

Social Inclusion
Technical Paper

Constructing a Food Poverty Indicator for Ireland

using the
Survey on Income and Living Conditions

Caroline Carney
Bertrand Maître

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Authors:

Caroline Carney

Caroline Carney is a Research Associate with an expertise in food poverty. She works as a social researcher at The General Council of the Bar of England and Wales.

Bertrand Maître

Bertrand Maître is a Research Officer at the Economic and Social Research Institute. More information on the author is available online at:
http://esri.ie/staff/view_all_staff/view/index.xml?id=78

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Abstract

There is no national definition or measure of food poverty in Ireland. This paper aims to construct a deprivation based measure of food poverty using deprivation indicators from the CSO's *Survey on Income and Living Conditions* (SILC). Food poverty has emerged as an issue of policy debate in Ireland, but the understanding of this issue is stymied by the absence of a methodology for measuring the problem in a quantitative and comparative way. The paper proposes a composite measure of food poverty based on a lack of one or more of three food deprivation items. This methodology shows that 10 per cent of the Irish population was in food poverty in 2010. This paper identifies households most at risk of food poverty and explores links with economic strain, health status and social class.

Key words: food poverty; health; deprivation; SILC

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Chapter 1: Introduction

The aim of this research is to explore the possibility of developing a food poverty indicator in Ireland using the Survey on Income and Living Conditions (SILC).

The specific objectives of this research are to:

- create an indicator to provide a measurement of food poverty
- identify the characteristics of the population experiencing food poverty
- analyse the association between food poverty and health outcomes
- identify risk factors for food poverty.

1.1 Background to the research

Food poverty is one aspect of the experience of poverty and deprivation. The modern conception of poverty has been influenced by Townsend's definition of poverty where poverty is considered as being relative to one's society, this encompasses income, resources and participation.

Individuals, families and groups in the population can be said to be in poverty when they lack the resources to obtain the type of diet, participation in the activities and have the living conditions and the amenities which are customary, or at least widely encouraged or approved in the societies to which they belong. Their resources are so seriously below those commanded by the average family that they are in effect excluded from the ordinary living patterns, customs, and activities." (Townsend, 1979: 31).

This perception of poverty is reflected in the Irish Government's definition of poverty (Government of Ireland, 2007:20). Research on poverty has conveyed its diverse nature as a multidimensional and dynamic process, which has many different aspects such as at-risk-of-poverty, material deprivation, fuel poverty, financial exclusion and food poverty. Additionally, consideration of these processes from a social exclusion perspective has given insight into how these different forms of poverty create multiple disadvantages and serve to exclude people from participating fully in society.

These aspects of poverty have been reflected in the national measurement of poverty through the SILC. The official measure of poverty in Ireland is 'consistent poverty' and this is based upon a composite measure of income and deprivation components.

Including income and deprivation in this measure allows for income or resources, and the inability to afford necessities, and to participate in society as a result of insufficient resources to be measured. This encompasses both poverty and deprivation as theorised by Townsend.

Food poverty has emerged as a social policy concern in Ireland and Northern Ireland in the last decade, following seminal studies by Friel and Conlon (2004) and Purdy et al (2006). Food poverty is defined as the inability to have an adequate and nutritious diet due to issues of affordability or accessibility (Dowler, 1998). Friel and Conlon (2004) expand this definition to include the social and cultural participatory aspect of food poverty. This is understood as lacking the means to participate in activities considered a cultural norm such as eating out or with friends and family, which resultantly deepens social exclusion. Households experiencing food poverty cannot always comply with dietary recommendations. They tend to spend a higher proportion of income on food while still not being able to afford quality food and they have to restrict social behaviour such as eating out due to lack of affordability (Friel and Conlon, 2004). The elements of this definition encompass affordability, access and social participation.

1.2 Approaches to researching food poverty

Different approaches have been undertaken in researching food poverty. These have included studies based on the expenditure required for an adequate and reasonably healthy diet for those with a low income, research based on nutritional consumption and studies which explored food poverty and health. Friel et al (2004) used the Household Budget Survey (HBS) for 2000 to calculate the cost of healthy food for different household types in the lowest income quintile. They identified what proportion of disposable income it would account for and found that for some types of households dependent on unemployment benefit, healthy food would account for large proportions of their income.

The Vincentian Partnership for Social Justice (VPSJ) (Collins et al) found, in its 2012 study on a minimum income standard, that the weekly cost of food is the most expensive area of expenditure for most of the nine household types examined. It was particularly expensive for households with children, and pensioners, and for lone parent households, the cost of food was only exceeded by childcare costs.

Additionally in their study on minimum essential budgets for households in rural areas, the VPSJ also found that there were considerable differences in the costs of food between urban and rural locations (Mac Mahon et al 2010). Davis et al (2012) found that the income of households in the UK who were benefits recipients, and minimum wage earners, did not meet the minimum income standard required by these households. The minimum income standard was based on the costs of food, clothing, housing as well as participating in society in Britain.

Other approaches to researching food poverty have focused on the nutritional consumption of low income and deprived groups, and the relationship of this with health. Research using the national *Survey on Lifestyles, Attitudes and Nutrition* (SLAN) in 1998 cited by Friel and Conlon (2004) considered social variations in nutrient intake. This research found that people in lower social classes (semi-skilled and unskilled) consumed unhealthier food products. Additionally, the SLAN also measures obesity rates. Research using SLAN 2007 found that people in lower social classes had higher rates of obesity and high blood pressure (Morgan et al, 2008).

In a survey of the most materially deprived low-income households (15 per cent of population) in Britain, Nelson (2007) found that deprived low-income households had a poor nutritional intake. The research found that consumption of fruit and vegetables was lower than the recommended minimum consumption, there was inadequate intake of some vitamins and minerals and there was a substantial level of obesity amongst this section of the population. Additionally, this research found that participants in this research had higher levels of raised central obesity which is linked to increased risk of chronic disease. It also found that female participants in the survey had a higher proportion of obesity in comparison to the female participants in the *National Diet and Nutrition Survey* which surveys all income groups. Research by Dowler and O'Connor (2012) highlighted the relationship between poverty, food and health inequalities. They discuss the prevalence of cheap unhealthy foods consumed by lower socio-economic groups contributing to poor nutritional outcomes and the failure of anti-poverty policies to include food and nutritional needs.

1.3 Purpose of this study

There is currently no methodology for measuring the extent of food poverty in Ireland in a quantitative and comparative way. Various studies (Friel and Conlon, 2004; Friel et al 2004; Purdy et al, 2006; Kelly et al, 2009) have used different means of exploring the experience and depth of food poverty. This has contributed to a multi-faceted understanding of the nature of food poverty, using a variety of indirect measures and indicators. Without a quantitative food poverty indicator, monitoring of food poverty trends over time and the identification of the population experiencing food poverty has not been possible.

There has consistently been a proportion of the population in deprivation as measured by the SILC. However, since the recession, the proportion of the population reporting deprivation and reporting food deprivation on individual items has increased (CSO, 2011). Such concern has highlighted the need for identification and the effective measurement of food poverty in order to allow the development of a response to this. This research aims to establish a food poverty indicator that allows for the monitoring of food poverty trends on an annual basis and the identification of groups vulnerable to food poverty.

Chapter 2: Methodology

This research explores trends in individual food deprivation items as well as their extent and their relationship with the household income and the social class of those experiencing such deprivation. This research considers the merits of using two different food poverty indicators in order to select the optimal one to measure food poverty for the purposes of this paper. The study seeks to determine what demographic, socio-economic and health characteristics are related to food poverty. The similarities and differences between the populations experiencing food poverty, at-risk-of-poverty, deprivation and consistent poverty are considered in relation to social class, location and health, in order to demonstrate how food poverty is a distinct experience of poverty. The social class, income and health characteristics of the population in food poverty over time are also considered. Binary logistic regression is used to identify the characteristics that contribute to the likelihood of experiencing food poverty.

This research uses secondary data analysis of the SILC in order to answer the research questions posed in this paper. Data from SILC surveys between 2004 and 2010 is used to consider trends over time; however the SILC 2010 is used to produce the most up-to-date figures and for detailed analysis. The SILC is the most appropriate survey to use to date as it contains four food deprivation items as well as relevant individual demographic, socio-economic and health indicators. The paper uses univariate, bivariate (cross tabulations and Pearson's Chi-square test) and multivariate (binary logistic regressions) statistical techniques to answer the questions of this research and to explore food poverty and its relationship with various characteristics¹. The sample size of SILC in 2010 is 11,576 individuals; results in this paper are weighted to population level.²

The advantages of using the SILC data for this research include the fact that it is undertaken annually. In addition, it provides a large sample with a wide range of indicators of living conditions, social exclusion and income. The SILC is conducted by the Central Statistics Office (CSO) and is used to monitor poverty, deprivation and social exclusion in Ireland.

¹ See Appendix 4 for a more detailed explanation of the techniques and software used to undertake these.

² See CSO 2011 for a detailed description of the 2010 SILC.

It is used for Ireland's implementation of the *National Action Plan for Social Inclusion 2007-2016* (NAPinclusion). The survey also reflects economic and social trends.

A limitation of secondary data analysis of SILC is that SILC was not designed to specifically answer the research questions of this project. The scope of the measures being used by this project is somewhat limited by this.

The SILC is a private household survey. This means that vulnerable groups such as the homeless, Travellers, people in institutions and asylum seekers, which may be at risk of food poverty, are not captured in this survey.

The SILC does not measure access to food which can be a contributory factor to food poverty. To clarify, food deprivation as measured by the indicators used in this study is based on deprivation of the items only due to affordability. Another limitation with the food indicators in SILC is that they do not measure the nutritional quality of the food that is affordable.

The food related deprivation indicators used in this research use the response from the person answering the household questionnaire as well as from the household reference person (HRP) for the individual questionnaire.³ This means inequalities in the sharing of household resources cannot be identified. Previous research has found that women within low-income households can reduce their food intake in order to provide more for their children (Coakley, 2001; Nutritional Advisory Group, 1995).

The measure of food poverty used by this research is quantitative and this research does not discuss the lived experience of food poverty. Qualitative research such as that by Coakley (2001) and *safe*food (2011) presents how food is experienced in low-income households.

³ The household reference person is the person responsible for the accommodation. When the responsibility is shared the oldest person is chosen.

2.1 Food deprivation items

In Ireland, consistent poverty is the official measure used to set the national social target for poverty reduction. It identifies individuals who are living in households where the income is below 60% of the median income and are deprived of 2 or more goods or services out of a list of 11 items that are regarded as essential.⁴ The deprivation questions are asked of the person answering the household questionnaire during the survey and their response is applied to each household member. The items in the deprivation index are items and activities considered to be a social norm within Irish society.

Three of the 11 items refer to the affordability of food. The deprivation items ask specifically if the household did not have these items due to affordability or for another reason. Only those who could not afford an item are regarded as being deprived of that item for our purposes. The deprivation items measure enforced deprivation of basic items as opposed to choosing not to have that item. Additionally, there is a fourth food deprivation item asked in the SILC that is not one of the 11 items used to measure basic deprivation. This question asks whether during the last fortnight, there was ever a day (i.e. from getting up to going to bed) when the respondent did not have a substantial meal due to lack of money. This question is asked of each household member aged over 16 years of age, however for this research the response of the HRP is applied to all members of the household in order to be consistent with how the three other food deprivation items are asked. While responses of individual household members may have differed to this question, using the response of the HRP gives an indication of the level of deprivation in the household and also allows for those who are aged under 16 years to be included in the analysis.

Deprivation items are important indicators of social exclusion. Approaches to poverty measurement based on income alone fail to identify whether people experience an enforced lack of goods and services regarded as the social norm. The definition of poverty used by the Irish Government makes particular reference to material, cultural and social resources being inadequate for a standard of living that is considered acceptable in Ireland (Government of Ireland, 2007:20).

⁴ See Appendix 1 for a list of the 11 deprivation items used in the SILC.

The use of deprivation items provides a means of capturing the social exclusionary experience of poverty, which income measures alone do not identify.

The use of deprivation items is recognised as an important means of measuring social exclusion across Europe as shown with the development and the inclusion of social indicators at a European level. Eurostat is currently reviewing the deprivation measure via the Taskforce on Material Deprivation to ensure that appropriate common indicators are used across the EU. Particularly in the context of the *Europe 2020 Strategy*, the EU has recognised the importance of the material deprivation items by including these with income measures of poverty, and indicators of low-work intensity, in order to reflect of diversity of living conditions in the EU. These allow among other things for measurement of inability to afford what are considered basic necessities in various societies (Fusco, Guio and Marlier, 2010).

The SILC contains four food deprivation items that are listed below. These items have been identified as indicators to measure food poverty in the *Review of the National Taskforce on Obesity* (DOHC, 2009).

1. Inability to afford a meal with meat or vegetarian equivalent every second day

This indicator suggests severe food deprivation. The recommended daily allowance is to consume two servings of protein per day. This item is also asked of all EU member states in the EU SILC survey. This item is one of the 11 deprivation items used for the consistent poverty measure.

2. Inability to afford a roast or vegetarian equivalent once a week

This indicator refers to the affordability of food and additionally, in referring to a weekly roast, it refers to affordability of a cultural norm. Though the reference to a weekly roast may be slightly outdated, the indicator refers only to those who cannot afford this. This item is one of the 11 deprivation items used for the consistent poverty measure.

3. Whether during the last fortnight, there was at least one day (i.e. from getting up to going to bed) when the respondent did not have a substantial meal due to lack of money

This indicator refers specifically to the respondent not being able to afford a substantial meal on at least one day, during the last fortnight, due to affordability. This item, in its reference to the affordability of food but not to the quality or adequacy of the food, refers to severe food deprivation. This item is not one of the 11 deprivation items used for the consistent poverty measure. Also, it is asked of all respondents over 16 years of age whereas the other deprivation items are asked at household level. For the purposes of this research, the response of the household reference person to this item is applied to all other members of the household.

4. Inability to have family or friends for a meal or drink once a month

This indicator refers to the social participatory aspect of food poverty. This is when people may restrict their social patterns due to not being able to afford certain products, or to participate in certain events considered a norm by society. This indicator could be considered a somewhat limited measure of food deprivation as it refers to '*a meal, or a drink*'. This item is one of the 11 deprivation items used for the consistent poverty measure.

Each of these deprivation indicators captures a different element of food poverty.

2.2 Structure of the paper

The next four chapters outline the results of the analysis undertaken in this paper. Chapter 3 discusses the prevalence of each of the food deprivation indicators over time and their relationship with the at-risk-of-poverty measure. This chapter also includes an EU comparison on the indicator which measures the inability to afford a meal with meat or vegetarian equivalent every second day. Chapter 4 details the construction of a food poverty indicator and explains the rationale for selecting the indicator used for this research. Chapter 5 considers the population who are experiencing food poverty. The experience of food poverty is compared with at-risk-of-poverty, deprivation and consistent poverty for some social and health characteristics. The trends in the experience of food poverty in relation to these characteristics over time are also identified. Chapter 6 presents the results of a regression analysis to identify predictive characteristics of food poverty.

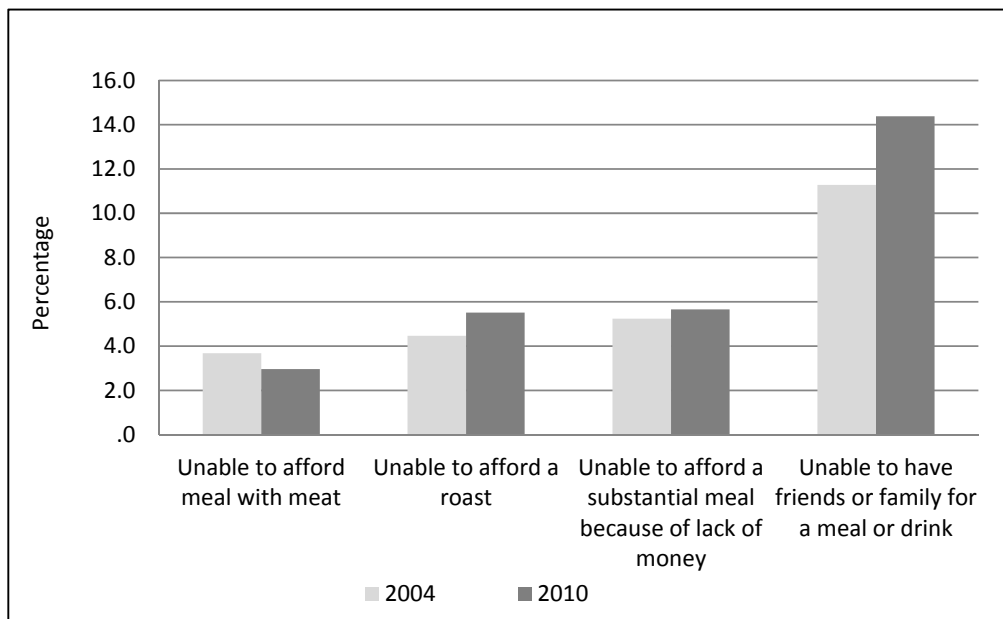
Chapter 3: Prevalence of food deprivation

This chapter presents trends in each food deprivation item between 2004 and 2010. Experience of food poverty in relation to at-risk-of-poverty status is also explored.

3.1 Level of food deprivation

Figure 1 shows the proportion of the general population experiencing deprivation on each food item in 2004 and in 2010. These differences in experience of each item between 2004 and 2010 are not all significant but are shown on Figure 1 below to convey change between 2004 and 2010. The confidence intervals for each of these items are shown in Appendix 2. Overall the percentage for those unable to afford a meal with meat decreased from four per cent to three per cent. For all other deprivation items the percentage was higher in 2010 than in 2004. The percentage for those unable to afford a roast increased from five per cent to six per cent, those who did not have a substantial meal one day in last fortnight, due to lack of money, increased from five per cent to six per cent and those unable to have family or friends for a meal or drink increased from 11 per cent to 14 per cent.

Figure 1: Proportion of population reporting food deprivation items, 2004 and 2010



Source: CSO SILC, 2004-2010, analysis by authors

It is apparent that a substantially larger proportion of the population reported being unable to have family or friends for a meal or drink in comparison to the other items. The other three deprivation items have more in common with each other than with the former item in regards to their prevalence in the population.

3.2 Trends in food deprivation, 2004 to 2010

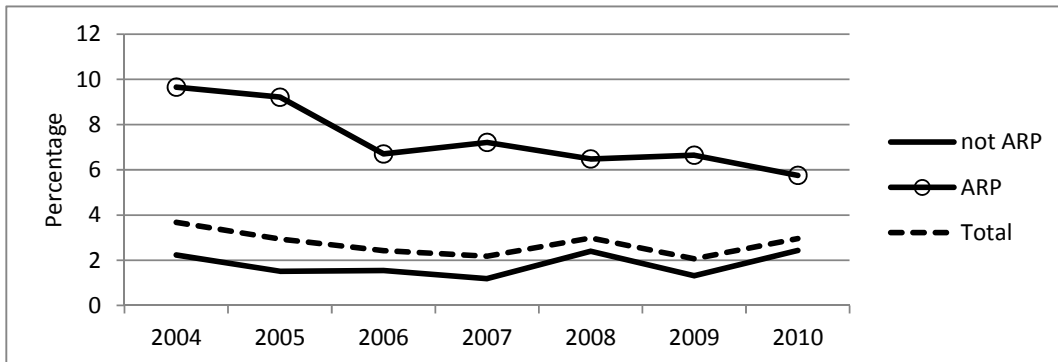
This section considers trends in each food deprivation item between 2004 and 2010. These trends show the impact of the recession and the changes to people's standard of living over this period. The rate reporting each of these deprivation items is also explored for those who are at-risk-of-poverty and not at-risk-of-poverty as well as for the general population. The at-risk-of-poverty indicator is considered more appropriate than the consistent poverty measure as the latter one includes three of the food deprivation items. Also it would be expected that those who are at-risk-of-poverty have a higher level of deprivation than those who are not at-risk-of-poverty. The at-risk-of-poverty indicator refers to all of those whose household income is below 60% of median household income. This is referred to as being at-risk-of-poverty (AROP) or income poverty. The rate of food deprivation reported by those who are AROP does generally increase after the recession though the patterns are somewhat different compared to those who are not AROP. Differences in experience of each item year on year are not all significant but are shown on the figures below to convey trends over time. The confidence intervals are shown in Appendix 2.

The proportion of the population reporting being unable to afford a meal with meat decreased from four per cent in 2004 to two per cent in 2007. However this increased to three per cent in 2008, decreased back to two per cent in 2009 before reaching three per cent in 2010. This shows an immediate impact of the recession in 2008 where people may have rapidly altered their standard of living.

As Figure 2 shows, the proportion reporting being unable to afford a meal with meat decreased for those AROP until 2006 and slightly increased in 2007. Overall the proportion of those who are AROP reporting this has decreased from ten per cent to six per cent between 2004 and 2010. The trend for those AROP from 2007 is the converse of those not AROP.

For those who are not AROP, the rate reporting this has been consistently low and similar to that of the general population; this did increase slightly in 2008 and 2010.

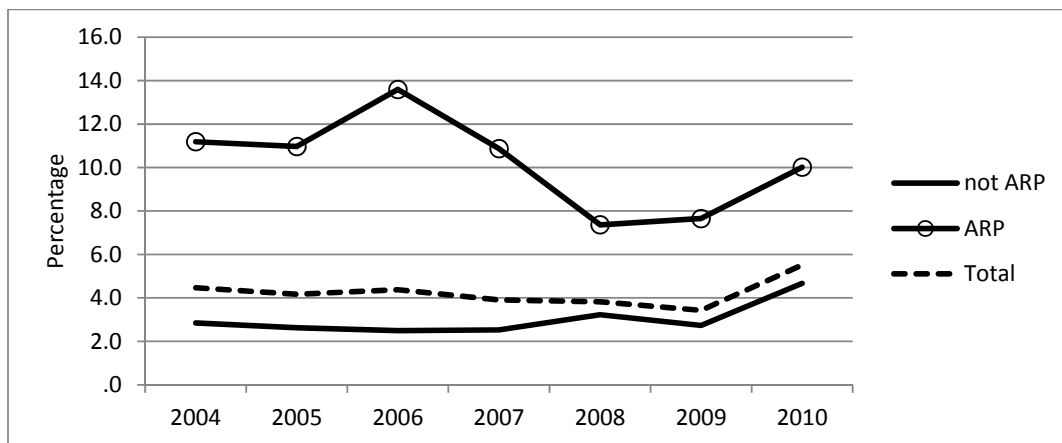
Figure 2: Unable to afford a meal with meat, 2004 to 2010



Source: CSO SILC, 2004-2010, analysis by authors

Figure 3 below shows the overall rate of the population being unable to afford a weekly roast between 2004 and 2010 as well as by at-risk-of-poverty status. For the general population, the rate reporting this decreased between 2004 and 2009 from five to three per cent before increasing to six per cent in 2010. For those who are AROP, those unable to afford a weekly roast had decreased from 11 per cent in 2004 to seven per cent in 2008. There was a slight increase in 2009 and 10 per cent of those AROP are unable to afford a weekly roast in 2010. For the population who were not AROP, the trend was similar to the general population. The rate for those not AROP unable to afford a weekly roast varied between three per cent in 2004 and five per cent in 2010.

Figure 3: Unable to afford a roast, 2004 to 2010



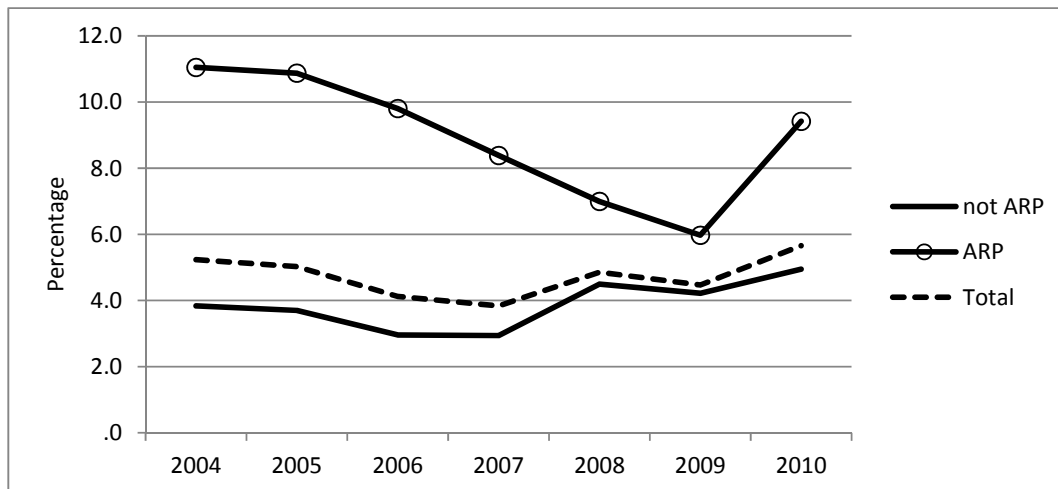
Source: CSO SILC, 2004-2010, analysis by authors

The results in Figure 4 below show the proportion of the population, over the period 2004 to 2010, when the respondent experienced a day (i.e. from getting up to going to bed) within the previous fortnight, when s/he did not have a substantial meal due to lack of money. This decreased from five per cent to four per cent between 2004 and 2007. This began to increase in 2008, reaching five per cent, although there was a slight dip in 2009, it increased again in 2010 reaching six per cent.

The proportion of those AROP who did not have a substantial meal, on one day within the last fortnight, due to a lack of money, had been consistently decreasing until 2009, from 11 per cent to six per cent. However this increased sharply in 2010 to nine per cent.

For those not AROP the percentage decreased until 2007 it then started to increase from 2008 onward, and this was more similar to the trend for the general population. The differing times of the increase in reporting this item and the differing rates of increase for the AROP and not AROP populations after 2008 shows how the impact of the recession seemed to affect these groups at slightly different times and with differing severity.

Figure 4: Unable to have a substantial meal on one day within last fortnight, due to a lack of money, 2004 to 2010

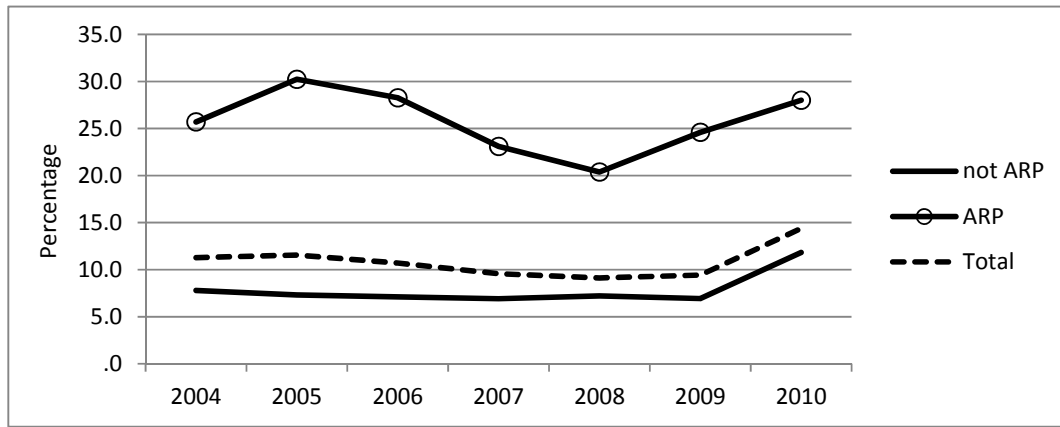


Source: CSO SILC, 2004-2010, analysis by authors

In Figure 5, we see that the proportion of the general population that reported being unable to have friends or family for a meal or drink was fairly consistent from 2004 to 2009. It decreased slightly from 11 per cent to nine per cent over this period. In 2010, this rose to 14 per cent. The proportion of the AROP population reporting this item rose in 2005 to 30 per cent from 26 per cent in 2004, and then decreased until 2008. There were 20 per cent of those AROP reporting such deprivation in 2008 and this increased to 28 per cent in 2010.

The proportion of the population who were not AROP reporting this deprivation had remained relatively consistent with a slight decrease from eight per cent to seven per cent between 2004 and 2009. Deprivation of this item increased to 12 per cent in 2010.

Figure 5: Unable to have family or friends for a meal or drink, 2004 to 2010



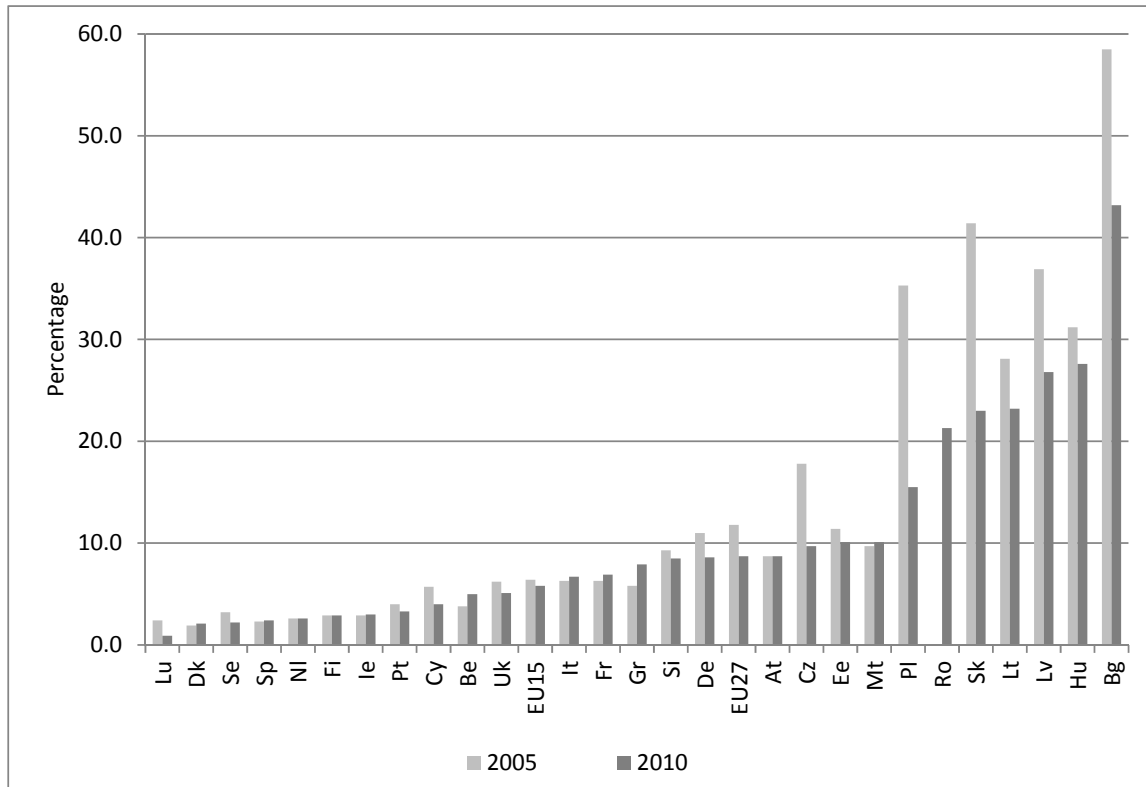
Source: CSO SILC, 2004-2010, analysis by authors

3.3 EU comparison of food deprivation item inability to afford meal with meat or vegetarian equivalent every second day

The food deprivation item 'inability to afford meal with meat or vegetarian equivalent every second day' is collected in all EU countries for EU-SILC and is therefore the only item available for EU comparison. However as it is only possible to compare responses on one item only, this does not represent food poverty across the EU and the conclusions that can be drawn from this are limited. It does however allow a partial insight into food deprivation across the EU and how Ireland compares in this respect to the rest of the EU.

Figure 6 shows the rate unable to afford a meal with meat or vegetarian equivalent, across the EU countries in 2005 and 2010. The rate for Ireland has stayed stable at 3 per cent. Ireland is at the lower end of the distribution of EU countries. Overall, the proportions of individuals experiencing such deprivation decreased in many EU countries in this five year period and on average for the EU 15 and the EU 27 countries.

Figure 6: Inability to afford meal with meat by EU countries, EU 15 and EU 27, in 2005 and 2010



Source: Eurostat, 2005 and 2010

Chapter 4: Construction of a Food Deprivation Index

4.1 Trends in four and three item index 2004 to 2010

This chapter examines different compositions and thresholds to construct a food poverty index. The chapter discusses the rationale for selecting a food poverty index to use for this research. The first index is based on deprivation of all four food deprivation items using a threshold of two items and the alternative index is based on three items (excluding the family and friends for a meal or drink item) and using a threshold of one item.

4.2 Two out of four food deprivation items 2004 to 2010

In exploring the use of all four food deprivation items in the index, the experience of lacking two or more items, as opposed to one out of four items, is used to ensure that the index is robust. The larger proportion of the population reporting the item being unable to have family or friends for food or drinks was a factor in this, as it would dominate the scale if one of four items were used. The trends reporting two out of four items as well as one or more of these between 2004 and 2010 are shown on Table 1. The changes illustrated in Table 1 are not in all cases significant but are shown to convey trends over time.

Table 1: Proportion of population reporting zero to four of food deprivation items and two or more deprivation items, 2004 to 2010

	2004	2005	2006	2007	2008	2009	2010
0	84	85	85	87	86	86	80
1	10	10	11	9	10	10	14
2	3	3	2	2	2	3	4
3	2	1	1	1	1	1	1
4	1	1	1	1	1	0	1
Total	100	100	100	100	100	100	100
1+	16	15	15	13	14	14	20
2+	6	5	4	4	4	4	6

Source: CSO SILC, 2004-2010, analysis by authors; results have been rounded to add up to 100%.

The percentage of the population reporting at least two items out of four decreased from 5 per cent in 2004 to 4 per cent in 2006 and remained constant until 2009. The most substantial change took place between 2009 and 2010 when the proportion increased from 4 per cent to 6 per cent.

This index (two of four) was not used due to various concerns over the appropriateness of the family and friends item as a measure of food deprivation in regards to the concept of food deprivation used by this research. The reasons for not using this index are explained fully in Section 4.4.

4.3 One of three food deprivation items 2004 to 2010

A composite indicator of food poverty using three food deprivation items was created. This measure excluded the unable to have family and friends for a meal or drink item. The rate reporting one to three of these items, as well as one or more is shown on Table 2 below. The changes illustrated in Table 2 are not in all cases significant but are shown to convey trends over time. The proportion reporting two or more is also shown for comparison. The trends reporting deprivation of one or more of the three food deprivation items again reflects the trends of those reporting deprivation of each individual food deprivation item.

Table 2: Proportion of population reporting zero to three of deprivation items excluding

	2004	2005	2006	2007	2008	2009	2010
0	91	92	92	93	92	93	90
1	6	5	6	5	5	5	7
2	2	2	1	1	2	2	3
3	1	1	1	1	1	0	0
Total	100	100	100	100	100	100	100
1+	9	8	8	7	8	7	10
2+	3	3	2	2	3	2	3

Source: CSO SILC, 2004-2010, analysis by authors; results have been rounded to add up to 100%.

Between 2004 and 2007, the rate reporting deprivation on one or more of three food items decreased from 9 per cent to 7 per cent but increased in 2008 to 8 per cent. After a slight decrease to 7 per cent in 2009, the largest rate of increase occurred between 2009 and 2010 where the population reporting food poverty was 10 per cent.

The proportion reporting two or more of the food deprivation items has remained quite low varying between 2 per cent and 3 per cent over the period 2004 to 2010. The fluctuations in the proportion of the population reporting this are consistent with the trends in each deprivation item and in the one out of three index. This was not considered to be a suitable food poverty indicator due to being overly stringent in the population it identified.

4.4 Rationale for a composite measure of food poverty

This section discusses the rationale behind the development of a composite indicator of food poverty. It considers the social class and income profile of those reporting each deprivation item, how each item is associated with other indicators of material deprivation, how dominant each item is in the two out of four and one out of three measures. The strength of a scale constructed using the food deprivation items and the overlap between the items are also examined.

Table 3 shows the rates reporting food deprivation on each item by household income position and by the social class of the HRP in 2010. This was taken into consideration in the selection of appropriate food deprivation items to use in a food poverty measure. For each measure of food deprivation, the lowest two income quintiles reported a higher rate of food deprivation on each item in comparison to the two highest income quintiles. For the unable to have family and friends for a meal or drink item, there is a comparatively higher rate of 6 per cent in the top two income quintiles reporting this form of deprivation.

Table 3: Proportions reporting food deprivation items from selected income and socio-economic groups, 2010

	Unable to afford a meal with meat	Did not have a substantial meal one day in last 14 due to lack of money	Unable to afford a roast	Unable to have family or friends for a meal or drink
Household income position				
Lowest two quintiles	5%	7%	9%	23%
Highest two quintiles	1%	4%	3%	6%
Social class HRP				
Higher /lower prof	1%	4%	1%	7%
Farmer	1%	2%	1%	5%
Lower service / routine	5%	8%	8%	22%

Source: CSO SILC, 2010, analysis by authors

In regards to social class, there was a stark differentiation in the rate of higher and lower professionals reporting the family and friends food deprivation item in comparison to the other deprivation items. There were also a comparatively larger proportion of farmers reporting this item.

The income and social class profile of those reporting the family and friends item differed to the profile of those reporting the other food deprivation items. This suggested that the populations reporting the family and friends item and the other food deprivation items were distinct and were experiencing a different form of deprivation.

Each of the food deprivation items were tested individually as a dependent variable in a series of binary logistic regressions with AROP; economic strain, HRP health status⁵ and some socio-demographic control variables such as, gender and age. These independent variables were used due to their strong relationship with material deprivation⁶. The results of these binary logistic regressions showed that each deprivation item was significantly related to each of the independent variables (except for gender for the meal with meat item, and the missed a substantial meal item). The odds of experiencing each item were highest for those in economic strain and those with bad health. This verified the effectiveness of these items as material deprivation indicators, although the model created with the missed a substantial meal item was the weakest. However, it was not possible to use this methodology to test the effectiveness of these indicators as measures of food deprivation as this is a concept that cannot be fully explored in this way.

⁵ This is a composite indicator created from the three health indicators used in the SILC i.e. whether HRP had limited activities due to a health problem, whether HRP had a chronic illness and the HRP's self-reported health status. A combination of having any two of the above three health indicators was measured as having 'bad health'.

⁶ Guio et al (2012) use similar methodology to test the effectiveness of the material deprivation indicators used in the EU-SILC.

In comparing the two out of four item index and the one out of three item index, the proportion of the population identified by each item who would not be identified by the index if that item were removed was considered. As can be seen on Table 4 below, 43 per cent of those on the two out of four item index would not be measured as being in food poverty if the family and friends item were removed. This suggested that this item was dominating that scale and given that this item was not specific to food deprivation, this was not considered an appropriate means of measuring food poverty.

Table 4: Percentage of population who would not be considered food deprived at given threshold without each item (average 2004 to 2010)

	Per cent who would not be deprived without this item on 4 item scale (2+)	Per cent who would not be deprived without this item on 3 item scale (1+)
Unable to afford a meal with meat	19.4	7.9
Unable to afford a roast	34.1	24.3
Did not have a substantial meal one day in last 14 due to lack of money	19.7	36.2
Unable to have family or friends for a meal or drink	43.4	

Source: CSO SILC, 2004 -2010, analysis by authors

A scale was created using the deprivation items for each year from 2004 to 2010. The reliability of these scales was tested with Cronbach's Alpha; in each case the Cronbach's Alpha was low (below .7). However, the impact of the family and friends for a meal or drink item was generally the least consequential upon the strength of the scale. In the years, 2006 and 2009, the scale was stronger with the removal of this item.

Although, the scale was also stronger in 2007 with the removal of the respondent not having a substantial meal on one day in last fortnight, due to lack of money, this was only by .002 and on average this item had a greater impact on the scale than the family and friends item.

Table 5 shows the Cronbach's Alpha for a scale using all four items and the Cronbach's Alpha if that item is removed for 2004 to 2010.

Table 5: Cronbach's Alpha for scale using all food deprivation items from 2004 to 2010

Cronbach's Alpha if item deleted	2004	2005	2006	2007	2008	2009	2010
Inability to afford a meal with meat or vegetarian equivalent every second day	0.539	0.591	0.485	0.559	0.527	0.474	0.518
Inability to afford a roast or vegetarian equivalent once a week	0.528	0.57	0.425	0.519	0.5	0.426	0.458
Inability to have family or friends for a meal or drink once a month	0.648	0.653	0.602	0.622	0.614	0.613	0.581
Did not have a substantial meal one day in last 14 due to lack of money	0.643	0.619	0.559	0.658	0.585	0.545	0.562
Reliability (alpha)	0.655	0.671	0.585	0.656	0.623	0.58	0.598

Source: CSO SILC, 2004 -2010, analysis by authors

Another way in which the deprivation items were considered was the percentage of those reporting deprivation on one of the items and who were deprived on that item only. For the family and friends item, this was 66 per cent in 2010. In comparison, this was 13 per cent for the meal with meat item, 25 per cent for the weekly roast item and 42 per cent for the missed a substantial meal item. Additionally, we explored the overlap for each of the three food deprivation items with the unable to have family or friends for a meal or drink item for the year 2010. We found that at the lower end 40 per cent of those who missed a substantial meal scored also on the family or friends for a meal or drink while it was at the highest for the roast item at 66 per cent. On the contrary as shown earlier on, the vast majority of those scoring on the unable to have family or friends for a meal or drink item did not score on any other items. At the lowest, 11 per cent of the latter group scored on the meal with meat item while it reached only 25 per cent on the roast item. Clearly this shows the singularity and the distinctiveness of the unable to have family or friends for a meal or drink item in the experience of food poverty.

The composition of the index of three food deprivation items was considered a more reliable and realistic measure of food poverty for the reasons discussed above. This was also considered more appropriate than using each deprivation item individually.

It allowed the inclusion of different aspects of food poverty. It facilitated the identification of a population experiencing a shared form of deprivation but who may experience differing aspects of this form of deprivation. The measure of deprivation in Ireland is based on a composite measure of 11 deprivation items. As people may have to restrict spending in one area but may not in another, the use of a composite indicator is more reliable as vulnerability in different areas is captured. Using the items individually does not capture the whole population who are deprived. This was taken into account when forming the food poverty index; people may have to restrict spending on food in one respect but may not in other. This index aimed to include all of those experiencing each aspect of food deprivation measured in the SILC.

Finally, similar methodologies and indicators have been used in other foreign surveys. In France, several specific food and nutritional surveys (l'enquête Individuelle et Nationale sur les Consommations Alimentaires : INCA2 2006-2007, l'Etude Nationale Nutrition Santé : ENNS 2006, le Baromètre Santé Nutrition: BSN 2008) have also used subjective individual items to construct an indicator of food precarity. The indicator of food precarity was based on the answer to three questions relating to the difficulty respondents had in eating sufficiently and the food people wish to consume. Any positive answers on these three questions would be considered as an indicator of being in food precarity.

Based on the results of the INCA2 survey in France in 2006-2007, 12 per cent of the population has been found to be in food precarity for financial reasons (Darmon et al, 2010).

4.5 Consideration of combined income and food deprivation measure

The use of the food deprivation items in conjunction with an income measure was also considered as a possible means of measuring food poverty. However, this was not used due to the measure being overly stringent and overly similar with the consistent poverty measure used in Ireland. There were 3 per cent of the population who were food poor and income poor, of whom 85 per cent were also in consistent poverty.

4.6 Conclusion

The one out of three item food poverty index was chosen to measure food poverty for the purposes of this paper. The reason this index was chosen as opposed to the two out of four food item index was due to the incompatibility of the unable to afford family and friends for a meal or drink item with the other food deprivation items in the food poverty indicator.

This paper does not suggest that this item is not a valid indicator of deprivation per se but is concerned with its ability to identify food deprivation specifically. This item captures deprivation of social participation, in particular social participation relating to food and drink. However the other deprivation items being used by this research capture deprivation that is specific to not affording adequate food. The indicator using the two out of four items could be used as a measure of food poverty including a social participatory aspect. However, this research was most interested in the population experiencing food deprivation. Moreover the inclusion of the reference to drink in this item meant it was not solely related to food.

The authors recognise that the exclusion of this particular item prevented measurement of the social participatory aspect of food poverty. Social participation can be regarded as an important aspect of food poverty as well as a means of cultural participation, and within families for children to learn social skills (Davis et al, 2012). However the main aim of this research was to develop a quantitative measure of food poverty, and the family and friends for a food or drink item, through the inclusion of the reference to drink, was considered to pertain more to social participation than food deprivation.

Chapter 5: Profile of the population in food poverty

This chapter explores the demographic and socio-economic profile of the 10 per cent of the population experiencing food poverty in 2010. It then compares the rates of food poverty and other measures of poverty. The chapter concludes with an analysis of trends in food poverty by socio-economic characteristics.

5.1 Demographic and socio-economic profile of the population experiencing food poverty⁷

Bivariate analysis and inferential tests were used to establish significant relationships between food poverty and various demographic and socio-economic characteristics. The demographic characteristics explored were gender; marital status; age; location; education; household composition; number of children in the household aged under 18; and tenure. The socio-economic characteristics explored were being at-risk-of-poverty; in consistent poverty; income quintile; socio-economic status; principal economic status; economic strain (difficulty making ends meet); and experience of two or more deprivation items on the basic deprivation measure (excluding those used in the food poverty index and the family or friends item).

The food poverty rate in 2010 based on the demographic characteristics of the HRP, are shown in Table 6 over. This shows that there were higher rates of food poverty where the HRP was female; single, divorced or separated; aged under 40; living in an urban location; educated to intermediate level or lower; had two or more children aged under 18 and was renting accommodation.

⁷ See Appendix 3 for the composition of the population in 2010 in food poverty.

Table 6: Risk of food poverty by demographic and socio-economic characteristics 2010

Demographic characteristics		
HRP Marital status		
	Single	19%
	Married	8%
	Widowed	7%
	Divorced	17%
	Other separated	13%
HRP Sex		
	Male	9%
	Female	12%
HH Composition		
	1 adult 18	12%
	2 adult 18	6%
	3+ adults 18	5%
	2 adults, 1 child	8%
	2 adults, 2 child	8%
	2 adults, 3 child	19%
	2 adults, 4+ children	12%
	1 adult & children	23%
	3+ adults & children	14%
Location		
	Urban	11%
	Rural	9%
HRP Education		
	None or primary	14%
	Intermediate Level	13%
	Leaving Cert Level	9%
	Low Tertiary Level	9%
	High Tertiary Level	5%
Number of children under 18 in HH		
	0	7%
	1	9%
	2	13%
	3 +	18%
Age of HRP		
	18 to 30	16%
	31 to 40	13%
	41 to 50	11%
	51 to 60	10%
	61+	5%

Source: CSO SILC, 2010, analysis by authors

The food poverty rate in 2010 based on the socio-economic characteristics of the HRP, are shown in Table 7.

Table 7: Risk of food poverty by socio-economic characteristics, 2010

Socio economic indicators		
At-risk-of-poverty		
	Yes	18%
	No	9%
Deprived on 2 of 8 dep indicators		
	Yes	36%
	No	3%
Consistent poverty		
	Yes	38%
	No	8%
Income quintiles		
	Lowest quintile	18%
	2 nd quintile	11%
	3 rd quintile	9%
	4 th quintile	11%
	Highest quintile	3%
HRP Social class		
	Higher prof	3%
	Lower prof	6%
	Intermediate / supervisor	10%
	Self employed	10%
	Farmer	4%
	Lower service or technical	14%
	Routine	14%
	Never worked	23%
HRP Principal economic status		
	At work	6%
	Unemployed	23%
	Student	15%
	On home duties	15%
	Retired	4%
	Ill/disabled	21%
	Other	17%
Ease or difficulty making ends meet		
	Very difficult or difficult	24%
	Somewhat diff to very easy	3%
Tenure		
	Owner occupied	6%
	Rented at market rate	15%
	Rented less market/rent free	26%

Source: CSO SILC, 2010, analysis by authors

Higher rates of food poverty were reported where the HRP was at-risk-of-poverty; in consistent poverty; in the lowest income quintile; was in lower service or technical employment, routine employment or never worked social class; was unemployed, a student, on home duties, or ill or disabled; found it very difficult or difficult to make ends meet and who experienced basic deprivation (excluding the food deprivation items and the family and friends item).

5.2 Comparison between rates of food poverty, at-risk-of-poverty, consistent poverty and basic deprivation

This section compares the rates of food poverty with the rates of at-risk-of-poverty, consistent poverty and deprivation in relation to the variables: economic strain, location, social class as well as self-reported health status i.e. whether activities are limited due to a health problem and whether the respondent has a chronic illness, for 2010.

5.2.1 Economic strain

The rate of food poverty reported by those who found it very difficult or difficult to make ends meet was 24 per cent (Table 8). This was slightly higher than the rate of at-risk-of-poverty, and much higher than the consistent poverty rate, among those experiencing economic strain. The rate of deprivation for those who found it very difficult or difficult to make ends meet was 52 per cent. For each poverty indicator, experience of that type of poverty decreased as difficulty making ends meet decreased.

Table 8: Risk of food poverty, AROP, consistent poverty and deprivation by ability to make ends meet, 2010

To make ends meet	Difficult & very difficult	Somewhat to very easy	Total
Food poverty	24%	3%	10%
AROP	23%	12%	16%
Consistent poverty	15%	2%	6%
Deprivation	52%	8%	23%

Source: CSO SILC, 2010, analysis by authors

5.2.2 Location

The urban population had a slightly higher rate of food poverty than the general population and the rural population. Differences in the experience of food poverty, AROP and deprivation differ only slightly on the basis of location. However while the at-risk-of-poverty rate is lower in the urban population, deprivation and food poverty rates are slightly higher than in the rural population. This is shown on Table 9.

Table 9: Risk of food poverty, AROP, consistent poverty and deprivation by location, 2010

	Urban	Rural	Total
Food poverty	11%	9%	10%
AROP	13%	20%	16%
Consistent poverty	6%	6%	6%
Deprivation	23%	22%	23%

Source: CSO SILC, 2010, analysis by authors

5.2.3 Social class

The rates of food poverty reported by different social groups differed in comparison to the rate of AROP. This is apparent among the self-employed and farmers who reported substantially lower rates of food poverty in comparison to the rate of AROP. The social class differences in experience of food poverty were more similar to the social class differences in consistent poverty and deprivation. However, this differed for those who never worked. This group had a substantially higher rate of food poverty and deprivation while their rate of consistent poverty did not differ as much from the overall level. This is shown on Table 10.

Table 10: Risk of food poverty, AROP, consistent poverty and deprivation by social class, 2010

	Higher & lower prof	Intermediate /supervisory	Self employed	Farmer	Lower service/ technical & routine	Never worked	Total
Food poverty	4%	10%	10%	4%	14%	23%	10%
AROP	7%	9%	19%	33%	22%	23%	16%
Consistent poverty	1%	2%	6%	2%	12%	7%	6%
Deprivation	9%	18%	19%	7%	34%	43%	23%

Source: CSO SILC, 2010, analysis by authors

5.2.4 Health profile of the population in 2010 reporting food poverty

The health characteristics examined were self-reported health status, whether daily activities were limited due to a health problem and whether the respondent had a chronic illness. When conducting the regression analysis in Section 6, these health variables were combined into a single composite variable of 'HRP health'. Those who were counted by this variable reported having any two of the three indicators of health status.

The relationship between self-reported health status and food poverty also followed a similar pattern to the relationship between health status and consistent poverty and deprivation. As Table 11 below shows, those with fair, bad and very bad health had a higher risk of food poverty than of AROP or consistent poverty. With the exclusion of those AROP, for each poverty indicator, the type of poverty measured increased as quality of health decreased, however this was more pronounced for food poverty and deprivation than the other measures.

Table 11: Risk of food poverty, AROP, consistent poverty and deprivation by self-reported health status, 2010

	Very good & good	Fair, bad & very bad	Total
Food poverty	8%	20%	10%
AROP	16%	16%	16%
Consistent poverty	6%	9%	6%
Deprivation	19%	40%	23%

Source: CSO SILC, 2010, analysis by authors

The rate of food poverty was higher for those reporting being very limited and limited in daily activities due to a health problem, than for those not limited in activities. Each of the poverty indicators produced similar trends, however this was slightly less pronounced for those AROP than for those in food poverty, deprivation and in consistent poverty. This is shown on Table 12.

Table 12: Risk of food poverty, AROP, consistent poverty and deprivation by limited activities due to a health problem, 2010

	Very limited & limited	Not limited	Total
Food poverty	16%	9%	10%
AROP	19%	15%	16%
Consistent poverty	10%	5%	6%
Deprivation	36%	20%	23%

Source: CSO SILC, 2010, analysis by authors

The difference in food poverty and deprivation rates for households experiencing a chronic illness was more pronounced than for those without. This is shown on Table 13 below. In 2010, 14 per cent of those with a chronic illness were in food poverty in comparison to 9 per cent who did not have a chronic illness. Compared to the other poverty measures, the AROP and consistent poverty rates varied only very slightly on the basis of whether respondents had a chronic illness.

Table 13: Risk of food poverty, AROP, consistent poverty and deprivation by chronic illness, 2010

	Chronic illness	No chronic illness	Total
Food poverty	14%	9%	10%
AROP	15%	17%	16%
Consistent poverty	6%	5%	6%
Deprivation	32%	19%	23%

Source: CSO SILC, 2010, analysis by authors

5.3 Food poverty by socio-economic characteristics

This section conveys trends over time, in 2004, 2007 and 2010, in the rates of food poverty reported by high and low income groups as well as different social classes; professionals, lower service, technical or routine workers and farmers. The rate of food poverty for all of these (excluding farmers whose risk of food poverty remained stable) decreased between 2004 and 2007 and increased between 2007 and 2010.

5.3.1 Food poverty rates by income level

The food poverty rates for the two lowest and two highest income quintiles, for the three years 2004, 2007 and 2010 are shown in Table 14 below. Income quintiles were merged in order to illustrate the contrasting rates of food poverty between the top two income quintiles and the bottom two income quintiles.

As Table 14 shows, the lowest and second income quintile had higher rates of food poverty in all three years reported. This was 15 per cent in 2004, 11 per cent in 2007 and 15 per cent in 2010. The rate of food poverty reported by the fourth and highest quintile was relatively high in 2010 in comparison to 2004 and 2007. However, when looking at the income quintiles individually, each year, the food poverty rate decreased as the income quintile increased. The fourth income quintile in 2010 was the only exception to this with a relatively higher food poverty rate. However in 2010, the deprivation rate increased in particular for those who were not income poor. The deprivation rate for those not at-risk-of-poverty, rose from 14 per cent to 19 per cent between 2009 and 2010 without changing significantly for those who were AROP (CSO, 2011).

Table 14: Risk of food poverty by selected income quintiles, 2004, 2007 and 2010

Food poverty	2004	2007	2010
Lowest and second quintile	15%	11%	15%
Fourth and highest quintile	5%	2%	7%

Source: CSO SILC, 2004, 2007 & 2010, analysis by authors

5.3.2 Patterns in food poverty by social class

Food poverty was least prevalent in households where the HRP was in the higher or lower professional class or farmers. Specific social class groups are shown in Table 15 overleaf to illustrate the differing rates of food poverty experienced by different social classes. The patterns are relatively consistent for each of the three years reported.

The rates of food poverty reported by higher and lower professionals and farmers were small in comparison to the level of food poverty reported by lower service or technical and routine workers. Higher and lower professionals generally do not have high at-risk-of-poverty or deprivation rates and farmers appear to be protected from food poverty despite having a higher rate of AROP than the general population.

Table 15: Risk of food poverty by selected social classes, 2004, 2007 and 2010

Food poverty	2004	2007	2010
Higher or lower professional	5%	4%	4%
Farmer	4%	4%	4%
Lower service / technical or routine	12%	8%	14%

Source: CSO SILC, 2004, 2007 & 2010, analysis by authors

5.4 Patterns in food poverty by health characteristics

The health indicators used in the SILC are self-reported health status, whether daily activities were limited due to a health problem and whether the respondent had a chronic illness. The rates of food poverty reported for each of these health characteristics for the years 2004, 2007 and 2010 are discussed below. Various studies have found links between poverty and health, nutrition and health, and food poverty and health as discussed in the literature review. This section aims to convey the consistently higher prevalence of food poverty amongst those with poorer health.

As can be seen from Table 16, the food poverty rates in 2004, 2007 and 2010 are higher for households where the HRP reported having very bad, bad or fair health, as compared to households where the HRP reported very good or good health. In 2010, 20 per cent of households where the HRP reported having very bad, bad or fair health also were in food poverty. In contrast to this 8 per cent of those with good, or very good health, reported food poverty. The trend for 2007 was similar however the rates of food poverty reported by all health categories were lower. In 2004, there was a high rate of food poverty reported by those with very bad, bad or fair health; 17 per cent.

Table 16: Risk of food poverty by self-reported health status 2004, 2007 and 2010

Food poverty	2004	2007	2010
Very good or good	7%	6%	8%
Fair, bad or very bad	17%	12%	20%

Source: CSO SILC, 2004, 2007 & 2010, analysis by authors

The response categories to self-reported health status were merged, as there were very small proportions of the population reporting very bad health and small proportions reporting bad health. In reporting self-reported health status, respondents tend to over-report good health. Kelleher et al (2003: 481) found that the Irish population reports better self-reported health than the European average despite having poorer health in some respects. However self-reported health status has been found to be significantly poorer for those experiencing socio-economic disadvantage compared to those who were socio-economically advantaged (Balanda and Wilde, 2003). In regards to food poverty, there is a clear differentiation between the rates of food poverty reported by those with good or poor health.

Table 17 shows that rates of food poverty in households where the HRP had very limited or limited activities, due to a health problem, were higher than where the HRP did not have limited activities. In 2010, 16 per cent of households where the HRP's activities were limited or very limited, due to health problems were in food poverty. In comparison, 9 per cent of those households where the HRP did not have their daily activities limited were in food poverty. In 2007, 12 per cent of those with very limited or limited activities were in food poverty, compared to 6 per cent of those without limited activities. The food poverty rates in 2004 were similar to those in 2010 with 15 per cent of those households where the HRP had very limited or limited activities were in food poverty.

Table 17: Risk of food poverty by limited activities due to a health problem, 2004, 2007 and 2010

Food poverty	2004	2007	2010
Very limited or limited	15%	12%	16%
Not limited	8%	6%	9%

Source: CSO SILC, 2004, 2007 & 2010, analysis by authors

The rate of food poverty reported by households where the HRP had a chronic illness was higher than for those without a chronic illness. Of those who had a chronic illness, 14 per cent, 10 per cent and 14 per cent were in food poverty in 2004, 2007 and 2010 respectively. This is shown in Table 18 below.

Table 18: Risk of food poverty by chronic illness, 2004, 2007 and 2010

Food poverty	2004	2007	2010
Has a chronic illness	14%	10%	14%
No chronic illness	7%	6%	9%

Source: CSO SILC, 2004, 2007 & 2010, analysis by authors

5.5 Conclusion

The characteristics of those experiencing food poverty were similar to those who were at-risk-of-poverty, in consistent poverty and in deprivation. In 2010, at the population level, the at-risk-of-poverty rate was 16 per cent, the rate of deprivation was 23 per cent and the consistent poverty rate was 6 per cent. Consistent poverty is measured using a combination of those who are at-risk-of-poverty (income is below 60% of median income) and those who experience deprivation on 2 or more of the 11 item deprivation index. There were similarities and distinctions between those in food poverty with those at-risk-of-poverty, in consistent poverty and in deprivation. Food poverty had most in common with deprivation due to the common items used in both indices. Also both the measures of food poverty and deprivation capture the inability to afford basic items as opposed to a measure of low income or the combination of these as in the consistent poverty measure.

Chapter 6: Predictors of food poverty

The aim of this chapter is to identify characteristics that contribute to the likelihood of experiencing food poverty. A binary logistic regression is used as this is a method appropriate for analysis of dichotomous nominal variables. Initially all the characteristics found through bivariate analysis to have a significant relationship with food poverty are tested. The number of children aged under 18 years in the household is not included due it being closely related to the household composition variable. The health indicators used are a composite variable of 'HRP' health as described in Footnote 5.

6.1 Main findings

The final significant model contained the following characteristics of the HRP: HRP principal economic status, household composition, HRP age, HRP social class, HRP education, HRP marital status, HRP health, income quintile and tenure [$\chi^2(18)=1113.261$ $p < .001$]. HRP gender was not significant in the regression. The Cox and Snell pseudo R-squared statistic was .095 and the Nagelkerke pseudo R-squared was 0.198, indicating a moderate effect for the final model. Table 19 overleaf shows the logistic regression coefficient (B), significance levels, odds ratios and confidence intervals (CI) for significant variables included in the final model.

Household composition was the strongest predictor in the regression. The odds of being in food poverty for households with three adults and children were just under three times higher than two adult households without children. The odds of food poverty were almost three times higher for people in households with two adults and three or more children compared to two adult households without children. For households with one adult and children, the odds were two times higher of being in food poverty. The odds were approximately one and a half times higher for households with two adults and one to two children.

The HRP's principal economic status (PES) was also a significant predictor of food poverty. The odds of being in food poverty were slightly more than two times higher for people in households where the HRP was unemployed and were almost two times higher for people living in households where the HRP was ill or disabled. Living in a household where the HRP engaged in home duties increased the odds of food poverty by approximately one and half times.

Table 19: Significant predictors of food poverty, 2010

Predictor		B	Significance	Odds Ratio	95% CI	
HRP PES (ref) category: at work					Lower	Upper
	Ill or disabled	0.6	p<.001	1.7	1.4	2.3
	Unemployed	0.8	p<.001	2.2	1.8	2.7
	Home duties	0.3	p=.002	1.4	1.1	1.7
	Other	0.4	p=.019	1.5	1.1	2.1
Household Composition (ref category: two adults households without children)						
	2 adults and 3 + children	1.0	p<.001	2.8	2.2	3.6
	Three Adults and children	1.1	p<.001	2.9	2.4	3.7
	One adult and children	0.7	p<.001	2.0	1.6	2.6
	Two adults and one to two children	0.5	p<.001	1.6	1.3	1.9
HRP Age (ref category: 65 years and over)						
	40 years and less	0.9	p<.001	2.4	1.7	3.4
	41 to 64 years	0.7	p<.001	2.0	1.5	2.7
HRP Social class (Ref category: higher and lower professionals)						
	Intermediate to never worked	0.5	p<.001	1.6	1.3	2.0
HRP Education (ref category: leaving certificate and above)						
	Inter level or below	0.5	p<.001	1.6	1.4	1.8
HRP Marital status (ref category: married)						
	Single	0.3	P=.005	1.4	1.1	1.8
	Divorced, separated or widowed	0.2	P=.021	1.3	1.1	1.7
HRP Health (ref category: good health)						
	Bad health	0.6	p<.001	1.8	1.5	2.1
Income quintile (ref category: all other income quintiles)						
	Lowest quintile	0.7	p<.001	2.0	1.7	2.4
Tenure (ref category: all other types of tenure)						
	Rented at market rate	0.4	p=.001	1.5	1.2	1.8
	Rented below market rate	0.7	p<.001	2.1	1.8	2.4

Source: CSO SILC, 2010, analysis by authors

Age was also found to be a significant predictor of food poverty in households where the HRP was aged under 65. Where the HRP was aged less than 40, the odds of food poverty were approximately two and a half times higher than households where the HRP was aged over 65. The odds of food poverty were two times higher for those in households where the HRP was aged between 41 and 64 in comparison to households where the HRP was aged over 65.

The social class of the HRP was a significant predictor of food poverty. The odds of food poverty were approximately one and half times higher for people living in households where the HRP was not a higher or lower professional in comparison to other households where the HRP was a higher or lower professional.

Marital status was also a significant predictor of food poverty. Households where the HRP was single had odds almost one and a half times higher of being in food poverty. All of those who were not married; single, divorced, separated or widowed had slightly higher odds of being in food poverty than those who were married.

Education was a significant predictor of respondent's likelihood of being in food poverty. The odds of being in food poverty were one and a half times higher for people living in households where the HRP was educated to intermediate level or lower.

Income quintile was a significant predictor of food poverty. The odds of food poverty were two times higher for households in the lowest income quintile in comparison to all other income quintiles.

'HRP health' was a significant predictor of food poverty. Where the HRP had bad health, the odds of food poverty were almost two times higher than where the HRP had good health.

Tenure was also a significant predictor of food poverty. The odds were two times higher for people living in properties rented below the market rate as compared to the odds for those who owned their property or rented it at market rate. For those renting at the market rate - as opposed to owner occupied - the odds of being in food poverty were one and a half times higher.

Chapter 7: Conclusion

This research explored trends in food deprivation as reported in the SILC between 2004 and 2010. This research explored the possibilities of measuring food poverty using an index based on either two out of four food deprivation items or alternatively, one out of three food deprivation items (excluding the family or friends for meal or drink item) used in the SILC. The one out of three item food poverty index was chosen to measure food poverty for the purposes of this paper. This measure found that 10 per cent of the Irish population was in food poverty. Food deprivation and food poverty, as measured by the food poverty index, decreased between 2004 and 2007 and increased in 2008 and in 2010. This research also considered the similarities and differences between those in food poverty and AROP, in consistent poverty and in deprivation in 2010, as well as trends over time for food poverty.

This research identified predictive factors of food poverty. Living in a household with three adults and children was the strongest predictor of food poverty. Other predictive characteristics included the HRP being unemployed, ill or disabled or engaged in home duties; living in a household with two adults and three or more children, one adult and children or two adults and one to two children; where the HRP was single or unmarried; where the HRP was aged under 40; where the HRP was a member of the lower social class; where the HRP's level of education was at or below intermediate level; where the household was in the lowest income quintile and where the household was a tenant occupier.

The findings from this research were limited due to the exclusion of vulnerable groups from the SILC sample for example the homeless, asylum seekers, travellers and people in institutions. These groups may be more vulnerable to food poverty. Also the absence of a measure of access to food, and of the quality or nutritional value of affordable food, limited the food poverty indicator used by this research.

The main aim of this research was to explore the possibility of developing a food poverty indicator from the SILC. The indicators used by the SILC are not specifically designed for the measurement of food poverty and thus this limited the possibilities of the indicators developed in this study. However the food poverty index used in this research succeeded in measuring the inability to afford basic foods and identified a distinct population who experience this form of deprivation. The 10 per cent of the population who experienced food poverty in 2010 also experienced multiple forms of disadvantage as is evident by their socio-economic characteristics. Further research in this area is required to examine and measure all aspects of food poverty and to explore the implications of it.

Acceptance of a standardised measure of food poverty is also necessary in order to monitor food poverty trends over time and to understand the causes and implications of it. The area of food poverty would benefit from further research using the SILC, and in qualitative research, in order to explore the experience of food poverty. As this research was primarily focused on developing a food poverty indicator, there is scope for further exploration of the population reporting food poverty, of the relationship between food poverty and health, and how food poverty has affected different groups and has changed over time. Acceptance of a food poverty indicator would also allow the effectiveness of policies to reduce food poverty to be measured.

It is worth also considering what policies would be most appropriate to reduce the prevalence of food poverty. Given the overlap between experience of food poverty with deprivation and with consistent poverty, existent policies to reduce these such as those used to meet Ireland's poverty reduction targets as part of the *EU 2020 Strategy* could impact upon food poverty. However, food poverty is also a particular form of poverty with different risk factors and the reduction of food poverty may be more effective with the use of policies focused exclusively on this.

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Appendix 1: Glossary

At-risk-of-poverty thresholds: income thresholds derived as proportions of median income. These are based on the household income adjusted for household size and composition (referred to as equivalised income). A household at risk of poverty has an adjusted (or equivalised) income below 60 per cent of the median adjusted household income. The at-risk-of-poverty rate takes account of household income from all sources, number of adults and number of children in the household. There are some minor differences in the income concept and the equivalence scale between the Irish and EU measures of at-risk-of-poverty.

At-risk-of-poverty: a term used at EU level to denote whether a household's income falls below the 60 per cent of median income threshold.

At-risk-of-poverty only: it shows the percentage of the population at-risk-of-income-poverty only. They do not experience deprivation; just the one dimension of poverty (income).

At risk of poverty or exclusion: this EU measure combines the number of people who experience at-risk-of-poverty or severe material deprivation or low work intensity. This measure is the basis for the Europe 2020 poverty target. In cases where people experience more than one of these indicators, they are counted only once. The Irish version of this measure is the combination of at-risk-of-poverty and basic deprivation.

Basic deprivation: people who are denied - through lack of income – at least **2 items or activities on this index / list of 11** are regarded as experiencing relative deprivation. This is *enforced deprivation* as distinct from the personal choice not to have the items. 11 basic items are used to construct the deprivation index:

- unable to afford two pairs of strong shoes
- unable to afford a warm waterproof overcoat
- unable to afford new (not second-hand) clothes
- Unable to afford a meal with meat, chicken or fish (vegetarian equivalent) every second day
- unable to afford a roast joint or its equivalent once a week
- without heating at some stage in the last year through lack of money
- unable to afford to keep the home adequately warm
- unable to afford to buy presents for family or friends at least once a year
- unable to afford to replace any worn out furniture
- unable to afford to have family or friends for a drink or meal once a month
- unable to afford a morning, afternoon or evening out in the last fortnight for entertainment.

The indicator **of basic deprivation** was developed by the Economic and Social Research Institute using data from the Survey on Income and Living Conditions. See Maître B, Nolan B and Whelan C (2006) *Reconfiguring the measurement of deprivation and consistent poverty in Ireland*, Dublin: ESRI, for further information on the indicator.

Consistent poverty: this is a measure of poverty used in the *National Action Plan for Social Inclusion 2007-2016 (NAPinclusion)* that takes account of the household's living standards as well as the household size, composition and total income.

Now a household is consistently poor if the household income is below the at-risk-of-poverty threshold (see above) and the household members are deprived of **at least 2 out of the 11 items** on the basic deprivation list.

Confidence interval: whenever we use data from a probability sample to draw conclusions about the population, there is a degree of uncertainty around our estimates. This is often reported as a confidence interval. This is the range within which we can be 95% confident that the population figures lies. For instance, recent calculations of the persistent-at-risk-of-poverty rate show a rate of 9.5 per cent (Confidence Interval ± 1.7 per cent). This means that we can be 95% confident that the 'true' rate in the population lies between 7.8 per cent and 11.2 per cent (i.e. between 9.5-1.7 per cent and 9.5+ 1.7 per cent). In general, for a smaller sample size the confidence interval will be wider.

Correlation: A correlation between two variables refer to a statistical relationship of dependence between these two variables. This relationship of dependence can be measured by a correlation coefficient and there are many of them. The most widely known is the Pearson correlation coefficient which measures the strength of the linear relationship between two variables.

Deprivation: see definition for basic deprivation above for measure of deprivation used in the NAPinclusion.

EU-SILC: European Union Statistics on Income and Living Conditions; this is a voluntary household survey carried out annually in a number of EU member states allowing comparable statistics on income and living conditions to be compiled. In Ireland, the Central Statistics Office (CSO) have been conducting the survey since 2003. The results are reported in the Survey on Income and Living Conditions (SILC). Any data as compiled by Eurostat and any reference to the questions or questionnaire in the household survey is here referred to as 'EU-SILC'.

EU 15: Member States of the European Union prior to the accession of 10 new member states on 1 May 2004, i.e. Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, United Kingdom.

EU 25: Member States of the European Union after the accession of 10 new member states on 1 May 2004, i.e. EU 15 plus Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, Slovenia.

EU 27: Member States of the European Union since 1 January 2007, namely EU25 plus Bulgaria and Romania.

Household: a household is usually defined for statistical purposes as either a person living alone or a group of people (not necessarily related) living at the same address with common housekeeping arrangements – that is, sharing at least one meal a day or sharing a living room or sitting room.

Lone parent: A parent who has primary custody of a dependent child and is not living with the other parent.

Material deprivation (EU): this indicator is one of the European Commission's common indicators on social protection and social inclusion. It measures the proportion of the population lacking at least 3 out of the following 9 items:

- arrears on mortgage or rent payments, utility bills, hire purchase instalments or other loan payments
- capacity to afford paying for one week's annual holiday away from home
- capacity to afford a meal with meat, chicken, fish (or vegetarian equivalent) every second day
- capacity to face unexpected financial expenses [set amount corresponding to the monthly national at-risk-of-poverty threshold of the previous year]
- household cannot afford a telephone (including mobile phone)
- household cannot afford a colour TV
- household cannot afford a washing machine
- household cannot afford a car
- ability of the household to pay for keeping its home adequately warm.

Mean: the average value (for example, the average income in a sample obtained via household survey).

Median: the value that divides a sample in half (e.g. the income level above and below which half the people in a sample fall).

Poverty and Social Exclusion: these terms are defined broadly in the *National Action Plan for Social Inclusion 2007-2016 (NAPinclusion)* as follows: 'People are living in poverty if their income and resources (material, cultural and social) are so inadequate as to preclude them from having a standard of living which is regarded as acceptable by Irish society generally. As a result of inadequate income and resources people may be excluded and marginalised from participating in activities which are considered the norm for other people in society.' The two concepts are very similar when used in Irish policy-making but poverty is sometimes used in the narrower context to refer to low income (or wealth). On the other hand, social exclusion is almost always used in the broader sense, to refer to the inability to participate in society because of a lack of resources that are normally available to the general population.

Quintile: One-fifth of a sample divided into five equal parts to show how income, for example, is spread throughout the population; each quintile represents where a person's or household's income is located, ranging from the bottom quintile (lowest fifth or 20 per cent) to the top quintile (highest fifth or 20 per cent).

Risk-of-poverty: a term used at EU level to denote whether a household falls below the 60 per cent of median income threshold.

Severe material deprivation: this EU indicator measures the proportion of the population lacking at least four out of the nine items listed in the EU index of material deprivation (see definition above).

SILC: in Ireland, the Central Statistics Office (CSO) are responsible for carrying out the EU-SILC survey. They often produce data and analysis in accordance with Irish national poverty targets, indicators and related issues. These results are reported in the Survey on Income and Living Conditions (SILC). Any data or analysis that is sourced specifically from the CSO is here referred to as 'SILC'.

Urban/rural location: in EU-SILC each country is divided into eight levels based on population density. These areas are further grouped into urban and rural areas as follows:

Urban:

cities, suburbs of cities, mixed urban/rural areas bordering on the suburbs of cities, towns and surrounding areas with populations of 5,000 or over (large urban);
mixed urban/rural areas bordering larger towns; and
towns and surrounding areas with a population of 1,000 to 5,000 (other urban).

Rural:

mixed urban/rural areas, and rural areas.

Appendix 2: Confidence Intervals

The tables below show the percentage (and confidence intervals) for Figures 1 to 5.

Confidence intervals are 95%.

Confidence intervals for Figure 1

	2004	2010
Unable to afford meal with meat	3.7 (3.4-4.0)	3.0 (2.7-3.3)
Unable to afford a roast	4.5 (4.2-4.8)	5.5 (5.1-5.9)
Did not have a substantial meal one day in last 14 due to lack of money	5.2 (4.8-5.6)	5.7 (5.3-6.1)
Unable to have friends or family for a meal or drink	11.3 (10.8-11.8)	14.4 (13.8-15.0)

Confidence intervals for Figure 2

	2004	2005	2006	2007	2008	2009	2010
Unable to afford meal with meat							
not ARP	2.2 (2.0-2.2)	1.5 (1.3-1.7)	1.5 (1.3-1.7)	1.2 (1.0-1.4)	2.4 (2.1-2.7)	1.3 (1.1-1.5)	2.4 (2.1-2.7)
ARP	9.7 (9.2-10.2)	9.2 (8.9-9.7)	6.7 (6.3-7.1)	7.2 (6.8-7.6)	6.5 (6.1-6.9)	6.6 (6.2-7.0)	5.8 (5.4-6.2)
Total	3.7 (3.4-4.0)	2.9 (2.6-3.2)	2.4 (2.1-2.6)	2.2 (1.9-4.4)	3.0 (2.7-3.3)	2.1 (1.8-2.3)	3.0 (2.7-3.3)

Confidence intervals for Figure 3

	2004	2005	2006	2007	2008	2009	2010
Unable to afford a roast							
not ARP	2.8 (2.5-3.1)	2.6 (2.3-2.9)	2.5 (2.2-2.8)	2.5 (2.2-2.8)	3.2 (2.9-3.5)	2.7 (2.4-3.0)	4.7 (4.3-5.1)
ARP	11.2 (10.7-11.7)	11 (10.5-11.4)	13.6 (13.0-14.2)	10.9 (10.4-11.4)	7.4 (6.9-7.9)	7.7 (7.2-8.2)	10 (9.4-10.6)
Total	4.5 (4.2-4.8)	4.2 (3.9-4.5)	4.4 (4.1-7.7)	3.9 (3.6-4.2)	3.8 (3.5-4.1)	3.4 (3.1-3.7)	5.5 (5.1-5.9)

Confidence intervals for Figure 4

	2004	2005	2006	2007	2008	2009	2010
Did not have a substantial meal one day in last 14 due to lack of money							
not ARP	3.8 (3.5-4.1)	3.7 (3.4-4.0)	3 (2.7-3.3)	2.9 (2.6-3.2)	4.5 (4.1-4.9)	4.2 (3.9-4.6)	4.9 (4.5-5.3)
ARP	11 (10.5-11.5)	10.9 (10.4-11.4)	9.8 (9.3-10.3)	8.4 (7.9-8.9)	7 (6.6-7.4)	6 (5.6-6.4)	9.4 (8.9-9.9)
Total	5.2 (4.8-5.6)	5.0 (4.7-5.3)	4.1 (3.8-4.4)	3.8 (3.6-4.1)	4.9 (4.5-5.3)	4.5 (4.1-4.9)	5.7 (5.3-6.1)

Confidence intervals for Figure 5

	2004	2005	2006	2007	2008	2009	2010
Unable to have friends or family for a meal or drink							
not ARP	7.8 (7.4-8.2)	7.3 (6.9-7.7)	7.1 (6.7-7.5)	6.9 (6.5-7.3)	7.2 (6.7-7.6)	6.9 (6.5-7.3)	11.8 (11.2-12.4)
ARP	25.7 (25.0-26.4)	30.2 (29.5-30.9)	28.3 (27.6-29.0)	23.1 (22.4-23.8)	20.4 (19.7-21.1)	24.6 (23.8-25.3)	28 (27.2-28.8)
Total	11.3 (10.8-11.8)	11.5 (11.0-12.0)	10.7 (10.2-11.2)	9.6 (9.1-10.1)	9.1 (8.6-9.6)	9.4 (8.9-9.9)	14.4 (13.8-15.0)

Appendix 3: Composition of the population in food poverty (2010)

HRP Marital status		
Single		34.4%
Married		49.4%
Widowed		4.8%
Divorced		3.9%
Other separated		7.6%
HRP Sex		
Male		52.5%
Female		47.5%
Location		
Urban		65.2%
Rural		34.8%
HH Composition		
1 adult 18		9.7%
2 adult 18		10.8%
3+ adults 18		7.3%
2 adults, 1 child		7.9%
2 adults, 2 child		12.7%
2 adults, 3 child		13.7%
2 adults, 4+ child		3.0%
1 adult & children		16.4%
3+ adults & children		18.4%
HRP Education		
No Quals		32.7%
Inter Level		24.9%
Leaving Level		22.3%
Low Tertiary Level		8.4%
High Tertiary Level		11.7%
No. of children under 18 in HH		
0		27.9%
1		18.1%
2		28.7%
3+		25.4%
Age of HRP		
18 to 31		11.9%
31 to 40		30.6%
41 to 50		26.7%
51 to 60		20.2%
61 +		10.7%

At risk of poverty		
No		72.8%
Yes		27.2%
Consistent poverty		
No		62%
Yes		38%
Social class		
Higher prof		3.1%
Lower prof		8.6%
Intermediate / supervisor		13.2%
Self employed		10.1%
Farmer		1.2%
Lower service or technical		24.0%
Routine		29.1%
Never worked		10.7%
Principal economic status		
At work		31.9%
Unemployed		25.6%
Student		2.8%
On home duties		22.3%
Retired		4.3%
Ill/disabled		11.1%
Other		2.0%
Ease or difficulty making ends meet		
Some difficulty to very easily		21.0%
Difficult & very difficult		79.0%
2 out of 11 dep indicators		
No		21.2%
Yes		78.8%
Tenure		
Owner occupied		45.3%
Rented at market rate		17.5%
Rented below market rate		37.2%

Appendix 4: Technical appendix

Analysis for this research was undertaken using statistical analysis of the SILC 2004 to 2010 datasets using SPSS (Statistical Package for the Social Sciences). This software package allows for easy analysis of survey data.

The statistical techniques used in this research were **descriptives**, it provides the numbers of respondents who selected each response category to a question in the survey and the corresponding percentage.

Cross tabulations allow testing of whether one variable has a statistical relationship with another, such as is gender related to being at-risk-of-poverty. SPSS provides the proportion of each response category selected which selected each response category of the other variable in question. For instance a larger proportion of women were at-risk-of-poverty than men. If their gender had no effect on being at-risk-of-poverty then even proportions of both would be at-risk-of-poverty.

A test of statistical significance can then be added to this in order to allow identification of whether the difference is due to chance or the result of statistical relationship, this test is called a Pearson's **Chi-square (χ^2) test**.

Binary Logistic Regression allows analysis of dichotomous nominal variables; this means variables with only two possible response outcomes i.e. in food poverty or not in food poverty. Where independent variables have more than one possible response category, these are recoded into dummy variables. This analysis tests whether and to what extent the independent variables can predict the occurrence of the dependent variable. In addition to this, this analysis allows the identification of which independent variables have the greatest impact on the dependent variable.