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Food Security, Food Purchasing, and Nutritional Intake in Northern Ireland

Prepared for: Food Standards Agency

**Food and You
Waves 1-4
Briefing paper 5
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Key findings

Defining Food Security

'Food security' means having access at all times to food that is sufficient, safe and nutritious to sustain an active and healthy life.¹ Household food security status in Northern Ireland was measured using the responses to questions within the Food and You Survey Wave 4 relating to the behaviours and experiences associated with meeting food needs. The ten questions used in Food and You are those used by the United States Department of Agriculture Economic Research Service.² Responses are allocated a score, and households are categorised as follows:

- **1. High food security (score = 0)** – Households had no problems, or anxiety about, consistently accessing adequate food.
- **2. Marginal food security (score = 1–2)** – Households had problems at times, or anxiety about, accessing adequate food, but the quality, variety, and quantity of their food intake were not substantially reduced.
- **3. Low food security (score = 3–5)** – Households reduced the quality, variety, and desirability of their diets, but the quantity of food intake and normal eating patterns were not substantially disrupted.
- **4. Very low food security (score = 6–10)** – At times during the year, eating patterns of one or more household members were disrupted and food intake reduced because the household lacked money and other resources for food.

For the purposes of this report, households categorised as 'low food security' or 'very low food security' have been combined and reported as 'low food security'.

The key findings of this report are summarised as follows.

Which households experience low food security?

- Over a fifth of people in Northern Ireland (22%) live in marginal or low food security: 10% of people in Northern Ireland live in low food security.
- Young people in Northern Ireland aged 16-34 are seven times more likely to live in low food security in comparison to people aged 65 or over.
- Young people were also more likely to worry about food running out before having money to buy more (27%), and to experience food running out without having money to buy more (18%) than any other age group.
- People who live in low food security in Northern Ireland are more likely to be aged between 16 and 34, not in self-reported good health, and/or have low educational attainment, with highest educational qualifications of GCSE or equivalents.
- 88% of people in Northern Ireland never ran out of food and could always afford to buy more in the past twelve months. Similarly, the Northern Ireland Health Survey 2015/16 demonstrated that 85% of respondents reported that they "always had enough of the kinds of food they wanted to eat".³
- 28% of people who experienced worry about the cost of food, who ran out of food before being able to buy more, or who could not afford balanced meals, skipped or cut meals because they did not have enough money. 8% also reported losing weight for the same reason.

Awareness of healthy eating recommendations by different levels of food security

- 92% of people in Northern Ireland living in low food security and 98% of those living in marginal food security could not accurately match food groups with the correct section of the Eatwell Guide, in comparison to 87% of those living in high food security.
- Fewer people (78%) from low food secure households count frozen vegetables towards their daily fruit and vegetable intake, in comparison to 93% of people living in high food secure households.
- 59% of low food secure households think rice counts towards their daily recommended fruit and vegetable intake, in comparison to 32% of high food secure and 31% of marginal food secure individuals.

How does food purchasing and dietary intake vary by food security levels?

- People from households with low food security status reported buying cheaper food over the last 12 months.
- The majority of people living in high and marginal food security shopped for food in large supermarkets (85% and 84% respectively), while only 64% of households living in low food security shopped for food in large supermarkets.
- 16% of people from low food secure households reported not doing a main food shop and buying food on a more frequent basis, compared to only 1% of people from high food secure households.
- 24% of people with low food security status said household income and the cost of healthy food were a difficulty in trying to eat more healthily compared to 10% of people with high food security and 9% of people with marginal food security.
- These figures are comparable to the Northern Ireland Health Survey findings in which 10% of households in the lowest deprivation quintile missed a meal because of lack money in 2016/17.⁴

Introduction

People are food secure when they have access at all times to food that is sufficient, safe and nutritious to sustain an active and healthy life.⁵ In order to assess food security, the Food and You Survey asks participants a series of questions designed to measure their ability to access food.⁶ The ten questions used in the Food and You Survey are those used by the United States Department of Agriculture Economic Research Service.⁷ This included questions about the ability to afford balanced meals, missing meals and worrying about food. These questions were combined to give an overall food security score. Findings from Wave 4 of the Food and You Survey are presented throughout the paper.

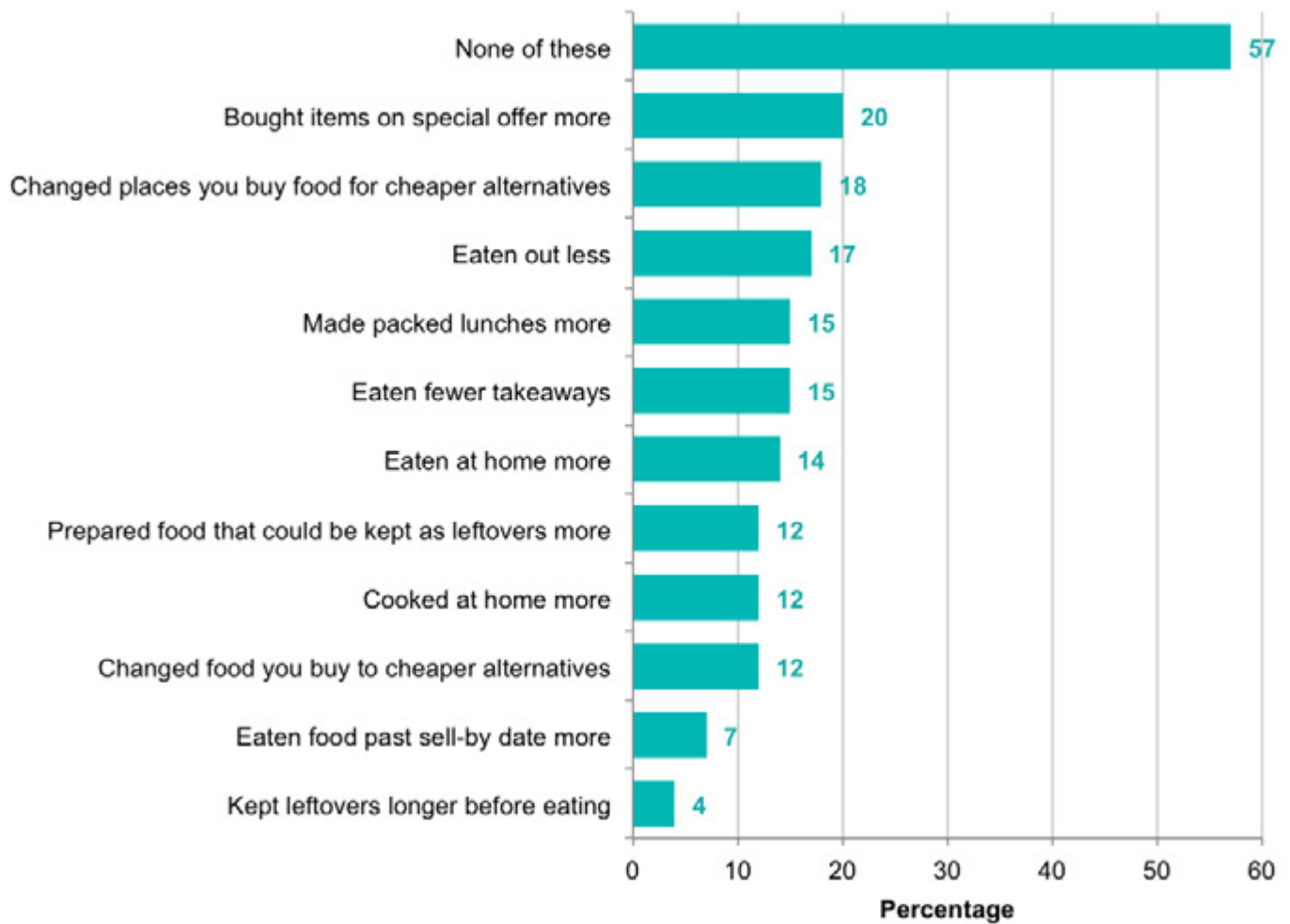
The Food Standards Agency (FSA) is an independent government department responsible for food safety and hygiene in England, Wales and Northern Ireland. In Northern Ireland, the FSA is also responsible for devolved matters relating to standards, nutrition and dietary health. The FSA also co-chair the All-Island Food Poverty Network with **safefood**. The network aims to support a coordinated and strategic approach to tackling food poverty on the island of Ireland through the development of consensus on related issues, collaboration and shared learning.

The Food Standards Agency's key priorities are to ensure that food is safe, that it is what it says it is, and that consumers have access to an affordable healthy diet. It is important to understand what effect, if any, different levels of food security may have on households, food purchasing and dietary intake in Northern Ireland, and how this compares to findings from England and Wales.

The evidence review of food in the context of poverty commissioned by the FSA in 2015 found that people in Northern Ireland were increasingly struggling to buy food for economic reasons and that this was having a detrimental impact on food and dietary intakes.⁸ The cross-Departmental framework for prevention of overweight and obesity in Northern Ireland, *A Fitter Future for All*, also includes targets to increase the proportion of people eating a healthy diet and reduce inequalities.⁹

In 2016, Wave 4 of the Food and You Survey included questions on food security and food affordability for the first time. The data illustrated in Figure 1 showed that in the last 12 months, 43% of respondents in the UK reported making a change to their buying and/or eating practices for financial reasons.¹⁰

Figure 1: Changes in food purchasing and nutritional eating practices for financial reasons (Wave 4)



The levels of marginal and low food security in Northern Ireland were similar to levels seen in England, while Wales experienced slightly higher levels of marginal and low food security, as shown in Table 1.

Table 1 Food Security Status by Country, %

	Northern Ireland	Wales	England	Total (3 countries)
High food security	78	74	80	79
Marginal food security	12	17	12	13
Low food security	10	9	8	8
Unweighted bases	521	492	2105	3117

Source: The Food & You Survey Wave 4: Northern Ireland Report (2016). p.33

The inclusion of questions about food security in Wave 4 of Food and You provides an opportunity to examine in more detail the characteristics of those households in Northern Ireland living in low food security. Since Food and You in Northern Ireland uniquely retains the questions on healthy eating practices, it offers an opportunity to examine the possible relationship between differing levels of food security and its influence on healthy eating practices.

Food security, food purchasing and dietary intake

Elaborating on the definition of Food Security by the United Nations World Food Summit 1974, the World Food Summit of 1996 updated the definition to: *“Food security exists when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life”*.¹¹

With on-going austerity measures in the UK, there is growing concern about rising levels of poverty after a long period of decline.¹² Although the drivers of food insecurity are complex, poverty is known to be one clear causal factor that determines access to food.¹³ Consequently, after a long term reduction in poverty rates over the last 20 years, a recent report by the Joseph Rowntree Foundation demonstrates that since 2012/13 poverty rates in the UK are now increasing.¹² Data from the

Trussell Trust has also shown that the number of emergency food parcels distributed to children and adults rose from 254 in 2011/12 to 32,780 in 2016/17.¹⁴ The latest Family Food Survey data from 2015 indicates that those households in the lowest 20% of equivalized¹⁵ income are consistently spending more of the household budget on food, resulting in a greater sensitivity to any food price rises (see Figure 2).^{16,17} In addition, the Food Basket research conducted in Northern Ireland in 2016 found that the cost of food and available income were key drivers of ability to access a healthy diet, with some households spending up to 44% of their available weekly income to purchase a minimum acceptable standard of food. This figure varied by household, but for most low income households, food was a flexible component of their budget, with people reporting to buy cheaper and less nutritious foods. This may put them at risk of becoming overweight or obese and of developing associated health conditions.¹⁸

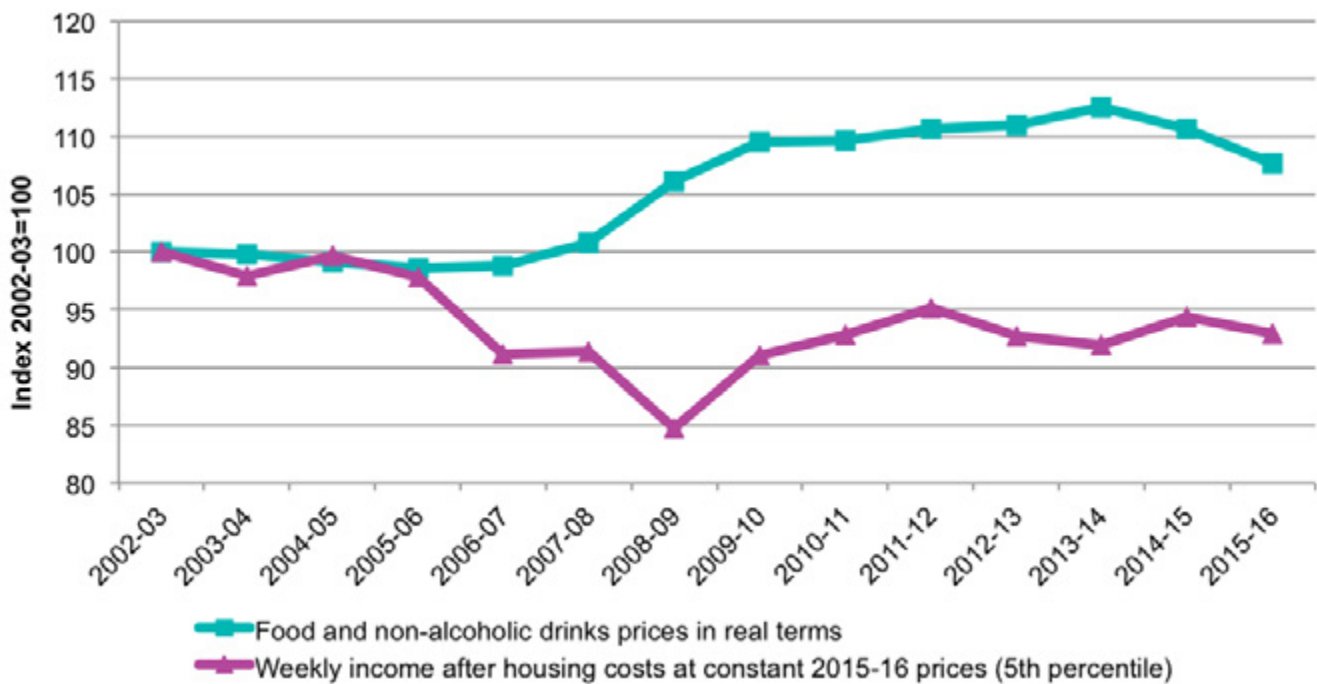
Figure 2: The percentage of total household income spent on food and non-alcoholic drinks



Source: Family Food Survey 2015, Department for Environment, Food and Rural Affairs⁹

Whilst food prices have dropped from their peak, available income after housing costs for the low income households has decreased, as shown overleaf, signifying an increasing pressure on household budgets caused by food prices (Figure 3).

Figure 3: Household income index (after housing costs) and food prices in real terms (UK) 2015-16



Source: Food Statistics Pocketbook 2017, Department for Environment, Food and Rural Affairs¹⁹

The Family Food Survey report (2015) also indicates that individuals from this group were spending 22% more of their budget on food in 2012 than in 2007 and also purchased 5.7% less food (in terms of quantity). Notably, these lower income households reported buying significantly fewer portions of fruit and vegetables than previous years²⁰. Jointly, data from the Living Costs, Food Surveys 2005–11 and Kantar Worldpanel, showed that household types universally reduced purchases of fruit and vegetables as well as increasing the share of calories purchased as processed foods.²¹ While food prices have since declined from their peak, the potential impact of EU exit on food security may reverse the trend leading to negative implications on food security. Households that are worse off and struggling with low levels of food security are therefore more likely to be affected adversely.

Qualitative studies and surveys also provide insight into how households manage food when the cost of living rises. For example, food budgets are often cut where people can.²² The food strategies that people describe include:

- Making use of price promotions and offers
- Living ‘hand-to-mouth’, i.e. Simply buying what is needed for that day or even for a particular meal due to having insufficient money
- Switching to cheaper and less nutritious alternatives.²³

A recent poll by the Living Wage Foundation (November 2017) also found that one-third of people on a wage less than the living wage reported skipping meals as a strategy to live on a budget.²⁴

Further to these findings, quantitative analysis from the National Diet and Nutrition Survey data from Northern Ireland have reported lower mean fruit and vegetable consumption in the lowest income and most deprived tertiles than in the highest income and least deprived tertiles. Mean intake of micronutrients is also reportedly less in lower equivalised income tertiles and more deprived tertiles.²⁵

This data suggests altered food purchasing and consumption practises in low income/highly deprived households has an association with reduced micronutrient intake and lower intake of fruits and vegetables. Consuming low levels of fruit and vegetables per day can increase the risk of developing chronic diseases, e.g. heart disease, stroke, and some cancers.²⁶

Research Questions, Data and Methods

Given the high population levels living in low food security and the potential effects of EU exit on food prices, it is thus timely to examine in more detail the characteristics of those households in Northern Ireland who are food insecure and any links with healthy eating knowledge and food practices.

Research Question 1: Which households experience low food security in Northern Ireland?

Research Question 2: How does knowledge about nutritional intake vary across households with different food security levels?

Research Question 3: Does food security influence household food purchasing and nutritional intake, including healthy eating?

This briefing is the fifth in a series of five based on secondary data analysis of the most recent wave, Wave 4, of the FSA's Food and You Survey. It aims to use data from Wave 4 of the Food and You Survey to explore food purchasing in households with low food security in Northern Ireland, and healthy eating behaviours as well as knowledge about healthy eating recommendations.

Food and You is a biennial, random probability, cross-sectional survey of adults living in private households in the UK. The first three survey waves, conducted in 2010, 2012 and 2014, covered England, Scotland, Wales and Northern Ireland. The fourth wave was carried out in 2016 and covered England, Wales and Northern Ireland.

The survey includes a range of questions about reported behaviour, attitudes and knowledge relating to food along with demographic and socio-economic variables and other household information.

The sample for the fourth wave of the Food and You Survey was boosted in Northern Ireland, allowing for analysis of the population in greater depth. It also contained a new module of questions related to food security and healthy eating including:

- Worry about food availability;
- Whether respondents were able to afford balanced meals;
- Skipping meals or cutting food intake;
- Knowledge of what counts towards daily fruit and vegetable intake;
- Barriers to healthy eating.

These are reported by demographic (e.g. age, sex, and country of residence) and socioeconomic factors (e.g. household income and employment status).

Data for analysis have been weighted to correct for lower probability of selecting adults in multi-adult homes and to correct for over-representation of Wales and Northern Ireland relative to England. The data has also been weighted to match the distribution of working status, gender, age and region in each country.²⁷

All tables are presented in the appendix.

Food Security

'Food security' means having access at all times to food that is sufficient, safe and nutritious to sustain an active and healthy life. Household food security status is measured by the responses to a series of questions about behaviours and experiences associated with difficulty in meeting food needs. The ten questions used in Food and You are those used by the United States Department of Agriculture Economic Research Service.²⁸

Responses are allocated a score (see Technical Report for more details)²⁶ and households are categorised as follows:

- **1. High food security (score = 0)** – Households had no problems, or anxiety about, consistently accessing adequate food.
- **2. Marginal food security (score = 1–2)** – Households had problems at times, or anxiety about, accessing adequate food, but the quality, variety, and quantity of their food intake were not substantially reduced.
- **3. Low food security (score = 3–5)** – Households reduced the quality, variety, and desirability of their diets, but the quantity of food intake and normal eating patterns were not substantially disrupted.
- **4. Very low food security (score = 6–10)** – At times during the year, eating patterns of one or more household members were disrupted and food intake reduced because the household lacked money and other resources for food.

For the purposes of this report, households categorised as ‘low food security’ or ‘very low food security’ have been combined and reported as ‘low food security’.

Households reporting three or more conditions that indicate food insecurity are classified as “food insecure.” These conditions were:

- Household adults worried whether their food would run out before they got money to buy more
- The food they bought did not last, and they did not have money to get more

- Household adults could not afford to eat balanced meals
- Household adults skipped meals because there was not enough money for food
- Household adults ate less than they felt they should because there was not enough money for food
- Household adults lost weight because there was not enough money for food
- Household adults did not eat for a full day because there was not enough money for food.

Households in which all of the following statements were true were classified as living in very low food security:

- Household adults worried whether their food would run out before they got money to buy more
- The food they bought did not last, and they did not have money to get more
- Household adults could not afford to eat balanced meals
- Household adults ate less than they felt they should because there was not enough money for food
- Household adults cut the size of meals or skipped meals and did so in 3 or more months.

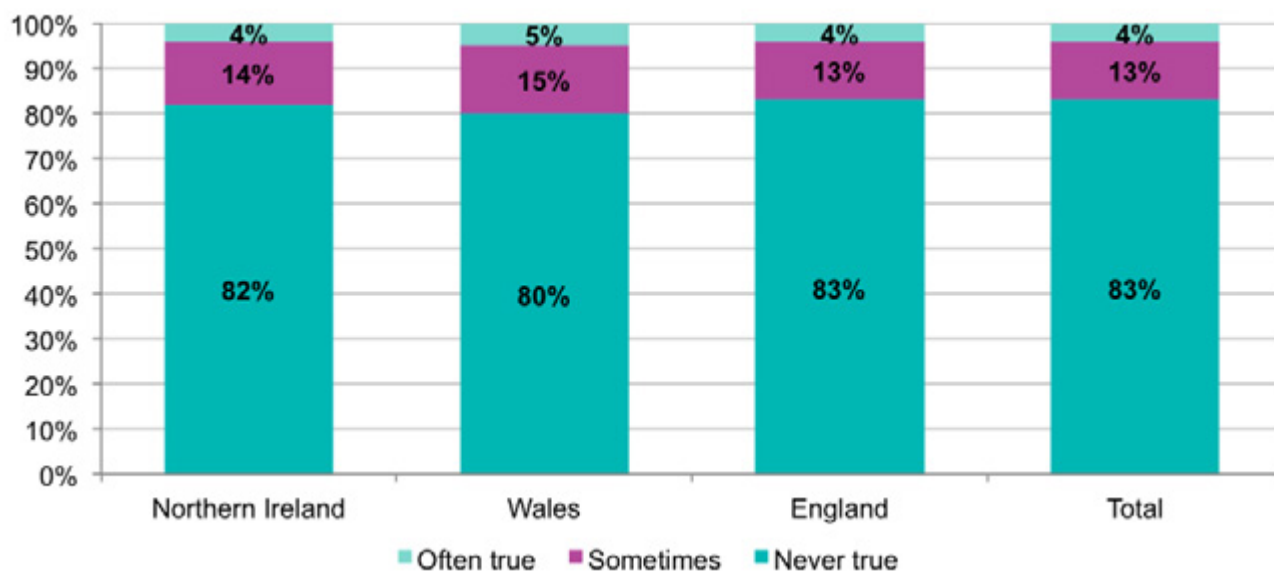
Which households experience low food security in Northern Ireland?

Northern Ireland in Context

Wave 4 of Food and You interviewed people from Northern Ireland, England and Wales about their food habits, to determine the proportion of respondents living in low food security. Table 1 highlights the differences by country. All countries had a small but significant proportion of the population experiencing low food security, with 10% in Northern Ireland, 9% in Wales, and 8% in England living in low food security. In Northern Ireland, 78% of the population lives in high food security, in comparison to 74% of people in Wales and 80% of people in England. 22% of households in Northern Ireland live in low or marginal food security, compared to 26% in Wales and 20% of people in England.²⁹

As Figure 4 demonstrates, 4% of people in Northern Ireland reported that in the last 12 months they often worried about running out of food without having money to buy more (Table 2). This increased to 14% for those reporting this happened sometimes; in total, nearly a fifth (18%) of people in Northern Ireland said this happened at least sometimes in the past year.

Figure 4: I/we worried whether my/our food would run out before I/we got money to buy more



This is comparable to the results from England and Wales, reporting 17% and 20% respectively.³⁰ In Northern Ireland, fewer people reported they had run out of food; 2% of respondents reported this as 'often true', and a further 10% reported this as 'sometimes true'. This can be compared to the Northern Ireland Health Survey 2015/16, in which 2% of respondents reported that they sometimes did not have enough to eat, 1% reported that they did not have enough to eat, and in total 85% reported that they "always had enough of the kinds of food they wanted to eat".³¹ This is slightly lower than the proportion of people in the Food and You Survey who reported that they never ran out of food (88%, Table 3).³²

In total, 12% of people in Northern Ireland reported that their food had sometimes or often run out before they had the money to buy more, a similar proportion to the number in England (11%) and Wales (14%) (Table 3). This was not significantly different between the countries.³³ 1 in 10 people across the three countries (10%, Table 4) could not always afford balanced meals.

Respondents who reported that they were often or sometimes worried about food running out, often or sometimes ran out of food and could not afford to buy more, or often or sometimes could not afford balanced meals, were asked additional questions about their eating habits in relation to financial worry:

- In the last 12 months, did you or other adults in your household ever cut the size of your meals or skip meals because there wasn't enough money for food?
- In the last 12 months, were you ever hungry but didn't eat because there wasn't enough money for food?
- In the last 12 months, did you lose weight because there wasn't enough money for food?

Just over one-quarter (28%) of people in Northern Ireland who were asked these additional questions reported that they had skipped meals or cut the size of meals because there wasn't enough money for food (Table 5). This is a similar percentage to those in the same situation in Wales (19%) and England (24%) (Table 5).³⁴ Skipping meals or cutting the size of meals was reported by 23% of respondents in all three countries combined (Table 5). 14% of respondents who experienced food worry across Northern Ireland, England and Wales did not eat when they were hungry because there was not enough money for food (Table 6); 8% of them lost weight because there was not enough money for food (Table 7). This highlights that worrying about the cost of food, running out of food due to a lack of money, and/or being unable to eat healthy, may have a potentially significant impact on nutrition and health. Respondents in these situations may forgo meals, not eat when hungry, and lose weight as a result. In these questions, there are no significant differences in responses by location, reflecting similarities in how people manage when they are concerned about affording food. These similarities are shown in Figure 1.

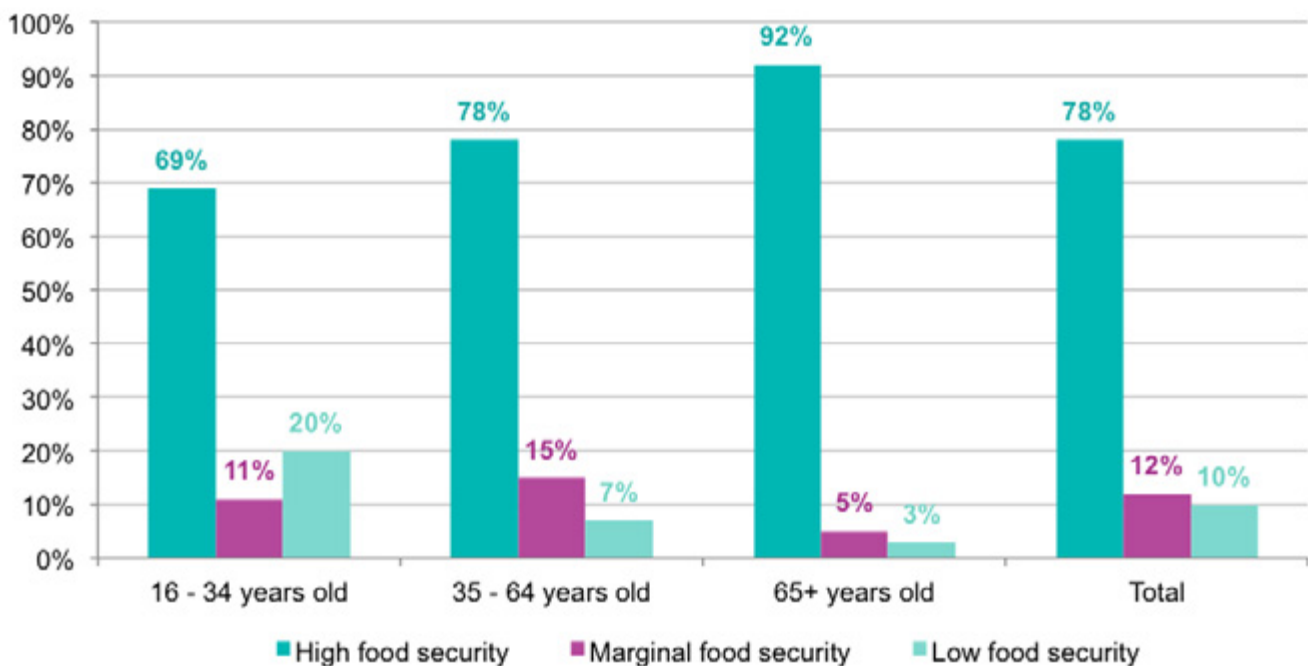
Finally, nearly 20% of people who reported skipping meals, not eating when hungry, or losing weight due to a lack of money for food, also reported that they or another adult in their household had not eaten for a whole day because of a lack of money for food (12% of respondents in Northern Ireland; 16% of respondents in Wales and 18% of respondents in England; Table 8). This highlights again the significant impact of food insecurity on nutrition and health.

Which demographic groups experience low food security in Northern Ireland?

What type of households live in low food security?

Low food security is directly correlated with several demographic differences: age, self-reported health status, work status and academic qualifications. Young people aged between 16-34 years old were nearly seven times as likely to live in low food security in comparison to people aged 65 or over; they were also more than twice as likely to live in marginal food security (Table 9).³⁵ Only 69% of people aged 16-34 live in high food security, in comparison to 78% of people aged 35-64 and 92% of those over 65 years old.

Figure 5: Food security status by age, %, Northern Ireland



Those who reported their health as good were more likely to live in high food security; conversely, those who reported their health as fair or bad were more likely to live in low food security.³⁶ In total, 20% of those with fair or bad self-reported health lived in low food security, in comparison to only 6% of those with self-reported good health (Table 10). There was significant variation in food security status by academic qualification: only 2% of people whose highest academic qualification was a degree or higher were classed as living in very low food security; this increased to 15% of people who reported no academic qualifications, or no higher qualification than GCSE/other, a significant difference (Table 11).³⁷

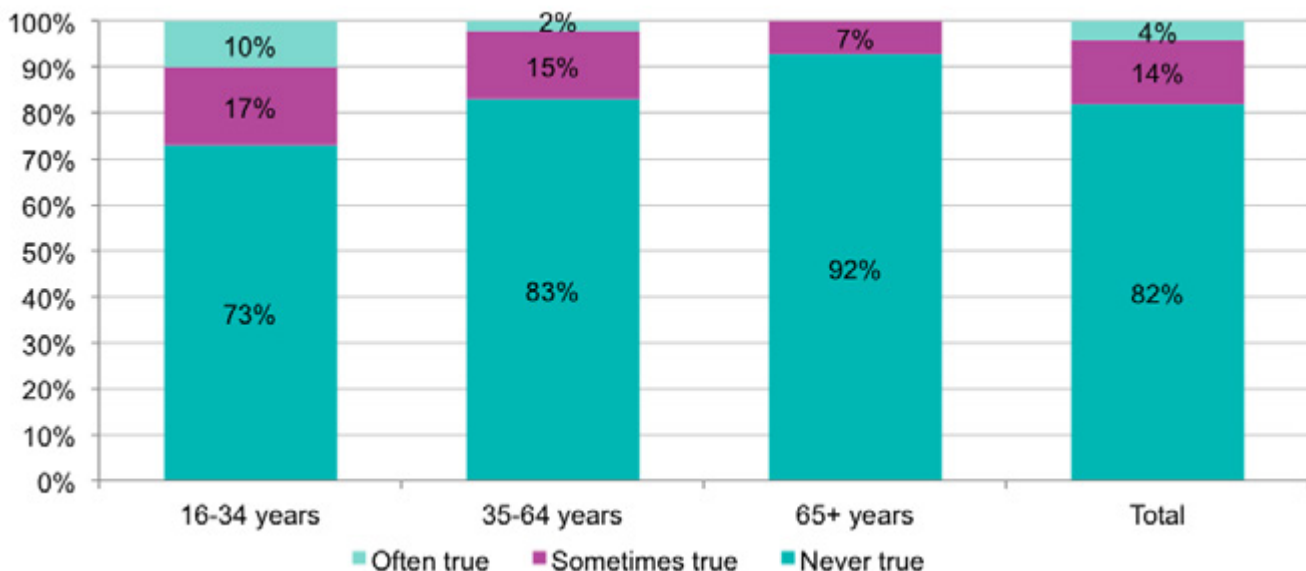
There was a significant difference between those who were classified as ‘in work’ and those who are ‘not in work’, a category that includes those who were unemployed and those who were retired. Those who were not in work were over twice as likely to experience low food security, with 15% of people not in work experiencing low food security, in comparison to 7% of people in work (Table 12).³⁸

Men and women were equally as likely to live in food insecurity (Table 13)³⁹ and no differences were found between households with children under 16 or no children under 16 (Table 14).⁴⁰ Family type had an effect on food security, with married people with children and single people without children reporting low food security more often and single people with children reporting marginal food security more often than all other groups (Table 15).⁴¹

Who worries about running out of food?

Young people between the ages of 16 and 34 years old were more likely to worry in the past 12 months that their food would run out before they had the money to buy more. Only 7% of people aged 65 years or older worried at least once in the past twelve months that they would run out of food before having money to buy more, in comparison to 27% of people aged 16-34 years old and 17% of people aged 35-64 years old (Table 16). This highlights that the likelihood of experiencing worry about running out of food significantly varies by age,⁴² which is unsurprising as young people are also significantly more likely to live in food insecurity (Table 9).

Figure 6: In the past twelve months, I/we worried whether my/our food would run out before I/we got money to buy more, % by age, Northern Ireland



Due to rounding, totals may not appear to add to 100%

People who reported a fair or bad health status were more likely to worry that food would run out before they had the money to buy more, with over a quarter (26%) of people with fair or bad health reporting that they had worried about this at least sometimes in the past twelve months, a significant difference from the 15% of people reporting good health who cited the same concerns (Table 17).⁴³

Finally, only 5% of people with a degree or higher academic qualifications reported that they often or sometimes worried about food running out, which increased to 20% of people with A-Levels, diplomas or apprenticeship qualifications, 22% of people with GCSEs or other qualifications, and 25% of people with no qualifications (Table 18). This is a hugely significant finding, which further demonstrates a strong relationship between an individual's qualifications and ability to maintain food security status.⁴⁴ This paper does not explore the reason for this trend, but it may be related to employment and income opportunities for those with higher qualifications.

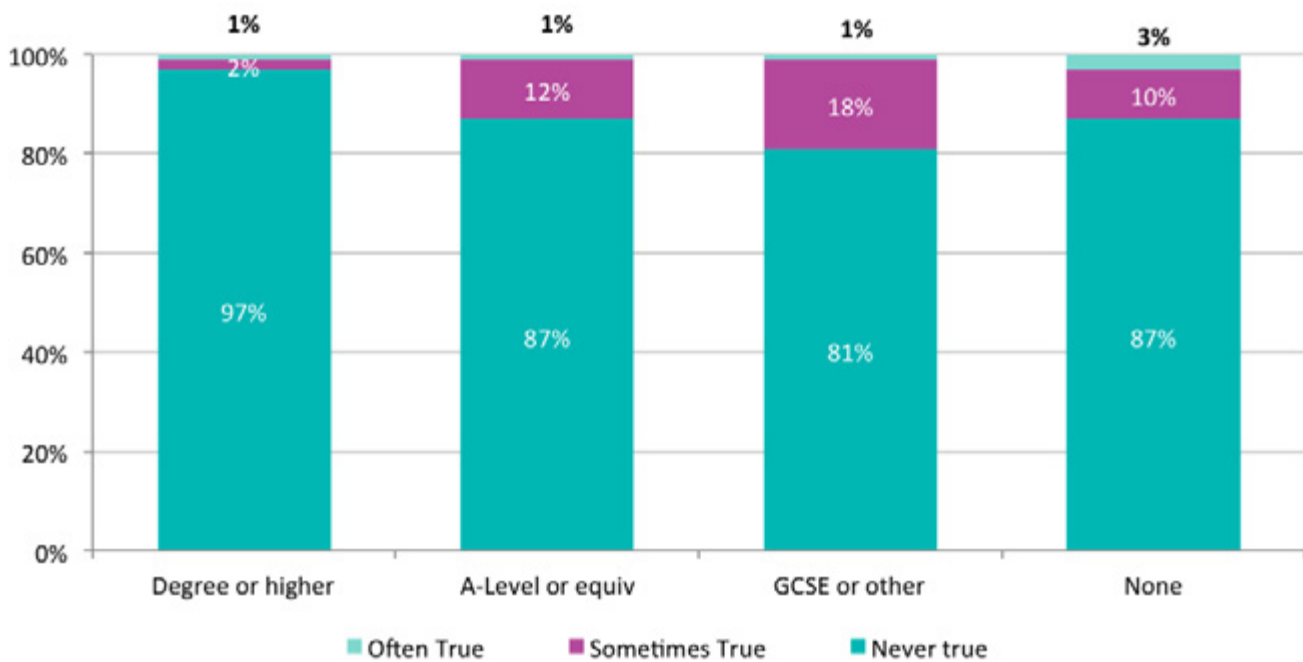
Who runs out of food?

Those who reported worrying about running out of food had similar demographic characteristics to those who experienced running out of food without having money to buy more. Table 19 highlights that young people were most likely to experience this, with 18% of 16-34 year olds reporting running out of food often or sometimes in the past twelve months, in comparison to 5% of people aged 65 years or older.¹⁹ People with fair or bad health were similarly more likely than those with good health to run out of food (23% compared to 8% respectively, Table 20).⁴⁵ Finally, running out of food was associated with education status. Of those with a degree, 96% reported that they never ran out of food without money to buy more, and no respondents with a degree reported this as often true. In comparison, 2% of people with no qualifications reported that this was often true and only 83% said that this was never true (Table 21).⁴⁶

Who cannot afford balanced meals?

Respondents were asked if they had been unable to afford balanced meals in the past twelve months. This was again related to age, general self-reported health status and highest academic qualification; approximately 4% of adults aged over 65 years said that they 'often' or 'sometimes' could not afford to eat a balanced meal, in comparison to a fifth of young people who were unable to afford balanced meals 'often' or 'sometimes' (20%, Table 22).⁴⁷ Adults with fair or bad health were nearly three times as likely to report often or sometimes being unable to afford balanced meals in comparison to adults with good general health (22% against 8%, Table 23)⁴⁸ and those with a degree qualification continued to be less likely to report food insecurity, with 97% of people in this group always able to afford balanced meals, against 81% of people with only GCSE qualifications or other (Table 24).⁴⁹

Figure 7: I/we could not afford to eat balanced meals, % by highest qualifications, Northern Ireland



As discussed, respondents who reported that they were often or sometimes worried about food running out, often or sometimes ran out of food and could not afford to buy more, or often or sometimes could not afford balanced meals, were asked additional questions about their eating habits in relation to money:

- In the last 12 months, did you or other adults in your household ever cut the size of your meals or skip meals because there was not enough money for food?
- In the last 12 months, were you ever hungry but did not eat because there was not enough money for food?
- In the last 12 months, did you lose weight because there was not enough money for food?

Due to the small sample size, it was not possible to analyse if there were any statistically significant differences by demographic when asked whether adults in the household had cut the size of meals or skipped meals because of a lack of money for food.

When asked whether individuals did not eat when hungry because of a lack of money for food, the only significant difference found was in work status. Our analysis found that people not in work were nine times more likely than those in work to report that they had been hungry but did not eat because there was not enough money for food, with over a quarter of individuals (27%) not in work, either retired or unemployed, reporting this occurrence, in comparison to just 3% of people in work (Table 25).⁵⁰

When asked whether respondents had lost weight because there wasn't enough money for food, 9% of respondents stated yes, which varied significantly by sex; 4% of women compared to 17% of men (Table 26).⁵¹ Given that men were not statistically more likely to not eat because there was no money for food (Table 27)⁵² and were not statistically more likely to report cutting the size of meals or skipping meals because there was no money for food (Table 28), it is unclear what causes this trend.⁵³

Healthy eating recommendations, barriers to healthy eating and food security level

Educational attainment, awareness of healthy eating recommendations and food security status in NI

15% of people with no qualifications living in Northern Ireland were identified as having low food security. A comparable number of people with GCSE (or an equal equivalent) were also identified as living with low food security. The number of individuals with higher qualifications in the form of A-Levels, diplomas or apprenticeships and individuals with degrees or higher living in low food security was 9% and 2% respectively.⁵⁴ This may suggest people with low food security tend to have fewer qualifications or a lower education level (Table 11).

Further analysis to investigate whether overall education level and food security status alters people's knowledge of healthy eating has been conducted. All individuals, in Northern Ireland, taking part in the Food and You Survey were asked to complete an exercise in which they matched up the proportions that different food groups should make towards the whole of a recommended balanced diet. A blank circle divided into 5 sections, representing the proportions that different food groups should make towards the whole of a recommended balanced diet was provided. Cards showing different food groups were handed to participants; 1) Fruit and vegetables, 2) Potatoes, bread, rice, pasta and other starchy carbohydrates, 3) Oil and spreads, 4) Dairy and alternatives, 5) Beans, pulses, fish, eggs, meat and other proteins and 6) Foods high in fat, salt and sugars. Foods which are not recommended as part of a balanced diet, and should be eaten less often and in small amounts, fall outside of the circle in a separate section.

This analysis allows researchers to assess the overall knowledge on what constitutes a healthy diet. The exercise based on the Eatwell Guide published by the government can be utilised to assess peoples' knowledge of the Eatwell campaign. 15% of people with high food security status completed the Eatwell Guide correctly, matching all six food groups to the appropriate segments of the Eatwell Guide. While only 2% of people with marginal food security and 8% of people with low food security were able to complete the exercise correctly (Table 29).

Nearly 90% of people, regardless of education level, did not place all foods in the correct proportion, outlining an overall lack of knowledge in adults within Northern Ireland as to what constitutes a healthy diet, and what proportion of food they should consume within their overall diet as outlined in the Eatwell Guide (Table 29).

The 5-A-Day fruit and vegetable public health message is a key recommendation in healthy eating guidelines. Knowledge with regard to what counts towards your fruit and vegetable intake was investigated according to food security status. People were asked whether frozen vegetables count towards recommended daily intake of fruits and vegetables. Over three quarters of people with low food security status correctly said that frozen vegetables did count towards a recommended intake (78%, Table 30). A similar number of people with marginal food security said frozen vegetables did count towards recommended intake (79%). People with high food security (93%) were more likely to agree with this statement than those with low food security.⁵⁵ Over half (59%) of individuals with low food security thought rice counted towards daily recommended fruit and vegetable intake compared to a third of people with high (32%) and marginal (31%) food security (Table 31).⁵⁶

In total, around 70% of people incorrectly identified that jacket potatoes were part of their recommended fruit and vegetable intake. Although more people with low food security (82%) than high food security (70%) or marginal food security (66%) agreed with this statement, these differences were not statistically significant (Table 32).⁵⁷

The majority of people, regardless of food security status, correctly identified that jam does not count towards their 5-A-Day (Table 33),⁵⁸ and correctly identified that pure fruit juice (Table 34)⁵⁹, dried fruit (Table 35)⁶⁰, tinned fruit (Table 36)⁶¹, fruit smoothies (Table 37)⁶², pulses (Table 38)⁶² and baked beans (Table 39)⁶⁴ do count towards daily recommended intake of fruits and vegetables. There were no significant differences between any of these outcomes and people's food security status. Overall, there is a consistent awareness across all groups with regard to what counts towards daily recommended fruit and vegetable intake.

Barriers to Eating Healthily

The current survey investigated reported difficulties in eating healthier amongst individuals with high, marginal and low food security. Around a third of all individuals recorded no difficulties in eating healthy and/or reported that they already did eat healthy. This did not vary significantly according to food security status, indicating that those living in low food security are not more likely to face difficulties in eating a healthy diet than those living in high food security (Table 40).

In general, reported barriers to eating healthy did not vary according to food security. A number of recurrent reported difficulties to eating healthy included giving up sugar or chocolate, a general dislike of healthy food and time constraints associated with eating a healthy diet (participants feeling as though they did not have enough time to prepare and cook food/work constraints). These feelings appeared across all food security status (Table 41).

However, a significant difference was reported between food security status and the reported difficulties to eating healthy with regard to the expense of food. Around a quarter (24%) of participants with low food security said money and the cost of healthy foods was a difficulty in trying to eat healthier. Few people from high (10%) and marginal (9%) food secure households mentioned this as an influential factor in trying to eat more healthy (Table 42).⁶⁵

How does food purchasing vary by food security levels?

Does food purchasing vary with food security status?

Food insecurity has previously been associated with modified dietary practices, often resulting in lower nutrient intake as well as a lower intake of fruits and vegetables. More people with high food security status completed the Eatwell Guide exercise correctly, suggesting they have a better overall knowledge of what makes up a healthy balanced diet (Table 29).

Previous Wave 4 Food and You analysis has revealed differences in food purchasing between different food security status. Participants in Northern Ireland living in low food security reported purchasing cheaper foods over the past 12 months. More than half (57%) said that they had bought items that were on special offer more frequently (Table 43), half (48%) said that they had eaten at home more often (Table 44), and 46% said they had bought cheaper food items (Table 45).

Current analysis of the data shows that fewer households living in low food security (64%) shopped for food in large supermarkets, while the majority of people living in high and marginal food security shopped for food in large supermarkets (85% and 84% respectively Table 46).⁶⁶

16% of people from low food security households reported that they did not do a main food shop, suggesting they buy food on a more frequent basis. A relatively negligible proportion of people from high and marginal food security status households (2% and 1% respectively) said that they did not do a main food shop (Table 46).⁶⁷

Discussion

This analysis has provided a more detailed delineation of who is at risk of food insecurity in Northern Ireland. About 22% of people in Northern Ireland live in low or marginal food security. Young participants in Northern Ireland are seven times more likely to experience low food security than older people. While there is much focus and concern about the impacts of austerity on older people, particularly pensioners, these findings show that younger people are also vulnerable. This study has shown that low food security is a bigger concern for young people than for older people. It is important to note that this study does not explain why there is greater concern among these groups. While it is possible that the difference is fully explained by lower levels of food security among younger people, it is also possible that other factors might contribute to this difference. For example, previous analysis of Food and You data has shown that older people have poorer knowledge of nutrition guidelines than younger people.⁶⁸ Therefore, it might be that younger people are more concerned about their food consumption because they have a better understanding of nutritional requirements. Similar factors might also partly explain the differences between men and women and residents of urban versus rural areas. However, further analysis and expanded datasets would be needed to prove the connection. One of the most significant findings of this report is that despite the general focus on older people in the literature, young people in Northern Ireland seem to be most affected by low food security. For instance, The Food Basket study looked at different types of households, but it did not include young people. Young people also seem to be excluded from the Brook Lyndhurst review.^{69 70} Therefore, the absence of data on young people and food insecurity should be addressed as this issue requires more research.

We found that food insecurity has a strong educational gradient, indicating that people with lower educational status and lower income are likely to have lower food security levels and are more likely to worry about food, having to adjust their consumption patterns. This is a crucial finding demonstrating that people with lower levels of education are very vulnerable when it comes to food security. While the data used in this report do not provide any explanations to this, we assume that this might indicate that employment opportunities are significantly more limited for people with lower academic qualifications and that their income does not allow them to have sufficient food security.

The finding that many people who are food insecure are skipping meals is in line with qualitative studies that have examined how households manage food when the cost of living rises, including that the food budget is often cut where people can and do economise.^{70, 71} The food strategies that people describe include:

- Making use of price promotions and offers;
- Simply buying what is needed for that day or even for a particular meal, resulting from having insufficient money to do anything other than live 'hand-to-mouth';
- Switching to cheaper and less nutritious alternatives.

The Northern Ireland Health Survey also found that more low income households reported not having a substantial meal for financial reasons – 10% of the most deprived households versus 2% in the least deprived.⁷²

The consequences of food insecurity are thus broad. As well as the importance of increasing household incomes, the cost of food is vital and should be kept in mind when reforming regulation. Similarly, our findings indicate that healthy food knowledge differs across groups with different levels of food security. As our findings indicate, people with low food security are more likely to think that rice is a part of their 5-A-Day. Improving food messaging by targeting people from low food security groups could be important to help people with low food security improve their knowledge of nutrition and consequently, improve their ability to eat healthier.

As in Wales, future research should further engage with the food security questions in the questionnaire. Some important data (such as skipping meals) can be used for further analysis on health outcomes e.g. negative outcomes in patients with diabetes and research from the USA shows that food insecurity is linked with poor glycaemic control due to skipping meals.⁷³ Other research from the US shows that food insecurity is linked with low levels of wellbeing in adults and children⁷⁴ and a study of people living in debt found that financial stress had severe impacts on health, wellbeing and health practices including diet with only 19% eating 5-A-Day.⁷⁵ Many of those in the Food and You Survey who reported running out of food and having low food security levels, also reported their health status as poor. Therefore, there is a risk that low food security could exacerbate pre-existing health conditions.

Appendix

Table 1 Food Security Status by Country, %

	Northern Ireland	Wales	England	Total
High food security	78	74	80	79
Marginal food security	12	17	12	13
Low food security	10	9	8	8
Unweighted bases	521	492	2105	3118

Table 2 In the last 12 months, I/we worried whether my/our food would run out before I/we got money to buy more, by Country, %

	Northern Ireland	Wales	England	Total
1 Often true	4	5	4	4
2 Sometimes true	14	15	13	13
3 Never true	82	80	83	83
Unweighted bases	520	492	2105	3117

Table 3 In the last 12 months, the food I/we bought just didn't last, and I/we didn't have money to get more, by Country, %

	Northern Ireland	Wales	England	Total
1 Often true	2	2	2	2
2 Sometimes true	10	12	9	9
3 Never true	88	86	89	89
Unweighted bases	521	492	2105	3118

Table 4 In the past 12 months, I/we could not afford to eat balanced meals, by Country, %

	Northern Ireland	Wales	England	Total
1 Often true	1	2	2	2
2 Sometimes true	11	10	8	8
3 Never true	88	88	90	90
Unweighted bases	521	492	2104	3117

Table 5 In the last 12 months, did you or other adults in your household ever cut the size of your meals or skip meals because there wasn't enough money for food? by Country, %

	Northern Ireland	Wales	England	Total
1 Yes	28	19	24	23
2 No	72	81	76	77
Unweighted bases	110	119	430	659

Table 6 In the last 12 months, were you ever hungry but didn't eat because there wasn't enough money for food? by Country, %

	Northern Ireland	Wales	England	Total
1 Yes	15	14	14	14
2 No	85	86	86	86
Unweighted bases	110	120	430	660

Table 7 In the last 12 months, did you lose weight because there wasn't enough money for food? by Country, %

	Northern Ireland	Wales	England	Total
1 Yes	9	8	8	8
2 No	91	92	92	92
Unweighted bases	109	120	428	657

Table 8 In the last 12 months, did you or other adults in your household ever not eat for a whole day because there wasn't enough money for food? by Country, %

	Northern Ireland	Wales	England	Total
1 Yes	12	16	18	18
2 No	88	84	82	82
Unweighted bases	41	40	152	233

Table 9 Food Security Status by Age, %, Northern Ireland

	16 – 34 years old	35 - 64 years old	65+ years old	Total
High food security	69	78	92	78
Marginal food security	11	15	5	12
Low food security	20	7	3	10
Unweighted bases	106	262	152	521

Table 10 Food Security Status by Health Status, %, Northern Ireland

	Good	Fair or Bad	Total
High food security	81	70	78
Marginal food security	12	10	12
Low food security	6	20	10
Unweighted bases	361	159	521

Table 11 Food Security Status by Highest Academic Qualification, %, Northern Ireland

	Degree or higher	A level/ diploma/ apprenticeship	GCSE/other	None	Total
High food security	94	77	70	72	78
Marginal food security	4	14	15	13	12
Low food security	2	9	15	15	10
Unweighted bases	118	156	99	140	521

Table 12 Food Security Status by Working Status, %, Northern Ireland

	In work	Not in work	Total
High food security	80	75	78
Marginal food security	13	10	12
Low food security	7	15	10
Unweighted bases	263	258	521

Table 13 Food Security Status by Sex, %, Northern Ireland

	Male	Female	Total
High food security	82	75	78
Marginal food security	8	15	12
Low food security	10	10	10
Unweighted bases	224	297	521

Table 14 Food Security Status by Children under-16 in the household, %, Northern Ireland

	Yes	No	Total
High food security	71	81	78
Marginal food security	19	9	12
Low food security	11	10	10
Unweighted bases	126	395	521

Table 15 Food Security Status by Family Type, %, Northern Ireland

	Married, with kids	Single, with kids	Married, no kids	Single, no kids	Total
High food security	75	62	86	76	78
Marginal food security	13	30	8	10	12
Low food security	12	8	7	14	10
Unweighted bases	152	40	41	233	521

Table 16 In the last 12 months, I/we worried whether my/our food would run out before I/we got money to buy more, % by age, Northern Ireland

	16 – 34 years old	35 - 64 years old	65+ years old	Total
Often true	10	2	0	4
Sometimes true	17	15	7	14
Never true	73	83	92	82
Unweighted bases	106	261	152	520

Table 17 In the past 12 months, I/we worried whether my/our food would run out before I/we got money to buy more, % by Health Status, Northern Ireland

	Good	Fair or Bad	Total
Often true	3	8	4
Sometimes true	12	18	14
Never true	85	74	82
Unweighted bases	360	159	520

Table 18 In the past 12 months, I/we worried whether my/our food would run out before I/we got money to buy more, by Highest Academic Qualification, %

	Degree or higher	A level/diploma/apprenticeship	GCSE/other	None	Total
1 Often true	2	5	4	4	4
2 Sometimes true	3	15	18	21	14
3 Never true	95	80	78	75	82
Unweighted bases	118	156	98	140	520

Table 19 In the past 12 months, the food I/we bought just didn't last, and I/we didn't have money to get more, % by age, Northern Ireland

	16 – 34 years old	35 - 64 years old	65+ years old	Total
Often true	4	1	1	2
Sometimes true	14	10	4	10
Never true	81	89	95	88
Unweighted bases	106	262	152	521

Table 20 In the past 12 months, the food I/we bought just didn't last, and I/we didn't have money to get more, % by Health Status, Northern Ireland

	Good	Fair or Bad	Total
Often true	1	5	2
Sometimes true	7	18	10
Never true	92	78	88
Unweighted bases	361	159	521

Table 21 In the past 12 months, the food I/we bought just didn't last, and I/we didn't have money to get more, by Highest Academic Qualification, %, Northern Ireland

	Degree or higher	A level/diploma/ apprenticeship	GCSE/other	None	Total
Often true	-	2	1	2	2
Sometimes true	4	9	14	15	10
Never true	96	88	85	83	88
Unweighted bases	118	156	99	140	521

Table 22 In the past 12 months, I/we could not afford to eat balanced meals, % by age, Northern Ireland

	16 – 34 years old	35 - 64 years old	65+ years old	Total
Often true	2	1	1	1
Sometimes true	18	10	3	11
Never true	81	89	97	88
Unweighted bases	106	262	152	521

Table 23 In the past 12 months, I/we could not afford to eat balanced meals, % by Health Status, Northern Ireland

	Good	Fair or Bad	Total
Often true	1	2	1
Sometimes true	7	20	11
Never true	92	78	88
Unweighted bases	361	159	521

Table 24 In the past 12 months, I/we could not afford to eat balanced meals, % by Highest Qualification, Northern Ireland

	Degree or higher	A level/diploma/ apprenticeship	GCSE/other	None	Total
Often true	1	1	1	3	1
Sometimes true	2	12	18	10	11
Never true	97	87	81	87	88
Unweighted bases	118	156	99	140	521

Table 25 In the last 12 months, were you every hungry but didn't eat because there wasn't enough money for food? % by Work status, Northern Ireland

	In Work	Not in Work	Total
Yes	3	27	15
No	97	73	85
Unweighted bases	50	60	110

Table 26 In the last 12 months, did you lose weight because there wasn't enough money for food? % by Sex, Northern Ireland

	In Work	Not in Work	Total
Yes	17	4	9
No	83	96	91
Unweighted bases	41	68	109

Table 27 In the last 12 months, were you ever hungry but didn't eat because there wasn't enough money for food? % by Sex, Northern Ireland

	Male	Female	Total
Yes	23	9	15
No	77	91	85
Unweighted bases	41	69	110

Table 28 In the last 12 months; did you or other adults in your household ever cut the size of your meals or skip meals because there wasn't enough money for food? % by Sex, Northern Ireland

	Male	Female	Total
Yes	24	31	28
No	76	69	72
Unweighted bases	41	69	110

Table 29 Correct proportion of foods placed on EatWell Guide, % by food security status, Northern Ireland

	High food security	Marginal food security	Low food security	Total
All foods in correct proportions – Eatwell Guide	15	2	8	13
Not all foods in correct proportions – Eatwell Guide	85	98	92	87
Unweighted Bases	411	58	52	521

Table 30 Frozen vegetables as part of daily fruit and veg intake, % by Food Security Status, Northern Ireland

	High food security	Marginal food security	Low food security	Total
Frozen veg counts towards daily intake	93	79	78	90
Frozen veg does not count towards daily intake	7	21	22	10
Unweighted Bases	409	58	52	519

Table 31 Rice as part of daily fruit and veg intake, % by Food Security Status, Northern Ireland

	High food security	Marginal food security	Low food security	Total
Rice counts towards daily intake	32	31	59	35
Rice does not count towards daily intake	68	69	41	65
Unweighted Bases	395	57	51	503

Table 32 Jacket potatoes as part of daily fruit and veg intake, % by Food Security Status, Northern Ireland

	High food security	Marginal food security	Low food security	Total
Jacket potatoes counts towards daily intake	70	66	82	71
Jacket potatoes does not count towards daily intake	30	34	18	29
Unweighted Bases	405	57	51	513

Table 33 Jam as part of daily fruit and veg intake, % by Food Security Status, Northern Ireland

	High food security	Marginal food security	Low food security	Total
Jam counts towards daily intake	14	15	13	14
Jam does not count towards daily intake	86	85	87	86
Unweighted Bases	400	54	52	506

Table 34 Pure Fruit Juice as part of daily fruit and veg intake, % by Food Security Status, Northern Ireland

	High food security	Marginal food security	Low food security	Total
Pure fruit juice counts towards daily intake	74	87	72	76
Pure fruit juice does not count towards daily intake	26	13	28	24
Unweighted Bases	407	58	52	517

Table 35 Dried fruit as part of daily fruit and veg intake, % by Food Security Status, Northern Ireland

	High food security	Marginal food security	Low food security	Total
Dried fruit counts towards daily intake	79	74	87	80
Dried fruit does not count towards daily intake	21	26	13	20
Unweighted Bases	400	58	50	508

Table 36 Tinned fruit as part of daily fruit and veg intake, % by Food Security Status, Northern Ireland

	High food security	Marginal food security	Low food security	Total
Tinned fruit counts towards daily intake	74	66	83	74
Tinned fruit does not count towards daily intake	26	34	17	26
Unweighted Bases	404	58	51	513

Table 37 Fruit smoothies as part of daily fruit and veg intake, % by Food Security Status, Northern Ireland

	High food security	Marginal food security	Low food security	Total
Fruit smoothies counts towards daily intake	76	83	83	78
Fruit smoothies does not count towards daily intake	24	17	17	22
Unweighted Bases	388	55	52	495

Table 38 Pulses as part of daily fruit and veg intake, % by Food Security Status, Northern Ireland

	High food Security	Marginal food security	Low food security	Total
Pulses counts towards daily intake	73	66	84	73
Pulses does not count towards daily intake	27	34	16	27
Unweighted Bases	390	56	48	494

Table 39 Baked beans as part of daily fruit and veg intake, % by Food Security Status, Northern Ireland

	High food Security	Marginal food security	Low food security	Total
Baked beans counts towards daily intake	66	65	81	67
Baked beans does not count towards daily intake	34	35	19	33
Unweighted Bases	402	57	51	510

Table 40 Difficulties in trying to eat more healthily, % by Food Security Status, Northern Ireland

	High food security	Marginal food security	Low food security	Total
No difficulties mentioned	65	76	71	67
Difficulties mentioned	35	24	29	33
Unweighted Bases	403	61	52	516

Table 41 Difficulties in trying to eat more healthily, % by Food Security Status, Northern Ireland

	High food security	Marginal food security	Low food security	Total
Giving up sugar or chocolate (mentioned)	18	23	24	19
Time Constraints / Time to prepare or cook food/ Work commitments or hours	32	30	25	31
Do not like healthy food	6	5	1	5
Unweighted Bases	403	61	52	516

Table 42 Difficulties in trying to eat more healthily, % by Food Security Status, Northern Ireland

	High food security	Marginal food security	Low food security	Total
Cost of healthy food not mentioned	90	91	76	89
Cost of healthy food mentioned	10	9	24	11
Unweighted bases	407	58	51	516

Table 43 Bought items that were on special offer more, % by Food Security Status, Northern Ireland

	High food security	Marginal food security	Low food security	Total
Not bought items that were on special offer more	86	68	43	79
Bought items that were on special offer more	14	32	57	21
Unweighted bases	411	58	52	521

Table 44 Eaten at home more, % by Food Security Status, Northern Ireland

<i>Northern Ireland, Wave 4</i>	High food security	Marginal food security	Low food security	Total
Not eaten at home more	89	91	52	86
Eaten at home more	11	9	48	14
Unweighted bases	411	58	52	521

Table 45 Changed food bought to cheaper alternatives, % by Food Security Status, Northern Ireland

<i>Northern Ireland, Wave 4</i>	High food security	Marginal food security	Low food security	Total
Not changed food bought to cheaper alternatives	95	85	54	90
Changed food bought to cheaper alternatives	5	15	46	10
Unweighted bases	411	58	52	521

Table 46 Difficulties in trying to eat more healthily, % by Food Security Status, Northern Ireland

	High food Security	Marginal food security	Low food security	Total
Mainly shop for food in a large supermarket	85	84	64	82
Do not do a main food shop	2	1	16	3
Unweighted bases	407	60	53	520

Endnotes:

- 1 Report of the World Food Conference, UN, 1974 http://www.un.org/en/ga/search/view_doc.asp?symbol=E/CONF.65/20
- 2 See www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/measurement/ for further details. The United States Department of Agriculture (USDA) monitors the extent and severity of food insecurity in U.S. households through an annual, nationally representative survey sponsored and analysed by USDA's Economic Research Service.
- 3 Health Survey Northern Ireland, 2015/16. [\[https://www.health-ni.gov.uk/sites/default/files/publications/health/hsni-first-results-15-16.pdf\]](https://www.health-ni.gov.uk/sites/default/files/publications/health/hsni-first-results-15-16.pdf) accessed 14.03.2018
- 4 Health Survey Northern Ireland, 2015/16. [\[https://www.health-ni.gov.uk/sites/default/files/publications/health/hsni-first-results-15-16.pdf\]](https://www.health-ni.gov.uk/sites/default/files/publications/health/hsni-first-results-15-16.pdf) accessed 14.03.2018
- 5 <https://www.wfp.org/node/359289> Accessed 18/12/2017
- 6 Bates, B. et. al. The Food & You Survey Wave 4 Technical Report. Food Standards Agency. <https://www.food.gov.uk/sites/default/files/food-and-you-w4-tech-report.pdf>
- 7 See <https://www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/Measurement> for further details.
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- 9 Department of Health (2015). A Fitter Future for All – Outcomes Framework 2015 – 2019. <https://www.health-ni.gov.uk/publications/fitter-future-all-outcomes-framework-2015-2019>
- 10 The Food & You Survey Wave 4: Combined Report for England, Wales and Northern Ireland (2017), p.15.
- 11 World Food Summit, 1996 <http://www.fao.org/docrep/003/w3548e/w3548e00.htm>
- 12 Joseph Rowntree Foundation (December 2017). UK Poverty 2017: A Comprehensive Analysis of Poverty Trends and Figures. London: Joseph Rowntree Foundation. Report by the JRF Analysis Unit, Joseph Rowntree Foundation, York. <https://www.jrf.org.uk/report/uk-poverty-2017>
- 13 Dowler, E., Lambie-Mumford, H. (2015). How can households eat in austerity? Challenges for social policy in the UK. *Social Policy and Society*. 14(3): 417-428.
- 14 [\[https://www.trusselltrust.org/news-and-blog/latest-stats/end-year-stats/\]](https://www.trusselltrust.org/news-and-blog/latest-stats/end-year-stats/) accessed 27.02.18
- 15 The income a household needs to attain a given standard of living depends on its size and composition. Equivalization is a way of adjusting a household's income for size and composition so that the incomes of all households are on a comparable basis
- 16 As originally observed in the nineteenth century by the German statistician Engels, the proportion of household expenditure spent on food varies with household income such that food budget share increases with decreasing income, even if actual expenditure falls. This statistic has been used as an indicator of welfare and as an indicator of levels of household poverty
- 17 [\[https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/597667/Family_Food_2015-09mar17.pdf\]](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/597667/Family_Food_2015-09mar17.pdf) accessed 12.03.2018
- 18 MacMahon, B, Moloney, N (2016). What is the Cost of a Healthy Food Basket in Northern Ireland. Dublin, Safefood. <http://www.safefood.eu/Publications/Research-reports/What-is-the-cost-of-a-healthy-food-basket-in-North.aspx>
- 19 [\[https://www.gov.uk/government/publications/food-statistics-pocketbook-2017/food-statistics-in-your-pocket-2017-pricesand-expenditure\]](https://www.gov.uk/government/publications/food-statistics-pocketbook-2017/food-statistics-in-your-pocket-2017-pricesand-expenditure)
- 20 Defra (2013). Food Statistics Pocketbook 2012. London: Department for Environment, Food and Rural Affairs
- 21 Griffith, R, O'Connell, M, Smith, K. (2013). Food Expenditure and Nutritional Quality Over the Great Recession. London: Institute for Fiscal Studies
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- 27 For further details about the survey methodology, including the weighting please see The Food & You Survey Wave 4 Technical Report: <https://www.food.gov.uk/sites/default/files/food-and-you-w4-tech-report.pdf>
- 28 See www.ers.usda.gov/topics/food-nutrition-assistance/food-security-in-the-us/measurement/ for further details. The United States Department of Agriculture (USDA) monitors the extent and severity of food insecurity in U.S. households through an annual, nationally representative survey sponsored and analysed by USDA's Economic Research Service.
- 29 $p=0.053$
- 30 $p=0.335$
- 31 Health Survey Northern Ireland, 2015/16. [\[https://www.health-ni.gov.uk/sites/default/files/publications/health/hsni-first-results-15-16.pdf\]](https://www.health-ni.gov.uk/sites/default/files/publications/health/hsni-first-results-15-16.pdf) accessed 14.03.2018
- 32 $p=0.160$
- 33 $p=0.515$
- 34 $p<0.001$
- 35 $p<0.001$
- 36 $p=0.01$
- 37 $p=0.014$
- 38 $p=0.930$
- 39 $p=0.817$
- 40 $p=0.327$
- 41 $p<0.001$
- 42 $p=0.006$
- 43 $p=0.01$
- 44 $p<0.001$
- 45 $p=0.007$
- 46 $p=0.001$
- 47 $p=0.002$
- 48 $p=0.027$
- 49 $p=0.001$
- 50 $p=0.055$
- 51 $p=0.141$
- 52 $p=0.480$ (new)
- 53 $p=0.01$
- 54 $p=0.002$
- 55 $p=0.023$
- 56 $p=0.245$ (new)
- 57 $p=0.939$ (new)
- 58 $p=0.229$ (new)
- 59 $p=0.370$ (new)
- 60 $p=0.193$ (new)
- 61 $p=0.431$ (new)
- 62 $p=0.276$ (new)
- 63 $p=0.203$ (new)
- 64 $p=0.029$

- 65 $p=0.010$
- 66 $p<0.001$
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