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FOOD STANDARDS AGENCY
SOCIAL SCIENCE RESEARCH COMMITTEE

**Report of the SSRC Working Group on *Listeria monocytogenes* and the
food storage and food handling practices of the over 60s at home**

September 2009

Contents	Page
Acknowledgements	iii
Summary	1
1. Introduction	
1.1 <i>Background</i>	5
1.2 <i>The SSRC Working Group’s approach to its work</i>	6
1.3 <i>Preamble to this Report</i>	7
2. Overview of existing research	9
2.1 <i>Food hygiene and food safety practices</i>	10
2.2 <i>Food and ageing</i>	12
2.3 <i>Life-stage, demographic and ‘lifestyle’ factors</i>	14
2.4 <i>The UK food retail environment</i>	14
3. Existing data sets available for secondary (further) analysis	16
4. Secondary data analysis	18
5. Proposed next steps and options for further research	19
5.1 <i>In-depth literature reviews and secondary analysis</i>	20
5.2 <i>New primary research</i>	21
5.5. <i>Meeting the FSA’s priorities</i>	24
Annex 1. Membership of the SSRC Working group and Scope of Work	
Annex 2: Literature search terms	
Annex 3: Interviewees	
Annex 4: Five cases illustrating socio-demographic variability among UK residents aged 60 years and above	
Annex 5: Existing data sets	
References	

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Summary

1. This report was produced by the Social Science Research Committee (SSRC), at the request of the Food Standards Agency (FSA). The FSA was responding to a recommendation made by the Advisory Committee on the Microbiological Safety of Food (ACMSF)'s *Ad Hoc* Group on Vulnerable Groups in response to the increased incidence of listeriosis among the over 60s in the UK since 2001. The SSRC agreed to advise on what existing evidence could be reanalysed and what new research might be commissioned to explore what food those aged over 60 consume, how they store and prepare it and how this might impact on their susceptibility to listeriosis.
2. This document reports the work of the SSRC Working Group which included a preliminary literature search, undertaking a small number of interviews with relevant experts and inspecting a range of existing data sets available for secondary analysis. No new research was undertaken as part of this review and our conclusions are based on the limited available evidence.
3. The overview of existing literature indicates a fragmented research effort to date with topics of interest investigated in isolation from one another and from different disciplinary perspectives, including food and ageing, life-stage, demographic and 'lifestyle' factors and food hygiene and food safety practices of the over 60s.
4. In referring to 'the over 60s' throughout this report, we are conscious of the diversity of this population. A lack of differentiation within this large and rapidly growing population is a characteristic of the literature on food safety issues. Greater attention to the diversity of older households will be an important consideration in any future research.

5. Before considering whether to embark on new primary research it will be important to commission a full, thorough and critical appraisal of a wider range of literature on relevant topics in the social sciences: examining work in additional social scientific disciplines/ sub-fields, particularly human geography, the sociology of consumption, psychology and economics; to include topics such as the provision of 'meals on wheels', care home and institutional settings; studying the research on the influence of ageing on people's physical, psychosocial and psychiatric state of health and the effects on food purchase and handling among those of 60 years and above. This review should also include a wider search for relevant international work especially for e.g. the Nordic countries and Australasia, as well as at EU level.
6. Several existing data sets are available and offer some opportunities for useful secondary analysis which could be carried out in tandem with the review of existing literature: English Longitudinal Survey of Ageing (ELSA); Expenditure and Food Survey (EFS); Food in Later Life study; Low Income Diet and Nutrition Survey (LIDNS); UK 2000 Time Use Survey; TNS Worldpanel.
7. In addition to a review of existing data sources, a strong case may be made for primary research as the overview of the current literature and consultation with relevant experts confirms the *Ad Hoc* Group's summary finding that data specifically focused on the shopping, food behaviour and consumption patterns of those of 60 years of age and above is limited. A focused investigation, using a variety of research approaches and methods, may be necessary to explore what different socio-demographic groups of those 60 years of age and above both report and are actually doing when they purchase and then store, prepare, cook and eat food (and dispose of waste).
8. Some options for new primary research are:

- i. a specially designed independent social survey to provide accurate baseline data on the range of knowledge of food safety and of food handling practices among the over 60's population in the UK.
- ii. this survey could be designed to lock onto the FSA's new Food Issues Survey (FIS). Since FIS is still at a comparatively early planning stage, and its content currently under review, a timely opportunity is offered to recommend that the topics of domestic food hygiene knowledge, and reported food handling, food safety practices be included as a priority for the first wave of the survey due in 2010. If consent is sought, both of these survey options would provide the opportunity to follow up specific groups of people who have characteristics of interest in a more detailed exploration of beliefs about food, safety and kitchen hygiene and/or of actual behaviour in the home.
- iii. a household based study of those aged 60 and above who have contracted listeriosis (undertaken in collaboration with the Health Protection Agency) to establish the socio-demographic characteristics of those who have contracted listeriosis in the recent past
- iv. a detailed study of key stakeholders to uncover their views about (a) current provision of food safety and health advice to those of 60 years of age and above (b) the identification of best practice and (c) the best means of encouraging and supporting best practice
- v. to gain a better understanding of the effect of any recent changes in the retail environment (eg changes in pack size, special offers) on the food purchasing and consumption practices of the elderly, further research with food retailers would be required (including analysis of existing datasets and new interview-based research).

An indication of timescale and approximate costs for these options can be supplied if required.

9. If the FSA's main concern is to understand the causes of future changes in listeriosis among the elderly, then i) and ii) above should be regarded as a

high priority, whereas if it is to understand the health effects of current food-related practices among the elderly, then iii) and/or iv) are higher priorities. Though important v) is unlikely to be so high a priority.

10. Since there is a wide range of social science disciplines which provide insights on the key issues of concern to the FSA, then ensuring that any future work benefits from the distinctive contributions of each of those disciplines requires establishing a robust cross-disciplinary partnership to secure the appropriate procurement and management of any new work the FSA commissions.

1. Introduction

1.1 Background

1. In 2008, the *Ad Hoc* Group on Vulnerable Groups of the Advisory Committee on the Microbiological Safety of Food (ACMSF) presented a Report entitled 'Increased Incidence of Listeriosis in the UK (draft)' (ACMSF 2008). The Report considered a change in the epidemiology of human *Listeria monocytogenes* infection in England and Wales since 2001 to which the ACMSF had been alerted by the Health Protection Agency (HPA). This change has been reported for other countries over the same period, including Scotland, Northern Ireland and elsewhere in Europe. The increase has predominantly occurred in patients of 60 years of age and above¹. In June 2007, ACMSF considered the high level of reporting of listeriosis in the UK and agreed that 'the change in epidemiology was more likely to be linked to social factors rather than a change in the bacterium', referring the issue of 'listeriosis in the elderly' to its *Ad Hoc* Group on Vulnerable Groups. In turn, that Group recommended that the Food Standards Agency (FSA) refer its Report to the Agency's Social Science Research Committee (SSRC) 'to consider the food storage and handling practices of elderly people in the home' (ACMSF 2008:44).

2. The referral was duly initiated and undertaken by the ACMSF's *Ad Hoc* Group on Vulnerable Groups. Professor Tom Humphrey, Chair of the ACMSF's *Ad Hoc* Group on Vulnerable Groups presented the Report at the SSRC's second meeting in November 2008. Among other things, the Report highlighted the need for, but also gaps in, evidence that would help identify specific 'consumption patterns of vulnerable groups' in those aged 65² and above, that would provide information on the 'food safety perception and practices in older

¹ presenting with 'bacteraemia... without central nervous system... infection' (ACMSF 2008:8)

² Para 4.55 (ACMSF 2008:43) refers to the 'over 65s' not the 'over 60s'.

age groups' and serve as a data source about the shopping, food storage, cooking and eating behaviours of all 60 years of age and above (ACMSF 2008: 43). The SSRC was asked to advise on how the social sciences could help in filling this gap.

3. In the discussion that followed Professor Humphrey's presentation, the SSRC agreed that it could help in significant respects. It can advise on what existing evidence could be reanalysed ('mined') and on what new research could be commissioned to explain what food elderly households (domestic setting) consume and how they store and prepare it. Professor Roger Jowell, SSRC Chair, stressed, however, that the social sciences will not be able to explain the increase in listeriosis in the last ten years because of the absence of historic data. In other words, no baseline data exist. The social sciences can, however, help unravel what is happening now in respect of consumption patterns, food storage and food preparation practices of this population group, thereby contributing to the creation of baseline data. The SSRC agreed on the formation of a Working Group with a view to producing an interim advice paper for the ACMSF.

4. The SSRC formed a Working Group (see Annex 1 for membership) in January 2009 to investigate what existing evidence could be further analysed and what new research might be commissioned to shed light on the way food is consumed (both what and how food is purchased and eaten) and the way food is stored and prepared by those of 60 years of age and above in a domestic setting. This document reports the work of that Working Group.

1.2 The SSRC Working Group's approach to its work

5. A document outlining the scope of work was drawn up and agreed by the ACMSF and SSRC Secretariats in December 2008 (see Annex 1). It specified the nature, extent but also limits of the SSRC Working Group's activities aimed at providing an interim advice paper to provide an initial view of the field. In

particular, it specified that the Working Group would neither be reviewing existing work nor be undertaking primary research. Rather it would concentrate on the current position to identify, in broad terms, what work has been conducted, what may be under way and what might be done in the future.

6. The Working Group completed the following:-

- literature searches (for search terms see Annex 2)
- interviews with experts including those in: the epidemiology of food borne disease; gerontology and the health behaviours of older people; food habits and food consumption among older people; food hygiene behaviour and research methodologies in older people, food hygiene behaviour generally.
- inspection of a range of social and dietary surveys, including contacting those associated with, or working on them.

1.3 Preamble to this Report

7. The ACMSF Report examines in particular the increase in cases of listeriosis amongst those of 60 years of age and above and this paper focuses also on this group. It is understood that due to the relatively low number of cases and the limited socio-demographic information collected about the cases that it is not possible to refine the group much further, but that there is a higher number of cases in certain subgroups within the group of those aged 60 years and above. The subgroups include those who are much older (cases increase with age), those with weakened immune systems and men (there are more cases amongst men 60 years of age and above than women 60 years of age and above).

8. The ACMSF Report also draws attention to the definition of a vulnerable group, noting those for which listeriosis vulnerability is considerably increased. It also notes that the 'identification of specific vulnerable groups is not straightforward', adding that 'there is no accepted definition of "elderly" or other similar terms such as "older adult"' (ACMSF 2008:6-7).

9. A social scientific viewpoint underlines such difficulties, pointing to additional complexities in how this age group is characterised³. The original HPA data (para 1 above) for patients of 60 years of age and above among whom an increase in the occurrence of listeriosis predominates, may, of course, conceal an extremely wide variety of socio-demographic characteristics. The thumbnail sketches⁴ presented in Annex 4 of an ad hoc selection of five actual (anonymised) cases illustrates some of the variation in, age, income level, household composition, marital and employment status, health/degrees of infirmity etc. In addition, 'patients of 60 years and over' may include those who are a whole generation apart, such that those who themselves are already in their late sixties and early seventies may act as carers for those in their eighties and nineties. In other words, those of '60 years and over' may be at different stages of the life course⁵ – e.g. the stage of grandparenthood or great-grandparenthood. Similarly, those of the same age and cohort, may include those who have suffered bereavement and entered widow- widower-hood, perhaps facing dramatically different economic as well as social-psychological circumstances. Sex-differentials in morbidity and longevity immediately following widow- widower-hood may reflect the differential consequences of solo-living for women who are used to housekeeping and men who are not, and may be significant in the present context (Davidson, Daly & Arber, 2003a; 2003b; Davidson & Arber, 2004). Different stages of the life course and/or different marital, economic etc circumstances can all have effects on health status and

³ Whether and how those aged 60 years of age and above are held to represent some sort of social problem deserving policy attention and practical support is itself variable, c.f Macintyre, 1976.

⁴ Assembled opportunistically, as part of preliminary preparation for a project which was eventually redesigned.

⁵ The term refers to the passage of an individual through life and through notable life events from birth, such as marriage, parenthood, bereavement, retirement from employment. The term allows differences between typical biographies of men and women and between those of varying socio-economic circumstances to be characterised and compared, as well as enabling the simultaneous analysis of the passage of biographical time in the context of the passage of historical time (Bryman et al 1987).

wellbeing in addition to contributing directly to the circumstances of daily living, that, in turn also includes food purchase, storage, preparation and consumption.

10. More than that, simple classification as ‘those of 60 years of age and above’ also conceals a distinction to be made between different cohorts. Thus highlighted is the historical period in which they reached adulthood, learned about domestic food handling etc and thereby, the need to bear in mind a distinction between age (biography) and cohort (history). The cases in Annex 4 provide a reminder that some of those aged 60 years and over were young adults already in employment at the outbreak of World War II (housekeeping during which, of course, required distinctive attention, with food rationing not finally ended until 1954) while others now also aged 60 years and above were not yet born.

11. More broadly, recent multi-disciplinary social scientific research⁶ on ageing and growing older in general further illustrates the socio-demographic variety among those aged 60 year and over, including dimensions such as migration, ethnicity and membership of minority groups. In addition, this research details the complexities of quality of life, health status, social support as well as social features shaping their opportunities for more/less difficult daily circumstances. In referring to the ‘over 60s’ throughout this report, we are conscious of the diversity of the population. However, a lack of differentiation within this large and rapidly growing population is a characteristic of the literature on food safety issues.

2. Overview of existing research.

12. This section presents an overview of existing research (see References) in order to illuminate what is currently known in respect of consumption patterns,

⁶ Details of such programmes are to be found at <http://www.growingolder.group.shef.ac.uk/books.htm> and <http://newdynamics.group.shef.ac.uk/>.

food storage and food preparation practices⁷ of those aged 60 and over. It reveals a fragmented research effort to date, with a tendency for topics of interest to this Report to be investigated in isolation from one another. This fragmentation is exacerbated in that several different disciplines have contributed, each inevitably bringing their own theories, methodological approaches and practical concerns to bear. As a result there is no self-evidently suitable order in which to consider the following topics; the list is arbitrary.

2.1 Food hygiene and food safety practices of the 60 years of age and above

13. The central issue of concern is the food hygiene and domestic food safety practices in which those of 60 years of age and above engage. Our examination of the literature has shown that very little is known about these practices. A small number of US-based studies (Johnson *et al.*, 1998; Gettings & Kiernan, 2001; Kendall *et al.*, 2003; Kendall *et al.*, 2006; Almanza *et al.*, 2007;) and two studies across the UK and Republic of Ireland (Hudson & Hartwell, 2002; Brennan *et al.* 2007) have directly addressed the food hygiene practices of those 60 years of age and above. These studies suggest that older people handle food differently from younger people though it is not clear how and why this occurs. The main reported differences include poor refrigeration and defrosting practices; differences in cooling, storage and reheating of leftovers; variable adherence to 'use-by' and 'best-before' dates; and differences in personal and domestic hygiene (e.g. hand-washing and cleaning of kitchen surfaces). Most of the literature does not differentiate within the over 60s, though one or two studies (e.g. Johnson *et al.* 1998, Brennan *et al.* 2007) discuss differences by socio-economic status, gender and household composition (noting particular issues, for example, for low-income men living alone).

⁷ The technical term practices emphasises the routine, collective and conventional nature of people's activities including what is seemingly habitual as well as knowledge that is culturally distinctive and socially shaped. (Reckwitz 2002, Warde 2005),

14. There is a literature on the dietary habits and nutritional status of those aged 60 years and above (Wylie, 2000; FSAI, 2000; Gustafsson & Sidenvall, 2002; Kulberg *et al.*, 2006; Sydner *et al.*, 2007; Giles, 2009). This body of evidence could be exploited and mined further to better understand how the dietary practices of the 60 years of age and above are affected by ageing and how this may be linked to an increased consumption of high risk foods. There is relatively little evidence regarding the current levels of food hygiene knowledge among the 60 years of age and above to use as a baseline for comparisons with any future changes. We do not know whether knowledge levels differ with generations or have changed as people age, and, if knowledge levels have changed, why change may have occurred. From the few studies that have investigated the domestic food safety knowledge and practices of the 60 years of age and above (Husdon & Hartwell, 2002; Brennan *et al.*, 2007; GfK 2009), the evidence indicates that people showed some misunderstanding and scepticism about a number of the key food safety issues associated with *L. monocytogenes* growth and contamination. For example: there is misunderstanding amongst older people as to the meaning of different types of date labels ('use by' and 'best before' dates in particular) and a certain amount of scepticism as to their application and the motives behind their use by the food industry. There was also some evidence that pointed to a limited awareness of the recommended fridge temperature (how one can ensure that a fridge is kept at the recommended temperature, how to check fridge temperature and how regularly this should be done). Further household-based research would be needed to investigate the range of domestic practices engaged in by the 60 years of age and above including fridge temperature regulation; refrigeration of foods; fridge storage practices; heating pre-prepared, delivered meals; cooling/storing/reheating leftovers; 'use by' and 'best before' dates. There are several examples of household studies that have examined domestic food hygiene practices with different age groups and which might be used to inform further research with the 60 years of age and above (e.g. Martens & Scott, 2005; Davidson, Arber and Marshall, 2009).

15. There is little evidence of the way knowledge is related to actual food hygiene/food safety practices within the domestic kitchen. Findings from a study completed on the island of Ireland (Brennan *et al.*, 2007) demonstrated that there is a significant discrepancy between the knowledge levels of best food safety practices and the actual practices that people engage in when preparing, storing and cooking food in their own homes. Without this baseline evidence for the UK population, it is extremely difficult to measure the effectiveness and value of information and communication campaigns aimed at improving domestic food safety knowledge and encouraging people to adopt better food safety practices within their own homes.

2.2 *Food and ageing*

16. Several examples were identified of high quality research on the various life-stage and health-related effects of aging that impact on the food choice and food practices of the 60 years of age and above. A significant body of UK/international gerontological studies have considered the general food habits and practices of those of 60 years of age and above, including some factors that might make them more vulnerable to listeriosis (Samuel *et al.*, 2000; Cates *et al.*, 2006; Cates *et al.*, 2007; ACMSF, 2008). In particular these studies examine the effects of ageing on an individual's physical, psycho-social and psychiatric state. A range of ageing-related effects were considered to impact on how those of 60 years of age and above interact with food. These included: deterioration of oral health, eyesight, hearing; disturbed sleep patterns associated with ageing; reduction in mental stimulation and social interaction opportunities; reduction in physical mobility (both personal and transport); significant life-stage events in particular the death of spouse/ partner; chronic physical deterioration/pain (including arthritis and osteoporosis); early stage dementia/ memory-related problems (Branch *et al.*, 1989; Wylie, 2000; Zanjani *et al.*, 2006; Kulberg *et al.*, 2006, Sukyung *et al.*, 2007). It is vital that the effects of aging on food safety practices are fully considered in any future investigations and that they are

explored in the domestic environment using a variety of techniques to observe and examine how ageing and its effects may act as a barrier to those of 60 years of age and above in implementing best practice food safety knowledge in their own kitchens. For example: deteriorating eyesight may make it very difficult for individuals to read 'use by' labels; early onset dementia may result in individuals forgetting how long a product has been in the fridge or forgetting to check the 'use by' dates; deterioration of oral health may result in individuals eating a restricted diet. It is important to note that an individual's circumstances and outlook on life are likely to have a major effect on how they cope with ageing. Future research should therefore be conducted at the individual household level as well as at the wider population level.

17. It is well established that the medical and health status of those of 60 years of age and above plays a major role in increasing their susceptibility to *L. monocytogenes*. The proposed case note review study [food.gov.uk/multimedia/pdfs/rrd28.pdf] will collect information on cases of listeriosis amongst those of 60 years of age and above. This study will record the presence of significant medical conditions, parameters for co-morbidities and treatments and will calculate a Charlson Co-morbidity Index and chronic disease scores. Its findings will shed light on the role of existing and past medical conditions; past and current drug regimes; and medically restricted diets on increasing the susceptibility of those 60 years of age and above to listeriosis. One interesting hypothesis raised during the discussions had by the working party with the SSRC was that the pace of development in the pharmaceutical industry – and in particular in drug regimes for the treatment of life threatening conditions such as cancer – has been extremely fast over the period associated with the increase in cases of listeriosis. It is imperative that the case note review considers the type, generation and combination of drugs that are now being used and whether there are any potential side effects associated with the development of these new drugs that may be linked to an increase susceptibility to listeriosis. This is highlighted not because any evidence was found but because it was

considered one of the few environmental factors that had changed significantly in the time period under investigation.

2.3 *Life-stage, demographic and 'lifestyle' factors*

18. There is a dearth of evidence on the diversity of the over-60s in terms of their life-stage, socio-demographic profile and 'lifestyle' characteristics as these relate to food choice and dietary patterns. This overview of the evidence revealed the importance of these characteristics in terms of their impact on food-related practices. At present, very little is known about those who have suffered from listeriosis apart from basic data on age and gender. The *L. monocytogenes* trawling questionnaire used by the HPA already collects further information about those who have recently suffered from listeriosis: where they are from, their ethnic background, their travelling and food consumption activity in the 30 days prior to illness, and some very basic information on their food safety practices. This still provides very limited information from which to profile those who have fallen victim to listeriosis and makes it almost impossible to undertake any meaningful profiling exercise to identify potential 'high risk' groups amongst the population of 60 years of age and above in the UK. The trawling questionnaire does however ask for participants' consent to be re-contacted at later date in connection with their illness so there is potential here for some very targeted and informative follow up research.

2.4 *The UK food retail environment*

19. The UK food retail sector has evolved significantly over the last 10 years. First, the range, variety and types of food product available has increased significantly, in particular in the chilled, ambient and ready to eat processed food categories, which includes some of those products classified as posing a 'high *Listeria* risk' (e.g. pre-packed cold meats; pre-cut and mixed fruit; prepared sandwiches). Second, in addition to developments in the foods themselves, there have been noticeable changes in the technology used to package foods including products that previously would have been sold unpackaged (i.e.

bagged mixed salad leaves; pre-cut boxed mixed fruit; sliced meat) This technology has enabled the processors and retailers to minimise contamination of food products with *L. monocytogenes* at the point of sale. The increase in cases of *L. monocytogenes* among those of 60 years of age and above does not appear, from our discussions with the *ad hoc* group and others, to have been matched with an increase in incidence of *L. monocytogenes* in products tested at the point of sale. There is also some evidence to indicate that the range of pack size alternatives has increased during this period. Third, the UK food retail environment is heavily dominated by the 'big four' multiple retailers (Tesco, Asda, Sainsbury's and Morrisons). Together they account for approximately 75% of all food purchased from food retail outlets in the UK (Cabinet Office 2008). The result is a highly concentrated food retail sector in which price and other promotional tactics are widely used to entice consumers into the store and then to buy more while they are shopping there. Promotions such as Buy One Get One Free (BOGOF) and regular 'half price specials' have become commonplace.⁸ These promotions may be resulting in individual households buying more food than they can realistically consume before the 'use by' dates. For example, pre-packed cooked meats are very often sold under such price promotional offers as they are regularly bought by a high proportion of consumers. Such pre-packaged cold meat products are often associated with *L. monocytogenes* contamination if not consumed by the 'use by' date and not stored properly under the recommended fridge temperature guidelines. Evidence from the gerontological studies reviewed indicates that the 60 years of age and above are generally reluctant to waste food. Couple this with the identified problems associated with 'use by' dates and fridge temperature and evidence from the diet and nutrition studies that many rely on restricted diets and some on cold, ready made food and a potentially dangerous combination of factors may result.

⁸ It has been suggested that such offers are liable to be most heavily promoted when there is an accumulation of unsold products nearing their 'sell by' date (Professor Ben Fine, member of the SSRC, personal communication).

20. A body of marketing and communication literature was also examined (IGD, 2005; IGD, 2007a; IGD, 2007b; Giles, 2009; McCarthy & Brennan, in press). From this it was clear that in order to target and engage the older UK population, marketing and communication efforts must be refined to consider how best to ensure that such efforts and campaigns appear relevant to the older population and that the images and ideas portrayed in such communications reflect the perceptions and expectations of older UK people. This finding is relevant to the public sector as well as to the food industry and may require the development of multiple messages in terms of health promotion, given the heterogeneous nature of the 60 years of age and above.

3. Existing data sets available for secondary (further) analysis

21. The Working Group reviewed a range of social and dietary surveys, examining internet sites and scrutinising publications that were based on those surveys. Details are appended at Annex 5.

English Longitudinal Survey of Ageing (ELSA)

22. Funded by the (US) National Institute of Ageing and a consortium of UK government departments, the ELSA study provides three waves of panel data designed to facilitate analysis of the economic, social, psychological and health-related aspects of ageing. There is a section on food expenditure, comparing 'lifestyle' issues such as eating at home versus spending outside the home.

Expenditure and Food Survey (EFS)

23. Commissioned by the ONS in conjunction with DEFRA, the EFS took over from two previous surveys (the Family Expenditure Survey and the National Food Survey) in April 2001. The EFS provides continuous survey data on household expenditure, estimated food consumption and nutrition.

The Food in Later Life

24. This study was funded by the European Union. It was of three years duration, beginning in 2003. The project generated longitudinal data (both quantitative and qualitative) on the relationship between food intake, nutritional well-being, health and quality of life among older people in a range of European countries (including data on two age groups: 65-74 and 75 and above). The study focused on the specific food procurement and consumption requirements of older men and women living alone as compared with those living with others.

Low Income Diet and Nutrition Survey (LIDNS)

25. The LIDNS survey was commissioned by the FSA and provides nationally representative data on the eating habits, nourishment and nutrition-related health of people on low incomes.

The UK 2000 Time Use Survey

26. This survey was conducted on behalf of the Economic and Social Research Council (ESRC) and a number of government departments. It was designed to measure the amount of time spent by the UK population on various activities including a range of food-related behaviour.

The TNS Worldpanel survey

27. This survey is undertaken by a leading market research company (TNS) and provides household-level data on food purchasing patterns. Data from the survey were used by the ACMSF Ad Hoc Group to index the purchase of 'high risk' foods by those 60 years of age and above compared to younger age groups.

Public Attitudes to Food Issues survey

28. The FSA also commissions specific studies such as the *Public Attitudes to Food Issues* survey which was undertaken by GfK NOP. Some further analysis of those aged 65 and above was undertaken, providing information on their food expenditure patterns, shopping behaviour and attitudes to food safety and food hygiene (GfK Social Research 2009).

4. Secondary data analysis

29. Having reviewed a range of existing surveys and data sets (see section 3 and Annex 5), this section considers the potential of these sources for additional analysis.

30. There are no research strands in the ELSA data directly related to the domestic food safety practices of those aged 60 and above. There are, however, some areas that may warrant further investigation including data on obesity, physical function and mortality. The data are available via the UK Data Archive.

31. The EFS includes annual measures of household expenditure based on diaries of all individuals in the household. Data are presented at household level but allow estimates to be made at an individual level. The EFS data could be used in a similar way to the TNS data (see below, para 35). Whilst the sample size is smaller, the sampling approach is more robust and there are fewer problems with attrition.

32. Besides specific data on domestic food consumption among older people in the UK, the Food in Later Life project includes comparative European data on 'meals on wheels' in Germany, Sweden and Denmark and on day centre users and providers in the UK, Italy, Portugal, Poland and Spain.

33. The LIDNS data could be used to establish the dietary patterns and nutritional status of low income people including those aged 60 and above. The data on diet and nutrition can be linked to various socio-economic characteristics as measured in the survey. The data are available via the UK Data Archive.

34. The Time Use Survey was designed to provide UK data that is comparable with other European studies as part of a wider Harmonised

European Time Use Survey. It may therefore be valuable in terms of addressing the international dimension discussed in para 41 below.

35. The TNS Worldpanel is a large data source, providing information at household level only. It could be used to analyse the frequency and volume of purchase of 'high risk' foods among people aged 60 and above. Based on the scanning of foods via Electronic Point of Sale technologies, it under-reports food bought without barcodes. While there is the potential to analyse food purchases against a range of socio-economic factors, TNS are a commercial agency and access to their data is costly.

5. Proposed next steps and options for further research

36. As requested by the ACMSF *Ad Hoc* Group, this Report has focused on what is known about the food behaviour, food storage and food handling practices of elderly people in the home. The overview of the current literature and consultation with relevant experts confirms the *Ad Hoc* Group's summary finding that data on the shopping, food behaviour and consumption patterns of those of 60 years of age and above is limited. A strong case may, then, be made for focused investigation, using a variety of research approaches and methods, of what different socio-demographic groups of 60 years and above both report and are actually doing when they purchase and then store, prepare, cook and eat food (and dispose of waste). Proposed, therefore, are some future options, including the potential for commissioning new primary research, identifying in each case the broad areas to be addressed⁹. Greater attention to the diversity of older householders than is played out in the current literature on food safety issues will be an important consideration in any future research. An indication of timescale and approximate costs for the options below can be supplied if required.

⁹ Such work may also help understanding of and have relevance for the reduction in the incidence of other food-borne diseases in addition to listeriosis.

5.1 *In-depth literature reviews and secondary data analysis*

37. The discussion presented above could be based on no more than an overview of the relevant social scientific literature on food hygiene and food safety practices of the 60 years of age and above. Before even considering whether to embark on new primary research, it will be important to commission a full, thorough and critical appraisal of a wider range of literature on relevant topics in the social sciences than could be considered here. To achieve this, the scope needs to be extended in a number of ways.

38. Firstly, it will be very important to examine work in additional social scientific disciplines/ sub-fields than could be covered sufficiently comprehensively here. Those which are particularly relevant include human geography, the sociology of consumption, psychology and economics. This last, for instance, has the capacity to estimate the potential economic benefits of preventing listeriosis and other food-borne diseases (e.g. the cost savings of health care, incident investigation etc.).

39. Secondly, it will also be valuable to enlarge the substantive scope of in-depth literature reviews in the social sciences, as well as in the health and social care literature. Thus topics such as research on the provision of 'meals on wheels', including any recent changes, and any effects on the food habits of older people, are likely to be important. Though no data sources have been uncovered thus far, future work could usefully take account of how such meal provision is delivered, whether any providers include accompanying food safety advice, how it is understood by recipients and/or their carers. Similarly, it is likely to be important to include care home and institutional settings, for the social and organisational issues are liable to be quite different from those associated with older people living at home (or in sheltered accommodation) where they are responsible for some of their own food preparation.

40. Thirdly, it will be important to fully review the significant body of research on the influence of ageing on people's physical, psychosocial and psychiatric

state of health and the effect that these factors may have on elderly people's choice of food, the way they store and cook food and their ability to handle food safely.

41. Finally the review should include a fuller search of relevant work outside of the UK. The overview of the literature suggests that relevant (English language) work in the field is comparatively sparse and in any case focuses on North America and the UK. A fuller search will be important, especially for e.g. the Nordic countries and Australasia. In addition, it may be useful to investigate the policy response in countries which have seen parallel increases in the incidence of listeriosis in those aged 60 and above and to determine whether initiatives such as that taken by the ACMSF have counterparts elsewhere and whether commissioning literature reviews or new primary research is already under way in other countries. Equivalent enquiries at EU level would be equally important.

42. The review will help support a better informed understanding of the effects of ageing on people's health-related food practices and contribute to the provision of a clearer picture of the diversity of the UK's elderly population and, to the extent that the literature has uncovered them, help identify particular 'at risk' groups. Secondary analysis of appropriate sources (as discussed in section 4 of this report) could be carried out in tandem, as part of this critical review, or as a separate piece of work.

5.2 *New primary research*

43. Each of the following sub-sections identifies an area of research to be addressed outlining the appropriate methodological approach. Up to date approximate costs and indicative timescale can be provided should the following be pursued to a next stage.

What is the range of knowledge of food safety and of food handling practices among the elderly resident population in the UK?

44. As previously noted, the social science community cannot currently comment in a statistically robust manner on the likely causes of the recent increase in listeriosis among the elderly because of the lack of baseline data. In order to establish the way that changes in food handling practices among the elderly may be influencing current rates of listeriosis we need to collect accurate baseline data from which to measure any future changes. Such work would require a social survey of a representative sample of the relevant segments of the population (including a consistent definition of 'the elderly'). It would need to establish basic demographic, socio-economic and household data; data about food safety knowledge, attitudes and beliefs; and data on reported shopping, storage and cooking practices. Filling this gap thoroughly can be accomplished by mounting an independent, 'bespoke' survey, although it is noted such surveys may be costly and time-consuming.

45. An invaluable stage toward such an independent social survey could be provided by designing it to lock onto the FSA's new Food Issues Survey (FIS). This is a major social survey for the Agency that will provide key quantitative data. Making it significant in the present context, it will include approximately 500 respondents of 60 years of age and above. Still at a comparatively early planning stage, the survey's content is currently under review. As such, however, it offers a timely opportunity to recommend that the topics of domestic food hygiene knowledge, and reported food handling, food safety practices be included as a priority for the first wave of the survey due in 2010. At the same time, it will be important to check that the range and type of detailed demographic data the survey is to include enables more meaningful and effective characterisation of different groups among those of 60 years and above than has been available so far.

46. Both a bespoke survey and the new FIS survey would provide the opportunity to follow-up respondents of particular interest, providing consent has been sought to do so. This would allow for types of additional investigation among those with specific characteristics as identified by the survey. One adopting an ethnographic methodological approach, is a more detailed exploration of the beliefs about food, safety and kitchen hygiene. The other is one focusing on actual behaviour in the home, i.e. domestic food practices, that adopts a conversation analytic methodological approach to the interpretation of video material.

What are the socio-demographic characteristics of those who have contracted listeriosis in the recent past?

47. Little is known about the demographic characteristics of those who have contracted listeriosis in the recent past. Assessing whether there are any significant differences in the demography or food hygiene practices of those who contract listeriosis and the wider population, is most suitably undertaken by a household based study of people who have contracted listeriosis (undertaken in collaboration with the Health Protection Agency). These data could then be compared with the baseline data referred to above and could include more detailed consideration of a range of socio-demographic and lifestyle factors such as changing household composition and health status.

What are the views of relevant stakeholders about (a) current provision of food safety and health advice to those of 60 years of age and above (b) the identification of best practice and (c) the best means of encouraging and supporting best practice?

48. In order to understand recent changes in the care environment, social support and health treatment offered to elderly people, a detailed study of key stakeholders would be required, designed to identify and encourage best practice among those offering food safety and health advice to those of 60 years of age and above.

Are recent changes in the retail environment likely to have had an effect on food purchase and consumption practices among the elderly?

49. In order to gain a better understanding of the effects of recent changes in the retail environment (including changes in pack size, food labelling, special offers etc) on the food purchasing and consumption practices of the elderly, further research with food retailers would be required (including analysis of existing datasets and new interview-based research).

5.3 Meeting the FSA's priorities

50. If the FSA's main concern is to understand the causes of future changes in listeriosis among the elderly, then the question posed above para 44 should be regarded as a high priority. If the FSA is more interested in understanding the health effects of current food-related practices among the elderly, then that posed above 47 is a higher priority. While important to the overall understanding of the current problem those posed above paras 48 and 49 are probably not such a high priority.

51. There is, then, a wide range of social science disciplines which provide insights on the key issues of concern to the FSA, ACMSF and its *Ad Hoc* Working Group. Ensuring that any future work benefits from the distinctive contributions of each of those disciplines, it will be vital to establish a robust cross-disciplinary partnership that will secure the appropriate procurement and management of any new work the FSA commissions. Capitalising on both the work of that *Ad Hoc* Group and that reported here deserves to be optimised collaboratively.

Annex 1. Membership of the SSRC Working group and Scope of Work

1. The SSRC Working Group consisted of three members of the SSRC: Dr Michael Howard (project lead), Ms Mary Brennan and Ms Laura Willoughby. Support was provided by Ms Robyn Ackerman of the SSRU and Ms Carol Spence, SSRC secretariat. Additional contributions were supplied by Professor Peter Jackson, Deputy Chair, SSRC and Professor Anne Murcott, expert member, FSA General Advisory Committee on Science (GACS).
2. The aim of the working group was to provide an interim advice paper to the ACMSF whose focus was to set out how the social sciences can help understand what is currently happening that might contribute to the risk of listeriosis in those of 60 years and above. The objectives of the paper include the provision of advice on: what existing evidence could be 'mined'; what new research could be commissioned to explore what food those of 60 years and above consume, how it is stored and prepared in the home (excluding care homes/institutions). The inclusion of carers should be considered as should, as a separate group, those aged 60 years of age and above who have weakened immune systems, due to illness/medication, as the majority of cases have an underlying condition. The paper should include an international dimension, as cases are rising in countries outside of the UK (in particular similar changes have been reported in Germany, Belgium, Denmark, France and Lithuania).
3. The paper is to identify broadly what work has been done and what is underway. The work excludes reviewing existing data and undertaking primary research. Advice is, however, to be included on suitable approaches and methods for new research and on existing data sources that might be worth reanalysing.

Annex 2: Literature search terms (Food hygiene at home for those of 60 years of age and above and carers of those of 60 years of age and above)

<i>Criteria (include sources from the UK, the EU, worldwide databases)</i>	<i>Other Terms / information</i>
Food shopping, storage and preparation practices	Purchasing, consumption, chilling, cleaning, storing, cooking, preparing, date labelling, expiration dates, best before/use by/sell by, fridge/refrigeration, food handling, storage instructions
Food safety / hygiene	Hygienic, reducing risk, food poisoning
Domestic setting	Home, kitchen
60 years of age and above	Older people, old, elderly, pensioners,
Immuno-compromised	Weakened immunity, immune system, immuno- suppressive treatments
Carers	Informal, casual, family
Methods (qualitative and quantitative)	Surveys, focus groups, depth interviews, behavioural, observation, ethnography

Annex 3 : Interviewees

Professor Sara Arber, Department of Sociology, University of Surrey

Professor John Edwards Head, Head of the Foodservice & Applied Nutrition Research Group, School of Services Management, Bournemouth University

Dr Karen Glaser, Institute of Gerontology, Kings College London

Dr Heather Hartwell, School of Services Management, Bournemouth University

Dr Bridget Holmes, Nutritional Sciences Research Division, Kings College London

Dr Lydia Martens, School of Sociology and Criminology, Keele University

Professor Christopher Ritson, Professor of Agricultural Marketing, Centre for Rural Economy, Newcastle University

Ms Jane Thomas, Nutritional Sciences Division, Kings College London

Dr Lisa Wilson, Science Director, The Caroline Walker Trust

Annex 4. Five cases illustrating socio-demographic variability among UK residents aged 60 year and over.

A widow since 1986, Mrs A is 88 years old. Suffering severe osteoporosis, she has a 'widow's hump' and can only walk awkwardly and slowly. She relies solely on State pension/benefits. Living alone, her two bedroom, inner urban, Victorian house requires very extensive repairs and redecoration. The rent is low, remaining so since she has refused any upgrading to a house which, in 2009, still has an outside toilet and a bathtub in the scullery. A neighbour who has been inside on odd occasions reports that it is the nearest to a slum she has ever seen, dilapidated and grimy, and doubts if all the rooms are used/usable. Three or four times a week, Mrs A does her own food shopping on foot, slowly and seemingly painfully, pushing a trolley. Her married son and daughter in law bring the grandchildren for regular monthly visits, and also drive her to hospital appointments. Aged 18 when WWII broke out, she continued living at home and working in the nearby biscuit factory in south London where she had worked since leaving school at the age of 14 until she married in 1946.

Married for 32 years, Mr and Mrs B live in a 'leafy suburb' south of London. Trained as a nurse, promoted to ward sister before giving up full time on marriage, at 67 years old she now works part-time as a GP's receptionist and does voluntary work at a nearby care home providing manicures and helping wash and set the women's hair. Mr B is 64, running his own business. Their house is detached, with four bedrooms and double garage, set in half an acre of garden. They and friends/neighbours hold regular dinner parties for one another. They run two cars (one four years old, the other two) and employ a cleaner and a gardener. They go the cinema regularly, visit Mr B's children of his first marriage (they have no children of their own) in the US, in addition to taking two holidays a year. Mrs B's father was in the Colonial Service, and she was born and brought up in West Africa, only learning to cook and keep house when she married.

A widower, Mr C who has just turned 100, still lives alone in his own home in a rural area of the West Country. He is very frail, so his 69 year old divorced daughter (there were no children) who lives some 12 miles away, visits virtually daily to shop, cook, run the house and help with his personal care. Social Services are involved and carers visit twice daily. The situation is fragile, for his daughter is finding matters increasingly unsustainable, physically and psychologically. It is hard, simultaneously, to run her own home, which has not been upgraded since the 1960s and is in urgent need of renovation and repair. The kitchen is especially run down: there is rising damp, wood sills and frames are rotting for want of paint, and tiles round the badly cracked kitchen sink are as badly cracked. She also chafes that she has insufficient time to tend her vegetable garden adequately, even though she depends on it to supplement her own food supply, for she explains that her very small pension 'from the office' only meagrely supplemented by State benefits – she reports she did not pay the

'full stamp' when still employed as a shorthand typist. Her father, who has a small private as well as State pension, however, refuses to move from his home.

Mrs D is a 91 year old widow who lives alone in a very small flat, in a block which has a warden who checks on residents via a daily phone call. Frail, but otherwise in good health, she can no longer walk far, and uses an electric scooter to do her own shopping in largest supermarket of the small market town. She shops and cooks all her own food. Her memory remains excellent and she continues to complete the Times crossword daily. Until last year, she regularly used 'Dial a Ride' services to visit a friend virtually paralyzed by stroke resident in a care home, for whom she did all her 'mending', darning small rents in a blouse, replacing buttons etc. Although when married to the director of a PR company, she once gave dinner parties and was widely known as an accomplished cook, she now relies on ready-meals, a deep freeze and a microwave oven. Her second husband died six years ago, whereupon the War Widow's Pension to which she was entitled following the death in 1943 of her first husband was reinstated. She also enjoys a private income. Her 65 year old daughter who lives 20 miles away, drives her to the dentist, hospital appointments (she suffers from glaucoma) and, bringing her laptop when she visits, deals with all her mother's correspondence.

Mrs and Mr E and their son, the youngest of three, live in a two bedroom maisonette they now own, just over the road from Mrs A. Their son who is employed on shift work in a warehouse, also has learning difficulties. Mr E born in 1927, was a joiner and Mrs E born a year later, gave up working as a shop assistant when they married in 1951, the same year, they explain as the Festival of Britain: Mr E was 24 and Mrs E 23. Now aged 81, Mrs E does all the cooking, and is often accompanied walking with her trolley on her twice weekly shopping trips to the supermarket by her sister who lives with her husband and an adult son round the corner. Their daughter and her family live further down the road and drive them on more major shopping trips, and any other occasions/appointments as needed. Mr E gave up driving some years ago as his eyesight became more troublesome: Mrs E never learned to drive. They live on a combination of pensions and though frugal are proud to be able to manage what they consider to be a decent standard of living after 'having it hard' when the children were young.

Annex 5: Existing data sets

Source	Key Objectives	Sample	Methodology
<p>1. English Longitudinal Survey of Ageing (ELSA)</p> <ul style="list-style-type: none"> • ELSA is the first study in the UK to connect the full range of topics necessary to understand the economic, social, psychological and health elements of the ageing process. • Funded by the (US) National Institute of Ageing and a consortium of UK government departments • Undertaken by researchers at UCL, NatCen, IFS and Cambridge 	<ul style="list-style-type: none"> • To construct three waves of accessible and well-documented panel data • To provide these data in a convenient and timely fashion to the scientific and policy research community • To describe health trajectories, disability and healthy life expectancy in a representative sample of the English population aged 50 and over • To examine the relationship between economic position and health • To investigate the determinants of economic position in older age • To describe the timing of retirement and post-retirement labour market activity • To understand the relationships between social support, household structure and the transfer of assets 	<ul style="list-style-type: none"> • National • The ELSA sample was selected from three survey years of the HSE (1998, 1999 and 2001). • Households were included in ELSA if they contained at least one adult of 50 years or older in the household who had agreed to be re-contacted at some time in the future when participating in the HSE. 	<ul style="list-style-type: none"> • Longitudinal/panel/cohort • Multi-stage stratified random sample • Wave 1: 12,100 cases. Wave 2: 9,433 cases. Wave 3: 9,771 cases • Face-to-face interview; self-completion; clinical measurements; physical measurements; performance measurements, such as the timed walk, were conducted, and Wave 2 included a nurse visit.
<p>2. Expenditure and Food Survey</p> <ul style="list-style-type: none"> • The EFS is a continuous survey of household expenditure, food consumption and income • Took over from the Family Expenditure Survey (FES) and the National Food Survey (NFS) in April 2001 • Commissioned by the Social Survey Division (SSD) of the Office for National Statistics (ONS) and by DEFRA 	<ul style="list-style-type: none"> • To provide information about spending patterns for the Retail Price Index, and about food consumption and nutrition 	<ul style="list-style-type: none"> • United Kingdom • Target 7,850 households (63% response rate) 	<ul style="list-style-type: none"> • The design of the survey follows the design of the FES, with the addition of more detailed recording of food items and the collection of food quantities (weights or volumes) as well as expenditure • Information for the EFS is collected from people living in private households. The survey is made up of: a comprehensive household questionnaire which asks about regular household bills and expenditure on major but infrequent purchases; an individual questionnaire for each adult (aged 16 or over) which asks detailed questions about their income; a diary of all personal expenditure kept by each adult for two weeks, and of home grown and wild food brought into the home; a simplified diary kept by children aged 7-15 years.

<p>3. Food in Later Life</p> <ul style="list-style-type: none"> • Started January 2003 • Duration: 3 years • Funded by EU • Project Coordinators: Dr Margaret Lumbers and Dr Monique Raats (University of Surrey) • Organised into 8 work-packages • Contains data on food selection and preparation for two age groupings, 65 to 75 and over 75 	<ul style="list-style-type: none"> • To generate longitudinal, qualitative and quantitative data on the relationship between food intake, nutritional well being, health and quality of life among older people • To understand the specific food procurement and consumption requirements of older men and women living alone as compared to those living with others • To compare data from two age groups (65-74 and over 75) • To undertake active dissemination and consultation with stakeholders, thus enhancing older people's nutritional well being, health and quality of life through food and service provision 	<ul style="list-style-type: none"> • <i>WP2: Food selection in later life:</i> Data were collected in each of eight countries from 96 older people stratified according to gender (male/female), age (65-74/ 75 and over) and living circumstances (living alone/with others) • <i>WP3: Procuring foods and planning /preparing meals in later life:</i> In each partner country, 20 men and 20 women (living alone or with partners) over the age of 64 years were accompanied when grocery shopping and observed. Subsequently, a problem-centred interview concerning meal and food preparation was conducted within a few days. The data collection was supplemented by various questionnaires concerning shopping, health and food-related quality of life • <i>WP4: Satisfaction with food-related services available to seniors:</i> 25 users and 25 providers (including five key informants) of 'meals on wheels' (Germany, Sweden and Denmark) and day centre users and providers (UK, Italy, Portugal, Poland and Spain) were interviewed • <i>WP5: The role of formal and informal networks in food procurement, preparation and consumption:</i> Data were collected using semi-structured interviews, a background questionnaire and 7-day food procurement diary and food consumption diaries. In each partner country data were collected from 80 older people stratified according to gender, age (65-74/75 and over) and living circumstances (living with and without partners/family) • <i>WP6: Determining the role of meals in later life:</i> Qualitative interviews were carried out in each partner country. Data were collected from 80 older people stratified according to gender, age (65-74/75 and over) and living circumstances (living with and without partners/family) • <i>WP7: Assessing seniors' food-related quality of life:</i> Initial pre-studies including 644 participants resulted in the development of a five item-scale measuring overall satisfaction with food-related life. The main survey included 3291 respondents above 65 years of age, approximately 400 from each of the eight participating countries. The individual samples were quota samples divided into equal proportions of women and men, young-old (65 to 74 years) and old-old (75 and above) and living with a partner or without a partner.
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<p>4. Low Income Diet and Nutrition Survey</p> <ul style="list-style-type: none"> • Commissioned by FSA • Provides nationally representative evidence on the eating habits, nourishment and nutrition-related health of people on low income. • Carried out by a consortium of three organisations, led by the Health Research Group at NatCen with the Nutritional Sciences Research Division at KCL and the Department of Epidemiology and Public Health at the Royal Free and UCL Medical School. 	<ul style="list-style-type: none"> • To provide information on food and nutrient intakes • To evaluate the extent to which the diets of the low income population vary from expert recommendations • To provide physical measurements of health-related factors closely associated with diet, such as height, weight and blood pressure for a representative sample • To assess levels of physical activity • To provide basic information on smoking and oral health in relation to diet • To examine possible relationships between diet and risk of disease in later life. 	<ul style="list-style-type: none"> • A total of 3,728 people from 2,477 households were included in the survey • The aim was to identify approximately the bottom 15% of the population in terms of material deprivation. A doorstep questionnaire was developed that helped measure material deprivation • Data were collected via: a face-to-face interview and self-completed questionnaire; four 24-hour recalls of diet on random days (including at least one weekend day) within a 10-day period; physical measurements, indicating height, weight and blood pressure; and a blood sample from those aged eight years old and over, to measure indicators of nutritional status.
<p>5. Time Use Survey</p> <ul style="list-style-type: none"> • The UK 2000 Time Use Survey was conducted on behalf of a consortium consisting of the ESRC, the DCMS, the DES, the Doh, the Department of Transport, Local Government and the Regions, and the ONS • Designed to provide results comparable with other European studies as part of a wider Harmonised European Time Use Survey. 	<ul style="list-style-type: none"> • To measure the amount of time spent by the UK population on various activities 	<ul style="list-style-type: none"> • The survey comprised only private households and the household members living in those households. The fieldwork year was divided into periods each covering a nationally representative sample • The primary sampling unit consisted of postcode sectors divided into five Government Office Region combinations. Within these postcode sectors account was taken of the population density and the social-economic group of the head of the household. • Selected household heads or their partners completed a household questionnaire. • All individuals aged 8 or over were asked to complete individual questionnaires, two one-day diaries and a one week work and education time sheet • An equal distribution of week and weekend days was required for the diaries so household members were given a randomly selected combination of days which minimised the gap between the two diary days • The household and individual questionnaires were mainly used to gather background information and demographics • The diaries record primary and secondary activities as well as information on the respondent's location, and who they were with at the time • The one week worksheet recording time spent in work and full time education over the week the diaries were completed.

<p>6. TNS Worldpanel</p> <ul style="list-style-type: none"> Conducted by a leading market research group providing consultancy, advice and research solutions on brand equity, purchasing behaviour, growth opportunities in emerging markets and internationally. 	<ul style="list-style-type: none"> Data from TNS Worldpanel were used by the ACMSF ad hoc group in their paper to index purchase of foods associated with a high risk of Listeria by those over 60 against younger age groups The data show purchases at a household level only. It would not be possible to investigate individual consumption of these foods. The data show 'eating occasions' for each food rather than amounts of food This is a vast data source that could show the frequency and volumes of purchases of high risk foods amongst the over 60s. This could be monitored over time as it is a continuous survey Panel members record their purchases by scanning the bar codes of all food purchased (with validation carried out against receipts). Therefore there is underreporting on foods bought without a bar code (foods bought loose) and 'top up' goods (goods bought outside of the weekly shop) There is the potential to analyse against a range of socio-demographic factors TNS charge for access to the data
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