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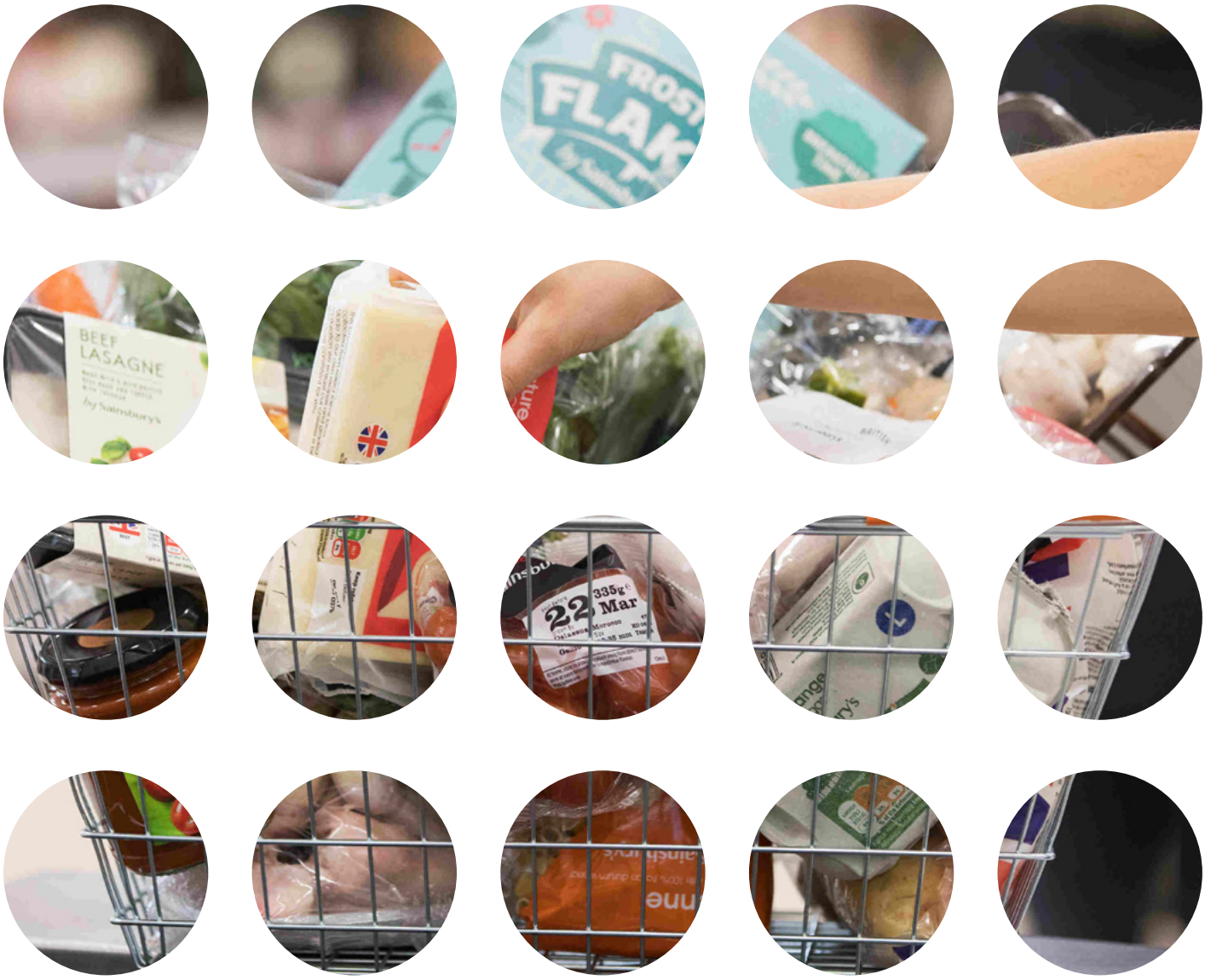
THE FOOD AND YOU SURVEY

WAVE 5

Secondary Analysis: Consumers with Food Hypersensitivities



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Contents

NOTES ON DEFINITIONS

A number of food hypersensitivities are referred to throughout the report. Respondents in the Food and You (Wave 5) survey were asked to identify their type of food hypersensitivity from a pre-determined list of options:

1. Food allergy;
2. Food intolerance;
3. Coeliac disease;
4. Non-coeliac gluten sensitivity;
5. Gluten intolerance;
6. Lactose intolerance;
7. Cow's milk intolerance;
8. Food protein-induced enterocolitis syndrome (FPIES);
9. Other.

Table A shows how the categories were merged and the number of individuals within each group.

Respondents were able to report multiple types of food reaction in the survey and findings relating to the prevalence of food hypersensitivities are based on the percentage of cases within the sample.

The prevalence of food hypersensitivities described in this report is based on self-reported data collected from the Food and You Wave 5 survey, unless otherwise stated. The prevalence of food hypersensitivities includes both clinically diagnosed and non-clinically diagnosed food hypersensitivities, as self-reported by respondents. Prevalence rates in this report may therefore differ from other sources of prevalence data that only considers clinically diagnosed food hypersensitivities.[1] Further information on the different types of prevalence data can be found in the World Allergy Organisation's *White Book on Allergy*.[2]

Owing to the large number of possible options available to respondents, and the small number of respondents within each sub-group, it was necessary for this report to place individuals in one of four exclusive groups: 'Food allergy', 'Food intolerance', 'Other adverse reaction', 'No adverse reaction'. To ensure that respondents were

Table A: Analytical categories for reporting

Reaction types in Food and You Survey	Category used in reporting	Number of respondents
Food allergy	Food allergy	149
Food intolerance	Food intolerance	309
Non-coeliac gluten sensitivity		6
Gluten intolerance		23
Lactose intolerance		36
Cow's milk intolerance		15
Food protein-induced enterocolitis syndrome (FPIES)		3
Other	'Other' adverse reaction	236
No answer given	No adverse reaction	2362
Coeliac disease	--	16

1 Food Standards Agency (2018). *Chief Scientist's Report: Issue Five: Food allergy and intolerance*. [Online] Available at: https://www.food.gov.uk/sites/default/files/media/document/fifth-csa-report-allergy%20(1).pdf.

2 World Allergy Organisation (2013). *White Book on Allergy*. [Online] Available at: https://www.worldallergy.org/wao-white-book-on-allergy.

only included in one category, respondents who reported both a food allergy and a food intolerance were placed in the category of 'food allergy'. In many cases, food allergies can create immediate risk after exposure or consumption, resulting in individuals managing eating, shopping and other food-related activities more cautiously than individuals who have food intolerances, which although severe, are less likely to cause immediate harm. It was therefore felt that individuals who experience both food allergies and food intolerances would manage their behaviour more similarly to those who experience allergies only, rather than those who experience intolerances only. There were 34 respondents who reported an allergy and an intolerance.

There were only 16 respondents who reported Coeliac disease (0.3% of respondents), defined as a "a common digestive condition where the small intestine becomes inflamed and unable to absorb nutrients".[3] Symptoms include diarrhoea, abdominal pain and bloating. The symptoms of and treatments for Coeliac disease are medically and socially different from the other reaction types included in the questionnaire and could not be included in any of the four analytical categories included in Table A. However, owing to the small numbers of respondents with Coeliac disease in the survey, it was impossible to analyse this group separately. It was therefore determined that cases of Coeliac disease would be excluded from the analyses described above. Cases which reported both an intolerance and Coeliac disease were included in the intolerance category.

For the purposes of reporting, therefore, the three types of hypersensitivity that are referred to throughout the report are defined as follows:

A **food allergy** is an immune response to a food-based allergen, almost always a protein. Symptoms may be mild (for instance, itching and swelling), but in extreme cases can include anaphylactic shock with potentially fatal consequences. Many food allergies present in early childhood but are outgrown in later childhood.[4]

A **food intolerance** is a condition in which an individual has difficulty in digesting certain foods or food components, (e.g., lactose), causing symptoms, such as abdominal pain, but which do not involve the immune system. Food intolerances include non-coeliac gluten sensitivity, gluten intolerance, lactose intolerance, cow's milk intolerance and FPIES.

The **'other' adverse reaction** category is derived from the 'other' answer option selected by respondents. The majority of respondents did not define their hypersensitivity, but examples given included Crohn's disease and irritable bowel syndrome.

3 NHS, *Coeliac disease* (2016). [Online] Available at: https://www.nhs.uk/conditions/coeliac-disease/.

4 Savage, J. and Johns, C. (2015). Food allergy: epidemiology and natural history. *Immunology and Allergy Clinics of North America*, (35), pp.45-59.

KEY FINDINGS

The following findings are based on secondary analysis of Food and You Wave 5 data which was issued to 3,069 adults over 16 in England, Wales and Northern Ireland between June and December 2018.

Prevalence and diagnosis

- 79% of respondents report no food hypersensitivity while 21% report having an adverse reaction to consuming certain foods.
- Food intolerances were the most common type of hypersensitivity (12%) followed by food allergies (5%) and 'other' adverse reactions (5%).
- Self-diagnosis was the most common form of diagnosis, reported by 77% of those with food intolerances, 63% of those with food allergies and 61% of those with 'other' adverse reactions. Those with food allergies (45%) were more likely to have a clinical diagnosis than those with food intolerances (23%) or 'other' adverse reactions (25%).
- People with food allergies (45%) were more likely than those with food intolerances (19%) to have their first reaction under the age of 16.

Demographic and socio-economic characteristics

- 24% of people aged 65 and over reported an adverse reaction to food, compared to 17% of those aged 16-34.
- Female respondents (24%) were more likely than male respondents (18%) to report experiencing any food hypersensitivity, with 13% of women (8% of men) reporting a food intolerance and 6% of women (4% of men) a food allergy.
- Respondents reporting bad general health (31%) were more likely to have a food hypersensitivity than those reporting fair health (29%) or good health (19%).
- Respondents who experienced an adverse reaction to food were more likely than those who did not experience a reaction to be unemployed (28%) than in work (19%) or in 'other' work status (21%).[5]

Eating out

- There were no differences between individuals with and without a food hypersensitivity in how frequently they ate outside the home.
- People with food intolerances (39%) were more likely to eat in a fast food restaurant than those with food allergies (27%) or other reaction (21%).
- People with food allergies (66%) and food intolerances (59%) were more likely to report that recommendations or invitations from someone they know were important in their choice of where to eat out, in comparison to 49% of people with no hypersensitivity.

Shopping patterns

- Respondents with food allergies (55%) were more likely to shop at mini supermarkets than respondents with no adverse reaction to food and respondents with an 'other' adverse reaction (both 42%).

5 Other' work includes categories such as people on maternity leave, people looking after family or home, full-time students, people with long-term disabilities, unable to work because of short-term illness or injury, etc.

- People with food allergies (28%) and food intolerances (27%) were more likely to visit markets than respondents with an 'other' adverse reaction (21%) or no adverse reaction (18%).

Food safety and the Index of Recommended Practice

- The Index of Recommended Practice measures respondents' scores on a number of food safety issues. There were no significant differences between respondents with food hypersensitivity (mean score of 68) and respondents with no adverse reaction to food (mean score of 67).[6]
- Respondents with a food allergy were the most likely group to report always using a different chopping board for different foods (58%), to never store open tins in the fridge (79%), and to always wash fruit and vegetables to be eaten raw (67%).

Hygiene standards and information sources

- Respondents with a food intolerance (36%) were most likely to report 'word of mouth' as a source of information for hygiene standards when eating out, in comparison to 17% of respondents with an 'other' adverse reaction and 26% of respondents with a food allergy.
- When searching for information about safely preparing and cooking food, respondents with food allergies were more likely to use product packaging (46%), food television shows or cooking programmes (42%), food magazines (25%) and food websites (33%) than those with other food hypersensitivities.

Trust

- There were no significant differences between trust in the Food Standards Agency or trust in the food supply chain among individuals with food hypersensitivities and those without, as measured by the trust in the FSA and trust in the food supply chain composite measures.[7] These findings are therefore not shown in the report.

Food insecurity

- There was no significant difference in the prevalence of food insecurity among individuals with food hypersensitivities and those without. These findings are therefore not shown in the report.

Learning points

- Few individuals have clinical diagnoses of food allergies or intolerance. Over three quarters of people with food intolerances (77%) and almost two-thirds of those with food allergies (63%) indicated that such reactions have been 'self-diagnosed'.
- Absence of a clinical diagnosis could lead to increased risk of adverse reactions whilst self or over-diagnosis could lead to unnecessary elimination diets with nutritional and social implications.
- There is a need to explore how individuals can be encouraged to attend screening and whether such testing

6 The Index of Recommended Practice is a composite measure of food hygiene knowledge and behaviours within the home. Individuals are given a score out of 100 with a higher score indicating more reported behaviours that are in line with recommended food safety practice.

7 Benson, A. et al. (2019) *The Food and You Survey Wave 5: Trust in Food and the UK Food System*. [Online] Available at: https://www.food.gov.uk/research/food-and-you/food-and-you-secondary-analysis-waves-1-5.

results in greater self-management, mitigating inappropriate food behaviours and adverse reactions.

- A greater proportion of older people, those aged 65 and over, report food allergies or intolerances (24%) when compared with their younger peers, those aged 16–34 (17%).
- When experiencing their first reaction to any food hypersensitivity, 16% were over 45 with 8% aged 55 and over.
- The concentration of research, policy and health information has, in the main, focused on the needs of children. Older people have been a fringe group in any allergy research. There is a paucity of longitudinal research that has explored the emergence or impact of food allergies or intolerances across the life course.
- To address this evidence gap, the FSA has funded a research programme to understand the patterns and prevalence of adult food allergies across the life course, including adult onset hypersensitivities.
- People reporting food reactions are more likely to be unemployed (38%) than in work (19%).
- Further guidance and information on managing food hypersensitivities may support entry to the workplace as well as sustained employment.
- There continues to be a need for individuals to be sign-posted to the most accurate and up-to-date guidance if individuals are to appropriately (and safely) manage their food allergy or intolerance.

INTRODUCTION

The prevalence of food allergies and intolerances

Food allergies and intolerances (collectively referred to as food hypersensitivities) are now recognized as a significant public health issue. A food allergy is an immune response to a food-based allergen. Symptoms may be mild (for instance, itching and swelling), but in extreme cases can include anaphylactic shock with potentially fatal consequences. Many food allergies present in early childhood but are outgrown in later childhood.[8] A food intolerance is a condition in which an individual has difficulty in digesting certain foods or food components, (e.g., lactose), causing symptoms, such as abdominal pain, but which do not involve the immune system.

Comprehensive and robust epidemiological data on food sensitivities are lacking[9], but using survey data from Wave 5 of Food and You conducted in 2018, this report shows that 21% of respondents reported having an adverse reaction to consuming certain foods. The most common reactions were food intolerances, experienced by 12% of people, followed by food allergies (5%). Food hypersensitivities were more commonly reported by women (24% of women compared to 18% of men). Of those with a food allergy, 45% reported this had been clinically diagnosed. In contrast, of those reporting a food intolerance, 23% indicated a clinical diagnosis. These levels are similar to those reported in Wave 4 of Food and You conducted in 2016 and comparable to the levels reported in an Omnibus survey conducted for DEFRA in 2014.[10] In this latter survey, 21% of respondents reported that they either had a food allergy or intolerance or shopped for someone with one. Of these, 10% were medically diagnosed. Both of these reported levels are higher than an estimated average prevalence of 3-4% of food allergies in European adults (medically confirmed diagnosis) found in one meta-analysis[11], but another meta-analysis found a wide variation in prevalence between European countries. For example, the baseline findings from the EuroPrevall study found that the self-report levels of adverse reactions to foods were much higher in mothers from Germany (30.2%), UK (22.3%), Netherlands (22.0%) and Iceland (19.7%) compared to Italy (10.7%), Spain (8.3%), Poland (6.5%), Greece (5.7%) and Lithuania (5.1%).[12] A similar pattern was seen in the levels reported by fathers. Although uncertainty remains about the precise levels of food allergy in the UK and elsewhere, recent reviews identify a consistent trend of an increase in the prevalence of food allergies internationally, as well as in the UK.[13] [14]

8 Savage, J. and Johns, C. (2015). Food allergy: epidemiology and natural history. *Immunology and Allergy Clinics of North America*, (35), pp.45-59.

9 Data on food allergies and intolerances are not routinely collected at national level and collating findings from individual studies is difficult because of variations in definition and measurement. One particular issue is the difference between prevalence as measured by self-report versus medical diagnosis with figures for the latter generally being lower. Survey data on prevalence that are based on self-report thus need to be treated with caution. There is a large body of research on various aspects of food allergies, but currently there is little research specifically focusing on food intolerances.

10 Anthesis Consulting Group (2014). *Baseline evaluation of the EU Food Information for Consumers (FIC) labelling: final report*. [Online] Available at: http://sciencesearch.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Completed=0&ProjectID=18705.

11 Rona, R.J. et al. (2007). The prevalence of food allergy: a meta-analysis. *Journal of Allergy and Clinical Immunology*, (120), pp.638-646.

12 McBride, D. et al. (2012). The EuroPrevall birth cohort study on food allergy: baseline characteristics of 12,000 newborns and their families from nine European countries. *Pediatric Allergy Immunology*, 23, pp. 230–239.

13 Loh, W. and Tang, M. (2018). The Epidemiology of Food Allergy in the Global Context. *International Journal of Environmental Research and Public Health*, 15(9), p.2043.

14 Sicherer, S. and Sampson, H. (2018). Food allergy: A review and update on epidemiology, pathogenesis, diagnosis, prevention, and management. *Journal of Allergy and Clinical Immunology*, 141(1), pp.41-58.

The picture regarding food intolerances is less clear, but an online survey conducted by YouGov in 2014 found that 22% of the adult population reported suffering from a food allergy (7%) or an intolerance (16%), representing an increase of 5% since 2011.[15]

The drivers of these trends are not clear, but the rise in food allergies is thought to arise from complex interactions between genetic, demographic, psycho-social and environmental factors which include immune sensitisation to foods via exposure to food allergens through the skin. While the hygiene hypothesis has been partly discounted, more understanding is needed regarding the development of the human microbiome and immune system and the effect of environmental factors, including diet, on these.[16]

In addition to geographic variation in the occurrence of food allergies, a range of additional disparities have been identified. For example, there are differences in risk by age with the highest prevalence in younger children, by gender with higher prevalence in women, and by ethnicity with higher prevalence in people of African and East Asian descent.[17] [18] Further precise and consistent data is necessary to confirm these trends and caution is required in exploring differences by ethnicity as these may be due to other factors, e.g., differing levels of awareness of food allergy and/or access to health care.[19] Both food allergies and food intolerances are reported more in women than men.[20] Any genetic determinants of food allergy remain largely unknown and the causes behind these gender differences probably include complex psychosocial factors. More research is needed to elucidate these, but it is known that the health practices of men and women are different and this may extend to perceptions of food-related risks, including allergies and intolerances, and how these are experienced and acknowledged.[21]

Many different foods have been identified as causing allergic reactions. A meta-analysis of the prevalence of food allergies in Europe found eight foods were linked to the majority of reported food allergies: cow's milk allergy with an overall lifetime prevalence of 6.0%; wheat allergy 3.6%; hen's egg allergy with a lifetime prevalence of 2.5%; fish allergy 2.2%; shellfish allergy 2.2%; soy allergy 1.5%; tree nut allergy 1.3%; and peanut allergy 0.4%.[22] Cow's milk, and products made from it, was also the food most commonly reported as causing an adverse reaction in Wave 5 of Food and You (23%), followed by fruit (16%), cereals containing gluten (13%), peanuts (9%), other nuts (9%), crustaceans (9%), molluscs (8%),

15 Vacher, L. (2014). *Understanding food allergies and intolerances – the consumer viewpoint*. [Online] Available at: http://www.fdin.org.uk/wp-content/uploads/2016/07/UK-1600-Respondents-Quant-Resarch-On-Allergies-Intolerance-YouGov-1.pdf.

16 Bloomfield, S.F. et al. (2016). Time to abandon the hygiene hypothesis: new perspectives on allergic disease, the human microbiome, infectious disease and the role of targeted hygiene. *Perspectives in Public Health*, 136(4), pp.213-222.

17 McBride, D. et al. (2012). The EuroPrevall birth cohort study on food allergy: baseline characteristics of 12,000 newborns and their families from nine European countries. *Pediatric Allergy Immunology*, 23, pp. 230–239

18 Loh, W. and Tang, M. (2018). The Epidemiology of Food Allergy in the Global Context. *International Journal of Environmental Research and Public Health*, 15(9), p.2043.

19 McBride, D. et al. (2012). The EuroPrevall birth cohort study on food allergy: baseline characteristics of 12,000 newborns and their families from nine European countries. *Pediatric Allergy Immunology*, 23, pp. 230–239

20 Afify, S. and Pali-Schöll, I. (2017). Adverse reactions to food: the female dominance – A secondary publication and update. *World Allergy Organization Journal*, 10, p.43.

21 DunnGalvin, A., et al. (2006). Incorporating a gender dimension in food allergy research: a review. *Allergy*, 61(11), pp.1336-1343.

22 Nwaru, B., et al. (2014). Prevalence of common food allergies in Europe: a systematic review and meta-analysis. *Allergy*, 69(8), pp.992-1007.

eggs (8%) and vegetables (7%).[23] The 2014 YouGov survey also found that dairy products were most commonly reported as linked with an allergy or intolerance (8%), but followed by gluten (7%), peanuts and tree nuts, eggs, crustaceans and molluscs (all 5%), fish and sulphur dioxide (both 3%), soya and sesame (both 2%), and lastly mustard, celery and lupin (all 1%).[24]

Despite the heterogeneity in methods used and gaps in the data, particularly for food intolerances, the overall picture is, as we have discussed, one of increasing prevalence of food hypersensitivities in the UK with perhaps up to 31% of households having a member with a food hypersensitivity.[25] The drivers of these trends are not clear, but they are thought to arise from complex interactions between genetic, demographic and environmental factors.[26]

Risk management strategies

The management of a food allergy or an intolerance requires the strict avoidance of the food(s) linked with the sensitivity. Qualitative research conducted as part of the DEFRA study in 2014[27] found that sufferers of food hypersensitivities use many different information sources when shopping which relate to the product. These include attention to ingredient lists and allergy boxes, as well as external factors, such as the perceived trustworthiness of the manufacturer. Those who were more experienced in managing their condition (i.e., those who had been diagnosed for two years or more) tended to have more established shopping patterns and to use more layers of information than those who were less experienced. The latter tended to rely more on allergy specific information, such as label information including “free from” claims and “contains” boxes. These findings are echoed by the comprehensive programme of research conducted by Bath University and funded by the FSA into the preferences of people with allergies and food intolerances when eating out.[28] The findings demonstrate that people have complex risk assessment strategies when eating out and apply a range of information sources. This includes food labelling, general health awareness and experience, verbal communications as well as rules of thumb. The trustworthiness of information (both written and verbal) is crucial.

This study also examined changes in practices following the introduction of allergen labelling in 2014 as part of the EU Food Information Regulations (FIR). This stipulates the labelling of both prepacked and non-prepacked foodstuffs to indicate the presence of 14 allergens and that food businesses must also provide information on these in either written or oral form. In the survey and interviews following implementation of the FIR, the majority of respondents saw the legislation as a positive

23 Fuller, E., et al (2019). *The Food and You Survey Wave 5: Combined report for England, Wales and Northern Ireland*. [Online] Available at: https://www.food.gov.uk/sites/default/files/media/document/food-and-you-wave5-combined-report-web-revised.pdf.

24 Vacher, L. (2014). *Understanding food allergies and intolerances – the consumer viewpoint*. [Online] Available at: http://www.fdin.org.uk/wp-content/uploads/2016/07/UK-1600-Respondents-Quant-Resarch-On-Allergies-Intolerance-YouGov-1.pdf.

25 Sicherer, S. and Sampson, H. (2018). Food allergy: A review and update on epidemiology, pathogenesis, diagnosis, prevention, and management. *Journal of Allergy and Clinical Immunology*, 141(1), pp.41-58.

26 Loh, W. and Tang, M. (2018). The Epidemiology of Food Allergy in the Global Context. *International Journal of Environmental Research and Public Health*, 15(9), p.2043.

27 Anthesis Consulting Group (2014). *Baseline evaluation of the EU Food Information for Consumers (FIC) labelling: final report*. [Online] Available at: http://sciencesearch.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Completed=0&ProjectID=18705.

28 Barnett, J., at al. (2017). *The preferences of those with food allergies and/or intolerances when eating out (FS305013). Final Report*. [Online] Available at: https://www.food.gov.uk/sites/default/files/media/document/fs305013-final-report.pdf.

step and that it had improved their eating out experiences. The provision of written information on menus was appreciated (it was seen as the "gold standard") and it made eating out more "normal". Most people also felt more confident about asking for information and perceived staff to be more responsive to information requests; improving the experience of eating out and mitigating the "risk" of being labelled as "fussy". Some, however, saw the implementation of the FIR as sporadic and inconsistent and still felt inhibited about asking staff for information. The "ideal" eating out experience was described by most respondents as one in which written allergen advice was provided, combined with staff willing to respond to requests for further information.[29]

Very little research has explored the wider lived experience of those with a food hypersensitivity, but a qualitative study funded by the ESRC shows the difficulties that people face in the daily management of their condition.[30] It was found that experience and the accumulation of knowledge played an important role as people learned what they could and could not eat. Social acceptance was also important, with individuals not wishing to be perceived as "fussy" or "faddy", particularly for those suffering from a food intolerance. It has not been examined in the UK, but studies in North America have shown that food allergies can impose additional costs on households because of the need to purchase special foods[31] and that for low income adults, managing a food allergy is difficult.[32]

Food hypersensitivities and the Food Standards Agency

Owing to the impact of food hypersensitivities on individuals (and wider commercial organisations), the provision of consistent and credible information on food allergens and other food components is vital for consumers and the Food Standards Agency is addressing this through an extensive programme of work. Following some high-profile deaths, including that of Natasha Ednan-Laperouse in 2016 after eating an unlabelled baguette, this includes a review of the current regulatory framework for foods that are pre-packed for direct sale to consumers (announced in November 2018). Responses to the background consultation[33] showed that consumers supported the provision of more written information on allergens and ideally labelling of all ingredients, but, as shown in the research by Bath University, were less certain about the value of "ask the staff" labels, seeing these as less credible. As a result of the consultation, Defra has introduced new legislation to provide better information for allergic consumers to enable them to make safer food choices. The new law will require pre-packed for direct sale (PPDS) foods to be labelled with a full ingredient list emphasising any allergens present. This change is due to come into force in October 2021.

29 Barnett, J., at al. (2017). *The preferences of those with food allergies and/or intolerances when eating out (FS305013). Final Report.* [Online] Available at: https://www.food.gov.uk/sites/default/files/media/document/fs305013-final-report.pdf.

30 Nettleton, S., et al. (2010). Experiencing Food Allergy and Food Intolerance. *Sociology*, 44(2), pp.289-305.

31 Gupta, R., et al. (2013). The Economic Impact of Childhood Food Allergy in the United States. *JAMA Pediatrics*, 167(11), p.1026-1031.

32 Minaker, L.M., et al (2015). Low income, high risk: the overlapping stigmas of food allergy and poverty. *Critical Public Health*, 25, pp.599-614.

33 Department for Environment, Food and Rural Affairs, Food Standards Agency and Food Standards Scotland (2019). *Summary of responses and government response*. [Online] Available at: https://www.gov.uk/government/consultations/food-labelling-changing-food-allergen-information-laws/outcome/summary-of-responses-and-government-response.

TECHNICAL NOTES

Notes to text and tables

1. Tables accompanying each chapter in this report can be found in the appendices. The chapter texts include references to the relevant tables.
2. The data used in the report have been weighted. Weighted and unweighted sample sizes are shown at the foot of each table.
3. Weights were applied to correct for the lower selection probabilities of adults aged 16 and over in multi-adult households and dwellings, as well as for the selection of one dwelling unit or household if two or more were found at the selected address.
4. Unless stated otherwise, where comparisons are made in the text between different population groups or variables, only those differences found to be statistically significant at the 95% level are reported. In other words, differences as large as those reported have no more than a five per cent probability of occurring by chance. The term 'significant' refers to statistical significance (at the 95% level) and is not intended to imply substantive importance.
5. The following conventions have been used in tables:
   – no observations (zero value)
   0 non-zero values of less than 0.5% and thus rounded to zero
   [ ] estimates based on 30 to 49 cases are presented in square brackets.
   * estimates based on fewer than 30 cases are not shown.
6. Because of rounding, column percentages may not add exactly to 100%. For questions where respondents could give more than one response, the percentages will add up to more than 100%.
7. 'Missing values' occur for several reasons, including refusal or inability to answer a particular question/section and cases where the question is not applicable to the participant.
8. Where a table contains more than one variable, the bases may not be exactly the same. Tables will usually show the bases for the first variable in the table, and for any other variables where the bases are not of a similar magnitude.

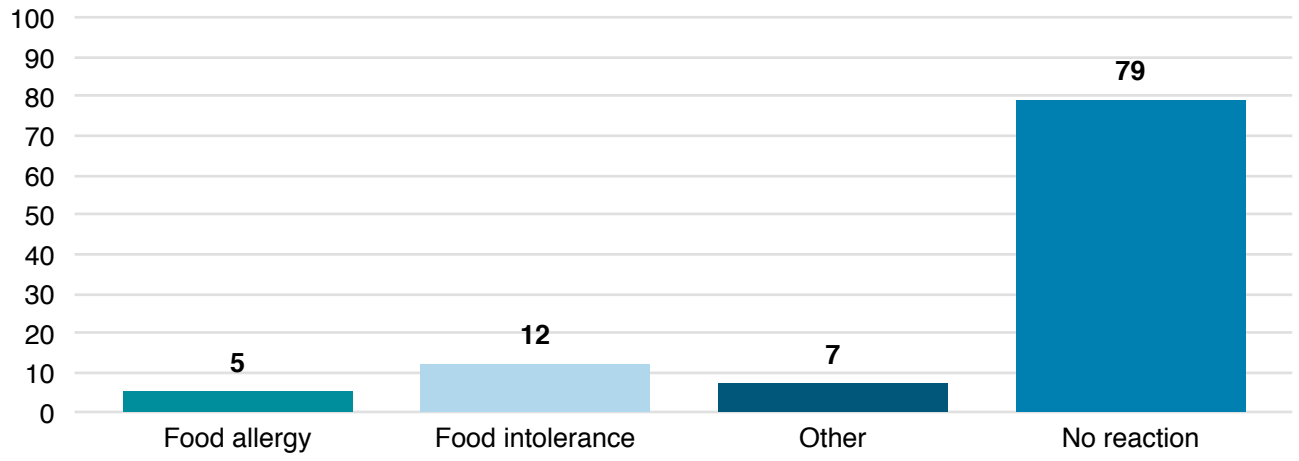
PREVALENCE OF FOOD HYPERSENSITIVITIES

The analysis presented throughout this report is based on a series of research questions, drawn up in collaboration between NatCen and the Food Standards Agency. These questions seek to explore different facets of life for people with food hypersensitivities, from the prevalence of food hypersensitivities to shopping, eating and cooking behaviour. Questions were designed to consider those differences that may emerge between people with food hypersensitivity and people without food hypersensitivity. Analysis was also conducted to identify any differences between people with different types of food hypersensitivity: food allergies, food intolerances, and 'other' adverse reactions.

Prevalence

As a policy priority for the Food Standards Agency, questions about food hypersensitivity are a core element of the Food and You Survey. Participants were asked to report any adverse reactions that they had to foods, including food allergies, food intolerances, Coeliac disease, and 'other' adverse reactions not included in any other category. The prevalence of food hypersensitivities described in this report is based on self-reported data collected from the Food and You Wave 5 survey, unless otherwise stated. The prevalence of food hypersensitivities includes both clinically diagnosed and non-clinically diagnosed food hypersensitivities, as self-reported by respondents. Prevalence rates in this report may therefore differ from other sources of prevalence data that only considers clinically diagnosed food hypersensitivities.[34] Further information on the different types of prevalence data can be found in the World Allergy Organisation's *White Book on Allergy*.[35] The prevalence of these hypersensitivities is shown below in Figure 1.[36] The prevalence rates include all food hypersensitivities, whether diagnosed by a clinician, by an alternative therapist, or self-diagnosed.

Figure 1: Prevalence of food hypersensivity among all respondents, %



34 Food Standards Agency (2018). *Chief Scientist's Report: Issue Five: Food allergy and intolerance*. [Online] Available at: https://www.food.gov.uk/sites/default/files/media/document/fifth-csa-report-allergy%20(1).pdf.

35 World Allergy Organisation (2013). *White Book on Allergy*. [Online] Available at: https://www.worldallergy.org/wao-white-book-on-allergy.

36 Respondents were able to report multiple hypersensitivities, so columns do not total to 100%.

Respondents were also asked to report the number of food allergies and food intolerances that they experienced (Table 1 and Table 2). In total, 3% of respondents reported one allergy, while 2% reported two allergies (Table 1). Food intolerances were more commonly reported, with 5% of respondents reporting one intolerance, 4% two intolerances, 1% three intolerances and 1% reporting four intolerances (Table 2).

To enable further analysis of how socio-economic and demographic characteristics were related to food hypersensitivities, respondents were grouped into one of four categories: respondents with no adverse reactions; respondents with a food allergy; respondents with a food intolerance; and respondents with an 'other' adverse reaction (Table 3). All further analysis is conducted using these groupings.[37]

Diagnosis

Self-diagnosis is the most common form of diagnosis

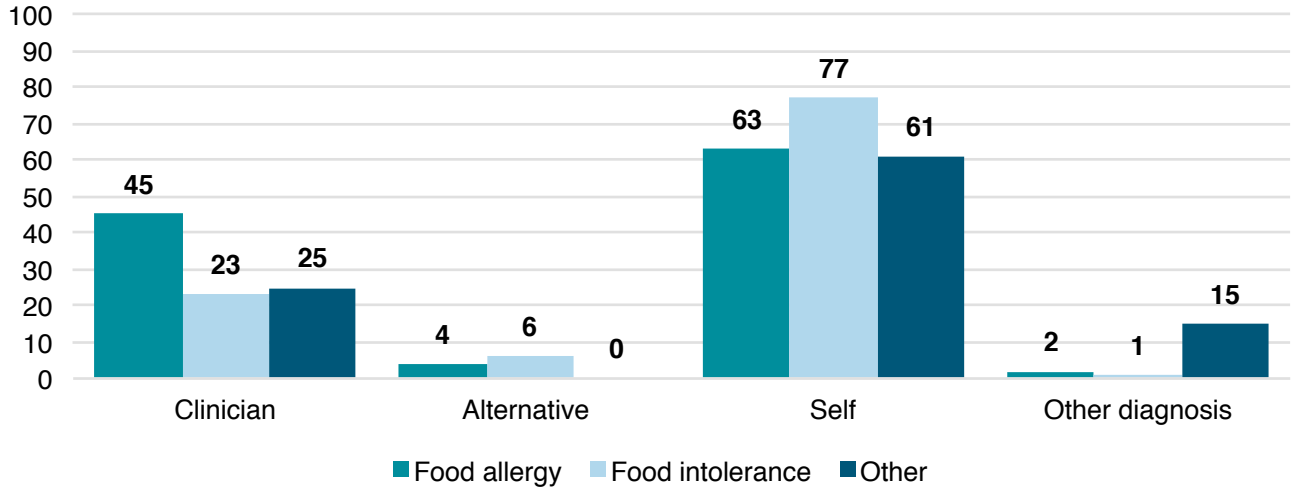
Respondents who reported food hypersensitivities were asked about the diagnosis of their condition.[38] Overall, 77% of those with food intolerances, 63% of those with food allergies and 61% of those with 'other' adverse reactions were self-diagnosed (Table 4).

Those with food allergies (45%) were more likely to have a clinical diagnosis than those with food intolerances (23%) or 'other' adverse reactions (25%) (Table 5).

Testing by an alternative therapist, which includes testing with homeopathists, reflexologists, online or via a walk-in allergy testing service, was reported by 4% of those with food allergies and 6% of those with a food intolerance (Table 6, Figure 2).

People with food allergies are more likely than those with food intolerances to have their first reaction under the age of 16

Figure 2: How food hypersensitivities have been diagnosed, by type of food hypersensitivity, %



37 As further described in Notes on definitions. To enable robust analysis and prevent individuals from being included in multiple categories for analysis, individuals with a food intolerance and food allergy were placed into the food allergy category. 12% of the population had an intolerance, with or without another hypersensitivity, while 10% have only a food intolerance

38 Respondents were able to report the diagnosis for multiple allergies, intolerances or other reactions so columns do not total to 100%.

Respondents were asked how old they were when they experienced their first reaction.[39] These findings are shown in Figure 3.

Among respondents with food allergies, 28% experienced their first reaction between 6-15 years old, with 17% under the age of 6 years old and 14% aged 16-24 years old. In total, 45% of respondents reported that their first reaction to an allergen food was under the age of 16 and 59% under the age of 25.[40] While this suggests that people with food allergies experience their first allergic reactions at a younger age, 13% of respondents reported experiencing an allergic reaction for the first time aged 35-44 and first reactions continue to be reported until the age of 74 (Figure 3, Table 7).

There is a different pattern for individuals with food intolerances. In total, 6% experienced their first reaction under the age of six, while 13% had a reaction between the age of 6-15 years old. The age at first reaction peaks between ages of 16-24, with 27% of respondents reporting their first reaction during this period, although first reactions were reported at all ages for those with food intolerances, including within the oldest age category, 75+ (Figure 4, Table 7). It was not possible to identify significant differences in the age at first reaction when analysed at national level (e.g. when comparing England, Wales and Northern Ireland).

Figure 3: Age at first reaction by food allergy, %

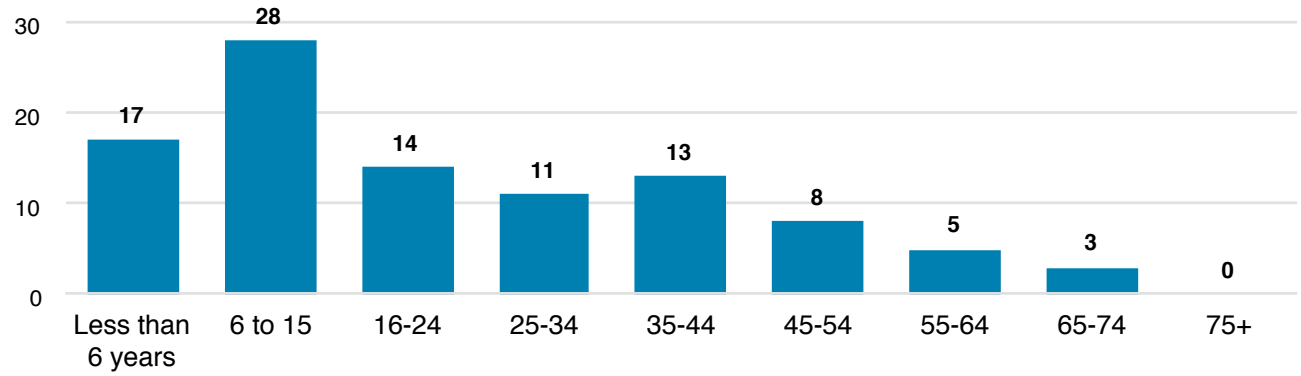
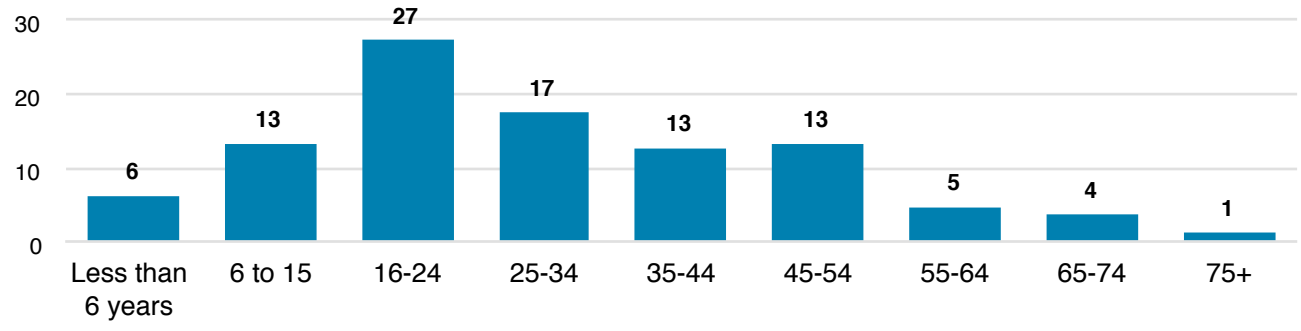


Figure 4: Age at first reaction by food intolerance, %



39 All respondents in the sample are aged 16 or over. All results are based on self-report.

40 The trends of age at first reaction to a food were studied across time using data from Wave 4 and Wave 5 of the Food & You survey. No significant differences in these trends were observed across time for either allergies or intolerances.

DEMOGRAPHICS AND SOCIO-ECONOMIC CHARACTERISTICS

This section describes the demographic profile of respondents who reported suffering from a food hypersensitivity. Only results which show a significant difference between individuals with food hypersensitivities and individuals without food hypersensitivities are presented: there were no significant differences when looked at by country, ethnicity, family type, household income or the number of adults in the household.

Respondents who are older, female, and not in work, are most likely to report a food hypersensitivity

Age

The proportion of respondents reporting a food hypersensitivity increases by age: 24% of people aged 65 and over reported any reaction to food, compared to 17% of those aged 16-34 (Table 8). This reflects the trends seen in Figures 2 and 3, in which individuals reported that their first reactions to food intolerances and allergies continues throughout the life course.

Gender

Those who reported having a food hypersensitivity tended to be female, with 24% of women compared to 18% of men reporting food hypersensitivity (Table 9), an effect that has been well-documented elsewhere. Research from the US suggests a number of reasons for this, including differing sex hormones, such as oestrogen in women; greater awareness among women of food-related risks; use of specific drugs such as anti-acid medications; and greater health knowledge and likelihood of women accessing healthcare.[41]

Work status

Analysis found that those with any food reactions were more likely than those with no adverse reaction to be unemployed (28%) than in work (19%) or in 'other' work status (21%).[42] Conversely, those in work (81%) were more likely than those who are unemployed (72%) to have no food reaction (Table 10). However, there were no significant differences reported in the prevalence of food hypersensitivities among households with different incomes, which suggests that there is no clear relationship between food hypersensitivities, work status and household income (Table 11). This finding suggests further research is required into how food hypersensitivities impact on employment and work.

41 Afify, S. and Pali-Schöll, I. (2017). Adverse reactions to food: the female dominance – A secondary publication and update. *World Allergy Organization Journal*, 10, p.43.

42 'Other' work includes categories such as people on maternity leave, people looking after family or home, full-time students, people with long-term disabilities, unable to work because of short-term illness or injury, etc.

HEALTH AND WELLBEING

Respondents with bad general health are most likely to report a food hypersensitivity, but personal wellbeing scores remain high

General health status

Individuals were asked to self-rate their health in the Food and You survey. Respondents reporting bad health (31%) were more likely to have a food hypersensitivity than those reporting fair health (29%) or good health (19%) (Table 12).

Wellbeing

Since 2010, the Office for National Statistics has released a series of questions which aim to measure personal levels of wellbeing through four questions using a response scale from 0-10.[43] [44] In this report, these questions have been used to examine the relationship between wellbeing and food hypersensitivities:

Measure	Question
Life Satisfaction	Overall, how satisfied are you with your life nowadays?
Worthwhile	Overall, to what extent do you feel that the things you do in your life are worthwhile?
Happiness	Overall, how happy did you feel yesterday?
Anxiety	Overall, how anxious did you feel yesterday?

Life satisfaction

In total, 86% of those with no adverse reaction had high or very high life satisfaction, as did 80% of those with a food allergy and 81% of those with a food intolerance (Table 13). These differences were not significant. These figures are similar to the UK population estimates, with 82% reporting high or very high life satisfaction in the year ending March 2019.[45] There were no significant changes between Waves 4 and 5 of the Food and You survey.

Researchers hypothesised that wellbeing scores could be affected by the severity of food hypersensitivity. Clinical diagnosis was used as a proxy for severity of food hypersensitivity, assuming that individuals who have a clinical diagnosis may have sought a clinical diagnosis due to severe and/or ongoing symptoms.

Whilst no significant differences were found between the wellbeing of individuals with a clinically diagnosed food allergy and those who had not been clinically diagnosed, analysis found that those with a clinically diagnosed intolerance (71%) were less likely to report a high or very high satisfaction score when compared with those with no intolerances (85%) or a non-clinically diagnosed intolerance (84%). This may reflect the additional needs of this group in managing their intolerances during daily life, for example, encountering greater risks associated with eating, shopping or cooking in comparison to their family, friends or peers (Table 14).

43 Office for National Statistics. *Personal well-being user guidance*. [Online] Available at: www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/methodologies/personalwellbeingsurveyuserguide.

44 For life satisfaction, worthwhile and happiness questions, Low is 0-4, Medium is 5-6, High is 7-8 and Very High is 9-10. For anxiety questions, Low is 0-1, Medium is 2-3, High is 4-5 and Very High is 6-10.

45 Office for National Statistics (2019). *Personal well-being estimates dataset: April to March 2011 to 2019*. [Online] Available at: https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/datasets/headlineestimatesofpersonalwellbeing.

Worthwhile

Scores for the 'worthwhile' domain were high: 92% of respondents with a food allergy, 88% of those with no food hypersensitivity, 84% of those with a food intolerance and 82% of those with an 'other' adverse reaction reported that they felt their life was worthwhile (Table 15). Whilst these proportions differ between each group, differences were not significant and were similar to the UK overall score (84%).[46]

Happiness

Responses to the happiness question also indicated positive scores from the participants: 81% of those with no food reaction, 79% of those with food allergies, 78% of those with food intolerances and 76% of those with an 'other' adverse food reaction scored high or very high (Table 16). These differences were not significant. In total, 76% of the UK scored high or very high for happiness.[47]

Anxiety

In contrast to those questions exploring 'worthwhile', 'happiness' or 'life satisfaction', the question determining levels of anxiety is answered on a negative scale: the lower the score, the less anxious the respondent. Overall, while responses to this question were less positive than those for the other three domains, there were no significant differences found between the four groups of respondents: 69% of respondents with no reaction, 64% with a food allergy, 62% with a food intolerance and 60% with an 'other' adverse reaction scored low or very low anxiety (Table 17). These scores were similar to the UK wide score for low or very low anxiety (64%).[48]

46 Office for National Statistics (2019). *Personal well-being estimates dataset: April to March 2011 to 2019*. [Online] Available at: https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/datasets/headlineestimatesofpersonalwellbeing.

47 Ibid.

48 Ibid.

EATING PATTERNS

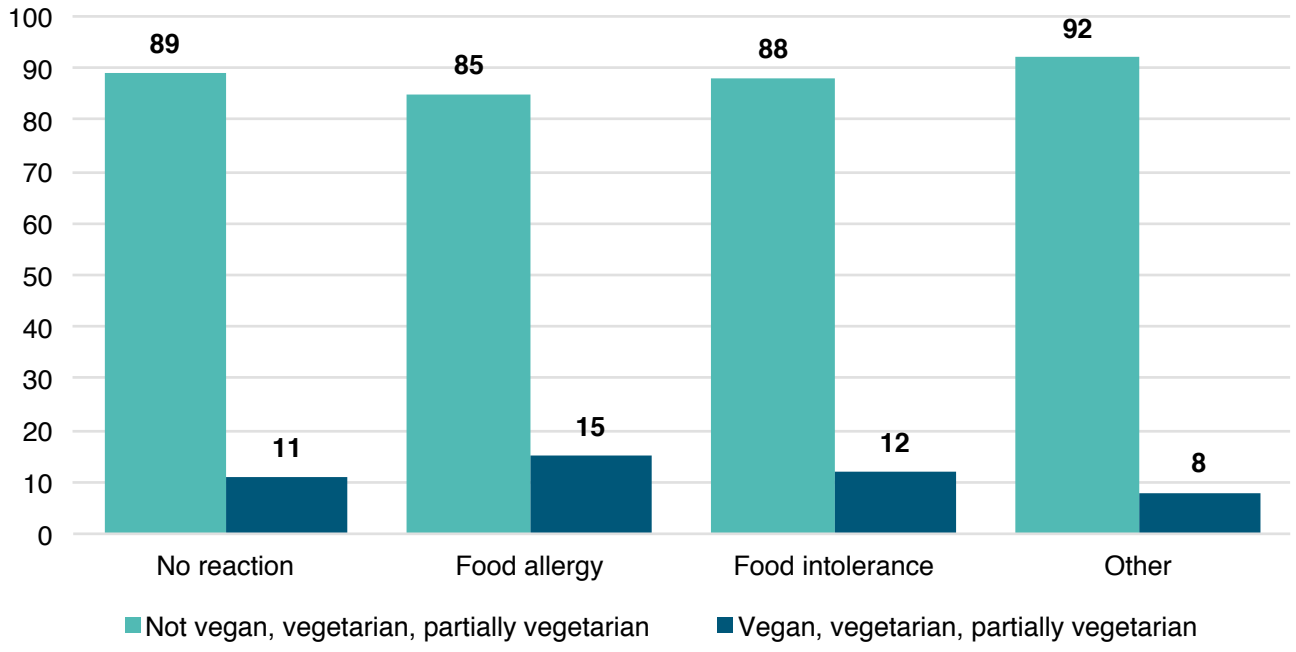
Respondents with food hypersensitivities are as likely as those without to follow a vegan or vegetarian diet

As strategies such as food avoidance and adopting an allergen-limited diet are perceived as important in managing risk, researchers are interested in whether individuals with allergens would adopt a further-restricted diet such as veganism, vegetarianism or partial vegetarianism. While the largest group of respondents with a vegan or vegetarian diet[49] was individuals with food allergies (15%) and the lowest percentage was among those with an 'other' adverse reaction (8%), no significant differences were found (Figure 5, Table 18).

People with food hypersensitivities cook as often as those without food hypersensitivities

Respondents reported high levels of cooking: 76% of those with a food allergy, 69% of those with a food intolerance, 68% of respondents with an 'other' adverse reaction and 67% of those with no adverse reaction cook at least 5-6 times per week (Table 19). In preparing or cooking food, 45% of respondents with a food allergy, 36% of those with a food intolerance and 38% of respondents with no adverse reaction reported that they were responsible for all or most of this task (Table 20).[50] These differences were not significant.

Figure 5: Vegan, vegetarian or partially vegetarian diet by type of food hypersensitivity, %



49 Respondents are asked whether they are vegetarian, partially vegetarian or vegan. This is referred to as 'vegan or vegetarian diet' throughout this report.

50 Base is all respondents living in a multi-adult house.

Eating out of the home

There were no differences in the frequency of eating out by food hypersensitivity – but outlets and priorities differ

In the Wave 5 Food and You survey (2018) almost all respondents reported buying and eating food outside the home during the last month. Nearly all respondents reported eating dinner out (85%), 70% reported eating out for lunch and 38% said they eat out for breakfast.[51] Respondents were defined as 'frequently' eating meals out of the home if they reported eating out once a week or more. Figure 6 shows the breakdown of different meals by different food hypersensitivities.

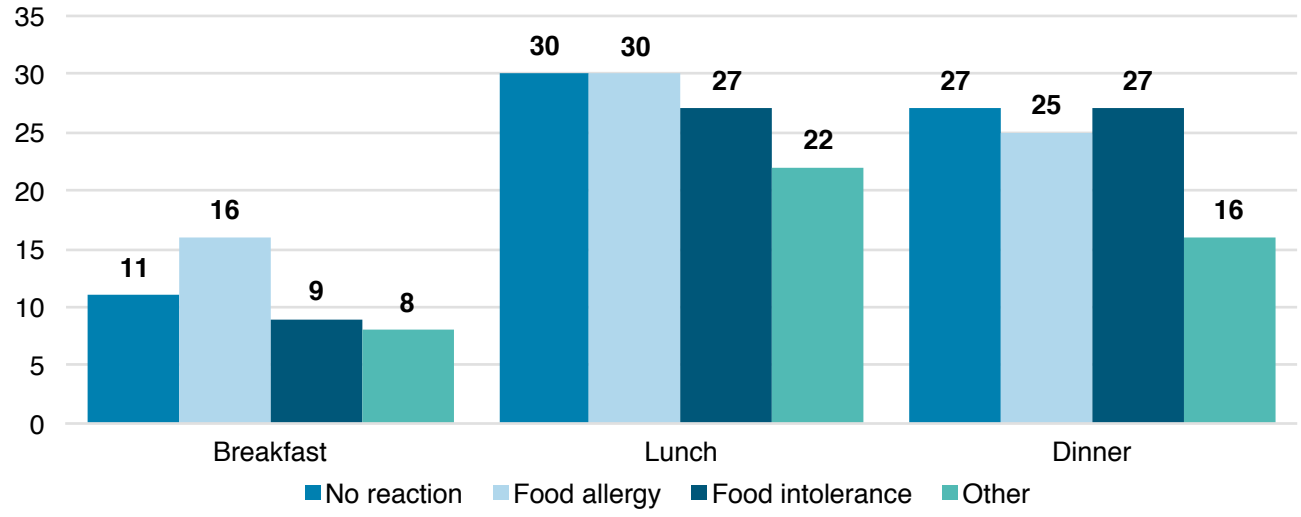
Contrary to expectation, individuals with food hypersensitivities are as likely as those without food hypersensitivities to report frequently eating out: for example, 27% of those with no adverse reaction, 25% of those with a food allergy, 27% of those with a food intolerance and 16% of those with an 'other' adverse reaction report eating dinner out at least once a week. There were no significant differences by hypersensitivity for any meals. (Tables 21, 22, 23).

Outlets for eating out

People with hypersensitivities still eat out at restaurants, coffee shops, pubs, and clubs

Respondents were also asked to report where they had eaten outside of the home in the past month. Overall, restaurants were the most commonly reported location, with 69% of all respondents eating in a restaurant within the previous month, followed by in a café or coffee shop (47%) and pub, bar or nightclub (40%). There were no significant differences for eating out in these outlets by type of food hypersensitivity (Table 24).

Figure 6: Percentage of respondents 'frequently' eating meals outside the home, by meal and hypersensitivity, %



51 Benson, A. et al. (2019). [Forthcoming] *The Food and You Survey Wave 5: The UK Food Landscape.*

Differences were reported in buying takeaway and fast food. Those with no adverse reaction (58%) were more likely than those with an 'other' adverse reaction (48%) to eat takeaway food from a restaurant or takeaway outlet, while those with a food intolerance were most likely to have eaten in a fast-food restaurant (39%), although this only applied to food eaten in the restaurant, rather than eating a takeaway meal from a fast-food restaurant. There was no difference in buying food to take away from a café, coffee shop or sandwich bar, which was reported by 41% of respondents with a food intolerance, 40% of respondents with a food allergy, and 36% of respondents with no adverse reaction (Table 24).

Sources of information when eating out

The most common source of information for all respondents was personal experience of the outlet (65%) followed by word of mouth and recommendations from friends and family (both 50%). This suggests informal networks are prioritised as a source of information over more official sources of information such as restaurant guides, magazines and newspapers, advertising or books. No significant differences were found between the most common sources of information used by those with or without food hypersensitivities (Table 25).

What's important to people with food hypersensitivity when deciding where to eat out?

People with food hypersensitivities value personal experience and recommendations from people they know – but price and good service are key

Respondents with food allergies (66%) and food intolerances (59%) were more likely than respondents with no adverse reaction (49%) to report that recommendations or invitation from someone they know were important to them when deciding where to eat out (Table 26).

Allergen information was more important in decision-making for food allergy sufferers (27%) than respondents with a food intolerance (14%), with no adverse reaction (7%) or an 'other' adverse reaction (4%); this suggests that 73% of respondents with a food allergy did not see allergen information as important when making decisions about eating out (Table 26).

Respondents with food intolerances (44%) were more likely to see the availability of healthier food or choices as important when making a decision in comparison to those with no adverse reaction, which may suggest that those with food intolerances are more conscious of healthy-eating (Table 26). Almost a fifth of all respondents with a food hypersensitivity cited having food available for different diets as an important factor, peaking at 23% of those reporting food intolerances (Table 26). This suggests that people with food hypersensitivities support consideration for other dietary choices, such as those based on religious tenets.

Finally, price, good service and a good hygiene rating were important to a large proportion of respondents. Figure 7 shows the top three factors when deciding where to eat, by category of food hypersensitivity (Table 26).

Figure 7: Top three factors in deciding where to eat out, by food hypersensitivity

Ranking	No adverse reaction to food	Food allergy	Food intolerance	Other adverse reaction
1	Good service (61%)	Recommendations or invitation from someone you know/ good reviews (66%)	Good hygiene rating/ score (67%)	Good service (62%)
2	Good hygiene rating/ score (60%)	Price (65%)	Good service (64%)	Price (61%)
3	Price (58%)	Good service (61%)	Price (62%)	Good hygiene rating/ score (58%)

Positive relationships with food

People with food hypersensitivities are also foodies – over three-quarters say they like trying new food and cooking at home

In the most recent wave of the Food and You survey (2018) respondents were asked about their attitudes towards eating, cooking and other food behaviours. These questions asked respondents to rate whether they strongly agreed, tended to agree, neither agreed or disagreed, tended to disagree, or strongly disagreed with a number of statements, including:

- "I like trying new things to eat";
- "I enjoy preparing and cooking food";
- "I'm not generally interested in food"; and
- "When preparing food, I could be more careful about hygiene".

A large proportion of respondents reported that they enjoy trying new things to eat, with 76% of people with a food allergy, 73% of people with a food intolerance, 72% of people with no adverse reaction and 67% of those with an 'other' adverse reaction reporting that they definitely or tended to agree with this statement. These differences were not significant, indicating that people with food hypersensitivities do not differ from the general population in trying new foods (Table 27).

A majority of respondents across all groups (67%) agreed that they enjoyed preparing and cooking food (Table 28), while 81% disagreed that they were not interested in food (Table 29). For both statements, no significant differences were observed between respondents with a food hypersensitivity and those without.

The lack of significant differences in relation to these questions further strengthens the argument that respondents with food hypersensitivity do not necessarily exhibit different patterns for cooking and eating. Respondents with food allergies and intolerances are as likely to choose a diet such as veganism or vegetarianism, as likely to cook frequently, and as likely where to eat out as those without hypersensitivities, although they do prioritise different sources of information when choosing where to eat out. This is an encouraging finding, suggesting that people with food hypersensitivities do not feel that their

food-related behaviours are unduly limited by those hypersensitivities. The finding that the majority of people with food hypersensitivities report enjoying trying new things to eat, cooking and preparing food, and have a general interest in food, similarly indicates that food hypersensitivities are not the main determinants of an individuals' relationship with food culture. From the data presented in this report, it appears allergens and intolerances are not necessarily seen as limiting the ability of those with food hypersensitivities to enjoy food and cooking.

Finally, in relation to the statement, "When preparing food, I could be more careful about hygiene", respondents with food allergies (57%) were most likely to disagree with this statement, compared to 47% of respondents with a food intolerance and 40% of those with no adverse reaction (Table 30). This suggests while respondents with food allergies and intolerances may have similar levels of interest in food, they are more aware of issues around hygiene and contamination. This is discussed in more detail in the final section, Food Safety.

SHOPPING PATTERNS

In addition to questions on eating patterns, respondents in the Food and You (Wave 5) survey were asked about their food shopping. Two main questions were analysed: the level of responsibility that the respondent has for household food and grocery shopping and the locations where people shop for food. This question focuses on multi-adult households, as respondents who lived on their own or who were the only adult in the household are assumed to be responsible for their food shopping by default. In multi-adult households, there were no significant differences identified between respondents with different forms of hypersensitivity and their level of responsibility for food shopping (Table 31).

Almost all respondents reported using large supermarkets (96% of all respondents), but respondents with food allergies (55%) were more likely than those with no adverse reaction (42%) or those with an 'other' adverse reaction to shop at mini supermarkets (Table 32). People with food allergies (28%) and food intolerances (27%) were also more likely to visit markets than those with an 'other' adverse reaction (21%) and no adverse reaction (18%) (Table 32).

The importance of provenance of food for people with food hypersensitivity

Respondents were asked to indicate the importance of food provenance when purchasing food, rating whether they strongly agreed, tended to agree, neither agreed nor disagreed, tended to disagree, or strongly disagreed with a number of statements, including:

- "When buying food, I check to see where it was produced";
- "Where possible, I prefer to buy food produced in the UK and Ireland";
- "I have greater trust in the quality of food produced in the UK and Ireland, compared to food imported from overseas"; and
- "I would be prepared to pay more for food and drink that is produced in the UK and Ireland".[52]

Among respondents with a food allergy, 50% reported that they checked where food is produced before purchasing, along with 46% of respondents with an 'other' adverse reaction, 42% of those with a food intolerance and 40% of respondents with no adverse reaction, although these differences were not significant (Table 33).

One in two respondents (51%) said they prefer to buy food produced in the UK and Ireland (Table 34). Similarly, almost half of respondents (48%) said they have greater trust in food produced in the UK and Ireland (Table 35). Finally, although respondents reported that they preferred to buy food produced in the UK and Ireland (Table 34), only 45% reported that they would be prepared to pay more for it (Table 36). However, no significant differences across groups were found.

Confidence in food labelling

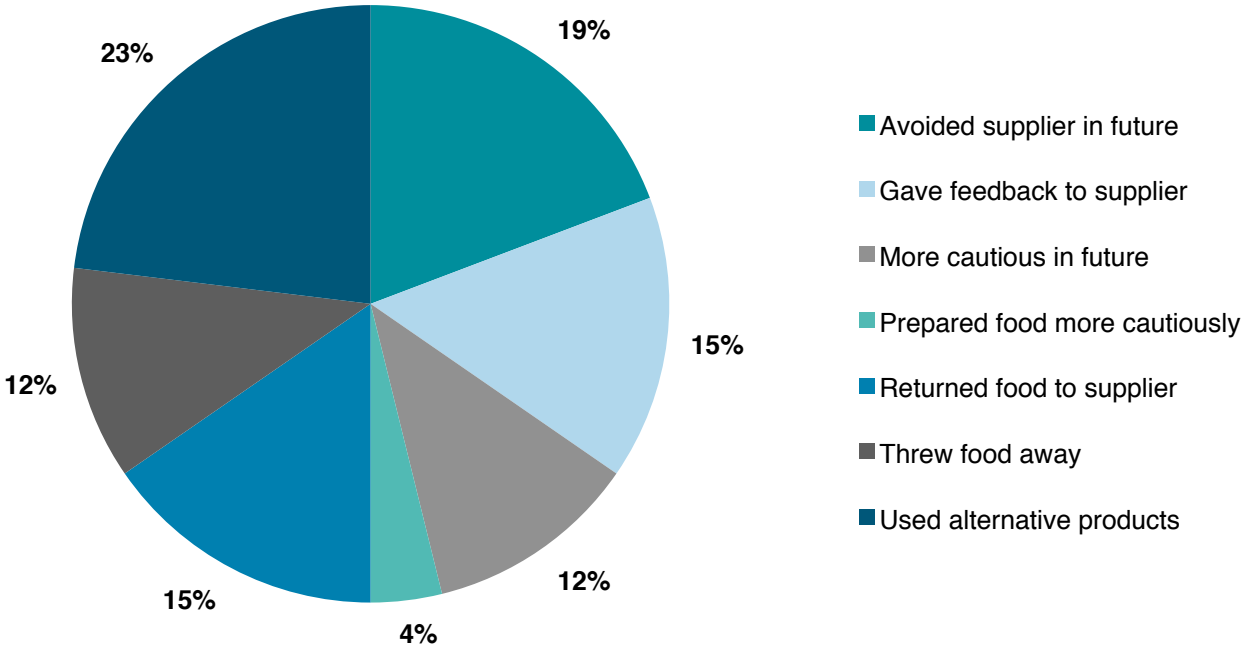
A majority (84%) of all respondents were always or mostly confident that food is what it says on the label or menu, with no significant differences by type of hypersensitivity (Table 37).

52 The questions asked varied by location. Respondents in England and Wales were asked about "food produced in Britain", while respondents in Northern Ireland were asked about "food produced in the UK and Ireland". The term "the UK and Ireland" is used to refer to both for ease of reading.

Respondents were also asked what actions they had taken when they were not confident in food labels. Respondents with no adverse reaction were most likely to take no action, compared to only 37% of respondents with food allergies and 42% of respondents with food intolerances (Table 38).

Respondents who reported taking an 'other' action were asked to specify which actions they had taken. A total of 31 qualitative responses, from individuals with and without food hypersensitivity, were analysed to identify key actions taken, which are presented in Figure 8. The most common response was to avoid using the supplier in the future, followed by using alternative products (such as avoiding discounted food or preferring to buy organic produce in the future). Respondents reported giving feedback to the supplier, in the form of making a complaint or asking further questions, including when returning the food to the supplier. Owing to the small number of respondents, these are indicative findings only and may not be representative of the wider population.

Figure 8: Other actions taken when respondent was not confident that food was what it said it was on the label or the menu, %



FOOD SAFETY

Since 2010, the Food and You survey has asked a series of questions which form the Index of Recommended Practice (IRP). This is a composite measure of food hygiene knowledge and behaviours within the home, which includes questions on five 'domains' of food safety: cleanliness, cooking, chilling, avoiding cross-contamination and use by dates. A higher IRP score indicates more reported behaviours that are in line with recommended food safety practice. This section looks at the mean IRP scores for people with and without food hypersensitivities and examines food safety practices reported by respondents with different forms of food hypersensitivities.

In the Food and You Wave 5 survey, the mean IRP score was 67 for all respondents. When looked at by type of food hypersensitivity, respondents with no adverse reaction had a mean score of 67 and respondents with food hypersensitivities had a mean score of 68 (Table 39). There was no significant change in IRP scores from Wave 4 to Wave 5.

Common actions in practicing food safety at home

Using different chopping boards

Respondents with a food allergy (58%) were most likely to report always using a different chopping board for different foods,[53] in comparison to 51% of those with an 'other' adverse reaction, 46% of those with a food intolerance, and 44% of those with no adverse reaction (Table 40).

Not storing open tins in the fridge

Respondents with a food allergy (79%) were most likely to never store open tins in the fridge, while respondents with no adverse reaction (64%) or food intolerance (64%) were least likely to never do this (Table 41). This may be due to the differing nature of allergies and intolerances. Respondents with allergies have a greater risk of exposure from trace or contact amounts of the allergen and so may be more aware of the need to avoid cross-contamination, while respondents with intolerances usually need to consume the food in order to experience a reaction and are less at risk from trace amounts of food passed on from cross-contamination.

Washing raw fruit and vegetables

The issue of cross-contamination may also explain why respondents with a food allergy (67%) were most likely to always wash fruit and vegetables to be eaten raw, compared to 53% of people with no adverse reaction and 50% with an 'other' adverse reaction (Table 42).

Hygiene standards when eating out

Respondents with a food intolerance (36%) were most likely to report 'word of mouth' as their key source of knowledge about hygiene standards when eating out, in comparison to 17% of respondents with an 'other' adverse reaction and 26% of respondents with a food allergy (Table 43). Differences between other answer options were not significant.

53 This question was adapted for respondents with only one chopping board, who were asked whether they cleaned the chopping board between uses with different foods.

Information about cooking and preparing food safely

Respondents were asked where they went for information about how to prepare and cook food safely at home. Information from family and friends was the most commonly selected option for all groups of respondents and differences were not significant. Respondents with food allergies were most likely to use product packaging (46%), food television shows or cooking programmes (42%), food magazines (25%) and food websites (33%) than all other groups (Table 44). This suggests that, although people with food allergies were not more likely than other groups to report an interest in food, they are the most likely to use a variety of information sources to ensure safety when cooking and eating.

DISCUSSION

The appropriate and safe management of food allergies and intolerances, whilst always central to the FSA delivery role, has become an urgent area of discussion, policy and research development following recent, highly publicised deaths.[54] [55] [56] The fieldwork overlapped the timeframe of this intense media interest, although we are unable to assess if such coverage influenced individual responses. Nevertheless, some surprising findings emerged from this analysis. Not least, we found few behavioural differences between those living with allergies or intolerances and those who have no adverse reaction to food. In bringing together these findings, we provide some discussion on the rationale that may underpin differences found, highlight knowledge and research gaps as well as identify immediate and longer-term policy implications.

The reported prevalence of food allergies or intolerance is high. Over a fifth of people responding to this survey (21%) reported some form of reaction to specific foods or food groups. Whilst a greater number of women than men reported hypersensitivity, we perceive this finding is due to a number of factors. There is a greater awareness among women of food related risks, higher health knowledge, as well as overarching gendered health seeking behaviours. That is, women are far more likely to follow-up health concerns and attend clinical appointments.[57] This reported prevalence is mirrored in the literature and other epidemiological studies.

However, as we've highlighted, few individuals seemingly have clinical diagnoses of food allergies or intolerance. Over three quarters of people with food intolerances (77%) and almost two-thirds of those with food allergies (63%) indicated that such reactions have been 'self-diagnosed'. The survey does not enquire why individuals choose not to obtain a clinical diagnosis and the wider literature is similarly silent on this area. It is recognised that diagnosing food hypersensitivities can be complex owing to the variation of symptoms, and the range of commercial testing outside of formal healthcare (non-NHS) expensive and limited in accuracy.[58] Similarly, individuals may perceive that their level of reaction to particular foods (or food groups) is too minimal to necessitate a clinical appointment. Nevertheless, absence of a clinical diagnoses could lead to increased risk of adverse reactions whilst self or over-diagnoses (outside of formal NHS services) could lead to unnecessary elimination diets with nutritional and social implications.[59] Moving forward, it may be that policy and practice would wish to explore how individuals can be encouraged to attend screening, and

54 Dearden, L. (2018). Megan Lee: Two takeaway workers jailed over death of girl, 15, who suffered allergic reaction to meal. *The Independent*, [online]. Available at: https://www.independent.co.uk/news/uk/crime/megan-lee-death-takeaway-allergy-trial-jailed-mohammed-abdul-kuddus-harun-rashid-a8621861.html [Accessed 15.08.19].

55 Doward, J. (2018). Pret allergy death: parents describe final moments with their daughter. *The Guardian*, [online]. Available at: https://www.theguardian.com/society/2018/sep/29/pret-allergy-death-parents-demand-label-laws [Accessed, 15.08.19].

56 Siddique, H. (2019) 'Boy with allergy died after cheese was flicked at him, inquest told'. *The Guardian*, [online]. Available at: https://www.theguardian.com/uk-news/2019/may/02/boy-with-allergy-died-cheese-flicked-at-him-london-inquest-told [Accessed, 15.08.19].

57 Thompson, A., et al (2016). The influence of gender and other patient characteristics on health care-seeking behaviour: a QUALICOPC study. *BMC Family Practice*, 17(1).

58 Mullin, G.E., et al. (2010). Testing for Food Reactions: The Good, the Bad, and the Ugly. *Nutrition in Clinical Practice*, 25(2), pp.192-198.

59 Lieberman, J.A. and Sicherer, S.H. (2010). Diagnosis of a food allergy. *American Journal of Rhinology and Allergy*, 24(6), pp.439-443.

whether such testing does result in greater self-management and knowledge, mitigating inappropriate food behaviours and adverse reactions.

In exploring demographics and socio-economic characteristic of allergies and food intolerances, two findings need to be drawn out. The first is that a greater proportion of older people, those aged 65 and over, report food allergies or intolerances (24%) when compared with their younger peers, those aged 16-34 (17%). Similarly, when we explored the age at which individuals experienced their first reaction to any food hypersensitivity, 16% reported that they were aged 45 and over, with 8% aged 55 and over (see Figure 3). The concentration of research, policy and health information has, in the main, necessarily focused on the needs of children and effective management of a range of allergies (e.g., peanut allergy) with older people a fringe group in any allergy research.[60] The (very) few research studies that explore ageing and food allergies and intolerance are clear that physiological changes (e.g., changes in gut tissue, increase in adipose tissue and immunosenescence) along with the number and type of long-term conditions, medications and polypharmacy, can all combine to raise the risk of allergic reactions and/or food intolerances.[61] [62] However, we found only one research paper that explored food allergies or intolerances longitudinally resulting in a paucity of information as to how allergies develop over the life course.[63] Similarly, outside (often inaccessible) guidance on prescription medication, there is seemingly little policy or clinical guidance directed toward older people that may support them to manage any reactions. The change in demographics across industrialised countries (around 25% of the population will be aged 65 and over by 2040) demands further research, policy guidance and changes in clinical practice if older people are to be supported to appropriately manage allergies and food reactions. The FSA is already responding to this need and has funded a research project to explore the patterns and prevalence of adult food allergies, including that of adult onset hypersensitivities.[64]

The second finding was that a greater number of people reporting food reactions are more likely to be unemployed (28%) than in work (19%). Within this secondary analysis, the rationale underpinning this finding is unclear. Prior research has demonstrated the link between food hypersensitivity and further allergic and auto-immune disorders (e.g., asthma)[65] [66] and it may be that it is the presence of these additional conditions (alongside food allergies or intolerance) that is limiting employment. Similarly, we found that those with food allergies are likely to experience living with poorer health, which may also affect their ability to obtain

60 Jensen-Jarolim, E. and Jensen, S.A.F. (2016). Food allergies in the elderly: Collecting the evidence. *Annals of Allergy, Asthma and Immunology*. 117, pp.472-475.

61 Ibid.

62 Diesner, S.C., et al (2011). Food Allergy: Only a Paediatric Disease? Gerontology, 57, pp.28 - 32.

63 Kwon, J., et al (2013). Characterization of food allergies in patients with atopic dermatitis. *Nutrition Research and Practice*, 7, pp.115-121.

64 Food Standards Agency (2018). *Research Project: Patterns and Prevalence of Adult Food Allergy*. [Online] Available at: https://www.food.gov.uk/research/food-allergy-and-intolerance-research/patterns-and-prevalence-of-adult-food-allergy.

65 Liu, A.H., et al (2010). National prevalence and risk factors for food allergy and relationship to asthma: Results from the National Health and Nutrition Examination Survey 2005-2006. *Journal of Allergy and Clinical Immunology*, 126(4), pp.798-806.

66 Mahdi, A.S., et al (2014). Relation between asthma and food allergy. *Advances in Life Science and Technology*, 18, pp.102-116.

(or sustain) employment. Research has explored the impact of hypersensitivities in children on the wider family,[67] identifying that parents of children with food allergy had significantly lower quality of life when compared with parents of children with no food allergies or reactions.[68] However, as we discussed in the introduction to this paper, there are few qualitative (or quantitative) studies that explore the impact of food allergies or intolerance on wider health and wellbeing, including employment. In addition, there would seem to be few policies that can appropriately support employers and employees to manage food allergies or intolerance in the workplace. The majority available would seem to be produced outside of central or local government.[69] [70] It is recommended that further guidance and information to employers (as well as employees) may support entry to the workplace of people with food hypersensitivities (as well as continued employment).

Despite the clear demonstration of the impact of food allergies throughout the life course on both health and employment, we found no significant differences in food behaviour around eating out, frequent cooking or interest in food between those reporting hypersensitivities and those with no adverse reactions. However, it would seem that individuals with food allergies and/or intolerances may manage the 'risks' of eating out and preparing food differently from their peers.

When preparing food at home, respondents with a food allergy or intolerance were most likely to report always using a different chopping board for different foods, to never store open tins in the fridge, and to always wash fruit and vegetables that are to be eaten raw. In addition, they were most likely to access a range of information sites for guidance. These included product packaging, food and cooking television shows, food magazines and food websites. Whilst there is an early and growing body of research literature on food labelling,[71] [72] [73] there is still a (surprising) paucity of research literature and guidance on managing day-to-day risk in preparing food at home. For example, a literature search applying the terms 'food allergies and risk management' found only 88 papers, the majority solely focused on the experiences of parents in caring for a child with severe allergies (anaphylactic shock).

This use of, and perhaps thirst for, information to guide decision-making and risk management was also seen in behaviours around eating out. Here, respondents were most likely to report reliance on word of mouth recommendations. Such behaviour may

67 Brantlee Broome-Stone, S. (2012) The Psychosocial Impact of Life-Threatening Childhood Food Allergies. *Paediatric Nursing*, 38(6), pp.27-330.

68 Valentine, A.Z. and Knibb, R.C. (2011). Exploring quality of life in families of children living with and without a severe food allergy. *Appetite*, 57(2), pp.467-474.

69 Anaphylaxis Campaign (2018). *Managing Allergens in the Work Place: A Guide for Employers and Employees*. [Online] Available at: https://www.anaphylaxis.org.uk/wp-content/uploads/2018/11/Managing-Allergens-in-the-Workplace-A-guide-for-Employers-and-Employees.pdf.

70 Ahmed, E. (2018) Handling Severe Allergies in the Workplace. *HR Magazine*. [Online] Available at: https://www.hrmagazine.co.uk/article-details/handling-severe-allergies-in-the-workplace.

71 Tonkin, E., et al. (2016). Managing uncertainty about food risks – Consumer use of food labelling. *Appetite*, 107(1), pp.242-252.

72 V. Marcotrigiano, et al. (2018). Food labelling: Regulations and Public Health implications. *Ann Ig*, 30, pp.220-228.

73 Brown, K.M. et al. (2015). Canadian Policy on Food Allergen Labelling: Consumers' Perspectives Regarding Unmet Needs. *Universal Journal of Public Health*, 3(1), pp.41-48.

be as a result of accessibility or trust in existing information forums (e.g., leaflets, websites). Research has highlighted that patient leaflets around allergies, intolerances and treatment, whilst well-presented, have readability levels that are higher than those recommended for health information.[74] In addition, the plethora of 'health' and 'allergy' internet sites (including 'chat' sites) are often not helpful or suitable for those living with food allergies or intolerances.[75]

Whilst this secondary analysis found that there were few differences in food behaviours between those living with food allergies or intolerances when compared to those with no adverse reactions, the analysis demonstrated research and policy gaps in a number of areas. Further research is necessary to explore the lack of clinically diagnosed allergies or intolerances. We also need to begin to understand allergies and intolerances across the life course, moving the experience of older people from the 'fringe' to the centre of policy and clinical practice. In addition, we need to further understand the interaction of food allergies, poor health and long-term conditions to finding and staying in employment. It is unclear if it is food allergies *per se* that results in greater unemployment or, the interaction with other auto-immune diseases (e.g., asthma, psoriasis). Finally, there continues to be a need for individuals to be sign-posted to accurate policy and practice information if they are to be supported to appropriately (and safely) manage their food allergy or intolerance.

74 Paudyal, P., et al. (2015). Readability, Presentation and Quality of Allergy-related Patient Information Leaflets; A Cross Sectional and Longitudinal Study. *Journal of Allergy and Therapy*, 6(3).

75 Arens, A., et al. (2013) Preferences and satisfaction of food allergy sufferers using Internet resources. *Clinical and Translational Allergy*, 3(3), p.126.

APPENDIX A: QUESTIONS RELATING TO FOOD HYPERSENSITIVITY IN THE WAVE 5 SURVEY

AdReac
Do you ever suffer from an adverse reaction after consuming certain foods?
SINGLE CODE
1. Yes
2. No

AvoidFd
Do you avoid any particular foods because of the adverse reaction they might cause?
SINGLE CODE
1. Yes
2. No

FdReac
Do you experience an adverse reaction to any of the following foods?
SHOW CARD B5
MULTICODE
INTERVIEWER: ONLY CODE 1-17 IF RESPONDENT EXPERIENCES AN ADVERSE REACTION TO THE GENERAL FOOD TYPE. IF ONLY A SINGLE ITEM WITHIN A FOOD GROUP (e.g. almonds, or bread) THEN CODE OTHER.

PROMPT: And do you ever experience an adverse reaction to any other type of food not listed here?
IF MULTIPLE ITEMS UNDER 'OTHER', CODE AS SEPARATE ITEMS.
1. Peanuts
2. Other nuts
e.g. almonds, hazelnuts, walnuts, cashew nuts, pecans
3. Cow's milk and products made with cow's milk e.g. butter, cheese, cream, yoghurt
4. Cereals containing gluten
e.g. wheat, rye, barley, oats
5. Eggs
6. Fish
7. Crustaceans
e.g. crabs, lobster, prawns, scampi
8. Molluscs
e.g. mussels, snails, squid, whelks, clams, oysters
9. Soya
10. Celery/celeriac
11. Mustard
12. Lupin
13. Sesame
14. Sulphur dioxide/sulphites
15. Other cereals e.g. buckwheat, rice, corn (please specify)
16. Fruit (please specify)
17. Vegetables (please specify)
18. Other (please specify)

IF (FdReac = OTHER) THEN
FdReacO
Ask and separately record other food types the respondent experiences an adverse reaction to.
WHEN ALL FOOD TYPES/ITEMS HAVE BEEN ENTERED PRESS PgDn
3 x open text box

IF (FdReac = FRUIT) THEN
FdReacFO
Ask and separately record other fruit types the respondent experiences an adverse reaction to.
WHEN ALL FRUIT TYPES/ITEMS HAVE BEEN ENTERED PRESS PgDn
3 x open text box

IF (FdReac = VEGETABLES) THEN
FdReacVO
Ask and separately record other vegetable types the respondent experiences an adverse reaction to.
WHEN ALL VEGETABLE TYPES/ITEMS HAVE BEEN ENTERED PRESS PgDn
3 x open text box

FOR EACH ITEM IDENTIFIED AT FdReac AND FdReacO AND FdReacCO and FdReacFO and FdReacVO
ReacTyp
SHOW CARD B6
How would you best describe your problem with **<INSERT ITEM>**?
SINGLE CODE
INTERVIEWER NOTES: A FOOD ALLERGY IS A FAST AND POTENTIALLY SERIOUS RESPONSE TO FOOD BY YOUR IMMUNE SYSTEM, TRIGGERING SYMPTOMS SUCH AS A RASH, WHEEZING AND ITCHING.

1. Food allergy
2. Food intolerance
3. Coeliac disease
4. Non-coeliac gluten sensitivity
5. Gluten intolerance
6. Lactose intolerance
7. Cow's milk intolerance
8. Food protein-induced enterocolitis syndrome (FPIES)
9. Other (please specify)

FOR EACH ITEM IDENTIFIED AT FdReac AND FdReacO AND FdReacCO and FdReacFO and FdReacVO
Diagnose
SHOW CARD B7

How did you find out about your condition relating to **<INSERT ITEM FROM FdReac>**?
MULTI CODE

1. I have been diagnosed by an NHS or private medical practitioner (e.g. GP, dietician, allergy specialist in a hospital or clinic)
2. I have been diagnosed by an alternative or complementary therapist (e.g. homeopath, reflexologist, online or walk-in allergy testing service)
3. I have noticed that this food causes me problems, but I have not been formally diagnosed with a specific condition.
4. Other (please specify)

FOR EACH ITEM IDENTIFIED AT FdReac AND FdReacO and FdReacCO and FdReacFo and FdReacVO
ReacAge

How old were you when you first started experiencing an adverse reaction to this food?
PROMPT: If you are uncertain as to the exact age please provide your best estimate.
INSERT NUMERICAL VALUE

APPENDIX B: TABLES

Table 1: Number of allergies

Base: All aged 16+	Total
	%
0	95
1	3
2	2
3	0
4	0
Unweighted base	3069
Weighted base	3069

Table 2: Number of intolerances

Base: All aged 16+	Total
	%
0	88
1	5
2	4
3	1
4	1
Unweighted base	3069
Weighted base	3069

Table 3: Prevalence of hypersensitivities

Base: All aged 16+	Total
	%
No adverse reaction	79
Food allergy	5
Food intolerance	10
Other adverse reaction	5
Unweighted base	3055
Weighted base	3061

Table 4: Route to diagnosis (self-diagnosis), by type of hypersensitivity

Base: All aged 16+	Type of food hypersensitivity				Total
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction	
	%	%	%	%	%
Not self-diagnosed	100	37	23	39	85
Self-diagnosed	-	63	77	61	15
Unweighted base	2373	149	339	194	3069
Weighted base	2411	161	321	168	3069

Table 5: Route to diagnosis (clinical diagnosis), by type of hypersensitivity

Base: All aged 16+	Type of food hypersensitivity				Total
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction	
	%	%	%	%	%
Not clinically diagnosed	100	55	77	75	94
Clinically diagnosed	-	45	23	25	6
Unweighted base	2373	149	339	194	3069
Weighted base	2411	161	321	168	3069

Table 6: Route to diagnosis (alternative diagnosis), by type of hypersensitivity

Base: All aged 16+	Type of food hypersensitivity				Total
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction	
	%	%	%	%	%
Not diagnosed by alternative therapist	100	96	94	100	99
Diagnosed by alternative therapist	-	4	6	-	1
Unweighted base	2373	149	339	194	3069
Weighted base	2411	161	321	168	3069

Table 7: Age at onset of adverse reaction (grouped), by type of food hypersensitivity

Base: All aged 16+	Type of food hypersensitivity			
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction
	%	%	%	%
Less than 6 years	-	17	6	4
6 to 15	-	28	13	19
16-24	-	14	27	16
25-34	-	11	17	14
35-44	-	13	13	14
45-54	-	8	13	18
55-64	-	5	5	9
65-74	-	3	4	4
75+	-	0	1	2
NET: Under 16	-	45	19	23
Unweighted base	-	147	329	178
Weighted base	-	159	310	153

Table 8: Type of hypersensitivity, by age

Base: All aged 16+	Age		
	16-34	35-64	65+
	%	%	%
No adverse reaction	83	78	76
Food allergy	4	6	6
Food intolerance	9	11	11
Other adverse reaction	5	5	8
NET: Any reaction	17	22	24
Unweighted base	604	1495	947
Weighted base	922	1450	679

Table 9: Type of hypersensitivity, by gender

Base: All aged 16+	Sex	
	Male	Female
	%	%
No adverse reaction	82	76
Food allergy	4	6
Food intolerance	8	13
Other adverse reaction	6	5
NET: Any reaction	18	24
Unweighted base	1255	1800
Weighted base	1499	1561

Table 10: Type of hypersensitivity, by work status

Base: All aged 16+	Work Status (4 categories)			
	In work	Retired	Unemployed	Other
	%	%	%	%
No adverse reaction	81	75	72	79
Food allergy	5	5	8	7
Food intolerance	10	12	11	10
Other adverse reaction	5	8	9	4
NET: Any reaction	19	25	28	21
Unweighted base	1542	966	126	420
Weighted base	1871	670	115	403

Table 11: Type of hypersensitivity, by household income

Base: All aged 16+	Household income				Total
	<£10,399	£10,400 - £25,999	£26,000 - £51,999	>£52,000	
	%	%	%	%	%
No adverse reaction	79	77	76	80	79
Food allergy	5	5	7	4	5
Food intolerance	12	11	10	11	10
Other adverse reaction	4	7	7	5	5
NET: Any reaction	21	23	24	20	21
Unweighted base	288	760	709	546	3055
Weighted base	164	582	739	698	3061

Table 12: Type of hypersensitivity, by general health status

Base: All aged 16+	General health		
	Good	Fair	Bad
	%	%	%
No adverse reaction	81	71	69
Food allergy	5	5	8
Food intolerance	9	15	16
Other adverse reaction	5	8	8
NET: Any reaction	19	29	31
Unweighted base	2263	581	202
Weighted base	2448	468	141

Table 13: Life satisfaction, by type of food hypersensitivity

Base: All aged 16+	Type of food hypersensitivity			
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction
	%	%	%	%
Low	4	5	5	4
Medium	10	15	14	17
High	48	47	48	46
Very High	38	34	33	33
NET: High/Very High	86	80	81	79
Unweighted base	2347	149	333	193
Weighted base	2393	161	315	168

Table 14: Life satisfaction, by clinically diagnosed intolerance

Base: All aged 16+	Clinically diagnosed intolerance		
	Clinically diagnosed intolerance	Intolerance, but not clinically diagnosed	No intolerances
	%	%	%
Low	4	4	4
Medium	25	11	11
High	42	50	48
Very High	29	34	37
NET: High/Very High	71	84	85
Unweighted base	95	272	2669
Weighted base	87	261	2698

Table 15: Worthwhile, by type of food hypersensitivity

Base: All aged 16+	Type of food hypersensitivity			
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction
	%	%	%	%
Low	3	3	4	5
Medium	9	5	12	14
High	45	51	41	42
Very High	43	41	43	40
NET: High/Very High	88	92	84	82
Unweighted base	2340	149	334	192
Weighted base	2386	161	317	167

Table 16: Happiness, by type of food hypersensitivity

Base: All aged 16+	Type of food hypersensitivity			
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction
	%	%	%	%
Low	6	9	9	8
Medium	13	12	14	16
High	39	37	41	47
Very High	43	42	37	28
NET: High/Very High	81	79	78	76
Unweighted base	2349	148	333	192
Weighted base	2395	161	316	167

Table 17: Anxiety, by type of food hypersensitivity

Base: All aged 16+	Type of food hypersensitivity			
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction
	%	%	%	%
Very low	50	40	42	41
Low	20	24	19	19
Medium	13	11	17	12
High	18	25	21	28
NET: Low/Very Low	69	64	62	60
Unweighted base	2344	149	333	192
Weighted base	2390	161	316	167

Table 18: Vegan, vegetarian, or partially vegetarian diet, by type of food hypersensitivity

Base: All aged 16+	Type of food hypersensitivity				Total
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction	
	%	%	%	%	%
No	89	85	88	92	89
Yes	11	15	12	8	11
Unweighted base	2373	149	339	194	3069
Weighted base	2411	161	321	168	3069

Table 19: Frequency of cooking, by type of food hypersensitivity

Base: All aged 16+	Type of food hypersensitivity				Total
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction	
	%	%	%	%	%
At least once a day	58	67	60	60	58
5-6 times a week	10	9	10	7	10
3-4 times a week	13	13	14	10	12
Once or twice a week	10	8	10	13	10
Once a fortnight	1	1	2	4	1
Once a month	1	-	1	1	1
Less than once a month	2	-	2	3	2
Never	5	2	2	1	4
It varies too much to say	1	0	0	1	1
NET: At least once a day to 5-6 times a week	67	76	69	68	68
Unweighted base	2373	149	339	194	3069
Weighted base	2411	161	321	168	3069

Table 20: Responsibility for cooking, by type of food hypersensitivity

Base: All aged 16+	Type of food hypersensitivity				Total
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction	
	%	%	%	%	%
Responsible for all or most of the preparing/cooking of food	38	45	36	29	37
Responsible for about half of the preparing/cooking of food	21	23	29	30	22
Responsible for less than half of the preparing/cooking of food	25	25	24	26	25
Not responsible for any of the preparing/cooking of food	13	5	8	12	12
Each person is responsible for preparing/cooking their own food	3	3	4	2	3
Unweighted base	1521	94	206	110	1939
Weighted base	1963	119	253	131	2471

Table 21: Frequency of eating out breakfast, by type of food hypersensitivity

Base: All aged 16+	Type of food hypersensitivity				Total
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction	
	%	%	%	%	%
At least once a day	1	0	0	-	1
5-6 times a week	1	3	-	-	1
3-4 times a week	2	3	3	1	2
Once or twice a week	8	10	6	7	8
Once a fortnight	5	5	5	2	5
Once a month	9	7	6	8	8
Less than once a month	14	10	14	16	14
Never	61	62	65	62	61
It varies too much to say (spontaneous only)	1	1	1	4	1
NET: Frequently	11	16	9	8	11
Unweighted base	2373	149	339	194	3069
Weighted base	2411	161	321	168	3069

Table 22: Frequency of eating out lunch, by type of food hypersensitivity

Base: All aged 16+	Type of food hypersensitivity				Total
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction	
	%	%	%	%	%
At least once a day	2	3	1	3	2
5-6 times a week	3	3	4	0	3
3-4 times a week	6	6	6	4	6
Once or twice a week	20	19	17	15	19
Once a fortnight	12	10	17	11	13
Once a month	11	21	12	22	12
Less than once a month	15	11	20	9	15
Never	31	26	23	33	30
It varies too much to say (spontaneous only)	1	1	1	2	1
NET: Frequently	30	30	27	22	29
Unweighted base	2373	149	339	194	3069
Weighted base	2411	161	321	168	3069

Table 23: Frequency of eating out dinner, by type of food hypersensitivity

Base: All aged 16+	Type of food hypersensitivity				Total
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction	
	%	%	%	%	%
At least once a day	1	-	0	-	0
5-6 times a week	1	1	-	-	1
3-4 times a week	2	2	0	1	2
Once or twice a week	24	22	27	16	23
Once a fortnight	21	24	18	24	21
Once a month	20	19	21	21	20
Less than once a month	17	13	20	19	17
Never	15	18	13	19	15
It varies too much to say (spontaneous only)	1	1	1	-	1
NET: Frequently	27	25	27	16	27
Unweighted base	2373	149	339	194	3069
Weighted base	2411	161	321	168	3069

Table 24: Eating outlets for eating out, by type of food hypersensitivity

Base: All aged 16+	Type of food hypersensitivity				Total
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction	
	%	%	%	%	%
Eaten in a restaurant	68	76	70	69	69
Eaten takeaway food from a restaurant or takeaway outlet	58	55	51	48	57
Eaten in a fast food restaurant	33	27	39	21	32
Got food to take away from a fast food restaurant	26	21	25	29	26
Eaten in a pub/ bar/ nightclub	40	52	40	37	40
Eaten in a café or coffee shop	47	52	48	50	47
Bought food or drink from a café, coffee shop or sandwich bar to take away	36	40	41	28	37
Unweighted base	2373	149	339	194	3069
Weighted base	2411	161	321	168	3069

Table 25: Sources of information when eating out, by type of food hypersensitivity

Base: All aged 16+	Type of food hypersensitivity				Total
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction	
	%	%	%	%	%
Own experience of the place	65	73	67	60	65
Appearance of the place	22	26	27	17	23
Word of mouth	49	59	53	50	50
Recommendations from friends/family	49	56	54	52	50
Customer reviews on websites or mobile apps e.g. TripAdvisor, Yelp, Google reviews etc.	24	27	29	29	25
Print or online editions of newspaper/magazine features or reviews	5	6	5	6	5
Online restaurant guides e.g. Time Out, Square Meal	9	18	13	16	11
Television programmes	4	3	6	3	4
Books e.g. restaurant guides	4	5	4	2	4
Leaflets/flyers	18	21	15	11	17
Media advertising e.g. television, radio, magazines, newspapers	8	5	4	7	8
Social media	23	21	23	21	22
Other (please specify)	1	0	2	1	1
None of these	2	2	1	3	2
Unweighted base	2103	136	305	171	2728
Weighted base	2201	153	297	153	2812

Table 26: What is important when deciding where to eat out? by type of food hypersensitivity

Base: All aged 16+	Type of food hypersensitivity				Total
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction	
	%	%	%	%	%
Price	58	65	62	61	59
Recommendations or invitation from someone you know/good reviews	49	66	59	51	51
Good service	61	61	64	62	61
A good hygiene rating/score	60	58	67	58	60
Calorie information of the food is provided	7	7	10	6	7
Allergy information of the food is provided	7	27	14	4	9
Healthier foods/choices	29	37	44	33	31
Food for different diets such as Vegetarian, Halal, Kosher etc.	17	21	23	18	18
None of these	3	2	1	5	3
Something else	5	15	4	8	6
Unweighted base	2107	136	306	171	2733
Weighted base	2204	153	298	153	2815

Table 27: I like trying new things to eat, by type of food hypersensitivity

Base: All aged 16+	Type of food hypersensitivity				Total
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction	
	%	%	%	%	%
Definitely agree	39	44	46	36	40
Tend to agree	33	32	27	31	32
Neither agree nor disagree	10	9	11	8	10
Tend to disagree	13	10	9	18	13
Definitely disagree	5	5	7	7	6
Don't know	0	-	-	0	0
NET: Agree	72	76	73	67	72
Unweighted base	2373	149	339	194	3069
Weighted base	2411	161	321	168	3069

Table 28: I enjoy preparing and cooking food, by type of food hypersensitivity

Base: All aged 16+	Type of food hypersensitivity				Total
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction	
	%	%	%	%	%
Definitely agree	36	44	40	40	37
Tend to agree	30	32	27	28	30
Neither agree nor disagree	15	10	15	14	14
Tend to disagree	10	8	10	11	10
Definitely disagree	9	6	8	7	8
Don't know	0	0	-	0	0
NET: Agree	66	76	67	68	67
Unweighted base	2373	149	339	194	3069
Weighted base	2411	161	321	168	3069

Table 29: I'm not generally interested in food, by type of food hypersensitivity

Base: All aged 16+	Type of food hypersensitivity				Total
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction	
	%	%	%	%	%
Definitely agree	3	3	2	3	3
Tend to agree	8	10	7	6	7
Neither agree nor disagree	9	7	9	13	9
Tend to disagree	30	23	26	32	29
Definitely disagree	51	57	56	46	52
Don't know	0	-	-	0	0
NET: Disagree	81	80	82	78	81
Unweighted base	2373	149	339	194	3069
Weighted base	2411	161	321	168	3069

Table 30: When preparing food, I could be more careful about hygiene, by type of food hypersensitivity

Base: All aged 16+	Type of food hypersensitivity				Total
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction	
	%	%	%	%	%
Definitely agree	11	11	8	5	10
Tend to agree	34	22	27	30	32
Neither agree nor disagree	15	10	18	9	15
Tend to disagree	25	34	25	32	26
Definitely disagree	15	23	21	24	16
Don't know	1	-	-	0	1
NET: Disagree	40	57	47	55	42
Unweighted base	2373	149	339	194	3069
Weighted base	2411	161	321	168	3069

Table 31: Responsibility for shopping, by type of food hypersensitivity

Base: All aged 16+ in multi-adult households	Type of food hypersensitivity				Total
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction	
	%	%	%	%	%
Responsible for all or most of the food/grocery shopping	37	50	43	38	38
Responsible for about half of the food/grocery shopping	27	22	23	33	27
Responsible for less than half of the food/grocery shopping	17	20	17	18	18
Not responsible for any of the food/grocery shopping	16	8	14	9	15
Each person is responsible for their own food/grocery shopping	3	-	3	1	3
Unweighted base	1522	94	206	110	1940
Weighted base	1966	119	253	131	2474

Table 32: Where people shop for food, by type of food hypersensitivity

Base: All aged 16+	Type of food hypersensitivity				Total
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction	
	%	%	%	%	%
Large supermarket	95	97	95	98	96
Mini supermarket	42	55	48	42	43
Local/corner shop	30	32	29	34	30
Garage forecourt	6	6	6	6	6
Independent greengrocer	14	21	18	16	15
Independent butcher	31	31	34	34	31
Independent baker	14	14	18	13	15
Independent fishmonger	7	9	10	9	7
Market	18	28	27	21	20
Farm	9	9	9	14	10
Home delivery - from a supermarket	16	23	22	15	17
Home delivery - (including vegetable boxes, Hello Fresh, Amazon Fresh) – not from a supermarket	3	4	5	3	3
Other shop	2	6	2	2	2
Unweighted base	2370	149	339	193	3065
Weighted base	2408	161	321	168	3066

Table 33: When buying food, I check to see where it was produced, by type of food hypersensitivity

Base: All aged 16+	Type of food hypersensitivity				Total
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction	
	%	%	%	%	%
Definitely agree	13	19	13	11	13
Tend to agree	27	31	29	35	28
Neither agree nor disagree	14	10	19	16	14
Tend to disagree	23	17	18	22	23
Definitely disagree	22	22	21	16	22
Don't know	0	-	-	0	0
NET: Definitely agree/tend to agree	40	50	42	46	41
Unweighted base	2373	149	339	194	3069
Weighted base	2411	161	321	168	3069

Table 34: Where possible, I prefer to buy food produced in the UK and Ireland, by type of food hypersensitivity

Base: All aged 16+	Type of food hypersensitivity				Total
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction	
	%	%	%	%	%
Definitely agree	19	23	19	31	20
Tend to agree	32	30	28	32	31
Neither agree nor disagree	22	30	22	19	22
Tend to disagree	15	10	20	9	15
Definitely disagree	12	8	11	9	11
Don't know	1	-	-	0	0
NET: Definitely agree/tend to agree	51	53	47	62	51
Unweighted base	2373	149	339	194	3069
Weighted base	2411	161	321	168	3069

Table 35: I have greater trust in the quality of food produced in the UK and Ireland, compared to food imported from overseas, by type of food hypersensitivity

Base: All aged 16+	Type of food hypersensitivity				Total
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction	
	%	%	%	%	%
Definitely agree	20	21	20	27	20
Tend to agree	28	21	27	33	27
Neither agree nor disagree	29	36	29	24	29
Tend to disagree	14	15	15	8	14
Definitely disagree	9	7	8	8	9
Don't know	0	-	-	0	0
NET: Definitely agree/tend to agree	47	42	47	60	48
Unweighted base	2373	149	339	194	3069
Weighted base	2411	161	321	168	3069

Table 36: I would be prepared to pay more for food and drink that is produced in the UK and Ireland, by type of food hypersensitivity

Base: All aged 16+	Type of food hypersensitivity				Total
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction	
	%	%	%	%	%
Definitely agree	12	16	13	13	13
Tend to agree	33	29	29	39	32
Neither agree nor disagree	24	25	24	21	24
Tend to disagree	21	15	24	18	21
Definitely disagree	9	14	9	7	9
Don't know	1	0	1	1	1
NET: Definitely agree/tend to agree	45	45	42	52	45
Unweighted base	2373	149	339	194	3069
Weighted base	2411	161	321	168	3069

Table 37: How often do you feel confident that it is what is says it is on the label or the menu? by type of food hypersensitivity

Base: All aged 16+	Type of food hypersensitivity				Total
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction	
	%	%	%	%	%
Always	27	23	25	27	26
Most of the time	57	55	60	63	58
Some of the time	13	19	13	9	13
Rarely	2	1	2	0	2
Never	1	1	0	0	1
Don't know	1	0	0	0	1
NET: Always/Most of the time	84	78	85	91	84
Unweighted base	2373	149	339	194	3069
Weighted base	2411	161	321	168	3069

Table 38: Over the past year, have you ever done any of the following because you were not confident? by type of food hypersensitivity

Base: All aged 16+	Type of food hypersensitivity				Total
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction	
	%	%	%	%	%
Tried to get more information about the issue	7	7	13	10	8
Read about the issue when you saw it but did not seek out	6	5	4	7	6
Read food labels more carefully	31	36	33	25	31
Changed the way you cook food	4	8	5	7	4
Changed the way you prepare food	3	5	3	4	3
Stopped shopping for food at certain places	9	10	15	10	10
Stopped eating certain foods	10	16	19	11	11
Other (specify)	1	1	1	2	1
Took no action	51	37	42	56	49
Unweighted base	1694	109	262	146	2220
Weighted base	1739	123	240	122	2231

Table 39: Index of Recommended Practice scores (overall), by type of food hypersensitivity

Base: All aged 16+	Type of food hypersensitivity				Total
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction	
	%	%	%	%	%
Mean	67	68	68	68	67
Standard deviation	16	15	15	17	16
Unweighted base	2373	149	339	194	3069
Weighted base	2411	161	321	168	3069

Table 40: Use different chopping boards for different foods, by type of food hypersensitivity

Base: All aged 16+	Type of food hypersensitivity				Total
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction	
	%	%	%	%	%
Never	21	17	21	13	21
Sometimes	15	10	11	15	14
Most of the time	14	8	17	15	14
Always	44	58	46	51	45
Not applicable	7	8	5	6	7
Don't know	0	-	-	0	0
NET: Most of the time/ Always	57	65	63	66	59
Unweighted base	2373	149	339	194	3069
Weighted base	2411	161	321	168	3069

Table 41: Store open tins in the fridge, by type of food hypersensitivity

Base: All aged 16+	Type of food hypersensitivity				Total
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction	
	%	%	%	%	%
Never	64	79	64	69	65
Sometimes	23	14	21	18	22
Most of the time	4	3	4	3	4
Always	6	3	9	8	6
Not applicable	4	2	1	2	4
Don't know	0	-	-	0	0
NET: Most of the time/ Always	9	6	13	11	10
Unweighted base	2373	149	339	194	3069
Weighted base	2411	161	321	168	3069

Table 42: Wash fruit and vegetables to be eaten raw, by type of food hypersensitivity

Base: All aged 16+	Type of food hypersensitivity				Total
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction	
	%	%	%	%	%
Never	11	11	9	15	11
Sometimes	18	15	20	20	18
Most of the time	13	4	12	11	12
Always	53	67	58	50	54
Not applicable	5	4	1	4	4
Don't know	0	-	-	0	0
NET: Most of the time/ Always	66	71	70	61	66
Unweighted base	2373	149	339	194	3069
Weighted base	2411	161	321	168	3069

Table 43: How do you know about the hygiene standards of the places you eat out at or buy food from? by type of food hypersensitivity

Base: All aged 16+	Type of food hypersensitivity				Total
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction	
	%	%	%	%	%
Word of mouth	27	26	36	17	28
Reputation	48	49	49	55	49
Appearance of staff	49	57	61	52	51
General appearance of premises	50	57	52	43	50
Hygiene rating/score	50	53	55	47	51
Customer reviews on websites/mobile apps	26	38	29	23	27
Other (SPECIFY)	4	4	3	3	4
Unweighted base	1963	128	284	166	2552
Weighted base	1934	138	276	143	2498

Table 44: Do you get information about how to prepare and cook food safely at home from any of these sources? by type of food hypersensitivity

Base: All aged 16+	Type of food hypersensitivity				Total
	No adverse reaction	Food allergy	Food intolerance	Other adverse reaction	
	%	%	%	%	%
Family and friends	46	52	47	42	46
School / college / a course	10	11	17	10	11
Work	11	16	13	6	11
Retailers (e.g. supermarkets)	11	18	13	13	12
Newspapers	7	7	11	6	8
News websites	5	10	6	3	5
Food TV shows / cooking programmes	28	42	36	35	30
Food magazines	12	25	16	11	13
Food websites	21	33	27	21	22
TV / radio campaigns	11	11	12	13	11
Books	22	34	26	26	23
Internet search engine	27	38	33	28	29
Social media	11	16	12	13	12
Product packaging	34	46	48	32	36
Doctor / GP	3	6	5	4	4
Other (specify)	2	2	4	5	2
I don't look for information on food safety	23	17	17	22	22
None	0	-	-	-	0
Unweighted base	2369	149	339	193	3064
Weighted base	2408	161	321	168	3067