unpacking the chicken, Florinel anatomically chopped the chicken, transferred the pieces into a plastic bowl, removed the skin because he did not like boiled skin, filled the bowl with water, rinsed the meat, and then threw away the water by inclining the bowl with one hand and pressing the meat with the other hand. After that, he introduced the chicken pieces into a pot with water for boiling the meat. Zoltan anatomically cut the chicken with the knife but used his hands to detach the pieces. Although he prepared a cutting board dedicated to meat for cutting the chicken, he performed the action on a ceramic plate placed on the sink drainer, so the chicken fell outside the plate several times and touched the sink drainage surface. Every piece of chicken was rinsed with cold running water for 2- 3 seconds, then the pieces were put in a glass baking dish. Zoltan was removing the water in excess from the glass baking dish with his hands when a piece of chicken fell into the sink. He took it, rinsed it with cold running water for 16 sec and put it back in the baking tray. He continued to prepare the chicken pieces to be backed by making them smaller and taking off the skin. Although he recognized that the taste of backed skin is good, he explained the action of removing the skin by considering having a healthier dish. This time the action was performed on the cutting board dedicated to meat and the chicken pieces had been moved from the glass baking dish to the ceramic dish. The meat waited there until the potatoes were ready for baking, meaning that they had been washed, peeled, cut into wedges, and seasoned with mix of herbs for fried potatoes. Then the meat was seasoned with spicy herbs and distributed on the potatoes. Zoltan poured some water in the glass baking dish before putting it into the oven. It is worth mentioning that he didn't use tap water, but water that he brings every 2 weeks in plastic bottles from the village where his parents live and claims that is safer than the tap water.

In all young single men households, cold water was used for washing hands. Florinel mentioned that he used warm water only in the cold seasons. All of them used alternatively paper towels and cloth towels to wipe their hands, while dishware was left to dry in the air and not wiped with towels.

Sorina (32 years, Young families, rural) decided to cook chicken legs for the interview. Although she raised chickens, they were too small to be slaughtered at the time of the visit, so she bought chicken legs from the supermarket. She opened the plastic bag containing the legs by hand. Sorina washed the meat in three stages:

- **1<sup>st</sup> stage** – washing the chicken legs in hot water taken from the kitchen tap- Sorina put chicken legs in a stainless steel bowl and filled it with water at 70 °C (temperature measured with an IR thermometer), pressed the legs with her hand to be sure they were fully immersed into the water, flicked each leg in the water and put them all on a cutting board. After doing the wash in hot

water Sorina decided to smell the meat to be sure it was all right as she had the feeling that the chicken had a strange smell.

- **2<sup>nd</sup> stage** – washing the meat in hot water after deboning it; the water was taken from the kitchen tap.
- **3<sup>rd</sup> stage** – washing the meat in cold water taken from the bathroom tap.

As investigators we cannot come with any explanation for the excessive washing of the meat, but we can assume that the only reason for using hot water for washing the meat was the fact that Sorina had only hot water in the kitchen (we did not notice this at the beginning). Having just hot water in the kitchen determined Sorina to shorten the time dedicated for washing hands to 2 seconds. Although Sorina is using paper towel to dry her hands, a piece of paper was left on the table after wiping hands and reused several times.

Int.: Why are you going to the bathroom to take water when you have current water in your kitchen?

Sorina: This is because at the moment I have just hot water at the kitchen, and it is too hot, so I have to combine it with cold water. I used to have cold water too, but we had troubles with the cold water pipe and I decided to cut it. So, we do not have cold water anymore into the kitchen.

(Sorina, 32 years, Young families, rural, Romania)

Sorina cooked with her 8-month daughter staying around in a go cart. When she started crying her mother either took the little girl in her arms or went in another room to bring her toys. In both situations, Sorina didn't wash her hands, which had touched the meat, as well as when the shoe of her daughter fall down from her leg, and she bent to took it from the floor and to put it back.

Many interruptions of the meat preparation took place because the young mum had to pay attention to the little girl and her brothers who were playing outside but were coming from time to time to ask or take something (e.g. a glass of water, money to buy sweets from the village shop, approval to meet a friend). We can blame the interruptions for the length of the meat preparation process, which almost doubled in these circumstances (e.g. after being deboned, the meat stayed on the cutting board for 15 minutes waiting to be further processed), and for actions leading to contamination of surfaces (bones left on the table, paper towel left on the table after usage). Another factor contributing to time increase of the preparation process was the problem with the cold water in the kitchen, which determined Sorina to go back and forth to the bathroom to get cold water. The time shortage and a bad decision on the sink model chosen for the kitchen (a bathroom model was in place) determined formation of a pile of dirty dishware in the kitchen sink, which, in turn, contributed to splashes around the sink every time the hot water was in use.



**Figure 4.2.24: Sorina's sink (Romania)**

Also, it should be pointed out that Sorina washed the chicken, chopped it, transferred it in small plastic bags and put them in the fridge immediately after returning from the shopping session. She said that she always did this, because she considered this is a safe practice and she did not “keep them in the fridge more than 2-3 days.” Meanwhile, she mentioned that the chicken was washed again before to start cooking it. At the time of the visit, Sorina put the bags with raw chicken close to a pot with sour soup that was stored in the fridge uncovered.



**Figure 4.2.25: Sorina left the washed chicken into the fridge close to an open pot containing soup (Romania)**

Maria Mirabela (34 years, Young families, urban) washed thoroughly with water every piece of chicken using hands. She washed the meat pieces aiming to remove the pellicle that chicken had on the surface. Afterwards, she squeezed every piece of chicken with her hands to remove the excess water and placed them on the cutting board. Then, Maria Mirabela cut in small pieces the deboned chicken legs removing in the same time the fat because she didn't like it, and after, washed again the chicken pieces, this time filling the bowl containing the chicken pieces with water. The removal of excess water was performed by inclining the bowl and using hands to prevent meat falling from the bowl.

All the elderly households in rural households used a bowl containing hot water: Damiana, 73 years, rural); Linalia (73 years, rural) to wash the chicken, or cold water as Domnica (75 years, urban) (all Elderly households) did. Because the visits at Damiana and Linalia were performed during winter, we believe that this was the reason for why they used warm water. Damiana's husband, Damian (73 years) seemed not to consider chicken as being risky. First, without rinsing his hands, after unpacking, he took a knife and started to cut anatomically the chicken. As the knife was not sharpen enough, he sharpened the knife using another knife used previously for cutting the chicken. He wiped with a dirty cloth the sharpened knife and continued to cut the chicken, leaving the cut pieces into the bowl containing water. The washing process was performed by his wife. When we asked the reason for which she does this, she was very surprised saying first that she washes by habit, because everybody washes the chicken and then she said that she washes it because washing removes the greasiness from the chicken. Similar to Damian, Damiana was not preoccupied about food safety, an example in this regard was that after washing the chicken with warm water, she used the same water to wash hands and the knife. The same procedure was followed also by another elderly rural household: Linalia. She used again warm water to wash the chicken after cutting it. As she didn't use the whole chicken to cook it, she left it in the initial package and moved it in the coolest room of the house, as the fridge was switched off (N.B. at the time of our visit it was - 11°C outside and about 4°C in the unheated room).

On the other hand, Fanica (69 years, Elderly households, urban) left the chicken breast inside the sink. First, she washed the chicken breast with filtered cold running water, without expressing a reason for using the filtered water. She explained, however, that she washed the chicken because "the greasiness from the chicken surface is disgusting." Domnica mentioned above, didn't leave the chicken inside sink, but into a bowl and washed with running water every piece of chicken, mentioning that she washed it because she didn't know "how many hands touched the meat."



**Figure 4.2.26: Domnica filled a bowl with water and placed the chicken legs in it to wash them (Romania)**

#### *Preparation of chicken before heating – cutting and trimming*

All the Romanian households performed a preparatory work before heating the chicken in terms of trimming and cutting. All used the cutting board for cutting the chicken, before or after washing it. However, for one research participant, Zoltan (35 years,

Young single men, urban), cutting anatomically the chicken was made on a plate, the informant struggled to chop it with the knife, whereas, the cutting board was used to slash the chicken legs and chicken breast before roasting it in the oven.



**Figure 4.2.27: Zoltan cut anatomically the chicken (Romania)**

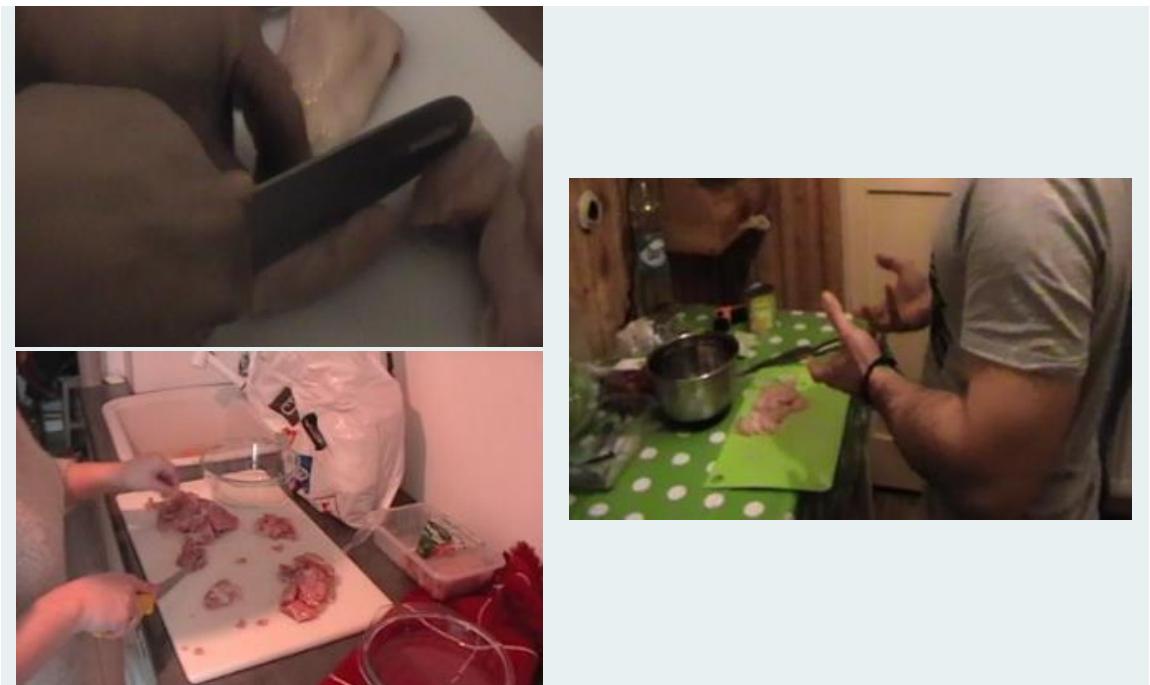
All households chopped the chicken before cooking it. The exception was Bogdan (32 years, Young single men, urban) who applied two techniques for cooking the chicken: boiling and frying. Bogdan used from the whole chicken only the chicken breast that was cut in two halves on the cutting board. After boiling the two chicken halves, he used hands to remove the meat from the bones and then chopped it in smaller pieces on the cutting board using the knife.



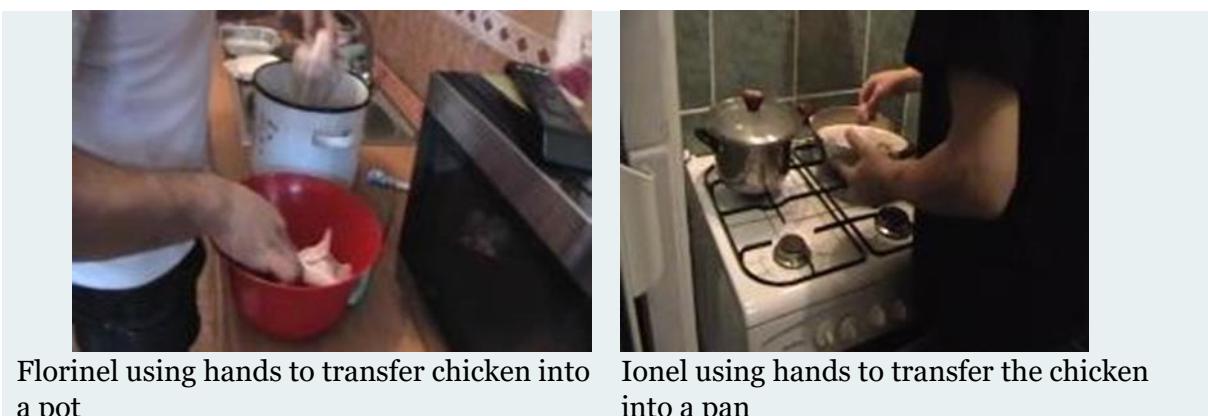
**Figure 4.2.28: Bogdan's chicken preparation, cutting before and after cooking (Romania)**

Some removed the parts that they considered being inedible or unpleasant for them to eat. For example, Balanel (28 years, Young single men, urban) removed the bloody veins from the chicken fillets and then cut the fillet in pieces “to be eaten from a single bite.” Whereas Maria Mirabela (34 years, Young families, urban) removed the fat when cutting the chicken in small pieces, leaving it at the edge of the cutting board. Zoltan, Florinel, Bogdan, Fanica (69 years, Elderly households, urban), Serena (36 years, rural), Amalia (31 years, urban) (both Young families) removed the skin from the chicken breast. The cutting methods were dependent on the type of meal the informant wanted to prepare during our visit. An example is Florinel (31 years, Young single men, urban) who cut anatomically the chicken to cook boiled chicken with vegetables, whereas for skewers, he cut the chicken breast fillet in small pieces. A few (4/11) deboned the chicken before cooking it: Fanica; Serena; Zoltan; and Sorina (32 years, Young families, rural). On the other hand, Bogdan deboned the chicken breast after boiling it. He left the boiled breast on the cutting board and used the knife and also the hands to remove the meat from the bone. The chicken was transferred from the cutting

board into plates or bowls, and only few of them transferred it directly from the cutting board into the frying pan (Bogdan) and to the pot (Linalia, 73 years, Elderly households, rural). All the used hands to transfer the chicken from the cutting board – plate/pot – pot/pan, even when the chicken was cut in smaller pieces, utensils such as forks, spatula, and spoon being used for mixing the chicken in the pot or pan.



**Figure 4.2.29: Various ways of cutting the chicken fillets (Romania)**



Florinel using hands to transfer chicken into a pot  
Ionel using hands to transfer the chicken into a pan

**Figure 4.2.30: Using hands to transfer chicken to the pots (Romania)**

Bogdan did not cook the whole chicken, so, after cutting the breast, he covered the meat with cling foil and put it on a plate into the fridge for being cooked the next day. However, most of the households who did not cook the entire chicken, stored it in the initial package.



**Figure 4.2.31: Bogdan used cling foil to cover the plate with chicken that was further moved in the fridge (Romania)**

Ionel (30 years, Young single men, urban) was the only informant who marinated the chicken that had to be cooked the next day. He put in a self-seal plastic bag a half of chicken breast and added olive oil, curry, salt and pepper, sealed the bag and placed it into a container bag and then in the fridge.



**Figure 4.2.32: Ionel's procedure of marinating the chicken in a zip-lock bag (Romania)**

### Seasoning the chicken

Seasoning the chicken before, after or during heating was dependent also on the dish the prepared (Table 4.2.4). A few added only salt (3/15) or a mix base (3/15). Others preferred to prepare their own mix of seasonings. The addition of seasonings over chicken was made by most research participants before frying/stewing, whereas for boiling the addition of seasonings was made during boiling, and only few added them at the end of heating. Some research participants used spoon to add seasonings and mix them with chicken, while others preferred to use hands to be sure that the chicken was well mixed with the seasonings (Sorina; Balanel; Zoltan; Florinel; Serena).

## Chapter 4.2: Handling and preparing chicken

**Table 4.2.4: Ways of seasoning the chicken in Romania**

Household	Type of heating	Before heating	During heating	End of heating	Seasonings	Observations
Ionel (30 years, urban)	Boiling, stewing		X		Salt, curry, pepper	poured the seasonings into the pot
Balanel (28 years, urban)	Frying	X			Olive oil spiced with red chili, salt and pepper	Mixed the seasonings with the chicken using hands
Bogdan (32 years, urban)	Boiling, frying			X	Mix of seasonings	Poured the seasoning and mixed it with a fork
Florinel (31 years, urban)	Boiling		X		Salt, bay leaves	Bay leaves by hand, salt using a spoon
	Grill	X			Mix of seasonings	Poured the seasonings into a plate, covered each chicken breast with seasonings by hands
Zoltan (35 years, urban)	Roasted	X			Mix of seasonings	Spread the seasonings easily by hands
	Boiling			X	Salt, basil	
Maria Mirabela (34 years, urban)	Stewing		X		Salt, pepper, curry	The informant poured the seasonings into the pan and mixed it with the fork
Sorina (32 years, rural)	Stewing	X			Garlic, olive oil, salt, pepper	Mixed the sauce with the chicken using hands
Minodora (27 years, rural)	Frying	X			Salt	Sprinkled salt with hands over the chicken
Serena (36 years, rural)	Stewing	X			Base mix (Delikat)	Used hands to add it and mix it with chicken
Amalia (31 years, urban)	Roasting	X			Garlic, olive oils, pepper, salt	Used a spoon to mix the seasonings with the chicken
Damian & Damiana (both 73 years, rural)	Boiling		X		Base mix (Delikat)	Added it with hands
Dumitra (84 years, rural)	Boiling		X		Base mix (Delikat)	Added it with a spoon
Linalia (73 years, rural)	Boiling			X	Sauce prepared from garlic, bay leaves thyme	Added it with a spoon
Domnica (75 years, urban)	Boiling		X		Salt	Added with a spoon
Fanel & Fanica (both 69 years, urban)	Frying	X			Salt	Added salt over the eggs, chicken fillets being dipped in eggs mix

**Table 4.2.5: Methods and tools for handling and preparing chicken in Romania**

Study group	Households	Did they wash it?	Did they cut it? (how, where)	Tools used	How did they season it?	Did they wash hands?
Young single men	Ionel (30 years, urban)	Yes Each fillet with running water	Yes, in small pieces on the chopping board using a knife	Plastic chopping board, knife, pot, wooden spoon, plate, pot, pan	Salt, curry, pepper	Rinsed his hands under water after taking out of the bag the chicken breast and after transferring the chopped chicken into the pot
	Balanel (28 years, urban)	Yes Each fillet with running water	Yes, in small pieces on the chopping board using a knife	Plastic chopping board, knife, wooden spoon, frying pan	Olive oil spiced with red chili salt and pepper	Washed his hands with soap before starting to cook Rinsed hands after washing the chicken and dried on dish towel Rinsed after mixing the chicken with herbs using his hands and dried on dish towel
	Bogdan (32 years, urban)	No	Yes, the chicken was cut anatomically on the chopping board using a knife	Wooden chopping board, hands, pan, knife, pot, fork	Mix of seasonings	No hands washing before cooking. Rinsed after throwing the chicken waste into the garbage and dried hands with hand towel Rinsed after washing the knife used for cutting the chicken
	Florinel (31 years, urban)	Yes, in a plastic bowl with running water, stirring by hands	Yes, the chicken was cut anatomically on the chopping board using a knife	Wooden chopping board, knife, pot, plate, fork	Salt, bay leaves, mix of seasonings	Rinsed with cold water after handling chicken
	Zoltan (35 years, urban)	Yes Each piece with running water	Yes, he cut the chicken anatomically using a knife	Wooden chopping board, hands, knife, pot, plate, glass baking dish	Mix of seasonings	Rinsed with cold water after handling chicken
Young families	Maria Mirabela (34 years, urban)	Yes, each piece un running water	Yes, in small pieces on the chopping board	Plastic chopping board, knife, pot, frying pan	Salt, pepper, curry	She washed hands before starting to cook; Rinsed after handling chicken
	Sorina (32 years, rural)	Yes, in a plastic bowl with running water, stirring by hands	Yes, she cut the chicken, while deboning it on the chopping board	Frying pan, wooden chopping board, knife, fork, bowl	Garlic, olive oil, salt, pepper	Rinsed after handling the chicken with hot water

## Chapter 4.2: Handling and preparing chicken

Study group	Households	Did they wash it?	Did they cut it? (how, where)	Tools used	How did they season it?	Did they wash hands?
	Serena (36, rural)	No	Yes, she cut the chicken anatomically on the chopping board.	Bowl, wooden chopping board, knife, plate, fork, frying pan	Base mix	Rinsed after handling the chicken
	Minodora (27 years, rural)	Yes, placed the fillets into a plate and filed it with water	Yes, in small slices	Knife, wooden chopping board, frying pan, fork	Salt	No
	Amalia (31 years, urban)	Yes, with running water pieces by piece	Yes, the chicken was cut anatomically on the chopping board with a knife	Knife, wooden chopping board, bowl, tray, spoon	Garlic, olive oils, pepper, salt	Rinsed hands after handling the chicken
Elderly households	Dumitra (84 years, rural)	Yes, in a plastic bowl filled with water	Yes, the chicken was cut anatomically using a knife	Knife, pot, bowl	Salt, base mix	No
	Damian & Damiana (both 73 years, rural)	Yes, in a plastic bowl filled with warm water	Yes, the chicken was cut anatomically using a knife, hands and chopping board	Knife, wooden chopping board, fork, pot, plate	Base mix, sun flower oil	No, just wiped hands on a hand towel
	Fanel & Fanica (both 69 years, urban)	Yes Each piece was placed into the sink and washed in running water	The chicken breast was deboned and the cut on the chopping board with a knife	Knife, wooden chopping board, bowl, plate, fork, frying pan	salt	Rinsed with water after handling chicken
	Domnica (75 years, urban)	Yes, in a bowl with running water	Yes. In smaller pieces on the chopping board with a knife	Wooden chopping board, knife, bowl, spoon, cauldron	Salt	Rinsed with water after handling chicken
	Linalia (73 years, rural)	Yes, in a bowl filled with warm water	Yes, the chicken was cut anatomically using a knife, hands and chopping board	Knife, wooden chopping board, bowl, kettle, wooden spoon	Sauce prepared from garlic, bay leaves thyme.	No

### Summary of how chicken was prepared in Romania

Romanian participants had different motivations that determined them washing the chicken. Some washed it to remove the bloody veins and greasiness, others washed it by force of habit that they have learned from their parents, or because everybody does this, while some others because they believed that the chicken was touched by too many hands. Anyway, the chicken was considered as being safer if washed.

There was a contradiction however between washing the chicken and washing hands. On the one hand, the research participants felt the need for washing the chicken to remove a potential risk that the chicken might have, whereas the research participants didn't pay enough attention to washing their hands before and after washing the chicken. As mentioned earlier, most of the households from rural area: Damiana (73 years); Linalia (73 years) (both Elderly households); and Minodora (27 years, Young families) washed their hands in the same water used for washing the chicken, whereas the urban households tried to minimise the risk of contamination of surfaces and utensils to some degree by rinsing and wiping hands. However, many cross contamination events have been noticed, especially in rural households.

Another aspect was the presence of cutting boards for cutting the chicken, before or after washing the chicken; all the Romanian participants used them to prepare the chicken. Most of the research participants used the same chopping board for cutting chicken and vegetables and only few had separate chopping boards. Most rinsed the chopping board between uses and only few washed it. Only elderly households from rural areas were not seen washing the chopping board after handling the chicken. Although Romanians washed the chicken because "otherwise is risky", they didn't consider it anymore being risky if they handled it using their own hands when transferring from the bowls to cutting board or from cutting board to pan, pots, this type of actions leading to many cross-contamination sequences.

## Handling and preparing chicken in France

In France, most bought chicken in a plastic container (9/15). For those who bought it from the butchery or at a local producer (5/15), they had it in a plastic bag or paper bag inside a plastic bag. 1 participant cooked a thawed chicken he himself raised in his garden, killed and prepared (Etienne, 30 years, Young single men, rural) but we couldn't observe how he stored it in his freezer.

### *Thawed or fresh chicken*

11/15 households cooked fresh chicken they bought recently. 4/15 cooked thawed chicken (Etienne; Gérard & Odile, Bernard & Hélène; Yvette & François). We could not observe the unpacking process as they thawed it the night before the observation. Some of them already took the chicken out of its package to freeze it, as they were not used to freeze it in its original package. Gérard & Odile thawed the chicken in its plastic bag overnight, so we could observe the unpacking from the bag used to freeze and thaw it.

The technics to thaw chicken were most of the time to transfer the frozen chicken from the package to a glass or plastic container. Most of the participants thawed their chicken in the fridge and some did it outside of the fridge at room temperature. This was the case of Odile who put the chicken in its plastic bag to defrost in a dish: she took it out from the freezer and let it thaw overnight outside, in the kitchen. She then put it back in the fridge in the morning for a few hours (one or two) and took it out again 30 minutes before the researchers came.

Yvette bought her whole chicken at the butchery 3 days before the cooking observation and directly froze it because she didn't like to keep fresh packed food too long in the fridge. She already prepared it before freezing it: she took out the giblets, the neck and head because her husband and she didn't like eating these parts. She took it out of the freezer to thaw in the fridge overnight and let it in its plastic bag in which she placed it to freeze it.

Bernard and Hélène bought the chicken legs 4 days ago from a local producer where they went during the weekend. They directly froze it and then they thaw it in a glass box in the fridge during the night. Table 4.2.6 describes how participants in France unpacked their chicken, as we observed it during the cooking preparation.

In France, 6 research participants opened their chicken tray or plastic bag by hands. 4 of them used a knife to open the package. One used both hands and knife to open the package. Only one used scissors to open the chicken bag.

**Table 4.2.6: Overview of unpacking of chicken among the French participants and tool used**

Study group	Household	Chicken product	How was the chicken unpacked	Where were the chicken placed next	Tool used	What happened to the tool
Young single men	Aurélien (25 years, rural)	Breast fillets	Opened the chicken tray with a knife and finish by hands.	Glass cutting board	Knife, hands	He used the knife to cut chicken fillets into pieces
	Vincent (29 years, rural)	Whole chicken	Opened the chicken package by hands, removed elastics around thighs	Dish	Hands	Did not wash his hands directly after handling raw chicken
	Fabrice (24 years, urban)	Breast fillets	Opened the package of chicken fillets with a knife	Plastic cutting board	Knife, scissors	Knife was placed on the table, scissors at the cutting board, then in the sink
	Simon (25 years, urban)	Breast fillets	Opened the chicken tray with a knife	Wooden cutting board	Knife	He used the knife to cut chicken fillets into pieces
	Etienne (30 years, rural)	Whole chicken	Unpacked the frozen chicken to thaw	N/A	N/A	N/A
Young families	Mathilde (37 years, urban)	Breast fillets	Opened the package with a knife	Plastic cutting board	Knife	Used the knife to cut fillets into pieces, later put in the sink
	Amandine (27 years, rural)	Whole chicken	Peeled out the plastic film wrapping the chicken by fingers	Cooking plastic bag	Hands	Did not wash hands directly after handling raw chicken, but dried hands
	Julie (28 years, urban)	Whole chicken	Unpacked the chicken tray with her hands	Dish	Hands	She rapidly wiped her fingers on the towel
	Mylène (25 years, urban)	Thighs	Unwrapped chicken thighs from the plastic bag by hands	Cooking robot	Hands	Did not wash his hands directly after handling raw chicken
	Elodie (31 years, rural)	Chicken cutlets	Opened the chicken tray with her knife	Plastic cutting board	Knife	The knife went on the cutting board
Elderly households	Gérard & Odile (71 & 65 years, rural)	Whole chicken	Removed thawed chicken from bag without touching the meat	Dish	N/A	N/A
	Sylviane (77 years, rural)	Whole chicken	Opened the chicken package with her hands	Wooden cutting board	Hands	She did not wash her hands directly after but shortly after
	Charles & Annie (75 & 70 years, rural)	Whole chicken	Opened the bag by hands	Wooden cutting board	Hands	He washed his hands after unpacking the chicken because he forgot to do it before
	Yvette & François (74 & 76 years, urban)	Whole chicken	Cut the plastic bag with scissors	Dish	Scissors	On the countertop
	Bernard & Hélène (both 72 years, urban)	Thighs	Used hands to move them into the wok	No unpacking observed	N/A	N/A

### *Washing or not washing chicken*

In France, no research participants washed their chicken and no one was used to do so. One participant (Elodie, 31 years, Young families, rural) mentioned that she knew some people doing it but she personally did not see the interest of doing so.

### **Preparation of chicken before heating**

For the 8 households who cooked whole chicken in the oven, they quickly put oil, butter, herbs, garlic, salt, pepper and water in the dish before putting it in the oven. Only one research participant (Julie, 28 years, Young families, urban) prepared a sauce with onion, tomatoes, garlic, spices and cream, following a recipe on her phone, that she put all over the chicken. Three research participants, Etienne (30 years, rural); Vincent (29 years, rural); (both Young single men); and Odile 65 years, Elderly households, Rural) put pieces of butter on the chicken. They also put olive oil on it.

For the five research participants who cooked chicken fillets, they cut it into pieces, except Elodie (31 years, Young families, rural) who cut into pieces only one fillet and kept the others to cook them in a paper “papillote”. They usually only separated pieces of fat or nerves from the fillets while cutting them into pieces. The pieces were of different size, some were even slices. Most used a knife to cut chicken pieces, except Fabrice (24 years, Young single men, urban) who used scissors he bought especially for this purpose, because he thought that this was more convenient, as he ate chicken very often, for his bodybuilding activities.



**Figure 4.2.33: Fabrice cut the chicken fillets into slices with a scissor and trimmed the fat (France)**

One research participant (Mathilde, 37 years, Young families, urban) made a very quick marinade with olive oil and salt on chicken pieces in a bowl the time she took a pan and heated it on the stove. She then directly cooked chicken pieces in the pan.



**Figure 4.2.34: Mathilde mixed chicken with oil and spices the bowl (France)**

Mathilde and Simon (25 years, Young single men, rural) moved their chicken pieces to a bowl before frying them. Mathilde moved it in a bowl in order to make a marinade. For Simon, it was more convenient for him to put all of his preparations in a single bowl, as he was sitting in the living room to cut chicken and vegetables and then to bring them over in the kitchen.



**Figure 4.2.35: Simon added the cut vegetables into the glass bowl (one bowl used for all foods) with the chicken pieces (France)**

Among the five research participants who cooked chicken fillets, 4 used their hands to remove chicken fillets from their tray to cutting board, and then from cutting board to

the pot or pan. Aurélien, for instance transported the chicken pieces using his cutting board, but used his hands to push them into the pot.



Aurélien put chicken pieces in the pot



Fabrice placed the chicken slices in the pan with his hand



Simon took the raw chicken pieces by hand to put them in the hot pan.



Elodie put the chicken fillets in the paper “papillotes”

**Figure 4.2.36: Transferring chicken by hands (France)**



**Figure 4.2.37: Transferring chicken with utensils: Mathilde pushed the chicken pieces into the pan with the spatula (France)**

Only Mathilde used a spatula to pour chicken pieces in marinade from their bowl to the pan. None of the French households mentioned any risk or caution regarding the chicken handling. Some of them mentioned only the need to cook it well.

### **Summary of how chicken was prepared in France**

Majority of French households did not handle chicken with care. One mother (Mathilde, 37 years, Young families, urban) mentioned that she did not like to touch raw chicken because of the greasy feeling she had on the hands afterwards. It was for convenience not safety. Odile (65 years, Elderly households, Rural) was careful not to touch raw chicken when she unpacked it to put it in the dish, but she did not explain why. Most of them took the chicken fillets, pieces or whole chicken with their hands. A majority did not wash their hands afterwards. No concerns were made about the need to handle chicken differently from other food. Washing raw chicken was not known nor practiced among French participants. No participants did it. Only one mother (Elodie, 31 years, Young families, rural) mentioned that she has heard about it but that she did not see the point of washing chicken as it will be cooked.

**Table 4.2.7: Methods and tools for handling and preparing chicken in France**

Study group	Household	Did they cut it? (how)	Tools used	How did they season it?	Did they wash hands?
Young single men	Aurélien (25 years, rural)	Yes, in small pieces	Glass chopping board, knife, pot, wooden spoon	Oil, butter, onions, cream fraîche, peanuts, spices, tomato sauce	Rinsed hands under water after handling raw chicken to take off the fatty feeling on them
	Vincent (29 years, rural)	No, whole chicken	Hands, dish, oven, spoon	Olive oil, butter, salt, pepper, thyme, parsley, basil, garlic and bay leaves	Washed hands with soap before handling chicken. Did not wash his hands directly after, but dried them on a hand towel
	Fabrice (24 years, urban)	Yes, in slices	Plastic cutting board, scissors, hands, pan, knife	Olive oil, salt, herbs	No hands washing before cooking. Rinsed his hands after handling raw chicken
	Simon (25 years, urban)	Yes, in small pieces	Wooden cutting board & spoon, knife, bowl, pan,	No fat, nothing	Washed his hands before handling raw chicken. Only rinsed his hand after touching raw chicken
	Etienne (30 years, rural)	No, whole chicken	Dish, oven, wooden spoon, fork	Water, butter and olive oil	Washes his hands before food preparation. Does not touch raw chicken
Young families	Mathilde (37 years, urban)	Yes, in small pieces	Cutting board, bowl & spatula (all plastic) knife, pan, spoon	Olive oil and spices for the marinade, coco oil & milk	Washed hands with soap before cooking and after handling raw chicken
	Amandine (27 years, rural)	No, whole chicken	Dish, oven, plastic cooking bag	Spices and water	Washed hands with soap and warm water after touching raw chicken
	Julie (28 years, urban)	No, whole chicken	Wooden spoon, pan, dish, oven	Onions, spices, coco milk	Rapidly wiped her fingers on the towel after handling raw chicken
	Mylène (25 years, urban)	No, chicken legs	Hands, cooking robot	N/A	No hands washing observed before cooking. Did not wash his hands directly after
	Elodie (31 years, rural)	No, chicken fillets	Hands, wooden spatula, pan, paper "papillotes"	N/A	Washed hands carefully with soap before cooking and after handling raw chicken
Elderly households	Gérard and Odile (71 & 65 years, rural)	No, whole chicken	Dish, oven	Herbs, butter, water	No hands washing observed before cooking. Rinsed hands with water after touching raw chicken
	Sylviane (77 years, rural)	No, whole chicken	Dish, oven, hands, spoon, knife	Tarragon, shallot, garlic, olive oil, frozen tomatoes	Rinsed her hands after preparing raw chicken and putting it in the oven raw chicken
	Charles & Annie (75 & 70 years, rural)	No, whole chicken	Dish, oven, hands, oven spit	Rosemary	Washed his hands after unpacking the chicken, dried hands on a hand towel after touching it later
	Bernard & Hélène (both 72 years, urban)	No, chicken legs	Fork, pan, wooden spoon, dish	Olive oil, canned tomatoes, thyme	Rinsed his hands under lukewarm water before cooking. Did not wash hands after touching chicken
	Yvette & François (74 & 76 years, urban)	No, whole chicken	Dish, oven	Olive oil, salt	Rinsed hands under water after touching raw chicken garbage

## Handling and preparing chicken in the UK

In this section we discuss the steps taken in the households in getting chicken ready to be cooked. We observed some degree of pre-cooking chicken preparation by 14 households.<sup>35</sup> As will become clear, there was significant variation in the amount of handling and preparation research participants engaged in.

Chicken preparation began with retrieving the chicken from wherever it had previously been kept. All UK households stored chicken in a fridge or freezer. In the 12 cases where we directly saw this happen we were able to record how long the chicken was ‘out’, i.e. at room temperature, before being cooked.<sup>36</sup> This varied considerably, from two to 20 minutes, but there was no clear difference between the three study groups (Table 4.2.8).

Most households used ‘fresh’ (as opposed to frozen) chicken for the meal we observed, although home freezing was common throughout the sample. Three of the young male research participants, Ryan, Josh and Liam, used chicken that had been bought fresh but subsequently frozen at home. All three explained that they had taken their chicken portions out of the freezer the previous evening and left them to defrost overnight, in the fridge. Others commented that this is what they would normally do on occasions that they were using frozen chicken.

**Table 4.2.8: length of time chicken is kept at room temperature before heating, including all preparatory work (nearest minute)**

Elderly Household		Young families		Young single men	
Household	Time	Household	Time	Household	Time
Susan (78 years, urban)	20	Laura (31 years, urban)	8	Ryan (20 years, urban)	7
Mary (70 years, urban)	12	Paul (34 years, urban)	3	Josh (22 years, urban)	19
Jean (72 years, rural)	-	Kate (30 years, urban)	16	Sahib (23 years, urban)	-
Archie (74 years, urban)	5	Chloe (38 years, rural)	7	Liam (28 years, urban)	-
Tricia (70 years, urban)	4	Alicia (23 years, urban)	13	Daniel (25 years, urban)	2

### Removing chicken from packaging

In general, the next task was to remove the chicken from its packaging. This can usefully be divided into three steps: opening the pack, transferring the chicken portions out of it, and dealing with the packaging itself. Each step was a site of varied practice among the sample and potentially involved raw chicken coming into contact with hands, equipment and kitchen surfaces.

<sup>35</sup> The exception was Sahib, who ‘prepped’ before we arrived, mixing chicken pieces and prawns in a plastic bowl and marinating them together in a homemade spice mix; when we arrived, the bowl of marinated chicken and prawns was sitting on the kitchen worktop, covered with cling film.

<sup>36</sup> In the other three cases the chicken was already out (sitting on the kitchen worktop, but still covered with cling film or packaging) when we began the observation. One of these research participants, Sahib, explained that he had intentionally retrieved the chicken from the fridge before we arrived to allow it to reach room temperature before cooking. He felt this would help the meat to cook more evenly. This question was not directly raised with the other two research participants, Jean Higgins or Liam Abney.

In most cases the chicken was still sealed in its original packaging at the start of the observation: invariably a plastic tray with either a clear film lid or an outer plastic bag. Households all adopted a similar approach to opening the packaging: they first pierced the lid or outer plastic with a knife or scissors and then pulled it open with one or both hands. The exceptions were Josh (22 years, urban) and Liam (28 years, urban) (both Young single men), who, as noted above, had home-frozen chicken breasts. In the process of freezing or defrosting, they had each already removed the original packaging and re-wrapped the chicken in individual portions. As a result, Josh's chicken breasts were in a knotted plastic freezer bag, which he cut open with scissors. He also used the scissors to open out the bag, avoiding any contact between his hands and the inside of the bag. Liam had defrosted his chicken breasts on a plate wrapped with cling film, which he peeled back using his hands (Figure 4.2.38).



**Figure 4.2.38: Opening the chicken packaging: Alicia pierces the film lid (left); Josh cuts open the freezer bag (middle); Liam unwraps cling film from a plate (right) (UK)**

Having opened the packaging, the chicken could now be transferred elsewhere: either to another surface for further preparation (see the following sub-section on trimming and cutting) or directly to a pan or dish for cooking. The major difference between households here was between those using their hands to pick up the chicken and those actively avoiding doing so. Again, though, this wasn't clearly differentiated by study group. The majority (nine research participants) used one hand to pick up and move the chicken, keeping the other hand free and uncontaminated, whether this was an explicit intention or otherwise. Chloe (38 years, Young families, rural ), one of the parents of young children in the sample, used both hands to pick up her whole chicken and transfer it directly to the 'instant pot' pressure cooker (Figure 4.2.39). She was the only person to use both hands in this task, perhaps due to the size of the whole chicken in comparison to individual portions.



**Figure 4.2.39: Transferring chicken with one hand or two (Paul, left; Chloe, right) (UK)**

Four research participants used other tools in lieu of touching the chicken with their own hands (Figure 4.2.40): Kate (30 years, Young families, urban,) held the open pack of chicken over her pan, tilted it and used the blade of a knife to slide the mini fillets out of the tray and into the pan; Josh (22 years, Young single men, urban) used scissors in one hand and a fork in the other to lift and transfer the chicken breasts, while Archie (74 years, Elderly households, urban) did the same using the point of a sharp knife; finally, Mary (70 years, Elderly households, urban) used folded paper towel as a sort of makeshift ‘glove’, effectively a barrier between her hands and the chicken. It is notable that in each of these four cases, the chicken was cooked ‘whole’ (i.e. in the same sized pieces as it was sold), with no further manipulation required before cooking.<sup>37</sup>



**Figure 4.2.40: Avoiding hand contact while transferring chicken (Kate, top left; Josh, top right; Archie, bottom left; and Mary, bottom right) (UK)**

<sup>37</sup> Kate, however, used a wooden spoon to break up some of the larger pieces of chicken during cooking, in the pan.

### *Dealing with the used packaging*

The third step was to deal with the packaging itself, including any remaining pieces of chicken that were being saved for future meals. Archie (74 years, Elderly households, urban) and Daniel (25 years, Young single men, urban), for example, simply returned the pack and its remaining contents to the fridge. Three research participants – Susan (78 years, Elderly households, urban), Mary (70 years, Elderly households, urban) and Alicia (23 years, Young families, urban) – each transferred their one remaining chicken portion to a plastic food bag and placed it in the freezer, leaving an empty packet to dispose of. Disposal itself was also varied; again there was little discernible pattern with respect to the three different study groups. Kate (30 years, Young families, urban) and John (Jean's partner) (71 years, Elderly households, urban) put the whole empty packet straight into the (non-recycling) kitchen bin. Liam (28 years, Young single men, urban) did the same with the cling film he had used to cover his defrosting chicken, while Josh (22 years, Young single men, urban) took his used freezer bag straight to the outside refuse bin, explaining that he didn't want to leave it "hanging around" in the kitchen. Recycling was more common: two of the older participants (Jean and Susan) removed and binned the film lid and rinsed out the plastic tray before setting it aside for recycling; six others added the tray straight to their recycling without rinsing.

### *Performing cross-contamination prevention*

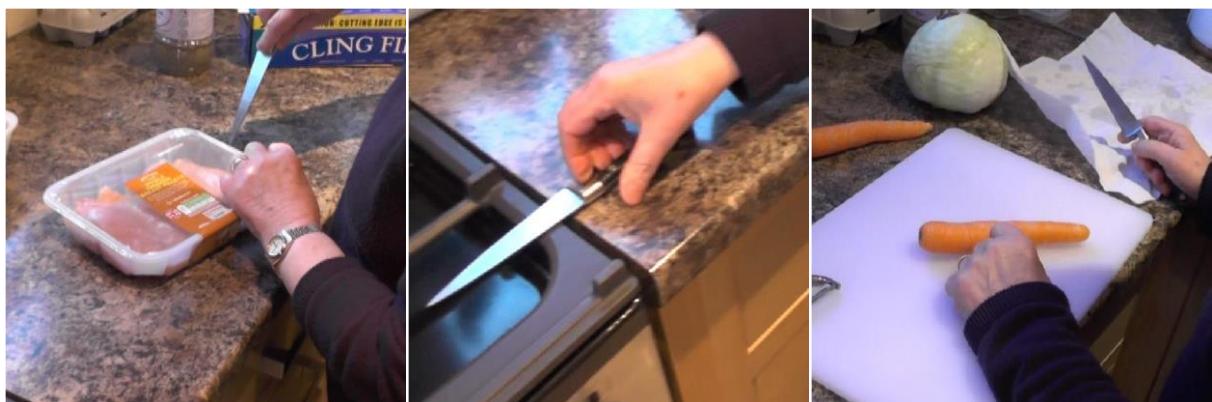
The three steps involved in removing chicken from its packaging provided numerous opportunities for raw chicken to come into contact with hands, equipment and surfaces. In turn, this introduced a potential risk of cross-contamination by any microorganisms present in the chicken. On the whole, households demonstrated awareness of this risk and put in place strategies to minimise it. As already seen, some tried to avoid touching chicken altogether. Most washed their hands immediately after handling raw chicken and before touching other foods or equipment. Over half used anti-bacterial soap when they did so. Most avoided reusing any cutlery or other tools used in opening packaging or moving raw chicken around and washed them after use.

Despite these well-informed measures, minor 'lapses' were common. While it is impossible to know from our observation whether these actually resulted in cross contamination of pathogens, we can at least identify moments of *potential* cross contamination. First, the knife or scissors used to pierce the outer packaging necessarily came into momentary contact with the inside of the packet, and in some cases with the chicken itself. It is important, therefore, to follow what subsequently happens to it. In most (eight) cases, after any further use in moving or cutting up chicken, the knife or scissors were either rinsed or placed in the sink for washing, without coming into contact with other foods, equipment, surfaces and so on.<sup>38</sup> However, in five cases there was potential for cross-contamination. For three research participants, Laura (31 years, urban), Chloe (38 years, rural) (both Young families) and

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<sup>38</sup> This includes Josh (22, Young single men, urban, UK), who used his raw meat scissors to turn over chicken breasts halfway through oven cooking. He reasoned that, since the chicken was returning to the oven for a further 12 minutes, this should not represent a cross-contamination risk.

Daniel (25 years, Young single men, urban), this was a case of temporarily resting the knife on the kitchen worktop, before moving it to the sink or dishwasher. Two elderly households reused the knife in preparing salad vegetables. Archie (74 years, urban) rested the knife on the worktop, in contact with spring onions and then later used the same knife for slicing the first of those spring onions, before switching to a different knife. Mary (70 years, urban) initially placed her knife carefully overhanging the cooker top, so that its blade was not in contact with any surfaces. However, she later reused the same knife for trimming carrots and cabbage, which were then added (raw) to her homemade coleslaw (Figure 4.2.41).



**Figure 4.2.41: Mary used the same knife for piercing the lid of the chicken packet and preparing salad vegetables (UK)**

Second, there were numerous instances where research participants handled chicken and then touched other items before washing their hands. On a small number of occasions this occurred after research participants had observably and intentionally picked up chicken with their hands. After loading chicken into his Remoska mini-cooker by hand, Daniel immediately used both hands to move the cooker (by the handles) and place its lid on top. He then washed his hands, touching the tap and a bottle of washing up liquid in the process. Similarly, having used his right hand to transfer chicken onto his chopping board, Liam (28 years, Young single men, urban) used the same hand to open a cupboard door, close the bin, turn on the tap and pick up the washing-up bowl. Jean (72 years, Elderly households, urban) handled one piece of chicken before handing over the task of chicken preparation to her husband John; she then rubbed her hands together and continued with vegetable and salad preparation.

Third, in other instances, research participants appeared to accidentally or unwittingly handle chicken, in ways that were barely noticeable in real time but can be observed in video recordings. As already seen, Mary used paper towel to pick up raw chicken, in order to avoid using her hands directly. As she acknowledged at the time, there were occasional slips, meaning her right hand actually came into contact with the chicken several times. Mary then continued meal preparation (touching utensils, other food items, etc.) without washing her hands. On close inspection of the footage, however, she did appear to wipe her right hand with the paper towel before disposing of it, which

may have helped in either displacing any pathogens or making the conditions less favourable for their survival by removing moisture. More subtle, and also more common, was for research participants to handle the inside of the chicken packaging with one or both hands, either when peeling back the lid or holding the tray, again potentially coming into contact with contaminants (Figure 4.2.42).



**Figure 4.2.42: Contact between hands and the inside surfaces of chicken packaging was difficult to avoid (UK)**

What these examples suggest that, despite being aware of risks of cross contamination and putting in place strategies to minimise risk, it is very difficult to eliminate risk entirely. They certainly do not appear to stem from a deficit in knowledge and understanding, nor from a lack of effort, but are more likely a product of the quick succession of micro-actions involved in routine food preparation, many of which are performed unconsciously. It is also worth emphasising that it is not clear just *how risky* these momentary 'lapses' are. For example, to what extent does the blade of a knife become contaminated with microorganisms as the result of quickly piercing the film lid of a pack of chicken? How much does that blade then have to be in contact with a surface to pass on that contamination, and how long does it linger? Does rubbing the hands together, or wiping them with paper towel, achieve different levels of cleanliness than washing under water (with or without detergent)?

## Washing chicken

It is worth a brief comment on the practice of washing chicken prior to cooking, since this was prevalent in other countries. Nobody in the UK sample washed chicken on the occasion of our observation, and nobody said it was part of their normal approach to food preparation. When it did come up in discussion, some research participants explicitly referred to how washing chicken may contribute to risk of illness, suggesting this is something they had learnt through education, training or the media. This was positioned in opposition to either their own former practice or that of somebody else that they know. For example:

I never wash chicken, just because, again, through the media found out that washing it just spreads the germs ... so before I might have got chicken and gone, it feels a bit slimy, and give it a rinse but apparently, recently I've heard that that's not the done thing anymore, really.  
(Paul, 34 years, Young families, urban, UK)

Never wash chicken. You're just spreading bacteria by washing it. So, that's one thing. My sister did it before, and I said, you can't really do that.  
(Sahib, 23 years, Young single men, urban, UK)

Others, by contrast, had seemingly never considered washing chicken, let alone done it, suggesting it is not something they had even known others to do:

Int.: You talked a little bit about washing your veg, what about washing meat or chicken before you cook it, do you ever do that?

Liam: No, can't say I've ever done... I'm just trying to think if I've ever, ever done that, but... I can't say I have actually. I've never even thought about it actually.

(Liam, 28 years, Young single men, urban, UK)

### Trimming and cutting chicken

After removal from packaging, there was a fairly even split between research participants who added chicken straight to the pan or dish for cooking (seven), and those who did further preparatory work in the form of trimming and cutting (eight). It is the latter group that we focus on now, which included three elderly households, three of the young single men,<sup>39</sup> and two of the young families: one expectant couple and one with a young child.

Trimming involved removing and discarding any small sections of the chicken portions that were deemed inedible, unhealthy or otherwise undesirable to eat. These were typically described as being fatty parts or those containing veins or blood, but it was often difficult to put into words how the judgement was made:

Int.: So what are the bits that you sort of trimmed off?

Tricia: I don't know, it's just when they look a bit whitish ... There, look. That's a bit iffy. Well, it's probably not, but it is in my eyes.

(Tricia, 70 years, Elderly households, urban, UK)

Susan: I don't know what it was, but it didn't look right, so that's why I took it off.

(Susan, 78 years, Elderly households, urban, UK)

Both Susan and Tricia used scissors to trim their chicken and also to cut each chicken breast into smaller pieces for stir-frying. They used one hand to hold the chicken and the other to operate the scissors, cutting the pieces over a small plate (Susan) and an old ice cream container (Tricia) respectively, before subsequently tipping the chicken pieces into a frying pan. As a result, neither used a chopping board for raw chicken.

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<sup>39</sup> This includes Sahib (23, Young single men, urban, UK), who cut chicken breasts into small pieces and marinated them before we arrived.

Ryan (20 years, urban) and Liam (28 years, urban) (both Young single men), by contrast, cut their chicken breasts on a chopping board. Ryan held the chicken with one hand and used a sharp knife to cut it into small pieces (trimming unwanted parts as he went). Liam used a fork to hold the chicken in place; he began by using an ordinary table knife to cut the chicken into small pieces, but quickly swapped it for a sharp kitchen knife, explaining that he would normally use scissors but couldn't find them on this occasion.

Laura (31 years, Young families, urban) and Alicia (23 years, Young families, urban) demonstrated a third approach. Like Ryan and Liam they also used a knife and chopping board. However, rather than cutting the chicken portions into smaller pieces they used a 'butterflying' technique to cut open and flatten the fillets. Alicia held the chicken with one hand, while Laura used both hands in the process (Figure 4.2.43). Similarly, John, Jean's husband (72 years, Elderly households, urban) didn't cut up their chicken thighs but trimmed off some of the fat and skin, using a chopping board and sharp knife.



**Figure 4.2.43: Three approaches to cutting chicken: Susan used scissors; Ryan used a knife; Laura used both hands and a knife to flatten out her chicken breast fillets (UK)**

As with removal from packaging, the various approaches to trimming and cutting raw chicken presented further opportunities for any pathogens present to potentially contaminate hands, equipment and surfaces. Again, it is useful to follow what subsequently happens to the tools and hands used in preparation to note any possible moments of cross-contamination, with the same caveats as earlier about the impossibility of determining whether contamination actually occurred in these instances.

As before, households took clear measures to minimise any risk. With few exceptions, equipment such as knives, chopping boards and so on were either rinsed, washed, added to the dishwasher, or put aside to be cleaned later, but were not used again in meal preparation. Most washed their hands after trimming and cutting raw chicken and made substantial effort to avoid touching other things before being satisfied their hands were clean. Common techniques here included holding out hands away from the body and surfaces or, if the use of hands was unavoidable, trying to use parts that had

not directly touched the chicken, for example the palm or back of the hand, while keeping the fingers at a distance (Figure 4.2.44).



Laura uses her palm and the back of her other hand to move the frying pan

Alicia uses her clean hand to move a bowl while holding her chicken-handling hand in the air

Sahib uses his palm to turn on the tap

**Figure 4.2.44: Avoiding touching things with raw chicken hands (UK)**

Once again, though, through scrutinising the video footage it is possible to observe subtle, momentary ‘lapses’ in putting these strategies into practice. These tended to involve touching equipment after handling raw chicken but before washing hands, and then using the same equipment with clean hands while preparing other parts of the meal. Turning taps on and off presented a particular challenge. For example, although Susan (78 years, Elderly households, urban) washed her hands after cutting chicken, she later used her right hand to transfer the chicken pieces into the pan, before picking up a slotted spoon to stir-fry her chicken and onions. After around five minutes of stir-frying, she put down the spoon (with its handle on the worktop), added her homemade sweet and sour sauce (prepared earlier) to the pan and then rinsed her hands, using her right hand to turn on the hot tap (Figure 4.2.45). This raises the question of the extent to which the slotted spoon handle, worktop and tap might have become contaminated by this chain of indirect contact with raw chicken, via the hands. This is especially worth considering since Susan continued to intermittently use the spoon to stir the chicken mixture, alongside salad preparation, possibly ‘re-contaminating’ her hands. In another case, Liam used a knife after handling chicken, potentially contaminating the handle, and then subsequently (after washing hands) used the same knife again, alongside handling salad ingredients.



**Figure 4.2.45: Susan handled raw chicken before touching the handle of the slotted spoon and the tap (UK)**

Moreover, in this example Liam was reusing the same knife and chopping board that he had originally used to cut chicken, this time to prepare vegetables: first, mushrooms (which were to be cooked), but then later peppers, which he served raw in his salad. Liam was the only research participant in the UK sample who reused the equipment that had been used in chicken preparation without first cleaning them.

### Seasoning chicken

It was common to flavour their chicken with herbs, spices, salt and pepper, or to cook it in a sauce, underlining chicken's role as a versatile meat which doesn't impart much of its own flavour to a dish. Six members of the UK sample seasoned or marinated chicken *before* cooking, presenting another opportunity for raw meat to come into contact with hands and utensils. It is notable that in five of these cases, the chicken was being cooked as a 'whole' breast fillet. Seasoning was often performed without making contact: Mary (70 years, Elderly households, urban), Josh (22 years, Young single men, urban) and Laura (31 years, Young families, urban) each sprinkled their chosen herbs or spices over their chicken portions, managing to add flavouring while directly touching neither the chicken nor the seasoning ingredients (Figure 4.2.46).

There were two exceptions to this arm's length approach.<sup>40</sup> While Archie (74 years, Elderly households, urban) didn't touch the chicken with his hands, he did twice reach into a jar of ground pepper with his fingers and once into a jar of herbs. He had previously used both hands to open his chicken packet, briefly touching the underside of the film lid in the process, and was yet to wash his hands since doing so. As a result, although the now seasoned chicken was still to be cooked, there is a risk that his pepper and herb jars were compromised in the process, affecting their future use. As with the examples discussed in previous sub-sections, this would depend on the likelihood of contamination from briefly touching the interior of the chicken packaging. Meanwhile, Alicia (23 years, Young families, urban) took a very hands-on approach to marinating, covering her butterflied chicken breasts with barbecue sauce and mixing them up by

<sup>40</sup> Note, again, that we did not see Sahib marinating his chicken pieces, so we can only comment here on five of the six participants that seasoned the chicken before cooking.

hand in a glass bowl. In this instance she washed her hands immediately afterwards, turning on the tap using a seemingly clean part of her thumb, at least a part not visibly covered in the marinade (Figure 4.2.47).



**Figure 4.2.46: 'Hands-off' approaches to seasoning chicken (UK)**



**Figure 4.2.47: 'Hands-on' approaches to seasoning chicken: Archie picked black pepper out of a jar; Alicia mixed her chicken portions with marinade in a bowl (UK)**

Others added flavouring *during cooking*. Susan (78 years, Elderly households, urban) made her own sweet and sour sauce from store-cupboard ingredients, which she added to the pan after stir-frying the chicken and then left the mixture to simmer. Kate (30 years, Young families, urban) had a similar method, stir-frying chicken and then allowing it to simmer in a white wine sauce from a recipe she followed. Chloe (38 years, Young families, rural) cooked her whole chicken in a pressure cooker with vegetable stock and onion. Paul (34 years, Young families, urban) made a glaze of olive oil and paprika, which he brushed onto the top of his chicken thighs after 40 minutes of cooking, before returning them to the oven for a final 10 minutes. Similarly, after roasting chicken thighs for 25 minutes, Jean (72 years, Elderly households, urban) topped them with tomatoes, olives, feta cheese, vinegar and dried herbs, and returned them to the oven. Sahib (23 years, Young single men, urban) (who had already marinated his chicken when we arrived) made a passata-based tomato sauce which he stirred in at the end of cooking. Similarly, Ryan (20 years, Young single men, urban) added a jar of ready-made pesto to his stir fried chicken pieces, while Liam (28 years, Young single men, urban,) added a shop-bought spice mix, both shortly before the end. And, while not using a sauce as such, Tricia (70 years, Elderly households, urban)

added flavour by mixing slices of chorizo into the pan partway through cooking chicken. None of these cases appeared to add any potential risk from a food safety point of view.

Finally, Daniel was unusual in that he cooked his chicken pieces completely plain, without any seasonings, sauces or accompanying ingredients. However, he drizzled olive oil over the top when serving.

**Table 4.2.9: UK overview table of handling chicken before heating, and including the cooking method**

Study group	Household	Chicken product	Trimmed	Before cooking	During/ after cooking	Before cooking	During/ after cooking)	Cooking method
Elderly households	Susan (78 years, urban)	Breast fillets	Yes	Yes	n/a	None	Sweet & sour sauce, homemade	Stir-fry
	Mary (70 years, urban)	Breast fillets	No	No	Yes	Mixed herbs, black pepper	None	Microwave
	Jean (72 years, urban)	Thighs	Yes	No	No	None	Mixed herbs, vinegar	Oven
	Archie (74 years, urban)	Breast fillets	No	No	Yes	Herbs, salt, black pepper	None	Foil parcel over hob
	Tricia (70 years, urban)	Breast mini-fillets	Yes	Yes	n/a	None	None	Stir-fry
Young families	Laura (31 years, urban)	Breast fillets	Yes	No	No	Cajun spice mix	Salt, black pepper	Pan fry
	Paul (34 years, urban)	Thighs	No	No	No	No	Oil, paprika	Oven
	Kate (30 years, urban)	Breast mini-fillets	No	No	Yes	No	White wine, black pepper, crème fraiche	Stir-fry
	Chloe Martin (38 years, rural)	Whole chicken	No	No	Yes	No	Vegetable stock	Pressure cooker
	Alicia (23 years, urban)	Breast fillets	Yes	No	No	BBQ sauce, marinade	None	Oven
Young single men	Ryan (20 years, urban)	Breast fillets	Yes	Yes	n/a	No	Pesto	Stir-fry
	Josh (22 years, urban)	Breast fillets	No	No	No	Salt, black pepper	BBQ sauce	Oven
	Sahib (23 years, urban)	Breast fillets	(unclear)	Yes	n/a	Spice mix (homemade)	Passata, herbs, black pepper	Pan fry
	Liam (28 years, urban)	Breast fillets	No	Yes	n/a	No	Garlic oil, peri peri spice mix	Stir-fry
	Daniel (25 years, urban)	Thighs/ drumsticks	No	No	No	No	Oil	Mini-oven

## Handling and preparing chicken in Norway

In the Norwegian households, most prepared fresh chicken fillets (thighs or breast) packaged in a plastic container with modified atmosphere (see table 4.2.10 for an overview of how the households unpacked the chicken).<sup>41</sup> A few prepared chicken that had been frozen and thus had been thawed before food preparation (Anna; Camilla, & Chris; Nils; Oda & Ove and Petter). Typically, the households had placed the frozen chicken on a plate and put it into the fridge. Anna took three chicken legs out the day before and thawed them in the fridge overnight on a plate covered with aluminium foil. Chris and Camilla had done the same to their chicken breast fillets but wrapped the plate in a plastic bag. Petter did the same but used a plastic film. He poured the melted water from the plate into the sink using his hands.



**Figure 4.2.48: Petter poured leftover water from thawing the chicken into the sink. Oda defrosted the chicken on a piece of paper cloth (Norway)**

Nils thawed the pre-cooked and pre-cut chicken pieces in a plastic bowl in the fridge for some hours. Oda thawed the chicken breast fillet on a plate on top of some paper towel for two hours on the kitchen counter. She explained that “I purposely took it out late, [in order] for it to be easy to cut through.” How the chicken was packaged and how these research participants unpacked the chicken when removing it from the freezer was not observed. The table below gives an overview of how the household unpacked the chicken, what kind of tools they used and what the tools were used for after opening the packages of chicken.

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<sup>41</sup> See chapter 4.5 for the Norwegian analysis of hand wash

## Chapter 4.2: Handling and preparing chicken

**Table 4.2.10: Overview of unpacking chicken in the Norwegian households and tool used**

Study group	Household	Type of chicken package	Ways of opening	Where were the chicken placed next	Tool used	What happened to the tool
Young families	Anna (31 years, urban)	Not observed	Not observed	Plate with aluminium foil	Not observed	Not observed
	Camilla & Chris (35 & 37 years, urban)	Frozen chicken thawed in fridge overnight	Took the chicken out of the bag using his hands	Cutting board	Not observed	Not observed
	Emma (33 years, rural)	Plastic package, modified atmosphere	Knife to cut, hands to rip off plastic cover	Put on a cutting board	Knife, cutting board	Knife and cutting board used to move the chicken to pan. Later washed before reuse
	Hanne (31 years, urban)	Plastic package, modified atmosphere	Used a knife to cut the plastic cover	Moved by hand to cutting board	A knife	The knife was used for cutting chicken to push chicken into the frying pan
	Lena (37 years, rural)	Plastic package, modified atmosphere	Tried use hands, cuts instead to rip with hands	Cutting board	A knife	In kitchen sink
Elderly household	Bente (71 years, urban)	Plastic package, modified atmosphere	By hands first, then cutting with a knife	Kept it in the pack till moved into pan	A knife	(Used to cut a piece of chicken for the MB sampling)
	Inger (70 years, rural)	Plastic package, modified atmosphere	Cut a piece loose with knife, rip it using hands	Dried on paper put on cutting board	A knife	It is used to cut chicken. Then placed in the kitchen sink
	Kari (71 years, urban)	Plastic package, modified atmosphere	Using hands to rip the top plastic coverage off	Kept in the pack, till moved into pan	By hands	Plastic container tossed in the bin and hands washed
	Nils (74 years, rural)	Not seen. Frozen pre-cooked and cut chicken	Not observed. Thawed in bowl in fridge.	Kept in a plastic bowl	Bowl	Bowl washed with soap and brush and reused for storing the fried chicken
Young single men	Oda (72 years, rural) & Ove	Not seen chicken thawed for two hours	Not observed	Kept on a plate on top of some paper	Not observed	Plate later washed up
	Fredrik (23 years, urban)	Plastic package, modified atmosphere	Using a knife to cut the plastic	Put into pan strait from the packaging	A knife	Left on the counter top, but not used later
	Georg (28 years, urban)	Plastic package, modified atmosphere	Used knife to cut the plastic packaging cover	Moved by hands into a bowl	A knife	Without prior cleaning, the knife was later used for cutting vegetables
	Jon (28 years, urban)	Plastic package, modified atmosphere	Cut open the plastic container with a knife	Put on the cutting board	Knife, cut-ting board	Used to cut the chicken. Later, knife and cutting board was washed /dried
	Petter (29 years, rural)	Not seen. Chicken thawed in fridge	Not observed. Thawed in fridge overnight	Plate, then cutting board.	Not observed	
	Roger (24 years, urban)	Plastic package, modified atmosphere	Knife to cut the plastic, rip open with his hands	Cutting board	Knife	Knife used to cut and push meat into frying pan, then washed in water

For ten of the Norwegian households, preparation of chicken started with opening the plastic wrap on top of a plastic container with modified atmosphere. Despite the opening mechanism at the corner of the square shaped container, all but one the research participant used a knife to open the package. Kari was the only one who used the opening mechanism on the chicken packaging by pinching her thumb and index finger on the loose plastic wrap in the corner of the package and pulling in the wrapping off.



**Figure 4.2.49: Kari managed to open the chicken package using the opening mechanism (Norway)**

For the other nine, the knife was typically used to cut a hole in the plastic wrap and then pull the plastic off by hand. For most, this meant touching the inside of the packaging.



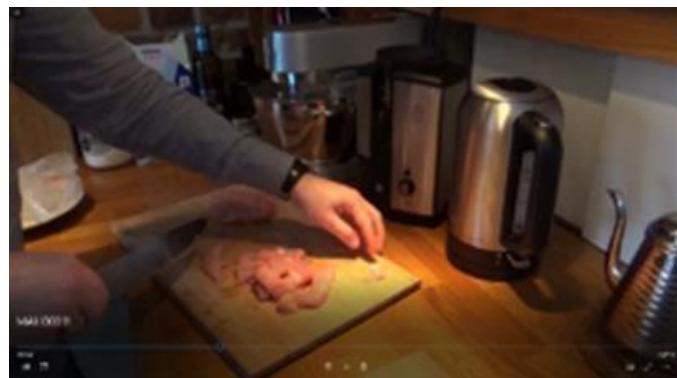
**Figure 4.2.50: Bente tried to use the opening mechanism on the chicken package, but didn't manage and thus used a knife and put her hands into the package to rip it open (Norway)**

Bente, in the example above, took care not to touch the chicken with her hands. For instance, she reused the knife as a tool for moving the chickens into the frying pan. It does seem that she intentionally avoided to touch the chicken by hand, but unintentionally came in contact with the chicken when touching the inside of the package when ripping the plastic wrapping off.

Furthermore, the knife used to open the chicken package can mistakenly be used for cutting vegetables after opening the package. Bente almost reused the knife when she was started preparing the salad, but realised it and switched to an unused knife. Georg, on the other hand, did not realise that the knife he was cutting vegetables with was the same knife as he had just used for opening the package of chicken.

### Washing or not washing chicken

None of the Norwegian households washed the chicken before cooking it, and no one mentioned that they sometimes did. However, all of the households had bought chicken in some kind of packages at the point of purchase. Meanwhile, a few research participants trimmed the chicken fillets to remove tendons, veins and blood. Chris (37 years, Young families, urban), for instance, cut off some pieces of chicken he said he would toss away. “It is a small tendon which... it is nothing against eating it, but you won’t enjoy it.”



**Figure 4.2.51: Chris trimmed off tendons from the chicken breast fillets (Norway)**

Furthermore, two of the research participants who thawed the chicken before preparation got rid of the excess meat juice produced during the process of thawing. Petter (29 years, Young single men, rural) poured the water on the plate from the thawed chicken fillets into the sink and Oda had placed paper towel on the plate underneath the chicken fillets when thawing. None of these examples resemble the performances or the rationale of washing the chicken for instance among the Portuguese households. The closest example among the Norwegian household is Inger (70 years, Elderly households, rural), who dried the chicken fillets with a paper towel before cutting it. She never explained why she dried the chicken fillet, but just said “I usually dry them a bit”. She also mentioned that she would dry the chicken fillets before putting them into the freezer “in case there are some bacteria or something.”



**Figure 4.2.52: Inger used a paper cloth to dry the chicken fillets (Norway)**

Except for Inger, the Norwegian research participants did not mention any need for doing something to clean or remove bacteria from raw chicken. However, all mentioned that chicken was an unsafe food product which had to be handled with care. Washing was not included in the Norwegian households in how to handle chicken safely.

### Preparation of chicken before heating

Nine of the households prepared chicken by cutting it into smaller pieces: Chris, 37 years, urban); Emma (33 years, rural); Hanne (31 years, urban); Lena (37 years, rural) (all Young families); Inger (70 years, rural); Oda (72 years, rural) (both Elderly households); Jon (28 years, urban); Petter (29 years, rural); and Roger (24 years, urban) (all Young single men). Six cooked the chicken as it was including Anna (31 years, Young families, urban, ), who prepared three chicken legs to be roasted in the oven, Bente (71 years, Elderly households, urban) and Fredrik (23 years, Young single men, urban), who both fried chicken thigh fillets whole, Georg (28 years, Young single men, urban), who prepared whole breast fillets, Kari (71 years, Elderly households, urban), who realized that the chicken fillet she had bought was already cut, and finally, Nils (74 years, Elderly households, Rural), who used a pre-cut and pre-cooked chicken product.

The research participants who cut the chicken, cut it in various sized pieces and used different cutting technics. Some research participants first cut the chicken fillet lengthwise and then across. Others just cut across. Few mentioned why they cut the chicken or why they cut it in the particular size as they did. Oda just said, “I usually cut it in that size when I fry the chicken.” Most just mentioned that what dish they were preparing and took for granted that this meant cutting the breast fillet into pieces. However, Petter told that the size of the chicken mattered because “they are going to be a bit like Asian [...] [I] will eat them with chop sticks, you know.” Most used the same knife as they had used for opening the chicken package. Moreover, most used the cutting board as tools for transporting chicken into the frying pan (Chris, Emma, Hanne, Laura, Oda, Roger) or to bring it a bowl with marinade (Petter). A few used the

knife used for cutting the chicken to shove the chicken off the cutting board, others used a skillet (Petter and Oda) or a spatula (Laura).



**Figure 4.2.53: Chris used the wooden cutting board to transport the cut chicken into the frying pan (Norway)**

For a few research participants, the chicken was moved from the cutting board to a plate or a bowl before it was moved to the frying pan. This was typically done by the research participants who marinated the chicken, but also by others. Inger, for instance, moved the chicken pieces one my one on to a serving plate before putting them into the hot frying pan.



**Figure 4.2.54: Inger cut the chicken breast and put the pieces on a plate. She later used the plate to transport the chicken to the frying pan (Norway)**

Among the research participants who did not cut the chicken, a few seemed to avoid touching the chicken before putting it into the frying pan (Bente and Nils). Bente, for instance, left chicken thigh fillets in the plastic container while putting on the potatoes. After the frying pan was properly heated and Bente had made sure the oil was evenly spread in the frying pan, she used the knife she previously had used for opening the chicken container (and for cutting chicken for the sampling) to move the three thigh fillets into the hot frying pan.



**Figure 4.2.55: Bente used a knife to lift the chicken thigh pieces into the frying pan (Norway)**

Nils had thawed the pre-cooked and pre-cut chicken in a plastic bowl in the fridge, and thus just emptied the bowl into the frying pan. Meanwhile, research participants such as Fredrik and Kari who did not cut the chicken used their hands to move them from package into the frying pan.

Four research participants marinated the chicken before heating (Anna; Georg; Jon; and Petter), while the others seasoned the chicken as part of the heating process. Among these four, how and where they moved the raw chicken during preparation to heating varied. Anna started preparing the chicken dish by peeling some garlic on a piece of paper, rinsing the garlic in tap water and dried each piece on a paper towel. After cutting the garlic into smaller pieces, she fetched a bag of mayonnaise in the fridge. She poured the mayonnaise on top of the chicken and smeared the mayonnaise on the chicken legs one by one using her hands. She pierced the chicken meat with the garlic pieces. She told that the mayonnaise would make the skin crispy and that the garlic would provide flavour. She marinated one leg at the time with her hands and laid them one by one on the ovenproof plate.



**Figure 4.2.56: Anna marinated the chicken legs with mayonnaise (Norway)**

Three of the young single men marinated the chicken before frying it. Petter, for instance, made a marinade in a bowl based on (orange) juice, dark soy sauce, Japanese soy sauce and sugar, and mixed it with a spoon. He used the knife he used for cutting the chicken to push the chicken off the wooden cutting board and into the bowl of marinade. He then mixed the chicken into the marinade using the same spoon. The chicken was left in the marinade while Petter heated a wok pan with some oil. He then used a plastic skillet to move the raw chicken from the glass bowl to the hot wok pan. Jon prepared the marinade by mixing a ready-made marinade mix and four table spoons of water in a plastic bowl. He then cut the chicken fillets into smaller pieces and put the pieces into the marinade mix, fillet by fillet. When finished, he mixed the chicken and the marinade mix using his hand. About fifteen minutes later, Jon brought the bowl with the marinated chicken and poured it into the hot frying pan.



**Figure 4.2.57: Jon marinated the chicken in bowl using a marinade mix and later used the bowl to transport the chicken into the frying pan (Norway)**

Georg used his hands to move the whole chicken breast fillet into the bowl with marinade, he had prepared. However, when moving the marinated fillet into the frying pan, he used a fork.



**Figure 4.2.58: Georg used a fork to lift the marinated chicken breast fillet into the frying pan (Norway)**

### Summary of how chicken was prepared in Norway

Most of the Norwegian households prepared fresh chicken fillets from a plastic container with modified atmosphere. This packaging technic increase shelf life of the chicken and minimize the risk of contamination at the retail stage. However, when opening the package most used a knife after sometimes fiddling with the opening mechanism first. Using a knife to cut a hole in the plastic wrapping on the package was often followed by using one's hands to rip the wrapping off and as consequence, hands might touch the interior of the chicken package. Moreover, when the knife was already present it was easily reused for cutting salad vegetables. While all the Norwegian households mentioned that handling raw chicken was risky and had to be done with care, washing the chicken was not a part of the preparation procedures. One reason could be that all prepared a pre-packaged chicken, most often in plastic container with modified atmosphere. Perhaps, they would wash the chicken if it was bought from a butcher or fresh meat counter. However, there are few butchers in Norway and fresh meat counters typically sell grilled and not raw chicken. Another reason could be trust that the chicken production follows hygienic regulations and standards. A third reason, and perhaps more plausible reason, is that washing of meat generally has never been a part of the standard preparation repertoire in Norwegian food culture.

None prepared a whole chicken. Thus, all the chicken products prepared in the Norwegian study were pre-cut when bought. However, research participants who prepared chicken breast fillet typically cut the chicken into smaller pieces. Only one fried the breast fillet whole. None of the participants preparing thigh fillets or chicken legs, cut the chicken. Furthermore, cutting the chicken was not considered necessary among two research participants, who both cooked breast fillets pre-cut into smaller pieces. Why the research participants were cutting the chicken was seldom articulated. Instead, they told that the dish they were preparing, cutting chicken into pieces seemed obvious. Cutting the chicken necessitates using a knife and a cutting board and thus more handling than heating the chicken as it is. Still, handling the chicken at some point by hands was done by most by moving the chicken into the frying pan, when marinating or as mentioned above by touching the inside of the packaging when opening it. Meanwhile, many of the research participants seemed to minimize handling chicken by hands by using for instance the cutting board as a means for transporting the chicken and by using tools such as knives, forks, skillets and spatula. Less than 1/3 seasoned the chicken before heating it, which was typically done by marinating the meat before heating it. The rest seasoned the chicken while heating it.

## Handling chicken in the five countries – summary and comparison

### The type of chicken that is used for cooking and associated practices

It is clear that shopping practices differ between countries, with all the Portuguese households purchasing chicken on the day of the cooking. Consequently, in between returning home and cooking, the chicken was mostly left on the kitchen surface, with a few research participants placing it in the fridge for a brief period. In countries other than Portugal, chicken was purchased some time in advance of the cooking session. In all countries, there was a preference for shop-bought chicken, and especially, pre-packaged chicken which, in Norway and Romania, is described as keeping the produce in a modified atmosphere. In the UK, standard packaging for chicken consists of a hard-plastic container to hold the chicken, with a sealing cellophane wrapper over the top. In other countries, households also mostly used fresh raw chicken, with some – e.g. in Norway and France – using chicken that had been frozen and defrosted prior to cooking (see below for discussion on defrosting). In France and Portugal, chicken was also bought in local butchers, and could be wrapped in a combination of plastic bags and paper wrapping. One research participant in France and one in Romania cooked a home-reared chicken. In the French example, the chicken had been killed, prepared and frozen before the cooking research, and then defrosted prior to the cooking. In the Romanian example, the researchers were taken through the extended process of butchering, cutting and washing the chicken. It may be noted here that, where chicken is home-reared, butchered and cooked, the PVF CCH chart needs to be amended.

Cooks bought and cooked a range of chicken parts, most frequently using whole chicken, breast pieces, and chicken thighs. In Romania, 8/15 households bought a whole chicken. However, they did not necessarily cook the whole chicken, and spoke about how they froze the remainder of the uncooked chicken for future use. These practices are suggestive of the commonality of cutting and trimming work (see below), with levels of skills required to do this work. It is also suggestive of the ways in which CCH steps 4 and 5 are contracted or extended sequentially in different ways. It may be argued that in the UK, where there is a mediated history of risk-communication on chicken reaching back to the late 1980s, there has been a historical transformation of the ways in which chicken is sold and packaged, making it possible for domestic cooks to work chicken in ways whereby handling is very limited. A similar pattern may be observed in Norway. In the other countries, more drawn-out work practices were observed in relation to PVD CCH steps 4 and 5.

Freezing and defrosting were discussed in France, Norway, the UK and Romania. Of interest is that home freezing may extend the work people do with raw chicken. In the UK, for instance, several research participants spoke about making a bulk purchase of chicken breasts or thighs, and then wrapping these up individually, for instance in

plastic freezing bags, before freezing. In France, too, shop-bought chicken may be unwrapped and re-wrapped at home before being stored in the freezer, and one research participant spoke about discarding parts of the chicken, including the giblets, the neck and the head, before freezing. In this way, practices gave voice to the priorities of portion and taste management. Defrosting practices, and the tools and appliances used in the process, varied. The frozen chicken could be placed on a plate (Norway) or in a glass bowl or plastic container (France), either in or out of the freezer packaging, and be stored covered or uncovered in the fridge overnight. Chicken was also defrosted outside the fridge, usually overnight, though one of the Norwegian research participants defrosted her chicken breasts on the kitchen counter for some hours, on a plate lined with kitchen paper. In France, Odile (65 years, Elderly households, rural) defrosted the chicken outside the fridge, and did so overnight, but she had clearly thought about her practices as, in the morning, she had placed the defrosted chicken in the refrigerator for some hours after defrosting and before cooking. There are no clear comparative differences in defrosting practices across countries, but there are some variations in how this is done, with inside and outside fridge defrosting being of SafeConsume interest.

### Unpacking chicken

Discussion of the work of unpacking the chicken is focussed, in accordance with the theories of practice methodology adopted, especially on the uses of the hands, kitchen tools and surfaces, and other materials (e.g. packaging and wrapping materials). How people engage with raw chicken in domestic kitchens is one of the focal points of the transdisciplinary methodology of WP1 years, and identified in the HACCP analysis as one of the areas to concentrate on. As pointed out in the UK report, work with raw chicken at this stage can open the investigation up for thinking about the possibilities of cross contamination associated with three steps: (1) the opening of the packaging that contains the raw chicken; (2) the movement of the chicken from the packaging into the kitchen working environment; and (3) the disposal of the packaging with any remnants (liquids and pieces) of chicken. Country teams have concentrated especially on the first two steps. In relation to each of these steps, attention may be paid to the conduits that enable chicken liquids and, of course, the pathogens that make their homes in this, to move about. These conduits can be human hands, kitchen tools, surfaces and other materials used in the process.

Households across countries used a combination of fingers, knives, scissors, kitchen paper, and the chicken packaging itself, in their efforts to open the packaged chicken and to move the chicken from the opened packaging into the preferred working environment. Knives were used to open the packaging, for instance, in Norway, even when this came with an in build opening mechanism, suggesting that these were not necessarily understood or used. In Portugal and Romania, the most common way of opening the chicken package was with the use of a knife, and this was followed by cooks using their hands to lift the chicken from the packaging. In the UK, one of the elderly

cooks used paper kitchen towel in order to move the chicken from the plastic container onto her chopping board. She agreed that this was not a full-proof way of preventing pathogens getting onto her hands, but this method of dealing with raw chicken had become a habit in which she implicitly trusted. In these, and in other handling practices discussed below, it was clear that cooks displayed and performed some level of pathogenic awareness. This is further discussed below.

### Is raw chicken washed, and if so, how is this done?

Whilst in many respects, the comparative analysis thus far has not demonstrated substantial cross-cultural variation, there was a distinct difference in the tendency to wash chicken in the process of getting it ready to cook. Specifically, washing chicken was not something that was observed in the fieldwork in Norway, France and the UK. We will need to wait for the results from the WP3 survey to find out whether cooks never wash chicken in these countries, or whether this is done by some. For instance, in a study conducted by the UK Food Standards Agency in 2013, it was found that washing meat was done by some of the elderly households. The FSA has also been campaigning on this matter for some years, telling domestic cooks that they should not wash meat. That this message has found resonance with UK cooks was clear in the discussion on this point in the UK fieldwork.

By contrast, the sociological analysis conducted in Portugal and Romania suggests that washing chicken is not uncommon in these countries. In the Portuguese study, it is speculated that the practice of washing chicken is connected with consumer trust, in that small butchers are not trusted as much as supermarkets in delivering ‘clean’ meat. In Romania, cooks held a variety of views on why they washed chicken, and for some, washing was a routine and traditional practice, learned inter-generationally. It was pointed out, interestingly, that whilst the washing of raw chicken was common, the same attentiveness to cleanliness was not present in relation to the washing of hands. In the Romanian study, chicken was washed in different ways; e.g. with the use of cold and hot water, and in the indoors kitchen, between kitchen and bathroom, as well as outside. The researchers have provided some interesting accounts of the work practices of specific households, including the young female cook who butchered and prepared a home-reared chicken. It is worthwhile thinking more about how the tasks of preparing chicken change as chicken becomes an industrial-commercial process. In countries where chicken is bought in shops, is washing part of the process of butchering and packing in the factory, and what are the reasons for doing this (e.g. to ensure that faeces are washed off)? Seen in this context, the frequent washing by the Romanian cook who butchered her home-reared chicken may make sense in a way that is not straightforwardly comparable with the practices in countries where chicken is always shop bought. The commentary also reflects on how Romanian kitchens may lack the kind of material infrastructure that facilitates safe cooking practices; a problem that was especially pronounced in rural households. Perhaps WP3 will give insight into how general some of these patterns are – e.g. how often Romanian cooks work with home-

reared chicken, and what kinds of utilities can be found in kitchens, and perhaps also about patterns of preparing and cooking food across outdoor and indoor spaces.

One interesting question to consider is whether the likelihood of chicken being washed is a ‘traditional’ practice; a practice that older cooks engage in routinely, but that is not necessarily shared by younger cooks. In the Portuguese analysis, table 4.2.2 contains information on this, and it reveals that all of the elderly cooks washed the chicken beforehand. Amongst the young families and the young single men, some cooks washed, whereas others did not. Again, it may be that the WP3 questionnaire will give some insight into whether this practice is less common amongst young people, and whether ‘educated’ cooks are moving away from this. In addition, it would be interesting to know how the washing of meat is represented in the mediated world.

### The chicken between the unpacking and the cooking/heating stages

There was considerable variation between participating households in the extent and nature of preparatory work that was carried out between unpacking (where applicable) and heating the chicken. Overall, the majority of households cut up the chicken into smaller pieces before heating, or at least trimmed off unwanted parts such as fat or skin. But a significant minority cooked it in the same form that they bought it, whether as whole chickens, as whole fillets or as pre-cut smaller pieces. Seasoning varied from coating raw chicken in a marinade by hand, to sprinkling with herbs and spices, to none at all.

Variation occurred *within countries as well as between them*. By this we mean that almost the full range of techniques for trimming, cutting, seasoning and otherwise getting chicken ready to cook were observed in all countries, with the exception of washing chicken (only in Portugal and Romania) and the more involved tasks of slaughter and butchery found in Romania and France (not directly observed in the latter case). The key differences between countries were in how prevalent the respective approaches were. The use of different approaches was seemingly driven by a combination of habit, cultural convention and the type of chicken product used, rather than by an explicit personal preference on the part of the cooks. The techniques were first and foremost dictated by the material properties of the chicken products that they used and by what was understood to be an accepted, appropriate, or even obvious and unquestioned method of preparing the particular dish in question.

In Norway and the UK, chicken was packaged and sold in ways that minimised the need for preparatory work before cooking. In most cases this meant either breast fillets with the skin and bones already removed or other pre-cut portions such as thighs or legs. Only one UK research participant (and none in Norway) bought what is classed as a ‘whole’ chicken, and even this had already had many of the rarely eaten parts of the bird removed, including head, feet, feathers and internal organs: it was ready to be unpacked and placed straight into the cooker, in this particular case a programmable pressure cooker. By contrast, over half of the households in Romania and France (eight

in each country) used a whole chicken, including one from each country who slaughtered and butchered their own chicken.

There were also key differences between countries in how whole chickens were prepared. In France, none of the eight households that used whole chickens cut them up before cooking. Similarly, in the single case in the UK, the chicken was only cut up *after* it had been cooked – removing meat from the carcass in small pieces, as is common practice in the traditional British roast dinner – with the remaining bones and cartilage thrown in the bin. Romania was quite different in this respect: the majority of research participants cut up the chicken ‘anatomically’ before cooking (often before washing). This was also observed in Portugal, although in some cases this was done by the butcher before bringing the chicken home.

More preparatory work in the home kitchen meant raw chicken was more likely to come into contact with hands, tools, surfaces and other foods. In turn, this is likely to have created more opportunities for potential cross-contamination of pathogens, all other things being equal. However, the specific understandings of this potential risk differed by country and from household-to-household, as did the measures taken to minimise the risk.

In Norway and the UK it was common to see raw chicken as a potential food safety risk, to be handled with greater care than all other foodstuffs. This was relatively rare in the other countries, where correct cooking of chicken was a more prominent concern than risks relating to cross-contamination. This is partly reflected in the more common use of separate equipment for preparing raw chicken, especially in the UK, and the apparently greater number of potential contamination incidents (from unwashed hands or reusing equipment) observed in the other countries. However, this should not be seen as a straightforward link between what people know and what they do. Avoiding contamination is also likely to depend on the availability and affordability of having multiple (colour-coded) tools, sufficient space in kitchens for storage and/or the facilities to repeatedly wash equipment and hands in between stages of food preparation. Moreover, there were also signs that awareness does not always lead to successful avoidance of risk: in both the UK and Norway, even highly vigilant research participants were prone to ‘lapses’, such as accidentally reusing a knife or inconsistently washing hands after handling chicken.

### Performing pathogenic awareness

Of particular interest in whether and in what ways domestic cooks displayed understanding of, and prioritised the pathogenic risks of chicken in their chicken and food handling performances, and vice versa, when such risks were not apparently understood or prioritised. Awareness of pathogenic risks was performed in the cooking research by the quite specific uses of the hands. It was not infrequently noted that cooks would handle raw meat with one hand, keeping the other free of chicken juices, to be used to do other actions and thus, using the two hands as a means for keeping chicken juices separate from other foods and items. In addition, cooks were seen treating the

knives they had used for cutting the packaging and the chicken with a degree of care. There are also examples where this is not the case – see e.g. the information in Tables 4.3, 4.2.7 and 4.8. In addition, pathogenic awareness was performed in the sequencing of actions, and the specific selections and uses of materials and tools in the process. Arguably, this is where the skill of keeping safe in the kitchen is taken to another level (from a consideration of specific items and specific actions). The analysis presented above shows that some cooks were highly risk-averse in relation to foodborne pathogens, resulting in ways of cooking with chicken where contact with the human hands was avoided altogether.

We warn against simplistic assumptions that performances fall into either a ‘safe’ or an ‘unsafe’ register. In the country analyses, there are examples of cooks who voice pathogenic safety issues as a priority and concern, and those for whom this is not so important. In turn, performances with chicken, hands and tools convey both understanding and apparent ignorance of such risks. It is useful here to tease ‘apparent ignorance’ apart a little. For it can mean indifference (we have e.g. assumed that young single men as risk-takers, and may, more so than other cooks, work with a higher level of indifference towards pathogenic risks); it can literally mean ignorance and thus, that pathogenic risks and agency is simply not understood; it can also mean the failure to notice in all the different minute handlings that take place in kitchen work whether pathogenic risks are present. The latter touches on the presence, in theories of practices, on the significance of routines in everyday life, and the challenges and contradictions that are the consequence of whether and when routine actions are reflected upon or not. As pointed out in the UK and the Norwegian studies, there are instances where the quick succession of actions in a routinised way either means that raw chicken is literally touched unnoticed (e.g. the brief touching of the hands with the inside of the chicken wrapping; or the light touching of the kitchen surface by the knife used for cutting chicken), or where the memory that hands or tools have touched raw chicken has lapsed. It may be assumed that, when the two elderly UK cooks, who used the same knives in the preparation of raw chicken and, later, the raw vegetables, had in fact forgotten that their earlier actions had left pathogenic traces that could thus cross-contaminate into the vegetables, as in other ways, these research participants performed awareness of pathogenic risks. A final observation here is that awareness of pathogenic risks may not operate at a conscious or informed level. It may be that practices are routinized in ways that mostly work rather well in keeping those harmful bugs at bay, but where the cook does not operate with the micro-biologist’s sense of acute awareness and understanding.

Similar incidences took place in other countries. In the Romanian study, three cooks used the knife used to cut raw chicken for cutting the fresh vegetables, and these were all elderly cooks (two from rural areas). Again, it will be useful to cross-reference this with the findings from the WP3 survey to find out whether the age of the cook matters. Finally, apparent ignorance does not necessarily result in food handling practices that could be seen as risky. Take for instance the young Portuguese man who did not wash

chicken. He was unlike the other cooks in the category of households where chicken was not washed, in the sense that he did not wash as a matter of convenience, when for the other households the reasoning was related to pathogenic risks.

What this does suggest is that his actions were informed strongly by the importance of convenience. It is important to take the multiple priorities that cooks refer to into consideration in our work. Several cooks embarked on the handling of raw chicken by the removal of the skin for 'health reasons'. Attending to health in one way may add to health risks in other ways.

One reason why lack of understanding pathogenic risks does not necessarily lead to risky performances is related to the materialities of cooking; whether this is the chicken itself (e.g. the specific ways in which chicken is packaged and prepared – e.g. the increasing availability of chicken portions, from breast pieces through to diced chicken - in the factory) and the kitchen infrastructure. Arguably this deal, at least in part, with the riskiness of the chicken, and it could thus be argued that the performance of pathogenic awareness is embodied into the materialities of the kitchen. A chopping board may be seen as a tool for cutting and trimming. At the same time, it also works as a tool that creates boundaries between raw chicken and other kitchen surfaces, and some come with little additions that also provide protection from contamination for fingers. Similarly, the knife may be seen as a tool for cutting and trimming. At the same time, the design distinction between the handle and the blade mark out where the hands go and created distance between the hands and the raw meat. The importance of the socio-technological organisation of the kitchen in combatting pathogenic risks was revealed by the differences in kitchen design and lay-out in Romania and in France.

### The value of sequence analysis, and short and protracted work processes

Sequence analysis is useful for tracing how cross-contamination risks arise as a consequence of the temporal organisation of actions in the kitchen (and outside this). The importance of the sequencing of tasks is represented in the CCH flow charts (Figure 1.1.2, Chapter 1.1), in which 'steps' in the work process are figuratively related to one another in terms of the order by which these are likely to occur. In the PVF flow chart sits the hypothesis that there are consequences for the level of pathogenic risks in the cooking process in relation to whether vegetables and fruit are prepared before or after work with raw chicken. Further discussion of attending to the sequences in cooking will be provided in a subsequent chapter. Again, it is useful to think through how it has come to be that it is more common to find that cooks start with chicken when making a meal that also includes vegetables. We have commented internally that this is related to the fact that it takes longer to cook chicken. Of course, training in cooking in the past has also pointed out that vegetables should be eaten fresh and should not be cooked overly long, as prolonged treatment in the kitchen will reduce the vitamins in such foods, especially vitamin C.

A sequential questioning was also applied in parts of the analysis presented here, where researchers in France, Romania and Norway mapped out what happened to knives used with raw chicken earlier in the process of steps 4 and 5 (CCH PVF) (see tables 4.2.5, 4.2.7, 4.2.10). Analyses like this could be further developed and elaborated, to include, for instance, what the hands did (see also the work that France has been doing on this). Sequence analysis can also illustrate, as has been done in the analysis presented here, how step 5 in the PVF CCH flow chart is itself a bringing together of a range of steps (moving chicken from the packing to the kitchen working space; washing chicken (and other tasks, see Romania); cutting and trimming; seasoning and arranging), and that it may be that the flow chart needs to be amended for instances where home-reared chicken is cooked. Decisions on the tasks to include in the process will either shorten or stretch the work process, and it is fair to say that the longer the work process, the more ‘opportunities’ present themselves for pathogens to be on the move.

**Table 4.2.11: Overview of type of chicken product prepared differentiated on the study groups and country**

	Portugal			Romania			France			UK			Norway			Total number of chicken prepared
	YSM	YF	EH	YSM	YF	EH	YSM	YF	EH	YSM	YF	EH	YSM	YF	EH	
Whole chicken	-	-	1	3	2	4	2	2	4	-	1	-	-	-	-	19
Cuts (parts with bones)	2	2	5	-	1	1	-	2	1	1	1	1	-	1	-	18
Fillets (no bones)	1	4	-	3	2	-	3	1	-	4	3	4	5	4	5	39
N (participants)	3	6	6	5	5	5	5	5	5	5	5	5	5	5	5	76 <sup>1</sup>

The type of chicken product prepared varied between countries and study group. Whole chicken was mostly prepared by the French and the Romanian participants. Cut of chicken was more typical among the Portuguese participants, while chicken fillets very mostly prepared by the Britons and Norwegian participants. These results reflect difference among the countries with regards to chicken is produced and sold in the countries and food cultural traditions and preferences. Furthermore, they are also related to where the chicken is bought – from a butcher or from a supermarket shelf. Furthermore, the type of chicken product used needs to be taken into consideration in the next tables.  
(YSM= Young single men, YF= Young families, EH= Elderly households)

<sup>1</sup>One Romanian research participant prepared two types of chicken products

## Chapter 4.3: Handling and preparing salads and vegetables

In this chapter, we discuss the handling and preparation of vegetables, with a focus on the preparation of salads, as well as cooked vegetables. The CCH steps that are relevant are listed in Figure 1.1.2 as 7a and 7b, and 7b and 8b (washing fresh vegetables and fruits; and handling and preparing fresh vegetables and fruits). The difference between 7a and 7b, and 8a and 8b is how these tasks are sequenced in relation to the handling, preparation and cooking of chicken. Where vegetables are handled and prepared before the handling of chicken, there is the possibility that pathogens that come with the vegetables (e.g. norovirus) move into the chicken preparation stage; where the handling of vegetables follows that of chicken, there is the possibility of pathogens moving from chicken to vegetables. The latter has been addressed in past research. SafeConsume's interest in norovirus and *Toxoplasma* is also of relevance work on the handling of vegetables. Norovirus may be present in salad ingredients, especially where these have been picked or handled by hands during the food production and processing stages. Because we asked domestic cooks to prepare chicken, with a salad or vegetables, the fieldwork on cooking does not contain much material on handpicked fruits. In relation to *Toxoplasma*, of particular interest are practices of handling garden grown vegetables as well as the presence of pets in the kitchen.

We present a nuanced analysis of different facets of work with vegetables, including:

1. Unpacking vegetables and salads.
2. Washing vegetables and salads.
3. Preparing vegetables and salads, including discussion on peeling and chopping vegetables, as well as seasoning.
4. Discussion on the tools used in preparing vegetables and salads

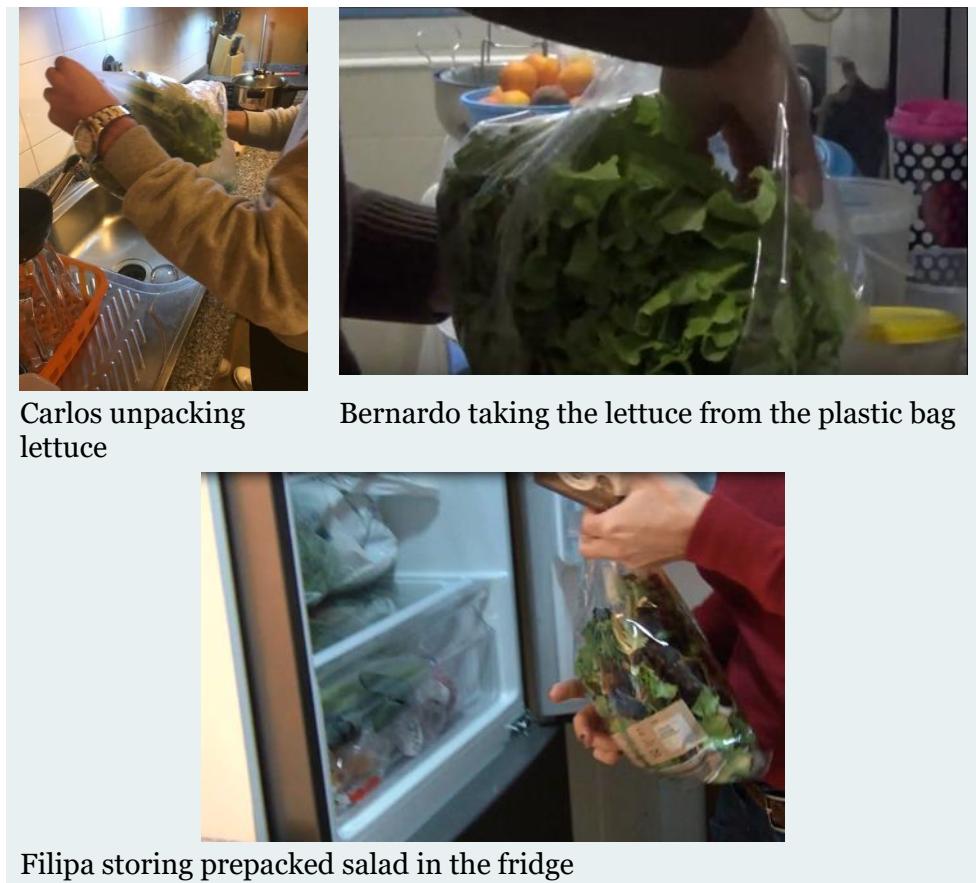
## Handling vegetables/salads in Portugal

Similar to the practices of washing chicken, we have also observed different ways of handling and washing salad or vegetables. We found households that bought prepacked and prewashed lettuce and salad (Filipa, Andreia, Emília, Augusto and André). Households bought salad on the same day and when they arrived home they put it on the kitchen counter. There were only four participants that stored it inside the fridge. Table 4.3.1 gives an overview of the salad vegetables the households bought and where they stored it.

**Table 4.3.1: Salad and vegetables (features and storage) among the Portuguese households**

Study group	Households	What kind?	Stored (where and how?)
Young single men	Carlos (24 years, urban)-	Unpacked lettuce, onion	Fridge
	Bernardo (19 years, urban)-	Unpacked lettuce, onion	Kitchen counter
	André (30 years, urban)	Prewashed and pre-cut salad	Kitchen counter
Young families	Marta (35 years, urban)	Unpacked lettuce, onions, carrots, cucumber	Pantry (onions, carrots, cucumber)
	Vanessa (29 years, rural)	Unpacked lettuce, courgette, carrots, broccoli, mushrooms	Kitchen counter. She takes it from the bag in the sink
	Sónia (42 years, rural)	Unpacked lettuce, Tomatoes, onion	Plastic bag in the kitchen table
	Andreia (33 years, urban)	Packaged and pre-cut salad; canned corn	Fridge (salad)
	Filipa (36 years, urban)	Prewashed salad (arugula, purple and beet lettuce), tomatoes	Fridge
	Sílvia (33 years, rural)	Unpacked lettuce	-
Elderly households	Josefina (81 years, urban)	She doesn't prepare salad for the meal but she usually buys prewashed salad	-
	Emília (89 years, urban)-	Prewashed and pre-cut salad, mushrooms, strawberries	Cupboard
	Augusto (70 years, rural)	Prewashed and packed, salad, tomato, watercress, grated carrots, purple onion	Fridge
	Manel (73 years, urban)	Unpacked lettuce, onion, green bean	Kitchen counter
	Odete (65 years, urban)	Unpacked salad, tomato, carrots, canned corn	Kitchen counter
	Celeste (70 years, urban)	Unpacked lettuce, carrots, tomato, onion	Kitchen counter

The unpacking process of vegetables and salads was simple because all the households put the bags on the kitchen counter and they only had to take it from the bag. They did it only with hands and, at this stage, they did not use more tools. The next step was handling lettuce, washing it, and then prepare other kinds of vegetables. Most households washed lettuce under running water inside a bowl in the sink and then cut it with their hands and put it again in the plastic bowl. There were only two participants who cut it first with hands and then washed it (Sónia and Celeste). There were some households (5) that washed hands before handling salad because they had just finished the process of handling chicken.



**Figure 4.3.1: Examples of pre-packaged salad in the Portuguese households**

### Washing salad

Table 4.3.2 gives an overview the ways salad and vegetables were prepared in the Portuguese households.

## Chapter 4.3: Handling and Preparing salads and vegetables

**Table 4.3.2: Handling and preparing salad/vegetables in the Portuguese households**

Study group	Households	Did they wash it?	Tools	Seasoning	Did they wash hands?
Young single men	Carlos (24 years, urban)	Leaf by leaf in running water (lettuce)	Bowl, wooden chopping board, knife	-	No
	Bernardo (19 years, urban)	Lettuce in running water	Dish, fork	Olive oil	Rinsed hands in water before handling lettuce
	André (30 years, urban)	in running water	Plastic bowl, dish, 2 forks	Olive oil, vinegar	No
Young family	Marta (35 years, urban)	With vinegar and then water	Dish, knife, bowl, grater, plastic chopping board	Vinegar, red wine, olive oil	Yes
	Vanessa (29 years, rural)	Leaf by leaf in running water and vinegar. Carrots, courgettes and mushrooms with water	3 Plastic bowls, cup, 2 knives, plastic chopping board, grater, spinner, plastic fork	Salt, Soy sauce	-
	Sónia (42 years, rural)	Yes. Lettuce and tomato with running water	Plastic bowl and cutting board, bread knife, knife, cup, small spoon	Salt, vinegar, olive oil,	Running water for a brief moment after handling vegetables
	Andreia (33 years, urban)	Yes	2 Plastic bowls, tweezers	Olive oil, vinegar, salt	No
	Filipa (36 years, urban)	Yes, Amukina	-	-	-
	Sílvia (33 years, rural)	Yes	Plastic bowl, spinner, dish	-	No
Elderly households	Josefina (81 years, urban)	-	-	-	-
	Emília (89 years, urban)	No	Scissors, bowl, spoon	Vinegar, salt, yogurt, balsamic olive oil	No
	Augusto (70 years, rural)	Only tomatoes with running water	Bowl, knife, plastic chopping board, scissors	Salt	Rinsed hand in water after preparing salad
	Manel (73 years, urban)	Lettuce with vinegar	2 Bowls, knife, chopping board, 2 forks	Vinegar, salt, olive oil	-
	Odete (65 years, urban)	Yes, lettuce, tomato with running water	Knife, bowl, grater, scraper	-	Yes
	Celeste (70 years, urban)	Washed lettuce in a plastic bowl in two baths	2 Bowls, grater, spinner	Vinegar, salt, oregano	-

André, Filipa and Andreia bought prewashed lettuce but they claimed they didn't trust it and washed it again while preparing the salad. For example, Andreia took the salad out of the fridge. She showed the salad label stating that it was pre-washed salad and ready to eat. Meanwhile, she washed it anyway.

Int.: You told me that it's written [in the package] that it's already washed, but you're still washing it.

Andreia: I am.

Int.: But why? Don't you believe it?

Andreia: Hum... I believe it, but in the industry [the food] goes through so many processes that I don't know if it's enough...

(Andreia, 33 years, Young families, urban, Portugal)



**Figure 4.3.2: Andreia bought prewashed lettuce but she did not trust it and washed it again (Portugal)**

In this case, it seemed the fact food is produced in big factories and goes through an array of processes and steps in a long food chain opens up doubts regarding safety procedures, and whether these are systematically applied throughout the entire complex food system. Also, usually people are not in direct contact with these processes and have to rely on labelling and information shown on the package. In this case, labels seemed not to offer enough reassurances that the product was clean and safe to eat, and Andreia rinsed the salad herself to be sure it was properly cleaned. That way she controlled what she put in her body. There were other participants who did not like to eat prewashed vegetables: Marta; Manel, Celeste and Odete. There were some households that used Amukina, for example, Filipa since they were expecting a child.



**Figure 4.3.3: Amukina is a disinfectant (sodium hypochlorite based) and antibacterial product for washing fruits and vegetables (Portugal)**

Others washed lettuce with vinegar: Manel; Marta; and Vanessa. For example, Vanessa (who was expecting a child) was the only one of the Portuguese households, who prepared salad and vegetables before chicken. She took a cup and filled it with vinegar. She opened the plastic bag with the lettuce and took it out. She then turned on the tap water and put each leaf under running water for two seconds, before putting them in the plastic bowl. She washed all the leaves of a fairly large lettuce. She then put the bowl in the sink and filled it with water, adding the cup of vinegar. She left the lettuce in the bowl for about 10 minutes. She dried her hands with a hand-towel stored under the sink. After preparing the vegetables, she dried the lettuce in a spinner salad bowl.



**Figure 4.3.4: Vanessa putting vinegar in a cup to wash lettuce (Portugal)**



**Figure 4.3.5: Vanessa dried the lettuce in a spinner bowl (Portugal)**



**Figure 4.3.6: Marta putting vinegar in the lettuce (Portugal)**

Finally, we had households that only washed lettuce with water: Sílvia; Sónia; Bernardo; Carlos; Odete; and Celeste, and employed several different ways of washing it. For example, Sónia took the lettuce from the plastic bag and put it directly on the kitchen counter. She removed and chopped the leaves with her hands and put them in a colander where she washed chicken before. She washed lettuce with running water, shaking the leaves with her hands. Celeste washed the lettuce in two baths inside a blue bowl: she filled the bowl with water and stirred the water with her hands. She picked the lettuce with one hand and with the other she tilted the bowl and threw away the water to the sink. She put the lettuce again inside the bowl, without water. She refilled the bowl with water and tossed the water once more before being satisfied with the lettuce wash. At the end she dried the lettuce in a spinner.



**Figure 4.3.7: Celeste washing the lettuce in a blue bowl but in two baths (Portugal)**

Another way of washing lettuce is performed by Odete. She washed lettuce with cold running water. Odete split the lettuce, leaf by leaf, and put the leaves into the sink. She washed each leaf for over a minute and placed the washed leaves in the counter next to the sink. To dry the leaves, Odete tapped each one against the sink, then grabbed them together and cut them with a knife into the bowl.

Int.: Do you always wash leaf by leaf?

Odete: Yes, because there's a lot of dirtiness.

(Odete, 65 years, Elderly households, urban, Portugal)



**Figure 4.3.8: Odete washing lettuce leaf by leaf (Portugal)**

Manel started to discard the old leaves from the lettuce, looking at the same time to the lettuce to see if it was clean or if he could spot small bugs (e.g. snail). He rinsed the leaves under water for about 8 seconds and then put them in a dish. He took the remaining water with his hands.



**Figure 4.3.9: Manel discarded old leaves (Portugal)**

#### *Preparing other salad ingredients and seasoning*

Households generally prepared salads with lettuce, purchased unprepared or in bags. A few added tomato, onions, carrots and sometimes canned corn, such as Andreia and Odete (65 years, Elderly households, urban). Usually they started washing lettuce, then they inserted it in a bowl and then they washed tomatoes and onions, cut them and added them to the lettuce bowl. Andreia and Odete also added canned corn. They washed it inside the can and then put it inside the bowl with other vegetables.

In: Do you also wash the corn?

Andreia: Yes. I run it through water because of the taste. To take this water from the can and the preservatives it has.

(Andreia, 33 years, Young families, urban, Portugal)

Four households, Marta (35 years, urban), Vanessa (29 years, rural), Sónia (42 years, rural) (all Young families); Manel (73 years, Elderly households) used a chopping board and a knife to cut tomatoes and onions (the same that they had used for chicken, yet, in most cases they washed it or rinsed it in water after handling chicken). The other households cut vegetables directly to the bowl, already with the washed lettuce.

There were only four households who prepared salad with other vegetables: Marta (35 years, urban); Vanessa (29 years, rural) (both Young families); Augusto (70 years, rural) and Emília (89 years, urban) (both Elderly households). Marta prepared a salad with lettuce, onions, carrots and cucumber; Vanessa made it with lettuce, zucchini, carrots, broccoli and mushrooms. Vanessa and Marta were the only ones in the sample who cooked vegetables (zucchini, mushrooms and broccoli in the case of Vanessa, and mushrooms in the case of Marta) in a frying pan. Augusto prepared the salad using prewashed and bagged salad, tomato, watercress, grated carrots, red onion and coriander. Emilia made a mixed salad with vegetables, fruit and raw mushrooms.



**Figure 4.3.10: Emília added strawberries and mushrooms to the salad bowl and seasoned it with olive oil, vinegar and yogurt (Portugal)**

After handling salad Odete did not season it because she was going to eat it later (to avoid wilting with the sauce). She actually prepared the full meal starting at around 2pm (a chicken stew, rice and a salad) to be eaten with her family (her daughter and grandson) who was coming to visit at dinner time. All the other research participants seasoned the salads given they were going to eat them straight after. They did it with olive oil, vinegar and salt. The seasoning portions were chosen by “eye meter” (“olhómetro”, their own expression). The process was usually the same for all: after the salad was prepared in a bowl, they put olive oil, vinegar and salt. Celeste (70 years, Elderly households, urban) put also oregano.



**Figure 4.3.11: Augusto seasoning salad with olive oil, vinegar and salt (Portugal)**

Vanessa seasoned it with soya sauce and Marta with red wine vinegar. At the end they usually stirred it with two forks or with a spoon.

Vanessa: Soya sauce will give it other taste.

Int.: A Chinese taste.

Vanessa: Japanese... I can't eat sushi [Vanessa is pregnant].

(Vanessa, 29 years, Young families, rural, Portugal)

Sónia preferred to make the sauce in a separate cup. She put olive oil, vinegar and a coffee spoon with salt and then mixed all the ingredients.



**Figure 4.3.12: Sónia preparing the salad sauce (Portugal)**

#### *Tools used for handling/preparing salads/vegetables*

In general, households used the same knife and cutting board to handle chicken and to prepare salad, apart from Vanessa (29 years, Young families, rural). However, after the preparation of chicken, they washed the chopping board or rinsed it under water. There were also some cases that a cutting board was not used because lettuce or other vegetables were directly cut on the kitchen counter or in a plastic bowl. Other common feature was the use of a bowl to put salad and the use of forks or spoons to stir it. Besides these tools, there were four households, Vanessa; Marta (35 years, Young families, urban); Celeste (70 years, urban) and Odete (65 years, urban) (both Elderly

households) that used a grater to slice carrots and three households used a spinner to dry lettuce Vanessa, Celeste and Sílvia (33 years, Young families, rural).



Figure 4.3.13: Marta using a carrot grater (Portugal)



Figure 4.3.14: Sílvia using a spinner to dry lettuce (Portugal)

As noted before Vanessa did not wash chicken, she did not even touch it, and always washed lettuce with vinegar. She also prepared zucchini, mushrooms and carrots and used different knives, peelers and bowls.



Figure 4.3.15: Vanessa using different bowls and peelers to prepare vegetables (Portugal)

This case represented an exception across the Portuguese sample, as Vanessa's food handling practices were not a common pattern among the households. This was possibly explained due to her professional background in the food catering business, an interesting example of continuity between work and home practices. Yet, the

common pattern across the Portuguese households was the use of the same knife, one single chopping board to cut different vegetables and also to chop and cut open in pieces raw chicken. For example, Sónia always used the same chopping board and knife (bread's knife) to peel vegetables (she said that she did not have many knifes) and the same colander and plastic bowl to season chicken and salad. However, she washed these tools with bleach after handling chicken.

Int.: Do you always use the same chopping board? Do you always cook meat and fish with the same chopping board?

Sónia: Yes, I do. I don't want to scratch the stone of the kitchen counter. I always use the same chopping board and wash it with bleach. This chopping board is quite old. But I like this chopping board because the wooden ones are not so hygienic.

(Sónia, 42 years, Young families, rural, Portugal)



**Figure 4.3.16: Sónia put bleach directly on the chopping board (Portugal)**

The way Emília (89 years, Elderly households, urban) prepared vegetables and fruit was another good example. She added packed and already cut mushrooms and strawberries to the salad. The knife to cut the strawberries was the same one to cut the chicken's skin. After washing strawberries with water, she put them on the same colander that was used before to wash raw chicken.

On the other hand, Odete never used a chopping board and avoided many movements to grab tools and gadgets across the kitchen. The fact she had difficulty to move around her kitchen due to her problem of reduced mobility could explain several short cutting activities to spare her to take extra tools and gadgets for food preparation. It was easier to prepare everything in the sink, where she used the border of the sink to support her body, as she could not stand up without the help of crutches. She put all vegetables directly on the sink and used the same knife, avoiding too many movements. Odete also explained she always cooks with a wooden spoon and did not believe it is less hygienic than plastic ones.

Int.: Do you always cook with a wooden spoon?

Odete: I think it's better than the plastic spoon. All of my life I've watched my mother cooking with a wooden spoon and she is 91 years-old and going strong, thank God.

Int.: But why do you think it's better than the plastic?

Odete: ...because the plastic... it doesn't mean that the plastic is not hygienic, but this is also good....

(Odete, 65 years, Elderly households, urban, Portugal)



Odete peeled the carrot over  
the yellow cloth

Odete washing her wooden  
spoon she had used earlier

**Figure 4.3.17: Odete did most of the food preparation over the sink due to her reduced mobility. Here she had access to cleaning tools (Portugal)**

The same way, Augusto (70 years, Elderly households, rural) always used the same knife and chopping board to cut chicken and onion, and the same bowl to prepare first raw chicken and then the salad. He also added some green beans to cook with the chicken.



**Figure 4.3.18: Augusto's kitchen counter. The knife was on top of peelings and leftovers to be put in the bin (Portugal)**



**Figure 4.3.19: Celeste also put vegetables directly on the kitchen counter (Portugal)**

We could say elderly households were the group that used more often the same knife, chopping board and put raw vegetables directly on the kitchen counter. However, it is important to bear in mind that the number of tools and gadgets used are often connected with the type of meal that was being prepared. The more complex and diverse dishes being prepared the more the need for different tools, gadgets and utensils. The exception is perhaps when households used a kitchen robot (like Thermomix) that had the capacity to merge in one technology several gadgets and tools. In our sample, very few households used a cooking robot though (less than one quarter of the households). Regarding young single men, they tended to cook quick meals to prepare with two or three ingredients maximum. They did not cook different varieties of vegetables at the same time, avoiding potential cross-contamination incidences to appear more frequently. The young households had clearly some concerns regarding cleaning and washing salads/vegetables. For example, salads were usually washed with the aid of vinegar or powerful disinfectants (e.g. Amoukina).

Throughout this section, we analysed the processes of handling and preparing chicken, salads and vegetables of fifteen Portuguese households. We have seen how they used different ways, methods and steps to perform all these practices. Concerning handwashing, most households run their hands through water, not spending much time in this activity. However, since most participants washed chicken, they may consider their hands washed as they are always under water.

The cooking utensils used to handle chicken were the same to prepare salads (knife and the cutting board). During salad preparation, we have observed that households washed lettuce, although they used different techniques to do it. In general, households prepared salads only with lettuce, tomatoes and onions and did not cook other vegetables. They seasoned it with olive oil, vinegar and salt. The fact that so many households washed chicken (especially if it comes directly from a small butchery shop and was not packaged) and washed bagged salads (even if they were pre-washed) may

give some evidence of the lack of trust in the national food system, especially regarding food safety and hygiene practices of manufacturers or small retailers like butchery shops. Thus, washing chicken and pre-washed salads was a sign of feeling in control and to safeguard their bodies from ‘undesirable’ pathogens. Interestingly, it was concerns for cleanliness and hygiene that made this sample potentially at risk of cross contamination, especially regarding the sequences of handling chicken first and then salads without washing hands properly or using the same chopping board for preparing chicken and preparing salads and vegetables afterwards, without thorough cleaning. It will be challenging to shift meanings and images of cleanliness and hygiene regarding chicken and pre-washed salads. Risk communication needs to bear in mind that trust relations in the food provisioning system need to be tackled first before ‘educating’ consumers to handle chicken and salads/vegetables properly.

## Handling vegetables/salads in Romania

In comparison to the other countries discusses in this report, buying pre-packaged lettuce and vegetables is not very common in Romania. Most of the Romanian households used vegetables that were loose and packed in plastic bags from the market. Some of them stored the vegetables in the fridge in the plastic bags, whereas others without. Meanwhile, some preferred buying cherry tomatoes in plastic boxes (Ionel, 30 years, urban); Balanel, (28 years, urban); Zoltan, (35 years, urban) (all Young single men); Sorina (32 years, rural); and Serena (36 years, rural) (both Young families), but during the cooking session only Ionel and Balanel used them. Only hands were used to open the plastic boxes with cherry tomatoes. Sorina, Balanel and Bogdan (32 years, Young single men, urban) were the only research participants who used packaged lettuce during the cooking session, and we observed that Balanel, although he tried to unwrap the Iceberg salad first using hands, finally needed a knife to succeed and took the one used previously to cut the tomatoes without washing it. Bogdan, on the other hand, removed easily the lettuce from the bag from, whereas Ionel used frozen vegetables and opened the package using a knife that was previously washed.

## Washing salad (including washing of hands)

Most of the Romanian households (12/15) bought loose lettuce. The exceptions were Sorina, Balanel and Dumitra. Balanel bought prepacked lettuce because at the time of shopping he didn't find loose lettuce, saying that he preferred the latter, whereas Sorina bought prepacked lettuce because she didn't like to buy vegetables or fruits that are touched by too many hands. Maria Mirabela, on the other hand, besides buying lettuce, also bought one plastic box with baby spinach and one with rocket, arguing that she liked to prepare the salad with these ingredients. Dumitra used lettuce picked from her own garden. When it comes to washing, all the Romanian research participants washed the lettuce. However, the ways applied for washing were different and summarized in Table 4.3.3.

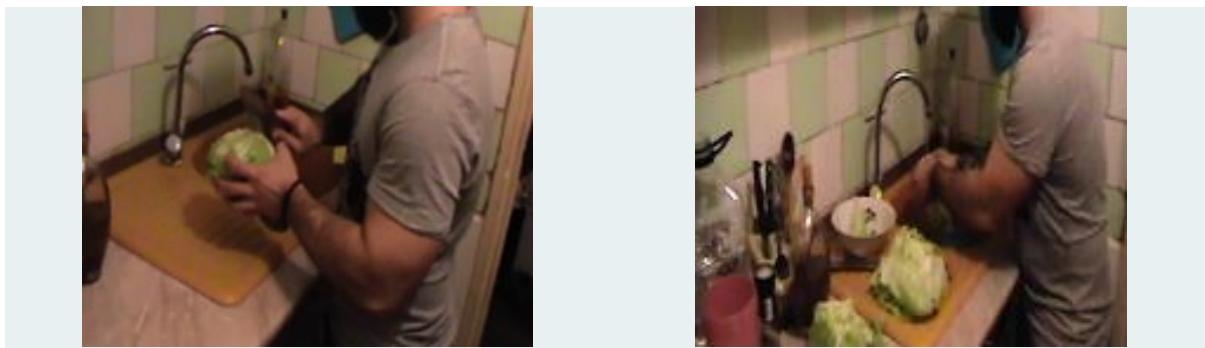
**Table 4.3.3: Ways of washing lettuce in the Romanian households**

Study group		Washing every leaf of lettuce		With running water the whole lettuce	Total
		In running water	In a bowl of water		
Urban	Young single men	Ionel (30 years) Balanel (28 years) Zoltan (35 years)			8
	Elderly households	Domnica (75 years) Fanica (69 years)			
	Young families	Amalia (31 years) Maria M. (34 years)			
Rural		Serena (36 years)	Damian (73 years) Dumitra (84 years) Linalia (73 years) Sorina (32 years)		4
	Elderly households			Minodora (27 years)	
	Young families			Bogdan (32 years) Florinel (31 years)	
Urban	Young single men				3

In most of the households (12/15) washing the lettuce leaf by leaf was preferred, whereas the others preferred washing the whole lettuce without cutting it first. Most washed the lettuce with running water (11/15). Although they had running water inside the house, Sorina and Damiana preferred washing into bowls with water, whereas Linalia and Dumitra used the bowl with water to wash the lettuce because they did not have running water inside the house. However, Dumitra cooked during summer, so mostly she stood outside to cook the lunch, and had the opportunity to use running water, but the day we visited her, she didn't have access to running water due to a water shortage at village level. She confessed that this situation happened very often, so she needed to use barrels to store water.

Most (11/15) used a cutting board and a knife to cut lettuce, while the others used their hands to tear the leaves claiming that this was a way to avoid oxidation (Maria Mirabela and Bogdan) or because it was more convenient to use hands (Ionel and Amalia).

For example, Balanel unwrapped the iceberg salad, cut the leaves with the knife, left them on the edge of the sink and never inside sink, inspected carefully every leaf and then, he washed them carefully with cold running water at low pressure. Every washed leaf was squeezed between hands and placed then into a bowl. As the leaves of the Iceberg salad were big, he somehow split the surface of a leaf into four zones and washed them carefully, by touching with his hands the leaf surface checking to not to feel anything strange.



Balanel used a knife to cut the Iceberg Salad   He washed every leaf with running water  
**Figure 4.3.20: Balanel's washing procedure of Iceberg salad (Romania)**

On the other hand, Zoltan took the lettuce out of the bag, didn't toss the bag but just left it on the table and took a knife to cut the leaves. He decided to leave the lettuce inside the sink and cut with the knife some leaves, which he inspected one by one and put aside on the sink brim. Then, he decided to cut all the leaves. He tossed the stem to the garbage bin, rinsed the knife and started to wash every leaf on both sides with cold running water at low pressure, inspecting them, shaking gently and transferring them into the plastic bowl that was previously rinsed with water. When asked how he could tell the leaves were washed properly, he said that he checked visually the lettuce, and it should not have soil or flies left. He was pleased with the lettuce that he bought saying that "it was clean, it didn't have any flies or soil and it was easy for me to wash it". He cleared the sink from the lettuce waste, washed his hands with dish soap and then pressed the leaves from the bowl to remove the excess water.

Int.: I see that you don't cut the whole leaf from the base, why?

Zoltan: I don't like the thicker part of the lettuce because it is bitter.

Zoltan: I wash every leaf of lettuce because it might have some flies.

Int.: How can you tell that the leaves are well washed?

Zoltan: I can see them. They should not have soil, or something that it can be seen during visual checking.

(Zoltan, 35 years, Young single men, Urban, Romania)



**Figure 4.3.21: Zoltan cut with a knife the lettuce, washed every leaf with running water and removed the excess water from the lettuce (Romania)**

Damiana separated every leaf from the stem, put them into a bowl and then she put the bowl into the sink, took every leaf and rinsed it with cold running water at medium pressure, leaving them in the same bowl. The probability of having dust or soil remained in the bowl was high. Then, Damiana pressed with the hands the leaves from the bowl to remove any excess water, and then started to cut them on the cutting board. After that, she rinsed again the cut leaves with running water.

Another type of washing the lettuce was applied by Florinel who started to take the lettuce out of the bag, which he left near the cutting board, and put it on the cutting board (the same cutting board used for cutting chicken but washed and used on the other side), and then washed the bowl with sponge and detergent both on the inside and the outside. Then, he took the lettuce and started to wash it with cold running water at medium pressure, first on the inside, moving easily but shaking it in the same time, as a method for adding water to the entire inside surface of the lettuce. When washing the lettuce on its outside, he insisted only on the bigger leaves. Then, he took with his both hands the lettuce and removed the excess water by squeezing it vigorously into the sink. The washing procedure took about 30 seconds without including the squeezing process. He rinsed the cutting board, and then he put the rinsed lettuce on it and started cutting it with a knife, then transferred the lettuce into the bowl using hands. However, after washing it when he put the whole lettuce on the cutting board, some leaves fell and he collected and tossed them in the garbage, and after that he started to cut the lettuce without washing his hands. The same procedure of washing was followed by Bogdan. Differences were observed in cutting the lettuce. Bogdan removed the stem of the lettuce with the knife on the cutting board, then, he tore the leaves using hands saying that he wanted to avoid oxidation. When asked, from where

he learned this, he mentioned his parents were used to apply the same procedure for cutting lettuce.



**Figure 4.3.22: Florinel removed the excess water from lettuce leaves using hands and then cut the lettuce on the cutting board with a knife (Romania)**

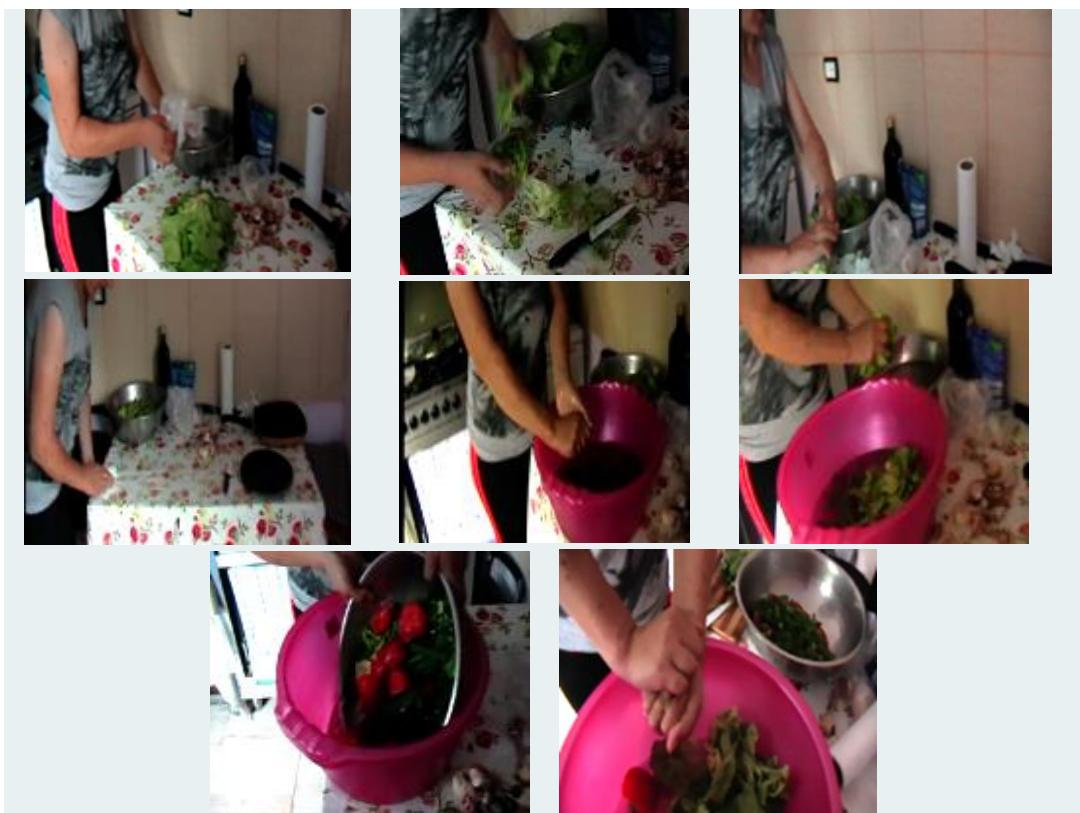
On the other hand, Minodora first rinsed the whole lettuce for about 10 seconds with running water from the water source placed outside. Then, she squeezed the lettuce and entered inside the house, put it on the table, tore the leaves using hands and inspected carefully each leaf for any flies left. She mentioned that even the lettuce bought from the market might contain flies as the lettuce she grew in her own garden. After that, she took more leaves in her hands and started to cut them on the cutting board with the knife. She never washed hands after handling the lettuce.

Sorina took the lettuce out of the bag and left it on the table, very close to the raw chicken bones. Then, using hands, she tore the lettuce, leaf by leaf and removing at the same time the thicker part. Then, she put the leaves into a bowl containing water. Afterwards, she removed the lettuce stem from the table and tossed the lettuce waste. She went to the garden to bring green onions and peppers and washed them in running water in the bathroom, and then she washed them in the same water as the lettuce. The research participant washed the lettuce and other veggies three times. The extended protocol is presented in Table 4.3.4. Analysing the data from, one can assume that Sorina considered the inspection as the most important part, as she inspected carefully each leaf of lettuce leaving the impression that she removed any danger from it. That's why we believe she didn't insist on washing it leaf by leaf. The most important source of contamination in this episode of washing was the presence of raw chicken bones left on the table during the whole cooking session, and the cross-contamination when she decided to wipe her hands with the paper towel (towel that touched the bones) and after that handled the vegetables.

## Chapter 4.3: Handling and Preparing salads and vegetables

**Table 4.3.4: Protocol used by Sorina for washing lettuce and vegetables**

Before putting into water	First bowl with water	Transferred to second bowl	Second bowl with water	Transferred to third bowl	Adding water	Transferred to cutting board
Cut the lettuce, inspecting it leaf by leaf by removing any soil, or other foreign bodies	Immersed the leaves into the bowl with water to cover all in water	Squeezed several leaves gently with both hands to remove the excess water		Squeezed gently several leaves with both hands to remove the excess water		Squeezed vigorously using both hands to remove the excess water
Left in the fridge	Washed each cucumber and tomato	Individually	Immersed all the veggies into the bowl by pressing with hands to cover all in water	Individually	Just left in the water	
Green onion leaves from her own garden, washed with cold running water	Immersed the onion leaves into the bowl in water to cover all in water	Squeezed gently leaves together with both hands to remove the excess water		Squeezed gently leaves together with both hands to remove the excess water		Shook gently to remove the excess of water
Pepper from her own garden were cut in halves	Washed every half of pepper	Individually/ Two halves		Individually/ Two halves		



**Figure 4.3.23: Sorina's procedures to remove soil from the lettuce and to wash vegetables (Romania)**

Maria Mirabela (34 years, Young families, urban) washed the lettuce leaf by leaf and then squeezed the leaves in her hands, but unlike other research participants she tore the leaves with her hands and did not cut them on a cutting board, saying that in this way she protected the leaves from oxidation. Domnica (75 years, Elderly households, urban) separated the leaves from the stem of the lettuce on the table. Then, she put all the leaves in the sink after she previously rinsed the sink with water using the sponge and started to wash every leaf one by one. When she ended up washing a leaf, she put it in the left hand, and then she rinsed the other leaves, holding in the left hand, the leaves washed previously. Then, she squeezed the washed lettuce leaves in the sink and cut them immediately on the cutting board with the knife. She repeated the same procedure of washing with the second batch of lettuce leaves.



**Figure 4.3.24: Domnica holding in her left hand the washed lettuce leaves, while washing other leaves with the right hand (Romania)**

A soon as he arrived home, Ionel (30 years, Young single men, urban) cut the lettuce leaves from the stem and left them into a bowl of water. He continued with the lettuce after he ended up cooking the chicken. He said that usually he added vinegar into the water, but he did not use it that day. He washed every leaf with running water for five seconds, and he squeezed it with his hands to remove the excess water. Then, he tore the leaves using hands and placed them into a bowl.



**Figure 4.3.25: Ionel teared lettuce leaves and placed them in a bowl (Romania)**

Amalia (31 years, Young families, urban) didn't take out the lettuce from the bag, she took a leaf and rinsed it with water for about 5 seconds and then she placed it into a plastic colander. She washed about half of the lettuce, leaf by leaf leaving them into the colander. The colander was moved on a counter top (placed on the opposite side of the counter top used to prepare food) during the chicken preparation.



**Figure 4.3.26: Amalia washed the lettuce leaves and then transferred them into a colander (Romania)**

Later on, she began to tear every leaf of lettuce using hands saying that it was easier for her than cutting it on the cutting board with a knife.

Int.: Usually, do you tear the lettuce?

Amalia: Yes.

Int.: Why don't you cut it with a knife?

Amalia: It is ok like this.

Int.: Did you have moments when you use the knife to cut the lettuce on the cutting board?

Amalia: Yes, but long ago. It is easier for me than cutting on the cutting board and then to transfer into the bowl.

(Amalia, 31 years, Young families, urban, Romania)

### *Preparing other vegetables for salad*

Zoltan (35 years, Young single men, urban) was an example of household sharing the kitchen with five other people. As he did not trust his mates for the hygiene of working surfaces in the kitchen, he was very careful not to put vegetables for example in the sink, on the table or on the edge of the sink, as he believed that these surfaces might be contaminated. Therefore, he was often seen to rinse the sink, the edge of the sink, his hands, utensils, plates, after or before handling vegetables. As he prepared three dishes, he prepared several "batches" of vegetables. As some of the vegetables that he used for the cooking session were stored in the fridge placed in his room, when he came in the kitchen, he brought the vegetables into the pot that he used later for preparing the soup. First, he rinsed with running water two tomatoes in the same time, by holding one in each hand and then he placed the tomatoes into a plastic bowl. Afterwards, he realized he needed to cut the potatoes for the steak. He brought from the cupboard two more knives and a peeler for potatoes, rinsed them and left them on the edge of the

sink. He took some potatoes that were into a wooden crate in the kitchen and rinsed them with water, transferred them on the edge of the sink, peeled them in the sink and then cut them in quarters in hands (he didn't use the cutting board) to be added to the chicken steak cooked in the oven. The knives were not used for cutting the chicken.



**Figure 4.3.27: Zoltan's procedure for washing the tomatoes and cutting the potatoes (Romania)**

While the first dish was baking in the oven, he continued with the second dish and started with finishing rinsing the tomatoes that he had not washed before. Then he rinsed with running water five carrots in the same time and left them on the plate that previously accommodated the chicken. The plate had been washed with water and sponge before putting the carrot on it. He removed the stem from the pepper, tossed the stem into the garbage placed under the sink. Then, he rinsed all the four cucumbers by holding them in his hands and scrubbed them by hand to remove any dirt that might be present. After that, he put them into the plastic bowl. He took two onions from the wooden crate, peeled them off with the knife used for cutting the other veggies and left the peels on a newspaper, took the chicken pieces and put them into the pot for soup (after rinsing hands first), rinsed the cutting board and the knife and then rinsed the onion following the same procedure that he applied for tomatoes. After that, he threw only the peels from the newspaper into the garbage and left the newspaper on the table saying that he will use it also some other time and wiped his hands using paper towel. After he cut the onions using the knife and cutting board rinsed previously, he started to peel the carrots inside the sink using the knife used for the other vegetables, and rinsed each carrot, placing it on a plate. After ending the washing procedure for carrots, he removed the waste, and after rinsing the sink inside and outside with water by hand. The carrots and the pepper were cut with a knife without using the cutting board. After that, he washed the cutting board and the knife used for cutting chicken. He continued with cutting the pepper without using the cutting board and left the cut pieces on the plate. Later, he transferred them into the pot with the chicken.



Zoltan rinsed hands after he placed the vegetables on a plate or on the brim of the sink

Later, he peeled two onions with a knife leaving the skin and peeled onions on the newspaper

**Figure 4.3.28: Steps in vegetable preparation, washing hands before peeling onions (Romania)**

He continued with the lettuce as described earlier in the subchapter on washing salad, and then he started to cut the ingredients needed for fish salad. First, he took in his hands several leaves and cut them on the cutting board with the knife, tomatoes were cut individually also on the cutting board, whereas the cucumbers were cut with the knife but without using the cutting board. After cutting the vegetables for salad, he rinsed his hands and cleaned the table with a paper towel. Then, he decided that he needed onions for the salad, so he peeled the onion, but this time not using the newspaper because he was hurrying, rinsed it and cut it on the cutting board. When one half of the onion fell out of the cutting board, he rinsed it and then continued to cut it.

In four households, Minodora (27 years, Young families, rural); Damiana (70 years, rural); Linalia (73 years, rural) (both Elderly households); and Balanel (28 years, Young single men, urban), we did not observe washing of all vegetables. For example, Minodora took a carrot from the wooden crate she had near the gas stove, peeled the carrot with a knife and then took a grater and grated the carrot directly into the pot containing rice and water, which was placed on the gas stove. For salad preparation she used only lettuce and tomatoes as ingredients. She took two tomatoes and a cup of water from the bucket and went outside to rinse the tomatoes. Afterwards, she had the tomatoes on the cutting board, removed the pedicles and cut them directly into the bowl with the lettuce.

For preparing the chicken salad, Balanel removed the cherry tomatoes out of their plastic box, placed them into a bowl and then filled the bowl with water, moved a little bit the tomatoes in the bowl and then removed the water by keeping the hand above the bowl not to let any tomato fell. Balanel rinsed the knife with cold running water for 12 seconds, but dried the handle of the knife with the tea towel he previously used for several times to dry hands. Then, he cut the tomatoes. When a cherry tomato fell on the floor, he took it, threw it into the garbage and continued to cut the tomatoes without washing hands. After washing the lettuce, he cut it on the cutting board used previously

for tomatoes, rinsed the cutting board and hung it against the wall. Then, he cut the cheese on the same cutting board with the knife used for lettuce (not washed from lettuce) and transferred it into the bowl. Balanel fetched a bag the cucumbers and put them on another, clean, cutting board (the third one). Then, he took a paper towel, transferred the cucumbers from the cutting board on the paper towel and peeled them. He threw the peel to the garbage along with the paper towel. He did not wash the cucumbers because need to wash them:

Int.: Do you peel every time the cucumbers? You don't like them with peel?

Balanel: Yes, I don't like especially the peel of cucumber.

Int.: Have you washed them before peeling?

Balanel: No, because I peel them off.

(Balanel, 28 years, Young single men, urban, Romania)

Linalia took the lettuce out of the bag and put in into a bowl, in which she added some water. There was not enough water to cover the whole lettuce. Then, she removed leaves one by one from the lettuce and immersed them into the bowl, not paying attention if the lettuce had any foreign bodies on it. However, Linalia tried to press and to move the leaves into the bowl to wash them. While detaching the leaves, she chunked the core and ate it saying that is delicious. Then, she took some leaves in her hands, squeezed them slowly to remove the excess water and put them in another bowl. After squeezing all the leaves, she cut them with a knife (the same knife was used for cutting the chicken and was not washed) without using the cutting board. Then, she cut with the same knife half of an onion placed on the table that was peeled off the day before and not washed. The operation took place above the bowl containing the lettuce, so the onion went directly into the bowl. After she finished to prepare the salad, she wiped her hands with a cotton towel.



**Figure 4.3.29: Linalia washed the lettuce into a bowl containing water (Romania)**

For preparing the salad, beside the lettuce, Damiana used an onion that was brought by her husband. She peeled the onion, leaving the peels on the table, and then she cut the onion without washing it first. The chopped onion went directly into the bowl containing the lettuce.

Others washed all the vegetables they used. Bogdan (32 years, Young single men, urban), for example used pepper at the end of frying chicken and prepared salad as a garnish for the chicken. During the boiling stage of the chicken, Bogdan started to prepare the salad. He fetched cucumbers from of the fridge, a pepper and tomatoes and placed them inside the sink. Then, he washed every vegetable with running water, put them into a bowl and removed the excess water at the same time keeping the vegetables inside the bowl. Then, he dried his hands with the cotton towel. He started to remove the stem from the bell pepper. Bogdan took out the lettuce from the bag, placed the lettuce inside the sink and threw the bag into the garbage. As mentioned earlier, participants who rinsed the whole lettuce, squeezed the excess water and put it into the plastic bowl and cut it using hands to avoid oxidation. After tossing the lettuce waste, he rinsed his hands with running water. Then, he started to cut the other vegetables, but this time on the cutting board (different from that used for cutting the chicken). He peeled the cucumbers and then cut them on the cutting board and transferred them in the bowl using hands. He finished to remove the stem from the bell pepper, cut them and transferred the slices back into the bowl. When he didn't have enough space to store the waste on the cutting board, he threw the vegetable waste directly from the cutting board into the garbage. Then, he continued to cut the pepper and the tomatoes. He realized he needed onions, he fetched a bag with green onions from the fridge and selected the quantity needed for the salad. The onions that remained, was put back into the bag and into the fridge. He insisted to wash the onions more than the lettuce, saying that he did not want to feel any dust on his teeth when eating the salad.



Bogdan peeled the cucumbers with a knife

He cut the vegetables on the cutting board

He used the cutting board to throw the vegetable waste

**Figure 4.3.30: Bogdan peeled, cut and threw vegetable waste using the cutting board each time (Romania)**

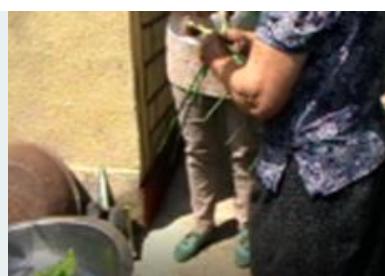
Fanica (69 years, Elderly households, urban) took the lettuce out of the bag and put the remained lettuce back in the bag and put it in the fridge. She removed every leaf from the stem by hands and put them into a plastic bowl placed inside the sink. She rinsed each leaf carefully with running water and put them on the cutting board. After she finished washing the lettuce, she rinsed the plastic bowl and transferred the leaves back again. Afterwards, she fetched a bunch of green onion leaves, cut the roots and washed it with running water, holding the entire bunch in her hands. Then she squeezed them and placed them into a bowl. After that, she removed the stems from the red radishes, left them first on the cutting board and them into the sink. She washed

each radish with cold running water and placed them into the bowl. Fanel (69 years) (Fanica's husband) took a cutting board and a knife that was previously washed and started to cut all the salad ingredients on the cutting board. Afterwards he transferred them into the bowl, using the knife.

Dumitra (84 years, Elderly households, rural) put all the vegetables she needed to prepare the dish on the table. She started to peel off the onions, carrots, celery, leaving first the waste on the cutting board and then transferring it into a bucket, while the vegetables were left in a bowl of water. Later, she removed the waste from the cutting board (she didn't wash it after tossing waste) and used it for cutting all the vegetables mentioned before. All the vegetables were washed individually, paying attention not to leave any soil or sand. She cut the onions, carrots and pepper, whereas for celery she used a grater. She washed the grater, in the same water used for washing the vegetables. After cutting all the vegetables, she washed the cutting board with water and detergent using a sponge. For preparing the salad, she only used ingredients from her garden. She went in the garden and fetched green onions and lettuce leaves. The roots of the green onions were removed by using a knife and thrown in a bucket. The lettuce and onions were left for several minutes into a bowl containing water. Afterwards, Dumitra moved slowly all the greens into the bowl to transport them to a plate. Then, she cut them on a cutting board with a knife.



Dumitra picked lettuce from her garden



She peeled green onion



After cutting the veggies, she transferred them into the bowl using hands

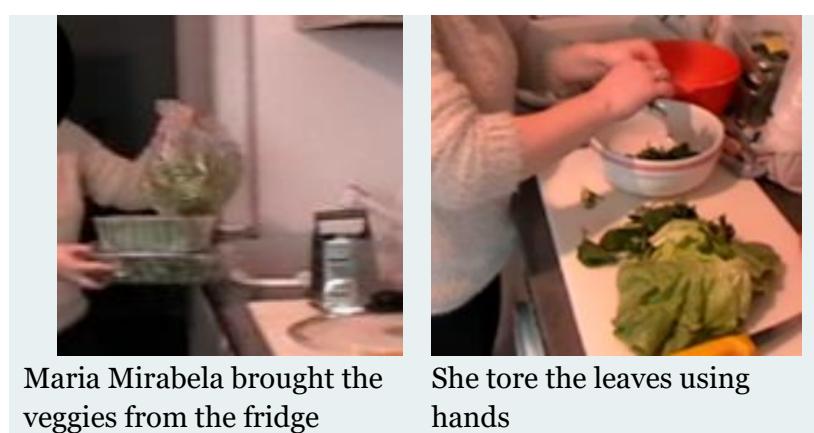
**Figure 4.3.31: Dumitra prepared salad in her garden using her own produce (Romania)**

Florinel (31 years, Young single men, urban) prepared vegetables in two sessions, vegetables for the boiled chicken dish and the salad. He used carrots, potatoes and aioli sauce, he prepared himself. After the chicken was left to boil, he fetch a bag with potatoes from the fridge and a bag with onions and left them on the counter top. He took two onions and peeled them with the knife he used for cutting the chicken, but after washing it. He left the peels in a plastic bowl, rinsed and cut the onions in halves on the cutting board. Then, he put them into the pot with the chicken. After that, he peeled some potatoes using the peeler, leaving the waste into the plastic bowl. He rinsed the potatoes in running water, chopped them on the cutting board and transferred them into the pot with chicken. For preparing the salad, he used lettuce,

tomatoes, and cucumbers. He washed the tomatoes, removed the pedicles, cut them on the cutting board, and then transferred them into the bowl. He rinsed the cutting board each time between cutting different vegetables.

Amalia (31 years, Young families, urban) roasted potatoes together with chicken wings and leg. She started vegetable preparation with peeling a few garlic cloves using the green knife that was left in the bowl containing chicken. She peeled potatoes, washed them and cut them on the cutting board. She frequently used the paper towel to wipe the countertop surface from water splashes. She placed the cut potatoes into the tray covered with baking paper and seasoned them. As the garlic peeled earlier was not enough for cooking, she peeled more garlic, washed it and pressed it over potatoes. During the cooking process of the chicken, which took place in the oven, she prepared the salad. She used tomatoes, cucumbers, radishes and green onions. She rinsed three tomatoes for about 5 seconds, then placed them into a bowl. She repeated the washing procedure with the other vegetables. After, putting back the bags with vegetables that were not used into the fridge, tossing the waste from the veggies out of the sink, she rinsed the knife and wiped the countertop with the towel. She continued to cut most of the greens by hands without using the cutting board, the exception being the green onion. Again, as mentioned earlier she tore also the lettuce using hands, however, she removed the bottom part of every leaf saying that she did not like it.

Maria Mirabela (34 years, Young families, urban) only used vegetable for preparing the salad. She used three types of leaves: lettuce, baby spinach and rocket. The baby spinach and rocket were packed in a plastic box wrapped with plastic foil. After washing the lettuce, she unwrapped the foil and took in one hand several leaves of rocket together and washed them by pouring water in her closed hands to be sure that the leaves would not fall inside the sink. Then she squeezed them and left them on the cutting board. She repeated several times the same movements for rocket and baby spinach. Afterwards, she removed the tails of rocket and baby spinach and tore the green leaves. Later, she tossed the green waste to the garbage and wiped her hands with the towel.



**Figure 4.3.32: Maria Mirabela prepared salad (Romania)**

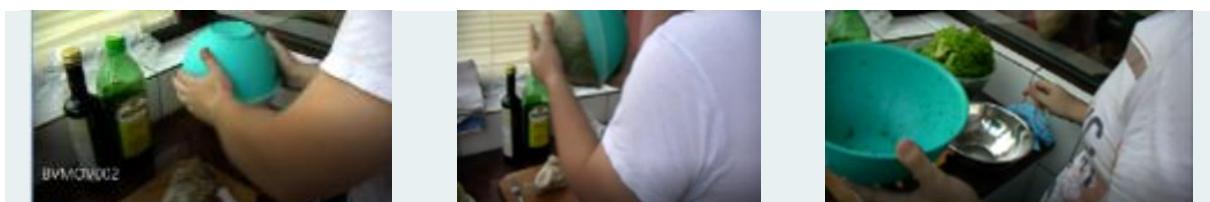
### *Seasoning salad and vegetables*

For seasoning the fish salad, Zoltan (35 years, Young single men, urban) used only salt and olive oil. Minodora (27 years, Young families, rural) used salt and sunflower oil for preparing the tomato and lettuce salad. Balanel (28 years, Young single men, urban) used olive oil, salt and a Caesar's dressing bought from the market to season the salad, which in the end included ingredients: tomatoes, cucumbers, cheese, Iceberg salad, chicken and canned corn.



**Figure 4.3.33: Balanel's Cesar salad sauce (Romania)**

To season the salad, Linalia (73 years, Elderly households, rural) used salt, pepper and sunflower oil, whereas, Damiana (73 years, Elderly households, rural) used only sunflower oil. Bogdan (28 years, Young single men, urban) used lemon, olive oil, salt and vinegar to season the salad. As the bowl was full of veggies and he couldn't mix them with a fork, he tried to mix the bowl using another bowl. He covered the bowl containing the salad ingredients with another bowl and started to shake it, repeating the operation several times. After that, he wiped his hands with the hand towel placed on the counter top.



**Figure 4.3.34: Bogdan used a second bowl to mix the salad ingredients (Romania)**

Fanel (69 years, Elderly households, urban) used sun flower oil, salt and vinegar to season the salad, that he mixed using two big spoons.



**Figure 4.3.35: Fanel poured salt over the salad, being careful not to touch the salt with the hand (Romania)**

Amalia (31 years, Young families, urban) used a new, small bottle of liquid seasonings. She added the seasoning over the potatoes. Maria Mirabela (34 years, Young families, urban) used salt and olive oil for seasoning the salad and mixed the salad with two forks. During mixing the salad, one leaf of lettuce fell out of the bowl onto the counter top. Maria Mirabela took it with the hand and put it back and continued to mix the salad. She said that usually she uses a dressing sauce for salad and sometimes eggs.

Often vegetables that were used for preparing the roasted chicken were seasoned separately from the chicken. Both Zoltan and Amalia who cooked chicken with potatoes in the oven, seasoned the potatoes before the heating process. Other research participants, Bogdan; Zoltan; Ionel (30 years, urban) Young single men, urban, RO; Florinel, 31 years, urban) (both Young single men); Domnica (75 years, urban); Dumitra (84 years, rural) (both Elderly households); Minodora (27 years, Young families, rural) seasoned the dish almost at the end of the heating process (boiling/frying).

### Summary of how vegetables were prepared in Romania

To sum up, different ways of washing and handling vegetables were observed. Three research participants from rural households (2 elderly households, 1 young family household) and one from urban area (1 young single men household) were not observed to wash all the vegetables for preparing salad: Damiana (73 years, rural); Linalia (73 years, rural) (both Elderly households); Balanel, 28 years, Young single men, urban) or a dish (Minodora, 27 years, Young families, rural) that involved a heating process. Some research participants preferred to start with washing vegetables and then to peel them, whereas most of them peeled the vegetables before washing them. Sink inside, bowls, newspaper, cutting board, paper towel, garbage bin have been used by the research participants to put first the vegetables wastes. The wastes were tossed most of the time after cutting the vegetables, or after washing the vegetables, and sometimes during cutting. When it comes to cutting the greens, some used hands to tear the lettuce or other leaves claiming that it was easier or to avoid

oxidation: Amalia (31 years, urban); Maria Mirabela (34 years, urban) (both, Young families, urban); Bogdan, (32 years, urban); and Ionel (30 years, urban) (both Young single men). Most of them used the cutting board to cut vegetables, and most of them didn't use hands to transfer what was cut from cutting boards to bowls/pots/pans. Most of the research participants inspected for soils, sand or bugs and separated the leaves from the stem before washing them (11/15). Those who washed the whole lettuce inspected the lettuce after washing it more carefully. Most of the research participants from the group of single men and young family removed the thicker part from lettuce leaves saying that they did not like it (some mentioned that the thicker part was bitter). Most of the research participants (14/15) squeezed the lettuce using hands and only one (Amalia, used a colander). Ionel said that he had a colander, but he had lent it to his girlfriend who was following a diet with a lot of salads.

## Handling vegetables/salads in France

We asked participants in France to prepare a salad – it was part of the research protocol – all of them did. However, some of them were not used to eat or prepare salad. In that case, they mostly bought pre-washed and pre-cut salad in plastic bag (Fabrice and Simon. Table 4.3.5 (next page) shows the kind of salad research participants prepared, the way they unpacked the salad when it was relevant, where they stored it before washing and after washing, and finally the way they washed it.

### Washing salad

6/15 of French research participants bought a pre-washed and/or pre-cut and/or pre-trimmed salad in plastic bag: Fabrice; Simon; Amandine; Julie; Mylène; and Elodie. Julie explained that she doesn't have time to wash and rinse fresh salad, because she has to take care of her child. All of them opened the plastic bag by hands. 9/15 of French research participants prepared a fresh salad: Aurélien, Vincent, Etienne, Mathilde, Gérard & Odile, Sylviane, Charles & Annie, Bernard & Hélène and Yvette & François. Among these 9 research participants, 6 of them bought it from the supermarket or from a local producer and 3 of them went to their garden to collect one, (Gérard & Odile, Sylviane and Charles & Annie). The question of opening fresh salad was not relevant as research participants put it in opened plastic or paper bag to carry it from the supermarket or producer to their home. For those who went to their garden, they carried it by hand or in a basin.

In France, none of the elderly households bought salad in plastic bag. Young households were more likely to buy pre-washed and pre-cut salad in plastic bag (4/5), than young males (2/5).

Among the 6 research participants who bought salad in plastic bag, 4 of them did not wash it, as the package said that it was “already washed” or “pre-washed” (for 3 research participants). They opened the package and directly put it in the serving bowl (for example, Julia in Figures 4.3.36). The fourth participant did not wash the packaged lettuce head and cut it directly into the bowl, for instance Amandine (Figure 4.3.36). However, two washed the pre-packed salad (Mylène and Elodie). Elodie, for example, washed it carefully in her sink, in 2 baths. (Figures 4.3. 38).

## Chapter 4.3: Handling and Preparing salads and vegetables

**Table 4.3.5: Overview of salad preparation among the French research participants**

Participant	Type of salad	Tool to open it	Stored before washing	Stored after washing	Type of washing
Aurélien (25 years, rural)	Fresh	N/A	Room temperature	Fridge	1 bath, under running water
Vincent (29 years, rural)	Fresh	N/A	Room temperature	Room temperature	1 bath, under running water
Fabrice (24 years, urban)	Pre-washed salad in plastic bag	Hands	Fridge	Fridge	No washing
Simon (25 years, urban)	Pre-washed salad in plastic bag	Hands	Fridge	Fridge	No washing
Etienne (30 years, rural)	Fresh	N/A	Fridge	Room temperature	1 bath, under running water
Mathilde (37 years, urban)	Fresh	N/A	Fridge	Fridge	1 bath, under running water
Amandine (27 years, rural)	Iceberg lettuce in plastic bag	Hands	Fridge	Room temperature	No washing
Julie (28 years, urban)	Pre-washed salad in plastic bag	Hands	Fridge	Fridge	No washing
Mylène (25 years, urban)	Rucola salad in plastic tray	Hands	Fridge	Room temperature	1 bath, under running water
Elodie (31 years, rural)	Small lettuce in plastic bag	Hands	Fridge	Room temperature	2 baths, in the sink, with vinegar for the first bath
Gérard and Odile (71& 65 years, rural)	Fresh	N/A	Garden	Room temperature	3 baths
Sylviane (77 years, rural)	Fresh	N/A	Garden	Room temperature	2 baths
Charles and Annie (75 & 70 years, rural)	Fresh	N/A	Garden	Room temperature	3 baths, use of vinegar to remove insects in 1 <sup>st</sup> bath
Bernard and Hélène (both 72 years, urban)	Fresh	N/A	Fridge	Room temperature	2 baths
Yvette & François (74 & 76 years, urban)	Fresh	N/A	Garage (cool temperature)	Garage (cool temperature)	2 baths, inspecting leaf by leaf



Julie transfers the fresh cut salad into the glass bowl with her hands

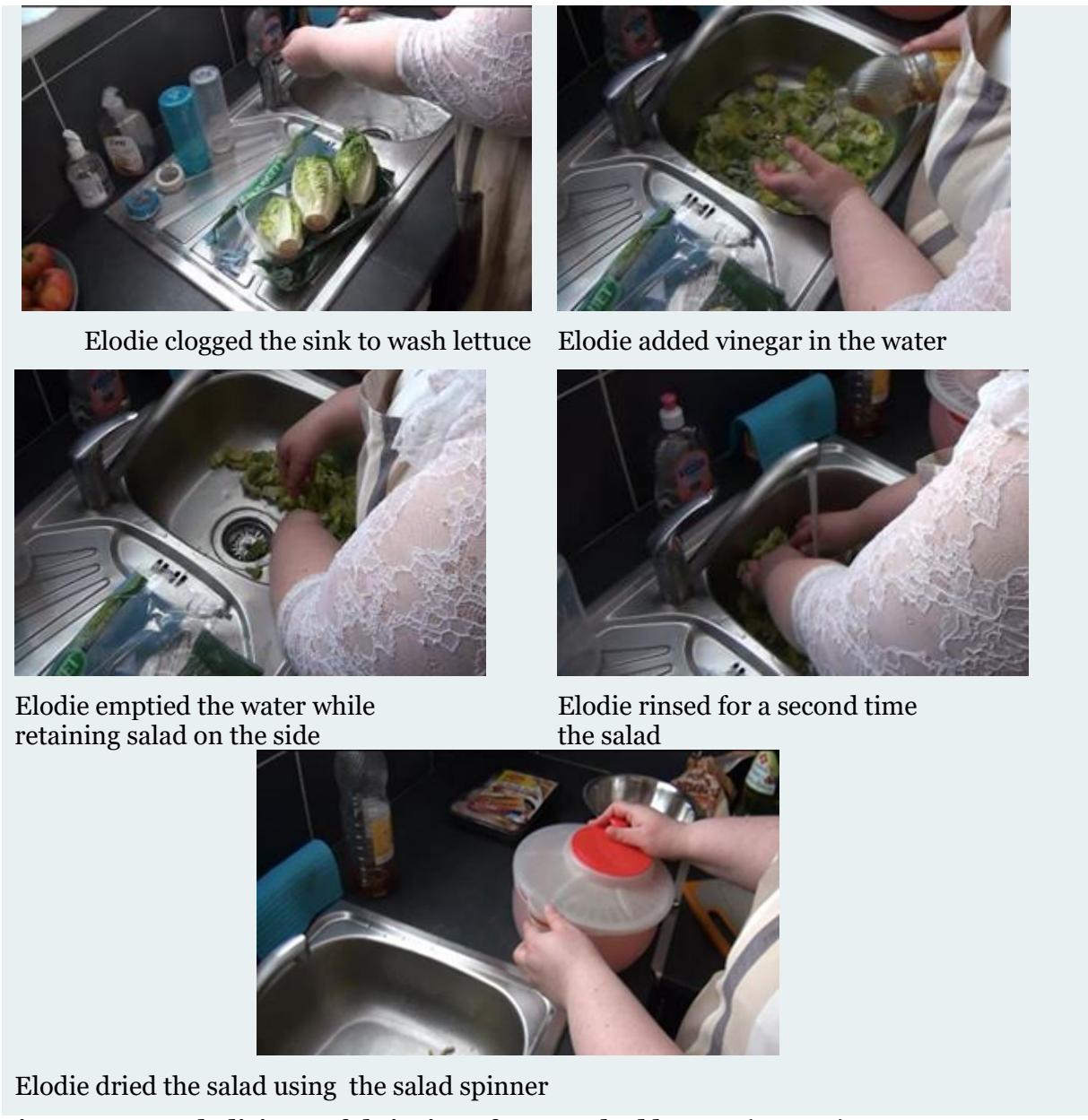


Amandine cuts lettuce in pieces directly into the bowl because she doesn't like to wash salad

**Figure 4.3.36: Putting lettuce into the salad bowl without washing (France)**



Figure 4.3.37: Mylène washed rucola leaves under running water in its tray (France)



Elodie dried the salad using the salad spinner

Figure 4.3.38: Elodie's careful rinsing of pre-washed lettuce (France)

Among the 9 research participants who prepared a fresh salad, all of them washed it. Four of them washed it in one bath and/or under running water: Aurélien, Vincent, Etienne, Mathilde; in two baths: Sylviane, Bernard & Hélène and Yvette & François; and 3 baths: Charles & Annie and Gérard & Odile and even with vinegar (Annie). The number of baths for washing salad seemed to increase, among French research participants, as they get older. All of the elderly washed their salad in 2 or 3 baths. See figures of various way of washing (Figures 4.3.39-4.3.40)



Aurélien put water on leaves and turned them a little bit, for one minute, while inspecting the leaves, to take away the sand



Aurélien drained water by shaking it



Vincent poured water over the salad in the colander and stirred the leaves a bit with his hands for a few seconds



As Vincent could not find back the spin-dryer, he drained water from salad by shaking the colander over the “plain sink”



Etienne put salad's leaves in the bowl



Etienne poured cold water on the leaves while turning them a bit (15 sec)



Etienne drained water out of the bowl while holding the leaves inside

**Figure 4.3.39: Rinsing lettuce in three Young single men households (France)**

Both the two and three baths washing method happened in a basin or in the bowl of the salad spinner.



François was in charge of washing salad in the household. He pulled off leaves and tore them into smaller pieces by hand and rinsed them in tap water



After second bath, François transferred leaves from the bowl of water to the basket and inspected if there are no soil or dirt left



He cleaned the sink with white vinegar and a sponge. Cleanliness was important in the household, and François even said they were “obsessed” with it.



During the second bath, Odile washed leaf by leaf under running water before putting them in the colander. She inspected every for rotten parts



Charles inspected, removed the damaged leaves and put the good leaves in the water and vinegar basin for the first bath. Since the salads came from his garden, this techniques removed any insects

**Figure 4.3.40: Various bath of lettuce and removal of dirt, insects and rotten leave (France)**

### *Rinsing fruits and vegetables to remove soil*

Research participants in general did rinse vegetables before or after peeling them or preparing them. The main reason was to remove soil on them. This reason was more frequent among research participants who grew their own vegetables in their garden. Some of them even rinsed vegetables before and after peeling.

Amandine (27 years, Young families, rural) rinsed every fruit she would eat with the skin or that she would peel. She said it is a reflex. For vegetables like potatoes, she would rinse them if there was soil, before peeling. Elodie (31 years, Young families, rural) paid attention to vegetables for microbiological reasons: she washed them if she did not peel them, she peeled and rinsed them if she eats them raw. But for cucumber for example, she peeled it but did not rinse it. Other mothers were less careful with these ingredients. Mylène (25 years, years Young families, urban) did not wash vegetables she would peel them, because they were not so dirty (like carrots). Julie (28 years, Young families, urban) did not wash the tomatoes she would cook. She sometimes rinsed them to prepare a salad. She did not wash zucchinis because she entirely peeled them.

Few research participants mentioned however that rinsing action is not "enough" to remove contaminants like pesticides or preservatives and treatment products on fruits. Mathilde (37 years, years, Young families, urban,) washed salad just to remove earth closed the root, but it was not a way, for her, to remove pesticides, so she just rinsed it quickly. Gérard and Odile (71 & 65 years, Elderly households, rural) rinsed vegetables to remove soil from the vegetables coming from the garden. They might rinse fruits they buy, but they were conscious that the rinsing action was not enough to remove preservatives and treatment products on fruits.

Charles (75 years, Elderly households, rural) washed vegetables before peeling them and his wife Annie preferred to wash them after, but if there was too much soil, she would wash them before peeling them. They did not wash fruits like melon or watermelon before cutting them although their son-in-law advised them to do so. They said that it is because of what producers put on it. They should wash it before opening it but they did not have the reflex yet.

### *Not rinsing vegetables for a taste matter*

Hélène (72 years, Elderly households, urban) either washed or peeled vegetables: she washed the carrots before cooking them but she would only peel and wipe with a paper towel the carrots she would grate, so the carrots did not taste "watery". She washed the vegetables she would cook because the "watery" taste did not matter. She always buys carrots of sand and they are dirty. For her, it was more important to avoid the "watery" taste of the washed carrots than to clean them.

## Handling vegetables/salads in the UK

As seen above, all research participants served their chicken meal with a vegetable-based accompaniment, which in most cases included an uncooked salad.

### Washing and peeling

In general, vegetables were not washed if they had an outer skin that was to be peeled before use, for example onions. The only items we saw being *both* peeled and washed were Paul's sweet potatoes. This was a function of how he had learnt to peel vegetables when growing up, under running water:

Paul: I always do it in the sink, wash the skins and that. I don't know why but it's the way that I was taught as a kid as well.

[...]

Int.: Sorry, and you were saying about— you generally do peeling in the sink?

Paul: Yes, yes, yes, usually in the sink, yes. And again I run it under water for some unknown reason.

Int.: So do you have any idea why you run it under the water?

Paul: (laughing) Do you know what, I've got no— it's something I remember watching my mom do. I've got no idea whatsoever.

(Paul Rothwell, 34 years, Young families, urban, UK)

This example aside, our focus here is therefore on washing (or not) of vegetables that were used without being peeled. Most research participants (nine) washed *some but not all* of these vegetables, and few of these gave explicit rationales for why this was the case. Only three research participants washed them all, and another three washed none. For comparison between households, it is helpful to divide discussion into particular types of vegetables.

First, a central component of most (12) research participants' salads was a leafy green vegetable, such as lettuce or cabbage. Five of these research participants used a bag of pre-washed, pre-cut salad leaves and, as a result, did no further cleaning or (indeed other preparation) of it. Six other research participants – two from each study group – used lettuce or similar salad leaves. Chloe (38 years, Young families, rural) used rocket that were not pre-washed. Only one of these (Archie, 74 years, Elderly households, urban) used lettuce without washing it at all; the rest washed them, but varied subtly in their techniques. One approach, as demonstrated by Alicia (23 years, Young families, urban) and Daniel (25 years, Young single men, urban), was to wash the lettuce whole. Alicia rinsed it under cold running water for around 10 seconds, then placed it to drain in a colander. Daniel was the only one to use water from the hot tap, explaining that he “like[s] to think that it might kill some bacteria”, but also expressed doubt about this. He again rinsed the whole lettuce under the hot tap for around 10 seconds, using his thumbs to slightly prise apart the leaves. Others, like Tricia (70 years, Elderly

households, urban) and Ryan (20 years, Young single men, urban), separated the lettuce into individual leaves before rinsing under cold water (for 10 and 15 seconds respectively), using their hands to move the leaves around inside the colander. Chloe used a similar technique but with different tools. She used a sieve in place of a colander, and instead of using the tap she poured filtered water from a jug over the rocket leaves, moving the jug from side to side as she poured instead of agitating the leaves themselves (Figure 4.3.41). This was also a much shorter rinse than the others, lasting around 3-4 seconds. Chloe explained that she used the filter jug to avoid contaminating the leaves with other substances that she felt might be in the tap water, such as chlorine.



**Figure 4.3.41: Varied approaches to washing salad greens: Daniel, Tricia and Chloe (UK)**

Still on leafy greens, two of the older households used cabbage, finely chopped with carrot and a dressing, to make coleslaw. In doing so Mary (70 years, Elderly households, urban) peeled the carrot, and removed outer leaves from the cabbage, but washed neither. Jean (72 years, Elderly households, urban) and John Higgins had done some initial preparation before the observation began, making it unclear as to whether the (unpeeled) carrots they used had been washed; after shredding, cabbage was mixed with salt to draw out moisture and then subsequently rinsed and agitated in a colander under cold running water for around 40 seconds.

Second, cucumber was used by six research participants, but only washed by two: Sahib (23 years, Young single men, urban) and Mary. Susan (78 years, Elderly households, urban), meanwhile, peeled hers rather than wash it. Cucumber was, in fact, the only vegetable that Sahib washed, cutting a section off and briefly rinsing it under running water. Mary didn't use running water, but wiped her cucumber with a damp paper towel. She felt rinsing it under the tap might make it 'soggy':

Cucumber I don't wash, I rub down ... I tend not to wash cucumber because when it's in the plastic film, I always peel it down to where I need the amount I want. And if you try and wash it— I suppose you could actually cut it off and then wash what you've got, but I don't sort of— then I— I don't know. It seems to make it wet, soggy. So, I just tend to use a paper towel and rub it down.

(Mary, 70 years, Elderly households, urban, UK)

Third, some vegetables were used interchangeably as raw or cooked ingredients: onions, mushrooms, tomatoes, and peppers. Onions were always peeled and never washed, with the exception of Archie, who rinsed some (but not all) of his spring onions, which he used raw in a salad. Nobody in the sample washed mushrooms, regardless of how they were being served.

Of the nine households that included tomatoes in their salads, four washed them. Chloe followed the same procedure as for her salad leaves (see above), pouring filtered water over the tomatoes in a sieve. The other three all washed tomatoes in their hands, under cold running water: Archie rinsed his tomato briefly, for around one second before drying it on a piece of paper towel; Mary cupped a handful of cherry tomatoes and moved them around under the water for a little over five seconds, before also using paper towel to rub them dry; and Alicia held the tomato still under the water but used her thumbs to rub the surface, for around 10 seconds. Among the five research participants (roughly half) who didn't wash their tomatoes, some reflected on not doing so. Sahib, who instead gave each cherry tomato a brief rub between his thumb and finger, was confident that, unlike other vegetables, they are not an item that requires washing:

Some foods I wash, some I don't. So, the cucumber, I washed. Tomatoes, I tend not to wash. It's just something you can rub. It's like an apple. I'm going to rub an apple on my top or something. I won't really go and wash it.

(Sahib, 23 years, Young single men, urban, UK)

Susan said she tends not to wash tomatoes but, by contrast to Sahib, she does sometimes retrospectively wonder if she should have done. However, thinking about this doesn't put her off eating them.

Peppers were used by five research participants as a salad ingredient, but only washed by one: Mary. She held the pepper under cold running water for around 10 seconds, rubbing it all over with her thumbs. Paul was the only member of our sample to cook with peppers. Interestingly, he washed the peppers that he cooked – using essentially the same technique as Mary, albeit for less time – but not the one he used in his salad.

### Chopping salad/vegetables

The second common stage in preparing vegetables was to cut them up before using them, whether planning to cook them or serve them raw. The most important concern here from a food safety perspective is with cross-contamination, especially from pathogens present in raw chicken. As such, we pay attention to the measures taken to minimise the risk of this happening, as well as the situations where contamination might have occurred.

As we saw earlier, it was uncommon for our research participants to reuse any of the equipment from preparing chicken for subsequent preparation of other foods: most washed this equipment straight away or put it to one side for cleaning later on. One approach to this was to have separate equipment designated only for raw meat use. At least two research participants, Josh (22 years, Young single men, urban) and Chloe (38 years, Young families, rural), had a pair of scissors that they explained were exclusively used for raw meat, while Alicia had a whole separate block of knives reserved for meat use.<sup>42</sup> Similarly, several households had separate, colour-coded chopping boards that were specifically designated for use with meat or vegetables. On the occasion of our visit, only five households actually used a chopping board for meat, but three of them: Ryan (20 years, Young single men, urban); Alicia (23 years, Young families, urban); and Jean (72 years, Elderly households, urban) had designated meat and vegetable chopping boards (Figure 4.3.42). The same was true of a number of other research participants, even though they were not needed on this occasion: this was mentioned explicitly by Kate (30 years, urban), Paul (34 years, urban (both Young families) and Tricia (70 years, Elderly households, urban), and alluded to by Mary (70 years, Elderly households, urban). This also suggests that having separate boards was quite evenly spread among our three study groups.



**Figure 4.3.42: Designated chopping boards: Ryan (left) and Alicia (middle) had colour-coded chopping boards; Mary's vegetable board was faintly marked with a 'V' (right) (UK)**

There were a few exceptions to this strict separation of equipment for meat and vegetables. Laura (31 years, Young families, urban) reused her chicken chopping board for salad, but not before cleaning it with anti-bacterial spray and a dishcloth. Susan (78 years, Elderly households, urban) reused her chicken scissors in cutting up herbs for her salad; in between uses they were rinsed under hot running water, but without

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<sup>42</sup> That said, she did use the bread knife from her 'meat' set during our observation, having cut her hand on her usual bread knife, drawing blood, and therefore not wanting to reuse it before washing.

detergent. As with some of the earlier examples, it is difficult to know whether or not this presented an opportunity for cross-contamination.

As introduced earlier, there were also a small number of cases of equipment being reused without being cleaned in between. These varied in the extent to which the tools in question had come into contact with raw chicken, and how noticeable it was that they had done so. Mary, for example, used the tip of a knife very briefly to pierce her packet of chicken before, later on, reusing that knife for her salad vegetables. Archie (74 years, Elderly households, urban) used a knife both for opening the chicken packet and lifting out a chicken portion, before later using it to slice spring onions. Liam (28 years, Young single men, urban), as we saw, used the same chopping board and knife for cutting up chicken into pieces and later slicing peppers for his salad. While Mary and Archie's examples are quite subtle, in Liam's case it seems 'obvious' that he used the same equipment and risked cross-contamination. However, there are a number of factors that might help account for this. First, Liam explained that he normally uses scissors to cut chicken, but in their absence was improvising with a knife and fork; in other words, his usual routine – which might well protect him from risk – was unavailable to him.<sup>43</sup> Second, Liam mentioned that he had considered cooking the pepper, which he sometimes does, but decided to have it raw as part of a salad instead:

Liam: So, these peppers, I'm going to do with my lettuce, so— because sometimes I'll do them with the chicken and the oil, but, I don't know, I just don't fancy it.  
(Liam 28 years, Young single men, urban, UK)

Third, the microbiologist took a swab from the chopping board in between chicken and vegetable cutting: again, this plausibly might have disrupted the flow of activity at the point where Liam would have otherwise cleaned the board.

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43 It can be inferred from other participants who also use scissors for chicken (Susan and Tricia), that Liam's usual approach to cutting chicken might not require a board or knife at all, thereby inherently avoiding risk of cross-contamination.

## Handling vegetables/salads in Norway

The households were instructed to prepare some fresh vegetables with their chicken dish, and they solved this challenge in different ways. Only one participant used frozen pre-prepared vegetables, which needed no further treatment before heating. Most of the research participants prepared a side salad of fresh ingredients, although some expressed that the salad was only made for this particular meal to accommodate the needs of the project.

While all of the research participants prepared vegetables, not everyone made a salad. Petter (29 years, Young single men, rural), for instance, prepared an Asian inspired chicken wok dish with vegetables. Roger (24 years, Young single men, urban) prepared a frozen wok vegetable mix with his chicken. Georg (28 years, Young single men, urban) prepared a salad that was heated a bit in the frying pan on the side of the chicken. The rest prepared a cold salad based on raw vegetables. However, a few also prepared cooked vegetables in addition.

### *Unpacking the vegetables and the tools used*

In Norway, vegetables and greens are increasingly sold in packages and wrapped in plastic film. Thus, for many of the research participants, preparing vegetables began by opening packages or wrappings, usually made of plastic. Similar to unpacking the chicken, the research participants often made use of a knife for packing out the greens. Meanwhile, compared to the chicken, the research participants often had opened packages of vegetables in the fridge. Bente (70 years, Elderly households, urban) was a good example. When fetching food from her fridge, she picked out four potatoes from the fridge drawer where she kept potatoes unpackaged. She then took out a lettuce, sugar snaps and sweet pepper stored in their original pre-packaged packaging, tomatoes she had picked and bagged herself in the shop, a quarter of a cucumber which was still wrapped in the original plastic wrapping, but which was opened and celery, which Bente did just break off from the celery package in the fridge.



Figure 4.3.43: Bente picked out the vegetables she would to prepare (Norway)

As with Bente, the observation did not capture the unpacking of all the vegetables. A lot of the vegetable packaging are large enough to last more than one meal and many research participants thus had already packages that were already opened, and some even re-packaged the food into plastic bags or boxes. One example of this is young single man Jon (28 years, Young single men, urban), who had three vegetables in his dish, where none of them were opened during the observation. The lettuce and red pepper were leftovers from a taco dinner the previous day, and was thus already rinsed and chopped and placed in small serving bowls. The last ingredient, half a cucumber, was re-packaged in a plastic bag. Jon took the cucumber out of the bag, and pulled the tight plastic wrapping surrounding the cucumber further back so he could cut into it without cutting the cucumber. However, for most research participants, the situation was like Bente's, with a mix of unopened, opened and re-packaged food, as well as food without packaging. The table 4.3.6 shows how the research participants opened the sealed packaging, excluding the vegetables that were already opened and/or re-packaged.

Typically, the research participants used various techniques for opening the vegetables depending on the packaging. For instance, lettuce was usually packed in a plastic container with a thin plastic wrapping around it which was not attached to the container where the lettuce head was laying. This package seemed to be fairly easy to open by hands (5/7). However, a few research participants used a knife for opening the lettuce packages and Inger.



Bente opened the lettuce bag with her hand



Emma opened the lettuce bag with her hands



Fredrik used a knife to open the lettuce bag

**Figure 4.3.44: Different ways of opening packages of lettuce (Norway)**

## Chapter 4.3: Handling and Preparing salads and vegetables

**Table 4.3.6: Overview over unpacking vegetables in the Norwegian households**

Households	Type of vegetables	Ways of opening	Tools used	Reuse of tool
Anna (31 years, urban)	Cherry tomatoes	By hands	None	
Bente (70 years, urban)	Lettuce, sweet pepper, sugar snaps	By hands	None	
Camilla & Chris (35 & 37 years, urban)	Green pepper	Knife first, then hands	Knife	Cutting vegetables
Emma (33 years, rural)	Red pepper	Cut with a knife	Knife	Cutting vegetables
	Lettuce	By hands		
Fredrik (23 years, urban)	Bagged charlottes	By hands		
	Carrots, potatoes, lettuce, cherry tomatoes	By cutting with a knife	Knife	Opened several packages of vegetables, cut them
Georg (28 years, urban)	Cherry tomatoes	Knife	Knife	For opening the chicken and cutting the vegetables
	Pepper	Knife		
	Lettuce	Hands		
Hanne (31 years, urban)	Lettuce	Hands	None	
Inger (70 years, rural)	Lettuce	Knife	Knife	Cutting vegetables
Jon (28 years, urban)	Not observed			
Kari (71 years, urban)	Squash	Cut in two, then sliced plastic with knife	knife	Cutting vegetables
	Lettuce	By hands		
Lena (37 years, rural)	Cucumber	Knife first, then peeled using hands	Knife	Cutting vegetables
	Chili	By hands		
Nils (74 years, rural)	Cucumber	Cut with a knife, wrapping peeled off by hands	Knife	Cutting the vegetables
Oda & Ove (both 72 years, rural)	Tomatoes	By hands	None	
Petter (29 years rural)	Pepper, carrots	By hands	None	
Roger (24 years, urban)	Vegetable mix	By hands	None	

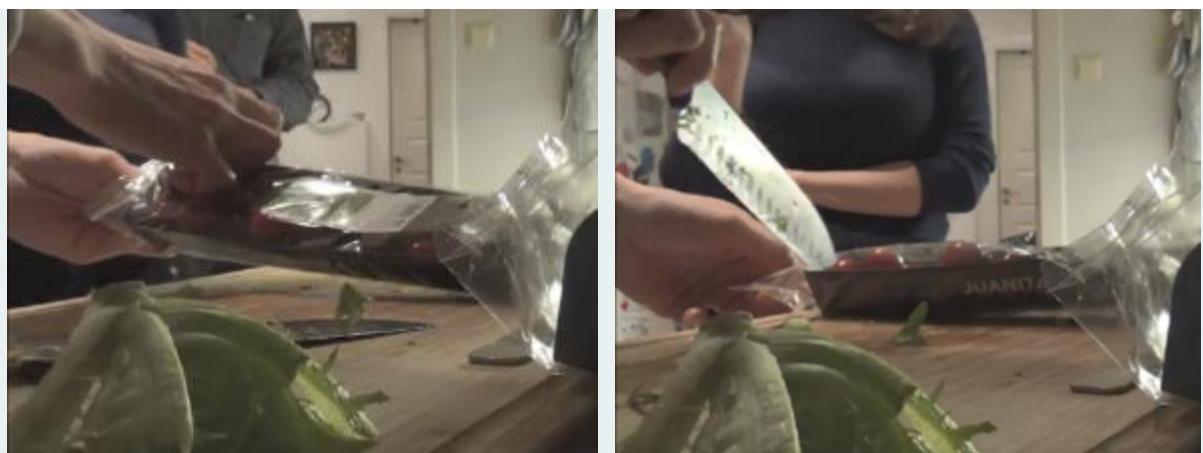
Meanwhile, most needed to open vegetables wrapped in a plastic film (e.g. cucumbers and peppers) by using a knife (6/6). The plastic film was wrapped tightly around the vegetable, and despite some research participants trying to open by their hands first, they all ended up using the knife first to tear a hole in the plastic, before unwrapping the plastic film with their hands after. For instance, regarding opening cucumbers and squash, both wrapped in tight plastic film, the research participants cut the vegetable in two first and then made a slit in the plastic film with the knife, and were then able to wrap the plastic film off using their hands (Lena, Nils and Kari).



Georg and Nils used a knife to open the plastic film surrounding the vegetables

**Figure 4.3.45: Using a knife to open shrink wrapped vegetables (Norway)**

Many of the research participants fiddled to open the packages and then ended up using a knife (Emma and Fredrik). This was for the most part relevant for the looser plastic packaging, which seemed easier to open than the tight plastic film wrappings. In contrast, the vegetables in tight wrappings were often not even attempted to open by hands before resolving to a knife (Georg, Kari, Lena).



**Figure 4.3.46: Fredrik tried to open the package of tomatoes by hands, but didn't manage and thus turned to the knife (Norway)**

However, some did not try to open the loose types of packaging with their hands before using a knife to aid them. This could be due to a preference for using knives, perhaps seeing it as simple and more effective than using hands. However, it could also be the same issue as with the opening of chicken packaging. When the knife first has been taken in use, it is available, and thus easier to use again. For instance, Georg had to use a knife to open the yellow pepper. Without putting the knife down, he then grabbed the cherry tomatoes, which were in a carton container surrounded by plastic, and cut the packaging open. Similarly, Fredrik opened the bag of shallots with his hands. He then took down a knife from a rack on the wall and chopped them. When opening the packaging of carrots next, which was a plastic bag, Fredrik used the knife. He then continued using the knife to open all other packages during the dinner preparation.

## **Washing salad**

The Norwegian sample displayed a wide variety in washing fruit and vegetables, ranging from rinsing each vegetable carefully to not rinsing anything, and everything in between. Likewise, the reasons for doing one or the other were many. The need for rinsing fruits and vegetables varied according to food product. In general, the research participants did not rinse fruit and vegetables with thick peel, such as avocado, mango, onions and garlic, except for participant Anna (31 years, Young families, urban) who rinsed a clove of garlic for her chicken dish. Chris (37 years, Young families, urban) stated that there is no need to rinse food such as mangos “(...) because the meat is on the inside.” Similarly, some food was perceived by some as best un-rinsed. For instance, Chris explained that mushroom “(...) will attract moisture like a sponge. Then it won’t be cooked well enough”, and Kari (71 years, Elderly households, urban) said that she never rinsed strawberries “because I think they get so watery.” Similarly, Hanne (31 years, Young families, urban) said that she prefers not to rinse rucola because “(...) I think rucola just collapse, and gets kinda, you don’t get to dry it properly, like (...) it gets, it just sticks into a ball.”

### *Order of washing*

When rinsing the vegetables for the salad, the Norwegian research participants revealed two different orders of doing it. The majority prepared one type of vegetable at a time, meaning they went through a whole preparation process with each vegetable before starting on the next. One example of this is Nils (74 years, Elderly households, rural). His salad consisted of seven different fruits and vegetables. He opened the packaging, rinsed, peeled (if necessary), cut and added each one to the salad bowl, before starting on the next. The other way, which was less common in the sample, rinsed all vegetables before continuing to cutting or preparing them further. One example of this is Georg (28 years, Young single men, rural). Georg lived in a room in a shared housing and had no access to water in his small kitchen space. This meant that for rinsing vegetables, he had to bring them to a shared sink in the hallway. During cooking observation, Georg collected all vegetables he was going to use and carried them out into the hallway on a wooden cutting board. He said he rinsed all the vegetables at once or not depending on the time he had, how busy the sink was (if the others he shares it with were using it at the same time), and if he had visitors. “(...) it’s like, if I have visitors, they have to move every time I go out the door [from his room to the hallway].” When carrying the vegetables out of his room to rinse them, Georg made sure they stayed on the cutting board and didn’t touch anything, except from when he was holding them under the running water. “I try not to put them places, I mean, not let them touch other things than the cutting board for instance.”



**Figure 4.3.47: Georg used the cutting board to transport the vegetables to the kitchen area to wash them (Norway)**

Another example of rinsing all vegetables before continuing preparation is Anna (31 years, Young families, urban). In contrast to Georg, Anna (31 years, Young families, urban) lived in an apartment with her husband and had a large kitchen with running water. She fetched cucumber, tomatoes and lettuce from the fridge. She then rinsed and dried the cucumber, rinsed and dried the cherry tomatoes, and lastly, she rinsed and spun the lettuce in a lettuce spinner, before proceeding to cut them and adding them to a salad bowl. She did not give a reason for rinsing all vegetables before continuing the preparation, but she was concerned with hygiene and order, which may affect the sequencing in her cooking.

In general, the only tools involved in washing fruits and vegetables were colanders and lettuce spinners. Detergents to wash fruits and vegetables are not available in Norway, and none of the Norwegian research participants used anything other than water during the observed food preparation. However, one participant, Inger reported to sometimes use vinegar when rinsing vegetables as a part of her storing routine:

So what I do, when I store the lettuce and vegetables, is that I rinse them and tend to them a bit and then put them in boxes. (...) Cauliflower and cabbage, like, may have caterpillars, especially when I buy them at the local farmer's, it happens there are some dirt on them, then I'll put it in vinegar. (70 years, Elderly households, rural),

Inger also said the vinegar may be used for foreign produced berries, fruits and vegetables because she does not know what pesticides or other remedies that have been used during production.

Furthermore, with regard to tools, there was a distinction between lettuce and other types of fruits and vegetables. While tools were hardly used for the other vegetables, many research participants used a colander or bowl for rinsing lettuce. Some research participants ripped the amount of lettuce leaves they needed off the lettuce head and placed them in a colander or bowl while standing or holding it under the running water in the kitchen sink. While the water was pouring down over the lettuce, they used their hands to move the lettuce about in the bowl or colander, turning them and shaking them in the water, such as Kari (71 years, Elderly households, urban) demonstrated on the far left picture beneath. Other research participants rinsed either loose leaves or whole

lettuce heads under the running water in the sink, holding it in their hands the whole time.



Kari was rinsed the lettuce in a colander      Nils used a glass bowl filled with water  
**Figure 4.3.48: Using tools for rinsing vegetables (Norway)**

All research participants used running water when rinsing vegetables. While the lettuce was sometimes rinsed with help from a bowl or colander, the main “tool” for rinsing other vegetables was the research participants’ hands. Most of the vegetables were rinsed in running water while being held by the research participants, and did not even touch the area around the kitchen sink. Meanwhile rinsing techniques varied from Oda’s (72 years, Elderly households, rural) rubbing, to more flushing ways.



Oda rinsed tomatoes by rubbing them in her hands under running water      Kari held the tomatoes still inn her hands, letting the running water pour over      Georg rinsed them one by one in running water  
**Figure 4.3.49: Different ways to rinse vegetables: rubbing, flushing and rinsing one by one (Norway)**

There were some exceptions during the cooking observations. For instance, Hanne (31 years, Young families, urban) rinsed tomatoes while they were in the packaging and Bente (71 years, Elderly households, urban), who used the colander she had previously used for lettuce to rinse the sugar snaps and tomatoes as well.



Hanne rinsed tomatoes in the plastic container by filling it with water and emptying it again

Bente used a colander for rinsing the vegetables

**Figure 4.3.50: Tools involved in rinsing vegetables (Norway)**

The research participants differed according to the precautions taken to rinse vegetables. Some, such as Anna (31 years, Young families, urban), was very careful, spending some seconds on each vegetable, rubbing them with her fingers to make sure any unwelcomed spots get off. Others, such as Bente, barely let the vegetable swing by the water jet from the kitchen sink, before removing it again. Most research participants were somewhere in between. However, generally, lettuce was rinsed more carefully and allocated more time during rinsing than other types of vegetables, which is further evident by the use of colanders and lettuce spinners for lettuce. Moreover, both Chris (37 years, Young families, urban) and Fredrik (23 years, Young single men, urban) rinsed nothing else during the cooking observation, apart from the lettuce.

After rinsing the vegetables, some sort of drying or getting rid of excess water took place. Most research participants gave the vegetable one or several small shakes to get the water off. One example was Emma (33 years, Young families, rural), who after rinsing each vegetable, gave a small shake or two and carried the vegetable over to the kitchen counter and cutting board. Again, lettuce was distinct in the sense that some of the research participants who barely gave the other vegetables a shake after rinsing, still used a lettuce spinner for the lettuce. Out of the thirteen who were observed to prepare lettuce, six of them used a lettuce spinner after rinsing (Anna, Bente, Camilla & Chris, Hanne, Inger and Jon (28 years, Young single men, urban). The exception in the sample was the use of paper or kitchen towel to dry the vegetables after rinsing. Anna was the clearest example on this. After rinsing garlic, cucumber and tomatoes, she dried them all with kitchen paper. She explained that she dried the cucumber “because I’m not going to use the whole cucumber, I’m putting a part of it back into the bag so it won’t go bad.” When asked what would happen if she stored the remaining cucumber in the plastic bag while being wet, she replied “then it gets mouldy.” Anna’s carefulness with drying is thus related to her storing practice. However, she dried the tomatoes and the garlic as well, which she was not going to store again after use. This suggests that there is something about the wetness as well, that she does not want while preparing food. Another participant, Kari, expressed this during rinsing lettuce; “That’s what so silly, when you first get to rinse it, it gets so incredible wet.” Similarly,

Oda dried the rinsed lettuce on a piece of kitchen paper spread on the counter top, saying “I’ve flipped it [on the paper] once, because it was so wet”, and Inger dried the red pepper with kitchen paper after rinsing it and removing the seeds.



Oda dried the rinsed lettuce using a paper cloth



Inger dried the red pepper using a paper cloth

**Figure 4.3.51: Drying lettuce and greens with paper cloths (Norway)**

#### *Reasons for rinsing/not rinsing*

The Norwegian sample consisted of research participants who rinsed all fruits and vegetables, those who rinsed some but not all fruits and vegetables and research, and those that generally did not rinse vegetables. The reasons for these different practices were varied. The main reasons for rinsing vegetables were pesticides and insects and other types of dirt. For instance, participant Nils (74 years, Elderly households, rural) said that he and his wife always rinsed fruit and vegetables. “If there’s any sand or these, I was about to say caterpillars, or something like that inside, then we get them out.” Emma (33 years, Young families, rural) rinsed all vegetables and named pesticides as the one thing she was most worried about. “I’m not worried about eating some dirt, I’m much more afraid of getting these pesticides and stuff. But I don’t think that will disappear just by me barely rinsing it in the sink.” She ended up concluding that she rinsed because she had heard through the Government or media that she should. The argument of pesticides was also used as an argument for not rinsing. For instance, elderly participant Kari said:

I have read that the only thing you achieve by rinsing fruits and vegetables is that they get wet (...) But for instance, if they are full of dirt, ‘cause strawberries can be, then I rinse them. Because dirt, I think, but, like, if someone has picked their nose and then picked these strawberries, you don’t get rid of that by rinsing them in cold water, I think.

(Kari, 71 years, Elderly households, urban, Norway)

Kari thus said that she did not believe rinsing vegetables was enough to get rid of bacteria or pesticides, but she did rinse if there was dirt. A variation of the pesticides

and dirt argument was exemplified by Inger. She reported to rinse vegetables because of both pesticides, dirt and other things, such as insects. However, her system for rinsing was connected to where the food was produced:

When I pick the vegetables over there [refers to a nearby local farm where she knows the farmer], I don't rinse at all. Except if they got dirt on them. (...) They pick the tomatoes [for me] but I don't rinse them because I know the ones who pick them.

(Inger, 70 years, Elderly households, rural, Norway)

Inger said she would rinse the tomatoes bought at the local supermarket although if they were Norwegian, and if she bought tomatoes in store from another country, she would add some vinegar when washing, because “(...) I don't know what they have put on them”, referring to pesticides. Similarly, participant Lena (37 years, Young families, rural) said “I don't always rinse cucumber, ‘cause I feel it's clean. It's this Nyt-sticker [“enjoy Norway”] on it, so it's Norwegian. Then it's clean.” She said she would rinse it if the cucumber was not Norwegian. Thus, place of production/origin was part of the negotiation when the research participants were deciding to rinse or not. Anna (31 years, Young families, urban) said she rinsed all types of fruits and vegetables to avoid getting ill.

It's not just that [pesticides], but more that there can be different bacteria, and don't know who touched it, don't know where they were, because a lot of things come from other countries. ... I don't know how they wash and then, it's not difficult for me to rinse one extra time, ‘cause then I know I won't get ill at least.

(31 years, Young families, urban, Norway, NO)

For Anna, rinsing was coupled with a lack of trust in the food production. Similarly, Chris (37 years, Young families, urban) said that he and Camilla (35 years, Young families, urban) always rinsed the lettuce, regardless of it being pre-rinsed or not, “just to be sure”. It was consistent with rinsing habits of Inger, who did not rinse vegetables from the producer she knew personally and trusted.

Fredrik (23 years, Young single men, urban) presented a completely different reason for rinsing than the already mentioned research participants. He said that he did not always bother to rinse the lettuce but did it sometimes because “it's nice, though, it gets fresher and stuff. And I think lettuce leaves absorb moisture. You can put them in water and they get like crispy. Tastes extra nice”. Thus, for Fredrik, rinsing was about taste and texture. He did not rinse any other vegetables for the heated dish, nor the side salad he prepared during cooking.

Lastly, some research participants expressed an unreflective or unarticulated relationship to rinsing or not rinsing vegetables. For instance, Petter (29 years, Young

single men, rural) rinsed both the vegetables he prepared but did not seem to have a conscious reason why. “Maybe reflex. (...) Like, we used to pick carrots, went to a farmer and picked. (...) So that’s maybe...some reflex, and it has just been the way I’ve done it”. He said it might be just to be sure, but he did not specify what he wanted to be sure of, even after the researcher’s following questions. Similarly, young single man Jon (28 years, Young single men, urban) rinsed the lettuce and red pepper but said he did not rinse cucumber. He said “it has nothing to do with getting ill if I rinse them, it’s mainly that I’m lazy (...) It’s actually only the cucumber I’m lazy with, that I can think of now.” He did not know exactly why he did not rinse the cucumber when rinsing other vegetables. When the researcher asked directly if the plastic wrapping may have something to do with it, he replied “that could be why”.

There were two Norwegian households that used pre-rinsed lettuce during the observed cooking session. Lena (37 years, Young families, rural) used some green kale which was pre-rinsed and cut, and Georg (28 years, Young single men, urban) had some pre-rinsed rucola. They both used the lettuce straight from the packaging. However, their reasons varied. Lena said “This is nice now. Speaking of ready washed and ready to eat, then we get some... (...) and it fills out the salad a bit, ‘cause mango is so expensive”. Lena indicated that the lettuce was practical because she did not have to do anything else with it before adding to the salad, it was healthy because they got some greens, maybe referring to vitamins, and it was economically because it filled out the salad, increasing the volume without spending more of the expensive ingredients, such as mango. On the other hand, Georg preferred the pre-rinsed rucola:

Particularly rucola, which is...well, it gets bad quickly. So it’s like I use to eat it in a day or two. And then there’s, like, the space I’ve got. I don’t have time to dry lettuce, don’t trust the sink out there.  
(Georg, 28 years, Young single men, urban, Norway)

For Georg, the choice of pre-rinsed lettuce was linked to his kitchen infrastructure, which consisted of a shared sink in the hallway and a tiny kitchen space in his room. Moreover, Georg was a household of one person, and was concerned with buying food that he was able to finish before it went bad.



**Figure 4.3.52: Easy preparation of pre-washed lettuce (Norway)**

### Three ways of preparing vegetables

In the Norwegian sample, three ways of preparing vegetables were identified; heat-treated vegetables only, fresh vegetables only, and preparing both. Although potatoes are vegetables, they are not considered here a vegetable dish when cooked alone. Indeed, in Norway, the potato is considered a starch, which has the same uses and the same status as pasta and rice. Table 4.3.7 gives an overview over all vegetables preparation in the Norwegian study. The first group only consisted of two research participants in this sample, which may be because the research participants originally were asked to prepare chicken and fresh vegetables. Both research participants belonged to the young men category, Petter and Roger and they both made chicken wok. Petter washed and chopped carrots and red pepper and added them to a home-made wok sauce with (home-made) marinated chicken and boiled rice. Roger's dish was similar, but used a pack of pre-prepared frozen vegetable mix, which he mixed with fried chicken, a ready-made wok sauce that only needed heating, and boiled egg noodles.

The second identified way of preparing vegetables was to only prepare fresh vegetables. This was the most frequent way in the Norwegian sample, when including the two research participants who prepared a garlic and a chili for the hot dish in addition to a fresh side salad. A typical way to do this was exemplified by Oda. She first prepared an oven meat dish with chicken, bacon and a creamed sauce, gratin with cheese. While the chicken dish was baked in the oven, she prepared a salad consisting of lettuce, cucumber, red pepper, tomatoes and some couscous. All the vegetables were cut in small pieces and added to a salad bowl.

The third way included preparing both heated and non-heated vegetables. This way was dominated by the younger research participants, such as young households and the young men. The heated vegetables were for the most part incorporated in the main heated dish, while the non-heated made out a separate side dish. For instance, young

single man Fredrik baked carrots, potatoes, shallots and garlic in the oven with chicken thighs, Chris added mushroom, green pepper and red onion to the creamed chicken pan, and Emma also incorporated onion and red pepper in the oven baked chicken dish she was making.

The exception in the Norwegian sample is Georg, who went for semi-heated vegetables. He added chopped yellow pepper and tomato in the frying pan for a few seconds before moving them to his dinner plate, saying he only wanted to “lightly roast them” to get some heat on them.

## Chapter 4.3: Handling and Preparing salads and vegetables

**Table 4.3.7: Overview over vegetable preparation in the Norwegian households**

Households/ Dish	Fruits & vegetable items	Washed/peeled	Other preparation
Anna (31 years, urban) (Chicken thighs baked in oven with side salad)	Lettuce	Washed	Spun w/lettuce spinner, chopped, added to salad bowl
	Cucumber	Washed	Dried with kitchen paper, chopped, added to salad bowl
	Tomatoes	Washed	Dried with kitchen paper, chopped, added to salad bowl
	Garlic	Washed	Dried with kitchen paper, chopped, added to heated dish
Bente (70 years, urban) (Fried chicken thigh filets with potatoes and side salad)	Lettuce	Washed	Spun in lettuce spinner, teared with hands, added to salad bowl
	Cucumber	Washed	Chopped, added to salad bowl
	Red pepper	Washed	Chopped, added to salad bowl
	Tomatoes	Washed	Chopped (divided in two), added to salad bowl
	Celery	Washed	Chopped, added to salad bowl
	Sugar snaps	Washed	Chopped, added to salad bowl
	Potatoes	Washed	Boiled in pot
Camilla & Chris (35 & 37 years, urban) (Creamed chicken pan with pasta)	Lettuce	Yes	Spun in lettuce spinner, teared with hands, added to salad bowl
	Mango	Peeled	Chopped, added to salad bowl
	Avocado	Peeled	Chopped, added to salad bowl
	Lime	No	Chopped, squeezed with hands, added to salad bowl
	Green pepper	No	Seeds removed, chopped, heated in frying pan
	Red onion	Peeled	Chopped, heated
	Mushroom	No (brushed)	Chopped, heated
	Garlic	Peeled	Chopped, heated
Emma (33 years, rural) (Chicken pasta gratin and salad)	Lettuce	Washed	Chopped, added to salad bowl
	Cucumber	Washed	Chopped, added to salad bowl
	Avocado	Peeled	Chopped, added to salad bowl
	Tomatoes	Washed	Chopped, added to salad bowl
	Red pepper	Washed	Chopped, added to salad bowl Chopped, fried in pan, added to heated dish
	Onion	No (leftovers, chopped)	Fried in pan, added to heated dish
	Asparagus	Washed	Fried in pan
Fredrik (23 years, urban) (Chicken thigh filets baked in oven with vegetables and side salad)	Lettuce	Washed	Chopped, added to salad bowl, seasoned with olive oil, salt and pepper
	Tomatoes	No	Chopped, added to salad bowl, seasoned with olive oil, salt and pepper
	Red pepper	No	Chopped, added to salad bowl, seasoned with olive oil, salt and pepper
	Potatoes	No	Chopped, seasoned with olive oil, salt and pepper, cooked in oven
	Carrots	No	Chopped, seasoned with olive oil, salt and pepper, cooked in oven
	Shallots	Peeled	Chopped, seasoned with olive oil, salt and pepper cooked in oven

## Chapter 4.3: Handling and Preparing salads and vegetables

Households/ Dish	Fruits & vegetable items	Washed/peeled	Other preparation
	Garlic	Peeled	Crushed with knife blade, seasoned with olive oil, salt and pepper cooked in oven
Georg (28 years, urban) (Fried marinated chicken with fried vegetables and lettuce)	Lettuce	No (pre-washed and cut)	Added to dinner plate
	Lime	Washed	Cut in quarters, squeezed over fried chicken
	Yellow pepper	washed	Chopped, fried in frying pan
	Tomatoes	Washed	Chopped, fried in frying pan
Hanne (31 years, urban) (Fried chicken with sauce and side salad)	Lettuce	Washed	Spun in lettuce spinner, teared with hands, added to salad bowl
	Tomatoes	Washed	Added to salad bowl
	Spring onion	Washed	Outer layer removed before washing, chopped, added to salad bowl
Inger (70 years, rural) (Fried chicken, salad and focaccia)	Lettuce	Washed	Spun in lettuce spinner, chopped, some added to salad bowl, and some distributed into plastic containers
	Red pepper	Unobserved	Seeds removed, chopped, some added to salad bowl, and some distributed into plastic containers
	Cherry tomatoes	Washed	Added to salad bowl, and some distributed into plastic containers
	Cucumber	Washed	Chopped, added to salad bowl, and some distributed into plastic containers
	Canned corn	No	Added to salad bowl, and some distributed into plastic containers
	Canned pineapple	No	Added to salad bowl, and some distributed into plastic containers
	Canned olives	No	Added to salad bowl, and some distributed into plastic containers
Jon (28 years, rural) (Chicken tikka masala with leftover salad)	Lettuce, leftover	Unobserved, washed the day before	Spun in lettuce spinner, teared with hands, in a small serving bowl
	Red pepper, leftover		Chopped, in a small serving bowl
	Cucumber	No	Chopped, added to a small serving bowl
	Canned corn, leftover	Unobserved	None.
Kari (71 years, urban) (Fried chicken and salad)	Lettuce	Washed	Dried on kitchen towel, teared with hands, added to salad bowl
	Red onion	Peeled	Chopped, added to salad bowl
	Squash	No	Sliced, added to salad bowl
	Tomatoes	Washed	Chopped, added to salad bowl
	Strawberries	No	Stem removed, sliced, added to salad bowl
	Pansies	No	Added to salad bowl
	Spring onion	No	End piece (stem?) and outer layer removed, chopped, added to salad bowl
	Carrot	Peeled	End piece (stem?) removed, sliced, added to salad bowl

### Chapter 4.3: Handling and Preparing salads and vegetables

Households/ Dish	Fruits & vegetable items	Washed/peeled	Other preparation
	Garlic	Peeled	Chopped, ground in kitchen machine with other dressing ingredients, added to salad bowl
	Lemon	No	Squeezed with squeezer, added to salad dressing ingredients in kitchen machine, added to salad bowl
Lena (37 years, rural) (Creamed chicken casserole)	Kale/leaf cabbage	No (pre-washed/cut)	Added to salad bowl
	Cucumber	No	Sliced in large pieces, then chopped in a cutting machine, added to salad bowl
	Red pepper	Unclear	Stem and seeds removed, chopped, added to salad bowl
	Mango	Peeled	Sliced in large pieces, chopped in a cutting machine, added to salad bowl
	Lime	No	Cut into quarters, squeezed over salad
	Chili	Washed	Tip cut off and seeds removed, chopped, added to heated dish
Nils (74 years, rural) (Creamed chicken casserole with a side salad)	Lettuce	Washed	Inspected, parts with brown spots removed, chopped, added to salad bowl
	Radishes	Pre-washed	Sliced, added to salad bowl
	Tomatoes	Washed	Dried with kitchen paper, chopped, added to salad bowl
	Cucumber	Washed	End piece cut off and thrown, chopped, added to salad bowl
	Carrot	Peeled & washed	Chopped, added to salad bowl
	Apple	No	Chopped, added to the salad bowl
	Red pepper	No	Stem removed, chopped, added to salad bowl
Ove & Oda (both 72 years, rural) (Creamed chicken dish)	Lettuce	Washed	Dried on kitchen paper, chopped, added to salad bowl
	Tomatoes	Washed	Chopped, white meat pieces removed, added to salad bowl
	Red pepper	No	Chopped, added to salad bowl
	Cucumber	No	Chopped, added to salad bowl
Petter (29 years, rural) (Chicken wok)	Carrots	Washed	Stem removed, chopped, added to heated dish
	Red pepper	Washed	Stem and seeds removed, chopped, added to heated dish
Roger (24 years, urban) (Chicken wok)	Vegetables mix, frozen	No	Massages the bag to loosen the frozen content before opening, fried in pan

### *Size variations*

The next parts will focus on the salads prepared with fresh vegetables. Among the 15 observed dinner preparations, 13 research participants prepared a salad as part of their meal. However, the size and work put into the salad preparation varied greatly among the research participants. For some, the salad was a small side dish, while for others it was given just as big a role as the chicken dish. For some, the salad consisted of few and simple vegetables, while others used many ingredients. Young mother Hanne (31 years, Young families, urban) was an example of a quick and simple side salad, which took little work. The salad was complementing the meal consisting of chicken, rice and sauce. Her salad had four ingredients, which were lettuce, tomatoes, spring onion and feta cheese, which was pre-cut in dices and marinated in olive oil. She rinsed all three vegetables, used a lettuce spinner to dry the lettuce, and tore the lettuce in pieces with her hands. The spring onion was sliced using a knife and cutting board, while the tomatoes and feta cheese was added to the salad bowl without any other preparation. On the other end of the scale was Kari (71 years, Elderly households, urban), who prepared a salad as one of only two components in her meal. The other component was fried chicken garnished with parmesan cheese, cured meat and herbs. Kari's salad was the largest in the Norwegian sample, consisting of eight different items, including edible pansies for decoration, and an elaborate salad dressing. Kari washed lettuce, tore it into smaller pieces with her hands and added it to the salad bowl. Red onion and carrot were peeled and chopped or sliced. Squash, strawberries, tomatoes, spring onion were carefully sliced or chopped, and stems removed before added to the salad bowl. Kari found edible pansies in her garden and added them on top of the salad, without any other preparation, together with three different types of herbs (she did not specify which ones they were) which she cut off from some herb plants on her kitchen counter. Most of the other research participants were somewhere in between these two modes of preparation, such as doing more cutting or adding more items than Hanne (31 years, Young families, urban), but less items than Kari, and skipping the dressing, which will be further described below.



Kari's elaborate and decorated salad



Hanne's quick and simple salad.

**Figure 4.3.53: From elaborate salads to quick fixes (Norway)**

In terms of salad based on fresh ingredients, the two examples of Hanne (31 years, Young families, urban) and Kari (71 years, Elderly households, U) above illustrate a general pattern in preparing salad among the Norwegian research participants. The elderly research participants used more items in their salad and spent more time preparing the salad, while the young households and young men used less ingredients and spent less time. This could be linked to concerns such as time available, accommodating children's taste, and role given to the salad in the meal, etc.

The typical salad consisted of lettuce, tomatoes, red pepper and cucumber, although the list of further items varied among the research participants. Some included root vegetables such as carrots, other included items that are newer to the Norwegian market such as mango and avocado, and some included cheese such as feta or mozzarella.

### *Tools*

The tools used for preparing salad was for the most part knives and cutting board. Most vegetables were washed (or not), chopped with a knife on a cutting board, and then added to a salad bowl or serving plate using hands or knives to shove or scoop from cutting board. Another tool was hands. In addition to many research participants using hands to move the prepared ingredients from packaging or cutting board and into the serving bowl, some research participants also used their hands to rip lettuce into smaller pieces rather than cutting with a knife: Bente (70 years, urban), Kari (71 years, urban (both Elderly households); Hanne (31 years, urban); and Chris (37 years, urban) (both Young families). Another tool observed was various kitchen appliances, such as Lena's (37 years, Young families, rural) manual cutting machine, which was used to chop the vegetables into right sized pieces, and Kari's kitchen machine, which she used to mix the salad dressing. Other tools observed was spoons. For instance, Chris used a spoon to scoop the flesh out of the avocado peel, and Hanne used a spoon to add dices of feta cheese to her salad. Moreover, spoons were used to mix and distribute salad dressing: Oda (72 years, rural); Nils (74 years, rural); and Inger (70 years, rural) (all Elderly households). Scissors were not common among the Norwegian sample, but were observed as Kari's tool when she was cutting herbs for the salad.



Oda used a knife and plastic cutting board



Kari used scissors as a tool for cutting the herbs for the salad

Lena used a manual cutting machine for cutting the vegetables preparing the salad.

**Figure 4.3.54: Various tools used for preparing salad: knife, chopping board, cutting machines and scissors (Norway)**

### *Serving*

Most of the prepared vegetable dishes were served as a mixed salad in a serving bowl, but some variations were present in the Norwegian sample. One example is Inger (70 years, Elderly households, rural), who was cooking for her husband and their grandchildren. She placed the rinsed and cut lettuce in a bowl and then found a plate for the remaining salad ingredients. “What I do now is that I put the other vegetables on a serving plate, like I, this is the lettuce, and then they can help themselves, because there are some who are not eating this and some who are not eating that”. Another variation was represented by Jon (28 years, Young single men, urban), who used mostly leftovers from yesterday’s taco dinner. He had lettuce and red pepper from previously, and prepared a cucumber during observation. The three vegetables were served in small serving bowls, without mixing them.



Lena's mixed salad

Inger's mix-yourself-platter

Jon's separate taco vegetables

**Figure 4.3.55: Different ways of serving the salad among the Norwegian households**

Moreover, Inger was an exception because while she was cooking, she was also putting aside some dinner for her two adult children and one of their spouses, who would not make it to Inger's house in time for dinner. She then placed the salad ingredients, dressing and chicken in boxes so they could have dinner after work.



**Figure 4.3.56: Inger's meal boxes prepared for her grandchildren and their parents (Norway)**

The Norwegian research participants mainly prepared salads as their fresh vegetable dish, and this section thus focuses on the seasoning of these. Moreover, the two research participants who heat treated the vegetables did not season their vegetables before heat treating them. Among the 13 research participants who prepared a fresh salad, only three did not season their salads: Anna (31 years, urban); Emma (33 years, rural) (both Young families); and Jon. Among the remaining ten research participants, the extent of seasoning varied greatly from only using one ingredient, to making a dressing consisting of several ingredients that needed various preparations, as well as varying between home-made dressings, semi-finished solutions and ready-made seasoning. Examples of simple ways of seasoning the salads was to add olive oil, such as Bente (70 years, Elderly households, urban) or simply squeeze a lime over the salad:

Chris (37 years, urban) and Lena (37 years, rural) (both Young families). Only one participant, Oda (72 years, Elderly households, rural), used a semi-finished bag of dressing, which she mixed with water using a spoon. And only one, Hanne (31 years, Young families, urban), used a ready-made form of seasoning, as she had some of the olive oil-based marinade with spices and sundried tomatoes from the jar of marinated feta cheese as a dressing. See Table 4.3.8 for an overview.



**Figure 4.3.57: Kari added oil to the kitchen machine, which she used to mix the salad dressing (Norway)**

The participant representing the most complex seasoning was Kari (71 years, Elderly households, urban), who made a home-made dressing consisting of several ingredients, preparation techniques and tools. Kari used eight ingredients in her salad dressing. She peeled and chopped a clove of garlic, separated an egg yolk from the whites, grated parmesan cheese, and squeezed half a lemon. All of these ingredients were added to a kitchen machine, with mustard, some olive oil and anchovies, and was then grounded together into a liquid dressing, which Kari added to the salad, using a spoon to distribute it. Kari was the only participant to use something other than a knife, spoon and hands to make the seasoning. Her salad was one of two components in the meal, whereas the other component was chicken. In contrast, most of the other research participants had three components, adding a starchy dish to the meat and vegetables, such as potatoes, pasta or rice.

**Table 4.3.8: Salad seasoning among the Norwegian households**

Study group	Households	Salad seasoning
Young families	Anna (31 years, urban)	None
	Chris (37 years, urban)	Lime
	Emma (33 years, rural)	None
	Hanne (31 years, urban)	Olive oil-based marinade from feta cheese jar
	Lena (37 years, rural)	Lime
Young single men	Fredrik (23 years, urban)	Olive oil, salt, pepper
	Georg (28 years, urban)	Olive oil, balsamic vinegar
	Jon (28 years, urban)	None
Elderly households	Bente (71 years, urban)	Olive oil
	Inger (70 years, rural)	Mango vinegar, olive oil with lemon flavour, honey, spices
	Kari (71 years, urban)	Egg yolk, anchovies, parmesan cheese, garlic, half lemon, Dijon mustard, olive oil
	Nils (74 years, rural)	Olive oil, vinegar, salt, pepper
	Oda (72 years, rural)	Semi-finished dressing mix, mixed with water

## Handling salad and vegetables in the five countries – summary and comparison

### *Unpacking vegetables and salads*

In general, unpacking vegetables and salad for use in the meal was a straightforward and uneventful task across all five countries. However, there were some notable differences in how product was bought and therefore the amount and type of packaging (if any) to be opened or removed. Variations in unpacking techniques largely reflected differences in retail practices and in the packaging materials used.

In Norway and the UK, most vegetables used by the households – and especially the leafy greens used in salads – were displayed and sold in plastic wrapping of various forms, from tightly shrink-wrapped peppers and cucumbers, to film-covered punnets of tomatoes, to sealed ‘modified atmosphere’ bags of pre-cut salad leaves, to loosely wrapped (unsealed) whole lettuces. In some cases, this packaging had already been opened or removed as part of preparing a previous meal. Where opening was observed it was nearly always done by hand, simply a matter of applying light force to rip open the plastic; only a minority of research participants used tools (knives) to open packets, especially true of lettuces and salad leaves. The main exception to this rule were shrink-wrapped cucumbers and peppers (the latter limited to Norway), which were typically cut into with a knife.

In Romania, by contrast, most vegetables and salad ingredients were bought loose but taken home (and sometimes stored) in unsealed plastic bags. One elderly participant used lettuce from the garden. Only three households used wrapped lettuce during the cooking observation (two young men and one young family), and two young men used packaged tomatoes. Unpacking was therefore usually at most a matter of lifting product out of a bag, ready to begin further preparation tasks. In the small number of cases where packaging was removed, it was most commonly done by hand, except for one participant who used a knife to open lettuce. The situation was similar in Portugal, with little packaging to remove. In France it was more mixed, with six research participants (mostly young households) buying their salad packed or wrapped – in all cases opened by hand – but nine using non-wrapped salad. This included three elderly research participants who harvested their own home-grown salad from the garden.

### *Washing vegetables and salads*

Techniques used for washing salad items and other vegetables varied within countries, as well as between them. There were also differences in how particular items were washed by the same person. Differences included the use of running water versus a bowl of water, whether or not vinegar and detergents were mixed with the water, and the amount of time and attention given to individual items.

Again, to some extent washing practices depended on how the produce was sold. Most of the research participants who bought packets of pre-prepared and pre-washed salad did not wash it again at home, although some did in Portugal and France. Buying pre-washed salad represented a substantial group within the sample in the UK (five households, spread across all study groups), Portugal (six households, especially young households) and France (six households, especially young households). In Norway two households used pre-washed salad and in Romania nobody did.

Conversely, with a small number of exceptions, most research participants washed lettuce or other leafy greens if they were sold as unwashed. Washing techniques were most homogeneous in the UK and Norway, where salad ingredients were washed in (usually cold – the only cook to be observed washing lettuce leaves with water from the hot tap was the young single man Daniel) running water, often in a colander, and occasionally dabbed dry with paper towel. However, the length of time spent rinsing and inspecting the produce varied within both countries. In Portugal, France and Romania, there was much more variation in washing techniques, with some rinsing under water, others washing in a bowl of water, and some combining techniques or washing items multiple times. In relation to this, the Romanian case of Sorina (32 years, Young families, rural) is discussed in some detail, and could be seen as an outlier. It may be that cooks who have experience of making salads from home grown produce have adopted a habit of washing vegetables/lettuce more than once. This pattern was for instance observed amongst the elderly cooks in the French study.

Nobody in the UK or Norway was observed using additional cleaning agents, although one Norwegian participant mentioned sometimes using vinegar, and one UK participant noted this as something she intended to try but had not yet done so. Portugal was the only location where it was relatively common among the sample to use additional cleaning agents in the process of washing vegetables, specifically vinegar (3 households) and a special detergent (1 household, expecting a child). One young family in France used vinegar, while one household in Romania mentioned sometimes doing so (but not on the occasion of the observation). In France, vinegar was also used as an agent for cleaning the sink area.

In terms of the pathogenic priorities SafeConsume addresses, it may be that washing vegetables under running water, or in a bowl containing water, is equally effective (or not) in removing pathogens before eating. There is a potential opportunity here to search out win-win scenarios, and more specifically, which mode of washing is most effective, the relative amount of water used, and whether it may be established that one mode of washing is both more effective at removing pathogens AND uses less water.

In general, across all countries, lettuce and salad leaves were more consistently and more thoroughly washed than other vegetables. Vegetables that escaped a dousing in water included tomatoes, and there was some variation in the ways in which cucumbers

and peppers were cleaned. Mushrooms also came out as a vegetable most cooks avoid washing in water. With some exceptions, notably in France, most research participants did not wash the vegetables that they peeled.

Research participants had a number of different reasons for washing vegetables, but the range of explanations was broadly similar across the countries, albeit with different emphasis. Common reasons included removing visible/tangible contaminants like dirt (e.g. soil) and insects, with many research participants carefully inspecting the produce by sight to judge when it was sufficiently clean; paying attention to this was especially prevalent in Romania. Other potential contaminants were invisible, with some research participants making reference to bacteria and/or traces of chemical pesticides, which they believed might be present. Finally, a significant minority of research participants – seemingly most common in the UK – were concerned about other hands having touched the produce, either in production or while on display in the shop, applying especially to non-packaged fruit and vegetables. In these cases, it wasn't typically explained further (e.g. with reference to contamination); the aversion was simply to the idea of other people handling something that they will then eat. In a small subset of cases (two rural, elderly research participants in the UK and Norway) this anxiety was heightened for produce originating from another country or from outside Europe, due to the perception that accepted hygiene standards might differ geographically.

### *Preparing vegetables and salads, including analysis on peeling, chopping and seasoning*

Most of the discussion in this chapter is about the preparation of salad, with the handling of lettuce receiving a lot of attention. There was some variation between countries in the complexity of the salad that was prepared, with the emphasis in Romania, France and Portugal on 'simple' salads, with few ingredients. In Portugal, a salad typically included lettuce leaves, tomatoes and onions, and salad seasoning could be as simple as the addition of some olive oil and vinegar. In Romania, sunflower oil was also used. In France, preparing a salad means a simple green salad, like lettuce, seasoned with a vinaigrette. In the Norwegian analysis, we find examples of salads with multiple ingredients, and also with some examples of salad dressings that are more complex. In one such example, using the electric food processor, the cook makes a dressing and adds a raw egg yolk.

### *Discussion of the tools used in preparing vegetables and salads*

All country reports in this chapter contain discussion on tool use in the handling of vegetables and salads. Tools were discussed in relation to the different tasks that have been identified and discussed in this chapter, and these include: tools for unpacking vegetables; tools for washing vegetables; and tools used for other aspects of preparation, from cutting and peeling work, through to assembling and seasoning salads and vegetables.

Before commencing a summary comparison, it is useful to think the concept ‘tool’ through. Tools relate to the emphasis in theories of practice on materials. It is appropriate to argue that food handling is made possible by the gathering and manipulation of a range of materials, not least the food items that are, through the various tasks undertaken, transformed into edible meals. Tools may be seen as a particular category of materials used in food practices. Yet, its common definition<sup>44</sup> does not lead to clear boundaries of what tools are, and therefore what not. An example from the analysis presented here is where one of the research participants uses the plastic bag in which the vegetables were bought as a holding container (and thus, as an alternative to a bowl or colander) for washing vegetables. The purpose of the plastic bag is thus transformed in the handling process, in what may be seen as an interesting consumer-cook ‘work-around’.<sup>45</sup> There is also the risk of discussing ‘individual’ tools, one after the other, when what is of interest is especially how specific tools and other material resources - including kitchen surfaces, sinks and their often attached drainage areas, as well as the utility of running water that can be turned on cold, hot or somewhere in between, and, as discussed by the Romanian team, at varying speeds - come together, and relate to one another, in the performance of tasks. Such material collections may be seen as socio-technological configurations, and may include foods, bodies, tools, appliances (electrical tools and devices), material infrastructure and utilities (e.g. gas, electricity and water).

Table 4.3.9 lists the tools and materials that were mentioned in the analysis (see Dant 2008; Martens 2012) that form part of the socio-technological configuration of handling vegetables, looking at the three tasks discussed in the country reports. The concept of socio-technological configuration first points to the idea that tools and other materials are outcomes of social and technological temporal developments, leading to design and innovation, and may (as for plastic packaging) work as ‘technologies’ in their own right. Secondly, configuration offers a way of thinking about which materials come together in the performance of tasks, and pinpoints how, by shifting to new tasks, the materials that are used will also change. In addition, socio-technological configuration offers a means for thinking not only about the relatedness of different materials used in specific tasks (for example, the ways in which the hands, the knife and the chopping board are designed and work in accordance with one another), but also about groups of tools that may be regarded as alternatives. In this chapter, for

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44 A tool is defined as “1a: an instrument (as a hammer) used or worked by hand: implement ... 2a: something (as an instrument or apparatus) used in performing an operation or necessary in the practice of a vocation or profession.” (Webster’s New Collegiate Dictionary, 1979: 1220).

45 ‘Work-around’ is a concept used by designers stands for the ways in which domestic practitioners change the intended uses of tools for their own purposes. Practitioners can thus be seen to be inventive in the ways in which they use tools and other materials, continuously thinking about how to solve ‘problems’ by using the materials ‘at hand’ in new ways.

example, and as signalled in Table 4.3.9, hands, knives, scissors, graters and electrical cutting devices are alternative tools for cutting vegetables, and some may offer affordances for different kinds of cutting practices (e.g. slicing, grating, or dicing). Finally, ‘configuration’ suggests that the materials that come together may change over time, or vary between different domestic practitioners, and that, as discussed by Kuijer (2014), not all materials in a configuration need to be drawn upon in any specific cooking event in order to perform a task.

This is explained in Figure 4.3.81, which captures the ‘materialities’ element of the Shovian practice theory drawn upon in SCEH, where single tools and materials are represented as individual blobs in one of the three circles (the other circles represent specific aspects of meanings and competencies), and which further suggests that specific performances do not necessarily draw on all of the items that make up the configuration. In the analysis presented in this chapter, for instance, salad leaves were broken up into smaller parts by hands and with the aid of knives; and carrots were cut into smaller pieces with the use of knives and graters.

What makes the socio-technological configuration of vegetable preparation of interest to SafeConsume’s concerns? From a micro-biological perspective, the reader might move directly to an analysis that is of interest from a food risk point of view. In relation to this, the most obvious analyses pathways that have been pursued include how vegetables are washed (see Fig 1.1.2, in Chapter 1.1 and CCH 7a and 7b), and whether the tools and hands that are used in the process are sources of cross-contamination. The latter is also addressed in chapter 4.1, which presents a sequence analysis.

**Table 4.3.9: Socio-technological configurations associated with preparing vegetables for salads and cooking**

Task	Socio-technological configuration
Unpacking vegetables	Plastic bags and wrappings in which vegetables come from the shop; hands; knives Also mentioned: fridge, freezer, kitchen surface
Washing vegetables	In and outside kitchen sinks; water supply; waste water drainage facility; drainage area attached to the sink; kitchen surfaces. Furthermore: bowls; colander; vegetable packaging; detergent (Portugal only); vinegar; hands For drying washed vegetables: colander; lettuce spinner; kitchen paper; hands
Preparing vegetables (cutting, peeling, arranging and seasoning)	For peeling and cutting: cutting / chopping boards (plastic, wooden); knives; grater; scissors; electrical cutting and mixing devices (food processor); bowls; hands Also relevant: surfaces of kitchen, sink, tables. For arranging and seasoning: bowls and serving plates; forks and spoons; hands; containers of oil, vinegar, salt and other ingredients.

Additional questions arise as to what elements of the configuration may be deemed as more or less essential for tasks to be done safely. From a micro-biological perspective,

this question is of interest as missing material elements that can be seen as essential may be identified as barriers to safe food handling. A related question is whether there are distinct variations e.g. between countries and/or between cooks with specific socio-demographic characteristics (thus by study-group, but also by other socio-demographic qualities, such as whether the practitioner is poor or affluent, from a rural or urban area, and whether they are more or less educated) in terms of access to essential tools and resources. Where country or socio-demographic patterns exist (e.g. the use of vinegar as a means of cleaning or enhancing the longevity of vegetables), and these are identified as SCE priorities, interventions can be developed with specific consumer groups in mind.

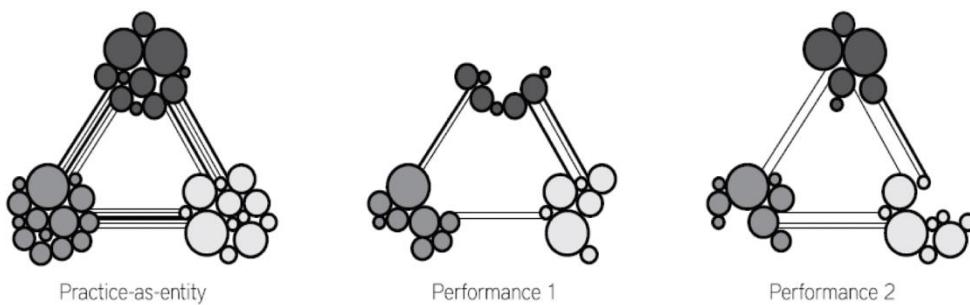


Figure 5-3 The practice-as-entity contains all elements and links that occur in the variety of performances it organises (note: it is usually more than two performances that make up an entity).

Figure 5-3 taken from Kuijjer, S.C., 2014. Implications of social practice theory for sustainable design. PhD thesis Accessed Oct 2017 @ <https://repository.tudelft.nl/islandora/object/uuid:d1662dc5-9706-4bb5-933b-75704c72ba30?collection=research>

**Figure 4.3.58: Materials (socio-technological configuration) as one of three elements that ‘make’ a practice a social entity, and the mobilisation of elements in the socio-technological configuration in the performance of tasks<sup>46</sup>**

An important infrastructural difference with respect to washing vegetables was the availability of running water. In Romania, two of the rural, elderly households had no running water inside the home, which meant they were restricted to washing salad in a bowl of water, where the water was taken from a source outside the kitchen (note that washing vegetables in bowls of water was a matter of preference for some other cooks in kitchens where there was running water). This was not an issue in the other four countries with the exception of one participant, a young single man, in Norway, who lived in shared accommodation, and prepared his food in a small kitchen in his own room, with access to a communal sink located in the hallway.

The human body needs to be included in thinking through the question of barriers to safe food handling. This is already done through the attention on hand washing and the uses of hands. In the Portuguese sample, one of the elderly female cooks, Odete (65

<sup>46</sup> The same figure is also presented in chapter 1.4.

years, Elderly households, U), suffered from reduced body mobility problems, and this had shaped her kitchen practices in the sense that she would do most of the tasks of cooking by staying on the same spot. This spot was at the sink, where the sink's edge was used to support her body. She also used a minimum of tools, with active use of the sink, which was used for chicken and vegetables alike, but which was also washed regularly. She used one knife throughout her cooking. The case of Odete is also an example of embodied competences (see below). The video analysis also shows other interesting ways in which Odete's work is personalised, with possible questions for the microbiologists – e.g. Odete preferred her wooden cooking spoon. From a microbial perspective, is she using the best tool? And, given she owned these tools, could she be given useful advice on its uses, abuses etc.

In general, it would seem that UK cooks had multiples of the tools listed in Table 4.3.9 at their disposal. In Portugal, vegetable preparation was done using the same knives and chopping boards that were used during the preparation of the chicken, and in the discussions of the Romanian households, the kitchen's socio-technological configuration was similarly 'basic.' The photographs e.g. show integrated sink & drainage surfaces, but these are relatively small in size in comparison with the stouter looking kitchen infrastructures of e.g. Norway and the UK. In the UK, moreover, a number of cooks used colour-coded plastic chopping boards (red for cutting raw meat; green for vegetables) and accessed a range of knives during cooking. It would not be right to conclude that these material variations relate in a straightforward way to the capacity for managing pathogens in food. It is probably not a matter of 'how many tools' a household has access to, but how these are used, that is of importance. There are various examples in the analysis where tool-related barriers have been re-worked by cooks in ways that work 'for them'. Some of these include: turning the chopping board around to use the other side; cleaning the chopping board with bleach after cutting chicken on it, and before using it for vegetable preparation (Sonia, 42 years, Young families, rural). Whether these are good safety practices is another matter. A multiplicity of tools in the kitchen may also work as a barrier, and, as observed by the Portuguese team, tools may multiply in accordance with the complexity of the recipes that guide the cooking. In kitchens where only one knife and one chopping board were observed in the cooking process, there would be less room for confusion as to the prior uses of the tools that were on the surface, before the next step in the cooking process got underway.

The ways in which tools are used, and how materials in the socio-technological configuration are selected and handled, also in relation to one another, furthermore offers insight into (a) embodied practitioner competencies and skills; and (b) how routines in performances are related to tools, and associated with this, apparently unquestioned assumptions about 'what tools do' (tool purposes). Tools and the ways in which these group together into socio-technological configurations (e.g. the ready-to-hand-ness of a knife and chopping board) may thus choreograph the performance.

One interesting example in relation to the work that domestic cooks do with vegetables is the plastic bag. In the Portuguese study (and also the UK and Norway), the plastic bag is a holding device for vegetables, that more or less effectively creates borders or boundaries between the vegetables and other environmental elements, making it especially good for moving the vegetables around, from the shop into the shopping bag, and to the home, where it can be stored easily without further ado in the fridge or elsewhere. But the plastic bag is also a socio-technological configuration in the sense that it doubles up as a communication device, giving consumers a whole range of information. In the Portuguese study, this aspect of packaging salad led to discussions about whether salad leaves that are pre-washed (a quality that is announced on the packaging through its labels, as well as in other ways) were washed or not before eating. This points to the active interaction between ‘abstract systems’ (packaging and its information) that demand that trust relations operate in faceless ways (Giddens 1990) and consumer agency, where the skilfulness of the domestic cook is mobilised not only in relation to their judgement of what may have happened to the salad leaves in the production process, but may include a range of other cultural concerns, for instance, whether a good soaking in water will enliven leaves that have become limp. Here, the perceived condition of the salad leaves means that it is the leaves that choreograph the direction of subsequent actions. The country reports suggest that the informational quality of food packaging is more pronounced in the UK and in Norway than in the other countries.

These questions point to the need to address the connections between the three elements of Shovian practice theory that render a practice social. The relationship between materialities and competencies is interesting for showing how socio-technological configurations may have a stability in the kitchen over time that come to be associated with embodied routines and dexterities, where performances move along with a degree of ease as tools and utilities are brought together in order to perform specific tasks. Whilst socio-technological configurations may be seen as an opportunity for changing risky practices by changing the choreographies of performance, these can at the same time be regarded as barriers in the sense that not only single tools, but the ways in which these come together in configurations, are relatively fixed elements in cooking – we do not purchase new sinks, taps, water supply, or even colanders and chopping boards on a weekly basis. There are further questions to be addressed in relation to materialities and meanings. Thinking about SafeConsume’s objectives, it is e.g. important to comprehend the cultural understandings domestic cooks hold in relation specific tools and materials – e.g. whether these are deemed clean or dirty, safe or dangerous. Whilst sociologists have tended to explore such concerns methodologically through interviews, our video analysis offers ways into exploring how such cultural understanding are performed, in embodied ways, in the material environment of the kitchen. One example of this is how the tools used in vegetable preparation create boundaries between vegetables and dirty matter. The sink is a point in case. With most cooks using bowls, colanders, or hands to handle vegetables whilst

cleaning these in running or ‘static’ water ‘over the sink’ categorises ‘the sink’ as an area of suspect cleanliness. Equally interesting are understandings of ‘the floor’. The analysis presents examples where cooks demonstrate through their specific performances, awareness of the possibility of cross-contamination, and similarly, a lack of such awareness. It is also possible to think about hierarchies of safety and danger, and what cooks identify as their main priorities. In Portugal, for instance, the sense of danger associated with the public sphere is especially pronounced, and this is perhaps compensated for by a deep trust in anything domestic, from the kitchen’s tools through to the hands on the body.

In practices with vegetables, it is clear that vegetables are regarded in a different cultural way from chicken, and more specifically, vegetables are seen as more benign food stuffs than chicken, even though these may come with soil and can harbour bugs. When vegetables are chopped, for instance, there is little evidence of chopping boards or other tools being washed between uses. Vegetables, especially in Romania, and to a lesser extend in Portugal and France, are washed to get rid of insects and soil/sand, rather than germs (though germs are also mentioned). This cultural distinctiveness of vegetables is also performed in the uses of the hands. In comparison to the ‘stilted’ ways in which chicken is handled (where hands that touch chicken often become ‘polluted’ in the imagination), across the analysis on vegetables, cooks demonstrate an ease with using their hands when preparing vegetables that is lacking when preparing chicken.

## Chapter 4.4: Cooking chicken and checking for doneness

One of the final steps of cooking up a meal is deciding when it is ready to eat. In this chapter, we focused on the last part of heating the chicken - the ways of determining doneness. The analysis is related to the 6<sup>th</sup> CCH step – cooking poultry (see Figure 1.1.2). We presented here the analysis of the various ways the participants determined if the chicken they were cooking was heated properly and how these activities were associated with the type chicken product used and the dish prepared. The chapter thus includes:

1. Discussion and description of the various ways of determining doneness among the participants in the study
2. Discussion and description of the repertoire of methods used in combination by the participants to assess if the chicken was cooked enough.
3. Discussion of how the ways of determining if the chicken was properly cooked depend on the type of chicken product used and the heating method employed.
4. Describing risky encounters after the chicken is cooked

The chapter starts with discussing the ways the French participants determined doneness when cooking chicken, followed by the Norwegian, the Romanian, the British and the Portuguese participant's methods for making sure that the chicken was properly cooked. In the end of the chapter, three examples of unsafe food handling after the chicken was served are discussed.

## The ways the Portuguese research participants determined if the poultry was done

There were many ways to check if the chicken was well done. All the research participants have experience of cooking chicken, but they used different methods to see if it is done and sometimes more than one way to check it. One first method observed among some households, especially the ones that cook chicken stews or curries was to check doneness according to reaching a particular time, which was based on previous experience. However, they used different times for cooking chicken, and they add to this knowledge other ways of checking for doneness. What was interesting was that several households had multiple checking systems that were employed at the same time, not relying on one single method. For example, Sílvia said that the chicken was well done after 45 minutes she started cooking it. However, she employed a second method based on visual sensory cues, notably looking for visible signs on the meat. For her the main sign was that chicken should have no blood inside and should be so tender that it falls apart. She cut the chicken with a knife to check if it is done (Figure 4.4.1).

Sílvia: It's cooked!

Int.: How do you know that?

Sílvia: If it doesn't have blood, if it falls apart...

(Sílvia, 33 years, Young families, rural, Portugal)



**Figure 4.4.1: Sílvia cutting the chicken to see if it is well done (Portugal)**

Bernardo (19 years, Young single men, urban) made chicken stew with pasta and he spent 50 minutes to cook it. Apart from counting time he also used a visual method of checking the colour of the chicken. A third method was to taste the chicken to check its texture. He took out a piece of chicken onto a dish and cut it to check if it was still pink (a sign of being undercooked). He would leave it longer if it were undercooked. He took out some pieces of chicken and tasted them to check if they were cooked. He cooked the meal at a low temperature in order to avoid burning food, saying that no one taught him, it is instinctive. Thus, so far three methods were in use by participants: checking time, visual cues and taste.

Regarding Augusto, time was the crucial sign for chicken's doneness. He knew by experience that chicken curry is done in half an hour and, at the end, he also tasted it.

Augusto: Half an hour and it's done.

Int.: How do you control whether it's cooked or not? By time?

Augusto: I taste...

Int.: And if it is raw, will you still taste it?

Augusto: Raw no, you can see that it is cooked.

Int.: How do you see it?

Augusto: By time.

Int.: By time?

Augusto: This takes half an hour to cook. If it was home-chicken it would take an hour.

(Augusto, 70 years, Elderly households, rural, Portugal)

Augusto added an important factor. Chicken cooking times varied according to the type of chicken bought. If it the chicken was raised home, it was tougher and needed more time to be 'properly cooked' and to get a softer meat texture.

Vanessa (29 years, Young families, rural) fried the chicken and used the inside colour and tasting methods. She cut a piece of chicken with the spoon and checked if it was cooked, seeing if it was white inside. She then took out a fork from the drawer, picked a piece of chicken and ate it to see if it had enough seasoning and it was cooked.

Carlos and Odete made a chicken stew and they know is ready by checking the surface colour. Carlos cooked chicken for 30-40 minutes and Odete for 25 minutes. They only looked for the outside colour. Carlos mentioned that if it was brown it is good and if it was still red/bloody it is not cooked. He also added smelling as another method that helped checking the doneness of chicken. If it smelled good, the chicken was cooked. Odete said she didn't need to cut and open it to know if it is well done.

Int.: How do you know it is cooked?

Carlos: The colour is good and also the time... it has passed more or less 30 minutes...

Int.: So inside do you think it is cooked?

Carlos: I think so... the smell is also a good indicator... it smells good!

(Carlos, 24 years, Young single men, urban, Portugal)

Int.: You've got to check the chicken, haven't you?

Odete: My God. I think it's done.

Int.: How do you see if it's done?

Odete: [...] I t's done.

Int.: But generally, you just eyeball it, don't you cut or open it?

Odete: No.

Int.: Do you believe it's done?

Odete: There...

Int. 2: Is it the experience?

Odete: Exactly. Many years.

Int. 2: And it never turned out raw?

Odete: No, thanks God.

(Odete, 65 years, Elderly households, urban, Portugal)

So far, a clock and the human body (sensory cues) were important tools/instruments to check the doneness of chicken. Thus, time, texture/taste, visual cues, and smell were all employed to check for doneness. Checking the temperature of the oven (not of the chicken inside) was another method used, but interestingly without necessarily making use of a thermometer. For example, Sónia (42 years, Young families, rural) was the only one in the sample who roasted chicken in the oven. She approached the ‘checking for doneness’ through several steps. She first looked at the oven. Then decided to open it. She got two forks from the drawer and carefully turned the pieces of chicken. She did that with all the pieces. She explained that there are different temperatures in the oven, so she had to examine all the chicken pieces. Pieces underneath were always less cooked, so they needed to be flipped over to get the ‘right’ colour. She also checked the potatoes by pricking them with a fork and see how far inside the fork goes (this way the texture is checked). Yet, she did not count the time the chicken needed to be in the oven. She knew that the chicken is cooked by looking at the colour, and that the colour needed to be consistent across all chicken pieces (Figure 4.4.2).



**Figure 4.4.2: Sónia checking the chicken in the oven (Portugal)**

None of the participants used a thermometer to check the inside temperature of the chicken and none conveyed any information or knowledge about the temperature that chicken needs to reach to be considered safely cooked. Tacit knowledge was mostly visible here through time checking and sensory cues, all methods used by the participants to check chicken was cooked. Nobody expressed a preference for undercooked meat, there was a concern to have chicken cooked. For example, with beef some participants preferred to have it undercooked as it was softer to chew. Regarding chicken this issue was not even put to discussion. Chicken needed to be cooked. However, there may be a disparity regarding the families’ methods used to check that chicken was cooked (e.g. colour, texture, time) and the scientific methods

employed to make sure chicken was not harmful for families' health, and it was safe to eat as pathogens are killed when reaching a certain temperature. Regarding the latter, the thermometer was the reliable device for this checking. Below, Table 4.4.1 summarises the main findings for each participant regarding methods to check chicken doneness.

To sum up, regarding checking if chicken was cooked or done participant used different methods, and they were often employed together. Checking the time and using sensory cues were the most common methods. Checking for blood, the colour of the meat, the smell, the texture were all important signs that give away the doneness of chicken. No participant in the Portuguese sample used a thermometer to check the temperature of the chicken.

**Table 4.4.1: Overview over chicken products, heating method, cooking time, and how to check if the chicken was properly cooked in the Portuguese households**

Study group	Household	Chicken product	Heating method	Cooking time	Ways to determine if chicken is properly cooked
Young families	Marta (35 years, urban)	Chicken fillets	Fried in the frying pan	10 minutes	Checked how the chicken looks on the surface and cuts the chicken with a knife to check inside
	Vanessa (29 years, rural)	Chicken breasts	Fried in pieces in the frying pan. Afterwards added to the pot with vegetables	1 <sup>st</sup> round took 11.58 minutes (frying pan, electric cooker on level 6); 2 <sup>nd</sup> round took 6 minutes (in a pot, electric cooker on level 7); 3 <sup>rd</sup> round took 1 minutes heated in a soya sauce (in a pot level 5); 4 <sup>th</sup> round with the vegetables took 1,12 minutes (in a pot on level 5)	Checked the texture of the chicken with the help of a plastic fork. She also cut a piece with a spoon to check inside.
	Andreia (33 years, urban)	Chicken Breasts, cut in pieces	«Frango à brás» (Fried chicken in a frying pan). Afterwards added fried potatoes and scrambled eggs to the frying pan	1 <sup>st</sup> round took 14 minutes and 35 seconds; 2 <sup>nd</sup> round with packed fried potatoes took 2 minutes; 3 <sup>rd</sup> round took 3 minutes and 46 seconds with packed fried potatoes and scrambled eggs.	Cut the chicken to check inside and check the texture of the chicken with the help of a spatula or other utensil.
	Filipa (36, years, urban)	Chicken Breasts	Chicken Lasagne: boiled chicken in the cooking robot (Thermomix) and later put in ovenproof dish (with Béchamel sauce and Lasagne sheets)	1 <sup>st</sup> round took 15 minutes (Thermomix); 2 <sup>nd</sup> round in oven (not registered)	Timing the cooking (based on experience)
	Sónia (42 years, rural)	Whole chicken (pre-cut in pieces)	Roasted in the oven (with potatoes and a sauce)	36 minutes on 230 °C	Check how the chicken looks on the surface. Check the texture of the chicken with the help of a fork (using the fork as an extension of her eyes). Cut the chicken with a knife and taste it.
	Sílvia (33 years, rural)	Entire chicken, cut in pieces	Chicken curry; chicken soup	Chicken curry: 30 minutes; chicken soup: 20 minutes	Timing the cooking (based on experience). Check the texture of the chicken with the help of a spatula or other utensil

## Chapter 4.4: Cooking chicken and checking for doneness

Study group	Household	Chicken product	Heating method	Cooking time	Ways to determine if chicken is properly cooked
Elderly households	Josefina (81 years, urban)	Legs	Boiled chicken with frozen peas and carrots	No data	Timing the cooking (based on experience)
	Emília (89 years, urban)	Thighs in pieces	Fried in the frying pan and later cooking in a sauce	1 <sup>st</sup> round took 11 minutes. 2 <sup>nd</sup> round took 3 minutes heated in a mustard and yogurt sauce	Check how the chicken looks on the surface and check the texture of the chicken with a tweezer
	Augusto (70 years, rural)	Entire chicken (he slices in halves at home)	Chicken curry in a pot	30 minutes with curry powder and coconut sauce	Timing the cooking (based on experience). Check the texture of the chicken with the help of a spatula or other utensil. He also tastes it at the end
	Manel (73 years, urban)	Entire chicken, pre-cut in pieces	Boiled in a stew in a pot	22 minutes and 44 seconds (electric cooker on level 6)	Cut the chicken to check inside and check the texture of the chicken with the help of a spatula or other utensil.
	Celeste 70 years, urban	Whole chicken (cut in pieces)	Boiled in a pot in a stew	33 minutes	Timing the cooking (based on experience) and check how the chicken looks on the surface
	Odete (65 years, urban)	Thighs	Boiled chicken with beer and onion soup (packed powder)	30 minutes	Timing the cooking (based on experience) and check how the chicken looks on the surface. Check the texture of the chicken with the help of a spatula or other utensil
Young single men	Carlos (24 years, urban)	Thighs	Boiled in a pot in a stew	30 minutes	Timing the cooking (based on experience) and check how the chicken looks on the surface.
	André (30 years, urban)	Entire chicken, cut in pieces	Fried in a pot with frozen vegetables	24 minutes and 29 seconds (electric cooker on level 6)	Timing the cooking (based on experience). Check the texture of the chicken with the help of a spatula or other utensil and check how the chicken looks on the surface. He tastes it at the end.
	Bernardo (19 years, urban)	Chicken breasts	Boiled chicken in a stew, then added pasta	1 <sup>st</sup> round took 26 minutes (electric cooker on level 5). 2 <sup>nd</sup> round with pasta took 14 minutes and 42 seconds (level 3)	Timing the cooking (based on experience). Check the texture of the chicken with the help of a spatula or other utensil. Cut the chicken to check inside.

## The ways the Romanian participants determined if the poultry was done

The doneness evaluation method of the chicken varied between the Romanian households and was dependent on the method of cooking. Some patterns were identified and discussed below in this subchapter.

The Romanian households were split in two groups: one who cooked chicken that was pre-cut by the producer and another group who preferred buying whole chicken and to cut it at home. In most cases the chicken was pre-packed and fresh. None of the participants used frozen chicken, although most of them explained that if they could not cook the entire product, they would keep it in the freezer and cook it on a later occasion. Two participants, both Elderly households in urban area, bought bulk chicken breast and bulk chicken legs. The reason that influenced the participants' buying decision was in the first instance that all the poultry containing bones was fresher than those that do not have bones, whereas in the second instance, the participant chose that product from economic reasons. Table 4.4.2 presents information related to heating, cooking time, and the methods used to evaluate if the chicken was cooked properly.

**Table 4.4.2: Overview over chicken products, heating method, cooking time, and how to check if the chicken was properly cooked in the Romanian households**

Study groups	Re-search participant	Chicken product	Heating method	Cooking time	How to check for if chicken is properly cooked
Young single men	Ionel (30 years, urban)	Breast fillet	Stewing and frying	Stewed with water and oil for about 7 minutes, 8 minutes frying alone, 13 minutes frying with rice.	Timing the cooking (based on experience) He cooks the chicken until all the water evaporates, and the chicken is white, but also he looks at the texture of the meat.
	Balanel (28 years, urban)	Breast fillet	Frying	20 minutes	Appreciates that chicken is properly cooked by looking at the surface colour (light – brown) Cuts the chicken to check the inside colour. Timing the cooking (based on experience)
	Zoltan (35 years)	Whole chicken	Boiling for soup and roasting in the oven for steak with potatoes.	70 minutes for soup and 60 minutes for steak	Until meat is falling off the bones. Colour at the surface of the roasted chicken.
	Florinel (31 years, urban)	Whole chicken Chicken breast	Boiled on the gas stove.	About 1 hour	When the potatoes are boiled, the chicken is also boiled. When ready, meat is falling off the bones. Timing the cooking (based on experience)
	Bogdan (32 years, urban)	Whole chicken, (only chicken breasts were cooked)	Boiled in a pot and fried in a frying pan along with eggs and peppers.	Boiling:25 min; Frying: 8 min; Frying: 3 min with eggs and vegetables;	Checks the colour of the meat; it has to be white and the texture (the meat is flared) by poking the meat with a fork. Timing the cooking (based on experience)
Young families	Maria Mirabela (34 years, urban)	Chicken legs fillets	Stewed and later cooked in a sauce.	21 minutes only for meat 15 minutes with milk, cheese and pasta.	Timing the cooking (based on experience) Checks the colour that it has to be white and the texture by poking poultry with a fork
	Sorina	Chicken legs	Frying in a frying pan.	23 minutes	Chicken is done when the fork enters easily into the meat. Pokes the poultry with a fork. Timing the cooking (based on experience)
	Amalia (31 years, urban)	Whole chicken, only chicken legs were used	Roasted in the oven.	About 45 minutes	Checks the surface colour and texture using a fork. Timing the cooking (based on experience))

## Chapter 4.4: Cooking chicken and checking for doneness

Study groups	Re-search participant	Chicken product	Heating method	Cooking time	How to check for if chicken is properly cooked
	Serena (36 years, rural)	Whole chicken, only chicken breasts were used	Stewed in a frying pan.	35 minutes	Checks visually if the meat is ready. The colour indicates how well is done the meat.
	Minodora (27 years, rural)	Breast fillet	Fried with oil in a pan.	15 minutes	Appreciates the colour surface to check if the meat is ready.
Elderly households	Dumitra (84 years, rural)	Whole chicken, only chicken breasts were used	Boiled with vegetables and rice	100 minutes	The meat is ready when it is falling off the bones. She used a spoon to check if the meat is falling off the bones. Visual cues (based on experience)
	Domnica (75 years, urban)	Chicken legs	Stewed with vegetables and pasta	About 55 minutes	She pokes the meat with the fork and taste it. Timing the cooking (based on experience)
	Fanel and Fanica (both 69 years, urban)	Whole chicken, only chicken breasts were used	Schnitzel (Fried with oil in a pan)	15 minutes	Appreciate the colour at the surface of the meat. She squeezed the meat during frying with the fork. Timing the cooking (based on experience)
	Damian & Damiana (both 73 years, rural)	Whole chicken, only chicken legs and breasts were used	Boiled with rice	42 minutes	DA's wife says that the chicken is ready when the meat changes its colour. She used a fork and a knife to see if the chicken is done. She also tasted the meat. Timing the cooking (based on experience)
	Linalia (73 years, rural)	Whole chicken, only chicken legs and breasts were used	Stewed	30 minutes	LL says that the chicken is ready when the meat is falling off the bones. Visual cues (based on experience)

Table 4.4.2 revealed that most of the Romanian participants used several methods to check if the chicken was done. However, the ways applied by the participants varied also on the dish they prepared. For example, Zoltan (35 years, Young single men, urban) cooked three dishes in the same session: soup with chicken and vegetables, chicken steak with potatoes and a fish salad. When he prepared the soup, he checked the texture of the chicken to assess its doneness (Figure 4.4.3). On the other hand, for chicken steak, he checked the surface colour, but also the inside colour of the meat. He mentioned also that usually he looked at the water that he added into the glass baking dish and when half of the water added in the dish is evaporated, he would check the meat.



**Figure 4.4.3: Zoltan checked if the chicken was properly cooked (Romania)**

Another example was Bogdan who applied two cooking methods of the meat for the same dish: boiling and frying. First, he cut the chicken breast with bone in two halves. He boiled one half of the chicken breast in a pot with water for about 20 minutes. During boiling, he poked with the fork the chicken breast, saying that he had to poke the chicken, then continued saying that the meat is white and flared, an indication that the chicken is done.

Int.: How can you tell that the breast is boiled?

Bogdan: Well

Int.: I see that you used the fork...meaning that you pressed it also with the fork.

Bogdan: Yes, yes, it must be poked a little bit. If you poke it... (Bogdan, 32 years, Young single men, urban, Romania)

Later, when he deboned the boiled chicken breast (Figure 4.4.4) he said that if the chicken breast hadn't been well cooked, the colour would have been bruised.

Int.: Now, you believe that the meat is boiled?

Bogdan: I guess so.

Int.: Well, how can you tell?

Bogdan: It is white (colour), it doesn't have at all a bruised colour ...usually if it is bruised...it would have had another colour...

Int.: Yeah. Ok

Bogdan: Then, being white, white...means completely boiled. OK, now I have to put some oil into the pan. I want to fry a little bit the meat, but I will add the meat only in hot oil.

(Bogdan, 32 years, Young single men, urban, Romania)



**Figure 4.4.4: Bogdan cut the deboned chicken (Romania)**

After boiling the chicken, he fried the meat in oil by and stirred with a fork for about 8 minutes. He placed the fried chicken on a plate containing paper towel to absorb the excess oil (Figure 4.4.5). When, he was asked again how he can tell if the meat is ready, he mentioned the colour and the smell specific to fried meat. When asked how he could smell if the chicken was properly cooked, he said “I don’t not exactly...the smell of the fried meat. Too much oil.”



**Figure 4.4.5: Bogdan is using paper towel to remove the excess oil from the fried chicken (Romania)**

After he had fried the chicken, he made an omelette adding the fried chicken and the pepper and cooked them for about 3 minutes. In this stage, he estimated the cooking time for stewing the pepper and to make the meat juicer. He mentioned that in this stage, the meat gets a very nice final crust.

### Using a recipe

One participant used a recipe for cooking the chicken. Maria Mirabela (34 years, Young families, urban) used the recipe for carbonara pasta using the instructions mentioned on the package of carbonara powder that she adapted a little bit by changing the bacon and the mushroom mentioned on the recipe with the chicken. During the stewing of the chicken legs (that she cut it previously into small pieces) she said that she never added water into the pan, she just left the chicken into the pan until all the water evaporates. “When all the water is evaporated, the colour of the meat becomes white”, she said. She checked twice to see if the chicken was ready. First, she just looked at the

pan containing the chicken that was covered with a lid saying that “I don’t need to take up the lid right now, because I know it is not ready, it still has water.” After 5 minutes, she removed the lid and started to mix the content with a wooden spoon saying that the chicken doesn’t have any water in it. To make sure that the meat was ready, she took a piece of chicken from the pan with a fork and tasted it. She explained that she didn’t have any specific rule or routine for how long she would stew the poultry to make sure that was properly cooked. Instead, visual cues in combination with timing the cooking based on experience was mentioned as the ways she would determine when the meat is ready. When the chicken was ready, she added sauce over the chicken in accordance to the instructions from the package (Figure 4.4.6). Also, for boiling the pasta, she followed the time instruction for boiling from the package.



**Figure 4.4.6: Maria Mirabela was using a measuring cup to add milk for carbonara sauce (Romania)**

Ionel (30 years, Young single men, urban) used a recipe that he had found on the Internet and told us that it was one of the dishes he liked to cook. However, he knew the ingredients needed and how to do it very well, and therefore did not consult the recipe to remember the cooking stages. First, he poached the chicken with water and some oil and then he fried it, adding also orange juice. Separately, he boiled in a pot a package of frozen vegetables. He tasted the vegetables to check if they were boiled and then he added them over the chicken and started to fry them together. He also boiled the rice according to producer instructions and then, he added it over the chicken with vegetables (Figure 4.4.7). Ionel evaluated if the chicken was properly cooked based on its texture and colour.



**Figure 4.4.7: Ionel checks the boiling time from the rice package (Romania)**

### Checking if the chicken meat separates easily from the bone

For example, most of the elderly households prepared a dish that involved a boiling part and mentioned that the chicken was ready when the meat was falling off the bone. Dumitra prepared a dish containing chicken, onions, carrots, peppers, celery, rice and tomatoes sauce, served with a simple salad from lettuce, green onions, dill and parsley seasoned with vinegar and sunflower oil. The heating process started by boiling the vegetables. She said she would add the meat when the vegetables were boiled. Furthermore, she explained that she started boiling the vegetables, because it would take more time to boil them than to boil the chicken. Dumitra evaluated the texture of the vegetables to check if the vegetables were boiled, but to be sure, she picked up some vegetables with a wooden spoon from the pan and tasted them to be sure that they are ready. And only after that, she added the chicken. To check the doneness of the chicken she looked at the meat saying that it is ready when the meat is falling off the bone (Figure 4.4.8).

Int.: How do you check if the meat is boiled?

Dumitra: I take up from the pot a piece of it and look carefully at it. If the meat falls off the bones, it is ready.

Int.: Do you use the fork for checking the meat?

Dumitra: Yes, if the fork enters easily into the meat, then the meat is well done.

(Dumitra, 84 years, Elderly households, rural, Romania)



**Figure 4.4.8: Dumitra was checking the doneness of the chicken (Romania)**

Damiana cooked chicken with rice saying that it was a dish that can be cooked easily. She didn't mention a specific time for how long the chicken needed to be cooked in order to be done. Instead, she used her experience with how long other ingredients needed to cook in addition to a stepwise cooking procedure. Damiana started by adding chicken, (chicken legs and chicken breast cut in two parts previously) into the pot containing water and left the pot on the wooden stove. She added the rice only after she checked the texture of the meat by chewing it (Figure 4.4.9). She said that the meat will be completely boiled when the rice will be also ready.

Int.: But, when can you tell that the meat is well done?

Damiana: I am going to taste it right now.

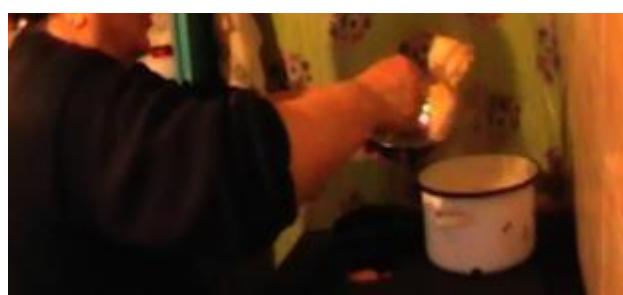
Int.: You taste it, but usually if you want to fry the chicken how do you check if the meat is ready?

Damiana: Well, it is ready, when it is fried...

Int.: By the colour, or how?

Damiana: Yes, yes... I also use the fork to check, I believe that now the meat is ready... as long as it still boils with the rice...I think it will be enough also for the chicken to be ready.

(Damiana, 73 years, Elderly households, rural, Romania)



**Figure 4.4.9: Damiana takes out from the pot a piece of chicken to taste it to check if the chicken is properly cooked (Romania)**

Similarly, Florinel cooked a chicken dish with chicken, vegetables and potatoes. When all the ingredients where boiling, he looked into the pot and poked the potatoes with the fork several times to check if they were ready.

Florinel: Have a look, it is boiled (poking the potatoes with the fork).

Int.: I have asked you about the meat...

Florinel: And the meat...

Int.: You suppose that if the potatoes are ready, automatically the meat is ready?

Florinel: Yes. Have a look! The meat is easily split.

(Florinel, 31 years, Young single men, urban, Romania)

For Florinel, the chicken was ready when the potatoes were properly cooked. He explained that potatoes need more time to boil than the chicken. For him, this was confirmed when he checked how easily the chicken splits. If he would only rely upon

checking the doneness of the potatoes is not certain. In fact, he had many ways of determining doneness discussed below.

### Timing cooking based on experience

Most of the Romanian participants told that they knew for how long the chicken should be cooked. Still, most checked if the meat was properly cooked. Florinel referred to above is a good example. As mentioned, he prepared a dish that involved boiling the chicken with vegetables. First, he cut the chicken into pieces, washed it and transferred it into a pot containing water and put it on the gas stove to boil. Then, he added an onion cut in halves. When the water started to boil, he removed the scum formed, explaining that it “contains blood and other things that are not ok”. After that, he added some potatoes. He said that the time needed for the chicken to be ready was about one hour. As mentioned above he employed various methods for assessing the doneness of the meat.

Int.: And the meat, how do you know when it is ready?

Florinel: I can tell with the eyes...I am looking at the colour, or I use the fork to check the texture... based by experience...so...I have applied these rules...

Int.: It means that you don't taste the meat to check if it is ready, you press the meat with the fork?

Florinel: Yes. And if it falls, it is ready.

(Florinel, 31 years, Young single men, urban, Romania)

Amalia (31 years, Young families, urban) prepared chicken legs with potatoes in the oven. She cut the chicken legs from the whole chicken, washed them and put them into a bowl. Then, she peeled the potatoes, washed them and put them into the tray after she previously covered the bottom of the tray with baking paper. Later on she added garlic and liquid seasoning, mixed the content of the tray, put the chicken on top, covered the tray with aluminium foil and transferred the tray into the oven. When asked how long she would cook the chicken dish in the oven she said: “I check it, I look at the colour of the meat, I look at the potatoes, I use the fork also to check if it ready”. After that, she left for a while the tray covered with aluminium foil in the oven and after she poked the foil and then she removed it, but she didn't look inside the tray. Also, she mentioned that although she knew that it was not so healthy to use aluminium foil, she liked how the dish was cooked when covering the tray with aluminium foil. After leaving the tray for one hour in the oven, she removed the aluminium foil and said that she can tell based on the chicken surface colour that the meat is ready. However, she used a fork to check the inside colour of the meat.

Bogdan said that the dish he prepared was his own invention, which he liked a lot. He told he cooked whenever he had time, explaining that this dish was cooked rapidly in less than one hour.

Bogdan: I guarantee you that the dish is very good. Anyway, I like it a lot. It is simple...chicken with eggs. It is my own invention, my recipe.

Int.: And because you liked it, you repeat it...

Bogdan: Yeah!

Int.: Anytime you have the occasion.... and time.

Bogdan: And time...you see, this recipe is ready in about half an hour, one hour...

(Bogdan, 32 years, Young single men, urban, Romania)

### Checking surface colour

Serena (36 years, Young families rural) stewed (35 minutes) the chicken fillet that she prepared herself from the chicken breast, whereas Minodora (27 years, Young families, rural) fried the chicken fillet after she cut it longitudinally to obtain thinner portions and washed it. Both participants used a fork to turn the chicken on the other side when frying into the pan and mentioned that they look at the colour of the chicken to evaluate if the chicken was done. Serena told to the researcher that white is the colour that the meat should have to be considered properly cooked, but she admitted that she will leave a little bit longer to stew because the fillets were thicker (Figure 4.4.10).



Figure 4.4.10: Serena's fried fillets at the end of cooking (Romania)

Serena: Look! This is how it looks a perfect stewed chicken.

Int.: So, you think that the chicken is properly parched and stewed.

Serena: I will leave them a little bit longer, because the fillets are a little bit thicker.

(Serena, 36 years, Young families rural, Romania)

With one exception, evaluation of the surface colour of the chicken was applied by the informants who did not cook the meat by boiling or did not have a boiling stage during the dish preparation. The exception was Bogdan (32 years, Young single men, urban), who knew that the chicken was boiled by looking at the surface colour and said that "it must be white, to be cooked". Zoltan used the chicken legs, wings and breast to roast it in the oven with potatoes. First, he put in the glass baking dish the potatoes, he added herbs and some water to create conditions for potatoes to boil easily and then at the top, he added the chicken parts. Although he removed the skin from the chicken breast

and left only the fillet, he did not remove the skin from the chicken legs saying that the meat becomes crispy in the oven if the skin it is not removed.

Int.: Usually, you don't like the skin of the chicken?

Zoltan: No, I remove it, although if it has skin, the meat becomes crispy in the oven.

(Zoltan, 35 years, Young single men, urban, Romania)

During the roasting in the oven, Zoltan looked at the surface colour of the chicken through the oven window twice, saying that he did not need to open the oven to check if the chicken was ready, because he easily could tell if the chicken needed to cook longer by the surface/skin colour. When asked about how long he roasts the chicken in the oven, he mentioned about one hour, but he always checked if the chicken and the potatoes are done, which, in his opinion, needed more time for cooking than the chicken.

Meanwhile, after 30 minutes, Zoltan tried to turn the chicken on the other side with a fork but did not manage to do it. Thus, he removed the tray from the oven and put it on the gas stove. He looked at the surface colour, which was brown and crispy. He used a fork and a knife and cut the chicken legs and looked at the inside colour to check if the chicken meat one the other side was done, saying that it still needed to be cooked some more. He thus turned the chicken on the other side and placed the tray back in the oven (Figure 4.4.11).



**Figure 4.4.11: Zoltan checked chicken was ready with a fork if the and his final dish at the end of cooking (Romania)**

### Checking inside colour

Balanel prepared a salad with chicken meat. He cut the chicken fillet into small pieces and fried the chicken in a frying pan with a type of butter prepared by himself at home with garlic and dill, which he kept in the freezer. He said that he learned how to prepare his own butter with garlic and herbs on TV and liked to use it every time he fried the chicken. He stirred the pan regularly with a spatula. He checked the surface colour but also, he used a fork and a knife to cut a piece of meat to check the inside colour (Figure 4.4.12).



**Figure 4.4.12: Balanel used a knife and fork to cut a piece of chicken to see if ready on the inside (Romania)**

Int.: How can you tell if the chicken is ready?

Balanel: Based on the brown, golden colour, and then I check the inside colour to see if the meat is well done.

Int.: Did you finish? It is ready?

Balanel: Yes, I stopped the gas.

Int.: How long it took you?

Balanel: About 20 minutes.

Int.: You said that you check if the chicken is ready based on the surface colour, but also you check the inside colour. How do you like the chicken?

Medium or...?

Balanel: I like the chicken to be well done, meaning that the colour it has to be golden but not to burnt, to be well cooked.

(Balanel, 28 years, Young single men, urban, Romania)

### Poking the chicken

Fanica (69 years, Elderly households, urban) cooked schnitzels from the chicken breast. She started by disjointing the chicken breast and cutting the meat into thinner fillets. Then, she washed every piece of fillet and moved them on the cutting board. Then, she pounded the fillets and dredged them into bread crumbs and then dipped them into eggs mixture and fried them in oil. She said that her family likes how she prepares the schnitzels. She stood in front of the gas stove during the frying stage, and frequently turned on the other side the schnitzels and removed the forming scum from the pan. She used a fork and often she squeezed the schnitzels to be sure that the schnitzels will be done also on the inside. Often, she checked the surface colour, but also, she mentioned using the fork for checking if the schnitzels were well done also on the inside. She cooked the schnitzels in three batches for about fifteen minutes each batch (Figure 4.4.13).



**Figure 4.4.13: Fanica's chicken schnitzels at the end of cooking (Romania)**

Sorina said that in her family every dish had to contain meat. During the cooking session, she used chicken legs to stew them, saying that "my children don't like the chicken to be fried, but stewed". First, she deboned the chicken legs and then she washed them with warm water (it is possible that using warm water to be the consequence of a problem at the water installation in her kitchen, where the cold water was not in function). After that, she added fresh garlic, salt, some herbs and a little bit of olive oil on the chicken meat and mixed them all together using her hands to have the condiments evenly spread on meat. She put all the chicken pieces in a hot frying pan without any oil and covered the pan with a lid. The cooking of chicken lasted for about 30 minutes. After one minute of cooking, she turned the pieces on the other side. She repeated the procedure after ten minutes of cooking, when she turned on the other side the chicken, but she also poked the pieces with the fork, saying that she wanted to be sure that the chicken will be cooked uniformly also on the inside. After 20 minutes of cooking, she turned again on the other side the chicken. She explained that she never tastes the fillets to check if it ready, she just looks at the colour of the meat and on the meat texture by using a fork. Having the hands busy with preparing the salad, she missed the moment of stopping the cooking process of the chicken, so the colour of the chicken at the end, as the participant mentioned "it is a little bit too brown, I should have stopped earlier the gas stove" (Figure 4.4.14).

Int.: How long it takes to cook the chicken?

Sorina: If I cook in this way the chicken, it takes maximum 30 minutes.

Int.: How do you know that the chicken is ready?

Sorina: I am not keen to taste the fillet, I just use the fork and visual checking. On the other hand, I do taste the soup or the cabbage rolls to check if they are ready.

(Sorina, 32 years, Young families, rural, Romania)



**Figure 4.4.14: The stewed chicken at the end of cooking prepared by Sorina (Romania)**

#### *Tasting the chicken to check the texture*

As mentioned previously, three research participants tasted the chicken to check the texture, to be sure that the meat is properly cooked. However, the tasting was not the main contributor in checking the doneness of the chicken and it was coupled with checking the surface colour of the chicken. For example, Maria Mirabela (34 years, Young families, urban) looked at the colour of the chicken saying that is properly cooked. However, she tasted a piece of chicken with a fork to be sure that the meat is also cooked on the inside. Domnica (75 years, Elderly households, urban) prepared boiled chicken and poked the chicken with a fork and tasted a piece of meat to check if it was cooked properly and could be chewed. After ten minutes of boiling the chicken legs and breast cut in quarters, Damiana (73 years, Elderly households, rural) took a piece of chicken and put it on a plate using a fork. She held the meat with two fingers and used a fork to split the meat and tasted it. Although she said that the meat was ready, she was not completely convinced, because later when she added the rice, she mentioned that the time needed for rice to boil it will be enough also for the chicken to be properly cooked.

#### **Summary of the Romanian ways of proper heating of chicken**

The methods applied by the Romanian research participants to evaluate the doneness of the chicken were dependent on the dish the participant prepared. The table below shows four different ways of checking the doneness of chicken. Most participants used a combination of two ways to evaluate chicken doneness. In case of frying, roasting and stewing, they evaluated the colour surface and the texture by poking (pressing) with a utensil (frequently fork) the chicken. In case of boiling, participants looked often at the meat texture and less on the colour of the chicken. The specific type of understanding expressed by the research participants associated with evaluation of doneness of boiled chicken was correlated to splitting easily the meat, or with the falling off the bones. Most research participants cooked chicken for longer periods to make sure it was cooked properly. Six out of fifteen research participants boiled the chicken alone and then combined it with other ingredients, most of the time with vegetables: Ionel (30 years, urban); Bogdan (32 years, urban); Zoltan (35 years, urban) (all Young single men); Domnica (75 years, urban); Linalia (73 years, rural); and Damiana (73 years,

rural) (all Elderly households). Two types of understanding were associated with the four ways of checking the doneness of the chicken (Table 4.4.3).

The first general understanding was that eating raw chicken may cause illnesses. The second understanding was related to frying, stewing and roasting; if overcooked, the meat has a browner colour and it is not very pleasant to eat. Many participants shared with the researchers their previous experiences related with undercooked meat. However, events with eating undercooked chicken were associated with eating outside their households.

**Table 4.4.3: Summary of the main ways of checking if chicken is done for different kinds of cooking procedures and chicken products**

Ways of checking if the chicken is cooked enough	Chicken part used for cooking	Cooking procedure	Type of understanding expressed on doneness	Type of general understandings expressed
Timing the cooking (based on experience)	Chicken legs Chicken breast Breast fillet Whole chicken cut into small pieces	Roasting chicken in the oven; Frying in a frying pan; Stewing in a frying pan; Boiling	It is needed one hour to boil the chicken to be done; To boil one half of the chicken breast it takes about 20 minutes;	
Check how the chicken looks on the surface	Chicken legs  Breast fillets cut in pieces	Roasting chicken in the oven;  Frying in the frying pan; Stewing in a frying pan	Chicken should be golden-brown and have a nice crunchy crust on the outside	Eating raw chicken is Dangerous. It can make you sick.
Cut the chicken to check inside	Whole breast fillets or cut in pieces	Frying in the frying pan; Roasting in the oven;	Chicken should not be pink inside; When the chicken is white inside it is properly cooked;	If overcooked, the chicken has a browner colour and it is not very pleasant to eat
Check the texture of the chicken with the help of a spatula or other utensil	Breast fillets cut in pieces  Chicken legs Chicken breast	Frying in the frying pan;  Stewing; Boiling;	If the meat it is not split easily it is not properly cooked; The meat is not properly cooked if it's not falling off the bones; The fork enters easily in the meat if it is cooked properly	

## The ways the French participants determined if the poultry was done

Different methods were used by French participants to determine the doneness of the chicken cooking. Table 4.4.4 (next page) summarizes the difference between chicken products, the heating method, the cooking time and the ways to determine if chicken is properly cooked. (See also Appendix D, for more details about the French preference for chicken and cooking methods)

### Mix methods: checking colour and firmness

Several participants mixed methods to determine if the chicken was properly cooked. However, the main method was to combine checking the inside and/or outside colour of the chicken and/or the firmness of the meat. For instance, three of the young men combined checking firmness and the colour. Vincent told that the whole chicken was cooked enough when he opened it with a knife and noted that the meat was white. For him, the colour inside the meat was an indicator that it is well cooked. Meanwhile, he also checked if the meat would easily separate from the bones.

I check the chicken bone wall, if I can't detach the chicken breast. I try to check the further I can go in the breast chicken to check if it is cooked enough in the centre. It has to be well white inside, I care about the colour.

(Vincent, 29 years, Young single men, rural, France).

Similarly, Fabrice (24 years, Young single men, urban), checked the outside colour and told he made sure the chicken was well cooked by turning the fillet' pieces twice on each side. Simon (25 years, Young single men, urban) told he liked to eat his chicken when it had a "gold-cooked" colour in the outside but soft inside.

Similarly, Mathilde (37 years, Young families, urban) also mentioned that the texture of the meat was important for her. She didn't like the chicken to become too dry, but didn't eat chicken when it is pink inside. Thus, she simmered the chicken in coco milk putting a lid on top on the pan and lowering the temperature. "When I cut a small piece in half, I look at the firmness and at the colour. If it is pinkish, I won't eat it, if it is too hard, it is overdone. I have to find the right cooking balance", Mathilde said (Figure 4.4.15).

**Table 4.4.4: Overview over chicken products, heating method, cooking time, and how to check if the chicken was properly cooked in the French households**

Study group	Household	Chicken product	Heating method	Cooking time	Ways to determine if chicken is properly cooked
Young single men	Aurélien (25, rural)	Breast fillets	Fried in pieces in a pot and cooked in stew with other ingredients	1h10	Seared chicken in butter long to achieve doneness, cooked it further in stew to make sure it was well cooked
	Vincent (29, rural)	Whole chicken	Baked in oven, with butter and herbs	2h5	Regularly checked the chicken's surface colour opening the oven door every 20 min., teared it to check that the meat was white.
	Fabrice (24, urban)	Breast fillets	Fried in pieces with oil	11 min.	Tested the firmness of chicken slices with the spatula. Checked the surface colour, turned the fillets twice to cook on each side
	Simon (25 urban)	Breast fillets	Fried in pieces at high heat	12 min.	Checked the "gold-cooked" colour outside but soft texture inside
	Etienne (30, rural)	Whole chicken	Baked in oven, with butter, olive oil and salt on top	41 min	Checked that there is no blood running from the inside by holding the chicken vertically. Checked that the skin colour was golden
Young families	Mathilde (37, urban)	Breast fillets	Fried in pieces and simmered in coconut milk	18 min.	Fried until the pieces had a fine colour, checked by cutting a piece to look at the colour, and also checked the texture of the meat with the spatula
	Amandine (27, rural)	Whole chicken	Baked in oven in a special cooking bag with spices	1h10	Used recipe on the cooking bag, but cooked it longer than prescribed based on experience, checked that the colour of the meat was not pink
	Julie (28, rural)	Whole chicken	Baked in oven with a coco milk sauce	1h10	Cooked the chicken for at least 1h in the oven, despite recipe saying 20-30 minutes. Afterwards, checked that the inside colour was not pinkish
	Mylène (25, urban)	Chicken legs	Baked in cooking robot	>30 min.	Followed the cooking robot timer, but still checked the surface colour
	Elodie (31, rural)	Chicken cutlets	Fried in a paper in a pan with spices	30 min.	Cutting the biggest fillet in the core to check on the colour of the meat inside
Elderly households	Gerard & Odile (71/65, rural)	Whole chicken	Baked in oven with spices and margarine	1h15	By experience, cooking the chicken at least 1h15 in the oven and flipping it every 20 minutes.
	Sylviane (77, rural)	Whole chicken	Baked in oven with various ingredients	1h30	By experience, flipping the chicken and adding some water in the dish. Checking the surface colour at the end.
	Charles & Annie (71/65 rural)	Whole chicken	Roasted in oven, on a spit	2h50	Checked surface and inside colour several times for pinkish colour to achieve properly cooked chicken
	Bernard & Hélène 72 (urban)	Chicken legs	Fried in a wok pan	47 min.	Looked at the surface colour, frying them before stewing them with tomato sauce
	Yvette & François (74/46, urban)	Whole chicken	Baked in oven	1h20	Cut the chicken to check the colour of the meat. Confidence in own experience of cooking chicken



**Figure 4.4.15: Mathilde checks on the chicken cooking by cutting a little piece of chicken and by watching the colour (France)**

Elodie (31 years, Young families, rural) also seemed to balance the cooking of chicken. She checked the inside of the largest fillet to check the colour and to be sure it was well cooked. If the chicken was “pink” she would have cooked it more, if it was ok so she decreases the temperature. Then she would put the temperature at the minimum to keep the chicken warm before serving it to her family.

The main aim for the participants, especially three of the young families and one elderly household, was to avoid “pinkish meat”. Julie (28 years, Young families, urban) said: “First of all, I leave the chicken at least 1 hour in the oven, to be sure, and anyways I always cut it in half to check if it is pinkish or not”. Charles (75 years, Elderly households, rural) roasted the chicken in the oven for 2 hours and a half before he checked on the cooking. He cut a thigh and said it were still too pinkish. He thus called his wife for her advice. She said she was afraid that it is not cooked enough, so she suggested that he put it back in the oven for another 20 minutes, which he did.

### Timing cooking based on experience and colour

Another common way mentioned by the participants was to cook the chicken “long enough” to be sure it was well done, based on the experience of timing the cooking of chicken and on the colour of the meat. This was typically mentioned in the elderly households. Odile (65 years, Elderly households, rural) calculated that she should leave the chicken in the oven for 1h or 1h15 and put on the timer. She turned the chicken in the dish every 20 minutes. At some point, she covered the chicken with aluminium sheet on top of to prevent it to roast too much. After 1h15 she removed the chicken from the oven. She said she was used to cook chicken, so she knew the right cooking time by experience.

Sylviane (77 years Elderly households, rural) said she knew well the time for cooking a chicken by experience. She regularly turned the chicken and added some water in the dish, in the oven. She checked the colour of the meat by cutting into one of the thighs in the end, but she said she was already sure the chicken was good to eat. Yvette (74 years, Elderly households, urban) said she had cooked a lot of chicken in her lifetime, she had the experience of it and she let the chicken cook for 1h15 to 1h30. Yvettes’s

husband, François (76 years) cut the chicken and appreciated the colour of the meat. He also said he has confidence in his wife's experience of chicken cooking.

Bernard (72 years, Elderly households, urban) who cooked chicken legs in a wok pan, turned the chicken legs over after judging they had the right outside colour, based on his experience because he was in charge of cooking chicken legs in his household and did it many times, and that they were cooking for long enough on one side. At the end, he picked in the chicken legs to appreciate the cooking (Figure 4.4.16).



**Figure 4.4.16: Bernard picks in the chicken to determine doneness (France)**

Aurélien (25 years, Young single men, rural), only relied upon timing the chicken to be sure that the chicken pieces were properly cook. He first fried them in a pot with oil before cooking them in a stew, with tomato sauce, onions and peanuts for more than one hour. "I start to sear the chicken pieces with butter to cook them at first, to be sure that they are cooked "at heart". With little pieces, it cooks fast". However, he did not check the colour or firmness of the cooked chicken.

#### *Recipe, to follow or not?*

Three participants from YF group used a recipe to decide how to cook the chicken properly. Amandine (27 years, Young families, rural) said: "I cook it according to my experience. On the cooking bag they say 1h10 but it is a big chicken, so I'll let it longer in the oven". She checked if the chicken was ready by cutting a thigh and watches the colour of the meat: "For me it is good, it is not pink anymore". Julie (28 years, Young families, urban), on the other hand checked the cooking time and temperature on her smart phone. She said the cooking time indicated in the recipe was too short. The recipe advised to cook the chicken for 20 to 30 minutes, but she did not believe it would be cooked enough. Instead, she decided to cook the chicken in the oven for 1 hour. Meanwhile, Mylène (25 years, Young families, urban), literally followed her cooking robot recipe, which is preregistered in her robot (with all the recipe's steps and the timer). She might check the chicken cooking but she mainly had confidence in her 'Thermomix' cooking robot and in the cooking time announced. Despite her confidence, "once it was not cooked enough so I finished cooking the chicken thighs in a pan, because I only put them in the cooking robot for 30 minutes", which she felt was not long enough.

### *Special method: no more blood*

One participant, Etienne (30 years, Young single men, rural) had his own method, learnt from his parents: no more blood should run out of the carcass while holding the whole chicken vertically. He also checked the colour of the skin, which had to be “golden” (Figure 4.4.17).



**Figure 4.4.17: Etienne checked on the cooking by holding the chicken vertically and by looking if blood still comes out of the chicken (France)**

### *Use of thermometer*

None of the French participants used a thermometer to determine the chicken cooking temperature and if it was properly cooked. Thermometers were not commonly used in kitchen by the participants.

### **Summary of the French ways of proper heating of chicken**

The methods employed to determine the doneness when cooking the chicken were diverse among the participants and were often mixed. Only one participant, Mylène (25 years, Young families, urban) strictly followed her cooking robot recipe but nevertheless checked, at the end, the doneness of the chicken. Seven participants used the timing: they cooked chicken long enough to be sure it will be cooked, by stewing with other ingredients; Aurélien (25 years, Young single men, rural); and Mathilde (37 years, Young families, urban) or by letting it in the oven long enough: 2h50 for Charles (75 years, Elderly household, rural). The timing method was often mix with the “checking inside the chicken” method to be sure the colour was not pink or pinkish anymore, and by checking the outside colour was ‘golden’.

## The ways the UK participants determined if the poultry was done

The UK research participants all cooked chicken that was pre-prepared by the producer, most commonly fresh breast fillets bought in a plastic container. On the occasion of our observation, two households used chicken they had frozen themselves at home and subsequently defrosted, but nobody used chicken that was sold frozen (although some did on other occasions). See the Table 4.4.5 (next page) for an overview of chicken products, heating method, cooking time and ways of determining if the chicken was properly cooked.

Table 4.4.5 illustrates that many of the research participants used two or more methods in combination to check if the chicken they prepared was properly cooked. Moreover, some participants said that they use different ways of assessing the doneness of chicken depending on the product and how it is being cooked. Mary, for example, checks chicken breasts (cooked in the microwave) by cutting them open at the thickest part and looking at the colour of the flesh inside to ensure it is no longer pink, as we observed on our visit (see further discussion below). When oven roasting a whole chicken, however, she uses a combination of techniques. She would first ensure that it has cooked for the appropriate time for the size of the chicken, based on a rule of thumb she learnt when she was younger from a Good Housekeeping cookbook, and sometimes consulting the instructions on the packaging. She would then pierce the flesh with a knife and observe the colour of the juices coming out of the meat.

Mary: A whole chicken I'd just give it the time, and then I stick the knife into the leg part because that's always the bit that's the last one—

Bill: It's got to run clear, hasn't it?

Mary: It has to run clear.

Int.: So when the juices come out they're clear?

Mary: Yes, if it's pink when it's coming out it's not done. Yes, most chickens nowadays on the package—I mean I know anyway, but I've noticed that they put on the packaging that the actual time that this chicken, this particular weight of chicken will take. But it's the same as I would have worked out for 20 minutes per pound plus 20 over, so that's how I work it out.

(Mary & Bill Russell, both 70 years, Elderly households, urban, UK)

**Table 4.4.5: Overview over chicken products, heating method, cooking time, and how to check if the chicken was properly cooked in the UK households**

Study group	Household	Chicken product	Heating method	Cooking time	How to check if chicken is properly cooked
Elderly households	Susan (78 years, urban)	Breast fillets	Fried in small pieces on gas hob, then left to simmer in sauce	21	Observed outside surface colour during initial frying stage: when all the pieces had changed from white to pink it was time to add the sauce and leave to simmer. Reference to approximate timings but not precisely measured.
	Mary (70 years, urban)	Breast fillets	Cooked whole in microwave	10	Referred to microwave instructions and set timer accordingly. Alerted to check progress by sound of chicken cooking. Brief judgement of outside surface colour (still slightly pink so not yet ready). Cut into the fillets to check the inside surface colour: judged to be undercooked when slightly pink inside and returned to the microwave for further cooking. Checked the inside colour again, now happy that it is white.
	Tricia (70 years, urban)	Breast mini-fillets	Fried in small pieces on electric hob	13	Broke some pieces of chicken in half while frying and checked the internal colour: it was not pink so this indicated that it was cooked. Also felt the texture during cooking. Reference to approximate timings but not precisely measured.
	Jean (72 years, rural)	Thighs	Roasted whole with vegetables in oven	54	Primarily used the timer on the oven. Then cut into one thigh portion to check the colour inside is not pink.
	Archie (74 years, urban)	Breast fillets	Cooked whole in foil parcel, in frying pan on electric hob	49	Used a timer on his mobile phone to monitor cooking time accurately. Alerted to check progress by sound of chicken cooking.
Young families	Laura (31 years, urban)	Breast fillets	Fried whole on electric hob	21	Cut partway into one breast fillet at the end of cooking to check it was white inside. Also felt the texture during cooking. Reference to approximate timings but not precisely measured.
	Paul (34 years, urban)	Thighs	Roasted whole with vegetables in oven	55	Set the timer on the oven, according to the recipe. Also quickly looked at the outside appearance to check the chicken wasn't burning.
	Kate (30 years, urban)	Breast mini-fillets	Fried in small pieces on gas hob, then left to simmer in sauce	29	Observed outside surface colour and broke pieces of chicken in half while frying to judge the inside colour: white indicated that it was cooked.

## Chapter 4.4: Cooking chicken and checking for doneness

Study group	Household	Chicken product	Heating method	Cooking time	How to check if chicken is properly cooked
	Chloe (38 years, rural)	Whole chicken	Cooked whole in electric pressure cooker	36	Used the timer on the pressure cooker, according to handwritten instructions from her partner. After cooking, checked the inside of the breast meat to ensure it was white all the way through.
	Alicia (23 years, urban)	Breast fillets	Roasted whole in oven	42	Noted the time on the oven clock and used this to indicate when chicken was ready.
Young single men	Ryan (20 years, urban)	Breast fillets	Fried in small pieces on gas hob	19	Observed outside surface colour during initial frying stage: when all the pieces had changed from white to pink it was time to add the onion. Reference to approximate timings but not precisely measured.
	Josh (22 years, urban)	Breast fillets	Roasted whole in oven	25	Primarily used the timer on the oven. Then cut into one thigh portion to check the colour inside is not pink.
	Sahib (23 years, urban)	Breast fillets	Fried in small pieces (in batches) on electric hob	6 (aver. per batch)	Sight; feel; sound; smell Felt the texture of the chicken changing: it became less 'squishy' and easier to break as it cooked. Broke open a piece from the first batch to check the inside colour is not pink. Alerted to check progress by sound and smell of chicken cooking.
	Liam (28 years, urban)	Breast fillets	Fried in small pieces on gas hob	16	Observed outside surface colour of chicken while frying. Cut open one piece of chicken to judge the inside colour: no longer pink indicated that it was cooked, which he felt would also apply to the other pieces.
	Daniel (25 years, urban)	Thighs/ drumsticks	Roasted in Remoska minicooker	39	Intermittently checked outside colour of chicken to monitor progress in cooking (it became more brown with time). At the end, cut all portions of chicken open to check colour inside: the meat should be white, not pink and the bone should be darker than before. Alerted to check progress by smell of chicken cooking.

Even for the same product – breast fillets, cut into small pieces – Sahib had different approaches to judging doneness depending on whether the chicken is being cooked in a sauce or not. For our visit he fried chicken pieces on their own, later mixing them with a tomato sauce he prepared separately. He frequently tested the firmness of the meat, using a pair of tongs. When he felt it might be ready, Sahib broke a piece in half and assessed the colour of the flesh, like Mary, checking that the meat was white rather than pink. However, if making a curry, where the chicken cooks in the sauce, he said he would base his judgement on time rather than a visual inspection:

“So, obviously I check the firmness of the chicken. And then when I think it's done, I'll take one piece from the pot, the biggest piece, and I will tear it, see if it's pink, if it's red, whatever it is. If it's white, and there's no juices running or anything, then you know it's cooked. You can tell if a piece of chicken's cooked.

[...]

If I'm making a chicken curry and that, if a piece of chicken's been in the pot for about 25 minutes, it's cooked. It can't not be cooked at that temperature ... You know it's going to be done.”

(Sahib Singh, 23 years, Young single men, urban, UK)

We now consider in more detail the specific techniques used to ensure chicken was sufficiently cooked.

### Using a recipe

Only three UK participants explicitly referred to written instructions in deciding how long, or at what temperature, to cook their chicken. First, Paul (34 years, Young families, urban) was making roast chicken thighs and vegetables, following a specific recipe. On his phone he had a photograph of a recipe belonging to his mother-in-law. He checked this several times during cooking, including when setting the temperature and time on the oven (Figure 4.4.18). As Paul explained, having cooked this dish on a number of previous occasions, the recipe on his phone was mainly used as a reminder, rather than something he needed to carefully follow: “We've done it that many times it's just refreshing myself really of what we've got to do ... So, yes, it's just times, quantities, that sort of stuff.”

Second, Mary (70 years, Elderly households, urban) referred to the instruction booklet for her microwave before using it. She usually cooks two chicken breasts when making this meal – and is confident in how long this takes – but on this occasion was cooking three, prompting her to dig out the instructions from the cupboard and check (Figure 4.4.18). However, cooking times were only specified for two or four breast fillets, meaning Mary had to interpolate for three fillets. She decided to set the timer for 9 minutes and then visually check the chicken to decide if any further cooking time was needed. Third, Chloe (38 years, Young families, rural) referred to hand written instructions for using the Instant Pot pressure cooker, including the settings to use and

timings of cooking (Figure 4.4.18). These had been written out by her partner, Joe, who is more experienced at using the pressure cooker.



**Figure 4.4.18: Reading cooking time instructions in various median (UK)**

Kate (30 years, Young families, urban) frequently checked a recipe on her phone (in a similar way to Paul), again for a dish that she had cooked on previous occasions, but this did not appear to directly influence how she judged when the chicken was done. Several other participants alluded to the fact that when they first cooked the dish in question they followed a recipe, but have since learnt to cook it from memory and their own judgement, sometimes adapting aspects of the dish to their own tastes or the availability of ingredients.

### Timing cooking based on experience

Among the UK research participants, then, few referred directly to a recipe for cooking time and temperature. That said, most (11) participants made reference to a known cooking time for chicken (often based on their previous experience) as factoring into their judgement of doneness in some way. Of course, it is possible that the four remaining participants also had an idea of cooking time in mind but did not refer to it explicitly. Those that did can be divided into two categories: on the one hand those estimating the length of time the chicken was cooking, or else having a general sense of how long it should take in the back of their mind (4); and on the other hand, those using a timer or clock to more precisely determine cooking time (7).

First, four participants made explicit reference to cooking time during the observation but without precisely measuring it. As seen earlier, Susan was making a sweet and sour dish, initially stir-frying onions and chicken before leaving both to simmer in a homemade sauce. Susan explained that when cut into small pieces chicken “cooks through quickly” and is ready “within ten minutes”. She recalled that the recipe advised cooking the chicken for 5 minutes (presumably before adding sauce) but that she would prefer to overcook rather than undercook, because “undercooked will make you ill”:

If I went back to my recipe the onions should take about five minutes and the chicken should take five minutes, right, but I, yes, as I say, my chicken I would want a good ten minutes.

(Susan Dunning 78 years, Elderly households, urban, UK).

Despite being aware of timings, both what the recipe advised and her own preference to cook chicken for longer, Susan did not set a timer to monitor how long it was cooking, commenting that “you can see I’m not watching the clock”. She also pointed to the surface colour of the chicken as a key indicator that she used (discussed further below). In practice she initially stir-fried the chicken for 4½ minutes and, including simmering, cooked it for a total of around 20 minutes.

Ryan’s approach was similar. Again, he had an idea of how long chicken should take to cook but would prefer to cook it for longer. Ryan estimated the length of time he was cooking chicken for, rather than setting a timer, partly based on his knowledge of how long it takes for other ingredients (in this case, pasta) to cook:

Int.: Do you know, roughly, how long the chicken takes to cook?

Ryan: Yes, roughly. I do it by eye. I mean, I’ll sear it first and then— 10, 15 minutes. Yes, I mean, I rarely ever—I mean, I cook it so often, I rarely ever check that it’s cooked. I know you probably should, but I’m pretty confident of when it’s cooked.

[...]

I mean, usually, I cook it for well-over how long it would take. So, I sear it in the pan, I’ll add the onions, and then I usually add my sauce. And then, it’s usually another seven to ten minutes for the pasta to cook. So, it’s already had about five to ten minutes in the pan and then another ten minutes. So, I give it plenty of time. So, it’s based on time, rather, because usually when I’ve added the sauce, I don’t look at the chicken so much.

(Ryan, 20, Young single men, urban, UK)

Tricia (70 years, Elderly households, urban) felt that chicken should take around 15-20 minutes to cook in the wok, something she felt she had probably “picked up” from television. However, other than this, she didn’t noticeably time how long she was cooking the chicken but instead judged it by sight and texture (see further discussion below). Laura cooked chicken breasts whole in a frying pan and was less specific about timings, but acknowledged time as a factor she was aware of. After around 5-6 minutes of cooking, she broke from salad preparation and turned over her chicken portions, sensing that it had been “quite a few minutes”. The number of times she does this, and the period of time between turnings, varies between one occasion and another:

Int.: How did you know it was time to turn it over?

Laura: I didn’t, really. There’s no real rule, it just— You would— I at least turn it sort of once on either side. It depends on how my evening’s going and how— I could turn it two or three times. Just seeing the way, obviously, how it’s cooking. But, yes, it’s been quite a few minutes, so—

Int.: So, it's not something that you're strictly timing for this many minutes?

Laura: No, not strictly.

(Laura Cooper, 31 years, Young families, urban, UK)

Second, there were another seven participants who used some form of clock or timer to help identify when chicken was properly cooked. As already seen in the first half of this chapter, this was universally true of those cooking chicken in the oven: Jean (72 years, Elderly households, rural), Josh (22 years, Young dingle men, urban), Paul (34 years, urban) and Alicia (23 years, urban (both Young families). Doing so not only marked out the appropriate time for the chicken to cook, but also explicitly set aside either 'down time' or opportunities to perform other tasks. In addition, Chloe (38 years, urban) and Mary (70 years, Elderly households, urban) used the integrated timer functions of their pressure cooker and microwave, respectively, whereas Archie (74 years, Elderly households, urban) used the timer on his mobile phone to mark out five intervals of five minutes (Figure 4.4.19).



**Figure 4.4.19: Archie sets the timer on his mobile phone (UK)**

An interesting point of difference between these seven participants was whether they relied fully on the cooking time or felt the need to use other means of checking the chicken was cooked after the time was up. Four of them – Jean, Josh, Chloe and Mary – all made a point of cutting the chicken open to check the colour inside, before going any further with serving it. By contrast, Alicia and Paul both explained that they were happy not to do so:

Alicia: I probably don't think about it as much as I should. I don't probe my meat before I eat it. That's probably it. I cook to time, but I just never probe meat, ever.

Int.: So when you say you cook to time, you mean it should take x number of minutes to cook, and then...

Alicia: Yes. I don't really give it a thought, I just say, this is how long it's going to take, and I have never killed anyone or given them food poisoning, so I think I am doing something right.

(Alicia Cook, 23 years, Young families, urban, UK)

I'm quite confident in I know that it's going to be cooked because I've done it so many times. And you just know. You get to know, like a thigh, depending on its size, you can just gauge how long it's going to take ... It's not something that I actively think, well I must cut into this first. To see if it's cooked. So yes, it's just one of those things. It's just experience, I suppose  
(Paul Rothwell, 34, Young families, urban, UK).

### Checking surface colour

With the exception of Alicia (23 years, Young families, urban), all participants made some noticeable judgement of the visual appearance of chicken with respect to how cooking was progressing and/or when it was ready. This can be separated into assessments of the outside surface and of the inside. In most cases, checking the external appearance of the chicken was a way of gauging progress, sometimes as a precursor to a further step of cutting into the chicken, rather than making a final decision about whether or not it was ready to eat. For those who pan-fried their chicken, judging the surface colour was part of ensuring even cooking "all over", i.e. that all sides of the chicken pieces were being exposed to the heat and none were burning. This was alluded to while cooking by Ryan (20 years, urban) Sahib (23 years, urban), Liam (28 years, urban) (all Young single men), Kate (30 years, urban) Laura (31 years, urban) (both Young families), and Susan (78 years, Elderly households, urban): all except Tricia (70 years, Elderly households, urban). Most also went on to check the inside colour (see below), but here we focus especially on Susan and Ryan, who only checked the surface colour. As we have already seen, Susan cut her chicken into small pieces and fried it, stirring continuously during the first 4-5 minutes. As she explained it during the stir-frying phase, "we're frying it all over to make sure it's not pink or looks raw". Once the chicken pieces had turned white all over, Susan added her sauce and left the chicken to cook further by simmering. Ryan, who followed a similar method on the whole, also used the changing colour of the outside surface of his chicken pieces to judge when to move on to the next stage of cooking: his first stage was to 'seal' or 'sear' the chicken (Ryan uses both terms); when he was satisfied this was done, he added onions to the pan. This was judged by the absence of any visible pink colour on the outside of the chicken: (Figure 4.4.20)

Ryan: Just add the onions now that the chicken is seared. Just turn that heat up a little bit.

Int.: So, when you say the chicken's seared, what do you mean by that?

Ryan: So, it's cooked all over. There's no more pink exposure on the skin.

(Ryan Langsdale, 20 years, Young single men, urban, UK)



**Figure 4.4.20: Ryan's chicken is sealed/seared and so he is ready to add the onions (UK)**

It is worth emphasising that both Susan and Ryan continued to cook their chicken after this moment: the assessment of the surface colour was not used as a sign that the chicken was finished cooking, but that it had reached an appropriate point in cooking to add further ingredients and begin the next stage.

Others using different cooking methods also noted changes in the surface colour as a sign of how the chicken was cooking. Mary (70 years, urban) and Archie (74 years, urban) (both Elderly households), were prompted to check their chicken earlier than anticipated as a result of popping or crackling noises that they heard coming from the meat. Mary interrupted the microwave programme, took out the dish containing her three breast fillets, partially peeled back the cling film covering the dish and looked at the chicken. First, she identified the source of the noise she heard – “if you look carefully, the ends have blown” – meaning that the thinner parts of the fillets had already cooked through and were possibly overheating. Turning attention to the thicker parts, the outside surface of which looked “slightly pink”, she decided that the chicken needed further cooking and could return to the microwave for the remainder of its programme. Archie responded to the sound he heard by removing his pan from the heat and opening the foil parcel with the chicken in it. Compared with Mary he made more of a passing comment about the outside appearance of the chicken – “now, look, that’s coming on fine” – before carrying out a further test that he explained he had learnt from his mother. He inserted a wooden skewer into the middle of the chicken breast, removed it again and examined the surface of the skewer: “it’s supposed to be

dry when it comes out". He then wrapped up the foil parcel again and returned it to the heat (Figure 4.4.21).



Mary points out the slightly pink colour of the chicken breast



Archie is pleased with how the chicken is cooking

**Figure 4.4.21: Visual responses to the sound of chicken cooking (UK)**

Paul (34 years, Young families, urban) also made a passing comment about the appearance of the chicken but didn't appear to use it as a basis of his decision making, confident that it would have cooked properly in the allotted time. At the end of cooking he opened the oven to check on his chicken thighs while he continued with salad preparation, but was more concerned about if they were overcooking or burning, rather than assessing if they were ready to eat.

Daniel (25 years, Young single men, urban) checked on the progress of his chicken thighs and drumsticks several times during cooking (Figure 4.4.22). The first three times he briefly lifted the lid of the Remoska and looked inside. The first time he noted that the chicken was "cooking quite nicely" but was "nowhere near done yet", the colour being "still quite white". The second time, around 7 minutes later, he commented that it was "still looking not quite cooked", explaining that he expected the surface to look crispy and brown when the chicken was ready. The third time, after another 11-12 minutes, the surface was noticeably a darker colour; he felt it was "actually cooking really nice" but still required "a wee bit longer". Around 8 minutes later Daniel checked the chicken for the fourth and final time. Again, he opened the Remoska and looked inside, but this time felt prompted to remove a thigh portion and cut it open to check the colour inside. This in itself was a common technique among our sample, which we will now explore in further detail.



**Figure 4.4.22: Daniel checked the surface colour of the chicken four times (UK)**

### Checking inside colour

Ten participants cut or broke chicken open to check the colour of the flesh inside before being satisfied it was cooked (the exceptions were Alicia (23 years, urban), Paul (34 years, urban) (both Young families), Archie (74 years, urban), Susan (78 years, urban) (both Elderly households) and Ryan (20 years, Young single men, urban). In general, if the flesh looked white, it was deemed to be cooked; if it was pink it was not yet cooked. For most who did so, this was the final, definitive test of chicken being sufficiently cooked.

For those cooking whole breast or thigh portions, a common approach was to use a knife to cut open one or more portions, either cutting partway through: Daniel (25 years, Young single men, urban); Laura (31 years, Young families, urban), Jean (72 years, rural); and Mary (70 years, urban (both Elderly households) or completely in half (Josh). This was typically done at the end of the cooking period. Similarly, Chloe (38 years, Young families, rural) (who cooked a whole chicken in the pressure cooker) checked by pulling apart the breast meat with a fork and checking the colour inside, before moving on to breaking up and serving the rest of the chicken. Among these participants, Mary was the only one to judge that the chicken was not yet fully cooked. Recall she was uncertain how long she should cook three chicken breasts for in the microwave, estimating 10 minutes but then setting the timer for an initial 9 minutes and then checking. On cutting into the fattest part of all three fillets she felt two of them still looked “a little bit pink in the middle” and returned the dish to the microwave for another minute of cooking. After this she checked the chicken again, looking inside the existing cuts she had made, and was satisfied that they were now fully cooked (Figure 4.4.23).



**Figure 4.4.23: Mary cuts into the chicken after nine minutes in the microwave (left) and then checks again after another minute of cooking (right) (UK)**

Others reflected on what the chicken might have looked like had it failed the test and/or what they would have done in response. Having cut into the middle of the largest thigh portion, Daniel (25 years, Young single men, urban) felt “confident that the rest of that meal is now cooked”, although he did also repeat the test on the drumstick. If it were not ready, he would expect the bone colour to be lighter, to see liquid red blood, and/or that some of the flesh in the middle would be pink. Josh said that, if the chicken was still slightly pink inside, he might feel the inside with his hand to see how hot it was. If unsure it was cooked, he would return it briefly to the oven before checking again:

Josh: If it is a little bit pink and I’m feeling brave I’ll kind of touch it and see if it’s warmed all the way through.

Int.: What, with your finger?

Josh: But I often hurt myself doing that so—

Int.: Do you find it’s— how often do you find do you have to do that?

Josh: I think when I’ve been lazy and I’ve not like pre-heated the oven then it doesn’t cook as well as I’d like. So—

Int.: And what would you do if it was a bit pink in the middle?

Josh: Put it back in and just kind of like look at it every like two minutes and see.

(Josh Lovell, 22 years, Young single men, urban, UK)

Four out of the six participants who fried their chicken in small pieces did a similar test, using a spatula, spoon, knife or their hands to cut or break open one or more of the pieces and check the colour inside. This was true of Kate (30 years, Young families, urban); Sahib (23 years, urban); Liam (28 years, urban) (both Young single men); and Tricia (70 years, Elderly households, urban). Again, white indicated it was cooked; pink meant further cooking was needed (Figure 4.4.24). Often this was in combination with other tests, including observing changes in the outside colour and checking the texture by prodding or poking.



**Figure 4.4.24: Checking inside colour of chicken: Kate, Sahib, Tricia and Liam (UK)**

### Poking the chicken

A more subtle way of testing chicken was based on its texture, specifically how it responded to pressure applied by poking or prodding with a spatula or other stirring implement. While this was only made explicit by a small number of participants, it is quite possible that others – especially those stir-frying the meat – also received similar sensory 'feedback' about the changing physical state of the chicken in the process of moving it around, breaking it into pieces and so on, but in ways that they might not be able to articulate or even be conscious of.

Sahib (23 years, Young single men, urban) was the most explicit about this technique for testing doneness, explaining simply that “you can feel the meat, if it’s cooked”. His approach was to fry small pieces of marinated chicken in a pan at a high temperature, in small batches. While frying the chicken he frequently turned the pieces over with tongs, sometimes squeezing them as he did so, and prodded the pieces with the end of the tongs. Choosing two pieces of chicken at different stages of cooking, Sahib demonstrated the difference: chicken became progressively less resistant and easier to break apart as it cooked. “So, that piece, you can tell because it’s a bit squishy. Whereas this piece, it’ll just break. So, squish, break.”

When cooking the first batch, Sahib followed this procedure by breaking one piece of chicken and checking the colour of the flesh inside. Satisfied that it was white, he decanted the cooked chicken into a container and added more raw chicken pieces to the frying pan. This visual test, he said, was to gauge how long the future batches should take to cook, although he didn’t strictly monitor the time. On the subsequent batches he didn’t repeat the visual check of the inside colour, but did continue to test the texture with his tongs.

Others to noticeably prod or poke the chicken in testing for doneness were Laura (31 years, Young families, Urban) and Tricia (70 years, Elderly households, urban).

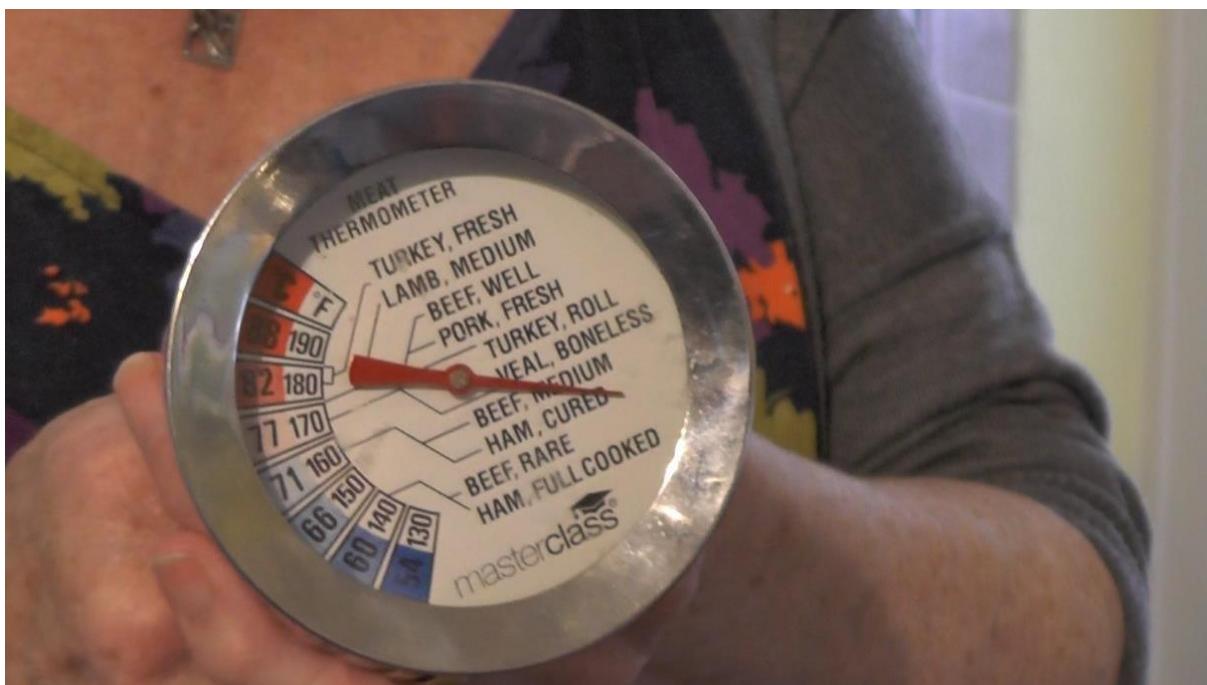
### **Using other senses**

Some participants referred to other sensory cues, especially appealing to their senses of hearing and smell. These were most apparent when participants were attending to some other activity, but the noises or smells of the cooking chicken caught their attention and prompted them to do something. As we saw earlier, both Mary (70 years, urban) and Archie (74 years, urban (both Elderly households) were alerted by unexpected sounds that led to them checking on the chicken's progress. Sahib (23 years, Young single men, urban), again, was the only participant to explicitly articulate this. While washing dishes as he waited, Sahib was twice interrupted by the chicken requiring his attention. On the first occasion he said he could hear that the chicken needed turning. On the second he could smell that it needed turning.

In a similar way to noticing the texture or feel of the chicken, it is quite possible that more participants were sensitive and responsive to these other sensory stimuli than we were aware of. It is likely that through experience they had become attuned to the changing smells and sounds at different stages of cooking, even if this was barely perceptible.

### **Using a thermometer**

None of the UK participants were observed using a thermometer to test if their chicken was cooked. Jean (72 years, Elderly households, rural) showed us a meat thermometer that her son had given her as a present. As she observed, "it's for every meat but chicken" (Figure 4.4.25). She only uses this for cooking a roast turkey at Christmas.



**Figure 4.4.25: Jean's meat thermometer, with no mention of chicken (UK)**

Paul (34 years, Young families, urban) told us that he had recently bought a food thermometer for this purpose, but was yet to use it and in any case felt “quite confident that it’s going to be cooked because I’ve done it so many times”. Josh (22 years, Young single men, urban) mentioned that he would like to have a thermometer so that he can check his meat is hot in the middle without having to cut the portion in half. However, he also explained that he doesn’t really mind it being cut in half, so doesn’t see this as a priority.

### Summary of the UK ways of proper heating of chicken

Among the UK participants, there were a range of different approaches to ensuring chicken was properly cooked, many of them used in combination. Most households (11 out of 15) had some awareness of cooking time as an indicator of chicken being done, with 7 of these using a clock or timer to measure this accurately. By contrast, nobody used a thermometer to measure the core temperature of the chicken. Checking the outside surface colour of the chicken was also common, especially among those frying their chicken (6 out of 7). However, this was generally seen as a way of monitoring progress – how well it was cooking, when to add other ingredients, whether there were any signs of overcooking or burning – rather than of making a final decision about the chicken being ready to eat. Checking the inside colour of the chicken, by contrast, was seen by most participants as a definitive test: this was done by 10 out of 15 households, often after first using other indicators such as length of cooking time or the outside surface colour. Finally, a smaller number of participants indicated that they used senses other than sight – touch, smell, hearing – for monitoring the cooking of chicken, but it is possible that more people use these senses in an ongoing, barely perceptible way, in conjunction with more visible forms of judgement.

## The ways the Norwegian participants determined if the poultry was done

The participants in this study used various skills and food knowledge to determine if the poultry was properly cooked or not. How they determined doneness depended upon the chicken product prepared and the cooking procedure coupled with thoughts and understanding. All the Norwegian research participants cooked chicken that was pre-cut by the producer. In most cases, fresh breast fillets bought in a plastic container were used. A few used frozen chicken and one research participant used pre-cooked chicken. See Table 4.4.6 (next page) for an overview of chicken products, heating method, cooking time, and ways of determining if the chicken was properly cooked.

Table 4.4.6 illustrates that the research participants often used two or more methods to check if the chicken they prepared was properly cooked. For some of the participants, using two or more methods was done in combination. Moreover, the research participants told that they used different ways of assessing if the chicken was properly cooked depending on the dish they made. For instance, Lena (37 years, Young families, rural, Norway) told about many ways of assessing doneness. When she fried the pieces of the breast fillet during the cooking session, she pointed at a piece of chicken and said, “It is a bit pink, that one”. Moreover, she checked the texture of the chicken. “I feel a bit how much they give in. It is a bit soft” (Figure 4.4.26).



**Figure 4.4.26: Lena was squeezing the chicken pieces with the spatula to check the texture of the meat (Norway)**

She was preparing a chicken curry casserole and, thus, fried the chicken before adding it to the boiling curry coconut sauce. “But it shouldn’t become dry either. It should be a bit soft, she said” She didn’t think it was ready yet and said, “it isn’t properly cooked, but if I add it now and let it boil a bit, I think it will be fine.” However, if she would not boil the chicken after frying, “I would have been a bit more particular about the frying.

Because it needs to be thoroughly cooked. If that was the case, she would “take a chicken piece on the side and cut it in two. [...] If it is a chicken fillet, I cut it over the thickest part.” Lena described looking at the surface colour, checking the texture of the chicken, timing cooking based on experience, and cutting a piece of chicken to check the inside of the chicken. Her descriptions thus suggest that cooking chicken may involve a repertoire of ways of checking if the chicken is done and that the cooking practitioner may use different ways of determining doneness depending upon the cooking method and the chicken product they prepared.

## Chapter 4.4: Cooking chicken and checking for doneness

**Table 4.4.6: Overview over chicken products, heating method, cooking time, and how to check if the chicken was properly cooked in the Norwegian households**

Study group	Households	Chicken product	Heating method and cooking time	Cooking time	How to check for doneness
Young families	Anna (31 years, urban)	Legs	Roasted in the oven 51 min on 200 °C		Timing the cooking (on experience), check surface colour
	Chris (37 years, urban)	Breast fillets	Fried in pieces and later added to pot 17 min		Check how the chicken looks on the surface and timing the cooking (on experience)
	Emma (33 years, rural)	Breast fillets	Fried in pieces (12 min) and then in an ovenproof dish (20 min)		Checked surface colour & texture with the help of a spatula, timed cooking (on experience)
	Hanne (31 years, urban)	Thigh fillets	Fried in pieces in the frying pan, about 8 min.		Cut the chicken to check inside, and checked the texture with the help of a spatula
	Lena (37 years, rural)	Breast fillet	Fried in pieces in the pan in 2 batches: (12 & 8 min), then cooked in pot (17 min & 8 min)		Checked surface colour and the texture of the with the help of a spatula, timed the cooking (on experience)
Young men	Fredrik (23 years, urban)	Thighs in pieces	Fried in a frying pan (6.5 min) in the pan, roasted in an oven dish (31.5 min)		Used the time and temp. suggestion in a recipe
	Georg (28 years, Urban)	Breast fillets	Fried whole in the frying pan 1st fillet 4 + 5 min, 2nd fillet 5 + 6 min		Timed the cooking (based on experience) and cut the chicken to check inside.
	Jon (28 years, urban)	Breast fillets	Fried in pieces in the frying pan (23 min), simmered in sauce (8.5min)		Cut the chicken to check inside after check how the chicken looks on the surface.
	Petter (29 years, rural)	Breast fillets	Fried in pieces in a wok pan 16 min alone, 4.19 min with greens min plus 1.02 min with sauce		Timing the cooking (based on experience).
	Roger (24 years, urban)	Chicken fillet	Fried in pieces in the pan in two batches (9.40 & 5.50 min), added to the wok (7 min)		Checked texture with the help of a spatula, cut a pieces with the spatula to check the colour inside and tasted a piece
Elderly households	Bente (71 years, urban)	Thigh fillets	Fried in a frying pan (10.5 min), and simmering in water (8.5 min)		Check how the chicken looks on the surface and timing the cooking (based on experience)
	Inger (70 years, rural)	Breast fillets	Fried in pieces in the frying pan (13.5 min)		Using a thermometer. Cut the chicken to check inside.
	Kari (71 years, urban)	Breast fillet	Fried in the frying pan 5.45 min left in pan with lid, but no heat for 33 min.		Timing the cooking (based on experience).
	Nils (74 years, rural)	Pre-cooked chicken	Fried in the frying pan (8 min), then cooked in a stew (16 min)		Check how the chicken looks on the surface.
	Oda (72 years, rural)	Breast fillets	Fried in pieces in a pan (9 min), cooked in oven (34.5 min)		Cut the chicken to check inside, using a recipe

## Using a recipe

A few of the research participants used a recipe for cooking chicken: Chris (37 years, Young families, urban); Fredrik (23 years, urban); Jon (28 years, urban) (both Young single men), Kari (71 years, urban) Oda & Ove (both 72 years, rural) (all Elderly households). Often no time and temperature advice was given. One exception was Oda's recipe. It instructed her to cook the chicken dish in the oven at 200 °C for 20-25 minutes.

Fredrik had checked time and temperature advised from an online recipe but didn't follow the rest of the recipe. "I thought I should make chicken in an oven dish with a bit of onions and potatoes and carrots, and then I will make a salad with mozzarella and a bit of tomatoes", he said. Fredrik started by setting the temperature on the oven.

Fredrik: I checked earlier today at work, how much degrees it should be. It should be 180 °C. I think it should [cook] for about 30-40 minutes.

Int.: Is it a new recipe?

Fredrik: No, you know what? It isn't at all. I just like to know roughly, for how long the chicken should cooks, because I usually forget it. Or else I go for... It is about, what can I say, experience, perhaps?

(Fredrik, 23 years, young man, urban Norwegian)

After first frying the chicken thigh pieces on both side in a frying pan for six and a half minutes, Fredrik put all the chicken pieces on top all the vegetables in the oven dish, which he just had removed from the hot oven. He then put the dish back into the oven, now covered with the chicken and put the oven timer on 30 minutes. When the timer beeped, he took the dish out and started checking if the potatoes under the chicken had become soft using a knife and a fork. He debated with himself if the chicken was done or not.

Fredrik: Well then, I think the potatoes are done and everything is ready, I do, I hope. It shouldn't take more than 20 minutes [cooking the potatoes].

Int.: Would you check?

Fredrik: Yeah, checking that [cutting into the potatoes], oh yeah, this will do!

Int.: Are you cutting the potatoes?

Fredrik: Yes. We can check the chicken as well, but there is no point, you know.

(Fredrik, 23 years, young man, urban, Norway)

He decided to cut into one of the chicken pieces.

Int.: What are you checking, what are you looking for?

Fredrik: Yeah, now I am actually looking for here, then... yeah, that I can see that it is properly cooked.

Int.: And what are you looking for exactly?

Fredrik: Yes, I'm looking for like blood.

Int2.: Colour?

Fredrik: Yes.... But I do think the meat looks like... it looks properly cooked.

But I do think it is a bit scary with like blood. But then again it has cooked for 30 minutes and there are small pieces, thus I wonder if it only is...

(Fredrik, 23 years, young man, urban, Norway)

Fredrik trusted the recipe's prescription of cooking time and became unsure when asked for what he was looking for. He admitted that he "probably not" knew what to look for. Instead, he relied on the recipe he had checked earlier that day, when planning the meal. Jon also followed the recipe on the Indian Tikka Masala kit he used for cooking. The kit included an Indian masala sauce, mix for Indian Tikka Masala, marinade, rice and coconut milk. Jon said it was very easy to make because you only have to add chicken and water.



**Figure 4.4.27: Jon's Indian tikka masala kit (left) and Jon reading the recipe on the backside of the kit box (right)**

The instructions gave accurate descriptions on the sequence of the procedures. "It is fool proof", Jon said. However, not everything was explained. "It says fry the chicken until it is ready [...] not how long the chicken takes to be ready". Jon thus looked on the surface colour and checked the inside of the chicken to makes sure it was ready (Figure 4.4.27).

Both Kari (71 years, Elderly households, urban, Norway) and Chris (37 years, Young families, urban, Norway) followed recipes without any mentioning of how long the chicken should cook. Kari followed a recipe for a summer salad including chicken, but it never mentioned how long she should cook the chicken. Instead, she assessed if the chicken was done based on experience. Chris was preparing a new chicken dish from a recipe suggested by his cohabitant, Camilla (35 years). It was a chicken pan with vegetables, sauce and pasta. To determine when the chicken was done, he relied on his cooking experience too.

## Timing cooking based on experience

Among the Norwegian research participants, few used a recipe for cooking time and temperature, and most seemed to rely upon a combination of experience and visual signs that the chicken was done. Chris (37 years, Young families, urban, Norway) provided a good example. He was preparing a new chicken dish from a recipe Camilla had found. It was a dish with chicken, red onion, peppers, crème fraîche, mushroom, pasta and tomatoes, served with a simple side salad. The heating process started by frying the chicken breast fillet that Chris earlier had cut into pieces. Chris said that he looked at the surface colour of the chicken to determine doneness for the most part. He didn't find it necessary to cut a piece of chicken in two to check if it was raw inside.

Chris: I don't bother. No, I feel like I've fried chicken that many times that I know, ok now it had... Yeah, because it has fried for about 7-8 minutes.

Int.: Did you take the time? Did you check the clock when you put it in, you know kinda?

Chris: No, but I know that took out the pasta like three to and then I have already begun frying.

Int.: You took the time on the pasta?

Chris: I took the time on the pasta.

Int.: Do you usually don't take the time on the chicken?

Chris: No, not that.

Int. 2: You consider...?

Chris: Visually and, actually, I feel it [if] I have fried it for five minutes or fried it for ten minutes. Thus, it is like an experience-based evaluation.

(Chris, 37 years, Young families, urban, Norway)

As with Chris, few mentioned the exact time and temperature needed for cooking chicken properly. Fredrik, Inger and Anna were the exceptions here. However, while Fredrik needed to check the time and temperature instructions, Anna knew them by heart.

Anna (31 years, Young families, urban, Norway) told that she would prepare chicken thighs baked in the oven, a Russian dish she had made many times before. She told this was a dish she learned to cook at a young age and was something she could prepare for weekly dinners as well as when having guests. As Fredrik did, Anna also started the cooking by setting the temperature on the oven. After turning on the heat on the oven, she marinated and seasoned the chicken legs and put them into the oven. She put the chicken on an ovenproof dish and told that it needed to cook for "200 °C and it needs to cook for at least three quarters". This freed time for Anne to prepare the salad and the potatoes. After preparing salad, washing potatoes, cleaning and washing up, the timer on the oven beeped and Anna took the plate with chickens out of the oven. She told that it was important that the skin of the chicken legs was brown and crispy. However, she was sure the chicken was thoroughly cooked. She said "it is indeed done now. It did cook for rather long". Moreover, she told that roasted chicken legs in the

oven could never go wrong in terms of doneness. However, chicken breast fillets were a bit more challenging.

...if you for instance fry for example chicken [breast] fillet, you may [burn] it a bit, or barbecue, and then you cut and suddenly... [...] that's why we cut the chicken in the middle where it is thick. I cut, while he [her husband] barbeques, to see if it is properly cooked. And there has been times when [...] the chicken got a bit too brown but was raw inside.

(Anna, 31 years, Young families, urban, Norway)

While Anna cooked the potatoes in the microwave oven, she put the chicken legs back into the oven. “It has started to get a nice crust, but it may just after cook now. I turned off the [oven]. Because it get like a very crispy... Do you know what I mean? Around [the surface], juicy inside. It is not a problem if it cooks a bit more.” Thus, Anna expressed two meanings to cooking chicken properly: 1) that cooking the chicken thoroughly meant that it was not raw, and 2) that cooking the chicken properly meant crispy on the outside and juicy on the inside (Figure 4.4.28).



Figure 4.4.28: Anna is happy with the colour of the chicken legs (Norway)

Kari (71 years, Elderly, urban, Norway) prepared a Caesar inspired salad from a recipe with chicken, but early on started in the wrong direction (Figure 4.4.29). The recipe instructed her to prepare the salad before the chicken, but she started with the chicken. This meant that the chicken was left in the pan for over half an hour after Kari thought it was cooked enough, while she prepared the salad. She fried the chicken for about five and half minutes and said, “It isn’t ready like yet, it has to cook much longer.” However, she was debating with herself of whether the chicken was done or not. “It doesn’t go that fast even though they are thin”, she said. She also said, “I worry that they will become dry. They are halved slices, right. I think they are done now.” She decided to turn down off the heat, put a lid on the pan and pull them over to another cold hob. Later she turned on the heat a bit, worrying that the chicken would get cold. Half hour later, when the salad was finished, she worried that “it has been left for too long.” Kari

said she would normally decide if the chicken is properly done by “take it a bit on the time”. However, “it is not alright to do it wrong, right?”



**Figure 4.4.29: Kari spent a lot of time preparing the salad while the chicken was left in the pan on very little heat (Norway)**

Petter (29 years, Young single men, rural) also used his experience when judging if the chicken pieces were wok fried properly. He said he had an eye on the clock and also looked a bit how the chicken looked, but “it is actually mostly experience”. Bente (71 years, Elderly households, Norway) told that she often poured a cup of water into the frying pan late in the frying process in order to cook the chicken for longer without making them too dry. “It doesn’t matter if they cook longer when you have water over”. This procedure thus freed time to finish the potatoes and the salad.

### Checking surface colour

Most of the Norwegian research participants said that looking at surface colour was an important visual cue to know if the chicken was properly cooked or not. As mentioned above, Anna (31 years, Young families, urban, Norway) assessed the surface colour of the chicken legs she prepared because she thought that a brown and crispy skin/surface was pleasant to eat (Fredrik, Bente and Roger). Others checked the surface colour to see if the chicken was thoroughly cooked. For instance, Chris (37 years, Young families, urban, Norway) said that he assessed the colour of the chicken pieces by stirring them around to cover all sides. “It is the colour. Actually, I did turn them around to make sure I cook them on each side [...] then [you] see if something is not fried.” He told that if the chicken pieces were still pink on one of the surfaces, they were not done. Lena (37 years, Young families, rural, Norway) also looked for pink colour or the one of the sides, but she also pressed the spatula on the chicken pieces to feel the texture as well. Meanwhile, for both Chris and Lena frying the chicken was only the first step of the heating process. They both boiled the chicken further in a sauce. In fact, for most of the Norwegian research participants frying raw chicken pieces in the frying pan, this was just the first step of determining if the chicken was done or not. Jon (28 years, young man, urban, Norway), for instance, said he first looked at the surface colour to decide *when* to cut the chicken pieces to see the colour inside the chicken pieces.

Nils (74 years, Elderly households, rural, Norway) was the only one of the Norwegian research participants who only looked at the surface colour to determine if the chicken was done (Figure 4.4.30). However, he was also the only one preparing pre-cooked and pre-cut chicken (Figure 4.4.30). In fact, he told that “if I make something, a dish or something, I just go to the shop and buy a bag or a can or something. I don’t go around on the market and get different thing and pick the feather of the hens and stuff before I begin.”



**Figure 4.4.30: Nils’ pre-cooked and pre-cut chicken ready to be cooked (Norway)**

Nils prepared a creamed chicken casserole based on the instant sauce with rice and a side salad. After frying the chicken on low temperature for about eight minutes while stirring the chicken pieces with a spatula, Nils told that the chicken was done. He said that he based that on the surface colour of the chicken. However, he said he would have done it differently, if the chicken was not pre-cooked.

Int.: If the chicken today was raw when you fried it. How would you see if it was done then?

Nils: Actually, if it was cut liked this, I would perhaps has fried it a bit longer than this and looked to see if it was more like this here on the surface.

(Nils, 74, Elderly households, rural, Norway)

In other words, Nils would still look at the surface colour, but cook the chicken longer than he needed for cooking pre-cooked chicken (Figure 4.4.31).



Figure 4.4.31: Nils told that surface colour showed the chicken was done (Norway)

### Checking inside colour

After cutting the chicken into pieces and marinated it, Jon (28 years, young man, urban, Norway) fried the chicken in a frying pan with a bit of oil. He told that he was not happy with the hobs on the stove, because they quickly got too hot. “Usually, I would actually put down the temperature a bit more before I throw in the chicken, because it was not supposed to sputter that much as it did now, but I forgot it today.” He thus put down the heat a lot and the chicken cooked for quite some time (23 minutes) (Figure 4.4.32). “Right now, it is on 8. I wanted a bit of heat. I think I brought it down too much earlier”. Red meat on the other hand, “is usually ok [to cook] on high temperature. [...] Then I cook on 12 [highest level on the stove] and have it there and turn [the meat] the whole time.”



Figure 4.4.32: Jon adjust the temperature on the stove (Norway)

After frying the chicken for 20 minutes, constantly stirring the chicken pieces around in the frying pan, Jon said that he thought the chicken was cooked properly.

When they get that nice colour, it is on most of the sides I just actually take the largest piece, it has to be this one and cut it and see if it is good. And that is what I will do now, when I have fried these enough or almost enough. After, I will have them together with water and sauce and turn up the temperature again. Thus, I do count on that they will be ready anyway.  
 (Jon, 28 years, Young single men, urban, Norway)



**Figure 4.4.33: Jon cut a piece of chicken and said it had pink colour inside, which for him indicated it was not yet properly cooked (Norway)**

About the piece he cut Jon said, “shall we have a look, it was one here I was a bit sceptical too” (Figure 4.4.33). However, he added that “I’m actually getting there.” He cut a second piece and made an assessment. “I look at the colour and I feel how soft it is when I cut through [...]. When I cut though, I noticed that it went very, very easy through.” Jon decided to add the tikka spice mix, water and coconut milk and let it simmer according to the instruction of the Indian Tikka Masala kit package. After about eight and a half minutes, his chicken tikka masala was ready to be served.

### Poking the chicken

Roger (24 years, rural, young man, Norway) prepared chicken breast fillets, wok vegetables and noodles for dinner. He chopped the chicken fillets in a very systematic way. First, he cut each fillets in two on the long side of the breast, before cutting the two halves into pieces. Second, he fried the chicken pieces in a hot frying pan with butter. Third, he fried the chicken pieces in two batches, and explained, “*It is too much to put all into it*”. Before turning the chicken pieces to fry them on the other side, Roger poked some of the pieces with the spatula. He also did this after flipping the chicken pieces. He then separated some of the larger chicken pieces in two, using his spatula. Meanwhile, he fried the first batch of chicken for nine minutes and forty seconds and the second batch for five minutes and thirty seconds. Roger told that he looked at the colour to determine if the chicken was properly cooked. After the both batches of chicken pieces were done, he fried the frozen wok vegetables, and added the chicken

pieces. The chicken then cooked together vegetables for seven minutes. He finished the dish by adding a bag of readymade sauce and noodles. Roger never explained why he poked the chicken pieces when it was frying in the pan. Perhaps he was poking the chicken pieces as a way to check the texture of the meat to find out if it was time to properly determine doneness by separating to see the colour inside the chicken bits.

Bente, Emma and Hanne also poked the chicken while it fried in the frying pan. Lena (37 years, Young families, rural, Norway) told that she squeezed the chicken pieces with the spatula to feel the texture. Bente (71 years, Elderly households, urban, Norway) said she was unsure if you could feel if the chicken was done or not by poking it. She added a cup of water to let the chicken simmer and told that this method kept the chicken from becoming dry. Emma (33 years, Young families, rural, Norway), on the other hand was very sure that the pieces of chicken fillets she was frying, was not done. Emma fried the pieces of chicken fillets for twelve minutes. After eight minutes, she poked some of the chicken pieces and said “we can’t eat these once. They have to be properly [cooked]”. What kind of sensation or feeling poking the chicken gave, which made her conclude that the chicken was not properly cooked, Emma never told. Perhaps, poking the meat is a practical, embodied and unspoken trick which the research participants didn’t reflected upon. Nevertheless, she didn’t worry because the chicken would later be roasted in the oven for twenty minutes together with vegetables, pasta and sauce under a layer of cheese topping.

Hanne was one of few that told what she was checking when by squeezing the chicken leg fillets with the spatula/ladle. However, she did not use a lot of words to describe what she felt.

Hanne: You do feel if the meat is cooked.  
Int.: When you squeeze it?  
Hanne: Mm, they kinda become tighter  
(Hanne, 31 years, Young families, urban, Norway)

Similarly, Lena pressed the spatula on the frying chicken pieces and said she “feel a bit how much they give in.” Petter (29 years, Young single men, rural) told that he used his cooking experience to determine if the chicken was properly cooked, but he also mentioned “you look at the tissue, if you know what I mean, if you can pull it a part, which you can’t if it is raw.”

### Using a thermometer

Among the Norwegian research participants, only Inger (70 years, Elderly households, rural) used a thermometer when cooking all kinds of meat. Others mentioned that they did the same when roasting a turkey in the oven: Chris, 37 years, Young families, urban; and Oda & Ove, both 72 years, Elderly households, rural). Chris told that he used a thermometer, but “not on that chicken, but on like a whole chicken. Then I would pierce it into the meat and checked the temperature.”

For Inger, the thermometer provided information of the temperature needed for different kinds of meat to be properly cooked. She used the thermometer after the chicken had cooked for seven minutes, but she said that the meat had not yet reached 55 °C (Figure 4.4.34). After 12 minutes, the chicken had almost reached 65 °C. “Now it is soon at 65 degrees”. After 13.5 minutes, Inger said “look now, it is there! Do you see it?” The thermometer showed 69 °C. She removed the thermometer, put the lid on the frying pan, turned off the heat and removed the pan from the stove. “Now, we let it rest here”, she said.



**Figure 4.4.34: Inger was checking the core temperature of the chicken pieces using a thermometer (Norway)**

In addition to the six methods for checking doneness employed by the Norwegian participants, Roger (24 years, Young single men, urban) tasted the chicken after frying it and before heating it together with the wok vegetables, sauce and noodles. It was less clear if he tasted it to check if it was properly cooked or just for the sake of the taste. While he never mentioned any concerns about tasting the meat, he told that he once had roasted a frozen turkey on the oven which ended up being frozen in the middle. However, he “ate around the red”, he said and added that “I’m still alive, thus it went fine”.

Most of the research participants used more than one way of making sure the chicken was properly cooked. A typical pattern was to check surface colour first and the check if the chicken was raw inside by dividing one piece in two and look for the pink colour. There were two general understandings expressed by the research participants in association to all six ways of checking for doneness: The first understanding was that eating raw chicken is potentially dangerous because it may cause illness. The other understanding was that cooking chicken for too long makes it dry and not very pleasant to eat. These two meanings may very well come in conflict with each other. However, most of the Norwegian research participants cooked chicken for rather long time often frying the chicken first and then cooking it in a stew, a wok or in an oven dish together

with for example vegetables and sauce. Furthermore, many of the research participants told about prior experiences when the chicken had not been properly cooked.

### Summary of the Norwegian ways of proper heating of chicken

Determining if the chicken is properly cooked or not is not just a question of too less or too long heating process for the research participants. For the research participants, properly cooked was associated with preparing a chicken meal, which was pleasant to eat, where the ideal chicken meat would be “crispy on the outside, juicy on the inside”. Moreover, the ways in which the research participants performed to decide that the chicken dinner was ready, depended on the type of chicken products and heating method. Only one of the Norwegian research participants used a thermometer when cooking chicken breast fillet. Others mentioned that they would use a thermometer when roasting a turkey or a whole chicken in the oven.

Among the Norwegian participants, timing cooking based on experience and checking the colour inside the chicken pieces was the most common method for determine if the chicken was done or not. However, often the participants used more than one way, for instance look at surface colour and/or check the texture of the chicken with the help of a utensil before cutting a chicken piece in half to finally judge if it was ready or not. The seven who made up their mind that the chicken was ready based on their timing experience, included two elderly households (Kari, Bente), four young families (Anna, 31 years, urban; Chris, 37 years, urban; Emma, 33 years, rural; and Lena 37 years, rural) and one participant from Young single men (Petter, 29 years, rural). The four who checked the inside colour to make up their mind that the chicken was properly cooked included three young single men (Jon, 28 years, urban; Georg, 28 years, urban; and Roger, 24 years, urban) and one young family household (Hanne). One young man (Fredrik) and one elderly household (Oda) used a recipe to determine if the chicken was ready. One participant used a thermometer (Inger, 70 years, Elderly households, rural). Finally, Nils (74 years, Elderly households, rural) only checked the surface colour, but he fried a pre-cooked chicken product.

## Risky encounters after asserting that the chicken was properly cooked

Checking for doneness can certainly be understood as a way of minimising risk or as a safety measure. Meanwhile, the assessment that the chicken is properly cooked may turn out to be wrong. Furthermore, what happens to the chicken after it is properly cooked may indeed reintroduce risk. Three examples may illustrate this.

### The undercooked chicken served with lukewarm vegetables and rucolla leaves

Georg (28 years, young man, urban, Norway) was a student from Oslo, who lived in a housing collective and shared a bathroom and a kitchen (with a dishwasher, tap and sink, but no oven) together with other students. His private space included a small room with a bed and a tiny kitchen including a small fridge, oven and counter top. Kitchen architecture has a defining influence on cooking practices and food work by encouraging some activities while discouraging others (Jacobsen, 2014: 125) Georg's kitchen facilities made many of the cooking tasks challenging. For instance, in order to wash his hands or to rinse the vegetables, he had to leave his room. Moreover, there was no space for having a standard size stove in his room. Georg's stove was only partially functioning (Figure 4.4.35). "It looks like working partially, so... [...] now that hotplate is broken, thus I have one hotplate [left]", he said.



**Figure 4.4.35: Georg's stove and frying pan**

Despite his rather small private kitchen, Georg enjoyed cooking and preferred eating proper meals. He told he avoided ready-made meals and processed food after working in a fast food pizza restaurant some years ago. "Then you learn what processed food is all about", he told. All the various tasks Georg performed until the point of heating the chicken was noted on the Gantt chart in chapter 4.1, including when the tasks took place. Perhaps working in such a confined space made it easier to reuse the safe knife for chicken and the vegetables. Meanwhile, he continuously switched between cooking tasks also challenged keeping his standards of when to carrying out the activities. After rinsing the vegetables, Georg started made the marinade for the chicken. He opened the plastic package of chicken with his knife and took a breast fillet with his left hand and placed it into the bowl with marinade. Afterwards he started cutting the yellow

pepper with the same knife which he held in his right hand, while holding the pepper in his left hand. He suddenly realised that he had not washed his hands after touching the chicken. “Normally, I would now... in fact, I touched the chicken... then I would actually have washed my hands again. [...] Now I also forgot that I used the knife that I use for the vegetables to open it.” He thus left the room to wash his hands and came back to continue cutting the yellow pepper using the same knife. In other words, the standard sequence of washing hands after preparing chicken and before cutting the vegetables was easily forgotten despite Georg’s better knowledge.



**Figure 4.4.36: Georg started cutting the yellow pepper after putting the chicken in the marinade (Norway)**

After the first fillet of chicken had marinated while Georg cut vegetables for his lukewarm salad, he used a fork to transport it into the frying pan placed on the only functioning hotplate on Georg’s stove (Figure 4.4.36). He fried the two chicken fillets one by one. The frying pan was not large enough for frying more than one fillet at the time (see Figure 4.4.37). Georg told that only having one hotplate “worked alright”, and never mentioned challenges with cooking only having the smallest hotplate functioning. Moreover, about his kitchen utensils he said, “I’m very satisfied with it”.



**Figure 4.4.37: George fried two marinated chicken fillets one by one since there was no space in the frying pan (Norway)**

He fried the first fillet for 3 minutes, turned it and fried it for a little over a minute before putting it on his dinner plate. In the meantime, he found a dinner plate, shook the frying pan and fetched and started opens a bag of rucola leaves, before deciding just to put the unopen bag on the dining table. He put the second chicken fillet into the pan and fried it for five minutes



**Figure 4.4.38: Georg moved the first chicken fillet to his dinner plate and put the second fillet into the frying pan (Norway)**

After 2.5 minutes he turned the fillet (Figure 4.4.38). While the second chicken fillet was frying, Georg continued cutting vegetables, seasoned the frying chicken by squeezing a lime over the pan, repacked the remaining chicken fillets and put them into the fridge (provided raw chicken for the microbiological analysis). A minute or so later, he took the plate with the first chicken fillet to transport it to the frying pan to fry it some more. He used a spatula to move the fillet into the pan. He put the plate where the first fillet had been left back to his dining table and opens package of rucola, arranged the leaves on his dinner plate (put lettuce in sampling box) and put the bag back into the fridge (Figure 4.4.39).



**Figure 4.4.39: Georg used the dinner plate to transport the first fillet back to the frying pan. He then put rucola leaves on his dinner plate (Norway)**

Shortly after, he removed the frying pan from the functioning hotplate and to the cold un-functioning hotplate and used the spatula to move chicken fillets from pan on to the plate. Georg said the fillets “need to rest a bit like to get... in order for the juice to gather in the middle, in a way”. He determined that the chicken fillets were done and continued to cook the vegetables in the same frying pan he had used for frying the chicken. Georg said the vegetables are just to be roasted lightly. They just need a shake, in a way”, he said. A few minutes later, he shoved some of the vegetable mix from pan to the plate on dining table and added olive oil and balsamic vinegar on top of the lukewarm vegetable and the rucola leaves. The left the meal to rest for 25 minutes while talking to the researchers and then checked if the chicken was properly cooked and realised by looking at the surface colour where the tenderloin is attached to the sirloin that the chicken was still raw by using a knife and fork (Figure 4.4.40).



**Figure 4.4.40: Georg checked the surface colour of the chicken and realised that the chicken was not properly cooked since (Norway)**

Georg said, “this one, I would fry some more” and explained that “it is a bit raw”. He told that he didn’t really look at the colour, “it is mostly the texture, like now it is a bit like gel”. He decided to fry the both fillets some more, except for the tenderloin, which he cut of and said he would “eat this as it is”. He added that he tried to “get the chicken as juicy as possible. Thus, it happens that I have to cook it again [...] I am more afraid of frying it for too long and that it becomes dry. Then, I rather fix it afterwards, like now”.



**Figure 4.4.41: Georg cut of the tenderloin of one of the fillets and moved the rest of the chicken into the frying pan to cook it some more (Norway)**

For how long he cooked the chicken was never observed. Nor was what happened to the vegetables and the rucola leaves (he might have decided not to eat it, to use a new plate and fetch a clean knife and fork). Meanwhile, if he did put the reheated chicken back to the same plate and continued using the same knife and fork, the undercooked chicken may easily have contaminated the plate, the knife, the fork and lettuce and the lukewarm vegetables – and the re-contaminated the properly cooked chicken when put back to the plate.

### Risk of cross contamination during serving the chicken

During the fieldwork in France, we observed on two cooking occasions where cooked chicken was served the same container where the raw chicken was kept prior to cooking, leading to a risk of contaminating. Bernard & Hélène (both 72 years, Elderly households, urban, France) served the cooked chicken in the glass box used to thaw chicken overnight without washing it in between (Figure 4.4.42). The glass box, which was stored on the countertop next to the stove, was used as a container for utensils during the cooking preparation.



Bernard opens the glass box where they had thawed the chicken legs



During cooking, Bernard used the unwashed glass box to store utensils

**Figure 4.4.42: Bernard and Hélène's glass container and its multiple use during cooking (France)**

At the end of the cooking, while looking for a dish to put the cooked chicken in to bring it on the dinner table, Hélène took the closest container she found and poured the cooked chicken with tomato sauce in it before, before serving (Figure 4.4.43).



**Figure 4.4.43: Bernard and Hélène served cooked chicken in the unwashed glass container (France)**

Simon (25 years, young single men, urban) France) served the cooked food (rice, chicken and vegetables) in the unwashed glass bowl where he has kept the raw chicken after cutting it (Figure 4.4.44).



Simon puts the raw chicken fillet in the glass bowl



Simon stores the unwashed glass ball on the countertop while cooking



Serving cooked food in the unwashed glass bowl that contained raw chicken



Simon mixed the cooked chicken and vegetables with rice, in the unwashed glass bowl

**Figure 4.4.44: Simon's multiple use of a glass bowl for preparing raw and cooked chicken (France)**

These two examples show that risk might reappears after the chicken has been thoroughly cooked. Research participants might have used the raw poultry bowl because it was more practical and because they forgot that it contained raw poultry when they used it for the cooked dish. However, this practice clearly indicates that the presence of pathogens on raw poultry meat were not thought about by these two participants. Perhaps, it was a lack of knowledge or perhaps the presence of potential harmful cooking is challenging to keep in mind given that they are invisible. Chapter 2.3 on participants' food anxieties indeed shows that French participants were less concerned by risks linked to pathogens in foods.

## Cooking chicken and checking for doneness in the five countries – summary and comparison

This chapter has discussed determining doneness as something broader than a reflexive decision or a choice. Judging if something was eatable (tasty, proper, fresh or safe) was a practice integrated and linked to other practices such as food provisioning, cooking and eating.<sup>47</sup> In this chapter, determining if and when the chicken was properly cooked has been studied both as succession and a part of the activities of heating (frying, boiling, roasting, stewing, microwaving, Thermomix cooking). Furthermore, judging if the chicken was heated enough involved activities, techniques, engaging with various kinds of materials (e.g. the chicken meat, utensils used, cooking appliances), skills, use of tools and sensory and mental capacities. In addition, the determination of when the chicken was ready to eat was informed by two broad understandings:

- 1) The first was related to food safety and involved the knowledge of the potentially danger of eating raw chicken because it may cause illnesses. For some, this knowledge brought about feelings of disgust and worries. Others just mentioned that chicken needs to be cooked for long.
- 2) The second understanding was related to taste and pleasure and involved the understanding of chicken as especially fragile to long cooking time, making it dry and not very pleasant to eat. For some, heating chicken was thus a question of balancing between heating it enough without losing the softness or juiciness of the meat and safety.

These two meaning – safety and tastiness – may very well come in conflict with each other. Meanwhile, they were important for interpreting how and why the participants decided if and when the chicken was properly cooked. It was both a question of avoiding potential harm and achieving a pleasurable meal.

1. This chapter has demonstrated that the ways of determining doneness are many and varied. In all, 9 ways of deciding if the chicken is ready to eat has been identified. The identified methods are by no means exclusive. Some of the ways identified can be separated into sub-categories, others can be merged.
2. The chapter has discussed and described that the participants used a repertoire of methods in combination to assess if the chicken was cooked enough. Most (61/75) of the participants made use of more than one method for deciding when the chicken was cooked enough to be served and eaten.
3. The chapter has shown that the combinations of methods were many, and methods employed depended on the type of chicken product used and the heating method employed (see Table 4.4.1 -4.4.6).

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<sup>47</sup> Warde, A. (2013). What sort of a practice is eating?. In Sustainable practices (pp. 33-46). Routledge.

4. Finally, this chapter has described that determining doneness may mitigate food risks temporarily by proper heating, but later re-emerge when the meal is served, which adds to the argument made in the summary of chapter 4.2; that in order to fully understand how safe/unsafe food handling the sequential nature of food preparation needs to be taken into account (see also the Observer TX visualisation made by the French team and the Gantt charts made by the Norwegian team in chapter 4.1).

The summary of this chapter included a discussion and description the various ways of determining doneness among the participants in the study. In the end of the chapter there was an overview of the ways of determining doneness among the participants in each of the countries separated on the household groups.

*i. Using a recipe, following time and temperature instructions*

Using a recipe or any type of time and temperature instruction on how to cook chicken properly was not widespread among the research participants. Only 8 of the 75 participants followed a recipe or instruction to determine how to cook the chicken enough, including three French Young families, one Norwegian Young single man and one Elderly household, two British Young families and an Elderly household. None of the Romanian or Portuguese participants used a recipe for determining how to cook the chicken properly. For some participants, time and temperature instructions were read when using a cooking robot, microwave oven, pressure cooker, or a cooking bag. Others searched online for time and temperature instructions or used written recipes or instruction provided by friends/relatives/partners (on paper or on the phone). In addition, recipe was used by a few participants for putting together the chicken meal in terms of ingredients needed and/or for instruction of the cooking steps, but not for deciding how long and/or what temperature to cook the chicken. In one Norwegian case, Jon (28, young man, urban) was cooking a chicken tikka masala dish using a ready-made spice and sauce kit, including stepwise cooking description, but there were no instruction for the cooking time or temperature for the chicken. Most of the participants followed the suggestions provided by the recipe/cooking instructions they used. Still, all checked if the chicken was cooked enough in other ways as well. The rest used the instructions rather as a reference. For instance, two French mothers had argued that the time suggestion was too short and both decided to increase the cooking time. To illustrate, Amandine increased the cooking time prescribed on the cooking bag she used for cooking chicken, explaining she cooked a large chicken. Others too had to improvise, as instructions didn't always fit the portion size of chicken they were cooking. The lack of confidence in advice given in recipes or needing to improvise suggest that the participants made use of prior experiences of cooking chicken.

*ii. Timing cooking based on experience*

More than half of the participants (40/75) determined doneness by timing the cooking approximately making use of their cooking experience and skills. A few participants told they had at some point used a recipe for the chicken dish they made but learned it

by heart after cooking it several times. In other words, cooking times (and temperature) can start off as a prescriptive form of knowledge and end up as a part of the cook's practical skills. In some cases, as the example of the French mother above, the participants extended the cooking time for the chicken prescribed by the recipe they used, believing that it needed more time to cook properly. The example of Amandine, a French mother aged 27, who extended the cooking time because the chicken she cooked was rather large, shows how timing cooking involves experienced understanding of the material (the chicken) and calculative skills (the size of the chicken, the cooking time and the temperature needed). Similar calculative skills were present among many the participant who timed cooking the chicken. While some participants used a timer (on the oven or on the smartphone) or had an eye on clock to measure time, others relied more on "sensing" time. Some participants timed the cooking of chicken with the help of the boiling time of other foods such as rice, potatoes and pasta. The Romanian discussion provides a good example. Florinel (31 years, Young single men, urban, Romania) checked the doneness of the potatoes he boiled in the same pot with chicken to know when the chicken was properly cooked. For a few participants, timing chicken meant cooking it "as long as possible". This was typically advocated among the French Elderly households. For others, timing the cooking meant achieving a balance between cooking enough without it getting dry.

As mentioned above, timing the cooking of chicken involved experienced understanding of the material (the chicken), in terms of the size of the chicken. This was also apparent among the participants who cut, sliced and diced the chicken before cooking it. The Tables 4.4.1 to 4.4.5 showed that cooking time varies among participants cooking a whole chicken, parts of the chicken or chicken cut into smaller size pieces. Meanwhile, there is more to understanding the materiality of chicken than its size. A Portuguese example revealed that cooking time vary according to the type of chicken. Augusto (70 years, Elderly households, rural, Portugal) told that chicken raised at home needs more time to cook properly than chicken bought in the supermarket, since the meat was tougher and thus more challenging to get a softer meat texture. The example points to the discussion in the Chicken preparation chapter, where it was argued that the tasks of preparing chicken change as chicken preparation becomes an industrial-commercial process (see also chapter 4.1). While butchering a chicken at home necessitates washing it, a preparation process associated with risk of contamination, the cooking of home raised chicken seems to necessitate a longer heating process, which may moderate the risk.

### *iii. Using a thermometer*

Only one participant used a thermometer to determine if the chicken was properly cooked: Elderly Norwegian household, Inger (70 year, rural) used a thermometer for all kinds of meat and cuts of meat (chicken fillet cut in pieces). For her, the thermometer was used as any other cooking utensils (spatula, though etc.). Inger's frequent use of the thermometer, seemed to be caused by her worries about foodborne illnesses, but was also related to cooking for her children, their spouses and her grandchildren on what seemed to be a weekly catering service to her family. Other

participants mentioned that they could use a thermometer for instance when roasting a chicken in the oven. For instance, Jean (72 years, Elderly households, rural, UK) used her thermometer to roast turkey at Christmas.

*iv. Looking at the colour of the surface of the chicken meat*

Quite a few if not all the participants monitored the heating process of the chicken by looking at the surface colour, for instance to avoid burning. Meanwhile, a few voiced that the reason for doing it was to make sure that the chicken cooked properly, for instance, during frying that all sides of the chicken meat was evenly cooked. Meanwhile, checking the surface colour was also an important step to reach pleasant taste. For instance, Anna (31 years, Young families, urban, Norway), looked at the surface colour of the roasted chicken legs for a nice crust arguing that she tried to achieve cooking the chicken to become crispy on the outside and juicy on the inside. Similarly, Simon, French young man aged 25 liked to eat his chicken with it had a golden cooked colour, but still was soft on the inside. He was one very of few participants than only check the outside colour before deciding that the chicken was properly cooked. Meanwhile, for most of the participants who checked the surface colour, visual appearance of the chicken was for most of the participant a first step to assess the progress of the cooking, as argued in the British discussion. Many of the participants who fried the chicken and monitored the surface colour continued with another heating process when the chicken had achieved the desired colour (e.g. boiling it in a sauce, adding it to an oven dish or a casserole).

*v. Second heating processes*

Many of the participants cooked the chicken two or more stages as part of preparing the meal. In addition, some heated the raw chicken in two batches because there was not enough space in the pan or pots to cook the meat properly all at once. One of the Romanian participants, Zoltan (35-year-old, Young single men, urban) roasted the chicken legs, wings and breast in the oven and made a soup from the rest of the chicken. Meanwhile, almost a third of the participant (23/75), employed a second round of heating to the same chicken, often frying or searing the chicken first followed by a boiling or stewing process. The second heating was more common among the Norwegian and British participants. Moreover, it was typically done by the participants who cooked fillets or parts of the chicken. None of the participants, who cooked a whole chicken, heated the chicken a second time (see table 4.4.7).

**Table 4.4.7: Overview of cooking steps and the type of chicken cooked**

	Fillets or parts	Whole chicken	Number of households
1 step only	38	15	53
2 (or more steps)	22	0	22
Number of households	60	15	75

It is also depended on whether the chicken was cooked in the oven (including cooking robot, microwave) or on the stove (pots, pans etc.) (See table 4.4.8). Few of the participants who cooked the chicken in the oven, microwave oven or used a cooking robot, did a second cooking step.

**Table 4.4.8: Overview of the cooking steps and where chicken was cooked**

	Stove (pots, pans)	Oven (robot, microwave)	Total number of households
1 step only	38	15	41
2 (or more steps)	18	4	19
Total number of households	56	19	75

Among the participants who cooked the chicken for a second time, many told that it reassured them that the chicken was cooked properly, and thus, saw no need for a checking the chicken any further. Norwegian participant Lena (37 years, Young families, rural) for instance, said she would not have eaten the chicken after frying it, but didn't worry too much because the chicken would cook further in the coconut sauce. In addition, a couple of the participants realised that the chicken was not properly cooked and felt the need to cook it longer or once more.

#### vi. Looking at the colour of the meat

Almost half of the participants (33/75), checked the colour of the meat to check if it was properly cooked by cutting into the meat with a knife, splitting it with spoon, fork, tong or a spatula, sometime while still in the frying pan or ripping it in parts using one's hands. Typically, participants were looking for the pinkish colour or blood, which meant that the chicken was still not properly cooked, while a white colour signalled that the chicken was ready to eat. Furthermore, cutting or splitting the chicken smoothly, was mentioned by a few as an additional sign of doneness. In comparison to the surface colour, achieving a white colour of the chicken meat most often meant that no further cooking was needed. Checking the colour of the meat inside was typically done by the British participants, among all the households. In comparison, among the Norwegian participants, it was typically done by the young male participants. In the Romanian and French study, the elderly participants typically checked the colour of the meat, while among the Portuguese, this was typically done among the young families.

As mentioned, for a few of the participants the absence of blood was a part of judging if the chicken was properly cooked. This was more common for the participants who cooked a whole chicken or parts with bones. However, it was also mentioned by a few others. Usually, checking for blood was done when cutting or breaking the chicken meat. Meanwhile, Etienne (30 years, Young single men, rural, France) employed a special way of checking for blood by holding the chicken vertically and monitoring if blood was running from the carcass.

vii. Judging the texture of the chicken

Another common method employed to decide if the chicken was properly cooked was to check the texture of the chicken. Almost half of the participants did employ various ways and tools to feel the firmness or the consistence of the meat. Meanwhile, it is possible to distinguish between two methods; 1) squeezing, poking or prodding the chicken, and, 2) pulling the chicken apart from its bones.

The first method was more common among the British and the Norwegian participants than the second, but also observed among the French, Portuguese and Romanian participants. Checking the texture by squeezing, poking, prodding, and splitting the meat using various utensils/hands (e.g. spatula, tongs, knife, forks, spoons, fingers) was arguably a more subtle or unarticulated way of judging doneness. Few told explicitly why they pursued to poke or prod the chicken or articulated what they were sensing. Among the Norwegian participants “bounciness” or feeling how much the meat “gives in”, was mentioned, but few provided any detailed descriptions. Thus, a caution was mentioned in the British discussion: It is quite possible that more participants, especially those stir-frying the meat, also received similar sensory 'feedback' about the changing physical state of the chicken in the process of moving it around, breaking it into pieces and so on, but in ways that they might not be able to articulate or even be conscious of. Sahib (23 years, Young single men, urban, UK) demonstrated that during the cooking process the chicken pieces frying in the pan became easier to break apart the more they cooked. For him, this was a telling sign of the cooking progress helping to determine when the chicken was properly cooked. Among the Portuguese, French and Romanian participants, a few tasted the chicken to check the texture. Tasting the chicken will be discussed more in detail in the next paragraph.

Separating the chicken from its bones was typically mentioned by the French, Romanian and Portuguese participants. Among the Romanian participants, this was typically advocated in the elderly households boiling the chicken. Elderly participant, Dumitra (84 years, Elderly household, rural) boiled the chicken in a pot with vegetables and told that when the meat would fall off the bones, something she would check by entering a fork into the chicken meat, it would be ready to eat. Similarly, Vincent (29 years, Young single men, rural, France) baked a whole chicken in the oven and checked if he could detach the breast fillet from the bone wall to judge the doneness of the chicken. Table 4.4.3 points out that the method of checking that the meat separate easily from the bones was only employed by participants cooking a whole chicken or chicken parts with bones. In other words, for the Norwegian and British participants, where most cooked a pre-cut and deboned chicken (breast fillets, thigh fillets), this method was much less common.

viii. Tasting the chicken meat

Very few (7/75) of the participants tasted the meat to check if it was properly cooked. The seven participants included one young Norwegian man, two elderly households Romanian women and one young family and three Portuguese households from each of the study groups. Among the Romanian households, Maria Mirabela (34 years, Young families, urban) was quite sure the chicken was properly cooked before she tasted it. However, the 73 year-old, Damiana (Elderly households, rural) was not convinced that the chicken was ready after tasting it and decided to cook it some more. None of these women expressed any concerns about tasting the chicken. Neither did, the young 24-year-old Norwegian man, Roger. However, he mentioned that he was “still alive” after eating a raw turkey once, suggesting that he worried less about eating undercooked poultry. Among the Portuguese households, Augusto (70 years, Elderly households, rural) tasted the chicken when he thought it was ready and claimed he would not have tasted it if he saw it was raw. Young man Bernardo (19 years, Young single men, urban) tasted the chicken to check the texture, but also would cut it to see if it was raw first.

Among all the examples, most of the participants did not taste the chicken to find out if it was raw. Instead, it seemed that they tasted it to check if the chicken was properly cooked – if it had a pleasant taste - perhaps to avoid it from cooking too much. None of the participant seemed to worry about any riskiness of tasting the chicken. However, most did it at the end of cooking when the meal was about to be served.

ix. Listening and smelling

Already, it has been argued that unspoken or subtle sensory inputs when cooking the chicken in terms of “feeling” the texture. Meanwhile, this could also include other senses as well. In the British discussion sound and smell is described as something that alerted the participants and prompted them to do something (e.g. turning the chicken, checking if it was getting burned). Also, in Portugal, Carlos (24 year, Young single men, urban) claimed that smell was a good indicator to check for chicken doneness. These sensory signals were not articulated by the participants in the other three countries but may still have been a part of the subtle and unspoken way of monitoring the cooking and determining doneness when cooking chicken.

**Table 4.4.9: Overview over the ways of determining doneness across countries and household group**

## **Chapter 4.5: Washing hands during food preparation – an example for further analysis**

This chapter provides a brief analysis of washing of hands among the Romanian, French and Norwegian households. The chapter focuses on when and how hands were washed, how often and the reasons given by the participants for washing hand and why not. The empirical analysis in this chapter is meant as an example of researching the contextual and sequential nature of hygiene work in kitchens, focusing on hand wash. As such, the chapter differs from the other chapter in part 4.

## Washing hands or not during and between preparing chicken and vegetable salad in Romania

To recall from Chapter 4.2 on handling chicken, three research participants rinsed hands in the same water used for washing the chicken. In fact, intentionally rinsing hands after touching chicken was rarely noticed. Instead rinsing hands came along with rinsing and washing kitchen utensils. Table 4.5.1 shows the moments when the research participants washed or rinsed their hands during the cooking session. However, the table does not include the moments when hands were rinsed or washed “unintentionally” during washing or rinsing the utensils used during cooking. Most of the households (13/15) washed the chicken; however, no one washed hands after washing the chicken, only a few rinsed their hands. As mentioned earlier, we assume that washing the chicken was being equivalent with removing the bacteria from the chicken and as such removed any feelings of risk.

**Table 4.5.1: Overview of the order of how many times, when and where the Romanian research participants washed and rinsed their hands**

Study group:	Young single men	Wash:	Rinse:	Where:
	Ionel (30 years, urban)	0	7	Kitchen sink
Rinsed after adding the salt into the pot containing water				
.....touching the chicken				
..... touching the chicken that he introduced into the pot containing water				
.....squeezing the orange				
.....touching the floor				
..... adding the boiled rice over the chicken				
..... chunking the tomatoes				
Study group:	Young single men	Wash:	Rinse:	Where:
	Balanel (28 years, urban)	1	2	Kitchen sink
Washed before starting to cook and dried on dish towel				
Rinsed after washing the chicken and dried on dish towel				
..... mixing the chicken with herbs using his hands and dried on dish towel				
Study group:	Elderly households	Wash:	Rinse:	Where:
	Damian and Damiana (73 and 70 years, rural)	0	1	Kitchen sink
Rinsed after removing the leaves that remain from washing of the lettuce				
Study group:	Elderly households	Wash:	Rinse:	Where:
	Dumitra (84 years, rural)	0	1	Bowl
Rinsed with water used for washing the chicken				
Study group:	Elderly households	Wash:	Rinse:	Where:
	Fanel and Fanica (both 69 years, urban)	0	3	Kitchen sink
Rinsed after squeezing the sponge used for rinsing the sink				
.....cracking the eggs				
..... dredging the chicken with bread crumbs, wiped hands over sink and further on a hand towel				
Study group:	Young families	Wash:	Rinse:	Where
	Maria Mirabela (34 years, urban)	1	2	Kitchen sink
Washed before starting to cook and dried her hands with hand towel				
Rinsed after moving the chicken pieces from the cutting board into the bowl				
..... moving with hands the chicken from the bowl into the frying pan				

## Chapter 4.5: Washing hands during food preparation

Study group: Elderly households	Wash:	Rinse:	Where
Linalia (73 years, rural)	0	1	
Rinsed with water used for washing the chicken			
Study group: Young families	Wash:	Rinse:	Where
Sorina (32 years, rural)	0	10	Kitchen sink
Rinsed after fetching some toys for her daughter			
..... when interrupting the deboning process of chicken; rinsing at this stage was followed by wiping with paper towel and taking the crying baby in her arms			
.....before continuing to debone the chicken			
.....after touching the box that contained the chicken			
.....rinsing the bowl			
.....washing the chicken			
.....adding salt with her fingers			
.....mixing with hands the chicken with garlic paste and dried with paper towel			
.....rinsing the frying pan			
.....placing with her hands the chicken from the bowl into the frying pan			
Study group: Elderly households	Wash:	Rinse:	Where:
Domnica (75 years, rural)	0	3	Kitchen sink
Rinsed after putting the vegetables from the bag on the table; followed by drying hands with towel			
..... washing the chicken; followed by drying hands with towel			
..... adding pasta into the pot			
Study group: Young families	Wash:	Rinse:	Where
Amalia (31 years, urban)	0	4	Kitchen sink
Rinsed after touching the chicken			
..... washing the knife			
..... adding salt and pepper over potatoes; followed by drying hands with towel			
..... moving the chicken from the bowl into the tray			
Study group: Young single men	Wash:	Rinse:	Where:
Bogdan (32 years, urban)	0	4	Kitchen sink
Rinsed after throwing the chicken waste into the garbage and dried hands with hand towel			
.....washing the knife used for cutting the chicken			
..... tossing the stub of the lettuce			
Rinsed after squeezing the lemon over the salad			
Study group: Young single men	Wash:	Rinse:	Where:
Florinel (31 years, urban)	0	2	Kitchen sink
Rinsed after tossing the chicken tray			
.....mixing the chicken pieces with herbs using hands			
Study group: Young families	Wash:	Rinse:	Where:
Serena (36 years, urban)	0	7	Kitchen sink
Rinsed after placing the bag on the floor			
..... returning from the toilette			
..... putting on the shoes			
.....cutting the chicken			
..... washing the bowl that contained the chicken			
..... turning side of the chicken in the pan			
..... tossing the waste			
Study group: Young families	Wash:	Rinse:	Where:
Minodora (27 years, rural)	0	2	Bowl
Rinsed after pressing the chicken to remove the excess water			
..... with water used for washing the chicken			

## Chapter 4.5: Washing hands during food preparation

Study group: Young single men	Wash:	Rinse:	Where:
Zoltan (35 years, urban)	1	11	Kitchen sink
Rinsed after unpacking the chicken			
..... cutting the chicken into the bowl and dried hands with paper towel			
..... cutting the chicken on the cutting board			
..... rinsing the sink inside			
..... chopping the potatoes and dried hands with paper towel			
..... adding the herbs over the chicken			
..... placing the chicken pieces over potatoes			
Washed every time he throws waste into the garbage			
Rinsed before adding the vegetables into the soup			
.....after adding the vegetables into the soup			
..... chopping the vegetables for salad			
..... rinsing the outside of the fish can			

### **Washing or rinsing?**

Two research participants washed their hands before starting to cook, including Maria Mirabela (34 years, Young families, rural Romania) and Balanel (28 years, Young single men, urban Romania). During cooking, most rinsed their hands, whereas washing was performed most of the time after washing kitchen utensils after those had been used for handling the chicken. For example, Florinel (31 years, Young single men, urban, Romania) washed the bowl carefully both on the inside and the outside with dish soap and sponge after using it for chicken, whereas, Balanel washed the cutting board used for chopping the chicken with sponge and detergent. In most of the households hands were not rinsed after washing the chicken, or hands were “rinsed” in the same water used for washing the chicken. Rinsing with cold or warm water depended also on the season, as all the households said they used cold water during summer and warm water during winter. The exception was Sorina (32 years, Young families, rural Romania), who only used hot water because it was the only tap that functioned in the kitchen, which was a deliberate intervention to the pipes done by her husband to reduce the water consumption in the household and by that saving money

### ***Why washing hands and why not***

Interestingly, having dirty hands was mostly associated with having greasy hands in the Romanian households. Meanwhile, the research participants varied in terms of when and why they washed their hands. For instance, Ionel (30 years, Young single men, urban) considered that he needed to wash hands after touching different objects, but he did not wash hands after touching his phone when he was cooking. Which suggest that touching some objects, perhaps those objects that were handled often, was not a part of his washing routine. During the visit, Linalia (73 years, Elderly households, rural) said she washed her hands before preparing the food. Typically, Linalia would pour water from the bucket into a special bowl for hand washing (in the morning/ before preparing the meal). Meanwhile she did not wash hands during the cooking session. Instead, she rinsed hands with the water used to wash the meat before

eating. She has no current water in the kitchen and the bowl with warm water was placed in her proximity, and thus tempting to use. Furthermore, for drying hands she used a textile towel, and if the hands were greasy, she used paper towels. The example illustrated that there is a discrepancy between the intention to wash hands and actually doing it. This was also demonstrated in Sorina's (32 years, Young families, rural) household. She declared that hands should be clean every time she cooks (before and after cooking), irons or changes the baby diapers, but when she started to cook, she did not rinse or washed hands, which suggest that hygiene rules are easy to forget among the many household obligations.

Some research participants mentioned washing hands after going to toilette and all of them mentioned that they wash hands depending on the situation. Others had stricter rules. Domnica (75 years, Elderly households, urban) considered that hands should be clean when drinking a cup of water or bringing hands to the mouth. Meanwhile, Florinel (31 years, Young single men, urban) said that he washed hands with soap and water when he felt that his hands were greasy or sticky, otherwise he would rinse them only with water. Zoltan (35 years, Young single men, urban), on the other hand mentioned that he insisted more on washing hands when he fixes something from his bike, especially when his hands get dirty from Vaseline.

### *Hand towels and paper towels*

Table 4.5.2 describes the kind of towel the households had in their kitchen, and how and how often they clean them.

## Chapter 4.5: Washing hands during food preparation

**Table 4.5.2: Types of towels found in the kitchens in the Romanian households and how they were used**

Study group	Household	Hand towel	Dish towel	Paper towel / other towels	How they were used during cooking	Other observations
Young single men	Ionel (30 years, urban)	Hand and dish towels are mixed up		No	Hand and dish towels were used simultaneously, either for wiping hands or surfaces. When wet, the towels were dried on the heater.	Although the towels had different destinations, in the process of cooking they were mixed up. The research participant did his best to use dry towels
	Florinel (31 years, urban)	Hand and dish towels are mixed up and hanged on the chair		Yes	Absorbent cloth were used for wiping hands and drying surfaces. He used the same hand towel to wipe either clean or dirty hands.	Paper towels not used but stored on the table.
	Balanel (28 years, urban)	Yes	No	Yes	Paper towel for wiping hands. Hand towels dried on the heater to be used only when dried.	
	Zoltan (35 years, urban)	No	No	Yes	The participant dried hands with paper towels, but reused them afterwards for cleaning surfaces.	
	Bogdan (32 years, urban)	Yes	No	No	Same towel used to wipe both dirty and wet hands, then hanged on the handle of the gas stove to dry.	
Elderly household	Fanel and Fanica (both 69 years, urban)	Yes	No	Yes	When the towels were too wet, they were dried on the heater and another dry clean towel was used. The towels were used only for drying hands while absorbent cloth for wiping surfaces.	The research participant used several towels during the cooking session.
	Dumitra	Yes	Yes	No	No towel was used during cooking for drying hands or wiping surfaces.	A cloth towel was used to wipe the chicken surface. The research participant was not seen using it afterwards for hands or surfaces.

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Study group	Household	Hand towel	Dish towel	Paper towel / other towels	How they were used during cooking	Other observations
	Domnica	Yes	Yes	Yes	Dish towel used also for wiping dirty hands and for holding the hot pot.	A hand towel was hanged above the sink from the beginning of the cooking session, but not used. Paper towels stored on the table, but not used
	Damian and Damiana	Hand towel and dish towels were not differentiated.	No		Hand towel was used for wiping dirty hands and for holding the hot pot.	
	Linalia	Hand towel and dish towels were not differentiated.	Yes		The same towel was used for wiping hands, cleaning surfaces and dried on the back of the chair. Paper towels were used only for greasy hands.	
Young families	Maria Mirabela	Yes		No	One towel stored on the counter top and used both for drying hands and dishes.	The research participant moved in the new apartment for two days, so she did not have everything in place.
	Sorina	No	Yes	Yes	Dish towel dried on the handle of the gas stove and not used during cooking. Paper towels used to dry hands and wipe surfaces.	
	Serena	No	No	Yes	Paper towels used to dry hands and wipe surfaces.	
	Amalia	Yes	Yes	Yes	Paper towels were used for wiping hands and surfaces. Same dish towel used for wiping hands, drying dishes and wiping surfaces.	Paper towels and cloth towels used alternatively for the same actions.
	Minodora	Yes	No	No	The same hand towel was used for wiping hands, drying dishes and wiping dirty surfaces.	

Examples of towels and where the households keep them between uses is presented in Figure 4.5.1. Three households used only paper towels in their kitchen during cooking for wiping hands and surfaces, including Zoltan (35 years, Young single men, urban), Serena (36 years, urban) and Sorina (32 years, rural) (both Young families households). Two had different towels for dishes and hands, including Domnica (75 years, urban, and Dumitra (84 years, rural) (both elderly households). Three households used towels only for drying hands, including Fanica (69 years, Elderly households, rural), Bogdan (32 years), and Balanel (28 years) (both young single men, urban). However, most of the households (7/15) didn't have separate towels for hands and surfaces. Households typically stored the towels on the heater, on the back of the chair, on the handle of the cupboard door or in other places (window case, table, drawer, above the sink).

All the households from elderly group used hand towels to dry hands. During cooking in the summer, Dumitra (84 years, Elderly households, rural) used the hand towel for two purposes: for when she wiped the chicken and when she took the pot from the gas stove. However, during the first visit performed during winter she had a hand towel stored on the back of the chair that she said she uses for drying hands. Domnica (75 years, Elderly households, urban) used the same towel for wiping hands and to protect her hands f when mixing the hot food in the boiling iron pot. Linalia (73 years, Elderly households, rural) used the same towel for wiping hands, mouth and surface, whereas Damian (73 years, Elderly households, rural) was use the towel to hold the cauldron while stirring and for wiping hands.

## Chapter 4.5: Washing hands during food preparation

		
Balanel dries the hand towels on the heater close to gas stove	Bogdan stores clean hand towel above the counter top on the windows case	Bogdan dries the hand towel on the handle of the gas stove
		
Dumitra dries the dish towel on the back of the chair	Fanica dries the hand towels on the heater	Domnica stores the hand towel above the sink
		
Maria Mirabela stores the hand towel on the counter top	Amalia stores the hand towel on the handle of the cupboard door	Amalia uses the towel to protect the counter top from water droplets
		
Dumitra wipes the chicken to dry it	Domnica uses hand cloth to hold the hot cauldron	Sorina stores the dish towel on the handle of the gas stove

**Figure 4.5.1: Examples of how the Romanian households store hand/dish towels (Romania)**

Four out of five households with young single man had towels in their kitchen, two of them used the same towel for dishes and hands and two of them only used towels for wiping hands. The only research participant who did not have a towel in the kitchen was Zoltan (35 years, Young single men, urban), but he told that he had one, which he used for removing hot pots from the gas stove. During the cooking, he used many paper towels for wiping hands, paper towels being used at least two times before they were thrown into the garbage bin.

Interestingly three households with young families used the same towel for wiping hands and dishes. Minodora (27 years, Young families, rural) used the same towel to wipe the hands and to clean the table after handling chicken, Amalia (31 years, Young families, urban) used the same towel for wiping hands, drying kitchen utensils, wiping surfaces. Also, Amalia used the same towel to protect the countertop for water droplets. Maria Mirabela (34 years, Young families, rural Romania) used the same towel for wiping hands and dishes leaving it most of the time on the countertop, close to the tray with chicken. Serena (36 years, rural) and Sorina (32 years, rural), both from rural areas, used only paper towels for wiping hands and surfaces.

The question regarding how and how often respondents clean the towels, was addressed only to three participants. One of them (Florinel, 31 years, Young single men, urban) mentioned that he washes them along with other clothes using the washing machine, Zoltan (35 years, Young single men, urban) said that he used the washing machine only when the towel it is too dirty, otherwise he washed it by hand, whereas Linalia (73 years, Elderly households, rural) mentioned that she used hot water and washed them every 2-3 days by hand.

Two research participants (Figure 4.5.2) regularly wiped the sink and countertop from droplets. Fanica (69 years, Elderly households, rural) used an absorbent cloth to wipe the surfaces, Amalia (31 years, Young families, urban) used paper towel and sometimes the hand/dish towel to wipe the countertop. At the end of cooking, Amalia used a disinfectant solution to clean the countertop using a paper towel to wipe it.



Amalia wipes often the countertop with a paper towel or dish/hand towel

Fanica wipes the sink with an absorbent cloth the sink

**Figure 4.5.2: Examples of using towel or absorbent cloth for wiping surfaces (Romania)**

Two households were rather careful when handling chicken. Fanica (69 years, Elderly households, rural), for instance moved the plastic bowl from the cutting board after she had washed the chicken in the sink, using the back of her hands to avoid the greasy part of the hands to come in contact with the bowl (Figure 4.5.3).



**Figure 4.5.3: Fanica was using the back of her hands to move the plastic bowl to avoid the contaminating it (Romania)**

Maria Mirabela (34 years, Young families, rural) used her hands carefully when handling chicken. First when giving a sample of the chicken to the microbiologist and second, when she washed the chicken, she opened the tap using the pinkie finger as her hands were sticky (Figure 4.5.4).

## Chapter 4.5: Washing hands during food preparation



**Figure 4.5.4: Maria Mirabela used the pinkie finger almost unnoticeable to open the tap (Romania)**

## Washing or not hands during and between preparing chicken and salad vegetables in France

The table below (Table 4.5.3) gives an overview of how many times the research participants washed and rinsed their hands, where they did it and during what circumstances they did. Rinsing hands unintentionally when rinsing vegetables or kitchen utensil is not included in the table.

**Table 4.5.3: Overview of the order of how many times, when and where the French research participants washed and rinsed their hands**

Study group: Young single men	Wash:	Rinse:	Where:
Aurélien (25 years, rural)	0	4	Kitchen sink
He rinsed his hands after throwing peels in the compost bin in the garden			
He rinsed his hands after handling the unwashed salad and dried his hands on the hand towel he hangs on the small counter in the kitchen			
He rinsed his hands under water after handling raw chicken to remove the fatty feeling on it, for 15 seconds			
He rinses his hands under water after blowing his nose			
Study group: Young single men	Wash:	Rinse:	Where:
Vincent (29 years, rural)	1	3	Kitchen sink
Vincent washed his hands with solid soap and lukewarm water over his (dirty) dishes in the sink before starting to cook and dried them on his apron which he used as a hand towel			
Vincent rinsed his hands with water only over the dishes in the sink after spreading oil over the raw chicken by hand			
He rinsed his hands with water after quickly cleaning the countertop			
He rinsed his hands after leaving the kitchen for 5 minutes for a smoke			
Study group: Young single men	Wash:	Rinse:	Where:
Fabrice (24 years, urban)	0	2	Kitchen sink
No hands washed before cooking			
He rinsed hands under running water after touching and cutting the chicken			
He rinsed his hands under running water after putting raw chicken in the pan			
Study group: Young single men	Wash:	Rinse:	Where:
Simon (25 years, urban)	1	3	Kitchen sink
Simon washed his hands for a few seconds with dish soap before starting to cook.			
Simon rinsed his hands with water after finishing cutting the vegetables			
He rinsed his hands with water after putting raw vegetables in the pan			
Simon rinsed his hand that touched the raw chicken with water			
Study group: Young single men	Wash:	Rinse:	Where:
Etienne (30 years, rural)	1	0	Kitchen sink
He washed his hands with liquid dish soap for 7 seconds and dried them on the hand towel before starting to cook.			
Study group: Young families	Wash:	Rinse:	Where:
Mathilde (37 years, urban)	2	1	Kitchen sink
She washed her hands with soap and lukewarm water before cooking			
Mathilde washed and rubbed her hands and carefully cleaned her fingernails under running hot water with soap after cutting and touching raw chicken			
Mathilde rapidly rinsed her hand after cutting onion and dry them on the towel			
Study group: Young families	Wash:	Rinse:	Where:
Amandine (27 years, rural)	7	1	Kitchen sink

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No hands washing observed before cooking			
She rinsed hands under warm water with soap after peeling cucumber			
Amandine washed her hands with soap and warm water after cutting cucumber and picking up a slice that fell on the floor			
Amandine washed her hand with soap and warm water after putting raw chicken in a special cooking plastic bag			
Amandine washed her hands with soap after closing and throwing away the garbage bag			
Amandine washed her hands with soap after peeling potatoes			
Amandine rinsed her hands under water after shredding potatoes			
Amandine washed her hands with soap after cutting the salad			
Amandine washed her hands with soap after blowing her nose and dries them			
Amandine coughs and sneezes, then washes her hands with soap			
Study group: Young families	Wash:	Rinse:	Where:
Julie (28 years, rural)	2	2	Kitchen sink
No hands washing observed before cooking			
Julie washed hands with a lot of liquid soap after having carried the cat			
Julien rinsed her hands under running water after peeling zucchinis and cutting onions and garlic			
Julie rinsed her hands under running water after cutting vegetables and putting them in the pan			
Julie washed her hands with soap after collecting all the rubbish from the meal preparation (empty packages and peels) and throwing them in the garbage bin under the sink			
Study group: Young families	Wash:	Rinse:	Where:
Mylène (25 years, urban)	0	1	Kitchen sink
No hands washing observed before cooking			
Mylène rapidly rinsed her hands under cold water after washing salad and throwing some leaves in the garbage			
Study group: Young family	Wash:	Rinse:	Where:
Elodie (31 years, rural)	3	2	Kitchen sink
She washed her hands, wrists and between her fingers with soap in a seemingly professional manner and dried her hands with the hand cloth			
Elodie rinsed her hands with clear water after touching raw chicken			
Elodie washed her hands carefully with soap after finishing cutting raw chicken (36'18)			
Elodie rinsed her hands quickly under clear water after touching the chicken paper papillote			
Elodie washed her hands with soap after throwing stuff in the garbage in the garage			
Study group: Elderly households	Wash:	Rinse:	Where:
Gerhard & Odile 73 and 65 years, rural	0	2	Kitchen sink
No hands washing observed before cooking			
Odile rinsed her hands with lukewarm water after unpacking chicken without touching it			
She rinsed her hands with water after touching the raw chicken while removing a little label on it			
Study group: Elderly households	Wash:	Rinse:	Where:
Sylviane (77 years, rural)	1	2	Kitchen sink for rinse, bathroom sink for wash
She rinsed her hands with water only on the side of the basin with potatoes, which is in her sink, after unpacking chicken and putting it in the dish			
She rinsed her hands after preparing raw chicken and putting it in the oven			

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She washed her hands with soap in a small bathroom next to the “arrière cuisine” <sup>48</sup> (back kitchen) to remove fat from her hands			
Study group: Elderly households	Wash:	Rinse:	Where:
Charles & Annie (75 and 70 years, rural)	1	1	Bathroom sink for wash, back kitchen sink for rinse
He washed his hands with soap and warm water in the bathroom sink, after unpacking chicken as he forgot to do it before			
He washes his fingers on the side of the basin used to wash salad in the back kitchen (32.09)			
Study group: Elderly households	Wash:	Rinse:	Where:
Bernard & Hélène (both 72 years, urban)	Him: 0 Her: 1	Him: 3 Her: 2	Kitchen sink
Bernard rinsed his hands under lukewarm water but used no soap and dried his hands on the hand towel. His wife, Hélène washed her hands with lukewarm water and soap.			
Bernard rinsed his hands after touching onions, just with water			
Hélène rinsed her hands after peeling beetroots			
Hélène rinsed her hands after finishing cutting all the beets			
Bernard wiped his hands on his jeans after rinsing them, while standing in front of the cooktop, after tasting the chicken sauce with a spoon			
Study group: Elderly households	Wash:	Rinse:	Where:
Yvette & François (74 and 76 years, urban)	Her: 1 Him: 1	Her: 3 Him: 1	Her: kitchen sink Him: back kitchen sink
Yvette rapidly rinsed her hands under water after unpacking the chicken and putting it in the dish			
Yvette rapidly rinsed her hands under water after seasoning the chicken			
François washed his hands with soap under running water before preparing the salad			
Yvette washed her hands with washing up liquid after peeling potatoes and cleaning countertop. She washes them over the sink drainer, because she is afraid than it can splash on the colander			
Yvette rapidly rinsed her hands with water after wiping counter top beside the coking plates with a humid sponge			
François rapidly rinsed hands under water after cutting bread and before putting chicken out of the oven (90’)			

### Washing hands before cooking?

Six households washed their hands with hand soap or dish liquid soap before cooking, including three young single men households. Vincent (29 years, rural), who washed his hands over his dirty dishes in his sink, Simon (25 years, urban) and Etienne (30 years, rural) and two Young families including Mathilde (37 years, urban) and Elodie, (31 years, rural), who also washed her wrist and finger nails very carefully. Charles, (75 years and Annie, 70 years, Elderly households, rural) did wash his hands after unpacking chicken because he realized that he forgot to wash them. Three only rinsed their hands under running water, including Aurélien, (25 years, Young single men, rural) and (Bernard, (72 years, Elderly households, urban) and Yvette, (74 years, Elderly households, urban). However, Hélène, who was cooking along his side, washed

<sup>48</sup> A direct translated of “arrière cuisine” is back kitchen. It is a second kitchen usually placed in the garage or close to the outdoor areas, and typically used for washing own garden produce and for storage.

her hands with soap before cooking. Difference between couples was also observed in the household of Yvette & François. While she rinsed her hands after unpacking and touching raw chicken her husband washed his hands with soap before rinsing the salad. To summarize, nine of the research participants either washed their hands with soap or rinsed them in water, before or at the beginning of the food preparation. However, among the last six no hand washing was observed before or at the beginning of preparation. Meanwhile, if this meant that they were not used to do it or simply forgot it, is difficult to say as they might have done it prior to our arrival and observation.

### **Washing hands after touching raw chicken?**

Only three participants, in three Young families (Mathilde, 37 years, urban; Amandine, 27 years, rural; and Elodie, 31 years, rural) washed their hands with soap after handling raw chicken. Mathilde did not like the greasy feeling on her hands and carefully washed her hands and fingernails with soap for almost one minute. Elodie told that she was very aware and careful about food risks from her catering training and experience. Amandine washed her hands with soap many times during the observation. She explained that she was careful about hygiene, which she taught to the teenagers she supervised, in the care facility where the family was working and living. Six participants: Aurélien (25 year, rural); Vincent (29 years, rural); Fabrice (24 years, urban,); Simon, 25 years, urban, all four in young single men households; and Odile (65 years, Elderly households, rural) and Yvette (74 years & Gerhard, 76 years urban), both elderly household, only rinsed their hands after handling raw chicken. Three participants, Julie, (28 years, Young families, rural), Charles, (75 years and Annie, 70 years, Elderly households, rural, and Sylviane (77 years, Elderly households, rural) dried quickly their hands on a towel. However, Sylviane dried her hands quickly on the towel before rinsing them. Furthermore, two research participants did no washing or rinsing of hands, but just continued food preparation after touching phone to read recipe, Mylène (25 years, Young families, urban) or utensils while cooking chicken, Bernard (72 years, Elderly households, urban). Only one participant was not observed to touch the raw chicken as he already had thawed it in a dish in the fridge the night before.

### ***Why washing hands and why not***

Except for two mothers who washed their hands quite often during food preparation, including seven times for Amandine (27 years, Young families, rural) and three times for Elodie (31 years, Young families, rural), most of the research participants did less so while cooking. The majority washed their hands once during food preparation, two washed their hands twice and five did not wash their hands all, neither at the beginning, during or at the end of the preparation. Instead they just rinsed them (see also Table 4.5.3 for an overview of hand wash among the research participants)

The most usual time for washing hands was before preparing food and after touching

raw chicken. Meanwhile, washing hands occurred on other occasions, such as after handling/peeling raw vegetables, picking up something from the floor, handling waste and the waste bag, throwing waste in garbage, sneezing or blowing nose, touching cat, domestic animal and after cutting cooked chicken to remove the fat (see Table 4.5.3 for an overview who among the research participants washed hands in what circumstances)

It seemed that washing hands occurred mostly after an action seen as unhygienic (like touching garbage, domestic animal or nose) or to remove a grease or moisture on hands and fingers, in the case of cooked chicken fat or moisture from raw vegetables.

When asked, the research participants would usually explain that they washed if they thought their hands were dirty. Most of them answered they would after going to the bathroom, when coming back home, and after gardening. Two also mentioned washing hands after petting animals (Etienne, 30 years, Young single men, rural and Charles, 75 years and Annie, 70 years, Elderly households, rural), after changing diapers (Elodie, (31 years, Young families, rural), sometimes before feeding her child and after putting gasoline in her car, Mylène (25 years, Young families, urban), after using public transportation or going to the gym, Bernard & Hélène, (both 72 years, Elderly households, urban).

Furthermore, a few participants did not separate between the word “to wash” as “to rinse” hands. Aurélien (25 years, Young single men, rural), for example, told that he washed his hands when he wakes up and each time he goes to the bathroom, but added he only used water most of the time without soap, also after going to the toilets. Sylviane (77 years, Elderly households, rural) also mentioned washing hands with water only.

A few of the participants told that they had to wash hands at work or that they learned to do it often at work. Aurélien was a high school supervisor and he washed his hands each time after going to the toilets at work. Vincent (29 years, Young single men, rural) told that it is better to be careful and to wash hands often, especially when handling food he touches or when encountering babies, dogs or cats. He also washed his hands after cooking and after smoking, a habit he kept from his previous work when he was often working with clients, he told. Simon (25 years, Young single men, urban) felt he always had dirty hands. He worked in a theater with customers and money. Thus he tried to wash his hands often, adding that he was not obsessed about being clean. He washed his hands after going to the toilets and he would sometimes disinfects his hands at work, for instance if he was tired of washing hands before serving popcorn to customer for example. This was also the case with Amandine (27 years, Young families, rural) who changed her behavior after her studies and her work as a specialized educator of special needs teenagers, living on the care facility. She bought an automatic soap dispenser (Figure 4.5.5) kept above the sink to make it easier to wash hands. She also tried to teach the teenagers to use it often and each time they were preparing food

or eating together. However, Amandine admitted that she did not do everything she has learnt about hygiene. She washed her hands with soap and lukewarm water when she felt her hands were dirty after handling food, when they were greasy, after blowing her nose and when arriving back home. This was also noticeable to us when she prepared food.



**Figure 4.5.5: Amandine's automatic soap dispenser (France)**

The use of disinfectant (hydro alcoholic gel) typically occurred when people were in a situation where they did not have other possibilities to wash hands, for instance when being outside of home, when there was an ongoing flu, when being sick or surrounded by sick people or after visiting certain places, for instance nursing homes. However, others did not like to use hydro alcoholic gel, either because they did not like the feeling on the hands, they had sensitive skin or had heard that washing with soap was more effective.

During our conversations about hand wash, most of the research participants mentioned several hygiene routines that were not included due to the scope of our observation – one visit to observe preparation of a chicken and raw vegetable meal. The results of our study only provide a very narrow picture, as washing hands is not only a part of food work. Furthermore, the research participants might have felt uneasy during our observation that could either make them wash hands more than usual or forget to do as often as they would normally do. For instance, Mylène (25 years, Young families, urban) told that she usually washed her hands before cooking, but she admitted that she did not do it today. Fabrice (24 years, Young single men, urban) told that he often washed his hands, each time after handling raw food, when arriving home he comes back home if he didn't have time to wash them before leaving work, after going to the toilet, and when he cooks. However, we did not observe this when he cooked. He did not wash his hands at all. There are several other examples of the same in the French study, which was difficult to interpret. In the conversation about washing hands, it was clear that hygiene for some were morally difficult to talk about. Meanwhile, if most participants explain that they do, some of the research participants admitted that they did not wash their hands after going to the toilet all the time without

explaining this any further (Etienne, 30 years, Young single men, rural and Sylviane, 77 years, Elderly households, rural). Meanwhile, for Mathilde (37 years, Young families, urban) it depended on where she was. She would always wash her hands after going to the toilet at work, but not when she was at home.

An interesting comparison was made after several visits were done. When visiting the household of Yvette & François (74 & 76 years, Elderly households, urban), the researchers invited to eat. The researchers had been invited to eat in many of the households. Meanwhile, this was the only couple who offered the researchers to wash their hands before eating. This reflected what Yvette (74 years, Elderly households, urban) had said, that she felt the need to wash her hands often with soap very often when cooking and when arriving home. In the toilet they had small individual guest's towels. The same situation was mentioned by Gérard & Odile (71 & 65 years, Elderly households, rural). During their holidays in Martinique, their host invited them to go wash their hands before eating. Gérard (71 years, Elderly households, rural) told that this gesture was unfamiliar to him, and something that we neither do nor say in France even though it is a good idea. Odile added that she would not dare to propose it to her guests.

### **Hand towels and paper towels**

In some households, there were no apparent distinction between hand towels and tea towels. This was most common in the young single men households (Aurélien, 25 years, rural; Fabrice, 24 years, urban; Simon, 25 years, urban; and Etienne, 30 years, rural) (see example in Figure 4.5.6). This meant that towels were used for various purposes such as drying hands and drying dishes. Another example was Vincent (29, young single men, rural), however he mostly used it as pot holder and to wipe surfaces. For drying his hands, he preferred to use his apron, which he seldom he changed it.



Aurélien only had one cloth for any purpose



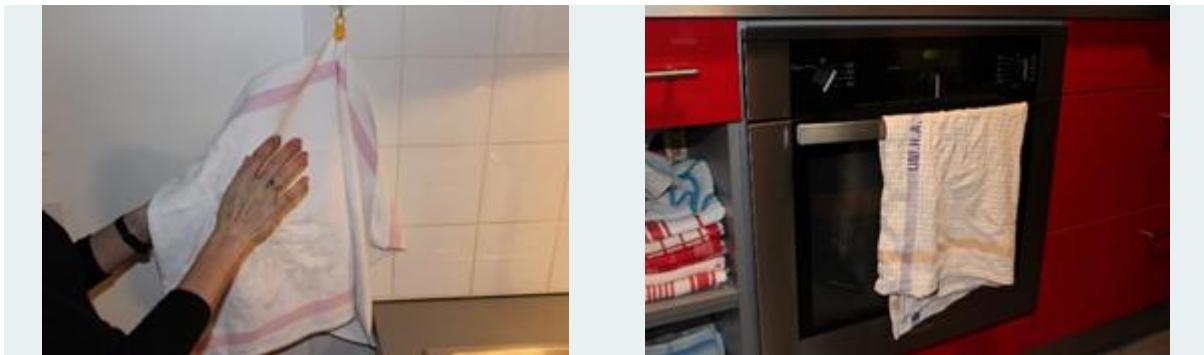
Fabrice put his all-purpose cloth on the oven handle



Vincent was drying his hands on the apron

**Figure 4.5.6: Examples of where cloths hung and drying hands in France**

In households with children, there were different towels for hands and drying dishes. Meanwhile, they were usually kept separately at the same place in the kitchen (see examples from Mathilde's household, 37 years, Young families, urban) in Figure 4.5.7). In addition, the members of the households typically would identify the purpose of use by the material, softer for hands, thinner for dish.



**Figure 4.5.7: Mathilde differentiates cloths for dishes she hangs on the oven handles and cloths for hands she puts beside the sink (France)**

Elderly households usually had a lot of different towels, to wipe different surfaces, glasses, countertop, dishes and hands. Meanwhile, two elderly households; Yvette & François (74 & 76 years, urban) and Charles & Annie (75 & 70 years, rural) used paper towels. For François it is a hygienic matter. They often used absorbent paper for both wiping surfaces and hands: "We consume a lot of paper towels. I am a lot in favour of single use towel, like that. It is a professional distortion and it has become a mania."



**Figure 4.5.8: Examples of using absorbent paper for wiping hands or surfaces in Yvette's and François' household (France)**

In some household, no towel were used during food preparation. For instance, Simon (25 years, Young single men, urban) struggled to dry his hands and shook them because he had not put a new towel in his kitchen. They were all stored in his room and he did not take time to go grab one. Instead he ended up drying them on a paper towel. The second time, he also shook his hands, but instead of using paper he dried them on a little piece of towel where he dried his clean dishes (Figure 4.5.9).



Simon dried his hands with piece of paper as there was no towel in the kitchen

Simon drained his hands over the sink (left) and quickly dried his hands on the tea towel placed under his clean dishes

**Figure 4.5.9: Simon's various ways of drying his hands (France)**

There were other creative ways of drying hands. For instance in Bernard's & Hélène's (both 72 years, Elderly households, urban) household, hands were mostly dried on a towel, but at some point, Bernard used his pants (Figure 4.5.10).



**Figure 4.5.10: Bernard wiped his hands on his jeans after rinsing them (France)**

#### *The chicken hand / the cooking hand*

We observed certain hand gestures taking place in three households during cooking: Simon (25 years, Young single men, urban); Elodie (31 years, Young families, rural); and Hélène & Bernard (both 72 years, Elderly households, urban) while preparing food (Figures 4.5.11 and 4.5.12). Most of the time, they tried to avoid touching other objects while cooking or after having touched something greasy or dirty. The “chicken hand” or the “cooking hand” as we can call it, occurred when participants held their hands in the air while talking or in between actions or when they used their pinkie to open drawers.

## Chapter 4.5: Washing hands during food preparation



Hélène stood with her hands in the air while talking with the interviewer, in between salad washing



Hélène opened a drawer with her little finger while cutting beet roots, in order not to put stains on the drawer



Later she turned the steamer on with her pinkie for the same purpose



Bernard regulated the heat with his little finger while cooking chicken

**Figure 4.5.11: Hélène & Bernard used their pinkies to avoid dirt and stains on kitchen surfaces (France)**



Elodie opens the drawer and takes a wooden spoon with only the palm of her left hand touching the drawer



She raised her fingers from the cutting board not to touch it

**Figure 4.5.12: Elodie used the palm of her hand to avoid dirt and stains on kitchen surfaces (France)**

## Washing hands or not during and between preparing chicken and salad vegetables in Norway

The number of times the participants washed or rinsed their hands varied a lot. Meanwhile, all washed their hands after handling raw chicken. Only one research participant never washed or rinsed his hands. Nils told that he had forgotten to wash his hands during cooking, and that he would normally wash his hands more often when cooking by himself.

The table below (Table 4.5.4) gives an overview of how many times the participants washed and rinsed their hands, where they did it and during what circumstances they did. Rinsing hands unintentionally when rinsing vegetables or kitchen utensil is not included in the table. Furthermore, the cooking sessions varied in terms of what went on and how long the visit lasted. For instance, the visit of Laura started when she arrived from the shop. Thus, the observation included Laura's hand wash when coming home with the groceries. Other times, the participants had started preparing food (bringing food out of the fridge and washing hands) before the observation started. The observation often ended when the food was ready to be served, but not always. Thus, the table only provides an overview of what was observed, not what happened before or after observation.

**Table 4.5.4: Overview of the order of, how many times, when and where the Norwegian research participants washed and rinsed their hands**

Study group:	Young families	Wash:	Rinse:	Where:
Anna (31 years, urban)		4	3	Kitchen sink
Washed (with soap) after marinating the chicken with mayonnaise				
Washed (with soap) before starting to prepare the salad				
Rinsed (in running water) before spinning the lettuce in the salad spinner				
Rinsed (in running water) when finishing the salad				
Rinsed (in running water) while the potatoes were in the sink				
Washed (with soap) after potatoes were put in the potato boiler				
Washed (with soap) after putting the potato peel into the bin				
Study group:	Elderly households	Wash:	Rinse:	Where:
Bente (71 years, urban)		1	2	Kitchen sink
Rinsed (in running water) after washing potatoes and dried on the hand towel				
Rinsed (in running water) after opening chicken package and dried on the hand towel				
Washed (with soap) after touching chicken and dried on the hand towel				
Study group:	Young families	Wash:	Rinse:	Where:
Camilla and Chris, 35 and 37 years, urban)		2	4	Kitchen sink
Washed (with soap) after fetching the vegetables for the dish, peeling the onions and before cutting them				
Washed (with soap) after cutting the chicken, placing the plate where the raw chicken had laid when defrosting and tossing the plastic wrapping in the bin				
Rinsed (in running water) and dried on the hand towel after chopping garlic				

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Rinsed (in running water) and dried on the hand towel after pushing the remaining vegetables on the cutting board to the side before preparing the salad			
Rinsed (in running water) and dried on the hand towel after rinsing the lettuce and putting it into the salad spinner			
Rinsed (in running water) after squeezing a lime into the salad bowl			
Study group: Young families	Wash:	Rinse:	Where:
Emma (33 years, rural)	3	1	Kitchen sink
Washed (with soap) after cutting the chicken			
Washed (with soap) after feeding the guinea pigs			
Washed (with soap) after putting the cutting board into the sink			
Rinsed(in running water) after picking up a piece of avocado from the floor to eat it			
Study group: Young single men	Wash:	Rinse:	Where:
Fredrik (23 years, urban)	4	0	Shared bathroom
Washed (with soap) before starting to cook			
Washed (with soap) after checking a message on his phone in the middle of cutting carrots			
Washed (with soap) after touching chicken and then checking his phone			
Washed (with soap) after picking up onion peel on the floor and tossing it into the bin			
Study group: Young single men	Wash:	Rinse:	Where:
Georg (27 years, urban)	2	0	Shared bathroom
Washed (with soap) before starting to cook and dried his hands on his own towel			
Washed (with soap) after realising that he had touch the chicken while cutting the yellow pepper			
Study group: Young families	Wash:	Rinse:	Where:
Hanne (31 years, urban)	3	2	Kitchen sink
Washed (with soap) hands after moving chicken thigh fillets that she would not use into a plastic bag to be frozen			
Washed (with soap) after cutting the chicken			
Washed (with soap) after peeling onion			
Rinsed (in running water) after a picking up a piece of chicken that fell on the floor, which she tossed in the bin			
Rinsed (in running water) after tossing her son's chewing gum in the bin when he did not want it anymore			
Study group: Elderly households	Wash:	Rinse:	Where:
Inger (70 years, rural)	5	3	Kitchen sink
Washed (with soap) after rinsing the lettuce in the salad spinner			
Rinsed (in running water) after cutting the red pepper and putting the pieces into boxes			
Rinsed (in running water) after draining juice from the canned pineapple and after using hands to distribute pineapple pieced into the salad boxes			
Washed (with soap) after clearing the kitchen and tossing food waste from the salad ingredients into the bin			
Washed (with soap) after cutting the chicken, tossing the chicken package into the bin and putting the knife and the cutting board into the sink			
Washed (with soap) after putting the chicken into the pan and bringing the plate where the chicken was placed to the kitchen sink.			
Rinsed (in running water) after tossing the plastic rice bag into the bin			

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Washed (with soap) after cleaning the kitchen counter with a cloth			
Study group: Young single men	Wash:	Rinse:	Where:
Jon (28 years, urban)	4	1	Kitchen sink
Washed (with soap) after bringing out the Toro Tikka Masala kit			
Washed (with soap) after grabbing a chicken fillet, putting it back into the package			
Washed (with soap) after mixing the chicken into the marinade using his hands			
Rinsed (in running water) after tossing something in his sink into the waste			
Washed (with soap) after putting oil into the frying pan			
Study group: Elderly households	Wash:	Rinse:	Where
Kari (71 years, urban)	3	0	Kitchen sink
Washed (with soap) after picking up a breast fillet of chicken and putting it back into the package when realising that it was already sliced			
Washed (with soap) after moving the chicken fillet by hand into the frying pan and tossing the chicken package into the bin			
Washed (with soap) after throwing the stems from the strawberries in the trash			
Study group: Young families	Wash:	Rinse:	Where:
Laura (37 years, rural)	6	16	Kitchen sink
Washed (with soap) after unpacking the groceries			
Washed (with soap) after cutting vegetables and putting her baby into the baby carrier and before continuing to cut the vegetables			
Washed (with soap) after finishing cutting the vegetables			
Rinsed (in running water) after tossing the mango core in the bin which baby Line had chewed while hanging in the baby carrier			
Rinsed (in running water) after putting the cut mango into the vegetable cutter			
Rinsed (in running water) after scraping the inside of the vegetable cutter to empty it for the remaining cucumber pieces			
Rinsed (in running water) after cutting chili			
Rinsed (in running water) after squeezing a lime over the salad ingredients			
Rinsed (in running water) after putting her baby's smoothie on the kitchen counter			
Rinsed (in running water) after placing baby Line on the living room floor			
Rinsed (in running water) after moving the chicken fillets onto the cutting board pieces into the frying pan			
Rinsed (in running water) after talking to her fiancé on the phone			
Rinsed (in running water) after wiping off snot from baby Line's face and throwing the snotty paper towel into the bin			
Washed (with soap) after cutting the chicken			
Rinsed (in running water) after pushing the first batch of cut chicken into the frying pan with the spatula			
Rinsed (in running water) after putting the vegetable cutter into the sink			
Rinsed (in running water) after cutting the sweet pepper			
Washed (with soap) after packaging remaining chicken fillets in a plastic bag to freeze it			
Rinsed (in running water) after putting the plastic chicken container into the bin			
Washed (with soap) after putting her baby to bed			
Rinsed (in running water) after cleaning the cutting board			
Rinsed (in running water) after putting dirty dishes into the washing machine and turning it on			

## Chapter 4.5: Washing hands during food preparation

Study group: Elderly households	Wash:	Rinse:	Where:
Nils (74 years, rural)	0	0	-
He never washed or rinsed his hands during cooking			
Study group: Elderly households	Wash:	Rinse:	Where:
Oda and Ove (both 72 years, rural)	1	0	Kitchen sink
Washed (with soap) after cutting the chicken and putting the knife into the dishwasher			
Study group: Young single men	Wash:	Rinse:	Where:
Petter (29 years, rural)	2	0	Kitchen sink
Washed (with soap) before starting to cook			
Washed (with soap) after cutting the chicken			
Study group: Young single men	Wash:	Rinse:	Where:
Roger (24 years, urban)	3	4	Bathroom/Kitchen sink
Washed (with soap) before opening the package of chicken			
Washed (with soap) after cutting chicken and turning on the stove			
Rinsed (in running water) after picking up a fried chicken piece to taste it. (He flushed his mouth as well)			
Rinsed (in running water) after pouring the frozen vegetables into the frying pan and wiping the stove with toilet paper			
Rinsed (in running water) after filling a pot with water for the noodles and placing it on the stove			
Rinsed (in running water) after doing some dishes			
Washed (with soap) after handling the kitchen cloths			

### Washing or rinsing?

The research participants varied between washing and rinsing their hands depending what they had used their hands for during food preparation. In general, rinsing was typically done after handling vegetables and fruit (cutting, touching etc.). When handling food that made their hands greasy, washing hands usually took longer time, involved soap and some rubbing. Anna's (31 years, Young families, urban) hand wash after handling the chicken legs is a good example. Anna's Russian upbringing had shaped her rather strict cleaning regime, which included washing and drying her hands often and usually for a long time each time. "I think I am just raised that way that I have to wash because there are a lot... In Russia, there are many people, a lot more than here. And thus ... very often diseases and parasites", she said. We never observed if she washed her hands before preparing food. However, she said, "I generally wash my hands a lot." However, after marinating the chicken, Anna's hands were full of mayonnaise. She thus used her elbow to twist the water tap, and then rinsed her hands in tap water (Figure 4.5.13).

## Chapter 4.5: Washing hands during food preparation



Anna's hands were full of mayonnaise from marinating the chicken legs



Anna used her elbow to turn the on tap



Anna rinsed her hands in running water



Anna used her elbow to change the strength water



Anna used liquid hand soap to wash her hands



Anna scrubbed her fingernails

**Figure 4.5.13: Anna washed of mayonnaise from her hands (Norway)**

After she rinsed her hands (without soap), she used her underarm again to change the strength of the water. She said she didn't want the water to splash all over the place and that "I never touch [the tap] when I have mayonnaise on my hands." Then, she rubbed her hands with soap and rinsed them with water. She used a nail brush to rinse her nails. In the end, she wiped her hands with paper, which she tossed in the trash under the sink. "Like mayonnaise or chicken, I first use paper because the chicken, it's a lot of bacteria. It is raw, right", she explained

Many of the research participants rinsed their hands instead of washing without explaining it any further. However, a few of the participants consciously varied between washing hands using soap and rinsing only using water. Anna (31 years, Young families, urban) told for instance, that she did not want to use soap when she

rinsed her hands after rinsing the potatoes “to not get soap on the potatoes” (Figure 4.5.14).



**Figure 4.5.14: Anna rinsed the potatoes and then her hands followed by drying them on paper towel (Norway)**

Other participants provided more general explanations. For instance, Hanne told that she washed her hands with soap when touching raw chicken and meat, but “don’t wash my hands after preparing salad [...] I don’t feel dirty on my hands then.”

“But salad, vegetables and dry goods is kind of OK, but it happens if I cut onions or garlic that I in a way get sticky on my hands, soggy, like that you... yeah sticky, then it happens that I rinse my hands to get [...] clean. Because... hm... not that I think we get sick by it, having garlic on my hands, but because it gets sticky and dirty everywhere.”

(Hanne, 31 years, Young families, urban, Norway)

In other words, concerns about food safety played a part in when to wash and rinse hands. Meanwhile, grease and stickiness seem to cut across.

#### *Why washing hands and why not*

Typically, the research participants were concerned about the hygiene of other people. Almost everyone mentioned that washing hands after going to the toilet and especially public toilets was very important. Kari (71 years, Elderly households, urban mentioned) that she always took care to wash her hands after going to the dance club because you get “very close with the hands”. Moreover, she mentioned that they never used to think about that before and often ate cake after the couple dancing. Emma (33 years, Young families, rural) had three children and told that she was very particular about telling her children to wash their hands when they participated in the cooking. She explained:

Because we touch so much disgusting stuff that others have touched, one thing is to become infected by [food], but I think it is disgusting that people go to the toilet and touch stuff without washing their hands and then we touch the same stuff and then they bring it here and touch the food. I think so. I don't worry that much about getting sick, but I think it is disgusting”  
(Emma, 33 years, Young families, rural, Norway)

Washing hands during cooking was also something the research participants did because they felt at their hand were dirty, for instance if their hands were sticky or greasy after handling food. Petter (29 years, Young single men, rural) said that he felt like washing his hands if they looked dirty “another thing is if... you do notice that you are greasy, and it could be that I have touched for example meat or something.” Roger (24 years, Young single men, urban) told that “it does get rather greasy with chicken. It's nice to avoid smearing that on everything else around you”. Similarly, Georg told that he felt like washing his hands...

...like now they are sticky because of the lime. Actually, after chicken, I usually... if I touch meat, I usually wash them and when I feel that something is sticking on to them and that's a bit... Actually, there are no available sink here. Thus, if I had a sink here, I would probably have washed them more often or at least rinsed them more often”

(Georg, 27 years, Young single men, urban, Norway).

Fredrik (23 years, Young single men, urban) washed his hands four times during cooking. He kept getting text messages on his mobile phone during cooking. In the middle of cutting the carrots, he checked his phone and said: “now I touched my phone, thus I have to wash my hands”. Moreover, he said, “I believe it is general knowledge today that the phone is full of dirt”. However, while he continued getting messages from his dinner date, he got tired of washing his hands and, in the end, he told that he didn't bother.

Roger (24 years, Young single men, urban) told that it was important to wash hands when cooking although he didn't always do it. However, “when I have to touch chicken” or “touch raw meat I will wash, but unless it is not that important”. In fact, all of the research participants told that washing hands after touching chicken was very important. Some did not explain this any further. Others mentioned that hand wash was necessary to avoid becoming sick. And few talked about chicken as a risky food because of potential harmful bacteria. Anna (31 years, Young families, urban) said that washing hand after handling chicken was very important because chicken was full of bacteria. Both Hanne (31 years, urban) and Laura (37 years, rural) (both Young families households) were educated in infections and hygiene. Hanne had a master's

degree in biotechnology and Laura worked a nurse. Hanne told that she had learned “a bit like washing hand and the transmission [...] of bacteria and stuff, but like maybe a bit like critical sense about best before and last expiration date, to make like an assessment by myself”. Moreover, she said she felt that her hands needed to be washed after “touching raw chicken for instance, then you are greasy as well, so you feel it.” Laura said that she probably was more mindful than others because she was a nurse. “I think I reflect more about where it is dirt and where it is clean.” However, she also said that she could have been conscious about it.

If I had been super conscious, I would have washed my hands before I touched [pointing at the cutting board with cut sweet pepper]. I don't do that. [...] You just have to do what you do, and some bacteria are normal. If I had touched the chicken, I wouldn't have touched the cutting board. But now I have just touched the frying pan. That will do.

(Laura, 37, Young families, rural, Norway)

### Hand towels and paper towels

The Norwegian participants dried their hands using either paper, hand towels or a tea towel. Pensionary Bente (71 years, Elderly households, urban) used the same tea towel for drying her hands and for her dishes. Anna (31 years, Young families, urban), one the other hand used hand towel and paper towel to dry her hands, but never the tea towel. Her use hand towel or paper depended on what she had used her hands for before washing. She said she would use paper instead of the hand towel to dry her hands when only rinsing them without using soap, “because I haven't washed them properly yet, right”. Meanwhile, in most of the households, the hand towel was used after both washing and rinsing. In a few households, washing hands were carried out in the bathroom. Here, the hand towel hanging besides the sink was used. Georg (27 years, young single men), urban lived in a shared housing together with three other people he did not know. He washed his hands in the shared bathroom, but pointed out that “it is my towel”.

However, in households where washing hands was done in the kitchen usually had several towel for different purposes and for different persons. These towels were sometimes switched in the process of cooking. Chris and Camilla (35 and 37 years, Young families, urban) had two black towels hanging on the doorknobs of two different cupboards underneath the kitchen counter (Figure 4.5.15). Chris explained that one was a towel is for drying hands, and the other was for drying kitchen items like knives and pans after washing up. Camilla said they easily remembered which towel to use for drying hands because “it's just wash hands and strait down to dry”, referring to the hand towel being places underneath the sink.

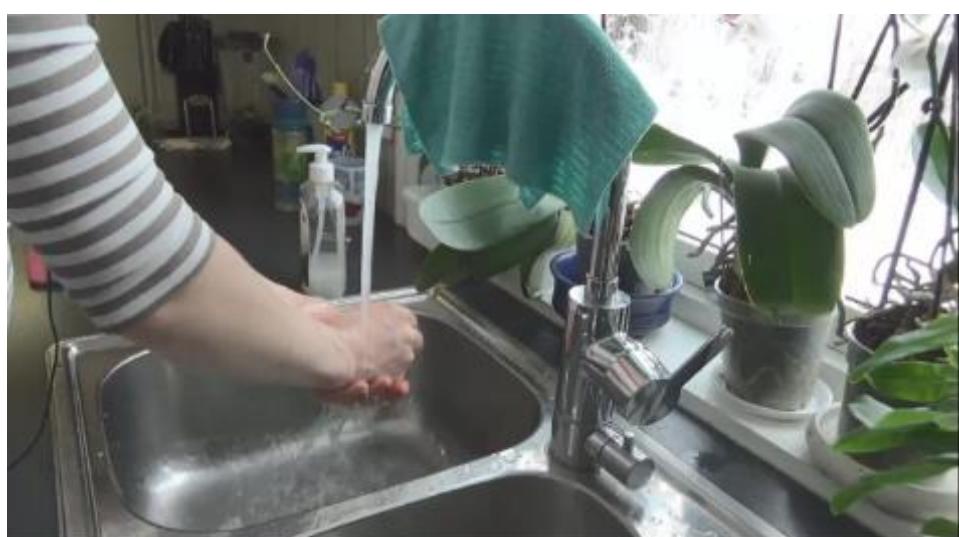


**Figure 4.5.15: Chris and Camilla's towels hung on the doorknobs (Norway)**

Meanwhile, Chris used the kitchen towel to dry his hands after fetching the lettuce in the fridge, suggesting that in between cooking and cleaning activities it was also to forget which towel was used for what purposes. Meanwhile, in a few households, paper towels were primarily used. For instance, Inger used several sheets of paper towels during cooking and handwashing. Similar to Chris and Camilla, paper towels used for one purpose, for drying hands for instance, was switched and used for cleaning the countertop.

#### *Tasks and doings that interrupt handwashing*

Among the Norwegian participants hand wash was sometimes interrupted by other pressing tasks. Emma (33 years, Young families, rural) did perform many tasks during cooking, including caring for her baby, feeding her pets and washing up.



**Figure 4.5.16: Emma washed her hands (Norway)**

After cutting the lettuce, she collected cut-offs left from the red pepper and from the lettuce in her hands and walked room to the two guinea pigs. She feed the pets with the cut-offs, returned jogging to kitchen, had a quick look at the stove that nothing was boiling or burning and washed her hands. When she started to cook, Emma had washed hands for long and used the hand towel to dry them, this time, she used no towel, but shook her hands three times before returning to the stove to stir the frying pan of asparagus and the sauce, which suggested that hand wash was performed differently from time to time during food preparation perhaps as other tasks require more attention.



**Figure 4.5.17:** Emma first fed the pets with the cuts offs and then washed her hands (Norway)

Furthermore, washing hand seemed more relaxed over the course of food preparation. After Fredrik (23 years, Young single men, urban) moved the chicken thigh fillets into the frying pan, he used a paper towel to dry his hands after handling the chicken. After that he went into the toilet to wash his hands properly, but first he used his mobile phone to send a text message (Figure 4.5.18).



**Figure 4.5.18:** First Fredrik wiped hands on a paper towel and then washed hands in the toilet. In between he used his mobile phone in between (Norway)

He commented that he could use his telephone, “now that will wash my hands”. Moreover, he said he rather wash his phone than washing his hands too often, because he “get too dry hands”. However, on his way back from the bathroom, he got a new

message and thus picked up the phone saying that he “got a message again, and because I am organising with the girl who will come, just a second.... Now I don’t bother to wash my hands anymore, because I touched my phone. I don’t give damn!” Fredrik did not wash his hands after touching his phone next time he got a message.

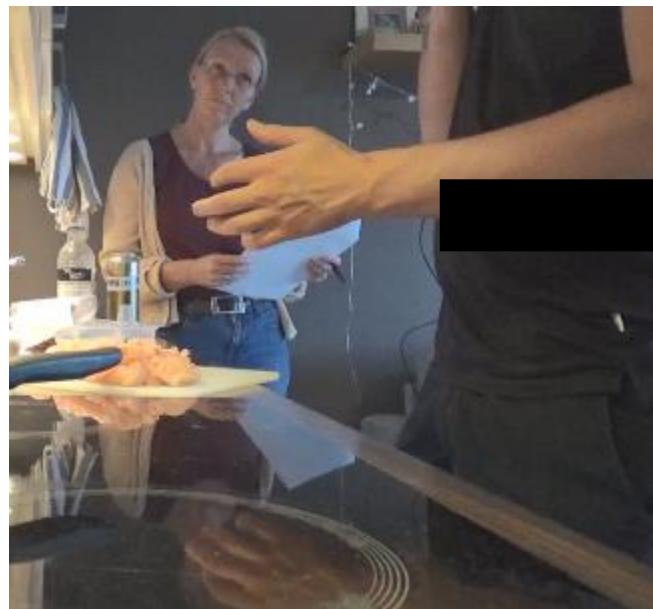
### *“The chicken hand”*

So far, it has been mentioned how participants take care not to touch anything when they have greasy hands. Anna (31 years, Young families, urban) for instance, used her elbow to turn the tap on after marinating chicken with mayonnaise. Others used their pinkie to push buttons or open drawers or as Oda (72 years, Elderly households, rural), who made sure that the part of hands that had touched the chicken did not come near the dishwasher (Figure 4.5.19).



**Figure 4.5.19: Oda made sure that the part of her hands that had touched the chicken did not come near the dishwasher (Norway)**

Avoiding that hands with chicken grease came in contact with other objects or persons were more or less an apparent performance in the Norwegian households. Roger (24 years, Young single men, urban) for example, put his hand out and away from his body immediately after he finished cutting the chicken (Figure 4.5.20).



**Figure 4.5.20: Roger put his hand out and away from his body immediately after he finished cutting the chicken (Norway)<sup>49</sup>**

Petter (29 years, Young single men, rural) needed to retrieve a glass bowl from the cupboard above the kitchen counter. He used his right hand to open the cupboard and fetch the bowl, while his left hand was securely incapacitated by positioning his arm outwards (Figure 4.5.21). He told he always thought about which hand he had touched the chicken to avoid touching things in the kitchen with «chicken fingers» as he called it.



**Figure 4.5.21: Petter used his right hand to open the cupboard to fetch the bowl, while his left hand was securely incapacitated by positioning his arm outwards (Norway)**

<sup>49</sup> This is not only a picture of "Roger", but also Solveig Langsrud. She was the coordinator of the SafeConsume project and has agreed to have this picture in the report.



**Figure 4.5.22: Emma's left hand (the hand she used to hold the raw chicken fillet) was held away from the baby, her body and the trolley bed (Norway)**

When Emma finished cutting the chicken, baby Eric started crying in the background. He was laying in his trolley bed in the kitchen to sleep. Emma walked over to the baby to comfort him. Her left hand (the hand she used to hold the raw chicken fillet) was held away from the baby and her body as well as the trolley bed (Figure 4.5.22). She stroked him with her right hand and rearranged his blanket while talking to her son.

My sweetheart, my little snuggle bunny, little bubba-bubba. Shall we ask Espen [older son] if he can help you a bit? You don't even see mummy. My beautiful boy, my beautiful boy. I'm sure you are very sleepy. Cuddle button. I can't pick you up right now, because I'm full of chicken.

(Emma, 33 years, Young families, rural, Norway)

## **Summary of hand wash in three countries**

This chapter has provided rich empirical descriptions of why, when, how, and how often the Romanian, French and Norwegian participants washed their hands. The main purpose of the chapter was to provide examples of researching the contextual and sequential nature of hygiene work in kitchens, focusing on hand wash.

As it was addressed in the French and Norwegian subchapter, the observations done in this study did not provide a full picture of handwashing among the 45 households. Observation as a method might affect when, how and how often the participants washed their hands. Across the three countries, most households mentioned washing hands more often than what was observed. On the one hand, washing hands is a part of unspoken bodily routines, which would be difficult to accurately describe in terms of when, how and how often. At the same time, washing hands and hygiene is embedded with morality, making it often difficult to admit that hand wash is sometimes forgotten or not done at all.

In this chapter, the way of avoiding using a dirty hand, which is a bodily way to avoid risk of contamination when interruption occurs, or other chores need to be done, has been titled “the chicken hand”. The chapter does not include a comparative summary. Instead, the summaries of each of the three country studies are presented.

### **Summary of washing hands in Romania**

Despite declaring that washing hands was important for hygiene, which most did do at least before starting to cook, the Romanian research participants were not fully practicing what they preach. Instead, rinsing hands predominated over washing in all the households, while rinsing alone and no washing with soap was observed in 12 households. Then, it seemed that, during summer season, Romanians preferred to use cold water only when washing or rinsing hands. The main reason for washing or rinsing hands during handling chicken seemed to be the greasiness that was associated with dirtiness. Meanwhile, the possibility to cross contaminate pathogens from hands to other food they were touching, was not emphasised. The kitchen infrastructure played a part in the practice of washing and rinsing hands. The lack of current water inside the kitchens was one of the reasons, especially for households in the countryside. Here, the practice of washing/rinsing hands was performed in bowls with water, and the same water was used for multiple purposes and sometimes for washing the chicken meat and the hands. Two of the Romanian research participants avoided touching things around the kitchen after handling raw chicken meat by using their pinkie finger to open a tap or the back of their hands to move away utensils. Furthermore in 7 households, the same towel was used for wiping hands and dishware. Meanwhile, three households used paper towels only, but were sometimes seen to use them for both wiping hands and surfaces.

### Summary of washing hands in France

The number of hands washing after handling raw chicken was rather low in the French households. Only 3 out of 15 washed their hands with soap after touching raw chicken, while 6 participants only rinsed their hands. Three wiped their hands on a towel and two continued to prepare food without any form of activity regarding the hand or fingers that touched raw chicken. One research participant did not touch the raw chicken as it was already thawed in a dish. The lack of hand wash after handling chicken could be interpreted as less awareness to or knowledge about hygiene and foodborne illnesses. Nevertheless, given that no hand washing routines after handling chicken also were present among research participants who followed more strict hygiene rules, it is tempting to suggest that hand wash routines did not revolve around handling meat in the French household. In general, the French research participants did not mention specific food risks related to handling raw chicken. They were neither not especially aware of foodborne illness and few could cite name of diseases or microorganisms. Meanwhile, it is also tempting to interpret the poor hand wash routines in relation to the ways chicken were prepared, which for a majority of the households were to roast a whole chicken in the oven, which meant less handling by hands. Rinsing hands were mostly done to remove greasiness on fingers more than for hygienic purpose. For instance, the use of smartphone while cooking was typically not accompanied by any specific precaution. Participants checked recipes, put a timer or answered their phone while cooking without washing their hands. Meanwhile, a few participants also used bodily technics, like using pinkie instead of other fingers, to avoid touching too many things with their hands while cooking.

### Summary of washing hands in Norway

The number of hand washes or hand rinses varied a lot among Norwegian participants. However, everyone washed their hands after handling chicken, except for Nils (74 years, Elderly households, rural, Norway) who did prepare a pre-cooked and pre-cut chicken fillet, which needed no preparation by hands. Few seemed to reflect much on why they rinsed instead of washing their hands. Still, all told that it was important to wash their hands after touching raw chicken. A few participants explained that touching raw meat necessitated washing hands, but preparing vegetables only needed a hand rinse. Thus, concerns about risk played a part in when to wash and when to rinse hands. Meanwhile, grease and stickiness seem to cut across. During cooking, a few of the research participants either forgot to wash their hands after handling raw chicken and before preparing salad, used the wrong towel to dry their hands, used their mobile phone before and after washing hands or were interrupted in some ways or another. Meanwhile, many research participants avoided using their hands and fingers after handling the chicken with various performances for instance using the elbow to turn on the tap, using the pinkie to open drawers or pushing buttons or avoiding contact with other objects or persons by incapacitating the arm in outward position.

## PART FIVE: CONCLUSION

## Chapter 5: Discussion, concluding reflections and future research steps

This report is part of the H2020-funded project SafeConsume; a transdisciplinary and multi-actor research and innovation project with the aim of investigating the link between consumer food handling and risk of foodborne diseases in Europe. It reports the main findings of WP1. To recall, its aim is to contribute to an in-depth, detailed, empirical and nuanced analysis of how food is handled in everyday life in five European countries: France, Norway, Portugal, Romania and the UK. The overall research question that drove the theoretical and empirical activities conducted in this work package is how food is handled in safe and unsafe ways from retail to fork in 75 European households. It addresses consumers' food practices involving critical handling of food across five stages: food procurement, transportation, storage, and cooking. These stages all involve socially shared mundane activities carried out in the everyday lives of European consumers.

The empirical work focused especially on two food products - poultry and raw vegetables, and three study groups - young single men, expecting parents or families with infants (here called young families as shorthand) and elderly households. Data collection and analysis served to grasp how food was handled in these different study groups during shopping, transportation, storage and cooking in everyday life. A second focus of the report was to review how safe or unsafe food handling varies between study groups and across national food cultures. A third focus was to study how food handling differs between rural and urban households and how social, economic and material circumstances affect safe food handling.

The research design involved an ambitious and challenging transdisciplinary approach wherein researchers from different scientific disciplines (social sciences and microbiology) worked closely together and created a shared conceptual model for studying consumers and food risks. The conception of this model took many hours of debate and collective interdisciplinary workshops where ideas, research expectations, concepts, methods and research tools had all to be brought together into a negotiated common language. The highly innovative and original transdisciplinary model that emerged from these fruitful discussions integrated HACCP analysis and theories of practice (ToP as shorthand), and defined as the main research objective the exploration of "critical consumer handling" (CCHs) events.

This report concentrates on the critical consumer handling of poultry, vegetables and fruit from retail to fork, following the defined critical handling steps (see diagrams in the introductory chapter and at the start of the specific chapters): 1. Shopping and food choice of poultry and fresh vegetables and fruit, 7a) Washing fresh vegetables and fruit

(before handling raw poultry), 8a) Handling and preparing fresh vegetables (before handling raw poultry), 5) Handling and preparing poultry, 6) Cooking poultry, 7b) Washing fresh vegetables and fruit (after handling raw poultry), 8b) Handling and preparing fresh vegetables (after handling raw poultry). We focus on these steps of food handling and the socio-material contexts in which these take place in everyday life.

The innovation of this analytical model resides in the achievement of moving away from individual models of human behaviour and to stress instead that food handling is collectively shared by groups of individuals and embedded in socio-technical structures which vary between national borders. We thus focus on how critical food handling is performed – what our research participants do – and how this reflects patterns of socially shared ways of handling food.

To implement such an ambitious model we draw on theories of practices, which emphasise the practicality of social life, comprising both individualistic and structural approaches to social action. Attention is given to the tacit and unconscious nature of much of human behaviour and to how repetitive and routinised forms of actions dominate much of the work around food in everyday life. The practice theoretical approach employed in the analysis combines, in a groundbreaking manner, natural and social sciences, by concentrating on how beliefs, competences, actions, bodies, pathogens and material infrastructures are entangled in producing or reducing risk of exposure to foodborne illness.

The conceptual model was operationalised by a combination of methods, hailing from social sciences and microbiology. These methods and research tools obliged us to accommodate challenging requirements rooted in different epistemological traditions of doing science (e.g. objectivism, constructionism, and subjectivism). Although there was a fruitful collaboration between the teams of social scientists and microbiologists of WP1 and WP2, there were also challenging dilemmas that are common when conducting transdisciplinary research (more below).

Fieldwork wise, 75 households and their food handling practices were observed during four food handling contexts in private homes: shopping, transportation, storage and cooking. The fieldwork has resulted in rich ethnographic work on kitchens, cupboards, fridges, freezers, in cars, buses, walkways and food stores, and includes video footage, photographs, interviews, field notes, and also samples of microbiological material and fridge temperature records.

In order to present the results, the report was divided into four main parts, which follow the analytical objectives of the project. Part 1 addressed the theoretical and methodological approaches in more detail; Part 2 offered an analysis of the diversity amongst the participating households of each country, taking into account daily

routines and socio-demographic contexts and also how these factors affected food practices, as well as research participants' concerns and experiences of foodborne illnesses. Part 3 entailed the various ways of organizing and performing shopping, transportation and storage. Finally, in Part 4, the different ways research participants prepared a chicken dish (from raw chicken) and a fresh salad, was analysed, taking into account the cooking order, kitchen tools employed, skills and competencies displayed, beliefs and risk perceptions offered about food preparation, together with the ways research participants determined the doneness of chicken.

In what follows, concluding reflections for each part are presented, and then future analytical steps and activities are addressed. Moreover, links with other WPs are also taken into account in order to contribute to the development of future tasks, design tools and activities. Thus, the report has a double goal, serving both as a scientific product and as an important bridge to the other WPs.

### Concluding reflections

#### *Part 2: households, food practices routines and perceptions of foodborne illnesses*

In Part 2 of the report, it was shown that household routines are very much shaped by family type and composition, corroborating a large body of social scientific literature on food and family dynamics (e.g. Cappellini et al 2016; Charles and Kerr 1988; DeVault 1994; Jackson, 2009; O'Connell and Brannen 2016). Routines varied between the three study groups. Interestingly, small differences were observed across the five countries, which show how food practices are embedded in shared structural and stratified societal divisions (family status, gender, work status, housing conditions, income, etc.) that currently exist in European societies. This also corroborates that individuals have some food choice discrimination but a large proportion of what, how, why they shop, eat and cook is orchestrated by structural and socio-material constraints and opportunities that should be taken into account seriously when designing instruments and tools to improve consumers' food safety in European kitchens.

To illustrate some of these structural constraints it was shown that the daily life of young single men is shaped by work routines and, at times, by their student stage in the life course. Leisure and sport activities were also important. These research participants were often living on their own or in shared accommodation, which was a tendency in several European countries and due to the challenges young people experienced of accessing the housing market. They tended to take full responsibility for the tasks of food work and cleaning. Although in France and Portugal, there was equal responsibility among housemates when they lived in shared accommodation, in Norway, Romania and Portugal some young single men also received foods or homemade dishes from their families, saving them from cooking on a daily basis (e.g.

they reheat food in stoves or microwaves). In this study's sample of young men, a concern with health and diet, the importance of body shape, fitness and physical activities, were common. There were some examples across the different countries, but this pattern was especially visible in the UK sample. Thus, food preferences and dietary requirements underline the concerns of this group about nutrients, carbohydrates and fats.

Young families are often composed of a couple and small children (there were also some couples expecting babies and on parental leave). Their daily routines were highly influenced by balancing work and family life. A structural pattern across all countries was visible that appears to have changed very little across decades: women still carried the main responsibility for cooking in the household (19 out of 25 young family households across the 5 countries reported that women were in charge of cooking; 3 out of 25 reported that the man carried primary responsibility). Shared responsibility for cooking appeared in countries like France, UK and Norway, while in Portugal and Romania cooking was primarily done by women (very few men in these two countries reported to be the main person responsible for food preparation). More sharing of responsibilities in the family appeared across the countries regarding other food work (cleaning, shopping, storage, setting the table, etc.). When the tasks were shared, the partner often assisted in shopping, transportation and carrying heavy bags. In Portugal, all the women in young families received help from their partners for cleaning, shopping or storing food; a feature that was far less in evidence amongst elderly households, where women have traditionally been in charge of domestic chores and men are kept away from food work.

Expecting mothers were concerned about cured meat, raw fish and undercooked red meat (in Portugal, there was also concern with salad, raw vegetables and eggs). Some young families referred the financial matters as important (there was a concern with buying cheaper products in large supermarkets especially in the samples of France and Romania).

In general, elderly research participants were retired. The daily routines were no longer determined by working life. Due to mobility constraints and difficulties, some elderly research participants living alone were helped by their families in food provisioning. There was a certain degree of concern with food and health issues due to age. Some research participants reported having some health problems (e.g. high blood pressure, cholesterol and diabetes).

A common pattern in all countries was the mother as the main source of cooking knowledge, skills and competences. In all countries, cooking knowledge was primarily transmitted by the mother (more than the school, friends or other sources of influence). Yet, in the case of young single men, living outside the parental home

brought important changes in food practices. Similar changes were experienced by a few elderly men with a rural background (e.g. Portugal) who had left their parent's house when young to work in the city, and had learned how to cook on their own. Also, young families, at the beginning of a married life or the birth of a child, mentioned that new eating habits and ways of cooking had to be learned to keep a healthy and normal pregnancy. In this group concerns with food safety and food hygiene were particularly visible.

Research participants expressed concerns around food safety issues and revealed some other food anxieties. Corroborating recent social science literature (Jackson, 2015), food concerns were many and complex, and while some were explicitly linked to food safety, others were associated with quality, preferences and ethics. Some concerns were related to treatment of food at home, while others were rooted outside, for instance, in production methods. However, concerns are intertwined with and affect each other. Focusing on food practices at home, concerns revolved around storage, food preparation, personal and kitchen hygiene and cleanliness. However, such concerns varied across countries and study groups. For example, elderly households in the Norwegian sample were very concerned with the proper way to store food whereas all research participants in Portugal were concerned with reheating food and treatment of leftovers. Kitchen hygiene was also a concern among Portuguese households, while the UK households reported to be 'unnaturally concerned'. While some food products are considered risky in all countries - fish, seafood and meat - there are also differences: chicken was mostly perceived as a risky food in the UK and Norway, whereas in Portugal, poultry meat was considered less risky than red meat. In Norway, red meat and cheese were considered to improve with more maturation time.

Regarding eggs there were also contrasting views between the Norwegians and the remaining countries. In Norway, research participants believed that eggs last much longer than the indicated expiry date. In contrast, eggs were seen as risky products in the other four countries, especially for pregnant women (particularly highlighted in Romania). Moreover, in Portugal, a float-test was mentioned by participants to check if the eggs were still good when they were uncertain about the expiry date, one of the tricks that is passed on from generation to generation. The differences in perceived risk between countries may reflect differences in the real risk, as eggs in Norway do not contain *Salmonella*, as opposed to other countries.

The Romanian, Portuguese and French research participants also mentioned yoghurt as a food product they were careful with. However, the degree of caution varied among the participants. While some fully trusted the expiry date, others would rather use their senses to evaluate whether it could be eaten or not, and some would eat yoghurt past the expiry date themselves but not feed it to their children. This corroborate social scientific literature where children are described as often being especially guarded

from potential food risks by their parents and other guardians (e.g. the risk of starving in an economically struggling family; the risk of getting bad quality or unsafe food). Romanian and Norwegian research participants preferred some washing routines on fruits and vegetables, but Portugal is the only country that referred to lettuce and fruits as risky products and were particularly careful with washing them.

Research participants mostly said that they had never been sick from food they had made at home. They generally perceived homemade food as safe food, and food eaten outdoors (e.g. in restaurants) or collected from shops (e.g. take-aways) as food that could potentially be unsafe. This finding may also reveal that households felt reasonably confident about their skills and competencies in producing safe food for themselves, families and children. If someone got ill from food produced at home, it was not attributed to the cook and their food preparation practices, but instead to the ingredient that had been brought home from the outside. Home is a secluded safe space, while the outdoors is a space of potential contamination and unsafety. In WP6, we detected similar findings when conducting research with school children and teachers.

Knowledge about food safety and hygiene was gained from several sources, with the family as an important source. Norwegian elderly households reported to have learned about food safety in primary school, while in Portugal nobody stated having learned about this topic at school (the exception were general bodily hygiene practices, like washing hands before eating). Apart from the school and the family, other sources of knowledge reported were the media and the work context (e.g. professional knowledge). Women considered pregnancy to be an important stage in their lives to improve knowledge about food safety.

### *Part 3: shopping, transport and food storage*

We conclude that shopping routines varied considerably among research participants. Participants chose a variety of food outlets to get food from, namely big supermarket chains (where discounts and value-for-money are important shopping criteria); small supermarkets in the high street for convenience; organic supermarkets to get chemically free, environmentally sound and healthier food, and local markets, small groceries and farm shops for some particular products, like fruit and vegetables, meat, cheese.

The tour research participants took during shopping trips inside supermarkets varied across countries. There were households where products were selected in accordance with the shop layout and organization (mostly in Romania, France and the UK), while other participants displayed awareness of the importance of maintaining the cold chain and prioritised getting the dry foods first and the frozen, fresh and chilled products last.

Making shopping lists was not common across countries, only very few research participants did this. Households often used the shop's carrier devices and some used their own reusable bags. Young families and elderly households faced some challenges during the shopping with heavy bags or baby trolleys.

Several research participants across all countries showed preferences to local and national products. However, this did not mean that they could necessarily afford them, as these tended to be more costly (e.g. in the UK and Portuguese markets one can find Spanish or Moroccan produce at lower prices than nationally grown foods). There was lack of trust in supermarket's retailing practices among some participants (e.g. suspicions of swapping expiry date labels were expressed in Portugal) and in low cost products. The price of products was an important factor in shopping routines, especially in Romania. Expiry date labels when choosing food products were particularly important in Norwegian households. In Portugal and the UK, savvy research participants were aware of retail practices in stocking foods on shelves and they would get products from the back of shelves where foods with longer shelf life were stored.

Criteria for buying chicken varied between countries. The reasons mentioned were linked to quality and freshness, but also with practical issues like the way research participants wanted to cook the chicken. For example, in the French sample the provenance of chicken and chicken breeding conditions were very important and there was clear preference for nationally-bred chicken. On the other hand, participants in Romania said that they chose chicken according to the dish they wanted to prepare, demonstrating that production and consumption arenas were profusely interlinked and should not be looked at separately. In both samples, there were households eating home-raised poultry. In Portugal, although research participants did not raise chickens themselves, they would sometimes get domestic chickens and eggs from their close and extended social networks (e.g. family, friends and neighbours).

Research participants' preferences for purchasing salad, fruits or vegetables were also diverse. For example, in Norway most households bought packed salad whilst in Romania, only one participant bought this. This may reveal both consumers' preferences but also the diversity of retail practices in each country and, importantly, the penetration of convenience food in retail markets that is contrasting across Europe (Jackson et al, 2018). Visual and sensory clues are important factors for choosing fruits and vegetables with some households mentioning that pre-rinsed lettuce or green salads are easy to handle (in some countries the rinsing treatment comprises a disinfection with chlorine and it might reduce the presence of bacterial pathogens). However, in Portugal some research participants washed pre-rinsed packaged salads

as they did not trust the washing process performed in industrial factories of bagged salads.

Considering food transport we can highlight that many households used the car made short trips to the shop(s). Clear exceptions were the Norwegians, who more frequently walked or cycled, and a few elderly households in Portugal, who were caught up in traffic jams at the end of the day. Using cooler bags for fresh products was not a common habit among research participants but a lot used reusable bags (fewer did so in Romania and Norway). Using reusable bags has become more popular with plastic bag taxation measures implemented in some countries (e.g. Portugal, UK). Only a few households expressed challenges in relation to food transportation. Some elderly households and young families in Portugal and a few households in France referred to difficulties relating to carrying heavy bags.

Regarding food storage, important differences and similarities across countries could be found. If we consider the places where food is stored at home, some common patterns among research participants were found. The main places for storing food at home are fridge, freezer, cupboards, pantries, kitchen drawers, cellars, countertops, kitchen table and cooling cupboards. In most cases, unpacking food was a priority when households arrived home from shopping. However, there were some households in the Portuguese sample who were caught up doing other tasks before storing the food when they arrived home (e.g. attending to pets, chatting with researchers, preparing a drink and washing the dishes).

The data did not highlight specific patterns among the three groups of households, or between countries, regarding food storage in the fridge. In the Romanian sample, it was common to store food in the original package after being opened, but in France, research participants unpacked food from their original packages to store them in the fridge. On the other hand, a common pattern between countries was keeping opened canned foods in the fridge. The storage of eggs also illustrates differences between countries. In Romania and Norway, all households kept eggs in cool places (mostly in the fridge), whereas in Portugal, UK and France, there were some households who stored eggs outside the fridge. Indeed, one Portuguese participant reported that eggs spoil in the fridge. These are all interesting findings that complicate simplistic understandings on food and trust. For example, it is interesting that in Norway, despite Salmonella being eradicated from eggs, all participants nevertheless stored eggs in the fridge, whereas in Portugal, where Salmonella can be a problem, especially in non-industrially processed eggs, some research participants did not store eggs sourced from domestic hens in the fridge. The general survey on food safety from WP3, plus the add-on survey on eggs for Portugal, can perhaps give further insights into this complex topic of food trust and risk perception, and its cultural variations.

Most households kept leftovers in the fridge, but there are different ways of storing them. Portuguese and Norwegian households tended to keep leftovers inside plastic containers with the lid on; Romanian research participants often stored leftovers in the original pot in which they had cooked the meal. The use-up of leftovers was very common among Portuguese households: here it was common to take the previous meal's leftovers to eat at work the following day. According to Schmidt et al. (2018), this is a new habit inherited during the economic crisis. There were also some French households who prepared meals in advance.

### *Part 4: preparing chicken and salad*

In Part 4, we showed how handling chicken varies across countries. All the Portuguese households in the sample bought the chicken fresh on the day of cooking, while in the other countries, several households bought it in advance to the observation visit. One important finding in this section is that downstream practices in research participants' kitchens are also influenced by what happens upstream in the retail context. The articulation between consumption and production is important to take into account and consumers should not be targeted on their own in the challenge to shift food practices towards greater levels of safety. There needs to be concerted action across all sectors: the market, state, communities and households. In order to be more effective in changing food safety practices the focus should be on the social organization of consumption and not on consumers only. As Evans et al (2019: 23) put it: "This includes technological change, regulatory change, and changes in supply chains as well as changes in consumer behaviour".

To illustrate the previous point, in all countries, there was a preference for shop bought chicken, and especially, pre-packaged chicken. Research participants also mostly used fresh raw chicken, with some – e.g. in Norway, France and the UK – using chicken that had been frozen and defrosted prior to cooking. In France and Portugal, chicken was also bought in local butchers, and could be wrapped in a combination of plastic bags and paper wrapping. In Portugal, the butcher was often asked to remove the skin and trim the wings, and this was mostly for health concerns. One participant in France and one in Romania cooked a home-reared chicken. The level at which chicken was prepared before the point of purchase influenced the ways research participants handled the chicken at home, the amount of preparation required and the way it was cooked.

Practices of freezing and defrosting were discussed with some households. Research participants in France, Norway, UK and Romania bought raw chicken and divided it in smaller portions to freeze for future meals. There are some variations regarding the methods used for defrosting chicken: some took it out of the freezer and put it on a plate in the fridge (Norway); some placed it inside a freezer bag; others out it outside the fridge to defrost (France).

Regarding the analysis of critical consumer handling (CCHs), the process of unpacking chicken, and the materials and tools used, concentrated mostly in two steps: the opening of the package of raw chicken and the movement of the chicken from the package to the kitchen environment. In these processes, research participants used a mix of different tools, such as knives, scissors, kitchen paper, but also hands and fingers. In Portugal and Romania, there was a tendency to open the package with a knife and take the chicken out with the hands.

In Portugal and Romania, the data also highlighted a tendency among households to wash chicken (this was not observed in the other countries, but also see the WP3 results on this). The Portuguese study suggested that washing meat is a common practice in this country, and this was due to the lack of confidence in the food safety system. However, variations in trust existed depending on the retail outlet. If the chicken was bought packaged in the supermarket then some research participants did not wash it, as the meat was perceived as ‘clean’. However, if the chicken was bought directly from the butcher, then participants washed it at home because they saw the butcher handling the chicken and believes it to be dirty [*out of sight, out of mind*]. Thus, in the Portuguese case, visible retail operations triggered concerns regarding chicken safety, whereas invisible backstage retail operations reduced safety concerns. Romanian research participants usually referred to the action of washing chicken (one participant even used a sponge and detergent) as a habit transmitted across generations.

We also analysed the steps taken after unpacking chicken (e.g. trimming, cutting and seasoning) and there are differences within and between countries related to cultural features, and to socio-demographic differences between the study groups. In France, most elderly households who had bought whole chicken did not cut it to cook, but among Portuguese and Romanian research participants, this was a common practice. On the other hand, in countries like Norway and UK, it was common to see chicken as a risky food (more so than in Portugal and Romania) and this had consequences for the selection of chicken in the shop, and consequently, for how consumers handled chicken.

In relation to analysis of critical consumer handling (CCHs) and considerations of cross-contamination, the order in which the meal is prepared and cooked (in our study, this was the order with which the salad, vegetables and chicken were cooked) is very important. Considering the total number of 75 households in this study, most first cooked the chicken and then prepared the salad. Among 65 households this sequence makes sense because heating the chicken usually took longer than preparing a fresh salad, and the salad was made in the period during which the chicken cooked. This may be a concern food safety wise, as this particular sequence increases the risk of contamination of campylobacter pathogens to vegetables and salads, if inadequate

food hygiene practices are performed during the process (e.g. not washing hands, tools and equipment between handling chicken and handling salads).

The analysis considered other tasks intermingled with cooking and how they may influence this process. These varied according to the study group but also the type of meals prepared (whether these involved more or less time, ingredients or products, or different actions, such as cutting or peeling). The ways of heating the chicken (e.g. boiled, roasting or frying) influenced the time available to do other tasks. For example, cooking a whole chicken in the oven is a preference for the elderly households in France. This option gives them time to do activities in rooms other than the kitchen or, as in some cases, to garden and pick vegetables. Yet, using a cooking robot like Thermomix that speeds up food preparation also allows households to insert other tasks while the machine is working, coordinating in a relaxed but skilful way, rhythms and temporalities between technologies and humans.

Important differences in salad and vegetable preparation are closely linked to the previous stages of food handling and the food chain, that is, how foods arrive in household kitchens (what shape and form). These are locked into the ways the retail market is organised in each country. This is an important finding, because many (unsafe) practices performed at home are not under the direct control of consumers, but are instead profoundly embedded in the ways the food supply chain is organised. This is another structural constraint important to take into account when offering food safety recommendations to consumers.

There are differences between countries regarding the type of salads and vegetables available in the food retail market for consumption (amount and package). This significantly influenced the choices made by consumers and also the unpacking process. In Romania, all research participants bought loose vegetables and all but one bought pre-washed salads. In Norway and in the UK, participants bought different types of vegetables wrapped in plastic, and in the UK, a tendency for buying pre-washed salads was observed. In Portugal and France, households bought packed and pre-washed but also unpackaged salads. In France, some elderly households also harvested and ate their own salads. The unpacking process is easy and most households use only hands to do it.

The type of salads and vegetables bought also influenced the washing process but here there were cultural and social variations. In Portugal and France, some households bought pre-washed salads but they still preferred to wash these at home, which may reflect concerns with toxoplasmosis (in the case of pregnant women) or lack of confidence in industrial processing practices of bagged salads. Some French and Portuguese research participants used, besides water, other products to wash salad, such as vinegar. One Portuguese young family used a commercial disinfectant.

In all five countries, most research participants who bought unwashed salads, washed these with water at home, although different washing practices were used alongside this process. The data also suggests different cultural patterns across countries: In Norway and the UK, research participants usually washed salad with cold running water, and in Portugal, France and Romania, mixed techniques, including running water and washing in a bowl full of water, or a mix of both, were observed.

The reasons expressed by research participants in all countries for washing salad and vegetables were quite similar. One group was concerned with the presence of insects or some kind of dirt; another group was concerned with the existence of bacteria or some kind of pesticides; and there were also some participants worrying about salad leaves and vegetables having been handled by a stranger in the supermarket before purchasing.

The analysis of preparation and cooking of vegetables and salads (including: peeling, chopping and seasoning), point to cultural differences across countries. Romanian and Portuguese research participants usually prepared salads with only few vegetables and with simple seasoning and dressing. In Portugal, dressing commonly consisted of only olive oil and some vinegar drops, whilst in Romania, sunflower oil was used. Norwegian participants mixed different types of vegetables to prepare salads, and generally, made more of ‘a meal’ of making salads.

The uses of tools during the handling and preparation of vegetables and salads was also underlined. Tools (e.g. knives, scissors, spoons and bowls, but also hands) are made from different materials (e.g. wooden, plastic) and have several roles in different actions and steps (e.g. unpacking, cutting and peeling). Their interaction with other kitchen equipment (e.g. sinks, kitchen surfaces) and utilities (e.g. water) was also highlighted in this report and these factors are all important in analysis of cross contamination, the spread of pathogens (e.g. Norovirus or Toxoplasma) and on safe food handling.

In the UK, it was common to use different chopping boards for vegetables and meat, while in Portugal and Romania, research participants often used the same tools for handling these foods. Encouraging consumers to buy different chopping boards or providing more information to teach consumers how to use different chopping boards may be considered. One participant in the Portuguese sample with a professional background in the food catering business, who showed ample command and good articulation on food safety issues, did not use different chopping boards for meat and vegetables, but also did not mix vegetables with meat. There may be other options beyond encouraging consumers to buy different plastic chopping boards, also because plastic is a sustainability problem that may deter some environmentally concerned

consumers from this practice. Thus, it is important to attend to different consumer priorities and considerations when making food safety recommendations.

The analysis of visual data suggests that in Norway and the UK the kitchen space and cooking equipment are larger than in Romania. In this country, there were two elderly households without running water inside their home.

The combination and interaction of all these factors points to some differences across the 5 countries, but also between households. Thus, macro structural factors varied from country to country, and the socio-demographic profiles of research participants (e.g. age, level of education, income, occupation, and for some countries, whether the household lived in a rural or urban area) had implications on steps and actions performed in food handling processes and influenced food safety practices. This discussion is also important in particular contexts, as underlined in the WP1 report. For instance, disabled people may face quite specific barriers and challenges in handling and cooking food, with consequences for safe food practices. One relevant example was discussed by the Portuguese team.

Variety in heating chicken also pointed to cultural differences between countries. In Norway, for instance, the vast majority of households (14) fried chicken in a pan and in the UK, this was also a common method of heating (8 households did so). In France, more than half used the oven, robot or micro-wave (9 households) and 6 households in the UK cooked in the same way. This option was not very common in the other countries: only 5 households in the sample from Portugal, Norway and Romania chose this way of heating chicken.

Cooking chicken and the making of salads were by most research participants done at different times. Only 16 households across the countries prepared both simultaneously. Among these, it was common to fry the chicken. Because this is a faster method for cooking chicken, we speculate that it may be easier to do both at the same time. However, other activities were also carried out during the cooking process: one fourth of the total number of participants performed other actions or tasks, such as cleaning or tidying.

The comparative analysis of the 3 study groups suggests that multitasking like this is particularly evident in the young family households. Across the 5 countries, these households conducted several roles at the same time: cooking, doing other domestic works, and family activities, such as taking care of the children. Amongst the young families, in 10 of the 25 households care of children while cooking was observed. In some households, this responsibility was shared by the couple: 8 young families across the countries, but most women cooked while their partner took care of children (7 young families). On the whole, the time dedicated to cooking was shared with other

family responsibilities and this may have consequences and implications for the safety of food practices.

A common pattern across the countries was that research participants often used more than one method for checking to make sure the chicken was cooked properly. Understandings of what properly cooked chicken is varied and were informed by: previous experience; the prescribed time in a recipe book; and sensory cues (visual, texture, smell and taste). If blood was evident upon checking, this was a sign that the chicken should be cooked for some more time; if the meat was white, this was a sign that it should be removed from the pan. If the meat separated from the bones and was tender, this was taken as a sign that it was properly cooked, and the same counted for when the meat smelt good. Thus, participants showed great care when cooking chicken and, contrary to other kinds of meat (red meat in France and in Portugal, for example), there was a strong belief that chicken should be cooked properly and not left medium rare. Importantly, what was understood by properly cooked chicken may differ from the microbiological understanding of what the safe temperature is that chicken should reach for it to be cooked properly and removed from the pan. It is important to note that hardly anyone used a thermometer to check the temperature inside the chicken.

### Future research steps

In the report, several food practices and themes have been left out. This is a consequence of constraints on our time to analyse all the materials and in view of the fact that this is already a large report that was cumbersome to manage technically. We have here included an exemplary discussion of the sort of topics that the team would like to develop further in the future. Further research steps will revolve around five important goals:

#### *Extending the analysis on food practices and research topics*

In this report, we mostly focused on chicken and vegetables/salads. However, in the data collected, there is scope to analyse deeper the beliefs, concerns, skills, sayings and doings regarding other types of food (e.g. seafood and fish, cured meats, eggs, cheese, ready meals, berries) that are of major relevance to sources of food borne illnesses.

In this report, we have also offered some insight into the kind of topics we would like to develop further. Chapter 4.5. on washing hands, for instance, explores the ways Norwegian, French and Romanian research participants washed their hands while preparing chicken and salads. Thus, the chapter offers an account of when and how hands are washed, how often, and participants' justifications for doing so. The chapter is meant as an example for researching the contextual and sequential nature of hygiene work in kitchens, focusing on hand-washing. Although it was just an exploratory exercise, it has already advanced interesting similarities and differences between the

three countries. The similarities across the three countries are the need to wash hands because of the greasiness of chicken. In Romania, this was associated with dirtiness. However, it was not common among French and Romanian participants to wash or rinse their hands when handling chicken; very few research participants washed their hands after touching raw chicken. Still, when they did wash their hands, they tended to rinse them. The reasons were to avoid the greasiness of chicken and not the potential cross contamination of pathogens associated with food safety. In contrast, in Norway, with the exception of one participant, all washed or rinsed their hands after handling chicken. The reasons were a mix of cleaning away chicken greasiness and food safety awareness. Still, very few seemed to reflect much on why they rinsed rather than washed their hands. An important distinction emerged when a few participants explained that touching raw meat necessitated washing hands, when preparing vegetables only needed a hand rinse. In all three countries, the little finger had an important function: it was used to avoid touching too many things with their full hands while cooking. Yet, in Norway research participants were slightly more creative in such bodily techniques: some used the elbow to turn on the tap, others used the pinkie finger to open drawers or pushing buttons and avoided contact with other objects or persons by incapacitating the arm in outward position. The use of towels and touching other objects while cooking (e.g. mobile phones, timers, and recipe books) is another interesting topic to explore further. In the following, we will give an illustration of a research software tool that can expand and sophisticate the sequential analysis of cooking, by attentiveness to the dynamic movements of visible bodies, foods, objects and invisible pathogens in the kitchen. The advantage of this software is also one of facilitating transdisciplinary data integration using both qualitative and quantitative analysis of video data.

### Visual Data and Risk *Behaviour* Map: improving and developing transdisciplinary research tools with the aid of software Observer XT

To recall, during the cooking observation, we video recorded the preparation and cooking, by research participants, of chicken and a salad. We filmed mainly hands and their movements. In every country participating in the fieldwork, chicken and salad were at the core of our observations, as they may contain pathogenic agents, potentially responsible for foodborne illness. In addition to these observations, and during the same sessions, microbiological samples were taken from different objects in the kitchen (e.g. work cooking surfaces, cutting boards, raw ingredients namely chicken and salad, handles and sink) before and after food preparation. The microbiological analyses tried to determine possible cross contamination between pathogenic agents and utensils, surfaces, etc. The project targets pathogens like *Salmonella*, *Campylobacter*, *Listeria* and *Norovirus*. Microbiological samples were analyzed later, in the laboratory. The questions that challenged our teams were: How to transcribe these observations in an understandable way for both microbiologists and social

scientists? How can we develop an analysis of consumer practices using the video data? How can we identify consumer practices that can lead to foodborne illness?

After the fieldwork, the research team inserted data in an excel sheet called the Risk Behavior Map (RBM), where every line corresponded to an observed action or discourse about action. The Risk behavior Map will be published with open access when the SafeConsume project is finished (April 2022). It allowed us to describe the risk taken at each action by each research participant, the knowledge used for these actions, skills needed, and the objects and materials used (following a ToP analytical framework). More than 10 thousand entries were inserted across the five countries in the RBM. This data set allowed us to deconstruct every action taken and to include the actions in sequential and chronological order. If one action was misplaced it was difficult to shift its position without deleting the data introduced after spotting the mistake. Putting data in a chronological and comparative overview and in a transdisciplinary approach, can be done more easily using The Observer XT. This commercial software was first designed to “conventionally, produce quantitative results that can be subjected to statistical analyses” (Snell 2011: 253). Researchers used The Observer XT software to analyze non-verbal behavior observations, especially personal and interpersonal actions, facial expressions and collateral acts change over time (Tafforin 2013). While studies made on food preparation observations at home focused on consumers’ whole-body movements (Jay et al 1999; Martens and Scott 2017; Torkkeli et al 2018), the methodological analysis to be developed in the future will focus on the hands and their movements, for instance, for further developing the work on hand washing discussed above and in Chapter 4.5.



**Figure 5.1: Visualization of cooking observation - summarised, The Observer XT**

One of the first tasks for working with this software is to establish a coding scheme. After this, we run the video and click on specific groups of behaviors and their modifiers, when they are happening. At the end of the coding observation, we can obtain a visualization, as a chart, of every action, in time, for one research participant. It allows us to replace in time and in successive order every action, as well as their

frequency and duration, and this is done more efficiently and quickly than the hand coding method developed by Martens and Scott (2017) using Excel Gantt charts. The visualization can show detailed or summarized results, as shown in Figure 5.1.

The Observer XT can be very useful for transdisciplinary work and analyse several observations in different countries. The interest by microbiologists is to easily and graphically spot the CCH (Critical Control Handling) and actions responsible for cross contamination risks. For the social scientist, it is possible to summarise the whole observation represented on a chart and to compare this with the narrative materials collected while cooking or during interviews (e.g. about participants' perceptions of hygiene; of what is considered as good practice; etc.). It offers different and versatile levels of analysis that can be detailed if zoomed in, or as a global overview of practice if zoomed out.

### Consolidating transdisciplinary research analysis

During the fieldwork, data analysis, and report writing, there were several stages of compromise and negotiation between different disciplines and research traditions of analysis and writing. One challenge that emerged was how to accommodate contextualised qualitative data into split sequences of performance into small detached units of observed action. Qualitative analysis of household cooking practices suggests that a number of these 'itemised' steps of observed action interconnect and make only sense when they are observed in flow, as a sequence of actions. The risk of itemizing actions is to lose the context from which the action is removed. For example, the ways of checking for chicken doneness often follow having to look at the colour and then tasting the meat to judge the texture. The summary tables provided after most of the chapters do not give information about the interconnectedness of the observations and does not translate the complexity and commitment of consumers. For these reasons explanations were given in the summary tables in this report. Meanwhile, the summary table also points to cross-country similarities and differences in the fieldwork study. They also revealed significant gender differences across countries that were more quickly seen through a table. The same is the case for the table that classified the main challenges to safe food handling: inserting the number of people with poor access to water and other material/structural constraints made such challenges more clearly observable. However, some action sequences posed greater difficulty when attempting to classify something in one category or item, because these were slippery and could easily leak to other and different categories, according to the subjective interpretation of the researcher. The reader of this report needs to take this into consideration. Looking for what is more common should also be calibrated against to what is less common, so that we avoid falling into the trap that common behavior is the one that needs to be tackled first. It may be that high risks lie with actions 'less common' performed.

Despite these concerns, the main aim of this report has been to map critical consumer handling based on a transdisciplinary approach combining HACCP analysis and theories of practices. The report provides detailed sets of data on food handling from retail to fork in 75 European households, who were visited on two occasions in the spring of 2018. As such the report welcomes any critical reviews, reuse and reanalysis of the work presented here.

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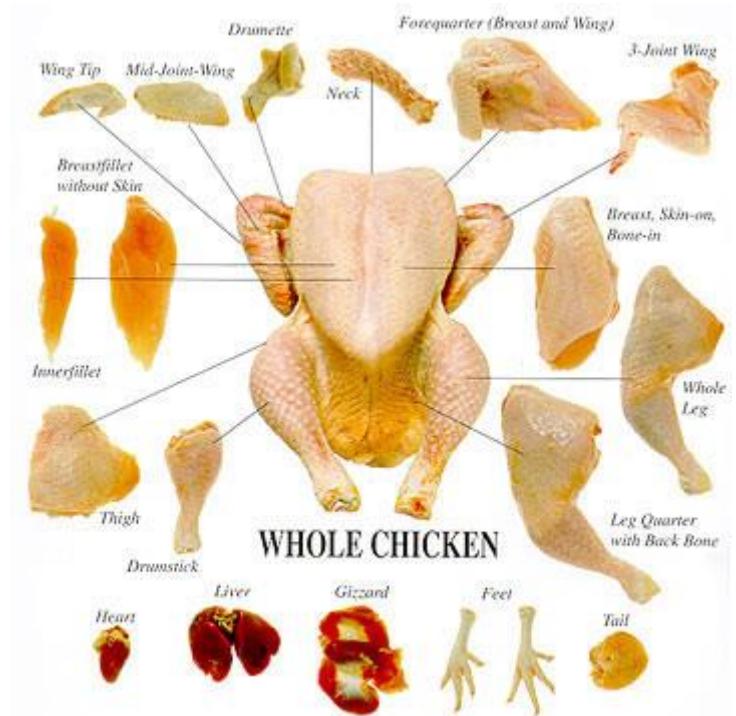
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## Appendix A: How chicken is sold

Modern commerce allows consumers to buy either the whole chicken or parts of it. The possibilities consumers have when deciding which part of the chicken to buy is shown in Figure A.1 and their description is presented in Table A.1.



**Figure A.1. Chicken parts**

<https://spanish.alibaba.com/product-detail/frozen-bonless-whole-chicken-breast-leg-thigh-drumstick-50016660591.html>

**Table A.1. Chicken parts for cooking**

Chicken part	Description
Whole chicken	Chicken with all its parts intact (head, neck, breasts, wings, legs) and edible internal organs (liver, heart and giblets) stuffed in the cavity. Nowadays, chicken without head, neck, claws and internal organs represents a whole chicken too. Consists of white and dark meat.
Poultry half or half chicken	The chicken is split in half lengthwise through the breast and back producing approximately equal left and right sides of the chicken carcass. Both halves consist of white and dark meat.

<b>Thigh</b>	The top part of the leg. Can be sold with or without skin and bone. It is considered dark meat.
<b>Drumstick</b>	The bottom part of the leg only (not including the thigh). Always includes bone. It is considered dark meat.
<b>Leg</b>	The <b>whole leg</b> that includes the thigh and drumstick.
<b>Leg quarter or hind quarter</b>	Half of the posterior part of the chicken including one leg and a part of the back bone.
<b>Unseparated leg quarters</b>	Both leg quarters united by a portion of the back, with or without the rump.
<b>Wing</b>	The wing with its three parts. Also known as <b>3-joint wing</b> .
<b>Drumette</b>	The first segment of a chicken wing. This part is the closest to the body and the meatier one.
<b>Wingette or mid-joint wing or flat wing tip</b>	The middle part of the wing, which does not contain much meat, but is generally moister than the drumette.
<b>Wing tip</b>	The third part of the wing. It is the most distant from the body. Does not contain much meat and is many times discarded. It can be used when making stock to help add flavor to the broth.
<b>Breast</b>	A cut of poultry taken from the bird's breast. It is available bone-in, boneless, skin-on and skinless. When is skinless and boneless is named <b>breast fillet</b> or <b>chicken fillet</b> . The breast is considered white meat and is relatively dry.
<b>Inner fillet or tenderloin</b>	Part of the breast, which is a few centimeters long and about 3 cm or less wide. There are two such fillets in a chicken, and they lie under the main portion of the breast just above the ribcage around the center of the sternum. They are separated from the main breast by filaments. They can come attached to the main breast itself or be separated from the breast in packages of generally four or more fillets.
<b>Forequarter or breast quarter or front quarter</b>	Half of the superior part of the chicken. The cut includes half of the breast, a wing and part of the back.

Breast halves or split breast	The breast that has been split lengthwise, producing two halves. They are available bone-in, boneless, skin-on and skinless. Larger breast halves are sometimes cut in half to provide smaller portion sizes. Consists of white meat only.
Giblets	Consists of the neck and chicken edible organs (liver, heart, and gizzard). May be included inside a butchered chicken or sold separately.
Chicken back	The pelvic part of the carcass, which is basically about 90% skin and bone. If not removed, it includes the pieces of meat that are called the “oysters” (considered a delicacy).
Feet	Part of the chicken lower legs that include the claws. They consist of skin, bones and tendons, with no muscle. Feet are cooked mostly to extract the gelatin.
Chicken paws	Parts of chicken feet including the claws. They are obtained by chopping the feet to shorten the bone.

Depending on where chicken meat is sold, there are different ways to pack the meat (Table A.2).

**Table A.2. Ways to pack chicken**

Method	Description of materials and method	
<b>Warping</b>  This method is performed in butchers' shops or groceries.	Butcher paper	Paper made of pure virgin pulps. Its internal structure gives a boost to the paper's wet strength so that it will not fall apart that easily when it gets soaked in oil or water. Further, with its high tear and burst resistance, this paper helps to prevent bones from breaking through the wrap. There is no wax and polymer coating on the paper. Could be bleached or unbleached.
	Freezer paper	A type of coarse sturdy paper. It features low density polyethylene laminated on one side for strength, leak resistance, and the prevention of freezer burn for up to a year. Maintains freshness both in the refrigerator and the freezer.
	Plastic films	Polyethylene (PE) film currently dominates the meat and poultry packaging market.

		Polyvinylidene chloride (PVDC) films, laminations, and coextrusions are also typically used in the poultry market. Films consist of monolayer and multi-layered coextruded structures. Highly layered films are tailored to create specific levels of barrier properties for meat and poultry packaging: keeping oxygen or ultraviolet (UV) light out and flavors in.
<b>Transparent plastic bags</b>  Performed in some butchers' shops or groceries.	T-shirt plastic bags	The bag acts as an interface between the meat and consumer and the meat and environment, so that it does not get easily contaminated by airborne viruses and bacteria. Butcher plastic bags are strong and durable. A lot of people prefer clear butcher plastic bags instead of having the meat warped in paper so that they can easily recall the perishable content of the package.
<b>Vacuum packaging (VP)</b>  Performed by industry but vacuum packaging machines are available in some butchers' shops too.	Bags made of polypropylene, specifically manufactured for vacuum sealing. Foam trays may be involved too.	By drawing the vacuum and sealing of bags, the air is excluded from the package and the damaging effects of oxygen such as rancidity or discoloration of the packed products are slowed down or not developed at all.
<b>Modified atmosphere packaging (MAP)</b>  Performed by industry	Thermoformed plastic trays with different depths covered by plastic films made of polyethylene, polypropylene or other polymers.	MAP provides alterations of atmospheric gas concentrations in the pack. The main gases used in MAP are carbon dioxide (to inhibit bacteria and moulds), nitrogen (to avoid oxidation of fats and pack collapse), and oxygen (to prevent bacteria anaerobic growth). The shelf life of MAP meat is almost triple than that of meat packed in normal atmosphere.

## Appendix B Transdisciplinary working protocol



## Transdisciplinary observation and interview guide

HACCP themes	Key themes to observe/interview	Checklist and probes
1. Shopping		<p>Aim: To follow the informant when they do their regular shopping routine and to capture challenges of doing food procurement in a safe way in the retail setting.</p> <p>Method: Accompanied shopping with a tape recorder w/discrete microphone and photographs if possible. Take notes and tape-record what the informant says with an inconspicuous microphone suitable for a supermarket environment.</p> <p>Ask the informant to join them during their regular (large) shopping routine. We want to observe them when they are shopping food for the household. Ask them to buy ingredients for a chicken dish, including a salad or other raw vegetable dish. Give the informant a general shopping list, including raw chicken, shellfish (clams, mussels, oysters etc.), ready to eat products (food products from the cooling section) salad/vegetables, fruit/berries and eggs. The informant does not need to buy any of the food products. However, we would like to observe them while they evaluate foods in these categories. If they don't buy food within the categories, ask them to show us what they normally buy (what sort of vegetables, readymade food etc.) We will provide them with a voucher for buying the chicken and raw vegetable dish, which they can use during the shopping observation or later.</p> <p>Follow them where and when they usually go shopping (included different outlets if relevant). Observe what the informant (and accompanying household members) is doing when he/she shops for food. Use a tape recorder and make the informant talk about what she/he is doing. Ask the informant to do the shopping in the way he/she normally does. Ask the informants to talk about what he/she is doing/thinking/considering etc. while shopping.</p> <p>When they are finished and ready to pay, ask the informant to go on a second round where you may ask the questions in the guide which the informant did not touch upon during the first round. Jackson et al. (2004:7) call this method accompanied shopping, which includes telling informants to explain their choices as they shop.</p> <p>We will try to observe shopping and transportation (and if practical and possible also storage) at the first meeting with the informants. Since issues of trust differs between cultures, the need for an introduction meeting before the</p>

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HACCP themes	Key themes to observe/interview	Checklist and probes
	shopping is something each partner has to decide on. You could either meet the informant for a coffee near the grocery/supermarket/food market where they usually buy food or visit them at home.	
	Shopping routine	<ul style="list-style-type: none"> <li>Who participate in shopping and what are their roles? Any particular reason for the different roles? Food safety reasons (e.g. adults are better at evaluating the quality/freshness/reading labels etc.)?</li> <li>How often do the informant go shopping for food? Why that often/seldom?</li> <li>Sequence of picking out products and placement in the trolley/bag: Time/temperature related? Contamination related? Does the informant mention any reason for doing in this way? Any food safety reasons?</li> <li>What other kinds of food does the informant buy? What are their intended use? Are any food safety issues mentioned concerning the use of different foods?</li> </ul>
CCH: PVF1.2.1 Shopping fresh vegetables and fruits	Food choice	<p>For each type of food (raw chicken, berries, vegetables, shellfish, ready-to eat products and eggs), look for:</p> <ul style="list-style-type: none"> <li>The product type/food characteristics that the informant consider to buy (or buys). Get information about preservatives (CCH RTE), irradiated, ready washed (vegetables), ready to put in oven/grill, ready cut. Are these products regarded as safer by the informant?</li> <li>Do they mention any safety issues? CCH, especially fruit/vegetables, egg, mussels/clams</li> <li>Do they use date labelling CCH RTE food? Why?</li> <li>Do they consider the country of origin of the product? How is it informed (labels, informed elsewhere)? Why do they consider this/why not?</li> <li>Do they consider production type (i.e organic)? Why?</li> <li>Trust in certain producers, brands or nations - lack of trust in others. (Make them talk about this) CCH</li> <li>How do they inspect the food products by using their senses; looking, touching, smelling? Make them talk about how they evaluate food through senses. Do they ever taste food in the store?</li> <li>What does the informant think about other people touching the same products?</li> </ul>



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HACCP themes	Key themes to observe/interview	Checklist and probes
CCH: RTE 1.1		<ul style="list-style-type: none"> <li>• What does informant think of reduced price products due to date labelling?</li> <li>• Ask the informant what they look for to evaluate ingredients such as ready-toeat, shellfish, berries, eggs. CCH</li> </ul> <p>Look for “none choices” or foods been put back. Ask why certain food was not chosen.</p>
	Food safety information available	<ul style="list-style-type: none"> <li>• Are there any food safety related information/labelling in outlet or on products?             <ul style="list-style-type: none"> <li>- Has the informant seen it?</li> </ul> </li> <li>• What is the informant’s ideas about possible food safety issues in the store or in other stores?</li> </ul>

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	About the outlet(s):	<ul style="list-style-type: none"> <li>• What kind of outlet? Different ones for different purposes? Own produce?</li> <li>• How is fresh food placed in the shop (fresh cuts of meat, fish, chicken or fruit/vegetables)?</li> <li>• What carrier devices are used? (trolleys, baskets etc.) What do the informant use?</li> <li>• What kind of packaging are used for fresh foods? (plastic bags, paper, cartons etc.)</li> </ul>
2. Transportation	<p>Aim: To follow the informant on their way between shops and home from retail. Having insights from (Brembeck et al 2015) in mind, we aim at capturing if and in what way consumer logistic prevent people from handling food safely.</p> <p>We don't need to follow all the informants. We provide the informants with the temperature logger to put in the shopping bag and kindly ask that it follows the refrigerated food into the fridge. Furthermore, we ask them the questions below during storage or cooking observations. Since transportation may give us the opportunity to ask follow-up questions from the shopping observation and help us building trust, we should prioritize it as long as it is practical and possible. Besides, going home with the informant makes it possible to do the storage observation as part of the shopping and transportation.</p> <p>Photographs and microphone will be used to capture data. An automatic temperature logger will be used to monitor temperature during transportation and storage at home. Provide an envelope to return the logger after 14 days.</p>	

HACCP themes	Key themes to observe/interview	Checklist and probes
	Time and temperature during transport	<p>Note down</p> <ul style="list-style-type: none"> <li>• Time without cooling</li> <li>• Outdoor temperature</li> <li>• Distance between retail and home</li> </ul>

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	Transportation vehicles and devices	<ul style="list-style-type: none"> <li>• Does choice of vehicle(s) depend on the kind of shopping done?</li> <li>• Does the informant avoid buying certain types of food of consideration to temperatures or means of transportation?</li> <li>• Spatial barriers (traffic, pedestrian barriers, challenging public transport routes )</li> <li>• How is food packed and carried? What sort of carrying devise is used? Are cool products put together?</li> <li>• Where are the food bags or other carrying devices put during transportation?</li> <li>• Who participate in shopping and what are their roles during transportation?</li> </ul>
3. Storage	<p>Aim: To capture how the informants organize food in their homes and how food storage routines may prevent handling food safely.</p> <p>Walk-along interviews (Pink, 2007). Ask the informant to show and walk us through the kitchen and routines. Video + photography.</p> <p>Get the informant to talk about concrete foods in the fridge (including “tomorrow’s” meals, leftovers, out of date products, etc.) Get the stories around this food! Take pictures!</p> <p>As a norm, we do this part of the fieldwork as an extension of observing shopping and transportation. However, we need to look into the fridge before observing the cooking as well because it's crucial in the HACCP and the fridge and its contents change over time.</p> <p>Some of the questions and probes below may also be asked during cooking, since a part of the cooking process has to do with putting food in and out of the fridge.</p>	
CCH: RTE 3.1, 6.1 CCH: EGG 4b.1, 6c.1.1	Get an overview of the kitchen and possible barriers to food safety	<p>Food storage</p> <ul style="list-style-type: none"> <li>• Informant shows how food is stored after shopping (arriving-home, packingout and storing-away-practices)</li> </ul>

HACCP themes	Key themes to observe/interview	Checklist and probes
		CCH

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		<ul style="list-style-type: none"> <li>- What foods belong in the fridge? On the counter/cupboards? of egg and RTE outside fridge)</li> <li>- Is it fixed places for certain type of foods? What kind of food an</li> <li>- Storing facilities (fridge, freezer, pantries, cupboards etc.)</li> <li>- Storage devices (boxes, bags, baskets, paper, plastic film etc.)</li> <li>- Are there some food that is more risky than others? What are they and how do you handle these foods?</li> <li>• How long before food is stored in the fridge and what happens to leftovers after dinner CCH (eggs, ready-to-eat)</li> <li>• Ask informant how they determine if food is still edible after storage -    What do they do with food that has expired?</li> <li>• Any food they store longer than others? What reasons? Taste?</li> </ul>	(storage hy?)
	Ask the informant about food storage devices in kitchen	Kitchen <ul style="list-style-type: none"> <li>• Get an overview of kitchen appliances and food storage spaces in the households. Ask the participants to show where they store different kind of food.</li> <li>• What about the cleaning space (sink, tap) and cleaning utensils (cloths, sponge, brush, soaps, disinfectants etc.)?</li> <li>• What kind of cooking equipment (pans, casseroles, knives, cutting boards etc.) do the informant typically use when they are cooking?</li> <li>• Do they say they lack kitchen appliances, is something broken or does not function properly?</li> <li>• Are there any challenges regarding cleaning mentioned?</li> <li>• How does the informant clean their kitchen? Why/why not?</li> </ul>	
CCH: RTE 3.1, 6.1 CCH: EGG 4b.1, 6c.1.1	Time and temperature	Observe how the informant check temperature in the fridge. Ask about the fridge: <ul style="list-style-type: none"> <li>• What is the temperature in the fridge? (display?/ thermometer? - vs calibrated</li> </ul>	

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logger/thermometer from SafeConsume) CCH

HACCP themes	Key themes to observe/interview	Checklist and probes
		<ul style="list-style-type: none"><li>• If there is no display/thermometer in the fridge, how do they know the temperature? CCH</li><li>• What they consider as best/correct temperature CCH</li><li>• From whom and where have they learned which temperature to use • When was the fridge bought?</li><li>• Do the appliances fulfil the households' needs (too small/big, too old, not functioning properly, challenging to set temperatures etc.)? Setting thermometers. Date labelling</li><li>• Ask about length of time food is stored outside refrigerator. Are there any rule of thumbs? Do they ever forget to put the food in the fridge? Tell about what happened to the food?</li><li>• Check if food/leftovers is being inspected and ask about storage routines related to fresh foods and opened packages)</li><li>• What do you do if something has expired? Do you open and smell or taste it before it is thrown?</li><li>• Do you eat something that has expired today? (What? Why?) Do you notice if it says "best before" or "last day of consumption"?</li></ul>
4. Food preparation		<p>When we schedule the second meeting, we will ask the informant to prepare a chicken dish with salad of their own choice - the dish may include more of the study's key ingredients, however we will ask about the ones not used anyway (berries, shellfish, eggs etc.) (see questionnaire). We start the cooking, by looking once more into the fridge. Please look at the storage questions concerning leftovers, temperatures and foods in the fridge.</p> <p>The social scientist will lead the dialogue and the natural scientist may add when it is natural and sample kitchen surfaces and food. The scientist note down questions that will be left for the interview after observation and make sure to monitor physical parameters (temperatures, times, materials) and risky behaviours not foreseen in the HACCP (see appendix for details).</p>

# SAFE CONSUME



HACCP themes	Key themes to observe/interview	Checklist and probes
		<p>Ask the informant to prepare the food the way he/she normally does, and to show us what is usually going on in the kitchen (e.g. let children run in and out, leave telephones on, let pets come and go etc.). We want to record interruptions of any kind!</p> <p>Before the informant starts preparing the meal, we do the first microbiological sample of the food and the utensils that the informant will use. Ask the informant to cut a piece of chicken/vegetables/lettuce...Keep it simple and friendly and continue talking with the informant.</p> <p>The informant will be asked to tell us what they are doing/thinking/considering throughout the session. The idea here is that if they are busy with talk they may perform in a routinized way. However, for some informants talking and cooking at the same time is challenging.</p> <p>Look for and ask the informant question such as "what are you doing... describe it for me... why...? "Pretend I am a foreign, why are you...?" However, avoid influencing the informant and ask simple questions.</p> <p>In Norway, we will use two video cameras, one static capturing the whole scene and one handheld to follow the actions taking place. If you would like to only use one camera, you may, but choose the hand held. After the food is prepared, new microbiological samples will be taken and the informant will be asked to donate his/her used cloth and towel to research. A new cloth/towel will be provided. The informant will also be asked if he/she want results from the sampling.</p>
CCH: PVF 5.1.2 Handling raw poultry	Handling raw poultry	<ul style="list-style-type: none"><li>• Look at what movement between hands, mouth, food, utensils and surfaces. Look for hand-mouth contact and touching other utensils or foods during handling the raw chicken. CCH</li><li>• Look for handwashing during or after finishing the handling of raw chicken?</li></ul>

# SAFE CONSUME



CCH: PVF 6.1 Cooking poultry  CCH: EGG 6a.1	Sampling - before the food is cooked	Ask the informant to cut us a small piece of chicken, vegetable/lettuce for the sampling.  <ul style="list-style-type: none"> <li>• Is this a typical dish or something new?</li> </ul>
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HACCP themes	Key themes to observe/interview	Checklist and probes
	Questions to keep the conversation going:	<ul style="list-style-type: none"> <li>• Do people here have different tasks (main course/salad, dinner parties/barbeque vs everyday dinner, weekdays/weekends, cleaning/dishes and cooking, putting the table, cooking vs caring for children etc.)? What are they and why are they divided like that?</li> <li>• Where does the eating take place (kitchen, living room, garden, balcony, in front of TV)? When and why?</li> <li>• Is the kitchen used for other activities (homework, work, tea, reading, charging cellphones, pets, play, washing clothes, watching TV etc.)?</li> <li>• If open kitchen and living room, any challenges?</li> </ul> <p>If food is stored in other rooms (freezing chest in the cellar/pantries etc.), how does it affect preparing a meal? Do you or other household members walk between rooms to collects food?</p> <ul style="list-style-type: none"> <li>• Who will eat the meal? How many normally preparing for?</li> <li>• Who does the food preparation? Different tasks?</li> <li>• Does she/he check or monitor done-ness for the poultry? How? CCH</li> </ul>

# SAFE CONSUME



	<p>Package opening:</p> <p>Contamination from person handling package</p> <p>Cross contamination from package material</p> <p>Contaminated environmental surfaces</p>	<p>Package opening, look for:</p> <ul style="list-style-type: none"> <li>• Hand-mouth contact</li> <li>• Washing hands</li> <li>• Other hygiene related activities</li>   <li>• Is the package size (family size) mentioned as a challenge?</li> <li>• Are there any physical barriers to open packages? Need to use tools? What happens to the tool afterwards?</li> <li>• What do they do with the package after opening it and where is the food put?</li> <li>• Has it ever happened that a food package was already open when bought? What did they do?</li> <li>• Any food safety concerns mentioned in relation to opening packages?</li> </ul>
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HACCP themes	Key themes to observe/interview	Checklist and probes
CCH: PVF 7a.1, 7b.1	<p>Food handling: Rinsing and contamination from surfaces and other foods, utensils, people or pets</p>	<p>Look for:</p> <ul style="list-style-type: none"> <li>• Cleaning of utensils</li> <li>• Sufficient rinsing of fresh vegetables and fruit CCH</li> <li>• Washing and drying kitchen surfaces / cleaning surfaces after raw poultry handling (cloth/sponge/paper, detergent, disinfectants, hygienic design of kitchen surfaces) CCH</li> </ul> <p>Look for:</p> <ul style="list-style-type: none"> <li>• Hand wash (when, how, how often, how long) <ul style="list-style-type: none"> <li>- Are there soap and towel/paper available in kitchen?</li> </ul> </li> <li>• Handwashing after handling raw poultry? CCH</li> <li>• In what order is the food prepared?</li> <li>• Where is different foods keep during preparation (apart/together)?</li> <li>• What happens to unused cuts of vegetables and trimmings of meat?</li> </ul>

# SAFE CONSUME



CCH: PVF 6.1 CCH: EGG 6a.1 CCH: SHE 7.1	Cooking/preparing  Time and temperature	Look for first, and ask them afterwards: <ul style="list-style-type: none"><li>• How to monitor if salad is rinsed properly? What are you looking for? Are there other ways of doing it? Why do you not do it like that?</li><li>• How to monitor proper heating of chicken (own senses, visually, color, smell/appearance / instrumental e.g. thermometer or sticking to recipe with time/temperature for cooking)? <b>CCH</b></li><li>• Why do you monitor proper heating? What are your aims (taste, tenderness, safe to eat)?</li><li>• Are there any other ways of doing this (using a thermometer, cutting the piece of meat etc.) Why do you not do it in that way?</li><li>• How do other people do it? Give examples of best/worst practices?</li><li>• Has it ever happened that you served undone chicken, when did you notice and what did you do?</li><li>• What happens when you cook in a hurry?</li></ul>
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HACCP themes	Key themes to observe/interview	Checklist and probes
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# SAFE CONSUME



<p>CCH: PVF 7a.1 and 7b.1/ 7b.3</p> <p>CCH: PVF 8b.2 Handling and preparing fresh vegetables and fruits (after poultry preparation)</p>	<p>Washing vegetables (the sequence cleaning and preparation)</p>	<p>Look for:</p> <ul style="list-style-type: none"> <li>• Does washing of vegetables happen before or after handling poultry?</li> <li>• Is the equipment washed in between handling raw poultry and using it for different foods? <b>CCH</b></li> <li>• How do they wash vegetables/fruit: Running water? Bowl/hands, water temperature? Before or after cutting?</li> <li>• How long time do they use for cleaning in between food preparation?</li> <li>• Are there any interruptions?</li> </ul> <p>Look for:</p> <ul style="list-style-type: none"> <li>• Washing / drying /disinfection of surfaces/equipment? How? <b>CCH</b></li> <li>• Washing / drying/ disinfection of hands? How? <b>CCH</b></li> </ul>
	<p>Hygiene</p>	<p>Look for:</p> <ul style="list-style-type: none"> <li>• What utensils are used for the different foods? Are any reasons given for the use of tools. Ask why do you do/do not?</li> <li>• How to clean utensil between uses and how to check that they are clean?</li> <li>• Does informant eat while cooking?</li> <li>• What other activities takes place in between food preparation (cleaning the dishes, telephones, emptying the bin, feeding the dog, caring for children etc.)</li> <li>• How does the informant handle/move about the kitchen infrastructure (taps, fridge/freezer/cooking devices/chopping boards/working benches etc.)?</li> <li>• Who takes part in preparing?</li> </ul>
	<p>Serving</p>	<ul style="list-style-type: none"> <li>• Ask the informant to cut off a piece of chicken, vegetable/lettuce for the last sampling.</li> <li>• Ask how long it normally takes between cooking and serving. Look if different foods are kept together or apart.</li> </ul>

# SAFE CONSUME



HACCP themes	Key themes to observe/interview	Checklist and probes
	Cloths/sponges/brushes	<ul style="list-style-type: none"><li>• Look for any hand washing before eating.</li></ul> <p>Before we leave ask the informant to collect their sponges/cloths from consumers (France will not do this). We thus need documentation on use of cleaning utensils.</p> <ul style="list-style-type: none"><li>• Ask the informant how they use cloths/sponges/brushes (where, when).</li><li>• How often are they changed?</li><li>• How and how often are they cleaned?</li><li>• Do they use detergents or only water for cleaning?</li></ul>



## Background questions

Some of the background questions are formulated as a questionnaire, which the either the researcher or the informant may fill at some point during the two meeting.

### Questionnaire

Who lives in the household?	
Age and gender	
Marriage status	Married
	Cohabitants
	Flatmates
	Other
What type of housing do you live in?	
Type of housing	Apartment
	Townhouse
	Villa
	Other
Rented	Owned
Square feet/m <sup>2</sup> ?	
Size of kitchen? Square feet/m <sup>2</sup> ?	
How long have you lived here?	
Closeness to food outlets? (miles/km or time to walk/drive/public transport)	
About the people who live in your household	
Your daytime occupation	
Your spouse's daytime occupation (if relevant)	
Your parents' occupation	
Your education (kind and length)	
If relevant, your spouse's education (kind and length)	
Your parents' education (kind and length)	



Your or household total income	
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## Food questions

The food questions may be asked during the participatory observations, but make sure it does not influence the performances. (For instance, don't ask about food safety issues when informant is rinsing the salad! Find a more convenient time for questions that are moral in nature.)

1. Tell us about your household - is it full time occupation and busy schedules? How does your everyday life looks like?
2. What kind of area/neighbourhood do you live in? Multicultural or not, urban or rural, white collar, blue collar, mixed? (Could be answered by the researcher if question don't make sense to the informant)
3. Are there any special diet in the household and how does that affect shopping and cooking?
4. Who are responsible for...
  - shopping food in the household
  - for transporting food
  - for storing and organizing food
  - for cooking and preparing (various meals/dishes/foods, weekday/weekend, guests)?
  - for doing the dishes - for cleaning kitchen ...and who helps.

...and in special circumstances, who takes charge and what happens? (Sickness, work-related trips, other situations where the main food provider is not available)
5. What can you tell us about the way you cook?
  - Weekdays and weekends?
  - Your cooking interests
  - Cooking from scratch/readymade food?
  - Taste preferences (yours and family's/household members')
  - Can you takes us through the meals you cooked the last week? What kind of foods, dishes, ingredients, fresh, readymade, cooking styles (boiling, frying, roasting, baking, barbequing, preparation of cold dishes)
  - Do you cook/eat differently in the summer/winter? Give examples?

These next questions should be asked AFTER the observations are finished:

Ask the informants to come back after they finished eating dinner (or another time if that is more practical or the only option).



6. Are there any physical challenges regarding food provision, transportation, storing/organizing food, preparation and cleaning (just moved out, becoming older, being pregnant, disabled, facilities at home/in neighbourhood) that you can think of in your household
  
7. Where did you learn to cook? Tell us about how food provision has changed since you were young? Prompt handling food safely:
  - Do you have any rules of thumbs?
    - o How would you prepare a meal using raw eggs (e. g. mayonnaise or other)?
    - o How do you prefer to cook eggs? Do you eat undercooked eggs (before yolk and white are firm)? **CCH**
    - o If you cook shellfish - how do you know that they are ready cooked? **CCH**
    - o How would you prepare a meal using fruit/berries (e. g. dessert) -
  
  - Do you worry about the safety of certain food products, dishes, cooking styles or eating out? What kind of food? What do you worry about? Who do you worry about?
  - How does your cooking differ from when you were a child - has it changed during various life-changes? Has food safety been improved or not, and why/why not?
  
8. What about berries, do you eat them and how? Picked by you? Bought? Frozen? Fresh? Which fruits/berries would you prefer to rinse or prefer not rinse? Why/why not? Heat or not? Would you rinse fruit/vegetables that are peeled? For instance melons, would you rinse it in water before you peel or slice it?
  
9. Have you ever heard any advises about how to cook and handle food safely? What are they? Where did you hear it? Do you trust the information about food safety form the authorities? Health workers? Media? Friends? Family? What about the supermarket? Or the food industry? Do you trust their advices? Do you trust that the food you buy is safe for you and for your family?
  
10. Have you (or other family members) ever become sick after eating food?
  - What kind of food? When? Who? Where?
  - What did it affect?
  - Changing routines? How, what?
  - Did you seek for medical advices? **CCH:**
  
  - And the other way around, [if there are two or more adults in the household] who does the cooking when you are sick?
  - Have you had to cook when having a typical stomach flu? Did you take any precautions? What were they?
  - If you had no choice but preparing food to others when sick what kind of precautions would you take?
  - Would you feel safe if someone that was sick served food to you? Would you eat it?
  
11. **CCH** What about cleaning? Where did you learn it?



- Do you wash your kitchen surfaces equally, regardless of the situation or are there situations where you want to wash them more (or less)?
- Could too much hygiene do any harm? Could too little hygiene do any harm? Is there a balance and where would that be for you?
- When do you think your kitchen surfaces are dirty and when do you think it is important that they are clean?
- Have you experienced that other people are too concerned about hygiene or too little concerned? Especially thinking about food preparation/eating/serving.
- Some people disinfect kitchen surfaces instead of or in addition to cleaning them - what do you think about that?

12. **CCH** In which situations do you feel that your hands are dirty?

- In which situations do you feel that it is important that your hands are clean?
- Do you wash your hands in the same way regardless of the situation?
- Have you experienced that other people are too concerned about hand hygiene or too little concerned? Especially thinking about food preparing/eating/serving. Or in the shop.
- Could too much hygiene do any harm? Could too little hygiene do any harm, e.g to people or the environment? Where would you say the balance is?
- Some people disinfect their hands instead of or in addition to cleaning them - what do you think about that?

[Those with children]

- Is it easy to learn them hygiene? What could make it easier to encourage children or others to wash their hands?

+ **CCHs** missed during the cooking event

13. Children/vulnerable people: [If they included in preparation of food].

- Do you have any concerns about food safety such as hygiene or that they ingest bacteria (e.g hamburgers.).
- Are there any food that you would avoid serving to your children/elderly because of safety.

If relevant: 14. Tell us

about your pet.

Where does it sleep/stays? Who does the cleaning of the place?

How, where and who prepare pet food? Where is pet food stored? How is it cooked?

Feeding pets while cooking or eating?

## Appendix C French shopping route

Shopping route (blue: fresh dairy products; yellow: frozen products; pink: fresh meat & fish)

Category	Participants	First stop	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th
Young single men	Aurélie n	NA										
	Vincent	Beverages	Pet food	butchery	fresh products (ham, sausage)	Fruit & Veg	Bakery	Fresh Dairy products	Eggs	Dry products	Frozen products	
	Fabrice	Sugar	Chicken meat	Frozen meat	Fresh fruit & veg	Nuts	Organic + Coffee	Frozen products	Chocolate			
	Simon	Cleaning products	Organic products	dry products	Beverages	Biscuits brioche	Meat Bacon	Fruit & veg	Fresh dairy products	Bakery	Hygiene and cosmetics	
	Etienne	Cleaning products	Butchery	Fresh dairy products	Dry products	Alcohol	Canned products					
Young family	Mathilde	Fruit & Veg	Dry products	Biscuits	Hygiene & Cleaning	Fresh dairy products						
	Amandine	Cleaning products	Chicken meat	Fresh fruit & veg								
	Julie	Coffee tea biscuits	Fruit & Veg	Dry products (chocolate) and then	Cleaning products	Cheese						

				Frozen products								
	Mylène	Cleaning products & Dry products	Bread	Vegetables	Fruit	Chicken	Eggs, ham, RTE	Cheese and then chocolate	Beans & cans	Frozen products	Pet food	
	Elodie	Cleaning	water	Hygiene	Fresh products (yog, cheese, ham)	Fruit & veg	Frozen products	Dry products (biscuits, pasta)				
Elderly	Gérard & Odile	Beverages	Dry products (biscuits, tea)	Fresh products (crepes, sausages)	Meat	Fruit & veg	Bakery	Fresh products (cheese yog)	Dry products			
	Sylviane	Cleaning	Beverages	Hygiene	Dry products (biscuits)	Meat	Fish	Fruit & veg	Bakery	Fresh Dairy products	Dry products	
	Charles	Dry products (sugar)	Fresh dairy products	Caterer (meat, pâté)	Pineapple s	Fruit & Veg	Bakery					
	Bernard & Hélène	Fish	Fruit & veg	Orange juice	Dry products (chocolate )	Dry products (biscuits)	dry products (biscuits)	juice	milk	Fresh dairy products (yogurts)	Dry products (sauce)	Fresh fruit & veg (basil)
	Yvette	Dry products (biscuits)	Cereals	Rice	Soap	Meat						

## Appendix D: Detailed overview of the cooking steps taken by the Romanian, French, British and Norwegian households

Romania		
Research participant	Chicken product	Heating method
Ionel	Breast fillets	Stewing and then fried
		<ol style="list-style-type: none"> <li>1. Tearing the lettuce leaves and placing them into a bowl filled with water, washing lettuce, removing excess water from it.</li> <li>2. Rinsing cutting board, fetching other kitchen utensils, filling a pot with water and putting it on the gas stove and adding salt into the pot with water</li> <li>3. Taking out of the fridge the raw chicken and frozen vegetables, unpacking chicken, transferring the oil from the pan into a jar that contains reused oil, washing thoroughly with warm water the pan with dish soap.</li> <li>4. Chicken preparation:            4.1 Half of the chicken breast is marinated for the next day with seasonings and left in the fridge            4.2 Half of the chicken is washed with water, chopped into small pieces and left to boil, rinsing hands, and kitchen utensils, boiling rice, removing the scum from the boiled chicken, boiling frozen vegetables, frying boiled chicken with boiled vegetables, orange juice and boiled chicken.            5. Salad preparation including washing cutting board, knives, tearing lettuce leaves, rinsing and chopping tomatoes, seasoning salad.         </li> </ol>
Balanel	Breast fillets	Fried in a frying pan with butter
		<ol style="list-style-type: none"> <li>1. Washing hands, wiping hands, unpacking the chicken.</li> <li>2. Chicken preparation: including removing the unwanted parts (veins), washing the chicken fillets, removing water from the washed chicken by pressing the chicken with hands, chopping the breast fillets into small pieces on the cutting board, rinsing and wiping hands, cutting the frozen butter on the cutting board and moving it into the pot, addition of herbs and mixing the chicken with herbs using hands, transferring chicken into the pan, rinsing hands, rinsing utensils and mixing the pot occasionally with a wooden spatula, checking the doneness of the chicken.</li> <li>3. Salad preparation: rinsing utensils, unpacking the cheese and leaving it on a plate, washing knife, washing tomatoes, rinsing and wiping hands, unpacking the Iceberg Salad using a knife, washing the salad, removing the excess water, chopping the salad on the cutting board, rinsing and wiping hands, cutting the cheese on the cutting board, rinsing cutting board, peeling cucumbers and cutting them on the cutting board, transferring all salad ingredients into a bowl including the addition of corn, fried chicken and seasonings.</li> </ol>
Florinel	Whole chicken	Boiling with vegetables
		<ol style="list-style-type: none"> <li>1. Chicken preparation: cutting, tossing waste, washing chicken, removing excess water, rinsing pot, cutting chicken, boiling the chicken with water, tossing waste, peeling and washing vegetables (onions and potatoes) and boiling them with chicken.</li> <li>2. Wiping and rinsing hands, seasoning the chicken, cutting chicken breast fillets, washing cutting board, wiping hand to cotton towel, tossing waste, washing cutting utensils.</li> <li>3. Fetching the vegetables (lettuce, tomatoes, cucumbers, onions), peeling, washing cutting, seasoning, rinsing hands, and cutting vegetables.</li> <li>4. Rinsing vessel (kettle) and polenta preparation, including wiping hands, rinsing plate and handling phone.</li> <li>5. Chicken skewers preparation: skewering seasoned chicken pieces into wooden skewers.</li> </ol>
Bogdan	Breast	Boiled and then fried alone and later with eggs and vegetables

1. Unpacking chicken fetching utensils, cutting chicken, tossing waste, rinsing and wiping hands, putting the chicken breast into a pot with water to boil, placing the left chicken on a plate after being covered with cling film.

2. Salad preparation: taking out of the fridge, cucumbers, tomatoes, lettuce, onion leaves, peppers, rinsing with water, checking the doneness of the chicken, fetching utensils, rinsing cutting board used for cutting the chicken, washing knife used for cutting the chicken, tossing lettuce waste, peeling, removing stubs, cutting and tearing the lettuce leaves, squeezing lemon, seasoning and mixing salad, tossing waste.

3. Chicken preparation: cutting boiled chicken into small pieces, cracking eggs, mixing eggs, fetching utensils, frying chicken, removing excess oil from it using paper towel, frying chicken with eggs and peppers, rinsing hands and utensils, tasting chicken.

Zoltan	Chicken legs, chicken wings, breast fillets The other left chicken pieces from those mentioned above	Roasted in the oven with potatoes Boiling alone and then boiled with vegetables
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1. Fetching utensils and food, washing utensils, carving the whole chicken, washing hands, wiping hands, separation of the chicken pieces for soup and steak, washing up cutting utensils, surfaces and hands.

2. Washing, peeling, washing and cutting potatoes, washing up surfaces, hands, tossing waste.

3. Roasting in the oven the chicken;

4. Boiling the chicken for soup, washing, cutting vegetables for soup and fish salad, clearing, washing hands, cleaning surfaces.

5. Combining vegetables and canned fish for fish salad, washing utensils and hands.

6. Cooling the pot with hot soup on the pavement to cool faster

Maria Mirabela	Chicken legs fillets	Stewed in the frying pan and then simmered in carbonara sauce
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1. Fetching utensils and washing hands.

2. Chicken preparation: washing chicken, chopping chicken, removing fat and unwanted veins, washing again the chicken pieces, and stewing the chicken into a frying pan, seasoning the chicken, rinsing hands, boiling pasta, checking the doneness of the chicken.

3. Sauce preparation: addition of milk over carbonara powder, mixing, grating cheese and transferring into the stewed chicken, wiping hands.

4. Salad preparation: washing baby spinach and rukola leaves, squeezing, tearing them with hands, adding seasonings and mixing salad.

Sorina	Chicken legs fillets	Stewed in pieces in the frying pan
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1. Preparation of the chicken: deboning the chicken and tending to baby daughter.

2. Washing chicken several times by transferring the meat from one bowl containing water to another, tossing waste, rinsing hands, cutting and preparation of seasoning paste for chicken stewing, rinsing hands.

3. Stewing the chicken.

4. Preparation of the salad, juggling between the stewing chicken and washing vegetables for several times.

5. Cutting vegetables, cleaning vessels, mixing salad.

6. Washing utensils, clearing surfaces, washing vessels and hands and wiping surfaces

Serena	Breast filets	Stewed in pieces in the frying pan
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1. Cleaning the surfaces used for cooking, fetching utensils, rinsing utensils.

2. Using toilette, rinsing and wiping hands.

3. Unpacking chicken, tossing waste, removing the chicken breast from the whole chicken, placing the left chicken into the freezer.

4. Chicken preparation: removing skin and bones, cutting in fillets the chicken breast, seasoning, rinsing and wiping hands, washing pan.
5. Stewing the chicken: turning sides using a fork and rinsing utensils used for chicken.
6. Salad preparation: rinsing lettuce, rinsing tomatoes, cutting tomatoes and lettuce leaves, fetching onion leaves from the garden, peeling, rinsing and cutting, seasoning the salad and mixing.
7. Cleaning surfaces, rinsing and wiping hands.

Amalia	Chicken legs	Roasted in the oven with vegetables
		<ol style="list-style-type: none"> <li>1. Fetching utensils and rinsing inside sink.</li> <li>2. Unwrapping lettuce and rinsing lettuce leaf by leaf and leaving them into a plastic bowl with a sieve, tossing waste and wiping hands.</li> <li>3. Unpacking chicken, rinsing hands, washing chicken, cutting anatomically the chicken, tossing chicken waste.</li> <li>4. Rinsing utensils, rinsing and wiping hands, fetching utensils.</li> <li>5. Chicken seasoning: peeling garlic, rinsing garlic, smashing garlic cloves, adding salt and pepper, olive oil, wiping hands, placing the left chicken in the fridge, rinsing utensils, wiping hands.</li> <li>6. Fetching utensils, peeling potatoes, rinsing and chopping, tossing waste, rinsing knife, wiping hands, fetching tray, seasoning the potatoes, putting the potatoes into the tray.</li> <li>7. Adding the chicken over the potatoes, covering with aluminum foil and roasting the chicken.</li> <li>8. Rinsing and washing utensils, flicking hands and wiping with dish/hands/surface towel.</li> <li>9. Salad preparation: fetching tomatoes, cucumbers and onions, rinsing veggies and then rinsing knife, cutting tomatoes, cucumbers and onions and tearing lettuce leaves, rinsing and wiping hands, seasoning and mixing salad.</li> <li>10. Rinsing utensils and disinfecting the surfaces.</li> </ol>

Minodora	Chicken breast fillets	Fried in the frying pan
		<ol style="list-style-type: none"> <li>1. Receiving the tray with chicken breast from the neighbor who did the shopping for her, boiling water</li> <li>2. Two activities performed in the same time: chicken breast preparation and frying and hen slaughtering, each activity performed by a different person. <ul style="list-style-type: none"> <li>2.1 Chicken preparation: Fetching knife, removing fat from the chicken breast, wiping hands, washing chicken pieces, removing excess water, cutting the chicken fillets, rinsing</li> <li>2.2 Frying chicken task intermingled with tending the babies.</li> </ul> </li> <li>2.3 Slaughtering the hen, plucking the chicken, collecting feathers, tossing waste, rinsing bowl, scorching, removing intestines, rinsing bowl, washing chicken, washing hands (with the same water used for washing chicken), tossing waste, rinsing pot, knife and hands, transferring the chicken into a plastic bag and storing in the freezer.</li> <li>3. Rice preparation: boiling water, adding rice, peeling and grating carrot, tending baby while mixing the rice, adding water, tasting rice, wiping hands.</li> <li>4. Salad preparation: washing lettuce, cutting the lettuce, wiping the cutting board, washing and cutting tomatoes, seasoning, and mixing the ingredients.</li> </ol>

Domnica	Chicken legs	Stewed alone and then boiled with vegetables
		<ol style="list-style-type: none"> <li>1. Fetching utensils, unpacking chicken, tossing waste, fetching vegetables, rinsing hands;</li> <li>2. Chicken preparation: cutting with a knife on the cutting board the chicken legs, rinsing chicken, rinsing and wiping hands, rinsing kettle, stewing the chicken in the kettle.</li> <li>3. Preparing vegetables for chicken: peeling and rinsing vegetables (carrots, peppers, tomatoes, and onions), cutting and transferring into the kettle, seasoning with salt, rinsing utensils and hands, rinsing parsley, cutting it and adding it into the kettle.</li> <li>4. Seasoning with pepper the stewed chicken and addition of pasta.</li> </ol>

5. Salad preparation: rinsing lettuce leaf by leaf, removing excess water, rinsing inside sink, cutting, seasoning with salt, oil and vinegar, mixing the salad.

Dumitra	Chicken breast	Boiled with vegetables and rice
		<ol style="list-style-type: none"> <li>1. Fetching utensils, unpacking chicken, wiping chicken with paper towel and cotton towel, scalding off the chicken over a gas flame.</li> <li>2. Chicken preparation: placing half of the chicken that was not cooked that day in the fridge, washing half of the chicken, cutting anatomically the chicken, washing chicken again, placing the washed chicken into a bowl on the table, cleaning vessels, including peeling, washing and cutting vegetables (onions, carrots, celery, parsnip), boiling vegetables, addition of chicken.</li> <li>3. Salad preparation, including picking from the garden lettuce leaves, green onions leaves, parsley and dill, washing veggies, chopping them on the cutting board, seasoning with salt and sunflower oil, mixing the salad, cleaning the vessels.</li> </ol>
Fanel and Fanica	Breast filets	Fried in oil the fillets (covered with bread crumbs and eggs) in the frying pan in several batches
		<ol style="list-style-type: none"> <li>1. Washing utensils (cutting board) and wiping the working surfaces (counter top and edge of the sink), rinsing hands, wiping surfaces and hands.</li> <li>2. Fetching the necessary dishware, washing vegetables, tossing waste.</li> <li>3. Preparation of the chicken breast: deboning, washing, cutting, washing utensils, tossing the waste, pounding the chicken, wiping surfaces, washing cutting utensils (cutting board and knife), including dredging into bread crumbs, shaking the excess, dipping into eggs mixture and wiping the surfaces.</li> <li>4. Frying of the chicken including removing the scum formed during frying.</li> </ol> <p>5. Preparing salad: cutting vegetables, seasoning and mixing the salad, task made by the other life partner.</p>
Damian and Damiana	Chicken breast and chicken legs	Boiled alone and then boiled with rice
		<ol style="list-style-type: none"> <li>1. Fetching utensils, unpacking chicken</li> <li>2. Chicken preparation: chopping anatomically the chicken, washing it with warm water, chopping the chicken legs in halves, wiping hands, filling a pot with water and left to boil, addition of chicken pieces, checking if the chicken is ready, addition of rice, base seasonings and oil.</li> <li>3. Salad preparation: chopping the lettuce leaves and removing the soil and sand, rinsing with running water every leaf, removing excess water, chopping with a knife, rinsing salad again, peeling onion, cutting onion, tossing peels, seasoning with salt, oil, mixing salad.</li> </ol>
Linalia	Chicken breast and chicken legs	Boiled alone.
		<ol style="list-style-type: none"> <li>1. Unpacking chicken, cutting anatomically the chicken, washing chicken into a bowl with warm water, transferring it into the kettle on the wooden stove for boiling.</li> <li>2. Rinsing hands with the same water used for washing the chicken, wiping hands, leaving the left chicken in the initial package and transferring it in the coolest room of the house.</li> <li>3. Addition of herbs over the chicken.</li> <li>4. Salad preparation: tearing lettuce leaves, rinsing with water, squeezing leaves, chopping with a knife the lettuce leaves, chopping an onion, seasoning the salad with salt and oil.</li> </ol>

The order of cooking among the French research participants		
Research participant	Chicken product	Heating method
Aurélien	Breast fillets	Searing/frying in pot then cooking in stew
<b>1. Getting ready to cook:</b> Before cooking, he starts with the peanuts peeling and cleaning the utensils.		
<b>2. Chicken preparation:</b> He starts to fry the chicken pieces in a pot after cutting them and puts a lid on it. Then when the chicken looks well cooked in every side, he adds onions, then crème fraîche, peanuts, spices, tomato sauce, and covers the preparation with the lid.		
<b>3. Cleaning:</b> He cleans up, the cutting board and some utensils he used.		
<b>4. Salad preparation:</b> He then washes the salad and puts it in the fridge before serving.		
<b>5. Cleaning:</b> he finishes with some cleaning of the utensils and countertop.		
Vincent	Whole chicken	Baked in oven
<b>1. Getting ready to cook:</b> he starts by washing his hands with soap and lukewarm water over his dishes in his sink.		
<b>2. Chicken preparation:</b> he starts with the chicken preparation, by putting olive oil, butter, salt, pepper, thyme, parsley, basil, garlic powder and bay leaves and water in the dish. He goes downstairs (where the oven is because his current kitchen is too small) to turn on the oven and pre-heat it.		
<b>3. Cleaning:</b> waiting for the oven to warm up, he cleans the sink and countertop before preparing the salad.		
<b>4. Preparing the salad:</b> he cuts the salad core and keeps the good leaves. He pours water over the salad leaves in the colander and stirs a little bit the leaves with his hands, while the water is running on them, for a few seconds. He drains water from salad by shaking the colander. He is done washing after pouring water just for a few seconds.		
<b>5. Chicken cooking:</b> he puts chicken in the oven downstairs and sets a timer for the first 20 minutes.		
<b>6. Other steps of preparation:</b> He looks at his food cupboard to choose a side dish (pasta, rice...), that he will prepare later, just before eating, in more than one hour.		
Fabrice	Breast fillets	Cooked in pieces in a frying pan
<b>1. Chicken preparation:</b> he starts by cutting chicken fillets in big pieces and fried them in a pan with oil.		
<b>2. Salad preparation:</b> At the end of the chicken cooking, he just opens the salad plastic bag to pour it in his plate.		
Simon	Breast fillets	Cooked in pieces in a frying pan
<b>1. Getting ready to cook:</b> MM25 starts by washing his hands. He usually does that when he cooks "real cuisine", while preparing a real dish. On his living room table, he fetches the chicken fillets, vegetables which he rinses under water, cutting board and knife.		
<b>2. Chicken preparation:</b> he starts cutting chicken fillets in pieces that he puts in a glass bowl.		
<b>3. Vegetables preparation:</b> then on the same cutting board, he starts cutting the vegetables, zucchini, onions and bell pepper, that he adds in the glass bowl with the chicken pieces.		
<b>4. Cleaning hands:</b> He washes his hands with water after finishing cutting the vegetables		
<b>5. Aside preparation:</b> he starts the cooking by boiling water to cook rice in a pot. Then in a pan he starts cooking vegetables with butter. He separates vegetables from the chicken pieces, as they were all in the same glass bowl.		
<b>6. Cooking chicken:</b> then he cooks the chicken pieces in a pan with no fat. He has two pans but one handle, so he changes the handle each time he stirs chicken or vegetables. He is using only one wooden spoon to stir the preparations.		
<b>7. Serving the meal:</b> after cooking rice, vegetables and chicken separately, he puts everything in the same glass bowl he put raw chicken in.		
<b>8. Salad preparation:</b> at the end of the preparation he just opens the salad plastic bag, to serve it with the chicken, rice and vegetables. He doesn't re wash the plastic bag salad.		
Etienne	Whole chicken	Baked in oven
<b>1. Getting ready to cook:</b> TS30 starts by washing his hands with dish liquid soap for 7 seconds and dries his hands on the hand towel.		

**2. Chicken preparation:** TS30 has taken the chicken out of the fridge, where it thawed overnight, in the glass dish. He adds water, butter and olive oil and puts the chicken in the oven.

**3. Salad preparation:** Then he prepares the salad, by separating the core from the leaves. He washes the leaves very quickly in the bowl salad. Then he cut an onion that he adds in the salad and prepares the vinaigrette (oil and vinegar) and adds some fried onions. The whole preparation took 16 minutes.

Mathilde	Breast fillets	Cooked in pieces in a frying pan then simmered with coco milk
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**1. Getting ready to cook:** she first washes her hands with soap and lukewarm water before cooking.

**2. Chicken preparation:** she takes out the chicken fillets from the fridge and fetches a cutting board and a knife to prepare the chicken on the countertop. She starts cutting the chicken fillets in pieces that she puts in a plastic bowl.

**3. Cleaning:** then she puts the cutting board in the sink and starts washing carefully her hands.

**4. Chicken preparation:** she pours some olive oil and spices over the chicken pieces to do a quick marinade. Then she cuts onions and starts cooking it in a pan with coco oil and puts chicken in the pan. After 3 minutes, she pours coco milk on the chicken once all pieces are well colored on all their sides. She puts the lid on the pan and let the chicken simmer in the coco milk for 18 minutes, while preparing the salad.

**5. Salad preparation:** she cuts out leaves from the salad with a knife and places them in the spin dryer. She sorts out the bad ones. She washes the salad leaves in the spin dryer under running water, with just one bath. She will put vinaigrette in her plate, not in the common bowl, for the salad not to «burn» if they don't finish it.

**6. End of chicken cooking:** she checks on the chicken cooking by cutting a little piece of chicken and by watching the color and thinks it is cooked enough. She will cook rice later to eat with the chicken.

Amandine	Whole chicken	Baked in oven in plastic cooking bag
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**1. Starter preparation:** She starts preparing the starter, a cucumber salad. She peels the cucumbers and shreds them in a vegetable shredder.

**2. Cleaning hands:** she washes her hands with soap and warm water at the end of cucumber salad preparation.

**3. Chicken preparation:** She reads the recipe on the back of plastic cooking bag she bought to cook the whole chicken. She puts the chicken in the bag and pours the spices and some water over. She closes the bag and mixes water with spices over the chicken and puts the chicken in the oven. Then she adjusts the timer on her phone.

**4. Cleaning hands:** she washes her hand with soap and warm water as she touched raw chicken.

**5. Aside preparation:** she prepares frying potatoes slices. She peels them over the bin and shreds them in the vegetable shredder to save time.

**6. Salad preparation:** she starts to prepare the iceberg salad by removing the basis and the outer leaves of the lettuce and by cutting the leaves in the bowl. She doesn't need to wash it as the leaves are stuck with each other and that she feels they are clean.

**7. Cleaning:** she cleans hands and countertop and puts the utensils, vegetable shredder and dish in the dishwasher.

**8. Preparing to serve meal:** she sets the table while her husband is giving their little boy his dinner

**9. End of starter preparation:** she seasons the sliced cucumbers

**10. Potatoes cooking:** she starts frying the sliced potatoes. To be sure they are cooked, she puts a slice in a plate and checks its doneness with the fork and knife.

**10. Eating:** We eat entrée while the chicken finishes to cook

**11. End of chicken cooking:** she cuts the chicken in the oven dish before serving it.

Julie	Whole chicken	Baked in oven
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**1. Chicken preparation:** She starts with chicken, by preparing the side preparation she has to pour on the chicken before putting it in the oven.

**2. Nonfood actions:** In between preparation, she gave a glass of water to her 2 and a half years old boy whom she is supervising her alone. She also twice removes the cat from the countertop where it loves to goes and stays and she washes her hands after touching the cat.

**3. Vegetables preparation:** After putting chicken in the oven, she starts the vegetable's preparation, by cutting and cooking zucchinis.

**4. Salad preparation:** While zucchinis are cooking in a pan, she starts to prepare the salad in plastic bag: she makes the vinaigrette (vinegar plus oil) and just pours the salad in plastic bag in the salad bowl without washing it, because she says that it is already pre-washed.

**5. Cleaning:** She then cleans the cutting board and countertop with detergent, while zucchinis are still cooking and chicken is in the oven.

Mylène	Chicken legs	Baked in cooking robot (Thermomix) (steamed)
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**1. Getting ready to cook:** She is cooking with her cooking robot “thermomix”, as usual. She is following a recipe on her phone on the “thermomix” application. She fetches everything she needs for the recipe: chicken legs, carrots, onion, and salad.

**2. Salad preparation:** she starts with salad preparation by washing it under running water. She drains rucola leaves in her hands. She places drained leaves in a bowl with a piece of absorbent paper. She feeds the rabbit on the balcony with some rucola leaves

**3. Cleaning:** she rapidly rinses her hands under cold water after touching the salad.

**4. Vegetables preparation:** she starts cutting an onion and shreds it in the robot (which can shred, cut, mix, stir, cook, etc.). Then she peels carrots and puts them in the robot with frozen leeks, water, white wine, olive oil, stock cubes.

**5. Chicken preparation:** then she puts the chicken legs in the upper part of the thermomix, to cook all at once, by steam. She verifies the position of the chicken legs to ensure that steam will circulate properly. She adjusts the cooking time.

**6. Cleaning:** she then collects empty packages and throws it in the bin on the balcony. She feeds her rabbit with carrots peeling. She washes the tray in which she cut vegetables with the sponge. She has to wait until the robot beeps at the end of cooking.

Elodie	Breast fillets	Cooked whole in a paper “papillote” in a pan
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**1. Getting ready to cook:** she puts on her apron and starts by washing her hands, wrists and insists between her fingers with soap. She used to work in a restaurant so she is familiar with hygiene rules. She fetches every ingredient (chicken, potatoes) she'll need and puts them on the countertop.

**2. Aside preparation:** she starts by the potatoes cooking. She puts the frozen potato dices in a baking tray that she puts in the oven. Then she starts the vegetables preparation by cutting an onion on a cutting board and cooking it in a pot with margarine.

**3. Salad preparation and aside preparation:** While the onion is cooking, she starts the salad preparation. She fetches olive oil and vinegar that she takes in the cupboard under the sink closed with a child lock safety. Then she washes her salad cut in pieces in her sink she cleaned just after lunch when she cleaned everything (countertop, dishes, table with soap and detergent). She adds peas and carrots can in the cooked onion and seasons the preparation. Then she seasons the salad in the bowl next to it. Then she puts the salad bowl in the corner until serving it.

**4. Cleaning:** she cleans with water and dishsoap the salad spinner and the knife. She ends the vegetable preparation.

**5. Aside preparation:** she checks on the potatoes in the oven and stirs them with the spatula.

**6. Chicken preparation:** she turns over the cutting board she used to cut the onion to put the chicken on it. She opens the « papillotes » paper covered with spices with her hands in which she will cook her chicken fillets. She takes out the chicken fat. She is making two preparations: one chicken fillet cut in pieces for her two younger children, and 5 chicken fillets cooked in paper “papillotes” for her husband, herself and 3 oldest children.

**7. Cleaning:** she rinses her hands with clear water after touching chicken. She cooks all of the preparation at the same time in different pans. She regularly checks the food, increases or decreases the temperature. Then she cleans all the dishes (salad spinner, knife, cutting board, sink, countertop...). She throws the waste she kept on the countertop while cooking in the garbage in the garage.

**8. Checking on the cooking:** She checks on the potatoes in the oven. She doesn't put a timer for potatoes, she just checks to watch the color, if it is grilled enough. She regularly checks on the chicken and she sets the table.

**9. End of salad preparation:** she seasons the salad with oil and vinegar

**10. End of cooking:** she checks the chicken cooking by cutting the fillet to check on the color. She won't check on the chicken pieces, for her, they are cooked enough.

Gérard & Odile	Whole chicken	Baked in oven
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- 1. Chicken preparation:** AP71's wife is cooking, she takes out the chicken from the plastic bag without touching the raw meat. She sends AP71 to go get some rosemary in the garden that she puts inside the chicken. She adds butter and oil on the chicken and puts it in the oven.
- 2. Salad preparation:** AP71 goes in his garden to pick a salad from the soil where they grow and also some potatoes. Then his wife washes it in the garage sink where he directly enters when he comes from the garden.
- 3. Aside preparation:** then she washes and peels the potatoes from the garden. She dries them in a towel and wait for cooking them.
- 4. Cleaning:** she dries a water stain on the countertop with the hand towel
- 5. Chicken cooking:** after 20 minutes of cooking, they check on the chicken, take it out of the oven, flip it before putting it back. 10 minutes before the end of cooking, AP71's wife puts an aluminum sheet on the chicken to prevent it to roast too much. They will wait for the lunch time to cook the potatoes to eat with the chicken.

Sylviane	Whole chicken	Baked in oven
<b>1. Chicken preparation:</b> she starts by removing chicken from his plastic bag. Then she washes hands with water only before preparing it. She adds tarragon, shallot, garlic (below the chicken skin), olive oil, water and frozen tomatoes she kept in her freezer. She then puts it in the oven.		
<b>2. Aside preparation:</b> She puts oil in a big pot, to put green beans from her garden to defrost and adds some garlic.		
<b>3. Cleaning:</b> she cleans the countertop in between preparations and dries the surfaces around the sink with her hand towel.		
<b>4. Salad preparation:</b> she goes in her garden to get a salad from the soil. She grows a big garden as she is a former farmer and that she kept some land to grow vegetables with her husband. She washes the salad in the "arrière cuisine", where she is used to clean vegetables from her garden.		
<b>5. Chicken cooking:</b> she checks on the chicken and flips it in the dish before putting it back in the oven.		
<b>6. Aside preparation:</b> she cooks thawed green beans. She adds some potatoes. She shakes the pot to mix vegetables, she doesn't use a wooden spoon or utensils		
<b>7. End of salad preparation before serving:</b> she makes the salad dressing in a big bowl to be ready to serve it, when her husband comes back home.		
<b>8. End of chicken cooking before serving:</b> After 1h30 of cooking, she takes the chicken from the oven where she keeps it warm until lunch time, and she starts to cut different parts with shears and a knife before serving it. She uses shears because she thinks it is more convenient and because she doesn't like to cut chicken. She already prepared in the morning a salad of raw vegetables that she serves.		

Charles & Annie	Whole chicken	Roasted in oven on a spit
<b>1. Chicken preparation:</b> He goes to his garden to get some herbs and prepares the chicken on the spit, he struggles to place in the oven.		
<b>2. Aside preparation:</b> Then he slices the bread he bought at the supermarket with a special slicing machine.		
<b>3. Salad preparation:</b> He starts washing his garden salad, he just collected. He washes the salad in several times.		
<b>4. In between preparations:</b> In between, he cleans surface in the kitchen, while the salad is in water. Then he dries the salad. He goes grab a wine bottle in the cellar, then he washes strawberries. Salad preparation: After talking with the researchers for a while, he finishes preparing vinaigrette (vinegar and oil) for the salad, while waiting for the chicken to finish cooking.		
<b>5. Vegetables preparation:</b> he cooks beans from his chicken, while chicken finishes to cook.		

Bernard & Hélène	Chicken legs	Fried in a wok pan
<b>1. Getting ready to cook:</b> MB72 washes his hands with lukewarm water but no soap.		<b>1. Getting ready to cook:</b> MB72's wife (referred as EB) washes her hands with lukewarm water and soap.
<b>2. Chicken cooking:</b> He is in charge of cooking chicken legs in a wok pan with oil. He chopped onions with a mandolin while the chicken legs are cooking, then he peels garlic and add them in the wok pan.		<b>2. Salad preparation:</b> When her husband starts cooking chicken legs, she starts washing the salad in the sink, next to him. She takes the water used for the salad and she puts it in her flowers, not to waste it. She starts again with a second bath.
<b>3. Cleaning:</b> he puts the cutting board and the mandolin in the sink but he doesn't wash it.		

<p><b>4. Chicken preparation:</b> he adds canned tomatoes in the wok. He goes in the garden to collect some thyme to put it right away in the wok.</p> <p><b>5. Cleaning:</b> he cleans the countertop with a sponge and some water.</p> <p><b>6. End of chicken cooking:</b> he picks in the chicken to appreciate the cooking. He tastes the sauce with a spoon and he covers the wok for the end of cooking.</p> <p><b>7. Serving:</b> he serves chicken dish in the thawed chicken glass box.</p>	<p><b>3. Cleaning:</b> cleans up a little bit by gathering waste from the onions her husband let on the countertop</p> <p><b>4. Aside preparation1:</b> she starts preparing the potatoes she collects from the garage. She peels them, washes them, cuts them and puts them in the electric steamer.</p> <p><b>5. Cleaning:</b> washes with clear water and her net sponge the utensils in the sink</p> <p><b>6. Aside preparation2:</b> MB72's wife puts some plastic gloves on to peel beets, as it colors fingers. She realizes at some point that the steamer is not working. She tries to resolve this problem.</p> <p><b>7. Cleaning:</b> she cleans the countertop, sink, and surfaces after the end of preparations.</p> <p><b>8. Getting ready to serve:</b> she dresses the table. She dries the salad before serving it and pours some salad dressing. She cuts the bread and verifies the potatoes cooking</p>
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Yvette & François	Whole chicken	Baked in oven
<p><b>1. Getting ready to cook:</b> MJ74 puts an apron before to start cooking.</p> <p><b>2. Chicken preparation:</b> she thawed the chicken overnight. She already took out the giblets, the neck and head because they don't like eating these parts in the chicken. She rinses her hands under water after touching the chicken. She punctures the chicken skin with fork and knife for it to be less fat before putting it in the oven.</p> <p><b>3. Aside preparation:</b> she starts preparing potatoes by putting oil and salt in a pan, while her husband peels them in the "arrière cuisine"'s sink, where they are used to clean vegetables. In the kitchen sink, she washes the peeled potatoes under running water in the kitchen sink and dries them with absorbent paper. She cuts potatoes in her hands and starts cooking them in the pan and covers them with a lid.</p> <p><b>4. Cleaning:</b> she puts used utensils in the dishwasher. She wipes the counter top with a piece of absorbent paper and the sink to keep it bright and clean.</p> <p><b>5. Salad preparation:</b> his husband is in charge to wash salad in the "arrière cuisine"'s sink. He meticulously detached leaves and tears them in smaller pieces by hand. He washes them in different baths. He places the salad drainer with lettuce leaves, in the garage to keep them fresh, until the meal is ready to be served.</p> <p><b>6. Cleaning:</b> he cleans the sink with white vinegar and a sponge. Then he cleans the dishes in the sink. They both like when their kitchen is super clean. He dries dishes with absorbent paper, to be more hygienic.</p> <p><b>7. End of preparations:</b> MJ74 ends the potatoes cooking. She also prepares the salad dressing before serving it. MJ74 sets the table and shows researchers place to wash hands before eating. Her husband cuts the bread and takes out the chicken from the oven. He cuts the chicken and appreciates the colour of the meat.</p>		

UK		
Research participant	Chicken product	Heating method
Susan Dunning	Breast fillets	Fried in small pieces
		1) Getting chicken and vegetables out of the fridge and sauce ingredients out of the pantry. Washing hands.
		2) Mixing together sweet and sour sauce ingredients in a bowl: tomato ketchup, soy sauce, lemon juice, sugar.
		3) Opening chicken packet and cutting chicken breasts into small pieces. Rinsing hands and scissors.
		4) Peeling and chopping an onion, then adding it to a frying pan with oil. Stir-frying onion continuously.
		5) Adding chicken to the frying pan. Stir-frying chicken and onion continuously.
		6) Adding sauce to the chicken and onions. Leaving the mixture to simmer. Washing hands and filling sauce mixing bowl with water to soak. Wiping chopping board used for onions.
		7) Peeling and chopping cucumber. Chopping red onion (already peeled). Wiping hands on dishcloth.
		8) Mixing salad dressing (oil and balsamic vinegar) in another bowl.
		9) Stirring the chicken and sauce mixture. Leaving to simmer further.
		10) Adding cucumber and red onion to the salad bowl and mixing.
		11) Chopping tomato. Interrupted by stirring the chicken and sauce mixture again. Then returning to chopping tomato. Adding tomato to the salad bowl. Stirring the chicken and sauce mixture again. Washing hands.
		12) Rinsing parsley and cutting it into small pieces, directly into the salad bowl. Stirring the chicken and sauce mixture again, then removing the pan from the heat. Briefly rinsing hands.
		13) Getting microwaveable rice from the pantry. Ripping open rice packet and heating it in microwave.
		14) Returning frying pan to heat and stirring the chicken and sauce mixture.
		15) Boiling kettle of water to warm plates. Removing rice packet from microwave on completion of heating. Wiping surfaces and chopping board with paper towel.
		16) Warming one plate under boiling water. Laying out plates. Serving up rice, chicken sauce mixture and salad onto the plates.
Mary Russell	Breast fillets	Cooked whole in microwave
		1) Getting potatoes from the fridge. Wiping potatoes with damp paper towel. Pricking potato skins with fork and coating with salt.
		2) Preheating mini oven (part of microwave) for potatoes. Deciding to use main oven instead. Preheating main oven and turning off mini oven.
		3) Adding potatoes to the preheated oven. Rinsing chopping board used for potato prep.
		4) Selecting a microwaveable dish for cooking chicken. Rinsing and drying the dish.
		5) Washing hands. Getting chicken from the fridge. Opening the pack of chicken. Removing one breast fillet and placing it in a freezer bag. Placing in the freezer.
		6) Transferring chicken from the pack to the microwaveable dish. Seasoning the chicken with black pepper and mixed herbs. Checking the microwave instructions for cooking time. Covering the dish with clingfilm. Placing the dish in the microwave and setting it to cook for 9 minutes.
		7) Getting carrots and cabbage from the fridge. Checking on the chicken (after c.5 mins) and returning it to the microwave to finish its programme.
		8) Topping and tailing carrots with a knife, then peeling. Grating the carrots and adding to a mixing bowl. Removing outer leaves of cabbage.

- 9) Checking chicken at end of its microwave programme (cutting open and inspecting colour of inside). Returning to microwave for 1 minute more.
- 10) Chopping cabbage. Choosing a larger mixing bowl and transferring grated carrot and chopped cabbage to it. Getting mayonnaise from the fridge. Adding black pepper and mayonnaise to the carrot and cabbage to make coleslaw. Covering bowl with clingfilm and putting it in the fridge until the meal is ready.
- 11) Getting chicken dish out of the microwave and re-checking chicken, which is now ready. Spooning juices over the chicken portions and scraping off excess herbs. Transferring chicken portions to a plate to cool. Emptying excess juices down the sink, rinsing dish and leaving to soak with water in it.
- 12) Rinsing plastic tray from chicken packaging, placing in a plastic bag and putting it to one ready for recycling. Rinsing hands under the tap.
- 13) Returning mayonnaise and remaining cabbage to the fridge and getting out salad ingredients. Washing pepper, radishes, celery and tomatoes under running water. Wiping cucumber with damp paper towel. Returning remaining salad ingredients (plus carrots) to the fridge. Topping and tailing radishes, chopping celery and adding both to a small bowl with cherry tomatoes. Chopping cucumber and pepper, and adding to another small bowl.
- 14) Disposing of vegetable peelings and trimmings to a food waste caddy for home composting. Washing hands with liquid soap. Slicing cooked chicken.
- 15) Returning remaining cucumber to the fridge and retrieving bowl of coleslaw. Taking baked potatoes out of the oven. Serving all of the meal components on plates.

Jean & John Higgins	Thighs	Roasted whole with vegetables
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- 1) Opening the chicken package (Jean).
- 2=) Trimming the chicken thighs, removing some small pieces of fat and skin (John).
- 2=) Greasing a roasting dish. Washing potatoes. Slicing potatoes and placing in roasting dish (Jean).
- 3=) Arranging chicken thighs on top of the potatoes. Washing hands (John).
- 3=) Drizzling oil over the chicken in the dish. Placing the dish in the oven (Jean).
- 4) Finely chopping cabbage and carrot in the food processor (John). Covering cabbage with salt in a bowl (Jean).
- 5) Loading vegetable prep equipment into the dishwasher. Rinsing the meat preparation equipment under running water and then loading it into the dishwasher (John). Cutting cheese into small pieces (Jean).
- 6=) Rinsing salted cabbage under running water. Washing tomatoes. (John)
- 6=) Removing roasting dish from the oven. Adding olives and then tomatoes in between the chicken thigh portions. Seasoning with herbs and vinegar. Adding cheese pieces to the top of the roasting dish and returning it to the oven (Jean).
- 7) Mixing carrot and cabbage together in a bowl. Adding mayonnaise-based dressing to the carrot and cabbage to make coleslaw (Jean).
- 8) Removing roasting dish from the oven. Checking the chicken (cutting open and inspecting colour of inside) (Jean).

Archie Phillips	Breast fillets	Cooked whole in foil parcel, in frying pan
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- 1) Washing hands. Draining pan of boiled potatoes (cooked before we arrived). Putting drained potatoes back in the pan on the hob to dry out. Pre-heating the hob for cooking chicken. Getting ingredients out of the fridge: mayonnaise, spring onions, red pepper and chicken.
- 2) Lining frying pan with foil ready for cooking chicken. Opening pack of chicken and transferring one breast fillet onto another piece of foil. Returning the remaining chicken to the fridge.
- 3) Seasoning chicken portion with salt, black pepper and mixed herbs, and adding a slice of butter. Folding the foil around the chicken, creating a parcel. Placing the foil-lined frying pan

on the hob and putting the chicken parcel in the pan. Setting timer on mobile phone for 5 minutes.

4) Separating lettuce leaves. Interrupted by stirring potatoes (still on the hob). Ripping up lettuce leaves with hands into a small bowl. Stirring potatoes again and transferring them to a glass mixing bowl.

5) Turning chicken parcel over (prompted by timer alarm) and setting timer for another 5 minutes.

6) Placing potatoes to cool by the window. Rinsing and chopping spring onions and adding them to the bowl with the lettuce. Returning remaining lettuce and spring onions to the fridge.

7) Turning chicken parcel over again (prompted by timer alarm) and setting timer for another 5 minutes.

8) Getting tomato from fruit bowl, rinsing it and chopping it. Adding tomato to the bowl with lettuce and spring onions. Cutting a small section from the pepper and returning the rest of the pepper to the fridge. Chopping the pepper, interrupted by timer alarm. Turning chicken parcel over again and setting timer for another 5 minutes.

9) Unwrapping and checking chicken (prompted by the sound it was making). Re-wrapping and turning down the heat to a lower setting. Continuing with chopping pepper, interrupted by timer alarm again. Turning chicken parcel over again and setting timer for a final 5 minutes.

10) Unwrapping and checking chicken (prompted by timer alarm, but after waiting for 2 mins). Leaving chicken parcel open but still over the heat. Finishing chopping pepper and adding to bowl of salad. Mixing salad ingredients together with both hands. Washing hands.

11) Preparing salad dressing: mixing mustard, oil, vinegar, salt and black pepper in an egg cup (including checking recipe book for quantities). Pouring dressing over the salad

12) Mixing mayonnaise with potatoes in the glass bowl to make potato salad. Chopping one further spring onion and adding it to the potato salad.

13) Transferring the chicken breast fillet to a chopping board and carving into thin slices.

Tricia Riley	Breast mini-fillets	Fried in small pieces
1) Getting chorizo and chicken out of the fridge. Opening chicken packet. Cutting chicken mini-fillets into small pieces, using scissors, into an old ice cream tub. Placing scissors in washing up bowl. Washing hands. Discarding chicken trimmings into the kitchen bin, and plastic packaging into a recycling bag. 2) Heating oil in a wok. Opening chorizo packet with different scissors. Tipping chicken pieces into the wok and stirring. Rinsing and drying chorizo scissors. Stirring chicken in wok. 3) Getting a red onion out of the cupboard, cutting open the net with the scissors. Stirring chicken. Peeling onion. Stirring chicken. Chopping onion. Stirring chicken. Chopping onion. Breaking onion pieces with fingers into another old ice cream tub. Stirring chicken. 4) Using paper towel to absorb some of the watery liquid in the pan. Adding more oil to pan. Adding remaining onion to ice cream tub. Washing hands. Wrapping remaining half of red onion in foil and returning it to the cupboard. Stirring chicken. 5) Slicing chorizo. Washing hands. Stirring chicken. Returning remaining chorizo to the fridge and getting out remaining ingredients: lettuce, goats cheese, and caramelised onion. 6) Stirring chicken. Testing a piece of chicken by cutting it in half and checking the colour inside. Adding chorizo to the pan and stirring in with the chicken. Stirring chicken and chorizo mix again.] 7) Opening lettuce pack and taking out one lettuce. Removing chicken/chorizo pan from the heat. Chopping lettuce. Rinsing chopped lettuce in a colander under running water. Dabbing lettuce with paper towel. 8) Testing another piece of chicken by cutting it in half and eating it. 9) Transferring the lettuce to a bowl. Dabbing the lettuce with more paper towel. Separating red onion pieces by hand and arranging on top of the lettuce. Washing hands. Removing		

goats cheese from packaging, placing on a plate and cutting with a knife into small pieces, then adding these to the top of the lettuce and red onion. Washing hands.

10) Transferring chicken and chorizo to the bowl of salad. Opening the jar of caramelised onion and scooping a spoonful on top of the salad.

11) Adding leftover chicken and chorizo to the ice cream tub with remaining pieces of red onion. Covering with lid and leaving on side to cool. Putting remaining lettuce and caramelised onion back in the fridge. Covering remaining goats cheese (still on plate) with foil and returning it to the fridge.

12) Covering bowl of salad with foil, to eat after we have left.

Laura Cooper	Breast fillets	Fried whole
<p>1) Pre-heating oven. Getting oven chips out of freezer. Spreading out chips on baking tray and placing in the oven. Returning remaining oven chips to the freezer. Saying goodnight to the baby (partner taking him up to bed).</p> <p>2) Washing hands. Getting chicken out of the fridge. Wiping chopping board with cloth and anti-bac spray. Opening the chicken packet and transferring chicken breast portions onto the chopping board. Putting chicken packet to one side for recycling.</p> <p>3) Trimming and flattening out the chicken breast with hands and knife. Washing hands.</p> <p>4) Heating oil in frying pan on hob. Getting spices out of the cupboard. Seasoning one side of chicken fillets with cajun spice mix. Transferring chicken fillets to frying pan with hands, seasoned side down.</p> <p>5) Washing hands. Placing chicken knife in dishwasher. Putting chicken trimmings in a food bag and leaving on side, to dispose of later. Wiping chopping board with cloth and anti-bac spray. Rinsing cloth and washing hands.</p> <p>6) Moving chicken around the pan with spatula. Seasoning with salt and pepper.</p> <p>7) Getting salad ingredients out of fridge: mixed salad leaves, tomatoes, cucumber, feta cheese. Transferring salad leaves to two bowls by hand and returning the rest of the packet to the fridge.</p> <p>8) Turning over the chicken portions using spatula and a fork.</p> <p>9) Opening tomatoes and laying them out on a chopping board. Cutting tomatoes in half and adding them to the bowls with the salad leaves. Opening and slicing cucumber and adding the cucumber pieces to the bowls of salad. Adding end of cucumber to food waste bag (with chicken trimmings already in it). Returning remaining tomatoes and cucumber to the fridge. Moving chicken around the pan again with spatula.</p> <p>10) Wiping chopping board with cloth and anti-bac spray. Rinsing cloth. Opening feta packet and cutting off a small portion on the chopping board. Cutting into chunks and placing on top of salad. Washing hands. Putting remainder of feta in a food bag and returning to the fridge. Rinsing feta knife and placing in dishwasher. Spraying chopping board with anti-bac spray. Stirring chicken again. Wiping chopping board. Spraying and wiping chopping board again. Partner making up formula milk for baby.</p> <p>11) Stirring chicken with spatula. Adding seasoning (salt, oil) and salad cream to bowls of salad. Stirring chicken again. Poking one fillet with the spatula to test if it's done, turning it over again with spatula. Turning off oven.</p> <p>12) Taking chips out of the oven and serving onto the bowls. Returning the baking tray to the oven.</p> <p>13) Poking the other chicken breast and looking underneath it (without turning it fully over). Cutting into one chicken breast with a knife to check the colour inside. Turning off the hob. Adding chicken portions to the bowls and placing the frying pan and spatula in the sink.</p>	<p>Paul Rothwell</p> <p>Thighs</p> <p>Roasted whole with vegetables</p>	<p>1) Pre-heating oven. Getting ingredients out of the fridge for cooking with the chicken: peppers, sweet potatoes and chorizo. Washing hands.</p> <p>2) Opening bag of sweet potatoes. Rinsing and peeling two sweet potatoes, then chopping them into wedge shapes. Laying out sweet potato wedges in the bottom of a roasting dish.</p>

Washing hands. Moving knife and chopping board to one side and setting out another chopping board.

3) Washing peppers, then removing seeds and chopping into small pieces. Adding pieces of pepper to the roasting dish, on top of sweet potato wedges. Moving pepper seeds and stalks to the bin.

4) Opening chorizo packet and placing chorizo on chopping board. Slicing chorizo and adding to the roasting dish. Opening a second packet of chorizo and this time slicing half of it and adding to the roasting dish. Washing hands. Wrapping remaining section of chorizo in foil and returning it to the fridge.

5) Getting garlic from the fridge. Peeling and slicing three cloves of garlic and adding to the roasting dish. Discarding garlic skin and trimmings to the bin. Washing hands. Wrapping remaining garlic in foil and returning it to the fridge.

6) Opening two tins of cannellini beans, draining in a sieve over the sink, and rinsing with water. Adding rinsed beans to the roasting dish, and putting empty tins on the recycling pile (lined up along the radiator). Opening pack of stock pots and boiling a kettle of water. Emptying contents of stock pot into a pyrex jug. Rinsing the pot and adding it to the recycling pile. Adding boiling water to the jug and mixing the stock.

7) Getting a bottle and a carton of orange juice from the fridge. Mixing the ingredients in the roasting dish using both hands. Washing hands. Checking temperature on the oven. Pouring some of the stock over the ingredients in the roasting dish, then pouring the remainder down the sink. Pouring orange juice over the ingredients. Adding the orange juice bottle to the recycling pile. Returning the carton of orange juice to the fridge.

8) Getting chicken thighs from the fridge. Opening both packets. Using one hand to arrange all nine chicken thighs on top of the mixture in the roasting dish. Adding the plastic trays from the chicken to the recycling pile. Washing hands.

9) Checking recipe. Putting roasting dish in the oven and setting timer for 40 minutes. Returning remaining pepper to the fridge. Clearing up: throwing sweet potato peelings in the bin, adding items to dishwasher and setting it going. Placing remaining sweet potatoes in a drawer with onions.

10) Mixing oil and smoked paprika in a small bowl. Removing roasting dish from oven (after 40 minutes). Brushing chicken thighs with oil and paprika mix. Returning roasting dish to oven and setting timer for 10 minutes.

11) Getting salad ingredients out of fridge: tomatoes, cucumber, different peppers, bag of mixed salad leaves. Throwing away an old pepper (in the process). Rinsing chopping board and knife. Washing hands.

12) Opening tomato and pepper packets. Removing seeds and slicing pepper. Discarding seeds in bin. Removing end of cucumber and discarding. Slicing cucumber. Chopping tomatoes.

13) Washing hands. Turning off oven. Arranging mixed salad leaves and other salad ingredients on plates, by hand. Washing hands. Returning remaining pepper, tomatoes and cucumber to the fridge.

14) Taking roasting dish out of oven. Transferring chicken thighs and other cooked vegetables onto plates with salad. Getting pre-prepared couscous from fridge, opening plastic tub and spooning on to both plates. Returning couscous to fridge.

15) Covering roasting dish and its remaining contents with foil. Leaving it to cool (to be put in fridge later).

Kate Buckley	Breast mini-fillets	Fried in small pieces
1)	Pre-heating oven. Washing hands. Getting pre-prepared potato slices out of the fridge, opening the packet and arranging the slices on a baking tray. Putting the baking tray in the oven and setting the timer for 30 minutes. Throwing potato packaging in the bin.	
2)	Washing hands. Checking recipe on phone. Getting ingredients out of the fridge: chicken, bacon, tarragon, peas. Getting onion out of bag hanging in pantry.	

- 3) Opening bacon packet. Trimming fatty parts and chopping bacon into small pieces on red chopping board, with knife. Throwing fatty trimmings and packet in the bin. Washing hands.
- 4) Checking recipe again. Peeling and roughly chopping onion on green chopping board, using different knife. Finely chopping onion in food processor. Washing hands. Checking recipe again. Opening pack of tarragon and chopping on black chopping board, using another different knife.
- 5) Checking recipe again. Getting crème fraiche from fridge and weighing out 100g in small bowl on electronic scales. Rinsing spoon and placing in dishwasher. Checking recipe again. Getting white wine out of fridge, measuring out one glassful and returning to fridge.
- 6) Tidying: throwing onion peel in bin, placing green chopping board in dishwasher, throwing tarragon packet away, wiping scales in putting back in cupboard.
- 7) Heating oil in wok. Washing hands. Checking recipe again. Adding bacon to wok and placing red chopping board in dishwasher. Washing hands. Stir-frying bacon with wooden spoon.
- 8) Opening chicken packet and adding chicken mini-fillets to the bacon in the wok, using a knife. Throwing chicken plastic tray in bin. Washing hands. Stir-frying chicken and bacon. Using wooden spoon to break up chicken into smaller pieces.
- 9) Boiling kettle of water. Continuing stir-frying chicken and bacon in wok, checking recipe partway through and then continuing again. Breaking pieces of chicken in half with wooden spoon and looking at colour inside.
- 10) Adding chopped onions to the wok. Rinsing food processor bowl and adding to dishwasher. Stirring contents of wok.
- 11) Getting pack of baby carrots and green beans out of fridge. Topping and tailing green beans on blue chopping board with knife. Stirring contents of wok. Adding wine and peas to wok and stirring again. Putting remaining peas back in fridge. Rinsing green beans and whole baby carrots in colander under running water. Adding boiling water to a sauce pan and lighting hob underneath it. Stirring contents of wok. Discarding green bean trimmings in the bin and adding blue chopping board to the dishwasher.
- 12) Stirring contents of wok, pausing to check recipe and then continuing stirring. Adding carrots and green beans to the sauce pan. Opening oven, stirring potato slices and then returning them to the oven. Continuing to stir contents of wok. Throwing remainder of creme fraiche, and carrot/bean packaging in bin. Stirring contents of wok.
- 13) Adding tarragon and crème fraiche to wok and stirring it in. Seasoning chicken mixture in wok with black pepper and continuing stirring.
- 14) Draining carrots and green beans. Removing potato slices from oven and transferring to two bowls. Spooning chicken mixture from wok into the bowls. Adding carrots and green beans to bowls.

Chloe Martin	Whole chicken	Electric pressure cooker
1)	Washing hands. Getting whole chicken out of fridge and opening pack with a knife. Washing hands. Setting up Instant Pot electric pressure cooker. Boiling kettle of water. Opening a stock cube and putting it in a pyrex jug. Throwing stock cube wrapper in bin. Mixing boiling water with stock and pouring mixture into pressure cooker.	
2)	Transferring whole chicken to pressure cooker, using both hands. Washing hands. Getting onion from a pack in the fridge. Peeling and chopping onion (directly on worktop). Adding chopped onion to pressure cooker. Placing lid on pressure cooker and setting it going.	
3)	Throwing outer chicken packaging in bin and leaving plastic tray on side for recycling. Washing hands. Rinsing chicken knife and washing hands again. Throwing onion peelings in bin.	
4)	Heating oil in frying pan. Getting packet of bacon lardons out of the fridge. Opening bacon pack. Transferring bacon to frying pan and adding plastic tray to the recycling pile on the side. Retrieving chicken packet from bin to check information printed on it. Returning it to the bin. Washing hands.	

- 5) Stirring bacon in pan. Washing hands. Getting packet of rocket and filtered water jug from the fridge. Rinsing rocket in sieve, using filter water. Transferring washed rocket to two bowls, by hand. Stirring bacon. Rinsing more rocket and adding it to the bowls.
- 6) Getting cherry tomatoes and avocado from the fridge. Cutting avocado in hand, removing stone and scooping flesh out of the skin into the salad bowls. Rinsing remaining rocket and adding packet to recycling pile. Adding extra rocket to bowls, on top of avocado pieces. Rinsing tomatoes. Chopping tomatoes in hand and adding pieces to the bowls. Rinsing knife and washing hands. Returning remaining tomatoes to fridge.
- 7) Running a bowl of hot water and washing dishes.
- 8) Releasing pressure from pressure cooker. Removing lid. Taking out chicken and placing in a bowl. Pulling chicken apart with two forks and checking the colour in the middle.
- 9) Removing meat from chicken carcass using forks and hands, and placing in another bowl. Throwing bones in the bin. Washing hands. Adding balsamic glaze to salad. Transferring chicken pieces to salad bowls using hands.
- 10) Putting remaining chicken pieces in a plastic bowl with a plate on top, and placing it in the fridge. Adding fried bacon pieces to top of salad bowls.

Alicia Cook	Breast fillets	Roasted whole
<p>1) Getting chicken, lettuce and tomato out of the fridge. Getting seasoning and marinade out of pantry. Potatoes and bread already out. Washing hands.</p> <p>2) Opening chicken packet. Trimming and butterflying chicken breast fillets on chopping board, with a knife. Transferring chicken portions to a glass mixing bowl and mixing by hand with barbecue sauce marinade. Washing hands.</p> <p>3) Pre-heating oven. Opening pack of potatoes. Cutting five potatoes into wedges using different knife and chopping board. Returning potatoes to the pantry. Transferring potato wedges to a roasting dish. Covering potato wedges with oil and pre-made seasoning mix, and mixing together with two wooden spoons. Placing roasting dish in the oven.</p> <p>4) Transferring marinated chicken to another roasting dish, using a fork and spoon. Adding roasting dish to oven. Transferring the remaining breast fillet in a freezer bag and putting it in the freezer.</p> <p>5) Tidying up: returning barbecue sauce to the pantry, adding the chicken packaging to the recycling and throwing away the seasoning packet in the bin. Rinsing bowl and cutlery from marinading chicken and leaving to wash later. Washing hands. Rinsing chicken knife and chopping board and leaving to wash later. Wiping veg chopping board and knife with damp paper towel.</p> <p>6) Removing potato wedges from the oven and mixing with wooden spoons. Returning them to the oven.</p> <p>7) Taking lettuce out of packaging. Rinsing lettuce and tomato under running water. Getting red onion and cucumber from fridge.</p> <p>8) Removing potato wedges from the oven again. Cutting bread rolls in half and placing them on top of the potato wedges. Returning them to the oven.</p> <p>9) Slicing cucumber and tomato. Placing tomato on plates. Chopping lettuce. Adding lettuce to plates. Peeling and slicing red onion. Breaking up with hands and arranging red onion on top of lettuce on plates. Turning off the oven. Arranging cucumber pieces on plates.</p> <p>10) Tidying up: returning remaining cucumber and red onion to fridge. Putting trimmings of lettuce, cucumber and tomato in colander for later disposal. Putting red onion peel in the bin. Adding veg knife and chopping board to the pile of dishes in the sink. Wiping the worktop with paper towel.</p> <p>11) Getting potato wedges and bread rolls out of oven. Placing bottom halves of bread rolls on plates. Getting chicken roasting dish out of oven. Placing chicken portions on top of bread roll bottoms with tongs. Boiling a kettle of water for soaking the roasting dishes. Serving wedges on to each plate and placing remaining halves of bread rolls on top of chicken pieces to form sandwiches.</p>		

Ryan Langsdale	Breast fillets	Fried in small pieces
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- 1) Getting onions out of cupboard and removing one onion from the net. Peeling and chopping half an onion on green chopping board, discarding peel to the bin.
- 2) Rinsing knife. Opening chicken packet. Trimming and chopping two chicken breast fillets into small pieces on a red chopping board. Disposing of trimmings in the bin. Putting empty chicken tray on the floor near the bin. Adding the chicken to a frying pan. Rinsing the red chopping board and knife, and leaving in the sink as the dishwasher is full. Washing hands.
- 3) Going out to refill the boiler, as hot water isn't working.
- 4) Adding oil and salt to frying pan with chicken pieces. Turning on the hob. Stir-frying chicken with spatula. Adding black pepper and stirring again. Adding more oil and continuing to stir.
- 5) Wrapping remaining half onion in clingfilm and placing in fridge. Stirring chicken. Boiling a kettle of water. Stirring chicken.
- 6) Stirring chicken. Pouring boiling water into a saucepan. Adding pasta to saucepan and throwing empty pasta packet in bin.
- 7) Adding onions to frying pan with chicken. Stirring chicken and onions. Adding salt to pasta and stirring with wooden spoon. Stirring chicken and onions. Getting jars of sundried tomatoes and pesto out of the cupboard. Stirring chicken and onions.
- 8) Getting lettuce out of fridge. Removing one lettuce from pack. Stirring chicken and onions. Cutting stem from lettuce and throwing in bin. Chopping lettuce on green chopping board and breaking apart with fingers, in colander. Rinsing lettuce under running water.
- 9) Stirring chicken and onions, and removing from the heat. Transferring washed lettuce to a mixing bowl. Stirring chicken and onions. Stirring pasta. Opening pesto jar, adding several spoons of pesto to the chicken and onions. Stirring the pesto in and returning the frying pan to the heat.
- 10) Opening jar of sundried tomatoes and draining most of the oil, into the sink. Emptying sundried tomatoes and remaining oil into the bowl of lettuce. Washing hands. Stirring chicken and onions. Returning remaining lettuce to the fridge.
- 11) Stirring chicken and onions. Stirring pasta. Mixing together lettuce and sundried tomatoes in mixing bowl, using one hand. Washing hands. Stirring chicken and onions, and removing from the heat. Moving pasta to the chicken hob and stirring. Stirring chicken and onions. Removing a piece of pasta from the pan to test. Returning pasta pan to original hob. Returning chicken and onions to the heat. Testing pasta by eating one piece.
- 12) Adding more pesto to the chicken and onions, and stirring it in. Draining pasta in colander over sink. Adding drained pasta to frying pan with chicken and onions. Mixing together and adding more pesto. Stirring again.
- 13) Serving salad and chicken pasta mix onto a plate. Transferring remaining chicken pasta mix into a plastic tub. Washing frying pan with sponge and washing up liquid under hot running water

Josh Lovell	Breast fillets	Roasted whole
<ol style="list-style-type: none"> <li>1) Washing up equipment to be used: chopping board, knife, scissors. Washing hands. Getting chicken portion (defrosted) out of fridge.</li> <li>2) Getting five potatoes out of a large sack. Removing sprouted eyes from potatoes and putting in bin (plastic bag hanging on cupboard door). Chopping potatoes into wedges on chopping board with sharp knife (both just washed up). Returning sack of potatoes to cupboard.</li> <li>3) Lining roasting dish with foil and pouring oil into it. Transferring potato wedges to dish and drizzling more oil over the top. Seasoning potato wedges with salt and pepper. Placing them in the oven (pre-heated before we arrived).</li> <li>4) Lining another roasting dish with foil and pouring oil into it. Cutting open freezer bag with chicken breasts in it, using scissors. Discarding top part of freezer bag to bin. Transferring chicken breast fillets to roasting dish using a fork and the scissors. Washing hands. Seasoning chicken with salt and pepper. Drizzling more oil over the chicken. Adding chicken to the oven and setting timer for 12 minutes.</li> </ol>		

- 5) Disposing of chicken freezer bag in the outside wheelie bin. Placing plate, scissors and fork on one side. Washing hands.
- 6) Removing chicken and potatoes from oven (prompted by timer). Turning over chicken portions using scissors. Stirring potato wedges. Returning potatoes and chicken to the oven and setting timer for 6 minutes.
- 7) Beginning veg prep (prompted by timer). Setting timer for another 6 minutes. Getting bag of pre cut broccoli florets from the fridge. Heating oil in frying pan. Removing stems from broccoli and cutting into smaller pieces, with knife in hand, straight into frying pan. Adding more oil and seasoning broccoli with cajun spice mix. Returning remaining broccoli to the fridge. Stirring broccoli.
- 8) Removing chicken from oven (prompted by timer). Cutting both fillets in half with a knife and fork, checking the colour inside. Stirring broccoli. Removing potato wedges from the oven. Testing wedges are cooked by prodding them with a fork. Stirring broccoli.
- 9) Transferring one chicken breast, roughly half of potato wedges and most of broccoli to a plate. Seasoning the meal with salt and barbecue sauce.

Sahib Singh	Breast fillets	Fried in small pieces
<p>1) Heating oil in a saucepan. Peeling an onion. Discarding half of it, judged to be bad, in the bin (a carrier bag hanging on a cupboard door). Peeling another two onions. Slicing onions. Peeling and slicing a red onion. Washing hands.</p> <p>2) Transferring red onion slices and some white onion into a small bowl. Sprinkling salt over the rest of the sliced white onion and breaking up into smaller pieces by hand. Adding onion to saucepan. Washing hands. Stirring onions in pan.</p> <p>3) Putting remaining half red onion and half white onion into small plastic food bags. Peeling and chopping garlic, removing the green stems from the middle. Stirring onions intermittently while doing this. Removing pan from heat. Adding chopped garlic to the pan. Washing hands. Stirring onions and garlic and returning pan to heat. Returning remaining garlic cloves to the cupboard. Discarding peelings to a plastic tray.</p> <p>4) Taking one red chilli from a pack and returning the rest of the pack to the cupboard. Stirring onions and garlic. Slicing chilli. Tasting chilli to see how hot it is. Washing hands. Slicing more chilli. Adding chilli to the saucepan and stirring. Adding tomato puree to the pan. Putting remaining half-onions in fridge. Stirring onion and garlic mix.</p> <p>5) Getting bag of mixed salad leaves from the fridge. Opening the bag and emptying the salad straight into a mixing bowl. Stirring onions, garlic and chilli, and adding paprika. Adding bowl of raw white and red onion pieces to salad leaves, by hand. Washing hands. Cutting off section of cucumber. Adding small cube of butter and bottle of passata to pan with onions, garlic and chilli to complete a tomato sauce. Stirring tomato sauce.</p> <p>6) Washing hands. Heating oil and butter in a frying pan. Washing hands. Removing section of cucumber from its wrapping and quickly rinsing under running water. Cutting in half lengthways and scooping out seeds with a spoon, directly into plastic tray with vegetable peelings. Adding mushrooms (which were chopped before we arrived) into frying pan and stirring. Stirring tomato sauce. Continuing to scoop out cucumber seeds. Slicing cucumber. Stirring mushrooms. Stirring tomato sauce. Continuing to slice cucumber. Adding cucumber to bowl of salad.</p> <p>7) Stirring mushrooms and tomato sauce. Opening jar of pickled jalapeno slices and adding to the salad bowl using a fork. Dropping lid from jar on floor. Washing lid and washing hands. Stirring mushrooms. Opening jar of olives and adding to the salad bowl using a fork. Stirring mushrooms. Adding mushrooms to the tomato sauce and stirring. Opening jar of pickled onions and adding to the salad bowl using a fork.</p> <p>8) Adding cherry tomatoes to the salad bowl, straight from the packet. Stirring tomato sauce. Tasting tomato sauce. Seasoning tomato sauce with mixed herbs and black pepper. Adding more butter to the sauce. Washing hands. Stirring the sauce.</p> <p>9) Tidying up: returning lid to jalapeno jar and placing back in fridge. Placing remaining cucumber in a food bag and returning to the fridge. Stirring tomato sauce.</p>		

- 10) Opening pack of mini peppers. Chopping mini peppers, removing stalks and seeds. Adding chopped peppers to salad bowl. Stirring tomato sauce. Washing hands. Stirring sauce. Stirring salad with fork. Putting remaining mini peppers into a food bag and returning to the fridge. Stirring tomato sauce. Disposing of pepper seeds and stalks to the bin (carrier bag). Stirring tomato sauce. Tasting tomato sauce.
- 11) Opening tin of sweetcorn, draining and rinsing over sink using a sieve. Putting tin in the bin. Stirring tomato sauce.
- 12) Heating oil in frying pan. Adding sweetcorn to salad bowl. Stirring tomato sauce. Throwing tray of peelings into bin. Adding chicken pieces (chopped and marinated, with prawns, before we arrived) to the frying pan, by hand. Washing hands. Turning chicken pieces with tongs. Turning chicken again. Stirring tomato sauce.
- 13) Mixing salad with both hands. Washing hands. Turning chicken over again. Prodding with tongs to check how cooked it is. Breaking one piece of chicken in half to look at the colour inside. Transferring chicken pieces to a large black bowl, stirring tomato sauce once in the process. Adding more chicken to the pan. Washing hands. Turning chicken with tongs. Stirring tomato sauce. Cutting avocado in half. Washing hands. Turning chicken with tongs. Stirring tomato sauce.
- 14) Testing texture of chicken with tongs. Scooping out avocado flesh with a spoon and discarding skins to the bin. Transferring cooked chicken pieces to the large black bowl. Adding more chicken pieces to the frying pan. Washing hands. Stirring tomato sauce. Chopping avocado and adding to small bowl. Washing hands. Turning chicken pieces over with tongs. Stirring tomato sauce. Cutting lemon in half and squeezing juice into bowl with avocado. Washing hands. Putting remaining half a lemon in a food bag and returning to the fridge. Seasoning avocado with salt and pepper and stirring with a spoon.
- 15) Turning chicken pieces with tongs. Washing hands. Adding cooked chicken to black bowl. Adding more oil to the frying pan. Adding more chicken pieces to the frying pan. Washing hands. Stirring avocado mix, tasting and adding more black pepper. Adding paprika to the avocado. Turning chicken pieces with tongs.
- 16) Washing up preparatory dishes in sink. Turning over chicken pieces with tongs. Washing more dishes. Washing hands. Adding cooked chicken to black bowl. Adding more chicken pieces to the frying pan. Washing hands. Wiping surfaces near sink. Turning over chicken pieces again. Adding cooked chicken to black bowl. Adding more chicken pieces to the frying pan. Washing hands. Turning chicken pieces with tongs. Washing hands. Turning chicken pieces again. Adding cooked chicken to black bowl.
- 17) Adding more oil to frying pan. Adding final batch of chicken pieces to frying pan. Washing hands. Turning over chicken pieces with tongs (twice). Adding cooked chicken to black bowl. Adding prawns to frying pan. Washing hands and rinsing bowl the chicken and prawns were marinated in, and leaving to soak. Turning over prawns with tongs. Stirring and tasting tomato sauce. Washing hands.
- 18) Transferring half of salad into another mixing bowl and mixing together by hand. Mixing cooked chicken, prawns and tomato sauce together and transferring them to a large plastic container. Rinsing pans and leaving to wash later.

Liam Abney	Breast fillets	Fried in small pieces
1) Heating oil in frying pan. Draining liquid from defrosted chicken into washing up bowl in sink. Transferring breast fillets from plate they were defrosted on to chopping board, by hand. Throwing clingfilm in the bin. Running hot water and rinsing out washing up bowl.		
2) Cutting up chicken breasts into small pieces on chopping board, using fork and knife. Changing to a sharper knife. Filling washing up bowl with hot water and detergent. Continuing to cut up chicken. Transferring chicken pieces to frying pan. Washing hands in bowl of hot water.		
3) Seasoning chicken in pan with salt and black pepper. Stirring chicken with slotted spoon.		

- 4) Opening pack of mushrooms. Laying mushrooms on chopping board and returning the rest of the pack to fridge. Chopping mushrooms in half. Slicing red pepper, removing stalk and seeds and putting these in the bin. Transferring mushrooms to frying pan. Continuing with slicing red pepper.
- 5) Turning over chicken pieces with fork and slotted spoon. Slicing yellow pepper, removing stalk and seeds and putting these in the bin. Stirring chicken and mushrooms. Turning over chicken pieces with fork and slotted spoon.
- 6) Opening packet of chopped lettuce. Transferring lettuce to two plastic containers, by hand. Laying red and yellow pepper slices on top of lettuce. Stirring chicken and mushrooms.
- 7) Using knife and fork to cut one piece of chicken in half, looking at the colour inside. Adding peri peri spice mix to the pan and stirring.
- 8) Tidying up: returning remaining lettuce to the fridge. Clearing dry dishes from draining board, putting away in cupboard. Washing plate from defrosting chicken. Putting away seasoning ingredients and oil in cupboard. Stirring chicken and mushrooms.
- 9) Smelling open packet of halloumi to check if it is still ok to eat (deciding to throw it away). More washing up. Turning off hob and transferring chicken and mushrooms to the top of each plastic container. Filling frying pan with water to soak.

Daniel Thorne	Thighs/drumstick s	Roasted in Remoska mini-cooker
1) Pre-heating Remoska mini-cooker. Getting pack of chicken out of fridge. Opening packet. Adding two thighs and one drumstick to the Remoska, by hand. Putting lid back on Remoska. Washing hands.		
2) Returning remaining chicken to the fridge. Getting lettuce, tomato, mushrooms and an onion out of the fridge. Peeling and chopping onion. Discarding peel in the bin (plastic bag hanging on radiator). Chopping mushrooms in half. Returning remaining mushrooms to fridge.		
3) Taking out one lettuce from the pack and returning the other lettuce to the fridge. Washing lettuce under hot running water. Removing several leaves from the lettuce and returning the rest to the fridge. Chopping one tomato and returning the remaining one to the fridge.		
4) Lifting lid on Remoska to visually check the chicken. Rinsing plastic container and drying with paper towel. Transferring lettuce, tomato, mushrooms and onion to the plastic container. Adding oil, salt and black pepper to the salad. Putting lid on container and shaking to mix the ingredients. Checking the chicken again.		
5) Filling sink with hot water and detergent. Washing up chopping board and knife. Wiping surfaces around sink with cloth. Checking chicken again.		
6) Checking chicken again. Transferring one chicken thigh to a plate and cutting it open with knife and fork to check the colour inside. Doing the same with the other two pieces of chicken. Unplugging the Remoska.		
7) Transferring the cooked chicken pieces to the plastic container. Adding more oil to the top of the chicken. Putting the lid on the container and leaving to cool for eating later, at work. Washing hands.		

The order of cooking among the Norwegian research participants		
Research participant	Chicken product	Heating method
N-ANNA	Legs	Roasted in the oven
1) Preparation of chicken, which includes fetching food, rubbing the thawed chicken with mayonnaise and place garlic inside. She places the chicken in the oven. Anna also washes up some utensils she needs and washes her hands in between handling chicken		

- 2) Anna fetches utensils and ingredients for the salad and prepares a salad, which includes to thoroughly rinse and dry the vegetables, cutting them and mixing it all together in a salad bowl. At the end, Anna checks the chicken in the oven and places the salad in the fridge.
- 3) Next, Anna prepares potatoes, which she rinses and peels, and places in a designated potato cooker. In between this, she rinses, wipes and washes her hands and tosses waste
- 4) Finalizing the meal with tidying and cleaning, in between boiling potatoes in the microwave and taking the chicken out of the oven

N-BENTE	Thigh filets	Fried whole in a frying pan, simmering in water
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- 1) Bente starts by fetching the various ingredients from the fridge, and some utensils. She sets water to boil, rinses potatoes, heats a frying pan with canola oil and open the chicken package. She then puts the potatoes in the boiling pot and the chicken in the hot frying pan. Bente is juggling these two main activities at the same time, only interrupted by her rinsing her hands (and sampling of chicken).
- 2) Bente prepares a salad, which includes fetching utensils, rinsing and chopping vegetables and mixing all in a salad bowl, topped with olive oil. In between this, Bente flips the chicken pieces and checks the temperature on the frying pan, as well as tidying and tossing waste from vegetable and chicken packaging
- 3) Bente wipes the kitchen counter and puts the remaining food back in the fridge. She checks potatoes and chicken for doneness, and adds some water to the chicken pieces to make maintain tenderness while she waits for the potatoes. Finally, she checks the doneness again and decides both potatoes and chicken are done.

N-CHRIS	Breast filets	Fried in pieces and later added to casserole
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- 1) Preparation of chicken and vegetables including cutting vegetables and chicken, fetching utensils and food, washing hands and cleaning utensils in between
- 2) Heating: Preparation of side dish (pasta) and frying the chicken, preparing the first round of salad, washing hands and cleaning utensils in between.
- 3) Juggling between frying the chicken and preparing the salad (first round). Using the chicken knife for the salad
- 4) Tossing away the first salad. Creating the dish by combining all the vegetables, chicken and pasta in the pan, adding other ingredients, preparing the second salad, cleaning utensils and washing hand in between
- 5) Finalizing the dish, tidying, tasting before serving

N-EMMA	Breast filets	Fried in pieces and later put in an ovenproof dish
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- 1) Preparation phase. Includes fetching utensils for all meal components, set water for pasta to boil and cutting chicken into pieces. Emma also tends to her baby who is crying, and washes her hands after touching raw chicken.
- 2) Emma fries the chicken pieces, while starting on vegetables for the oven dish, and pasta. She repeatedly flips chicken pieces in the frying pan, in between washing up knife and cutting board from chicken preparation, rinsing and cutting onion and red pepper, and adding pasta to the boiling water. In between this, Emma tends to her three children. Finally, Emma moves the fried chicken to the ovenproof dish
- 3) Heating vegetables in frying pan and starting the sauce, while finalizing the pasta. Emma juggles stirring the frying vegetables, boiling sauce and boiling pasta, while tending to her baby at the same time, sometimes carrying him in one arm while stirring with the other. Pasta and vegetables are added to the chicken in the ovenproof dish.
- 4) Emma remembers she has asparagus and rinses, cuts and heats them. In between this, she starts preparing the salad, and repeatedly stirs the sauce. She feeds vegetable cut-offs to the guinea pigs and washes her hands after. She adds the finished sauce, canned corn and cheese to the oven dish, and puts it in the oven
- 5) Emma finishes the salad, which includes fetching food, chopping and mixing all in a salad bowl. She checks her phone, tends to her children, washes her hands and tosses waste.
- 6) While she waits for the oven dish to finish baking, Emma tidies the kitchen, including tossing waste, wiping the counter and washing up. she feeds the guinea pigs once more, and

gets help from her two older children to set the table. Finally, she takes out the oven dish from the oven and serve it on the dinner table.

N-FREDRIK	Thighs in pieces	Fried in a frying pan and roasted in an oven proof dish
1) Preparation phase. Fredrik washes his hands, turns on the oven, fetches food, and utensils, and tidies the workspace.		
2) Preparation of the heated vegetable dish. Includes opening packages, chopping vegetables and adding them to an ovenproof dish. Fredrik seasons the vegetables with olive oil and salt and pepper, and mixes it all together. In between, Fredrik heats a frying pan for the chicken and adds butter and olive oil to it. These activities are also intermingled with tidying, tossing waste, and checking the mobile phone.		
3) Heating of chicken and vegetables. Includes opening chicken package and frying them in a pan, before adding them to the vegetable dish that was put in the heated oven. In between this, Fredrik tidies, placing remaining food back into fridge, wipes his hands with kitchen paper, tosses waste, and checks his mobile phone.		
4) Preparation of salad. Fredrik starts by washing his hands, fetching utensils and washing up the salad bowl. In between washing, he checks his phone and lets in his dinner guest. He then opens packaging and chops vegetables for the salad, draining mozzarella and mixing it all together, seasoned with salt, pepper and olive oil.		
5) While the oven dish gets ready, Fredrik tidies and tosses waste, and sets the table, as well as serving salad. Finally, he takes the dish out of the oven and checks doneness.		
N-GEORG	Breast filets	Fried whole in the frying pan
1) Preparation of vegetables and chicken. Georg starts by washing hands. Then rinsing and cutting vegetables, making marinade and marinating the chicken filets. In between he also tidies waste from the vegetables.		
2) Continue to prepare vegetables. Cutting pepper and peeling garlic, in between continued marinating the chicken filet and adding oil to the heating frying pan		
3) Heating chicken. Includes fetching utensils, adding one filet to the pan first, while marinating a new filet. He then removes the first filet from the pan to make room for the second, and then adds the first to the pan again. He flips the chicken filets and seasons them with lime. In between this, Georg continues to prepare vegetables and tidies and tosses waste. He then moves the fried chicken filets to a dinner plate		
4) Heating vegetables. Georg finishes cutting vegetables and heats them in the same pan as the chicken. The vegetables are then served on the dinner plate with the chicken		
5) Finalizing the meal. Includes setting the table and seasoning the salad with olive oil and balsamic vinegar, as well as fetching salt and pepper.		
6) Georg realizes the chicken is not properly cooked and reheats the frying pan, adding the chicken filets to fry some more.		
N-HANNE	Thigh filets	Fried in pieces in the frying pan
1) Preparation of rice and sauce. Includes fetching utensils, bag of rice and semi-finished sauce, heating and stirring. Intermingled with checking the recipe on the packaging, tidying and tossing waste. Hanne prepares rice and sauce in cooperation with her son, Håkon.		
2) Preparation of chicken. Includes fetching new utensils and cutting the chicken, in between checking the temperature on- and stirring- the sauce and rice. Hanne also washes her hands, tosses waste and tidies. She cooperates with her son, Håkon during this phase as well.		
3) Preparation of vegetables. Includes fetching new utensils, rinsing and tearing or chopping vegetables for a salad, and adding ready-marinated feta cheese to the salad. This is intermingled with tidying, tossing waste from packaging or cut-offs, stirring the sauce, washing hands and taking care of children. Håkon is demanding more attention from his mother at this stage.		
4) Heating chicken. Includes fetching spices, seasoning and stirring the frying chicken, intermingled with stirring the sauce and washing up and tidying.		

5) Finalizing all components of the meal. Includes checking and determining doneness for the chicken, stirring the chicken and the sauce, and serving them, as well as rice and salad. In between, Hanne is tidying, tossing waste, setting the table and (sometimes at the same time as) taking care of her two children.

N-INGER	breast filets	Fried in pieces in the frying pan
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Fetching food and utensils, preparing and serving salad in boxes in between tidying, tossing waste, washing up and wiping surfaces as she went along and washing/rinsing hands.

Storing food boxes with salad, washing up, tidying everything from the salad preparation  
Cutting and heating chicken in between preparing side dish (rice), fetching utensils and food, tidying, tossing waste, washing up and wiping surfaces as she went along and washing/rinsing hands. Also tending to grandchild including (serving food).

Storing food boxes with chicken and rice, tidying, tossing waste, washing up and wiping surfaces

N-JON	Breast filets	Fried in pieces in e frying pan, simmering in sauce
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1) Fetching utensils, preparing side dish and chicken, including making marinade and marinating the chicken, intermingled with washing hands, tossing waste and checking the recipe

2) Preparation of side dish, which Is rice. Includes boiling water, adding the rice and spice mix and setting the time, using his phone. Intermingled with washing hands, tossing waste, and heating the frying pan for the chicken, adding oil.

3) Heating chicken in frying pan, adding sauce ingredients and letting it simmer until he decides it is done. Finalizing the chicken dish, Intermingled with checking recipe and stirring rice

4) Preparing cucumber, which finalizes the vegetable dish. The lettuce and pepper are pre-prepared as they are leftover from yesterday's dinner

N-KARI	Pre-cut breast filets	Fried in the frying pan
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1) Preparation and heating of chicken with garnish. This step includes fetching chicken, garnish and vegetables, fetching utensils, intermingled with checking recipe, tidying, tossing waste, cleaning, and washing hands.

2) Preparation of vegetables for salad. This step includes fetching utensils, fetching food, and peeling and cutting vegetables, as well as checking the recipe and tidying in between

3) Preparation of salad dressing, intermingled with fetching food, fetching utensils, tidying, and mixing the dressing in a kitchen machine

4) Tidying and checking recipe

5) Finalizing the dish. Including mixing the dressing with the salad, decorating the salad, as well as cleaning.

N-Lena	Breast filet	Fried in pieces in the frying pan in two batches, then boiled in casserole
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Preparation of the whole meal, including fetching utensils (pots and pans), washing up cutting boards, knives, vegetables cutter, fetching and unwrapping fruits and vegetables, boiling water for side dish (barley) and tending to baby daughter in between and washing hands

Preparation of salad including peeling and cutting of fruit and vegetable in between tending to baby, fetching vegetables, preparing barley, washing hands, tossing waste and watering herbs

Cutting and heating of chicken while tending to baby, tidying/washing up, preparing the sauce for the chicken stew, washing hands and stirring the side dish (barley) in between Fiancé and oldest daughter arrives and take over tending to baby. Heating chicken, preparation of sauce for the chicken stew and side dish continues. In between, washing hands tidying/washing up, tossing waste and preparing and serving salad.

Finalizing/serving the meal after tending to baby, washing hands, tossing waste, tidying and washing up

N-NILS	Pre-cooked and cut chicken pieces	Fried in the frying pan and later cooking in a stew/sauce
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<p>Frying the chicken and cleaning utensil in between</p> <p>Preparing the salad and washing up/cleaning, tidying utensils and tossing waste in between</p> <p>Preparing rice, heating the chicken stew and washing up/cleaning and tidying utensils in between</p> <p>Frying bacon to put on top of the salad, washing up/cleaning/tidying in between, heating the chicken stew</p> <p>Serving the food and washing up/cleaning/tidying and tossing waste in between</p>								
N-ODA/OVE	Breast filets	Fried in pieces in the frying pan – cooked in an ovenproof dish						
<p>1) Preparation of the chicken dish. Fetching utensils and food from the fridge. Frying bacon, frying chicken and mixing ingredients for sauce. Adding all elements into an ovenproof dish, and sprinkle cheese on top. This is intermingled with tidying, tossing waste, cleaning and washing hands.</p> <p>2) Preparation of vegetables, including washing up utensils from step 1 and fetching new utensils, fetching food, rinsing and chopping vegetables. Includes tidying, putting remaining vegetables back into fridge. Intermingled with putting the chicken dish in the heated oven.</p> <p>3) Making dressing for the salad and mixing the dressing and salad together. Tidying, tossing waste and cleaning</p> <p>4) Preparation of side dish (rice), intermingled with washing up and tidying. Finalizing and serving the chicken dish, salad and rice.</p>								
<p>N-PETTER</p> <table border="1"> <tr> <td>N-PETTER</td><td>Breast filets</td><td>Fried in pieces in a wok pan</td></tr> <tr> <td colspan="3"> <p>1) Preparation of chicken including washing hands, fetching utensils and food, cutting chicken, making Asia-inspired marinade and marinating the chicken pieces, as well as tidying and washing the cutting board and knife after</p> <p>2) Preparation of vegetables and rice. This includes fetching vegetables and rinsing and chopping them, boiling water for the rice. This is intermingled with tidying and tossing waste.</p> <p>3) Preparation of chicken, sauce and vegetables, including heating chicken and vegetables, and making sauce, intermingled with stirring rice, tasting food and washing up</p> <p>4) Finalizing the dish, mixing sauce with fried chicken and vegetables, placing wok pan with water in sink, and serving the food</p> </td></tr> </table>			N-PETTER	Breast filets	Fried in pieces in a wok pan	<p>1) Preparation of chicken including washing hands, fetching utensils and food, cutting chicken, making Asia-inspired marinade and marinating the chicken pieces, as well as tidying and washing the cutting board and knife after</p> <p>2) Preparation of vegetables and rice. This includes fetching vegetables and rinsing and chopping them, boiling water for the rice. This is intermingled with tidying and tossing waste.</p> <p>3) Preparation of chicken, sauce and vegetables, including heating chicken and vegetables, and making sauce, intermingled with stirring rice, tasting food and washing up</p> <p>4) Finalizing the dish, mixing sauce with fried chicken and vegetables, placing wok pan with water in sink, and serving the food</p>		
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N-ROGER	Chicken filet	Fried in pieces in the frying pan in two batches. Afterwards added to the wok with vegetables						
<p>Fetching utensils (cutting board, knife, frying pan), food (chicken, noodles, frozen vegetable wok mix, sauce, beer) and washing hands</p> <p>Preparing chicken, cutting chicken breast fillets into pieces, frying chicken pieces in two batches, fetching butter for the frying pan and putting in back into the fridge, setting temperature in the stove, washing hands, stirring chicken, washing up (knife), tossing paper waste and sipping a beer in between</p> <p>Frying vegetable wok mix, fetching butter for the frying pan and putting it back into the fridge, stirring the vegetables, washing up, rinsing hands, wiping the stove, preparing the pot of boiling water for the noodles, setting temperature on the stove, having sips of beer in between</p> <p>Bringing the chicken, the noodles and the sauce into the frying pan of vegetables, stirring the dish, washing up and tidying, checking mobile phone</p> <p>Turning off the heat on the stove, washing up and tidying</p>								

## Appendix E: French cooking methods and chicken preferences

The choice for the chicken product was made by the participants according to their food habits, the number of people who would eat the meal prepared (either their household, family and roommates or because they invited investigators over) and their cooking skills (Fabrice, YSM, for example, did not know how to cook a whole chicken, in terms of temperature or duration). Most of the research participants said they were considerate about the origin of chicken, including those who bought a whole chicken, but also expresses by a family who bought chicken fillets and an elderly participant who bought chicken legs. All of the 5 elderly participants (rural or urban) bought chicken at their local producer, butchery or cooperative, and told that local origin was an important decision-making criterion when buying chicken products. Three of the young males also mentioned the importance of local origins of chicken products (Aurelien, YSM; Vincent, YSM; Etienne, YSM). Among the families, one told she tried to buy special quality label chicken, Label Rouge<sup>1</sup> (Mathilde, YF), another family told they preferred buying chicken which was “raised without antibiotics treatments” (Elodie, YF).

Int: Where did you buy the chicken and how did you choose it?

Elodie (31, YF, R, FR): At Super U, sometime ago. It was raised without antibiotic treatments. If I can I would buy organic, but I can't, so at least this is without antibiotics.

A family preferred chicken products with a “farm label” (indicating free range or outdoors chickens) (Amandine, YF). Julie (YF) preferred buying meat from the butchery, because she thought it tastes better and was healthier with less preservative.

Julie (28, YF, U, FR): I used to take meat [at the supermarket] but since my husband gets lunch coupons, I take it at the butcher, it is much better... I know about preservatives, many chemicals, which are not used at the butcher.

All the French participants except one (14/15) cooked chicken bought in supermarket, local producers, or in a butcher shop. Only one participant (Etienne, YSM) cooked one of his own chickens, that he had raised, butchered, gutted, and plucked 6 months ago and that he kept in his freezer. 11 participants cooked a fresh chicken product they bought the same day or the day before at the supermarket or the butchery. 4 out of 15

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<sup>1</sup>Label Rouge is a French label attributed to products with “higher quality” essentially based on their sensory characteristics and their perception, but also on production conditions, which differ from the conditions of production of usually marketed similar products; product image in terms of its conditions of production; elements of the presentation or service. At all stages of its production and its development, products must meet the requirements defined in the specifications, validated by the National Institute of Origin and Quality (INAO) and approved by a ministerial order published in the Official Journal of the French Republic.<https://www.inao.gouv.fr/eng/Official-signs-identifying-quality-and-origin/Label-Rouge-Red-Label>

participants used frozen chicken, from 6 months (Etienne, YSM) to a few days prior to the observation (Gérard & Odile, E; Bernard & Hélène, E and Yvette & François, E) (See table in appendix for an overview of the heating method and the order of food preparation during our observations at participants). All of the participants who cooked a whole chicken, used the oven. Of these 6/8 participants baked it in a dish, with sauce, butter, oil or water.



Cooking the whole chicken in the oven with fat and herbs (Vincent, 29, YSM, R, FR)



Cooking whole chicken in oven with fat and herbs (Odile, 65, E, R, FR)



Cooking whole chicken with water, fat, herbs and garlic (Sylviane, 77, E, R, FR)



Cooking whole chicken with vegetable sauce and coco milk sauce (Julie, 28, YF, U, FR)



Cooking whole chicken with fat and spices (Yvette, 74, E, U, FR)



Cooking whole chicken with fat and herbs (Etienne, 30, YSM, R, FR)

One of the participants, Amandine (YF) baked it in the oven, by inserting the chicken in a plastic cooking bag with spices. This is a new product found in the supermarket shelves, which prevent fat to spoil the oven. Another participant, Charles (E) (elderly, rural, France) roasted the whole chicken on a spit in his oven. It took 2h50 to cook it, which was the longest time observed for cooking chicken among the French participants.



Plastic cooking bag for chicken with a spices mix (Amandine, 27, YF, R, FR)



Chicken on a spit (Charles & Annie, 75, E, R, FR)

Among the 5 participants who cooked chicken breasts, 4 of them fried pieces in a frying pan or pot with oil (Aurélien, YSM; Fabrice, YSM; Mathilde, YF) and with no fat (Simon, YSM) for a taste question. Elodie (YF), mother of 5 children made 2 preparations for the breast chicken: she cooked some pieces in a frying pan only for her younger daughter. Her main dish was, however, to cook whole breast fillets in paper “papillote” (paper pouches impregnated with oil and covered with spices) in a pan. ☺

Elodie (31, YF, R, FR): I like “papillottes” very much, I use them often, no need to add fat. It has been on market for a few years. I saw it on TV.



Cooking chicken pieces in a pan with fat (Fabrice, 24, YSM, U, FR)



Cooking chicken pieces with coco milk simmered (Mathilde, 37, YF, U, FR)



Cooking chicken pieces in a stew pot  
(Aurélien, 25, YSM, R, FR)



Cooking chicken pieces in a pan with no  
fat (Simon, 25, YSM, U, FR)



Putting chicken in the paper « papillotes » covered with spices (Elodie, 31, YF, R, FR)

For the 2 participants who cooked chicken legs, one elderly participant (Bernard, E) fried them in a wok pan and one family participant (Mylène, YF) cooked them in her cooking robot (Thermomix), following a recipe, in steam.



Putting the chicken legs in the upper  
part of the “thermomix” cooking robot  
(Mylène, 25, YF, U, FR)



Cooking chicken legs in a wok pan  
(Bernard, 72, E, U, FR)