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# *Standard of Healthy Living on the Island of Ireland*

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# Executive Summary

## Introduction

Pre-requisites for health are *equity, minimum income, nutrition, peace, water, sanitation, housing, education, work, political will and public support* (WHO, 1986). It has long been known that social disadvantage harms health (Black, 1980, Ettner, 1996). Many researchers have documented that those in lower socio-economic groups are more at risk of developing major chronic diseases such as cardiovascular diseases (Beaglehole and Yach, 2003, WHO, 2003a), diabetes (Wilder et al., 2005), and some cancers (Brunner et al., 1993, Strong et al., 2005), and are at a higher risk of having multiple risk factors associated with these diseases (Lynch et al., 1997).

The living standards that many people enjoy and the behavioural choices they make are heavily determined by their access to resources such as income, wealth, goods and services (O'Flynn and Murphy, 2001). The most prominent explanation between disadvantage and health is that lack of resources restricts access to the fundamental conditions of health such as adequate housing (Macintyre et al., 2003, Macintyre et al., 2005), good nutrition (Nelson et al., 2002) and opportunities to participate in society (McDonough et al., 2005). Each of these issues are very much influenced by material and structural factors inherent to and determined by fiscal, social and health policy (Graham and Kelly, 2004, Milio, 1986).

A sound evidence base helps inform healthy public policy. Information on the social determinants of health, and more particularly, the social determinants of dietary habits on the island of Ireland is piecemeal. There is limited evidence of the social variation in dietary habits and little data on the economic barriers to healthy eating and living.

## Aims

On the basis of current knowledge and identification of gaps in the evidence base, there are two main aims to this research, expressed as components 1 and 2. Component 1 takes an empirical approach to investigate the financial (i.e. income) and non-financial (i.e. demographic and socio-economic) constraints to eating healthily and to identify a dietary pattern in both Northern Ireland and the Republic of Ireland. The second component of the study takes a normative approach to the issue of the standard of healthy living and aims to develop budget standards, which will ensure a minimum income standard to provide for healthy living, in both the North and South of Ireland. More specifically, the objective of Component 2 of the research was to identify a budget standard which demonstrates how much it would cost a low-income family comprising two adults and two children to maintain a living standard which provides a healthy diet, material security, social participation and sense of control. The model may in future be explored for other family types.

## Methods

### Component 1

Component 1 investigates dietary and socio-economic patterns through the use of *Cluster Analysis*. *Cluster Analysis* classifies similar objects, defined in terms of a common set of variables, into groups, where the number of groups, as well as their forms, is unknown at the outset. Clustering aims to ensure that the objects within the resulting clusters have characteristics similar to all other objects grouped together within the same cluster and dissimilar characteristics to objects grouped into other clusters. In this study the 'objects' clustered are individ-

ual households, and the classification is performed according to households' food purchasing characteristics, allowing for their varying economic and socio-demographic features. *Latent Class Analysis*, an evolving approach to *Cluster Analysis*, is used. It varies from more conventional forms of *Cluster Analysis* in that social, demographic and economic variables are included within the clustering procedure, rather than seen as 'exogenous' variables employed for exploratory analysis post-clustering. (Thus, social, demographic and economic features are thought of as contributing equally to the overall structure of the data as do the dietary features – and thus feature *latently* in the production of dietary clusters).

### Component 2

A minimum basket of goods and services required for healthy daily living in Northern Ireland and Republic of Ireland was established for a theoretical household comprising two adults and two children, boy aged 10 years, girl aged four years. The core baskets focus on health-related behaviour commodities necessary for day-to-day living including *food and physical activity*, but also including non-behavioural commodity baskets i.e. *housing, household services, household goods, transport, clothing and footwear, educational costs, personal costs, personal care, leisure goods and leisure activities*. Car ownership, tobacco and alcohol are also included in the baskets as variable commodities. Development of the weekly Northern Ireland (NI) and Republic of Ireland (RoI) healthy living basket constituents was informed by household expenditure patterns and national health recommendations.

Each individual basket was priced at the national and regional level, where applicable, and summed to determine the overall cost of living, thus setting the budget standard. Integral to the development of these standards was the necessity to compare the direct financial cost of healthy living with the household unit's financial capacity to purchase. Three income scenarios were used; *a family with one full-time worker, a family with one full-time and one part-time worker and a family with two unemployed adults*.

## Main Findings

### Component 1

Prior to undertaking multivariate clustering, data characteristics were explored univariately. It was found that the average expenditure for households in the Republic is higher on all food groups. However, as a percentage of total food expenditure, households in the North spent more on *cereals, breads and potatoes* while households in the Republic spent more on *foods high in fats and sugars*. Within the Republic, there was a consistent pattern of shifting expenditure from *cereals, bread and potatoes* to *foods high in fats and sugars* as expenditure rises, but this pattern was not replicated in the North.

Sharper contrasts in expenditure patterns between rural and urban households were found in the Republic than in the North of Ireland. The one area in which expenditure patterns in the North showed more systematic variation than those in the Republic was in respect of household composition, where an increased number of children in the household appeared to draw expenditure away from *fruit and vegetables*. Lower income households in both the North and in the Republic spent less on *fruit and vegetables*. Those households within which the head of household was unemployed also spent below average on *fruit and vegetables*.

The *Latent Class Clustering Analysis* revealed distinct patterns of clustering for the Republic and for the North, but with some common reference points. Two clusters, together accounting for over half of the households (56%), dominated the clustering in the Republic. Of these, the second, although accounting for a lesser proportion of the total number of households (26%), may be thought of as being more representative of the overall diet in the Republic, as it had no patterns of dietary expenditure which varied significantly from those of the total

number of households. The numerically dominant cluster (accounting for 30% of households) varied in respect of its low consumption of *fruit and vegetables* and, in socio-economic terms, in respect of having a higher percentage of single households and households living in rented accommodation. Of the smaller clusters, there was one which stood out in healthy dietary terms, (being highest in its expenditure on *fruit and vegetables* and lowest in its expenditure on *foods high in fats and sugars*), but this cluster, which was also distinguishable in respect of the high proportion of married couples with small or no families, contained only 3% of the total households.

There was one cluster which dominated the clustering of the households in Northern Ireland, containing almost two in every five (38%) of households. It was characterised, in dietary terms, in respect of its low expenditure on *fruit and vegetables* and, in socio-economic terms, by its low-income. Of the five other clusters, all of which accounted for a relatively sizeable and even proportion of the households, two might be considered to have the healthiest dietary patterns, (being highest jointly in their expenditure on *fruit and vegetables* and almost jointly lowest in their expenditure on *foods high in fats and sugars*). These were distinguishable in socio-economic terms, by one being more representative of managerial occupations whilst the other was more representative of professional occupations. Together they accounted for just over a quarter (26%) of households in the North.

### Component 2

In identifying how much it costs a low-income two parent, two children household to live a life compliant with general societal norms in the Republic and Northern Ireland, inequity in healthy lifestyle choices on the island of Ireland has been highlighted, as have the underlying issues of affordability and accessibility to socially acceptable choices both within and between the two jurisdictions.

The baskets purchased in Northern Ireland are typically more affordable than those purchased in the Republic for the three family income scenarios. Comparing the standard baskets between North and South, each income scenario, but in particular the family with two unemployed adults in the Republic of Ireland, is close to and above 100% spending capacity. When alcohol, tobacco and car ownership are included in the budgets, disposable incomes for all income scenarios in both jurisdictions fall short of the minimum requirement to purchase these baskets of goods. Price similarities are seen in *household services, leisure goods and leisure services* costs in both regions. *Personal Costs* (which includes child care) increase substantially for the family with two workers.

*Food, housing and transport* are the main budgetary drivers for a two adult, two children family type living in both the Republic of Ireland and Northern Ireland. Food prices vary considerably between North and South with the baskets being €36.35 cheaper in Northern Ireland. The food baskets for each income scenario, irrespective of region or car ownership, contribute to a substantial proportion of the weekly family budget, ranging from 25% to 36% of the budget in the Republic and from 23% to 36% in Northern Ireland. While food prices in both regions follow the same patterns, costs are substantially cheaper in Northern Ireland. Using average prices, the food basket is 22% cheaper in Northern Ireland compared to the Republic of Ireland.

There is a considerable variation in housing costs on the island of Ireland with housing overall being more expensive in Northern Ireland. The housing basket incorporates local authority rent charges, waste disposal rates, house insurance and fuel rates. When the household comprises working adults, the required proportion of the budget for housing is almost 10% higher in Northern Ireland, ranging from 22% to 27% compared to 14% to 17% in the Republic of Ireland. Within the Republic of Ireland there is a marked regional variation in household rents and refuse collection charges due to varying local authority charges.

Transport costs are 23% less expensive in Northern Ireland, irrespective of car ownership, compared to the Republic of Ireland. Additionally, the cost of a car was noticeably higher for families in the Republic of Ireland

compared to those in Northern Ireland. This study estimated the financial burden of car ownership to be €94.78 and €74.68 per week, in the Republic of Ireland and Northern Ireland respectively.

Marginal variation is observed across regions in the baskets comprising *clothing, footwear, educational expenses, household goods, household services and leisure activity*. *Personal care* prices are substantially more expensive in the Republic of Ireland when compared to Northern Ireland, with the main cost differential being seen in medical costs, which are almost five times cheaper in the North. *Child care*, a financial burden in both regions, having significant bearing on the financial shortfall for the family with two working parents, is substantially more affordable in Northern Ireland, costing on average €23.37 less per week than in the Republic.

The findings of the research indicate that the incomes of two adult, two children households living in the Republic and Northerrn Ireland, reliant on the current minimum wage and welfare payments, are insufficient to meet the needs of the family. Each of the three household income scenarios in both the North and Republic of Ireland, but in particular the family with two unemployed adults in the Republic of Ireland, are at 100% spending capacity or above for the standard basket. When alcohol, tobacco and car ownership are included in the budgets, incomes for each income scenario, in both jurisdictions, fall short of the minimum requirement to purchase the overall baskets of goods. These budgets do not account for food or drinks purchased outside of the home. In the Republic of Ireland the largest financial shortfall affects the least well-off household type, the family with two unemployed adults, while in Northern Ireland the greatest shortfall is for the family with one full-time worker. Evidence-based studies of the health needs of other population groups are now warranted.

## Research Implications

This report is a critical first step in providing information that helps identify those populations living on the island of Ireland who are at risk of poor diet-related health outcomes. It identifies, from an all island perspective, living costs which may compromise healthy living. The report has characterised, using routinely collected data, the types of diet on the island of Ireland and it has demonstrated the main socio-economic and demographic drivers of those patterns. It has raised a number of a priori hypotheses concerning the socio-economic determinants of dietary patterns which now require further investigation for confirmation. The inability to make robust comparison between the jurisdictions has highlighted the lack of correspondence between routinely available data sets from the Republic and from the North. This may be resolved in one of two ways. The most efficacious long-term approach would be a homogenisation of data sets- this would require sustained co-operation between the respective data collecting agencies. In the interim, more targeted primary data collection will be necessary, using homogenised methods North and South. The *Latent Class Clustering* approach adopted has much to commend it, given its simultaneous exploration of dietary and socio-economic features and thus the more intrinsic revelation of underlying structure that it affords. Its use with other, preferably homogenised datasets, is recommended. Notwithstanding the data limitations, this first attempt to identify population groups at risk of a nutritionally unbalanced diet on the island of Ireland will facilitate targeted intervention and is necessary as part of an integrated nutrition surveillance mechanism.

A basic human right is the ability to enjoy a minimum standard of living such that it is not detrimental to health. The report has described the development of budget standards for the Republic and Northern Ireland and illustrated how this approach is useful in assessing household living standards and household financial capacity. The advantage of this report of low cost budgets is that it is based on Irish circumstances, values and conditions in 2005. It thus has the potential to provide a better understanding of the circumstances of households with low standards of living on this increasingly affluent island. These budget standards are particular to two adult, two children households. Further information, adopting the same methodological approach, is now needed on the

cost of the various baskets of goods against differing financial and household scenarios.

The majority of people experiencing social disadvantage, and in some occasions poverty, are rarely in this situation through any fault of their own. Rather, the societal distribution of wealth, a person's place within the social hierarchy and their experience of the social structures, sets their level of resource and ultimately restricts or supports access to the fundamental conditions of health. The proposed budget standard research is not aiming to tell individuals and households how much money they should be spending on food and other items nor what they should be buying. Rather, it is hoped that in the interest of public health and social equity, the budget standards will act as a benchmark against which informed policy and financial provision are related. The dietary data will provide policy makers with the information required to target interventions and funding to address unmet needs within the communities.

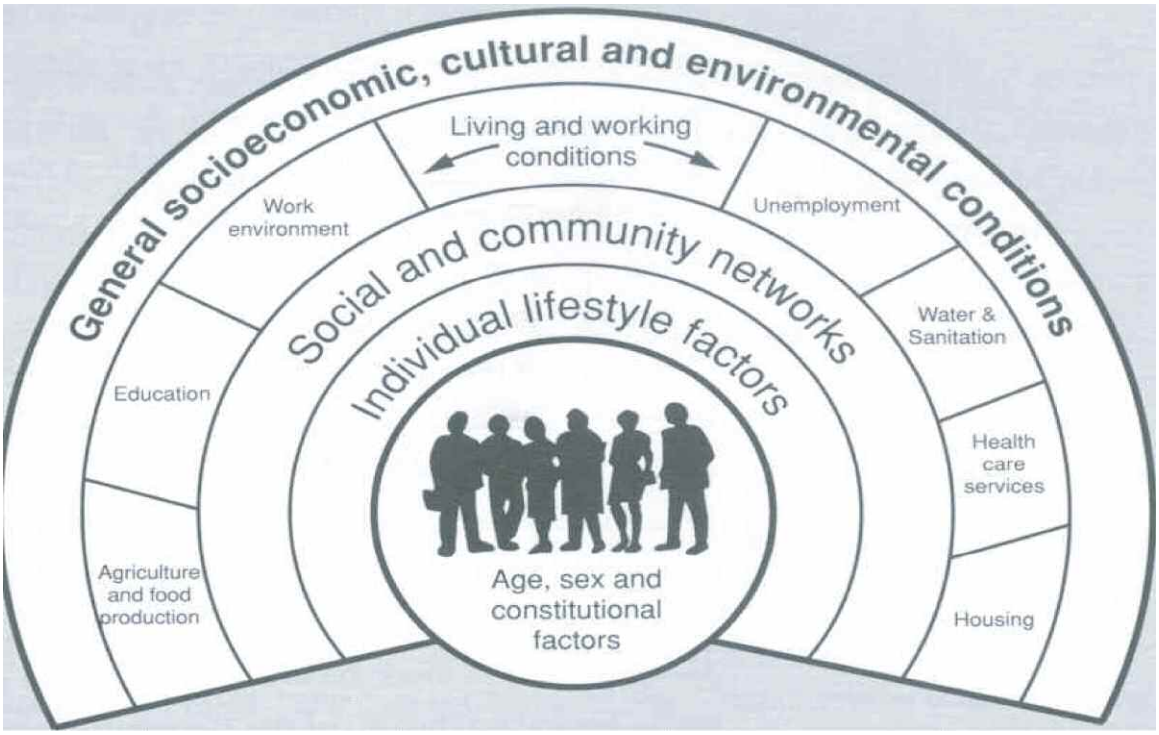
This report adds to the understanding of the wider determinants of dietary choice and highlights how even on an economically vibrant island such as Ireland, a number of population groups remain at risk of poor dietary intake because of macro-economic processes and food supply issues. It strengthens the argument for policy and practice responses to have a greater concentration on the distal causes of inequalities in health and health-related behaviours. A whole of government approach is necessary to address the crosscutting social, retail, dietary and health implications of this research. ***safe***food, with its all island remit, is well-placed to further this agenda in both jurisdictions.

# 1. Introduction

Prerequisites for health are *equity, minimum income, nutrition, peace, water, sanitation, housing, education, work, political will* and *public support* (WHO, 1986). It has long been known that social disadvantaged harms health (Black, 1980, Ettner, 1996). Many researchers have documented that those in lower socio-economic groups are more at risk of developing major chronic diseases such as cardiovascular diseases (Beaglehole and Yach, 2003, WHO, 2003a), diabetes (Wilder et al., 2005) and some cancers, (Brunner et al., 1993, Strong et al., 2005) and are at a higher risk of having multiple risk factors associated with these diseases (Lynch et al., 1997). The most prominent explanation between disadvantage and health is that lack of resources restricts access to the fundamental conditions of health such as adequate housing (Macintyre et al., 2003, , 2005), good nutrition (Nelson et al., 2002) and opportunities to participate in society (McDonough et al., 2005). Each of these issues are very much influenced by material and structural factors inherent to and determined by fiscal, social and health policy (Graham and Kelly, 2004, Milio, 1986).

Ireland, both North and South, experiences marked social inequalities in health, seen in the variation in health outcomes, especially mortality, across the different social groupings (Balanda and Wilde, 2001). In the same way that our understanding of the aetiology of chronic and infectious diseases benefits from knowledge of the pathobiologic processes involved in such diseases, increased understanding of social factors, broadly considered, may shed light on processes every bit as integral to our understanding of the aetiology of those diseases (Kaplan, 2004). Such a social perspective of health was conceptualised two decades ago in the Black report (Black, 1980) and later made explicit by Dahlgren and Whitehead (1991) who visualised 'layers of influence', a series of concentric circles radiating outwards from the individual (Figure 1.1). The individual, endowed with intrinsic characteristics (age, gender, ethnicity and genetics) is placed at the core, embedded in a series of complex systems which influence health and which could theoretically be modified. These influences begin with health behaviours before radiating out to the social and physical world, recognising that social connection with people, articulated as social and community networks, is important for health. The next layer of influence on health relates to living and working environments, referring in particular to physical and structural factors. Overarching this social model of health is the influence of socio-economic, cultural and environmental conditions, represented in the outermost layer. Since the 1980s and the renewed reorientation towards a social model of health, exemplified by the recently established global Commission on the Social Determinants of Health (WHO, 2005), efforts to understand the role of exposure to economic, social, physical and behavioural factors during gestation, childhood, adolescence, young adulthood and later in life have identified long term effects on health (Ben-Shlomo and Kuh, 2002, Reilly and Gaffney, 2001, Viner and Cole, 2005).

**Figure 1.1 Social determinants of health**




To date there has been limited research undertaken in the North and the Republic of Ireland investigating the relationship between socio-economic and structural factors and healthy eating and living. The following sections describe key behavioural and socio-economic features of populations and where information is available. It describes the situation in the Republic and Northern Ireland, before outlining the main aims and objectives of the study.

## 1.1 Health-Related Behaviours

A large proportion of the non-communicable burden of disease, including type 2 diabetes mellitus, hypertension, stroke, cardiovascular diseases, metabolic and endocrine diseases, and cancer, all of which are increasing world-wide, is preventable - partly through modifiable behavioural risk factors such as diet, physical activity, tobacco smoking and alcohol (WHO, 2003a, WHO, 2004, WHO, 2002).

National surveys in both the Republic of Ireland (CHPS, 2003) and Northern Ireland (HPA, 2002b) have examined the patterns of dietary intake, physical activity, smoking and alcohol consumption within each region. Similar proportions of respondents in both jurisdictions felt that what they eat could be healthier (78% of men and 80% of women in NI compared with 78% of men and 76% of women in RoI). A much larger percentage of respondents in Northern Ireland reported eating fried food four or more times per week (36% compared to 11% in the Republic), whereas similar numbers in both surveys used butter or hard margarine daily (47% and 48%). Forty five percent of respondents in Northern Ireland reported engaging in regular physical activity[1], compared to 51% in the Republic. A lower proportion of respondents in Northern Ireland were current smokers compared to

respondents in the Republic of Ireland (22% compared to 27%). Seventy percent of respondents in Northern Ireland compared to 78% in the Republic of Ireland consumed alcohol in the previous month. Of those drinking in the previous month, the frequency of alcohol consumption was very similar in Northern and Republic of Ireland; 71% of men and 54% of women in NI and 72% of men and 56% of women in RoI reported drinking alcohol in a typical week.

Inequalities in health may be partly explained by social inequalities in dietary behaviours, especially when clustered with other risk factors (Eurodiet, 2001, Hupkens et al., 1997, James et al., 1997). Social gradients in health-related behaviours, particularly diet, have been observed in the Republic of Ireland (Friel et al., 2003, Kelleher et al., 2003) and Northern Ireland (HPA, 2002b) but little data exists offering an all island perspective. Health-related behavioural choice is strongly affected by structural, material and psychosocial factors (Dowler and Dobson, 1997, Shaw et al., 1999). It is generally accepted that in the rich developed world the main structural barriers to healthy food choices are an excess availability of processed food, restricted access to healthy food, its relative affordability and levels of disposable income (Dowler, 1998). The Combat Poverty Agency funded study 'Policy Response to Food Poverty' (Friel and Conlon, 2004) identified the many issues which impact on the food choices made by people living in the Republic of Ireland, highlighting financial capacity, affordability and access as the most important drivers.

Work by Lee and Gibney in the Republic of Ireland in 1989 identified that the purchasing costs of required energy intake were greater than the financial provision made through payments (Lee and Gibney, 1989). Murphy-Lawless' (1992) analysis of food expenditure shows that families living on the average industrial earnings have better quality food, larger portions and greater variety than those dependent on social welfare. Recent research into the direct cost of compliance with the national healthy eating guidelines (Friel et al., 2004) found that single parents with one child, two adults with two children and single older people would have to spend 80%, 69% and 38% respectively of their weekly household income in order to purchase a healthy food basket based on economy line products.

While such information is not currently available for Northern Ireland, our current report *'The Standard of Healthy Living on the Island of Ireland'*, together with the ongoing evaluation by the Institute of Public Health, Ireland of the Armagh Dungannon Food Poverty Programme *'Decent Food for All'*, a partnership-based programme committed to addressing food poverty issues in Northern Ireland (http://www.publichealth.ie/index), and the recently funded investigation into food poverty in Northern Ireland being undertaken by the Public Health Alliance, Northern Ireland, will help increase the evidence base for Northern Ireland.

## 1.2 Socio-Environmental Determinants of Health

There are numerous complex systems in operation, with long causal pathways connecting in a multi-directional manner, distal environmental, economic and social factors through to proximal level behavioural and intrinsic personal characteristics to influence human health outcomes. Economic and public health analyses show repeatedly that behaviour modification alone, via education, motivation, skills training and social support, is having only limited success in curbing the rise in non-communicable diseases, in particular obesity (Hill et al., 2004, Hill et al., 2003). Factors such as the physical environment, transport, housing, access to and use of services, operating directly and indirectly through psychosocial and behavioural factors, influence health outcome.

Place of residence and socio-economic status, in terms of the natural and built environment, are important contributors to health and behaviour choice (Diez Roux, 2001, Ecob and Macintyre, 2000, Frank and Engelke, 2001, Mitchell, 2001). There is a relationship between housing tenure and health (Macintyre et al., 2003, Breysse et al.,

2004, Howden-Chapman, 2004), physical and social features of the dwelling and of the area. Psychological characteristics of residents are distributed unequally across housing tenure categories in ways which might be more health damaging for social renters than owners. Indications are that a person's physical location plays a large role in influencing their ability to alter their diet and physical activity choices. As a result of the modern day car culture and car reliance, city planning and its allied professions have become unaware of the health impacts that our land use and transportation decisions have on the ability to walk and bike, two of the most common forms of physical activity (Fahey et al., 2004a, Frank and Engelke, 2001). In a study by Friel and Harrington (Friel and Harrington, 2005) which examined the walkability of urban and rural neighbourhoods in the Republic of Ireland, neither locality was conducive to walking, with particular concern around road safety in rural areas where footpaths and bicycle paths are generally absent and traffic volume and speed are of concern.

The Acheson report in 1997 described the role of transport in health as one where *'The primary function of transport is in enabling access to people, goods and services. In doing so it promotes health indirectly through the achievement and maintenance of social networks. Some forms of transport, such as cycling and walking, promote health directly by increasing physical activity and reduction of obesity…Lack of transport may damage health by denying access to people, goods and services and by directing resources from other necessities. Furthermore, transport may damage health directly, most notably by accidental injury and air pollution'* (Acheson, 1998).

## 1.3 Socio-Economic Factors and Health

Financial resource is one of the key socio-economic factors determining the health status and health outcomes of individuals and communities as a whole (WHO, 2003b). In recent years the Republic of Ireland has undergone extraordinary economic growth. However, while becoming an increasingly wealthy nation it has also become more unequal, with the gap between the rich and the poor increasing. Living in consistent poverty[2] involves not only material deprivation but also emotional and psychological distress and constrains the options available in respect of making healthier choices. Encouragingly, between 1994 and 2000, the proportion of people living in consistent poverty in the Republic of Ireland fell from 15.1% to 6.2% respectively (Government of Ireland, 2000). However the numbers falling below relative income poverty lines have remained high compared to other european countries (Daly and Leonard, 2002). The Republic of Ireland currently has 21% of its population living in poverty in comparison to Sweden, which has the lowest rate at 10%. Falling unemployment contributed directly to improved living standards, but income gains were not confined to those in or moving into work. During this period social welfare rates also increased in real terms. However, in general, social welfare payments lagged further behind incomes from work and property and thus average income. As a result by the end of the 1994-2001 period those relying primarily on social welfare for their income were more likely to fall below income linked poverty lines (Layte, 2004).

Poverty rates in Northern Ireland are marginally higher than in the Republic of Ireland (6.9% and 6.2% respectively using the 'consistent poverty' measure). According to a recent report (Hillyard et al., 2003), 30% of Northern Ireland households during the period 2002-2003 were classified as poor, whilst a further 12% could be described as vulnerable to poverty. Additionally, 37.4% of all Northern Ireland children were reported to be growing up in poor households during the same time period. As well as poverty rates being higher than both the Republic and the UK, income inequality is also worse, with the richest 40% of the population earning 67% of the total household income, whilst the poorest 40% earn only 17% of the total. The Hillyard et al (2003) report suggests that 'based on the 2002/2003 figures, Northern Ireland is one of the most unequal societies in the developed world'.

Three measurable dimensions of human development are living a long and healthy life, being educated and hav-

ing a decent standard of living. The Human Development Index figures released recently by the United Nations, list Ireland in tenth position, ahead of Britain in twelfth position (UN, 2004).

## 1.4 The Irish Policy Context

Evidence that low socio-economic status leads to poor health has spawned debate about the appropriate policy to remedy these inequalities. The Republic of Ireland adopted its National Anti-Poverty Strategy (NAPS) in 1997. In doing so, Ireland became the first European Union Member State to adopt an explicit overall target for the reduction of poverty. The NAPS aims to reduce the proportion of the population who are described as consistently poor, by increasing social welfare payments to the minimum of the lower range recommended (GoI, 1997). The equivalent strategy in Northern Ireland is the New Targeting Social Need (TSN), which is the Government's high level policy for combating the problems of unemployment, increasing employability and addressing the causes of social exclusion (OFMDFM, 1998). It is concerned with reducing inequalities in other policy areas such as health, housing and education.

International and national policy issues such as food supply, distribution and price have each been shown to contribute to the social gradient observed in food and nutrient intake (Friel et al., 2004, Milio, 1986, Morris et al, 2000). Whilst there is no current food or nutrition policy either in the North or South of Ireland, addressing issues of supply, distribution or price, national health policy emphasises the importance of healthy living, including diet, for disease prevention (DoHC, 1999, DoHC, 2000, HPA, 1996). Current dietary recommendations are based on the habitual consumption of foodstuffs, which, if consumed in balanced proportions, will result in a nutritionally adequate diet. Within the health strategies of both Northern and Southern Ireland are points of action to improve the diet, such that essential nutrients and energy are maintained and to reduce the level of health inequalities (DHSSPS, 2002, DoHC, 2001). Similarly, the health policies in both regions recognise the importance of physical activity in the maintenance of overall good health. Current policy guidelines in Northern Ireland (HPA, 2002a) and the Republic of Ireland (HPU, 2003) encourage various forms of physical activity, including walking, swimming and cycling for at least 30 minutes at moderate intensity most days of the week .

Underpinning the health strategy in both localities is the recognition that health is determined not simply by individual level behaviour choice but also wider political, social, environmental and economic factors. Transference of this into systemic healthy public policy relies on cohesion between government departments. At European Union level, conflict between policies in relation to food and nutrition issues is not new. Agri and food supply policies do not support nutrition recommendations necessary for good public health (Elinder-Schafer, 2003, Lobstein and Longfield, 1999). The WHO states that 'it is critical that health authorities emphasise the importance of the housing environment on health and that environmental and housing authorities recognise that the built environment is a vital factor in human health' (WHO, 2004).

However, despite there being current health policy which explicitly cites the need to address issues relating to health behaviour, and social policies that recognise their role in the reduction of health inequalities, it remains that on the island of Ireland there is no co-ordinated strategic approach aimed at addressing the wider determinants of population health and ensuring a standard of healthy living for all groups of society.

## 1.5 Study Aims and Objectives

A sound evidence base informs healthy public policy. Information on the social determinants of health, and more particularly the social determinants of dietary habits, on the island of Ireland is piecemeal. There is a lack of evidence on the social variation in dietary habits and little data on the economic costs of healthy living.

There are a variety of techniques used in nutrition surveillance to record and describe the food consumption patterns of populations. Between 1996 and 2002 the Republic of Ireland participated in the DAFNE (Data Food Networking) initiative, a common effort to compare the food habits of European populations (Trichopoulou et al., 2003). The DAFNE databank is based on food information collected in the context of household budget surveys (HBS), which are periodically conducted by national statistical offices. Much effort has been made to develop a methodology relevant to the Irish Republic's data (Friel et al., 2001). The HBS in the Republic of Ireland and the National Food Survey (NFS) in Northern Ireland are the only regular sources that capture food information collected under governmental jurisdiction and offer an ideal mechanism through which social variation in dietary habits can be investigated.

Recently, multivariate statistical techniques have been used to examine the combination of foods consumed by populations, relating these to demographic and socio-economic variables (Barker et al., 1990, Billson et al., 1999, Villegas et al., 2003). Additional insights into the economic barriers to a healthy diet can be provided through the application of Discrete Choice Modelling to household level data. The independent effects of financial and non-financial factors on the probability of a household accessing a healthy diet can be estimated.

Knowing the economic and socio-environmental influences on healthier living and eating allows strategic action and intervention to be developed. Veit-Wilson (1994) recommends that governments employ an adequate income benchmark, internationally known as a Minimum Income Standard (MIS). A MIS is described as a set of criteria for evaluating the adequacy of income levels (based on welfare rates, pensions and minimum wages) required for people to be able to take part in ordinary social life and stay out of poverty. One of the basic approaches used in the development of MIS are budget standards. The primary purpose of a budget standard is to inform judgments about income adequacy by providing an *independent* benchmark which allows income levels to be judged in terms of the normative standards that can be purchased from that income (Saunders, 2000). A budget standard thus translates household needs into baskets of goods, such as *food, clothing, household goods, household services, leisure goods, and leisure services*, goods into budgets and budgets into the income level required to reach pre-defined living standards (Parker et al, 1998). Different types of budget standards exist; *Modest-But-Adequate Standards*, also known as *Reasonable Standards*, cost all components of a typical household budget which would ensure living comfortably without debt, whereas *Low Cost But Acceptable Standards* operate closer to the poverty line (Parker, 2001). At the start of the 20$^{th}$ century Rowntree highlighted the implications of financial paucity on dietary and health outcomes through the use of a nutritional poverty line (Rowntree, 1901). Not until the early 1990s was this approach revisited in the UK (Stitt and Grant, 1994) and then further developed by Parker and others to estimate the realistic costs of a healthy diet for a number of population groups (Nelson et al., 2002, Parker et al, 1998, Parker, 2001) and more generally a healthy way of living among single males (Morris et al., 2000).

On the basis of current knowledge and identification of gaps in the evidence base, there are two main aims to this research, expressed as Components 1 and 2.

## Component 1: Factors Affecting Variation in Dietary Habits on the Island of Ireland

The first component of the research established issues for tackling food poverty by determining exactly what the financial (i.e. income) and non-financial (i.e. demographic and socio-economic) constraints were to eating healthily and identified a dietary pattern in both Northern Ireland and the Republic of Ireland. Dietary patterns were investigated using the novel application of *Cluster Analysis* (Villegas et al., 2003) and described with respect to socio-economic and socio-demographic characteristics. The factors affecting variation in diet were assessed using discrete choice models such as multi-nomial logit model (Train, 2003).

## Component 2: Budget Standards

The second aim of the study was to develop budget standards, which identified a minimum income standard to provide for healthy living, in both the North and South of Ireland. More specifically, the objective of Component 2 of the research was to identify a budget standard which demonstrates how much it would cost a low-income family comprising two adults and two children to maintain a living standard which provides a healthy diet, material security, social participation and sense of control. The model may in future be explored for other family types. The study aim was met through the establishment of the cost of a minimum basket of goods and services that are required for healthy daily living in the North and South of Ireland. Budget standards were developed based on baskets of core goods and services focussing on food but also including *clothing, personal care, household goods, household services, leisure goods, leisure services.* Baskets relating to variable costs (housing, fuel, transport, job-related costs, pets) are also incorporated into the budget determination.

This research will inform health, food and social policy development in a way that actively obliges multi-sectoral action. It provides a sound knowledge base on the social variation in dietary habits on the island of Ireland, identifies which types of diet different population groups follow and which socio-economic and demographic factors are most strongly predictive of these. It quantifies the financial costs of a healthy diet and more broadly the financial costs of healthy living on the island of Ireland for a two parent, two children family, relative to their available financial resources.

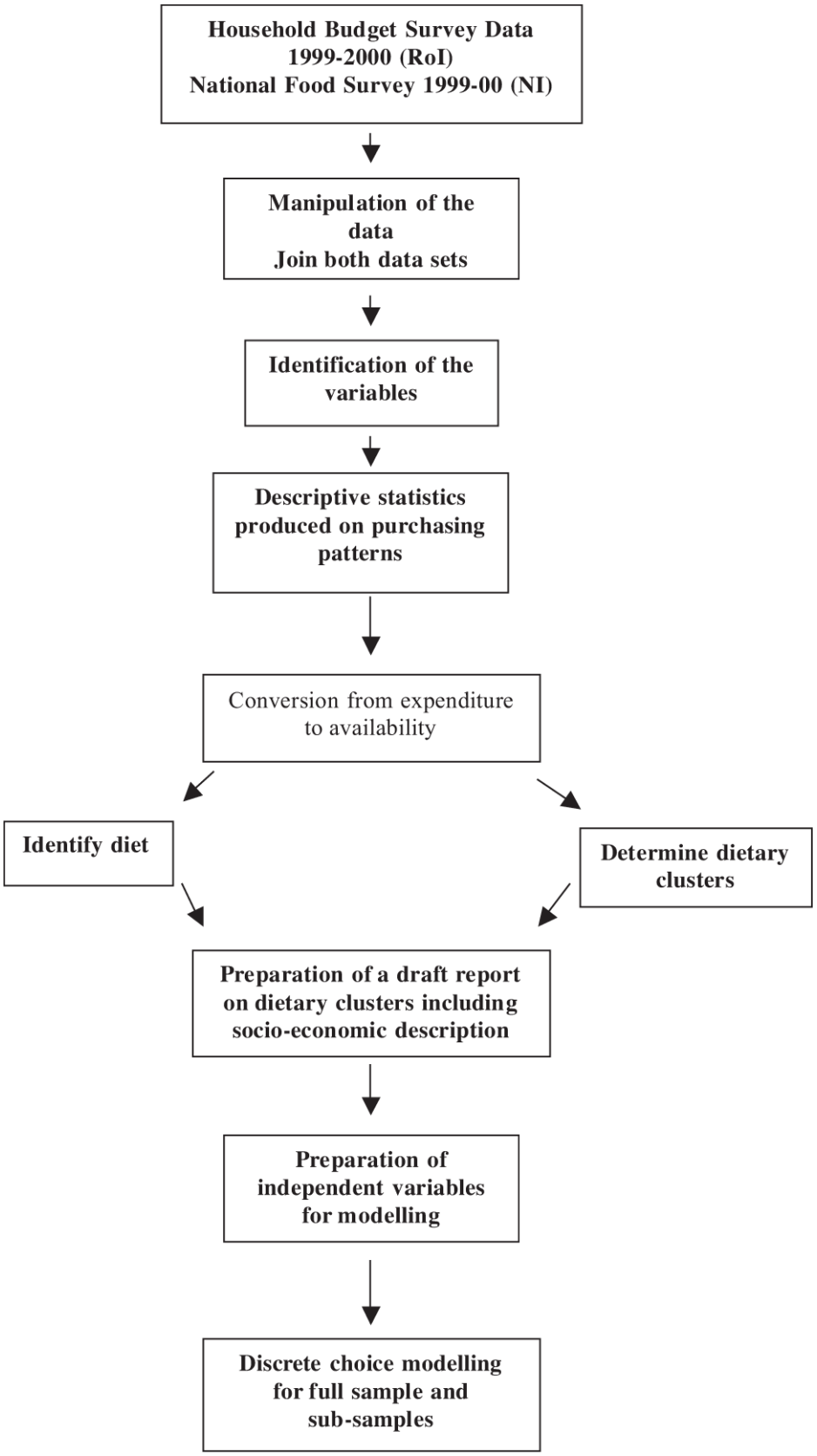
# 2. Factors Affecting Variation in Dietary Habits on the Island of Ireland *(Component 1) - Methods & Results*

## 2.1 Methods Introduction

The social variations in household-level food expenditure patterns for both the North and South of Ireland were explored. The methods used to investigate dietary patterns and their social, demographic and economic correlates in the Republic and the North of Ireland are summarised in Figure 2.1. In order to develop a realistic diet, the first stage of the research was to identify the most recent data on household level food availability and expenditure in both the North and the Republic. The Household Budget Survey 1999-2000 (HBS) in the Republic and the National Food Survey 1999-2000 (NFS) in the North provided information on health-related dietary habits on the island of Ireland.

Use of information from different sources raises issues of comparability, with each containing its own validity attributes and methodological characteristics. Each dataset was examined, compared and presented separately. The methodology followed by the Central Statistics Office in the Republic and the Ministry of Agriculture, Fisheries and Food in the North, to ensure national representativeness and feasibility of food expenditure and availability, was as follows. A stratified cluster sampling design and a three stage stratified random sampling of private households had been undertaken in both the Republic and the North. In the Republic, households that refused to participate in the survey were replaced by others with similar characteristics. In the North, there was some special handling of refusals. All samples were evenly distributed throughout the year to capture seasonal variability. In the 1999 – 2000 HBS a 55% response rate was obtained, with 7,628 households providing expenditure information on a range of commodities including food. The National Food Survey (NFS) collects information on domestic food acquisition and expenditure for households in the UK over a one week period. About 5,974 households participated in the UK with a response rate of 64% for the year 2000, and 6,136 households with a response rate of 65% in 1999. The sample in Northern Ireland consists of 1,200 addresses per year from January to December, of which 727 in 1999 and 726 in 2000 participated in the survey. For the purposes of this research, in order to use a corresponding time period, 909 households in Northern Ireland were examined from June 1999 to July 2000. Figures presented in the discussion that follows have been weighted to allow for the sample design used and for the differential response rates.

**Figure 2.1** **A summary of the methods used to investigate dietary patterns in the North and the Republic of Ireland**


Household Budget Survey Data
1999-2000 (RoI)
National Food Survey 1999-00 (NI)
Manipulation of the data
Join both data sets
Identification of the variables
Descriptive statistics produced on purchasing patterns
Conversion from expenditure to availability
Identify diet
Determine dietary clusters
Preparation of a draft report on dietary clusters including socio-economic description
Preparation of independent variables for modelling
Discrete choice modelling for full sample and sub-samples

## 2.2 Data Preparation

In order to establish dietary clusters (see section 2.6 below) and to examine the effect each covariate had on the dependent variable, the independent variables were identified and included. Many independent variables were found to be comparable between the HBS and the NFS. The characteristics in common between both datasets include food expenditure, food quantity, income, region, household composition, age, alcohol status, housing tenure and social class. Each individual variable was assessed to establish comparability between data sets. The independent variables constitute a mixture of data, with some expressed in a continuous form and others in a categorical form. Some variables were changed to dummy variables in order to run the *Cluster Analysis*. Each dataset was examined, compared and presented separately. The variables used in this study are presented in Appendix 1.1.

### 2.2.1 Food

The primary purpose of the HBS is to determine the pattern of household expenditure in order to update the weighting basis of the consumer price index. Consequently the food information is limited to weekly expenditure on 138 food items and quantities are available for 14 core food items. In contrast the NFS focuses on expenditure and acquisition of food items only. Therefore the description of food items, of which there are 234, is much more detailed. A study already completed by the Data Food Networking Group provided us with a breakdown of each food item and comparability of the HBS food data to the NFS food data (Trichopoulou et al., 1999).

As the HBS provides data for only 14 food quantities it was necessary to convert expenditure on the 138 food items to quantities. Therefore, the RoI household food expenditure data were converted to household food availability. This was undertaken using a Tobit model[3], by predicting food prices per unit weight using the NFS. However, during the completion of the second component of this research programme actual prices between the North and the Republic were found to be different in 2005. This difference would have an effect on predicted prices in the North which were being used to calculate quantities in the Republic. Therefore, given the difference in actual prices in 2005 for the North and the Republic, actual prices in the North were deflated and changed to pounds for the period 1999-2000 in order to establish the percentage difference. Expenditure is also presented in euros for the equivalent time period 1999-2000 using the exchange rates recommended by the Central bank at €1.27. In *Food Shelf One* [4] prices in the Republic were higher by 25%, in *Food Shelves Two* and *Three* prices in the North were higher by 13% and 10% respectively, in *Food Shelves Four* and *Five* prices in the Republic were higher by 2% and up to 39% respectively. All expenditure on food items in the North was adjusted to account for this change. For the period June 1999 to July 2000 an average annual exchange rate of £1.24 was used for every Irish pound (www.inlandrevenue.gov.uk/exrate/02_006_erl.htm).

Once these changes were made to actual prices in the North, expenditure for each food item was then regressed on quantity consumed controlling for *equivilised* [5] income, age and region. Region was included to capture variation in price between urban and rural areas. Age may reflect the accessibility of food for the older generation and the effect that shopping at a convenience store has on price. Income, age and region were not found to be significant in affecting expenditure although quantity was significant. From the model it was possible to predict how a unit change in quantity affects change in expenditure, which allows calculation of predicted price. These predicted prices were then divided into expenditure in the Republic in order to calculate quantity. As not every food item in the North was comparable to the Republic there was a decrease in the quantity of food items to 85 for the Republic. Prices were also predicted using the 14 food quantities in the Republic to establish whether predicted prices in the North were similar. It was found that the NFS predicted prices were marginally higher (i.e. .01 -.02 pence) than the Republic and that the margin of error between actual prices and predicted prices was small.

Alcohol and meals consumed away from home are not included, as information provided on food consumed outside of the home is not detailed enough, with the exception of takeaway foods. Also, food items that were infrequently reported were excluded, because the distributions were skewed. Additionally, data from each *Food Group* was examined for extreme values based on a subjective evaluation of normal probability plots. Therefore in the HBS the number of food items included in further analyses was reduced to 127 and in the NFS to 204. The *Food Plate and Food Pyramid* are used in order to group food items according to recommendations (FSA, 2005, HPU, 2005).

### *2.2.2 Socio-Economic and Demographic Variables*

The socio-economic and demographic characteristics that were common for both data sets were total expenditure, income, region, employment status household size/composition, housing tenure and social class. Other variables contained within the HBS were car ownership, type of shop, number of hours worked by a spouse, work status of a spouse and education of both the head of household and the spouse. Information on alcohol and cigarette consumption was also available. As clustering was conducted separately for each jurisdiction, these were included in the model for the Republic.

In the HBS, data on gross income, direct income and disposable income were collected for the household. These were defined on the basis of money receipts of a recurring nature which accrue to the household regularly, together with the free goods and services and the retail value of own produce. The gross receipts of each individual household member were converted to weekly equivalent amounts and combined to give the average gross weekly income for the household. However, there is evidence of understating income, as there is a gap between income and total expenditure. The Central Statistics Office has suggested that total expenditure is a much more reliable and valid measure (CSO: 2000). The correspondence between the different measures was determined and a correlation co-efficient of 0.8 observed. Therefore, total expenditure of the household is used in further analysis. In the NFS the total net weekly income of regular household members was taken as a measure of income. Since income will provide a different living standard to the individuals in a large versus a small household, equivalence scales are used to adjust expenditure for differences in household size and composition (Nolan et al. 2000). In this study the OECD equivalence scales were used.

The variable employment participation is taken as one measure of the time cost of accessing food. Different categorisations of employment status are used by the Household Budget Survey for the Republic and the National Food Survey for the North of Ireland. In the NFS, two categories *Employed* and *Unemployed* are used, while in the HBS a third category *Not Available to Work*, is also used.

The variable *region* in the North and in the Republic has been classified into rural and urban districts. However, there may be a question as to whether these categories capture different living conditions. The issue of degree of urbanisation needs to be further studied. Urban households are defined as being located in cities and towns, including suburbs. Rural households are located outside the boundaries of cities and towns. Again a dummy variable has been included to capture the effect.

Housing tenure is grouped differently in Northern Ireland and in the Republic of Ireland. Data for household tenure in the North and in the Republic of Ireland have been grouped into two categories which include owning the house outright and renting a home.

Social class categorisations vary between the two jurisdictions, as those used in the United Kingdom are felt inappropriate for the Republic, given its agricultural base. Social class in the Republic has been categorised into

seven groups according to the occupation of the household head. In the North social class is a derived classification, based on occupation and employment status. This produces five class categories with skilled occupations being divided into non-manual and manual classifications.

## 2.3 Latent Class Analysis

Consumption of food or food expenditure has long been a cornerstone of research for economists (Benus et al., 1976). The traditional theoretical approach to consumer behaviour assumes that households consume goods which maximise utility subject to a budget constraint. This implies that consumers are *rational*, in that they consistently rank their choices, that they have full knowledge of all commodity characteristics and that any variability between consumers is a residual rationality (individual components that are not represented by the specified function) (McFadden, 2000). If heterogeneity (in the form of variation in individual household purchasing patterns) was considered it was through individual characteristics (Deaton, 1997). The major focus of the analysis to date has been on relative household consumption responses to income and food price changes (Pollack and Wales, 1980).

More recently, the assumption that preferences are homogenous within demand studies has been relaxed (Boxall and W, 2002). It is recognised that the presence of individual heterogeneity accounts for different individuals making different choices when faced with the same choice sets (Rigby and Burton, 2004). McFadden (1986) recognised this prospect and used *latent* variables in understanding choice behaviour. Previous approaches to analysing dietary behaviour have used *Factor Analysis, Cluster Analysis, Hierarchical Agglomerative Clustering* and *K-means Clustering* (appendix 1.4). The approach that we adopt here is to consider heterogeneous preferences when choosing food items while allowing for the effects of economic and demographic variables, through use of *Latent Class Analysis* (LCA). *Latent Class Analysis* is an evolving approach to *Cluster Analysis*, which may be defined as the classification of similar objects into groups, where the number of groups, as well as their forms, is unknown. In our case the 'objects' to be clustered are individual households, and the classification is to be performed according to households' food purchasing characteristics, allowing for their varying economic and socio-demographic features. It varies from more conventional forms of *Cluster Analysis* in that social, demographic and economic variables are included within the clustering procedure, rather than seen as 'exogenous' variables employed for exploratory analysis post-clustering. (Thus, social, demographic and economic features are thought of as contributing equally to the overall structure of the data as the dietary features – and thus feature *latently* in the production of dietary clusters). *Latent Class Analysis* can be viewed as a probabilistic variant of K-means clustering. Probabilities are defined as closeness to each cluster centre (McLachlan and Basford, 1998). As such, the *Latent Class* clustering approach provides a way not only to formalise the K-means approach, in terms of using an explicit statistical model, but also to extend it. For example, in contrast to the ad hoc measure of distance used in *Cluster Analysis* to define homogeneity, *Latent Class Analysis* defines homogeneity in terms of probability. As such it is a more probabilistic and a more flexible alternative to K-means clustering, which only performs well under strict conditions.

A difficult decision when undertaking clustering is how to determine the appropriate number of clusters in which to group the individuals. Hierarchical agglomerative clustering will generally employ a formal, but still essentially ad-hoc, stopping rule for the process of agglomeration. The *K-means Clustering* technique provides no assistance in identifying the number of clusters. *Latent Class* clustering employs various diagnostics, such as the *Bayesian Information Criterion* statistic (Vermunt and Magidson, 2000a). Following initial exploration of the variables, a discrete choice model was applied to identify dietary clusters, whilst allowing for the effect of demographic and socio-economic variables. *Latent Class* clustering also allows the inclusion of mixed (discrete and continuous) variables. This is suited to our analysis as the food expenditure variables are continuous while some of the

covariates (the social, demographic and economic variables) are categorical.

Finally, a common practice for K-means clustering is to use *Discriminant Analysis* to describe differences among the clusters on one or more exogenous variables (that is, variables that have not been employed in performing the clustering). In contrast, the *Latent Class* cluster model can be extended to include covariates. This allows both classification and cluster description to be performed simultaneously. In K-means analysis individuals are assigned to clusters on the basis of the distance between variables. Clusters are subsequently characterised by socio-demographic and lifestyle factors. In contrast, *Latent Class Analysis* allows the covariates to predict the latent distribution of the indicator variables. Thus, this form of analysis may be thought of as internalising the economic and socio-demographic characteristics of the households being surveyed. These characteristics are treated, conceptually, as part of the determining features of dietary patterns, rather than as associated features that are investigated only after the analysis of dietary patterns has been performed.

The analysis was performed with the *Latent Class Analysis* program *Latent Gold* (Vermunt and Magidson, 2000a).

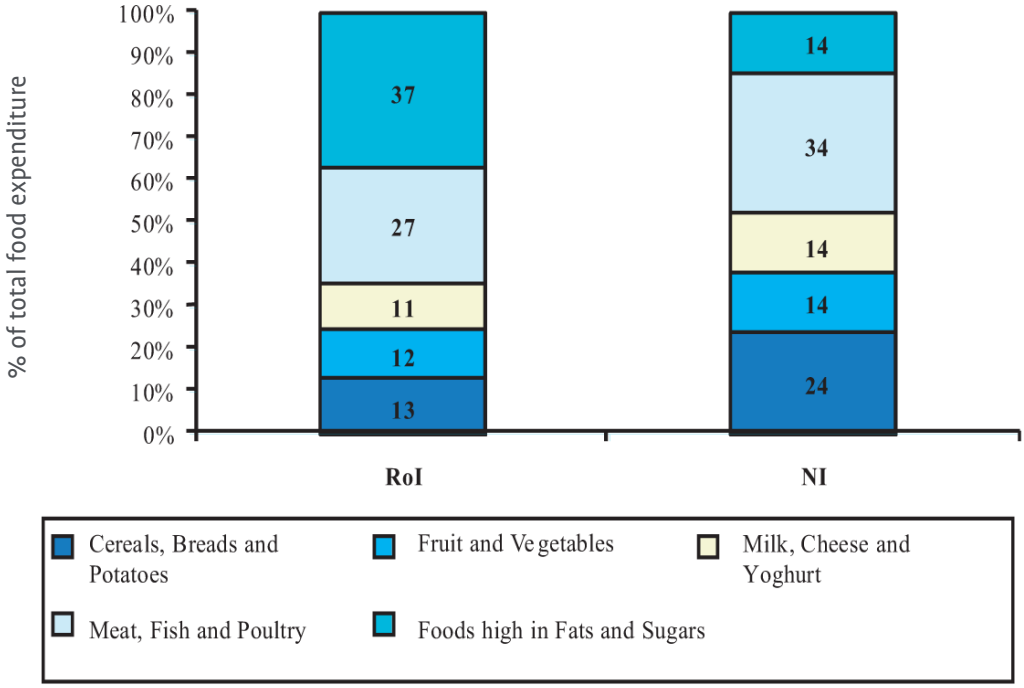
## 2.4 Results Introduction

Section 2.5 examines the respective patterns of household expenditure on food in Northern Ireland and the Republic of Ireland. It looks at the relationship between the socio-economic variables and food expenditure for each individual household on a weekly basis. (All figures presented are weighted to allow for sample design and differential response). Section 2.6 presents results from the *Latent Class Analysis.*

## 2.5 Food Expenditure Patterns of Households in the North and the Republic

Overall, households in the Republic of Ireland spend more on food than households in the North. In the period June 1999 to July 2000 average expenditure on household food in Northern Ireland was €64.73 per household per week, compared to average expenditure in the Republic of Ireland, which was €116.84 per household per week. (Comparative figures suggest that the households surveyed in the Republic of Ireland were generally larger than those surveyed in the North. Three quarters of households surveyed in the North had a household composition of 2 adults and 2 children or less, the comparative figure in the Republic was only 60%, though the Household Budget Survey in the South has a large residual category (30%) of 'All Other Households'). Figure 2.2 shows the percentage of total food expenditure for each *Food Group* in both the North and the Republic. Over a quarter of households' total food expenditure in the Republic, and over a third in the North, was spent on *meat, fish and poultry*. Households in the North spent nearly double the amount as households in the Republic on *cereals, breads and potatoes*. In contrast, households in the Republic spent more than twice as much on *foods high in fats and sugars*. Expenditure on *fruit, vegetables, milk, cheese* and *yoghurt* was similar.

**Figure 2.2 The percentage of total food expenditure by food group**




Household expenditure varies with the economic, social and demographic characteristics of the household. The NFS in the North and the HBS for the Republic provide comparable information on income/total household expenditure, employment status, housing tenure, urban/rural location, social class and household composition.

### *2.5.1 Income-Related Patterns of Household Food Expenditure*

Figures 2.3 and 2.4 show, respectively for the Republic and the North of Ireland, the percentage of food expenditure spent on each *Food Group* as it varies by *equivilised* [6] total household expenditure or income quintile.

Total household expenditure in the Republic is generally much higher, but more evenly distributed, than income is in the North. (This would lend support to the contention of the CSO in the Republic that income is generally understated, but the magnitude of the difference is too large to be explicable in terms of this factor alone). As seen in Table 2.1, 60% of households in the Republic have a total household expenditure of less than €750 per week, whereas 60% of households in the North have an equivilised income of less than €265 per week. The top 20% in the Republic have total household expenditure in excess of €1080 per week. Whereas the top 20% in the North only have incomes greater than €380 per week, some of these are very much higher.

**Table 2.1** **Relative distributions of equivilised total household expenditure (RoI) and income (NI)**

| | RoI (equivilised total expenditure) | NI (income) |
|---|---|---|
| 1st quintile | <€ 247.85 | <€129.00 |
| 2nd quintile | <€ 481.97 | <€198.88 |
| 3rd quintile | <€ 749.54 | <€265.63 |
| 4th quintile | <€1083.75 | <€379.47 |
| 5th quintile | >€1083.75 | >€379.47 |

The distribution of expenditure on food varies between the Republic and the North of Ireland. In the Republic, households whose total household expenditure falls in quintiles 3, 4 and 5 spend more than the average on food for all households, while households whose total expenditure falls in quintile 1 spend around €50 less on food than the average for all households. In the North, households whose income falls in quintiles 4 and 5 spend more than the average on food for all households, while households whose income falls in quintile 1 spend only €15 less on food.

Figure 2.3 shows that, in the Republic, the percentage of total food expenditure spent on *cereals, breads and potatoes* declines as the total household expenditure quintile rises. Households whose total expenditure falls in quintile 1 spend 3% more of their total food expenditure per week on *cereals, breads and potatoes* than the average expenditure on this group for all households. A similar decline by total household expenditure quintile is seen for the food group *milk, cheese and yoghurt* and for the food group *meat, fish and poultry*. Conversely, the percentage of total food expenditure spent on *foods high in fats and sugars* increases considerably as the total household expenditure quintile rises, from 29% of total food expenditure for total household expenditure quintile 1 to 41% of total food expenditure for total household expenditure quintile 5. There was little systematic variation in the percentage of total food expenditure spent on the food group *fruit and vegetables*.

**Figure 2.3** **Percentage of total food expenditure spent on each food group by equivilised total household expenditure quintiles for the Republic of Ireland**

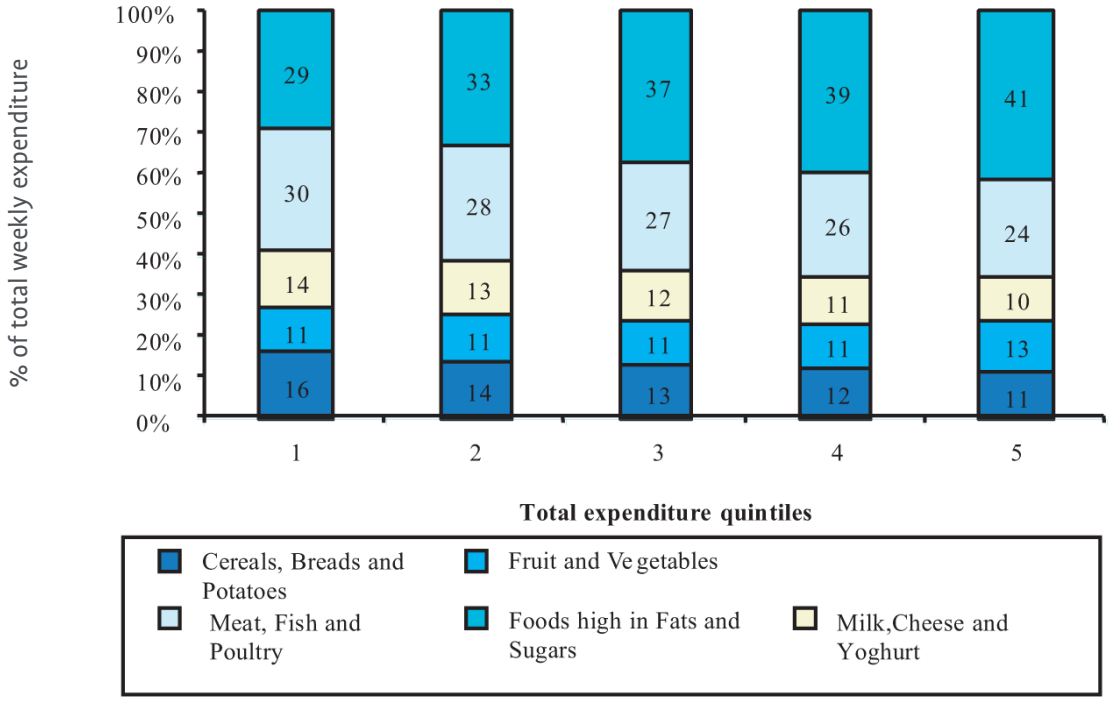
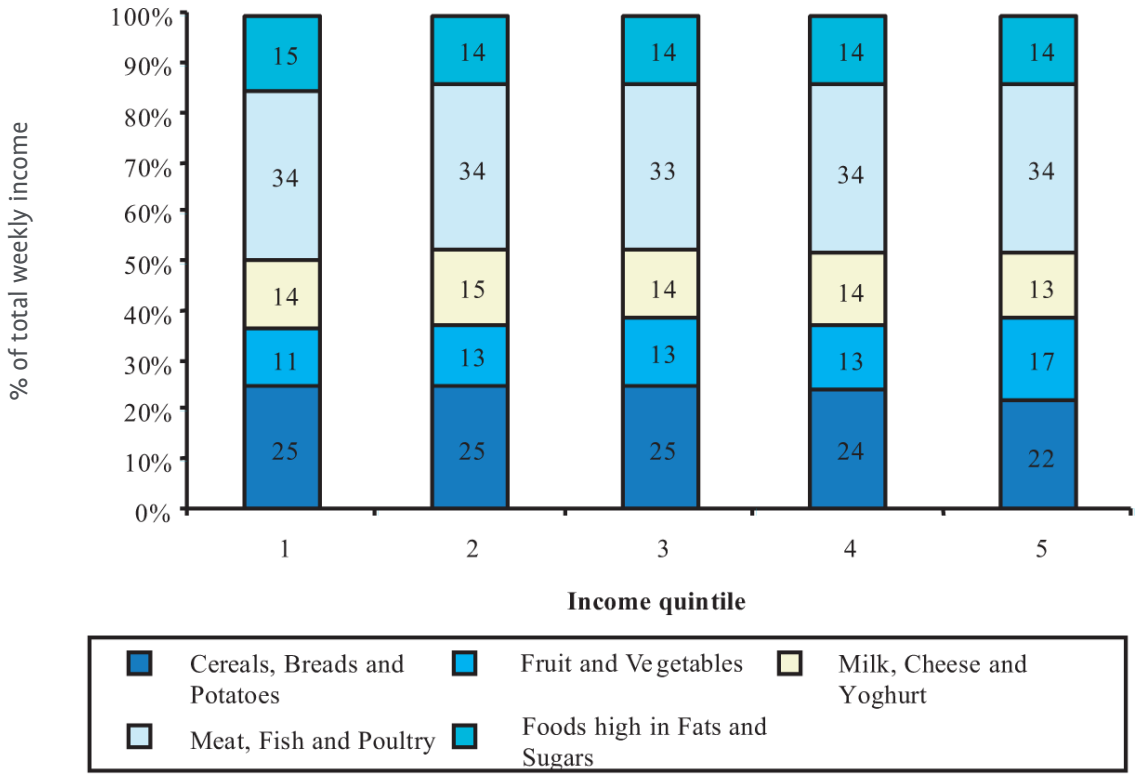



Figure 2.4 shows a more erratic picture for the North, suggesting that there is less systematic variation between households' income and the breakdown of their food expenditure between food groups. As in the Republic, households in the North whose total income falls in quintile 1 spend more than the average percentage of their total food expenditure on *cereals, breads, and potatoes*, though the variation from the average is much less. Expenditure on *fruit and vegetables* rises systematically with income quintile. All other food groups show very consistent percentages of total household food expenditure between income quintiles.

**Figure 2.4** **The percentage of total food expenditure spent on each food group by equivilised income quintiles for the North of Ireland**




### 2.5.2 *Employment Status*

Employment participation may be taken as one measure of the time cost of accessing food, with full-time workers expected to have greater time constraints on shopping choices, all other things being equal. Different categorisations of work status are used by the Household Budget Survey for the Republic and the National Food Survey for the North of Ireland. In the NFS two categories 'Employed' and 'Unemployed' are used, comprising 86% and 14% of the sample, respectively. The HBS uses a third category 'Not Available to Work', giving respective percentages of 60%, 5% and 35%.

**Figure 2.5** **The percentage of total food expenditure by work status for the Republic of Ireland**

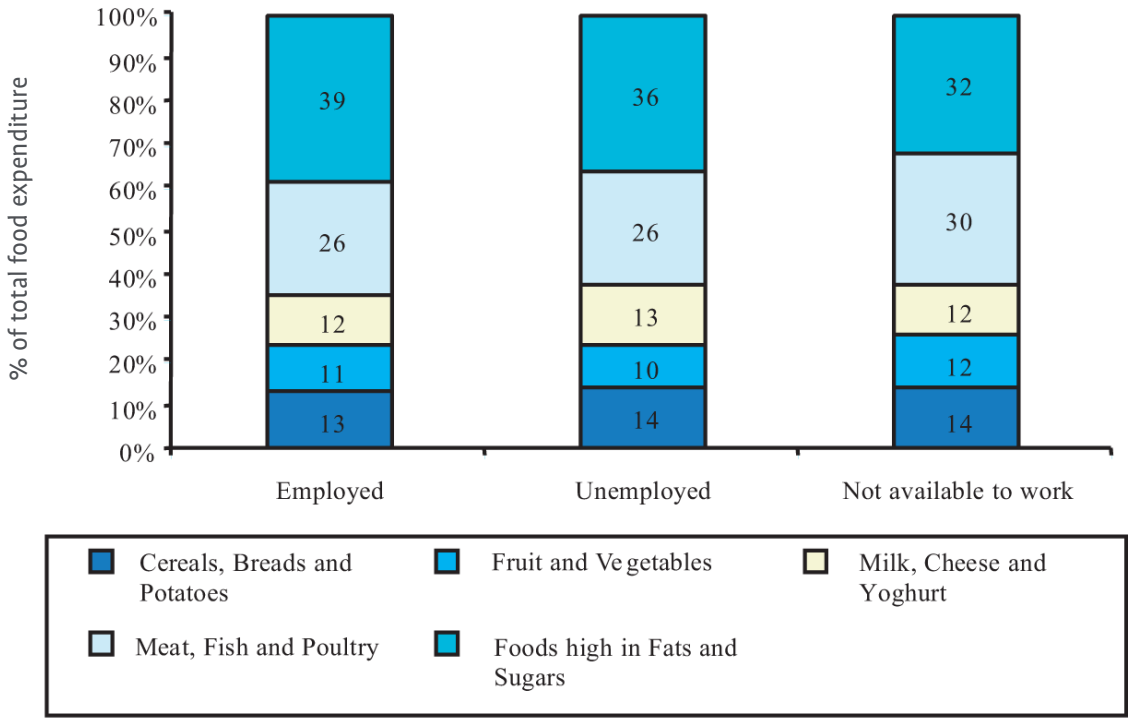
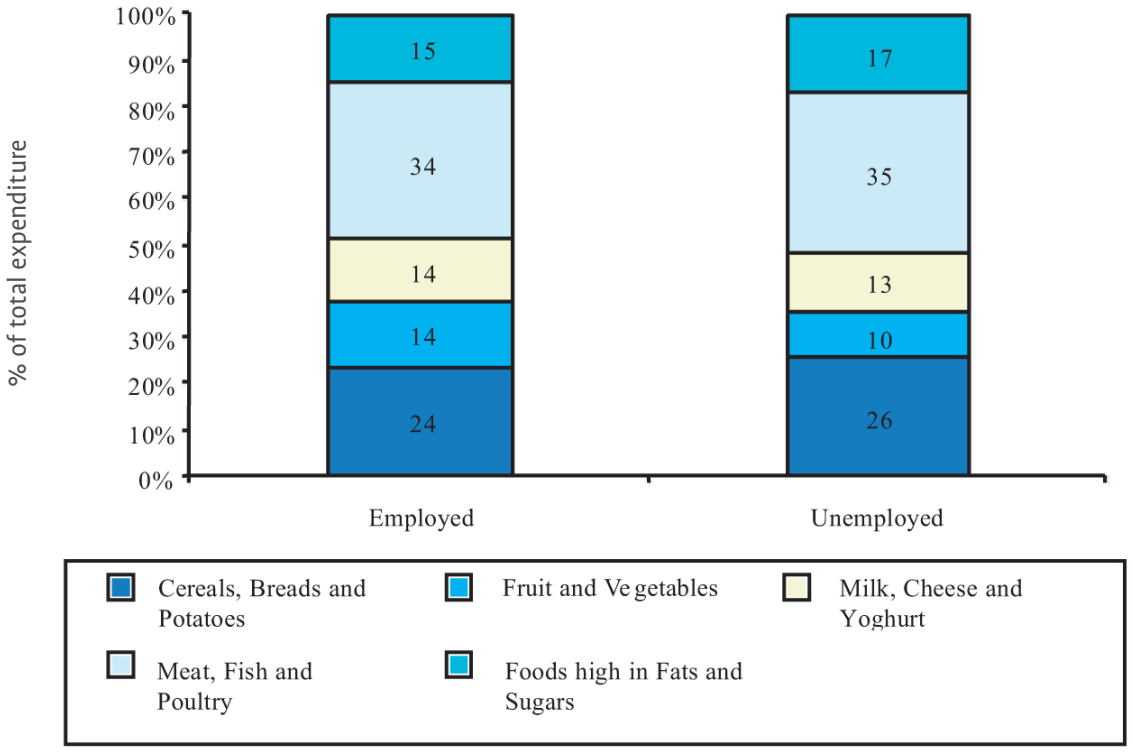



Figure 2.5 suggests that the differences between the percentages of the total household food expenditure between work status categories are not large. Households in the Republic in which the head of household is unemployed spent a higher percentage of their total food expenditure on foods within the groups *cereals, breads and potatoes* and *milk, cheese and yoghurt*. This was offset by a lower percentage spend on *fruit and vegetables* and *foods high in fats and sugars*, which showed the only marked difference between categories.

**Figure 2.6 The percentage of total food expenditure by work status for the North of Ireland**

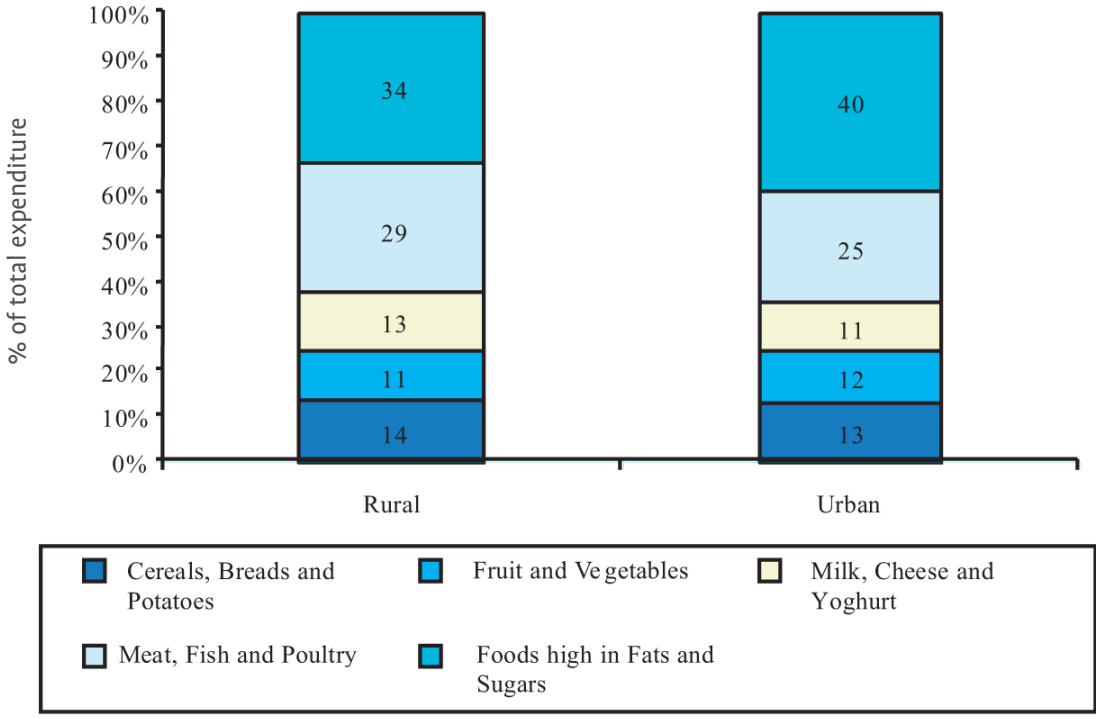



Differences between work status categories in the North are a little larger than in the Republic, as seen in Figure 2.6. Households in which the head of household is unemployed in the North spent a lower percentage of total food expenditure on *fruit and vegetables* and *milk, cheese and yoghurt* and a higher percentage per week on *fats and sugars* and *cereals, breads and potatoes*.

### *2.5.3 Urban/Rural Location*

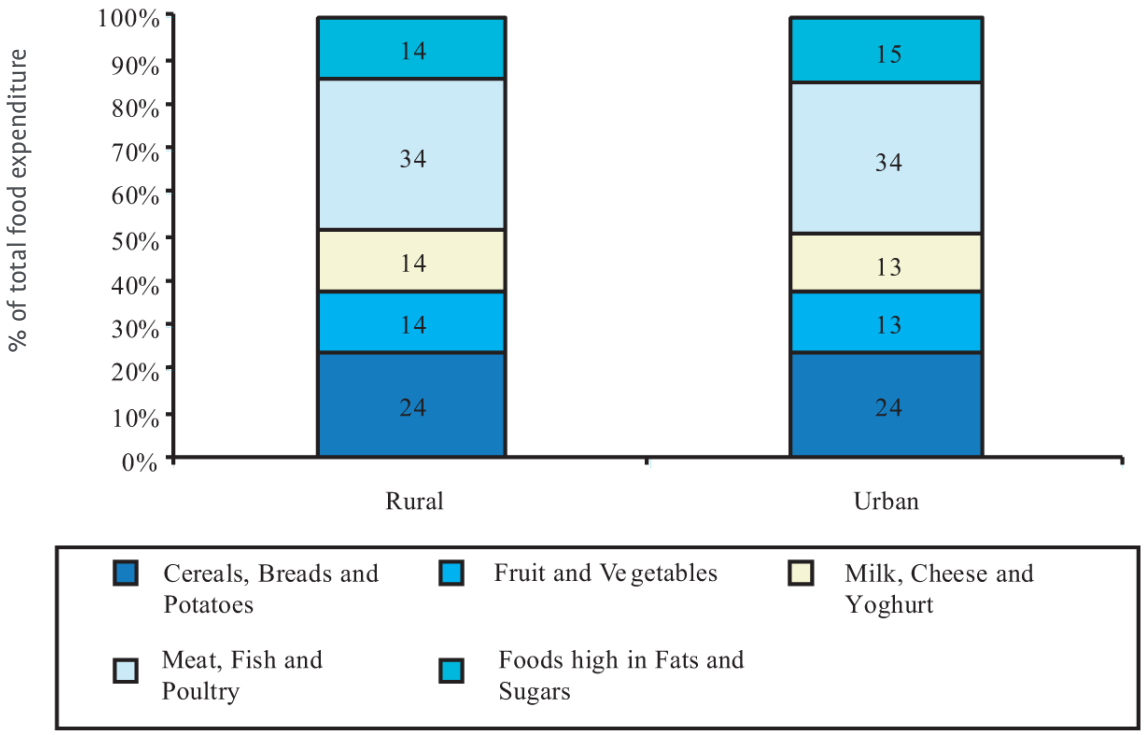
Location is a significant factor in determining access to a healthy diet (Billson et al., 1999, Hulsof et al., 1992). The urban/rural split in the Republic is roughly 55% / 45%, whilst these percentages are reversed in the North. In both the North and the Republic, rural households spend approximately €12.50 per week more on food than do urban households. Average food expenditure per week in an urban area in the Republic was €111.83 per week and in the North €59.27 per week. In a rural area in the Republic €124.77 was spent on food while €71.98 was spent per week in the North.

**Figure 2.7** **The percentage of total food expenditure for each food group by location in the Republic of Ireland**




Urban households in the Republic spent the most on f*oods high in fats and sugars* at 40% and average expenditure per week was above average expenditure for all households in the Republic (Figure 2.7). Rural households in the Republic spent 4% more than urban households on *meat, fish and poultry* and double the amount spent by urban households in the North. In both the Republic and the North average expenditure on *fruit and vegetables*, and *milk, cheese and yoghurt* were very similar. In the North there is very little variation in dietary expenditure between rural and urban areas (Figure 2.8).

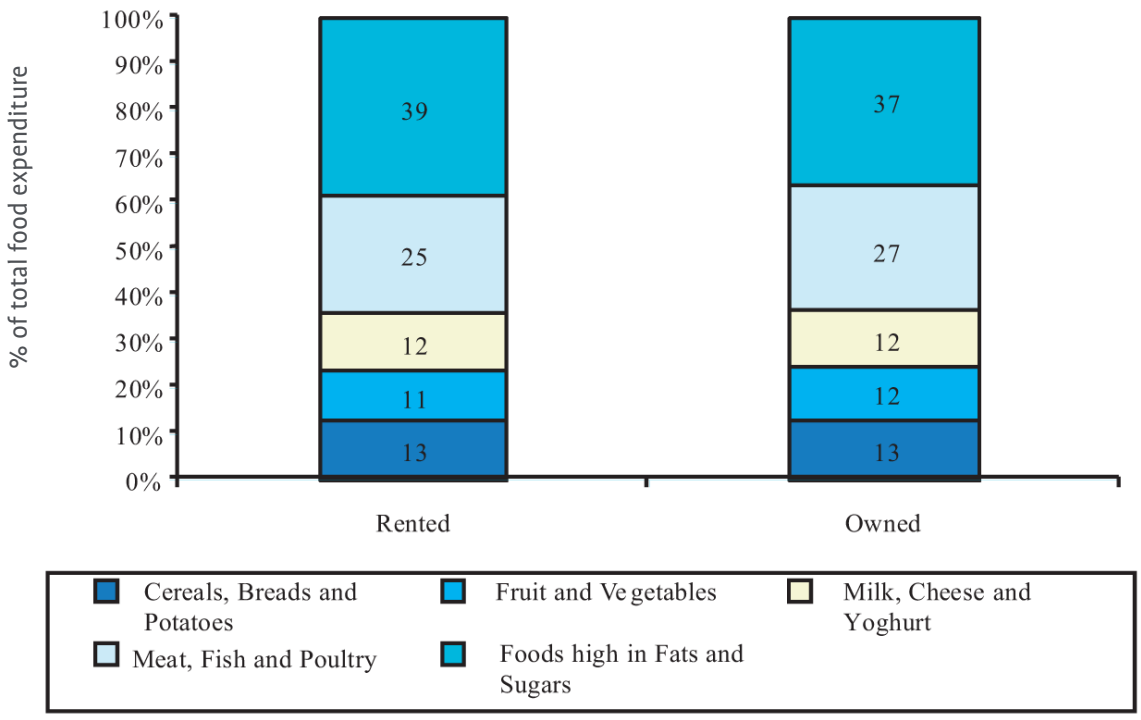
**Figure 2.8** **The percentage of total food expenditure for each food group by location in the North of Ireland**




### *2.5.4 Household Tenure*

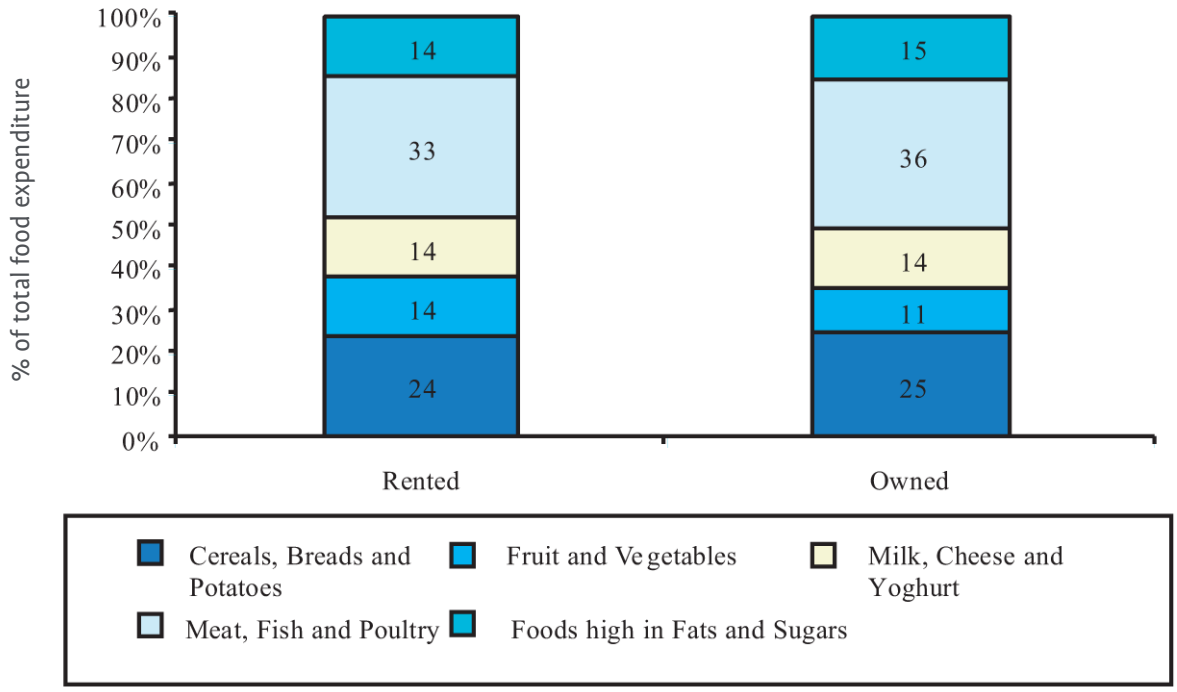
The distribution of households surveyed varies markedly by housing tenure across the two jurisdictions. Only one in six (16.5%) of households in the Republic were rented, whereas nearly three quarters (72.2%) of those in the North were rented. Across the different types of accommodation the expenditure patterns are very similar with only a 1% or 2% difference between most food groups. Rented households in the Republic spend a little more of their total food expenditure than did owner- occupied households on *foods high in fats and sugars* and a little less on *meat, fish and poultry* (Figure 2.9).

**Figure 2.9** **The percentage of total food expenditure for each food group by housing tenure in the Republic of Ireland**




In relation to overall food expenditure patterns, as indicated earlier, those living in the Republic of Ireland spent more on *foods high in fats and sugars*, while about a quarter of total food expenditure in the North is spent on *cereals, breads and potatoes*. In contrast to the situation in the Republic, rented households in the North spent a little less on *foods high in fats and sugars* than did owner - occupied households, but they did spend a little more on *fruit and vegetables* (Figure 2.10).

**Figure 2.10** **The percentage of total food expenditure for each food group by housing tenure in the North of Ireland**

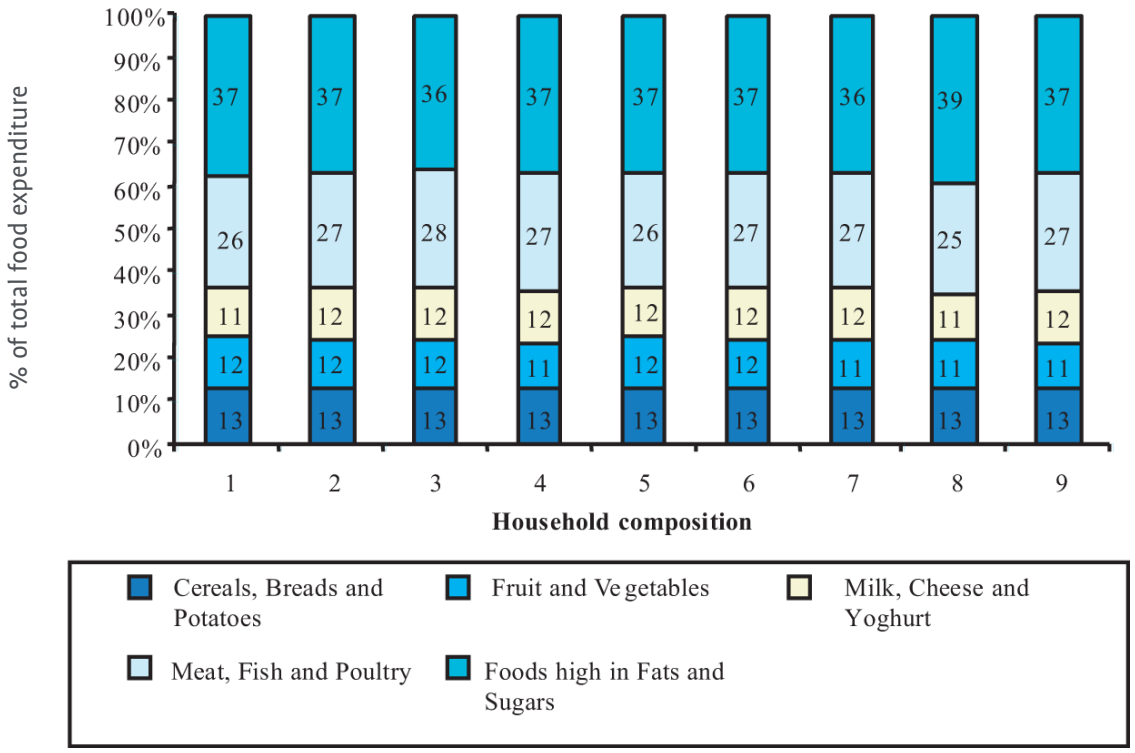



### *2.5.5 Household Composition*

Previous literature suggests that the size and the composition of a household have a significant effect on household food expenditure (Pryer et al. 2001; Barker et al. 1990). In the Republic, the highest average per capita expenditure on food per week was in households with a single adult. In the North, the average expenditure for a two adult, four children household was €119.57 per week, while in the Republic average expenditure was €125.38 per week.

Although average expenditure per household increased, it did not increase equally for each additional child. In the Republic of Ireland, expenditure on food increased by €6.82 for one extra child and with four extra children expenditure increased by €11.53 (rather than by €27.27 had the increase been proportionate). In the North, a couple's average expenditure on food increased by €7.73 with an additional child. However, as with the Republic additional expenditure seemed to vary for every child added to the family. A single adult household with children spent €9.96 less than the average expenditure for all households in the Republic and €6.51 less in the North.

**Figure 2.11** **The percentage of total food expenditure for each food group by household composition in the Republic of Ireland**

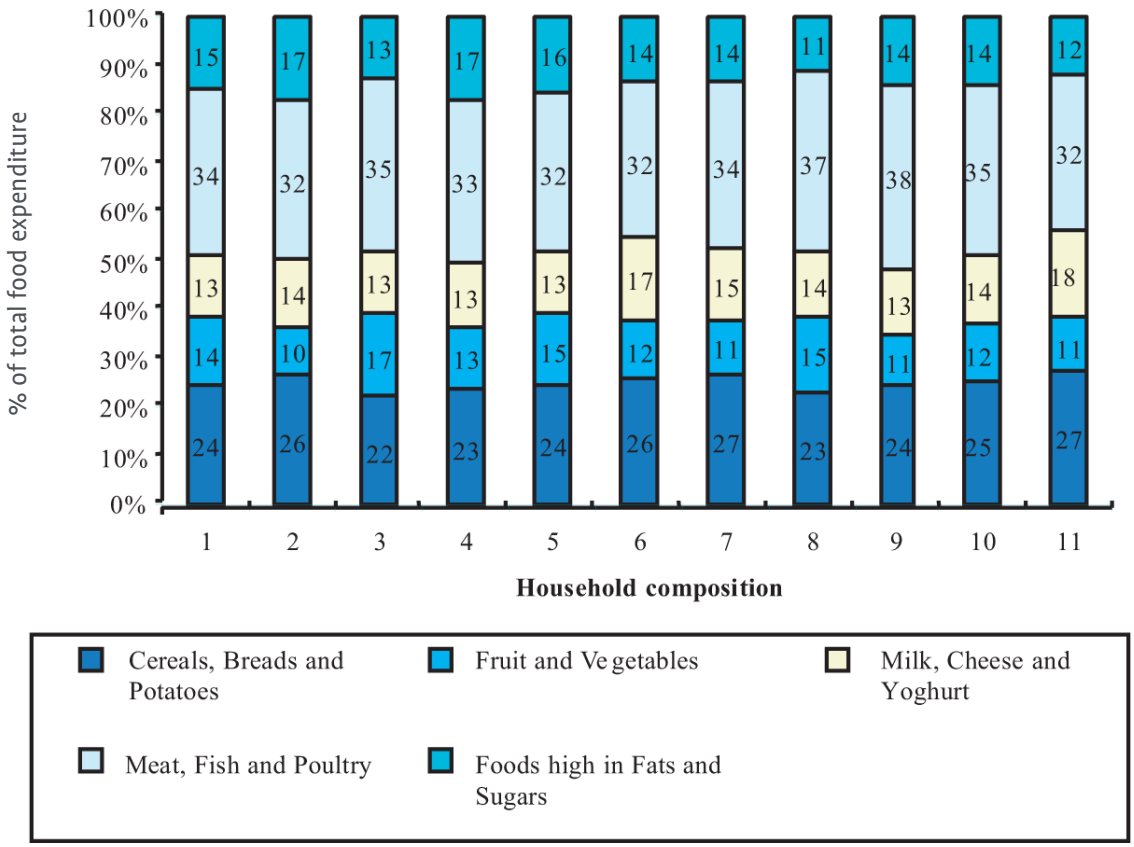



### Classification of household composition

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
|---|---|---|---|---|---|---|---|---|
| 1 adult aged 14-64 | 1 adult aged 65 or over | Married couple | Married couple + 1 child | Married couple + 2 child | Married couple + 3 child | Married couple + 4 child | Single adult+ 1 child | All other households |

Within the Republic, there was not a clear pattern of variation of food group items purchased by household composition (Figure 2.11). Single parent households purchased a higher proportion of food items from the *foods high in fats and sugars* food group. The lowest expenditure on *fruit and vegetables* was by married couples with a single child, who also had relatively high expenditure on *foods high in fats and sugars*. The highest expenditure on *fruit and vegetables* was by single adult households in the 14 to 64 year age range.

**Figure 2.12** **The percentage of total food expenditure for each food group by household composition in the North of Ireland**




## Classification of household composition

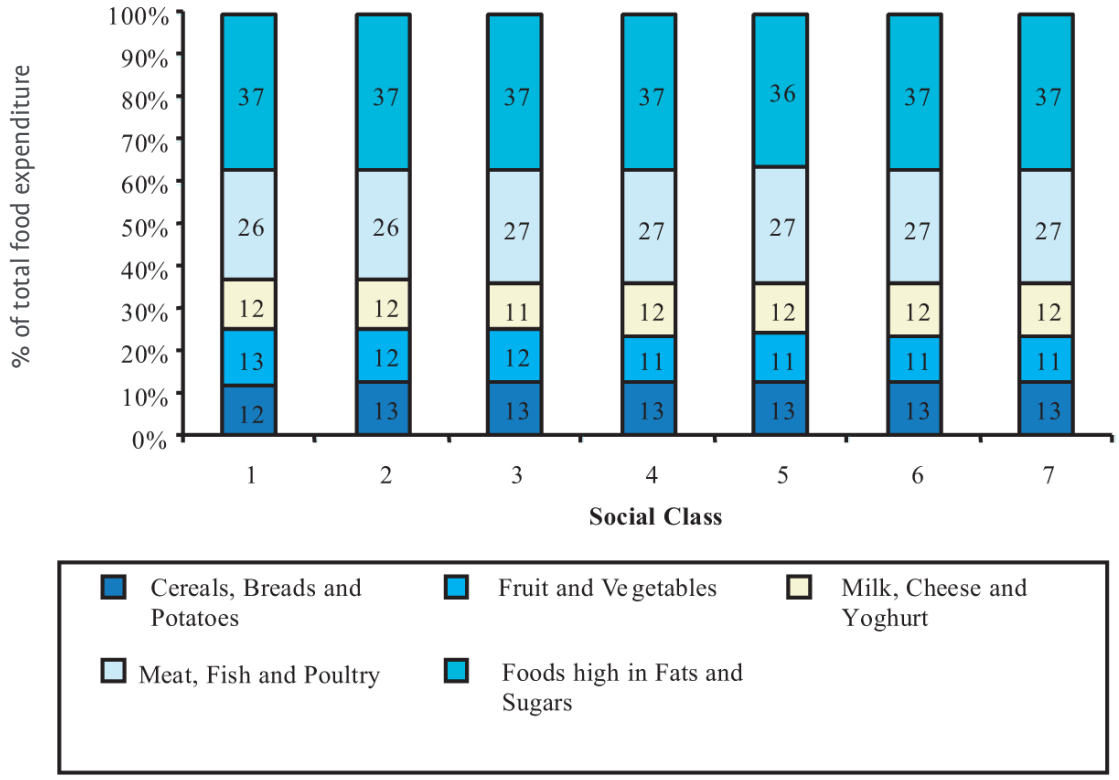
| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 1 adult only | 1 adult + 1 or more children | 2 adults only | 2 adults + 1 child | 2 adults + 2 child |
| **6** | **7** | **8** | **9** | **10** |
| 2 adults + 3 child | 2 adults + 4 child | 3 adults only | 4 or more adults only | 3 adults + 1 or 2 children |
| **11** | | | | |
| 3 or more adults + 3 or more children | | | | |

In the North variations were more systematic (Figure 2.12). It would appear that the quality of household diet declines according to the number of children in the household. Expenditure on *fruit and vegetables* was lowest for single parent households and households with more than three children and highest for households with two adults only. However, expenditure on *foods high in fats and sugars* was highest for only-child households, either single parent or two parents. It was at its lowest for households with adults only. Expenditure on food items from the *meats, fish and poultry* food group showed an inverse relationship, being highest for adult-only households and increasing progressively for each additional adult.

### *2.5.6 Social Class*

Social class categorisations vary between the Republic and Northern Ireland, with nearly one half of the latter falling into the residual 'other' category. (Social class had been classified according to the numerous occupations listed – the 'other' category included households where household members were living on pensions, retired, unemployed, sick and/or students). Generally, households that fall into the category of *unskilled manual* spend the least percentage of total food expenditure on *fruit and vegetables*. The percentage of total food expenditure on *foods high in fats and sugars* was similar across the different social classes. The households that are in the professional and managerial social classes spent the largest percentage of total food expenditure on *meat, fish and poultry* and *fruit and vegetables*.

**Figure 2.13** **The percentage of total food expenditure for each food group by social class in the Republic of Ireland**

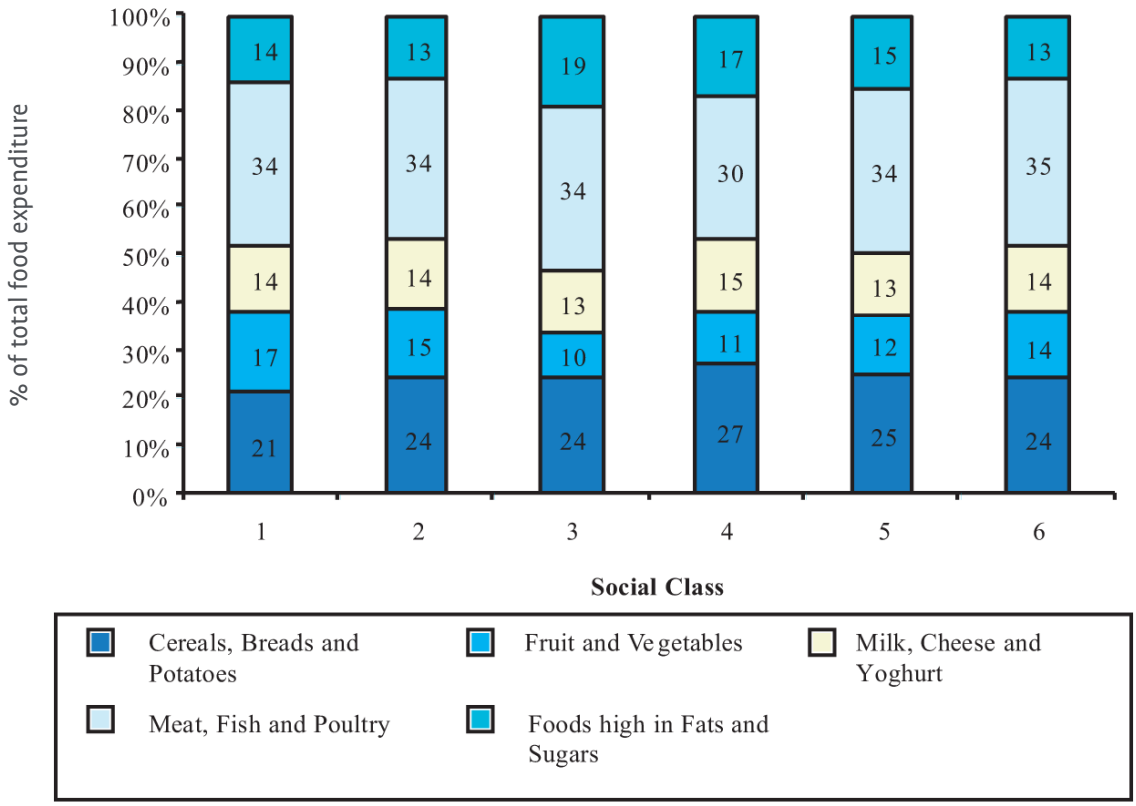


## Classification of social class (RoI)

1. Professional Workers 2 . Managerial Technical 3 . Non-Manual
4 . Skilled Manual 5 . Semi-Skilled
6 . Unskilled Manual 7 . All Others Gainfully Occupied

Within the Republic, the distribution of food expenditure according to the different food categories was relatively invariant across the social classes (Figure 2.13). There was a small decline in expenditure on *fruit and vegetables* with social class. Expenditure on *foods high in fats and sugars* was highest for Managerial and Technical workers and Skilled Manual workers.

**Figure 2.14 The percentage of total food expenditure for each food group by social class in the North of Ireland**




## Classification of social class (NI)

1 = Professional 2 = Managerial &Technical 3 = Skilled Occupations
4 = Partly-Skilled Occupations 5 = Unskilled Occupations 6 = Other

The distribution of food expenditure across the different food categories in the North showed more by way of systematic variation with professional, managerial and technical workers spending noticeably more on *fruit and vegetables* than did skilled, partly-skilled and unskilled workers (Figure 2.14). The latter tended to spend more on *foods high in fats and sugars*, with skilled manual occupations having the highest expenditure within this food group. Though, it should again be noted that some of these social categorisations included quite small numbers, given the dominance of the 'other' category.

## 2.6 Dietary Patterns of Households in the Republic of Ireland

### 2.6.1 Dietary Clusters

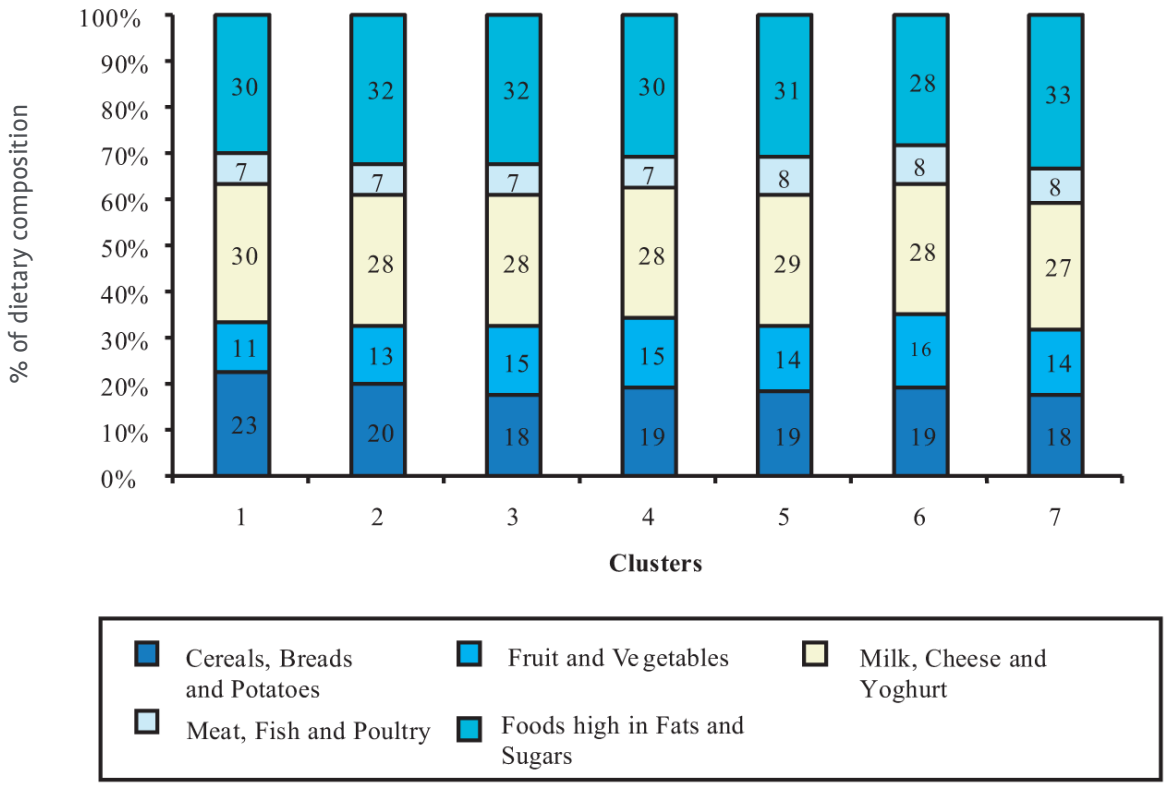
Using the data from the HBS, the 7,628 households surveyed were classified using the *Latent Class* approach to *Cluster Analysis* into dietary clusters. Clustering was halted when the households had been grouped into seven clusters (Table 2.2). Of the 7,628 households, over half fell into one of two clusters – *Cluster 1* and *Cluster 2*, which contained 30 % and 26 % of the households respectively. These are taken as reference clusters and their respective characteristics discussed further below. Of the remaining clusters, three had a sizeable membership – *Cluster 3* at 16 %, *Cluster 4* at 13 %, and *Cluster 5* at 9 % - and two may be considered to be residual clusters – *Cluster 6* and *Cluster 7* both with only 3 % membership.

**Table 2.2 Dietary patterns of households in the Republic of Ireland by food groupings**

| | Cluster 1 | Cluster 2 | Cluster 3 | Cluster 4 | Cluster 5 | Cluster6 | Cluster 7 |
|---|---|---|---|---|---|---|---|
| **Cluster Size** | 30% | 26% | 16% | 13% | 9% | 3% | 3% |
| Cereals, breads and potatoes (grams) | 6612 | 10265 | 9631 | 6664 | 9283 | 8090 | 15075 |
| Fruit and vegetables (grams) | 2455 | 5076 | 6058 | 3902 | 5241 | 5441 | 9493 |
| Fruit juices (millilitres) | 656 | 1369 | 1682 | 1131 | 1292 | 1365 | 2405 |
| Milk, cheese and yoghurt (grams) | 374 | 724 | 911 | 491 | 654 | 686 | 1613 |
| Milk (litres) | 8.32 | 13.79 | 14.11 | 9.27 | 13.16 | 11.11 | 20.73 |
| Meat, fish and poultry (grams) | 1703 | 3170 | 3431 | 2180 | 3389 | 3109 | 5866 |
| Eggs (number) | 5 | 7 | 5 | 6 | 6 | 7 | 8 |
| Foods high in fats and sugars (grams) | 8747 | 15980 | 16367 | 10037 | 14506 | 11255 | 26876 |
| Ice-cream (millilitres) | 286 | 625 | 708 | 403 | 519 | 509 | 1008 |

Clustering of households was performed on the basis of their expenditure of the 85 food items reported in the Household Budget Survey. Here, cluster characteristics will be presented in terms of the aggregation of those individual items into the standard food groups of the Republic of Ireland *Food Pyramid*. The proportionate contribution of each food group to the overall diet, as measured in grams, can be seen in Figure 2.15

**Figure 2.15** **Respective contribution of food groups to cluster diets in the Republic of Ireland**




### *2.6.2 Dietary and Social Characteristics of Dietary Clusters*

Households in *Cluster 1* spent more money on *cereals, breads and potatoes* and less on *fruit and vegetables*. Households grouped into the cluster are over-represented by single adult households. These may be either in the 14-64 years age range or the 65+ years age range. They are also over-represented by single parent households. They are more likely to live in local authority rented accommodation or private rented furnished accommodation, be categorised as 'all others gainfully employed' rather than to a distinct social class, be out of work, live in an urban location and have an overall low total household expenditure. They are more likely to be households containing smokers.

Households in *Cluster 2* may be thought of as consuming the most representative southern Irish diet, (notwithstanding that, at 26%, it has a slightly smaller cluster membership then *Cluster 1* at 30%), since the expenditure patterns of this cluster do not deviate in any significant way from the whole - Republic expenditure patterns. As with households in *Cluster 1*, they spend less on *fruit and vegetables* than do the smaller clusters, though less markedly so than *Cluster 1*. *Cluster 2* is under-represented by households in the various 'single household' categories characteristic of *Cluster 1*. A household in this cluster is more likely to be a household with more than four children, to live in a rural location, to have generally higher total household expenditure and to have a slightly higher chance of living rent free.

*Cluster 3* is distinguishable from *Cluster 2* and particularly *Cluster 1*, by its lower expenditure on *cereals, breads and potatoes*. It compensates by higher expenditure on *fruit and vegetable* food items and of *foods high in fats and sugar*. *Cluster 3* is distinguishable by its relative level of educational attainment. Households grouped within this cluster are over-represented in terms of household members having a higher degree, for the spouse of the head of the household to have a professional occupation, and less likely for the household to have a low total household expenditure. This would appear to be independent of household structure, though the various 'single household' categories characteristic of *Cluster 1* are slightly under-represented within this cluster.

*Cluster 4* is distinguishable from other clusters (except *Cluster 6*) by its low expenditure on food items from the top shelf of the Food Pyramid *(foods high in fats and sugars)*. In other respects, (apart from the higher expenditure on *fruit and vegetables* previously noted), it shows similar patterns to *Cluster 2*. A household in *Cluster 4* is less likely to have teenagers in the household or be a household with a large number of children. It is more likely to be a household with no children and for the married spouse to be temporarily away. It is not particularly distinguishable in terms of educational attainment, occupational classification or total household expenditure.

*Cluster 5* does not vary markedly from the reference *Cluster 2* other than in respect of higher expenditure on *fruit and vegetables*. It is also has few distinguishing social characteristics. Educational attainment at the primary and junior level is marginally over-representative of this cluster.

*Clusters 6 and 7*, as has been mentioned, have very small cluster membership, both being only 3%. *Cluster 6* has the most distinct dietary pattern. It is the highest of all clusters in its expenditure on *fruit and vegetables* and it is the lowest of all clusters in its expenditure on Top Shelf food items (*foods high in fats and sugars*). It therefore exhibits the healthiest dietary patterns of all clusters. The cluster is not clearly distinguishable in social, demographic and economic terms. Some over-representations of households with certain characteristics are found, but the small number within this group would render them insignificant in formal statistical terms. *Cluster 7* is distinctive in dietary terms for being the highest spending cluster on *foods high in fats and sugars*, it has low expenditure on Bottom Shelf *cereals, breads and potatoes*, food items. It is over-represented by households categorised as having professional head of household or spouse, though also (somewhat perversely) for the spouse to have no educational qualification. It is also over-represented towards the higher quintiles of total household expenditure.

**Table 2.3 Summary of cluster characteristics for Republic of Ireland**

| Cluster | Key Dietary Characteristics | Key Social Characteristics |
|---|---|---|
| Cluster 1 (30%) | Highest in cereals, breads, pots<br>Lowest in fruit and vegetables | Single parent and single adult<br>Rented housing, smokers |
| Cluster 2 (26%) | Low in fruit and vegetables<br>High in fats and sugars | Rural location<br>More than 4 children |
| Cluster 3 (16%) | Low in cereals, breads, pots<br>High in fats and sugars | Educational attainment<br>working spouses |
| Cluster 4 (13%) | Mid-range across all food groupings | No children<br>Spouse temporarily absent |
| Cluster 5 (9%) | As cluster 4 except for small (<1% variations) | Educational attainment |
| Cluster 6 | Highest in fruit and vegetables | Married couple with one or no children |

| | | |
|---|---|---|
| (3%) | Low in fats and sugars | |
| Cluster 7 | Higest in fats and sugars | Professional households |
| (3%) | Low in cereals, breads, pots | Spouses without qualifications |

## 2.7 Dietary Patterns of Households in Northern Ireland

### 2.7.1 Dietary Clusters

The NFS for the North provided data for 234 food items for a survey sample of just under a thousand households. These were clustered in a similar way as has been described for the Republic, using the *Latent Class Clustering Analysis* procedure and drawing in social, economic and demographic information also provided by the NFS. In this case 6 clusters provided the natural termination point for the clustering routine (Table 2.4).

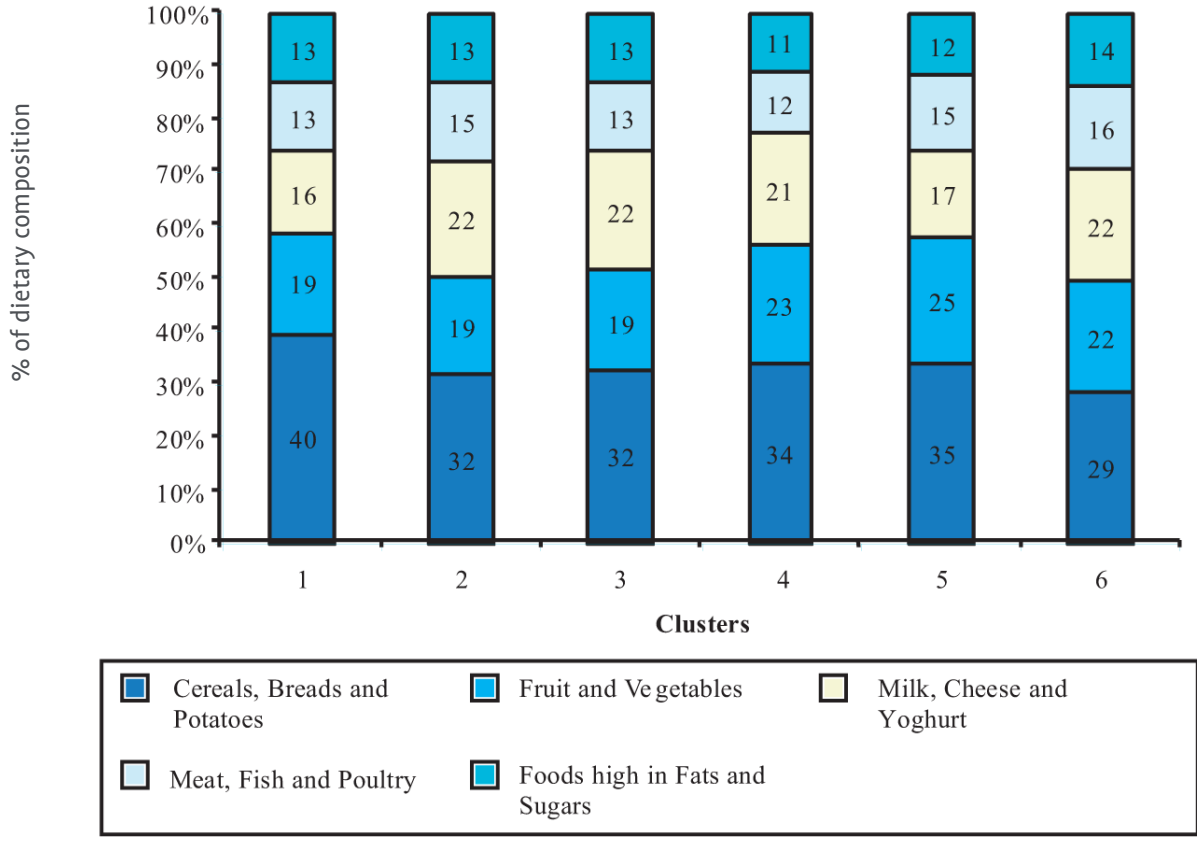
The distribution of households between clusters produced a single dominant cluster which contained 38% of the households clustered. The spread between the other five clusters was more uniform and they contained 16%, 13%, 13%, 11% and 9% respectively. Thus, each represents a clear dietary type, without the presence of the residual clusters observed for the South.

**Table 2.4 Dietary patterns of households in Northern Ireland by food groupings**

| | Cluster 1 | Cluster 2 | Cluster 3 | Cluster 4 | Cluster 5 | Cluster 6 |
|---|---|---|---|---|---|---|
| Cluster Size | 38% | 16% | 13% | 13% | 11% | 9% |
| Cereals, Breads and Potatoes (grams) | 4389 | 7088 | 9570 | 10001 | 7570 | 10709 |
| Fruit and Vegetables (grams) | 1970 | 3743 | 5816 | 6238 | 5129 | 7089 |
| Fruit juices (millilitres) | 161 | 400 | 794 | 1006 | 628 | 1085 |
| Milk, Cheese and Yoghurt (grams) | 196 | 316 | 394 | 358 | 334 | 424 |
| Milk (litres) | 1.59 | 4.47 | 5.50 | 4.49 | 5.34 | 6.64 |
| Meat, Fish and Poultry (grams) | 1238 | 3003 | 3372 | 3214 | 3563 | 5303 |
| Eggs (number) | 3 | 6 | 6 | 6 | 8 | 7 |
| Foods High in Fats and Sugars (grams) | 1357 | 2759 | 2851 | 3210 | 3584 | 4533 |
| Ice Cream (millilitres) | 91 | 343 | 430 | 494 | 263 | 592 |

The proportionate contribution of each food group to the overall diet, as measured in grams, can be seen as follows in Figure 2.16. In contrast to the patterns exhibited in the Republic, where expenditure on *meat, fish and poultry* was fairly consistent across clusters, there were some distinctions between clusters in the North in this respect.

**Figure 2.16** **Respective contribution of food groups to cluster diets in Northern Ireland**




### *2.7.2 Dietary and Social Characteristics of Dietary Clusters*

*Cluster 1* covers more than a third of Northern Irish households. It has the highest expenditure on food items from the *cereals, bread and potatoes* food group and the joint lowest on items from the *fruit and vegetables* food group. In these respects it displays a similar pattern to that of *Cluster 1* of the South. The cluster has a relatively high representation of the young and the old. Households within this cluster tend to be smaller and are likely to be within the lowest quintile for income.

*Cluster 2*, the next largest cluster, covers more than one in every six households in the North. In relation to *Cluster 1*, it has lower expenditure on *cereals, breads and potatoes*, but higher acquisition on *meat, fish and poultry*. There is no equivalent cluster to this in the South. Households falling within *Cluster 2* can be found across all household compositions. They tend to be found more predominantly within the unskilled occupational class and in the lowest income quintile. Their most dominant characteristic is their higher levels of membership of the 'other' social class categorisation.

*Clusters 3* and *4*, each covering 13% of households, have quite similar dietary patterns but are distinguished in terms of social, economic and demographic characteristics. They both spend high amounts on *fruit and vegeta-*

*bles*, compared to the first two clusters, and low amounts on *foods high in fats and sugars*. They may be considered relatively healthy diets. The most differentiating social characteristic is membership of the 'other' social class categorisation, with *Cluster 3* being strongly over-represented in respect of this characteristic and *Cluster 4* being under-represented. Households in *Cluster 3* have more household members in the 17 to 25 year age range. Households in *Cluster 3* will tend to be classified occupationally as managerial households, whereas households in *Cluster 4* are classified as professional households.

There are also similarities in the dietary patterns of *Clusters 5* and *6*. Both have equally the lowest rates of expenditure on *cereals, breads and potatoes* and the highest rates of expenditure on *meat, fish and poultry*. What distinguishes the clusters from each other is that *Cluster 5* has also the highest expenditure on *foods high in fats and sugars*, whereas for *Cluster 6* this is close to the norm across clusters. Both are characterised by relatively large households, though for *Cluster 6* these are more likely to be classified as professional in terms of social grouping. They are also over-represented within the highest quintile of income, whereas households in *Cluster 5* are over-represented in the second quintile. Households grouped into *Cluster 6* are over-represented in terms of whether household members consume alcohol.

**Table 2.5 Summary of cluster characteristics for Northern Ireland**

| Cluster | Key Dietary Characteristics | Key Social Characteristics |
|---|---|---|
| Cluster 1 (38%) | Highest in cereals, breads, pots<br>Lowest in fruit and vegetables | Smaller households<br>Lowest quintile for income |
| Cluster 2 (16%) | Lower in cereals, breads, pots<br>Lowest in fruit and vegetables | Unskilled occupational class<br>'Other' social class categorisation |
| Cluster 3 (13%) | Highest in fruit and vegetables<br>Lowest in fats and sugars | Managerial households<br>'Other' social class categorisation |
| Cluster 4 (13%) | Highest in fruit and vegetables<br>Low in fats and sugars | Professional households |
| Cluster 5 (11%) | Lowest in cereals, breads, pots<br>Highest in fats and sugars | Large households<br>Professional households |
| Cluster 6 (9%) | Lowest in cereals, breads, pots<br>Highest in meat, fish, etc | Large households<br>Alcohol consumption |

## 2.8 Comparison of Dietary and Social Patterns between the Republic and North of Ireland

Direct comparison of both dietary and social patterns between clusters in the Republic and the North of Ireland are difficult to make. As has been noted regularly above, there are inconsistencies in the data sources, some of which are known and some of which may be surmised. Because of this, it was also necessary to undertake the clustering exercises separately. Notwithstanding these caveats, some tentative alignment of clusters is offered below. Figure 2.17 shows the location of the seven clusters of the Republic of Ireland according to the three discriminating dietary dimensions. Figure 2.18 shows a similar representation for the six clusters of Northern

Ireland. It was noted previously, unlike the Republic, the dimension of *meat fish and poultry* does provide some discrimination between clusters. Notwithstanding this, it is possible to see some rough alignments between North and South clusters.

**Figure 2.17** **Location of clusters for the Republic of Ireland according to the three dominant dimensions of diet**

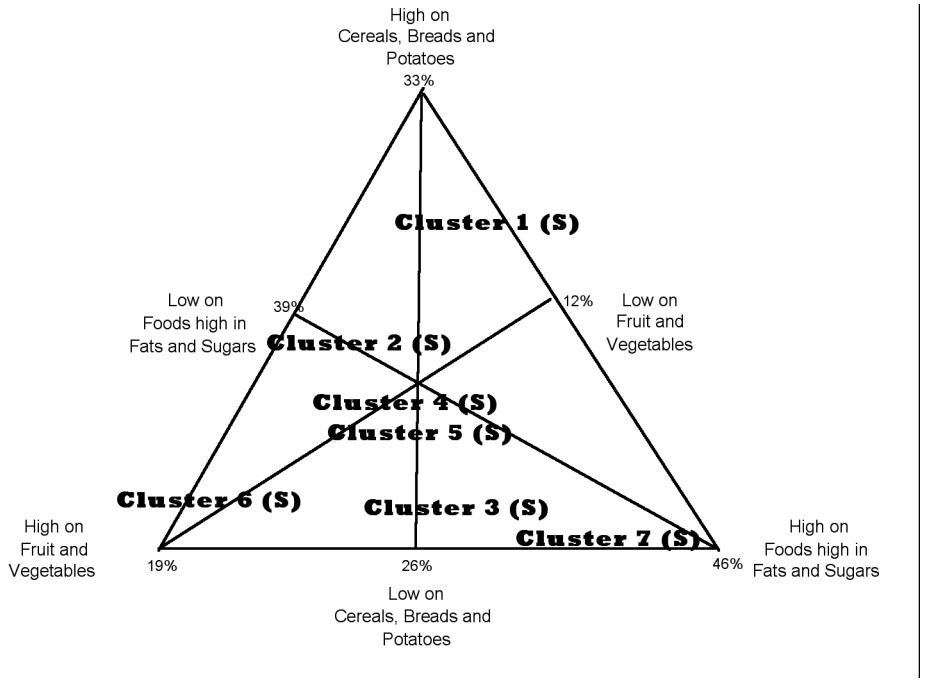
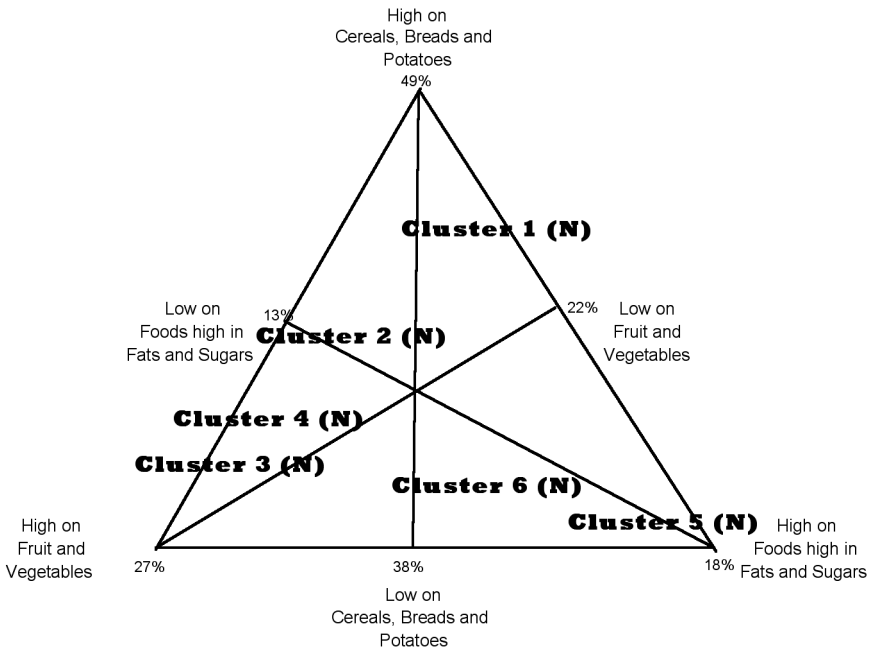



**Figure 2.18** **Location of clusters for Northern Ireland according to the three dominant dimensions of diet**



It will be seen that there is a fairly close correspondence between the two dominant clusters, *Cluster 1 (N)* and *Cluster 1 (S)*, with their respective proportionate membership of 38% and 30%. The similarities are not only dietary. It has been noted that, for both North and South, households in the respective clusters will tend to be smaller households comprised of either the relatively younger (often in the Republic single parent) or relatively elderly household members.

There is also a dietary correspondence between the second major cluster of households for both North and South. *Cluster 2 (S)*, which accounts for 26% of households in the Republic and *Cluster 2 (N)*, which accounts for 16% of households in Northern Ireland, each have medium levels of acquisition of *cereals, breads and potatoes* and *fruit and vegetables,* but low levels of acquisition of *foods high in fats and sugar*. It is not possible, though, to discern clear similarities in respect of social composition of the respective clusters.

North and South Clusters generally align more strongly in respect of dietary characteristics than social characteristics – as a consequence of the clustering process being 'led' by the dietary variables. The two Northern Clusters, *Cluster 3 (N)* and *Cluster 4 (N)*, which each respectively account for 13% of Northern households correspond closely to *Cluster 6 (S)* on account of both being the respective cluster spending highest amounts of *fruit and vegetables* and the lowest amounts of *foods high in fats and sugars*. Cumulatively, these clusters account for 26% of Northern Irish households, but only 3% of households within the Republic.

There is no apparent alignment between the two Southern clusters, *Cluster 4 (S)* and *Cluster 5 (S)*, which together account for 22% of households within the Republic and which each have medium levels of expenditure on foods in all the three dominant dietary groupings, and any of the Northern clusters.

*Cluster 5 (N)*, which accounts for 11% of Northern Households, corresponds closely to the residual cluster *Cluster 7 (S)* on account of both being the respective highest spending cluster on *foods high in fats and sugars* and the lowest spending cluster on *fruit and vegetables*. Any correspondence in socio-economic terms is difficult to assess, given the low membership of the two Southern clusters, (both comprising only 3% of households), rendering assessment of significance difficult, though it has been noted that both *Cluster 7 (S)* and *Cluster 5 (N)* were characterised by the higher probability of professional class membership.

There are dietary similarities between the final Northern cluster, *Cluster 6(N)*, which accounts for 9% of households in the North, and the third major cluster in the Republic, *Cluster 3(S)*, which accounts for 16% of households, in that both had relatively low levels of expenditure on *cereals, breads and potatoes*. *Cluster 6(N)*, however, also had high expenditure on *meat, fish and poultry*.

**Table 2.6** **Summary of cluster alignments and shared social characteristics between Northern and southern clusters**

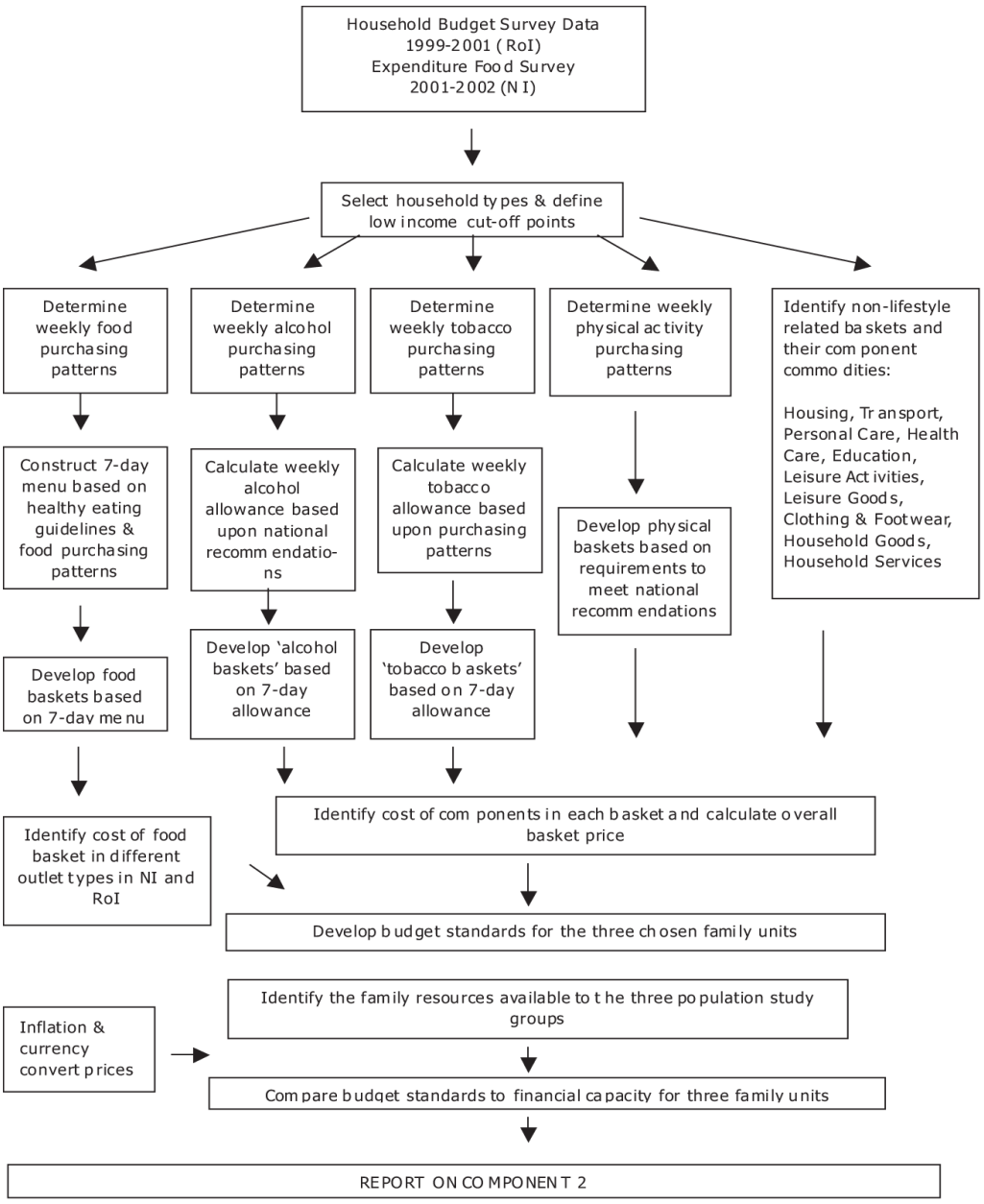
| Northern Clusters | Southern Clusters | Cereals, Breads & Potatoes | Fruit and Vegetables | Foods High in Fats and Sugar | Social Character |
|---|---|---|---|---|---|
| Cluster 1(N) | Cluster 1(S) | High | Low | Medium | Smaller h'holds with either younger or older h'hold members |
| Cluster 2 (N) | Cluster 2 (S) | Medium | Medium | Low | No clear common defining character-istics |
| Cluster 3 (N)<br>Cluster 4 (N) | Cluster 6 (S) | Medium | High | Low | No clear common defining character-istics |
| | Cluster 4 (S)<br>Cluster 5 (S) | Medium | Medium | Medium | No clear common defining character-istics |
| Cluster 5 (N) | Cluster 7 (S) | Low | Medium | High | Professional households |
| Cluster 6 (N) | Cluster 3 (S) | Low | Medium | Medium | No clear common defining character-istics |

# 3. Budget Standards *(Component 2) - Methods & Results*

## 3.1 Methods Introduction

A summary of the methods used to develop budget standards for a two-parent, two children family unit living in both the Republic of Ireland and Northern Ireland, through the determination of direct costs of healthy living, is shown in Figure 3.1.

**Figure 3.1 Summary of Component 2 methodology**



The Low Cost but Acceptable (LCA) budgets were used in the current project. The LCA budgets *'marks the threshold below which good health, social integration and satisfactory standards of child development are at risk'* (Bradshaw, 1993).

Development of the weekly Northern Ireland and the Republic of Ireland healthy living budget standard and its basket constituents was informed by household expenditure patterns and national health recommendations. Household expenditure patterns for a range of health-related behaviours and commodities in both NI and the RoI were determined using data from the Expenditure and Food Survey (EFS) 2001-2002 in NI (ONS, 2001) and the Household Budget Survey (HBS) 1999-2000 in the RoI (CSO, 2002).

## 3.2 Weekly Basket Construction

### 3.2.1 Food basket

The 1999-2000 HBS contains 146 food items purchased for home consumption, (CSO, 2002) and the EFS in NI contains 66 items (ONS, 2001). Dietary recommendations in RoI are depicted graphically by a five-shelf food pyramid. Each shelf of the pyramid recommends daily consumption of a number of servings of a particular food group[7], compliance with which will provide a balance of energy and nutrient intake (FSAI, 1999, NAG, 1995). The food plate is the visual aid used in Northern Ireland in relation to healthy eating guidelines. It recommends the sensible intakes from each food group[8] represented by a segment of the plate (Appendices 1.2 and 1.3).

Weekly food baskets for two parent, two children households living in NI and RoI were compiled based on aggregated 7-day menus, developed to reflect the habitual food purchasing pattern identified in the household expenditure data from each locality but also ensuring a balanced number of servings from the daily dietary guidelines (Appendices 2.1 and 2.2). The food baskets were constructed to contain items in purchasable quantities (e,g. one litre of milk) and based only on at-home consumption. Ideas for the menus were taken from a food recipe book (MABS, 1998) specifically designed for healthy eating on a low budget.

### 3.2.2 Physical Activity

A weekly physical activity 'basket' was constructed based upon the clothing and equipment necessary to participate in walking, swimming and cycling, the more popular choices of exercise (Fahey et al., 2004a), at the national recommended levels in the Republic of Ireland and Northern Ireland, i.e. 30 minutes of moderate intensity exercise most days of the week (HPA, 2002a, HPU, 2003).

### 3.2.3 Alcohol and Tobacco

Although alcohol is not typically associated with healthy behaviour, it can be argued that there may be direct health benefits in terms of reduced risks of heart disease, hypertension and stroke associated with moderate alcohol consumption (Eidelman et al., 2002). Following consultation with alcohol policy advisors it was agreed that the alcohol baskets would be based upon the maximum weekly recommended sensible drinking limits of 21 units for males and 14 units for females for the Republic of Ireland and Northern Ireland. Alcohol was considered an optional variable in the budget standards.

Given that the budgets are intended to promote good health, tobacco products are not included as a standard. However, since 27% of the population in the Republic of Ireland (Kelleher et al., 2003) and 29% of the population in Northern Ireland (HPA, 2002b) smoke, the final budgets were developed both with and without tobacco prod-

ucts. Three tobacco baskets were developed, with cut-offs based on a previous study with similar population group (Parker et al, 1998), a light smoker (5 cigarettes per day), an average smoker (15 cigarettes per day) and a heavy smoker (20 cigarettes per day). Tobacco is included here as an optional variable.

### *3.2.4 Non-Behavioural Commodity Baskets*

Non-behavioural baskets were developed comprising various commodities and services necessary to live a balanced life and the items included are based upon previous UK and Irish studies with similar groups of the population (FBU, 1992, VPSJ, 2000). For ease of presentation the commodities and services have been grouped together under the following basket headings: *housing, household services, household goods, transport, clothing and footwear, educational costs, personal costs, personal care, leisure goods, leisure activities*.

## *3.3 Weekly Basket Pricing*

### *3.3.1 Food Basket Retail Cost*

The weekly food baskets were priced at the national level using information available through the Tesco Ireland online database (www.tesco.ie and www.tesco.com). Both market brand and own brand prices were recorded to illustrate differences in basket cost if economy line own brand items were chosen.

Financial cost and actual availability of recommended foodstuffs vary depending on retail outlet type. In order to investigate this aspect in the Irish setting, identification of price variation of the weekly food baskets by retail outlet was undertaken in Galway city and Belfast city across a representative selection of the four Irish retail outlets including Multiples (e.g. Dunnes, Tesco), Groups/Symbols (e.g. Mace, Supervalu, Centra), Foreign shops (e.g. Aldi, Lidl) and Independents or Corner Shops. Food is the only basket in this study for which price variation by retail outlet type is recorded.

Food basket prices for the Republic of Ireland have been extensively documented elsewhere (http://www.cpa.ie/pub_workingpapers.htm). In brief, prices of the food baskets were identified in Galway city across a representative selection of the four Irish retail outlet types (Friel et al., 2004). In the summer of 2003, two fieldworkers visited 13 of the 15 retail outlets. They approached and physically documented prices rather than asking for a list of prices. The cost price, the weight and the retail price per unit weight for each food in the baskets were recorded. Prices were noted for the leading market brand and the outlets' own brand where available. When own brand lines were not available the price of the market brand was substituted. Where more than one brand of the same product was offered the price of the cheaper brand was recorded. In many of the smaller retail outlets foodstuffs such as fresh meat were not stocked and in these instances the price of the foodstuff in one of the larger retail outlets was used. Where price per weight was not available, as in the case of some fruit, equivalent weights were estimated using a textbook of food portion sizes (MAFF, 1991).

The same process was used in Northern Ireland, where in the summer of 2004 two researchers from NUI, Galway visited six retail outlets in North and West Belfast. The areas of Belfast chosen were based upon the most recent census information (NISRA, 2002). Following identification of the retail outlets available in the two locations, a letter explaining the nature of the project and asking permission to collect food prices was given to the manager of each store. Permission was granted from six of the eight retail outlet managers that were approached.

### *3.3.2 Physical Activity Basket Retail Cost*

Clothing and equipment needed to participate in walking, swimming and cycling, the most popular choices of exercise (Fahey et al., 2004a), were identified and priced. The once-off purchase prices were converted to a weekly cost using the life span of the various commodities (Parker et al, 1998). Swimming was priced on a per session basis in each of the main urban areas in the Republic of Ireland and Northern Ireland, and an average price calculated for each area.

### *3.3.3 Alcohol and Tobacco Costs*

Alcohol prices were gathered for Northern Ireland and the Republic of Ireland from the Tesco online websites www.tesco.com and www.tesco.ie respectively. The price variation between alcohol types is substantial, particularly in the Republic of Ireland, in relation to spirits. It would be hard to justify assuming that a household derives its weekly alcohol allowance from spirits, hence for the purposes of this exercise, a flat weekly optional allowance of €40 will be included in the budget standards for the Republic of Ireland and £28 for Northern Ireland. This allowance, in both regions, is sufficient to allow alcohol to be purchased within policy guidelines.

The national average prices for a packet of standard filtered 20 cigarettes were used and were provided by the Central Statistics Office in the Republic of Ireland and the Office of National Statistics in Northern Ireland who routinely collect this information.

### *3.3.4 Non-behavioural Basket Retail Costs*

Prices for each commodity group (*housing, household services, household goods, transport, clothing and footwear, educational costs, personal costs, personal care, leisure goods, leisure activities*) were obtained in both regions.

Discussions with the CSO in the Republic of Ireland identified which prices were generic on a nationwide basis, such as clothing, and which costs had substantial regional variability e.g. household rent, waste collections and childcare costs (CSO, 2005). For those commodities deemed to have regional variability, pricing was done in the four major cities - Cork, Galway, Limerick and Dublin.

In Northern Ireland, identification of retail outlets comparable to those utilised in the Republic was necessary. As in the Republic of Ireland, certain commodities have generic prices and are applicable across the six counties. However for those items where regional variability exist prices were collected for each county.

A number of resources were used to obtain the price data. Retailers and service providers in the Republic and the North were approached physically for prices as well as accessing online databases where available. Many of the retailers who were phoned or written to requesting prices of their products provided price lists. Published prices, gathered from other sources (VPSJ, 2000) were also used. Where regional variation in price exists the average price, minimum price and maximum price are presented, both in the results section and in the appendices for the relevant basket. Only national average prices are presented when no regional variation was identified.

## *3.4 Determination of Weekly Budget Standards*

The overall aim of Component 2 of the study is to develop budget standards in the Republic of Ireland and Northern Ireland to determine the *Cost of Healthy Living on the Island of Ireland*. Integral to the development of

these standards is the necessity to compare the direct financial cost of healthy living with the household unit's financial capacity to purchase.

Three theoretical family income scenarios were chosen:

- Two parents, two children (aged 10 and 4 years) with one full-time worker on the national minimum wage and one unpaid home-maker.
- Two parents, two children (aged 10 and 4 years) with one full-time worker and one part-time worker both on the national minimum wage.
- Two parents, two children (aged 10 and 4 years) with both parents receiving unemployment benefit.

For each income scenario, six budgets have been produced:

1. Standard Budget
2. Standard budget + alcohol budget
3. Standard budget + tobacco budget
4. Standard budget + alcohol budget + tobacco budget
5. Standard budget for family without a car
6. Standard budget for family with a car

The financial capacity for each of the three income scenarios was determined using information supplied by the Department of Social and Family Affairs and the Department of Health, Social Services and Public Safety, for the Republic of Ireland and Northern Ireland respectively, and also from local authorities. The cost of the weekly basket was compared with the household's weekly financial capacity in order to determine:

- If a shortfall in available finance existed for basic expenditure.
- If a shortfall existed when the optional alcohol, tobacco and car ownership variables were included in the baskets.
- If this varied between the different household scenarios.

## 3.5 Results Introduction

The summary results are presented for each commodity basket for the Republic and Northern Ireland separately and a comparison then made between the two areas. Basket prices were collected over different time periods. For comparison purposes all prices were adjusted to the same time period (April 2005) using the relevant Consumer Price Indices for Northern Ireland (ONS, 2001) and the Republic of Ireland (CSO, 2005). Additionally, to allow direct comparison of prices between the two regions, the Northern Ireland sterling prices were converted to euro using currency conversion rates for April 2005.

## 3.6 Weekly Basket Prices

### 3.6.1 Food Basket Costs

Food prices in both regions follow the same patterns with the Foreign store being the cheapest retail outlet to purchase food and the Group and Symbol and Independent stores being the most expensive. Basket prices for own brand products are slightly cheaper than market brand prices in all of the retail outlets, however there are

two important points to note when interpreting this finding. Firstly, not all outlets stock a full range of own brand lines and where this was found to be the case the market brand equivalent price was entered into the basket costing. Secondly, the own brand food prices are based on quantities that accord with foods available in the shops. Retailer own brand products vary in size and are often available only in larger sizes than their market brand equivalents. The purchase therefore is of larger volume and hence inflates the basket price, helping to explain why the difference between overall own brand and market brand basket prices is not as striking as might be expected.

However, whilst the patterns are the same, the prices vary substantially with food prices in Northern Ireland being less expensive compared to prices in the Republic of Ireland (Table 3.1).

**Table 3.1 Average weekly food basket prices for market brand and own brand products across different retail outlet types in the Republic of Ireland and Northern Ireland**

| | Republic of Ireland | | Northern Ireland | |
|---|---|---|---|---|
| **Outlet Type** | **MB (€)** | **OB (€)** | **MB (€)** | **OB (€)** |
| Multiple | 166.09 | 156.24 | 144.25 | 121.42 |
| Foreign | 133.20 | 133.20 | 89.72 | 89.72 |
| Group/Symbol | 176.66 | 173.41 | 165.70 | 163.96 |
| Independent | 181.50 | 179.70 | 162.06 | 162.06 |
| **AVERAGE** | **162.50** | | **126.15** | |

### *3.6.2 Physical Activity Basket Costs*

Overall, physical activity costs are cheaper in Northern Ireland compared to the Republic of Ireland (Table 3.2). Examination of the figures indicates that clothing prices are more expensive in Northern Ireland but it is cheaper there to participate in leisure activities such as swimming.

**Table 3.2 Physical activity basket prices in the Republic and Northern Ireland**

| | **RoI (€)** | **NI (€)** |
|---|---|---|
| Men's Clothing and Equipment | 2.23 | 3.15 |
| Women's Clothing and Equipment | 2.59 | 2.21 |
| Boys Clothing and Equipment | 2.76 | 3.30 |
| Girls Clothing and Equipment | 2.33 | 2.33 |
| Average Leisure activities | 11.77 | 7.16 |
| **TOTAL** | **21.69** | **18.16** |

### *3.6.3 Alcohol and Tobacco Basket Costs*

An allowance of €40 has been made for alcohol, which is sufficient in both regions to purchase alcohol from an off-licence or supermarket in quantities which do not exceed the sensible weekly alcohol recommendations of 21 units for males and 14 units for females. Tobacco costs are slightly higher in Northern Ireland than in the Republic of Ireland (Table 3.3).

**Table 3.3 Smoking basket prices in the Republic and Northern Ireland**

| Tobacco Allowance | RoI (€) | Ni (€) |
|---|---|---|
| Light smoker (5 per day) | 12.34 | 13.19 |
| Medium smoker (15 per day) | 30.86 | 32.99 |
| Heavy smoker (20 per day) | 43.20 | 46.18 |
| **AVERAGE** | **28.80** | **30.79** |

### *3.6.4 Housing Basket Costs*

The housing basket incorporates local authority rent charges, waste disposal rates, house insurance and fuel rates. Overall basket prices are cheaper in the Republic of Ireland, as can be seen from table 3.4, however, housing costs vary regionally within each jurisdiction and substantially so in the Republic of Ireland when compared to Northern Ireland (Table 3.4).

**Table 3.4 Average, minimum and maximum housing costs in the Republic of Ireland and Northern Ireland for three family income scenarios**

| | Republic of Ireland (€) | | | Northern Ireland (€) | | |
|---|---|---|---|---|---|---|
| **Housing: Couple with children, 1 full-time worker** | **Average** | **Minimum** | **Maximum** | **Average** | **Minimum** | **Maximum** |
| Rent | 47.47 | 38.16 | 55.62 | 72.90 | 72.90 | 72.90 |
| Refuse/Rates | 4.36 | 0.00 | 7.30 | 14.10 | 14.10 | 14.10 |
| Insurance | 5.25 | 4.47 | 5.89 | 3.52 | 3.18 | 3.85 |
| Fuel | 20.44 | 20.44 | 20.44 | 42.81 | 42.81 | 42.81 |
| **HOUSING TOTAL** | **77.52** | **63.07** | **89.25** | **133.33** | **133.99** | **133.66** |

| Housing: Couple with children, 1 full-time worker and 1 part-time worker | Average | Minimum | Maximum | Average | Minimum | Maximum |
|---|---|---|---|---|---|---|
| Rent | 58.93 | 50.71 | 79.46 | 72.90 | 72.90 | 72.90 |
| Refuse/Rates | 6.20 | 4.04 | 7.40 | 14.10 | 14.10 | 14.10 |
| Insurance | 5.25 | 4.47 | 5.89 | 3.52 | 3.18 | 3.85 |
| Fuel | 20.44 | 20.44 | 20.44 | 42.81 | 42.81 | 42.81 |
| **HOUSING TOTAL** | **90.82** | **79.66** | **113.19** | **133.33** | **133.99** | **133.66** |

| Housing: Couple with children,in receipt of unemployment benefit | Average | Minimum | Maximum | Average | Minimum | Maximum |
|---|---|---|---|---|---|---|
| Housing* | 41.61 | 32.17 | 54.22 | 0.00 | 0.00 | 0.00 |
| Refuse/Rates* | 2.86 | 0.00 | 7.30 | 0.00 | 0.00 | 0.00 |
| Insurance | 5.25 | 4.47 | 5.89 | 3.52 | 3.18 | 3.85 |
| Fuel | 20.44 | 20.44 | 20.44 | 42.81 | 42.81 | 42.81 |
| **HOUSING TOTAL** | **70.16** | **57.08** | **87.85** | **46.33** | **45.99** | **46.66** |

*A waiver scheme is in operation in Northern Ireland whereby a family dependent on the Job Seekers Allowance (JSA) is entitled to claim the full amount of housing benefit (i.e. rent plus rates).

The variation in housing basket cost within Northern Ireland is solely due to variations in house insurance, as rent and rates are standard irrespective of where a family resides within a region. However, in the Republic of Ireland, the large variation in housing costs is as a direct result of the different rental and waste collection charges imposed by the different local authorities. Appendix 2.3 demonstrates the variation in regional local authority rents in the Republic of Ireland.

Refuse collection varies both in price and method across different regions in the Republic of Ireland, with some areas imposing a standard charge for collection of waste and recycle material, some areas impose a standard charge in addition to operating a tagging system whereby families have to purchase a tag and attach it to the bin before it is collected, and other areas charge per bin lift. Additionally, some local authorities offer a waiver scheme for those on state welfare. Limerick Co. Council contract out refuse collection to a number of private companies. Appendix 3.4 summarises a selection of the systems in place in the Republic of Ireland and the respective charges.

### *3.6.5 Transport Basket Costs*

Transport costs are lower in Northern Ireland with noticeably higher costs for car-owning families in the Republic of Ireland compared to those in Northern Ireland (Table 3.5).

**Table 3.5** **Average transport costs in the Republic of Ireland and Northern Ireland for three family income scenarios**

| **Total transport for non-car owner: couple with children, 1 full-time worker** | **RoI (€)** | **Ni (€)** |
|---|---|---|
| Regular day-to-day fares and other travel | 12.69 | 9.81 |
| Travel to work | 13.25 | 10.18 |
| **TOTAL** | **25.94** | **19.99** |
| | | |
| **Total transport for non-car owner: couple with children 1 full-time, 1 part-time worker** | | |
| Regular day-to day fares and other travel | 12.69 | 9.81 |
| Travel to work | 26.50 | 20.36 |
| **TOTAL** | **39.19** | **30.17** |
| | | |
| Total transport for non-car owner: couple with children, unemployed | | |
| Regular day-to-day fares and other travel | 12.69 | 9.81 |
| Seeking work costs | 9.78 | 7.52 |
| **TOTAL** | **22.48** | **17.32** |
| | | |
| Total transport for car owner: couple with children, 1 driver | | |
| Motoring cost | 87.84 | 69.55 |
| Other modes of transport | 6.95 | 5.13 |
| **TOTAL** | **94.78** | **74.68** |

### *3.6.6 Clothing, Footwear and Educational Basket Costs*

Clothing and footwear costs are slightly lower in the Republic of Ireland when compared to Northern Ireland (Table 3.6), while educational prices were marginally less expensive in Northern Ireland (Table 3.7).

**Table 3.6** **Average clothing costs in the Republic of Ireland and Northern Ireland**

| | **RoI (€)** | **NI (€)** |
|---|---|---|
| Female clothing | 8.75 | 10.33 |
| Male clothing | 17.91 | 18.50 |

| | | |
|---|---|---|
| Girl clothing | 13.27 | 14.32 |
| Boy clothing | 6.22 | 6.87 |
| Sewing material | 0.18 | 0.18 |
| **CLOTHING TOTAL** | **46.34** | **50.20** |

**Table 3.7 Average educational and pet costs in the Republic of Ireland and Northern Ireland**

| | RoI (€) | NI (€) |
|---|---|---|
| Clothing | 3.77 | 3.65 |
| Stationery | 1.64 | 1.84 |
| Schoolbooks | 2.63 | 1.39 |
| Pet & pet expenses | 7.06 | 5.63 |
| **EDUCATIONAL TOTAL** | **15.11** | **12.50** |

### *3.6.7 Personal Basket Costs*

The cost of the basket containing other personal items varies between family income scenarios within the Republic of Ireland and Northern Ireland in addition to varying between jurisdictions. Most noticeable is the effect of childcare costs on this basket, with Northern Ireland proving to be less expensive than that in the Republic (Table 3.8).

**Table 3.8 Average personal costs in the Republic of Ireland and Northern Ireland for three family income scenarios**

| | RoI (€) | NI (€) |
|---|---|---|
| **Couple with children: 1 full-time worker (no childcare costs)** | | |
| Trade union membership, full-time | 3.40 | 2.07 |
| Donations to charities | 1.00 | 1.46 |
| **TOTAL** | **4.40** | **3.53** |
| | | |
| **Couple with children: 1 full-time worker and 1 part-time worker** | | |
| Trade union membership: full-time | 3.40 | 2.07 |
| Trade union membership: part-time | 1.40 | 1.66 |

| | | |
|---|---|---|
| Childcare, part-time work | 96.25 | 72.88 |
| Donations to charities | 1.00 | 1.46 |
| **TOTAL** | **102.05** | **78.07** |
| | | |
| **Couple with children in receipt of unemployment benefit (no childcare costs)** | | |
| Donations to charities | 1.00 | 1.46 |
| **TOTAL** | **1.00** | **1.46** |

### *3.6.8 Personal Care Basket Costs*

Personal care prices are substantially more expensive in the Republic of Ireland when compared to Northern Ireland. The main cost difference is seen in medical cost prices (Table 3.9), which are almost five times cheaper in Northern Ireland.

**Table 3.9 Personal care costs in the Republic of Ireland and Northern Ireland**

| | RoI (€) | Ni (€) |
|---|---|---|
| Healthcare | 1.10 | 1.05 |
| Personal hygiene | 2.89 | 3.30 |
| Personal accessories | 1.20 | 1.42 |
| Cosmetics | 0.39 | 0.47 |
| Medical Costs | 16.96 | 3.20 |
| **PERSONAL CARE TOTAL** | **22.54** | **9.45** |

### *3.6.9 Household Goods Basket Costs*

Purchase of the basket of household goods is overall slightly more expensive in Northern Ireland. However, gas and electrical appliances are substantially more expensive in the Republic of Ireland (Table 3.10).

**Table 3.10 Household goods costs in the Republic of Ireland and Northern Ireland**

| | RoI (€) | NI (€) |
|---|---|---|
| Lounge/dining furniture | 1.35 | 1.41 |
| Bedroom/bathroom | 3.11 | 3.49 |
| Floor coverings | 2.56 | 2.31 |
| Curtains | 1.05 | 1.14 |
| Textiles and soft furnishings | 1.19 | 1.08 |
| Lampshades | 0.12 | 0.25 |
| Gas and electrical appliances | 4.68 | 3.53 |

| | | |
|---|---|---|
| Kitchen and hardware | 1.96 | 2.36 |
| Stationery and paper goods | 0.78 | 0.76 |
| Toilet paper and cleaning materials | 2.73 | 2.89 |
| Home security | 0.07 | 0.13 |
| Garden tools | 0.13 | 0.18 |
| DIY | 0.33 | 0.42 |
| Paint, wallpaper and timber | 1.53 | 1.71 |
| Small materials | 0.40 | 0.39 |
| **HOUSEHOLD GOODS TOTAL** | **21.98** | **22.82** |

### *3.6.10 Household Services Basket Costs*

The cost of household services varies little between both jurisdictions, as can be seen in Table 3.11. The largest cost differential is in telephone prices, with residents in Northern Ireland paying on average €1.23 more per week.

**Table 3.11 Cost of household services in the Republic of Ireland and Northern Ireland**

| | RoI (€) | NI (€) |
|---|---|---|
| Postage | 1.07 | 1.31 |
| Telephone | 30.44 | 31.67 |
| Shoe repairs & dry cleaning | 1.74 | 1.84 |
| **HOUSEHOLD SERVICES TOTAL** | **33.26** | **34.82** |

### *3.6.11 Leisure Goods Basket Costs*

Prices for leisure goods are very comparable across both regions, with the largest difference being found in the prices of electrical goods and their repairs and in the cost of hobbies.

**Table 3.12 Leisure goods costs in the Republic of Ireland and Northern Ireland**

| | RoI (€) | NI (€) |
|---|---|---|
| TV, audio, video and repairs | 3.77 | 2.96 |
| Newspapers, magazines, books | 6.20 | 5.52 |
| Household games | 0.17 | 0.16 |
| Toys | 3.77 | 4.65 |
| Seasonal items | 0.44 | 0.51 |
| Hobbies (including photographic equipment/ processing) | 0.94 | 1.76 |
| Plants, flowers, garden products | 0.63 | 0.86 |

| | | |
|---|---|---|
| **LEISURE GOODS TOTAL** | **15.92** | **16.41** |

### *3.6.12 Leisure Activities Basket Costs*

Leisure activity costs are more expensive in Northern Ireland with the main difference being in holiday expenses.

**Table 3.13 Leisure activities costs in the Republic of Ireland and Northern Ireland**

| | RoI (€) | NI (€) |
|---|---|---|
| Arts, entertainment, outings | 3.77 | 2.96 |
| TV licence | 3.02 | 3.53 |
| Holiday expenses | 13.77 | 15.75 |
| **LEISURE ACTIVITIES TOTAL** | **19.97** | **22.59** |

## *3.7 Household Financial Capacity*

Household financial capacity for each family income scenario is detailed in Table 3.13. Families with either one or two working adults have similar weekly incomes north and south of the island. However, the family with two unemployed parents have a financial advantage of €40 if residing in Northern Ireland (Table 3.14).

**Table 3.14 Financial capacity of three family income scenarios in the Republic of Ireland and Northern Ireland**

| | RoI (€) | NI (€) |
|---|---|---|
| Two adults (one full-time worker) with two dependent children | 471.82 | 472.58 |
| Two adults (one full-time, one part-time worker) with two dependent children | 530.51 | 560.41 |
| Two adults (both unemployed) with two dependent children | 388.28 | 427.70 |

## *3.8 Budget Standards*

### *3.8.1 Republic of Ireland*

Detailed budget standards for the Republic of Ireland are presented in the appendices (Appendices 2.4-2.9), while summary budget standards are presented in this section. Price variation can be seen between the average, minimum and maximum costs for the standard basket costs.

One Full-Time Worker Family

The weekly household income for the family unit with one full-time worker is sufficient to meet the requirements of the standard basket cost based on minimum and average prices, while there is a shortfall of €30.14 if the goods are purchased at the maximum price levels (Table 3.15). However, if alcohol and tobacco are included in the weekly basket cost this family income scenario has substantial shortfalls at both the average and maximum price levels (€62.52 and €113.34 respectively).

**Table 3.15 Budget standard for a two adult, two children family with one full-time worker on minimum wage. Non car owners**

| | Average | Minimum | Maximum |
|---|---|---|---|
| | (€) | (€) | (€) |
| TOTAL BASKET COST (STANDARD) | 465.54 | 417.22 | 501.96 |
| Plus alcohol | 40.00 | 40.00 | 40.00 |
| Plus tobacco | 28.80 | 12.34 | 43.20 |
| TOTAL BASKET COST (incl. ALCOHOL & TOBACCO) | 534.34 | 469.56 | 585.16 |
| HOUSEHOLD CASH INCOME | 471.82 | 471.82 | 471.82 |
| **WEEKLY SHORTFALL (STANDARD)** | **6.28** | **54.60** | **-30.14** |
| **WEEKLY SHORTFALL (incl. ALCOHOL & TOBACCO)** | **-62.52** | **2.26** | **-113.34** |

Owning a car places a further substantial burden on this family income scenario (Table 3.16). In this situation there is a minimum shortfall of €14.24 and maximum €98.98 for the standard basket of goods, and a minimum of €66.58 for the basket that includes alcohol and tobacco (maximum €182.18).

**Table 3.16 Budget standard for a two adult, two children family with one full-time worker on minimum wage. 1 car, 1 driver**

| | Average | Minimum | Maximum |
|---|---|---|---|
| | (€) | (€) | (€) |
| TOTAL BASKET COST (STANDARD) | 534.38 | 486.06 | 570.80 |
| Plus alcohol | 40.00 | 40.00 | 40.00 |
| Plus tobacco | 28.80 | 12.34 | 43.20 |
| TOTAL BASKET COST (incl. ALCOHOL & TOBACCO) | 603.18 | 538.40 | 654.00 |
| HOUSEHOLD CASH INCOME | 471.82 | 471.82 | 471.82 |
| **WEEKLY SHORTFALL (STANDARD)** | **-62.56** | **-14.24** | **-98.98** |
| **WEEKLY SHORTFALL (incl. ALCOHOL & TOBACCO)** | **-131.36** | **-66.58** | **-182.18** |

One Full-time, One Part-Time Worker Family

The weekly household income for a two parent, two children family with one full-time worker and one part-time worker is insufficient to meet the family's needs, even at the minimum standard basket cost where a shortfall of €14.20 is observed and a maximum shortfall of €106.29 (Table 3.17). The purchase of alcohol and tobacco places the family at a further financial deficit, with a minimum shortfall of €66.54.

**Table 3.17 Budget standard for a two adult, two children family with one full-time and one part-time worker, both on minimum wage. Non car owners**

| | Average (€) | Minimum (€) | Maximum (€) |
|---|---|---|---|
| TOTAL BASKET COST (STANDARD) | 589.74 | 544.71 | 636.80 |
| Plus alcohol | 40.00 | 40.00 | 40.00 |
| Plus tobacco | 28.80 | 12.34 | 43.20 |
| TOTAL BASKET COST (incl. ALCOHOL & TOBACCO) | 658.54 | 597.05 | 720.00 |
| | | | |
| HOUSEHOLD CASH INCOME | 530.51 | 530.51 | 530.51 |
| | | | |
| **WEEKLY SHORTFALL (STANDARD)** | **-59.23** | **-14.20** | **-106.29** |
| **WEEKLY SHORTFALL (incl. ALCOHOL & TOBACCO)** | **-128.03** | **-66.54** | **-189.49** |

Car ownership places an additional burden on an already overstretched budget for this income scenario, with a minimum shortfall of €69.79 and €122.13 for the standard basket and the basket with alcohol and tobacco respectively (Table 3.18).

**Table 3.18 Budget standard for a two adult, two children family with one full-time, one part-time worker, both on minimum wage. 1 car, 1 driver**

| | Average (€) | Minimum (€) | Maximum (€) |
|---|---|---|---|
| TOTAL BASKET COST (STANDARD) | 645.33 | 600.30 | 692.39 |
| Plus alcohol | 40.00 | 40.00 | 40.00 |
| Plus tobacco | 28.80 | 12.34 | 43.20 |
| TOTAL BASKET COST (incl. ALCOHOL & TOBACCO) | 714.13 | 652.64 | 775.59 |
| | | | |
| HOUSEHOLD CASH INCOME | 530.51 | 530.51 | 530.51 |
| | | | |
| **WEEKLY SHORTFALL (STANDARD)** | **-114.82** | **-69.79** | **-161.88** |
| **WEEKLY SHORTFALL (incl. ALCOHOL & TOBACCO)** | **-183.62** | **-122.13** | **-245.08** |

Family With Two Unemployed Adults

The family with two unemployed adults do not have the financial capacity to purchase the minimum standard basket, with a shortfall of €16.09 (maximum €105.42). This shortfall increases to a minimum of €68.43 and a maximum of €188.62 when alcohol and tobacco are included (Table 3.19).

**Table 3.19 Budget standard for a two unemployed adult, two children family. Non car owners**

| | Average (€) | Minimum (€) | Maximum (€) |
|---|---|---|---|
| TOTAL BASKET COST (STANDARD) | 451.32 | 404.37 | 493.70 |
| Plus alcohol | 40.00 | 40.00 | 40.00 |
| Plus tobacco | 28.80 | 12.34 | 43.20 |
| TOTAL BASKET COST (incl. ALCOHOL & TOBACCO) | 520.12 | 456.71 | 576.90 |
| HOUSEHOLD CASH INCOME | 388.28 | 388.28 | 388.28 |
| **WEEKLY SHORTFALL (STANDARD)** | **-63.04** | **-16.09** | **-105.42** |
| **WEEKLY SHORTFALL (incl. ALCOHOL & TOBACCO)** | **-131.84** | **-68.43** | **-188.62** |

Again, as with the other two income scenarios, ownership of a car places the family at an even greater financial disadvantage with a minimum shortfall of €88.39 for the standard basket and a maximum shortfall of €260.92 when alcohol and tobacco are included (Table 3.20).

**Table 3.20 Budget standard for a two unemployed adult, two children family. Car owners**

| | Average (€) | Minimum (€) | Maximum (€) |
|---|---|---|---|
| TOTAL BASKET COST (STANDARD) | 523.62 | 476.67 | 566.00 |
| Plus alcohol | 40.00 | 40.00 | 40.00 |
| Plus tobacco | 28.80 | 12.34 | 43.20 |
| TOTAL BASKET COST (incl. ALCOHOL & TOBACCO) | 592.42 | 529.01 | 649.20 |
| HOUSEHOLD CASH INCOME | 388.28 | 388.28 | 388.28 |
| **WEEKLY SHORTFALL (STANDARD)** | **-135.34** | **-88.39** | **-177.72** |
| **WEEKLY SHORTFALL (incl. ALCOHOL & TOBACCO)** | **-204.14** | **-140.73** | **-260.92** |

### *3.8.2 Northern Ireland*

One Full-Time Worker Family

In order to purchase the minimum cost weekly basket of standard goods, this household income scenario in Northern Ireland would have a €50.63 surplus, while the average and maximum goods have a shortfall of €4.91 and €28.04 respectively. This shortfall increases substantially when alcohol and tobacco products are included in the budgets (Table 3.21).

**Table 3.21 Budget standard for a two adult, two children family with one full-time worker on minimum wage. Non car owners**

| | Average (€) | Minimum (€) | Maximum (€) |
|---|---|---|---|
| TOTAL BASKET COST (STANDARD) | 477.49 | 421.95 | 500.62 |
| Plus alcohol | 40.45 | 40.45 | 40.45 |
| Plus tobacco | 30.79 | 13.19 | 46.18 |
| TOTAL BASKET COST (incl. ALCOHOL & TOBACCO) | 548.73 | 475.60 | 587.26 |
| HOUSEHOLD CASH INCOME | 472.58 | 472.58 | 472.58 |
| **WEEKLY SHORTFALL (STANDARD)** | **-4.91** | **50.63** | **-28.04** |
| **WEEKLY SHORTFALL (incl. ALCOHOL & TOBACCO)** | **-76.15** | **-3.02** | **-114.68** |

Ownership of a car increases the cash requirement of a family significantly, as can be seen in table 3.22. The already existing cash deficits for a standard basket of goods are increased from €3.02 and €114.68 for the minimum and maximum costs to €57.71 and €169.37 respectively when car ownership costs are included in the budget standard.

**Table 3.22 Budget standard for a two adult, two children family with one full-time worker on minimum wage. 1 car, 1 driver**

| | Average (€) | Minimum (€) | Maximum (€) |
|---|---|---|---|
| TOTAL BASKET COST (STANDARD) | 532.18 | 476.64 | 555.31 |
| Plus alcohol | 40.45 | 40.45 | 40.45 |
| Plus tobacco | 30.79 | 13.19 | 46.18 |
| TOTAL BASKET COST (incl. ALCOHOL & TOBACCO) | 603.42 | 530.29 | 641.95 |
| HOUSEHOLD CASH INCOME | 472.58 | 472.58 | 472.58 |
| **WEEKLY SHORTFALL (STANDARD)** | **-59.60** | **-4.06** | **-82.73** |

| | | | |
|---|---|---|---|
| **WEEKLY SHORTFALL (incl. ALCOHOL & TOBACCO)** | **-130.84** | **-57.71** | **-169.37** |

One Full-Time, One Part-Time Worker Family

The two adult two children family with one full-time and one part-time worker have a weekly budget surplus of €9.32 and €64.86 for the standard basket purchased at the average and minimum price levels. Alcohol and tobacco place a considerable burden on the family resources especially when baskets are purchased at the average and maximum prices, resulting in a €61.93 and €100.45 shortfall respectively. Where it is possible to purchase the baskets at the minimum price, a small surplus remains (€11.21) as can be seen in table 3.23.

**Table 3.23 Budget standard for a two adult, two children family with one full-time, one part-time worker on minimum wage. Non car owners**

| | Average (€) | Minimum (€) | Maximum (€) |
|---|---|---|---|
| TOTAL BASKET COST (STANDARD) | 551.10 | 495.56 | 574.23 |
| Plus alcohol | 40.45 | 40.45 | 40.45 |
| Plus tobacco | 30.79 | 13.19 | 46.18 |
| TOTAL BASKET COST (incl. ALCOHOL & TOBACCO) | 622.34 | 549.21 | 660.87 |
| | | | |
| HOUSEHOLD CASH INCOME | 560.41 | 560.41 | 560.41 |
| | | | |
| **WEEKLY SHORTFALL (STANDARD)** | **9.32** | **64.86** | **-13.82** |
| **WEEKLY SHORTFALL (incl. ALCOHOL & TOBACCO)** | **-61.93** | **11.21** | **-100.45** |

As in the other family scenarios, this family financial situation is placed under considerable strain when car ownership is included. A small weekly surplus exists if the minimum standard basket of goods (without alcohol and tobacco) is purchased, however a standard shortfall exists when goods are purchased at the average and maximum prices (€46.31 and €69.44 respectively). The inclusion of alcohol and tobacco results in a substantial weekly financial shortfall of €117.55, €44.42 and €156.08 for the average, minimum and maximum priced baskets as can be seen in table 3.24.

**Table 3.24 Budget standard for a two adult, two children family with one full-time worker, one part-time worker on minimum wage. One car one driver**

| | Average (€) | Minimum (€) | Maximum (€) |
|---|---|---|---|
| TOTAL BASKET COST (STANDARD) | 606.72 | 551.18 | 629.86 |
| Plus alcohol | 40.45 | 40.45 | 40.45 |
| Plus tobacco | 30.79 | 13.19 | 46.18 |
| TOTAL BASKET COST | 677.97 | 604.83 | 716.49 |

| | | | |
|---|---|---|---|
| (incl. ALCOHOL & TOBACCO) | | | |
| HOUSEHOLD CASH INCOME | 560.41 | 560.41 | 560.41 |
| **WEEKLY SHORTFALL (STANDARD)** | **-46.31** | **9.23** | **-69.44** |
| **WEEKLY SHORTFALL (incl. ALCOHOL & TOBACCO)** | **-117.55** | **-44.42** | **-156.08** |

Family With Two Unemployed Adults

If purchasing the standard basket of goods, the family with two unemployed adults would have a weekly surplus for the three pricing levels ranging from €18.69 for the maximum priced basket to €97.36 for the minimum priced basket of goods. However, this surplus decreases dramatically when alcohol and tobacco are included in the baskets and the surplus ranges from €43.71 for the minimum priced basket to a deficit of €67.95 for the maximum priced basket (Table 3.25).

**Table 3.25 Budget standard for a two unemployed adult, two children family. Non car owners**

| | Average (€) | Minimum (€) | Maximum (€) |
|---|---|---|---|
| TOTAL BASKET COST (STANDARD) | 385.76 | 330.34 | 409.02 |
| Plus alcohol | 40.45 | 40.45 | 40.45 |
| Plus tobacco | 30.79 | 13.19 | 46.18 |
| TOTAL BASKET COST (incl. ALCOHOL & TOBACCO) | 457.00 | 383.99 | 495.65 |
| HOUSEHOLD CASH INCOME | 427.70 | 427.70 | 427.70 |
| **WEEKLY SHORTFALL (STANDARD)** | **41.94** | **97.36** | **18.69** |
| **WEEKLY SHORTFALL (incl. ALCOHOL & TOBACCO)** | **-29.30** | **43.71** | **-67.95** |

Again, as has been seen previously, inclusion of a car and its associated running costs places a financial burden on the family unit. The considerable financial surplus at the minimum standard level without car ownership (€97.36) is decreased to a surplus of just €40 and ranges from an average budget shortfall of €15.42 and a maximum of €38.67. Inclusion of alcohol and tobacco results in a financial shortfall at all three price levels ranging from €13.65 at the minimum to €125.31 at the maximum price level (Table 3.26).

**Table 3.26 Budget standard for a two unemployed adult, two children family. One car one driver**

| | Average (€) | Minimum (€) | Maximum (€) |
|---|---|---|---|
| TOTAL BASKET COST (STANDARD) | 443.12 | 387.70 | 466.38 |
| Plus alcohol | 40.45 | 40.45 | 40.45 |

| | | | |
|---|---|---|---|
| Plus tobacco | 30.79 | 13.19 | 46.18 |
| TOTAL BASKET COST (incl. ALCOHOL & TOBACCO) | 514.36 | 441.35 | 553.01 |
| HOUSEHOLD CASH INCOME | 427.70 | 427.70 | 427.70 |
| **WEEKLY SHORTFALL (STANDARD)** | **-15.42** | **40.00** | **-38.67** |
| **WEEKLY SHORTFALL (incl. ALCOHOL & TOBACCO)** | **-86.66** | **-13.65** | **-125.31** |

### *3.8.3 Budget Standard Comparisons Between the Republic and Northern Ireland*

One Full-Time Worker Family

Comparing the average standard basket costs with the financial capacity of the family, in both regions, it can be seen that for the non-car owning families there is a small weekly cash surplus (€6.28) in the Republic of Ireland, whereas there is a small cash deficit in Northern Ireland (€4.91). There is however substantial variation in basket costs, due mainly to regional variation in various commodities, and can result in a weekly cash surplus from the minimum basket cost (€54.60 and €50.63 for the Republic and Northern Ireland respectively) to a substantial weekly cash deficit for the maximum priced basket (€30.14 and €28.04 for the two regions respectively). However, it must be borne in mind that it is not always possible to purchase these products at the minimum price, and indeed, some prices e.g. housing and waste management costs are beyond individual control.

When alcohol and tobacco are included in the baskets the budget costs exceed the financial capacity of this income scenario in both regions. Car ownership places a significant financial burden on families in both regions, however this is greater in the Republic of Ireland when compared to Northern Ireland.

One Full-Time, One Part-Time Worker Family

This family type in Northern Ireland has a €30 financial advantage compared to the same family unit in the Republic of Ireland. For non-car owning families, when purchasing the standard basket at the average cost, the Northern Ireland family has a surplus of €9.32 while the family in the Republic has a deficit of €59.23. There is considerable variation within both jurisdictions, with the purchase of the standard basket yielding a surplus of €64.86 for the minimum (deficit of €13.82 for maximum) in Northern Ireland and a deficit of €14.20 for the minimum (and €106.29 maximum) in the Republic of Ireland. The inclusion of alcohol and tobacco in the weekly basket places an additional financial burden on families in both locations, but considerably more so for families in the Republic, with an average deficit of €128.03 (max €189.49), compared to an average deficit of €61.93 (max €100.45) for families in Northern Ireland.

As with the one full-time worker family, car ownership increases the financial burden for this family type, with the burden being considerably more substantial for families in the Republic, having an average deficit of €182.62 (max €245.08) compared to €117.55 (max €156.08) for Northern Ireland.

Families With Two Unemployed Adults

Two adult, two children families in Northern Ireland with two unemployed adults have a considerable financial

advantage when compared to their counterparts in the Republic of Ireland. At the average budget standard cost, those families in the Republic have a substantial shortfall of €63.04, whereas by purchasing the basket in the North those families have a surplus of €41.94. Indeed, at all three cost levels for the standard basket, families in the North have a surplus ranging from €97.36 for the minimum basket down to €18.69 for the maximum basket. The addition of alcohol and tobacco into the baskets places additional financial burden on both family units, although this is considerably more for those in the Republic. Again, as with the other family types, car ownership causes additional financial pressure, especially so for the already financially disadvantaged family in the Republic of Ireland.

Figures 3.2a (non-car owning) and 3.2b (car owning) demonstrate the cost of a standard healthy living basket as a percentage of weekly household income for the three family scenarios. These figures clearly illustrate how each income scenario is at around 100% spending capacity or above and this does not take into account purchase of alcohol or tobacco.

**Figure 3.2a** **Direct financial cost of a standard healthy living basket as a perentage of weekly house hold income for three non car owning family scenarios in the Republic of Ireland and Northern Ireland**

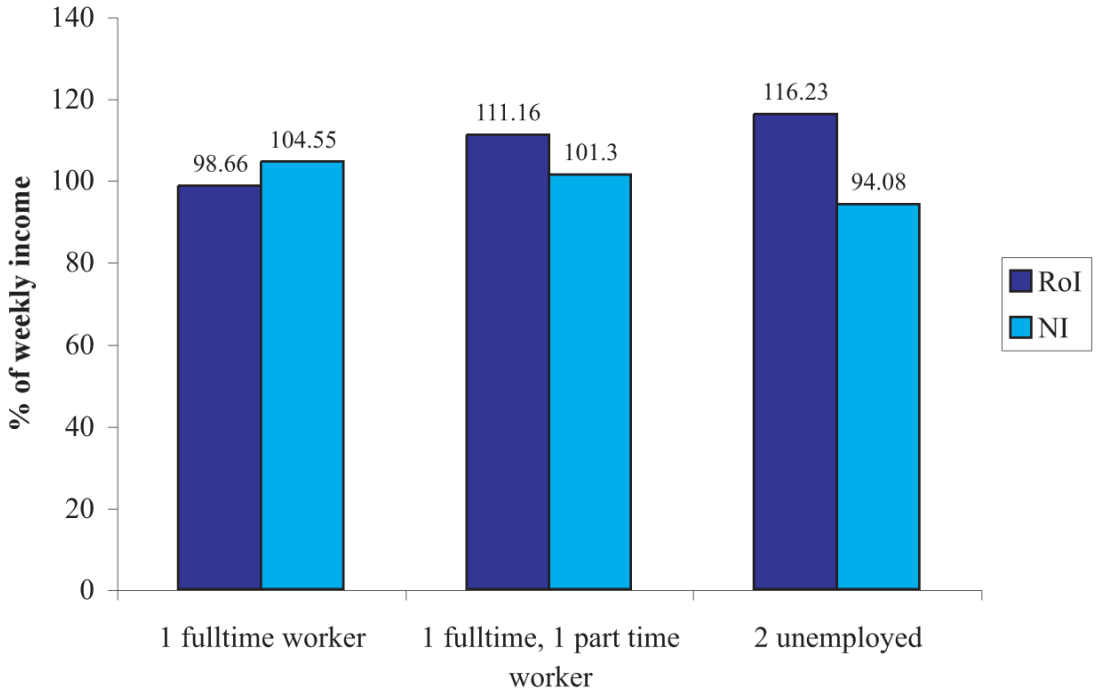
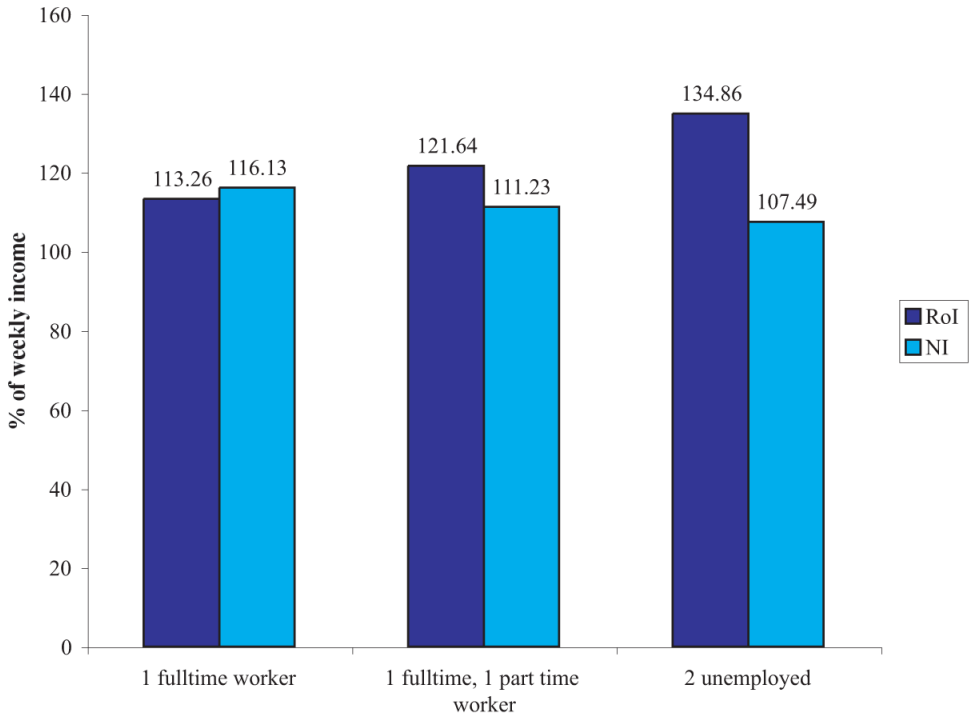


**Figure 3.2b** **Direct financial cost of a standard healthy living basket as a percentage of weekly house hold income for three car owning family scenarios in the Republic of Ireland and Northern Ireland**



# 4. Discussion

This study aimed to address two main research questions. Firstly, to determine the socio-economic and demographic variation in household food availability on the island of Ireland and also identify which socio-demographic and economic characteristics most strongly relate to different dietary habits. Secondly, it aimed to quantify the financial costs to maintain a living standard which provides a healthy diet, material security, social participation and sense of control on the island of Ireland for a two parent, two children family and determine the economic resources available to this household type.

The two research components complement each other and contribute further to the evidence base on the socio-economic and demographic drivers of the determinants of dietary choice and overall health.

## 4.1 Social Variation in Dietary Habits

Overall Expenditure Patterns

This examination of expenditure patterns of individual households in the North and in the Republic of Ireland demonstrates that average expenditure for households in the Republic is higher on all food groups. However, as a percentage of total food expenditure, households in the North spent more on *cereals, breads and potatoes* while households in the Republic spent more on *foods high in fats and sugars*. These two food categories were those for which Component 2 of the study observed the largest differentials between prices in the North and in the Republic. It was also noted that the relative earnings of households in the Republic are seemingly considerably higher than in the North. Complex explanations of these related findings, in terms of the lead relationship between price and demand, and the relative substitutions of food items, would be possible but they would be very speculative in the absence of further confirmatory research. Within the Republic, there was a consistent pattern of shifting expenditure from *cereals, bread and potatoes* to *foods high in fats and sugars* as total expenditure rises, but this pattern was not replicated in the North.

Similarly, sharper contrasts in expenditure patterns between rural and urban households were found in the Republic than in the North of Ireland. The one area in which expenditure patterns in the North showed more systematic variation than those in the Republic was in respect of household composition, where an increased number of children in the household appeared to draw expenditure away from fruit and vegetables.

There was little systematic variation between jurisdictions in relation to expenditure on food and measures relating to access. However, lower income households in both the North and in the Republic spent less on *fruit and vegetables*. Those households within which the head of household was unemployed also spent below average on *fruit and vegetables*.

A tentative general conclusion that may be drawn from the comparative patterns in dietary expenditures between the Republic and the North of Ireland is that the comparative affluence, but greater heterogeneity, of the former provides a stronger contrast in terms of subsequent patterns of food expenditure and consumption. However, research at this macro level can only render this to be something of an a priori hypothesis. More detailed research at the micro level would be necessary for confirmation.

Social Patterning of Dietary Expenditures

That social patterns are reflected in dietary patterns was investigated more intensively through the use of *Latent Class Clustering Analysis.* Two clusters, together accounting for over half of the households (56%), dominated the clustering observed in the Republic. Of these, the second, although accounting for a lesser proportion of the

total number of households (26%), may be thought of as being more representative of the overall diet in the Republic, as it had no patterns of dietary expenditure which varied significantly from those of the total number of households. The numerically dominant cluster (accounting for 30% of households) varied in respect of its low expenditure on *fruit and vegetables* and, in socio-economic terms, in respect of having a higher percentage of single households and households living in rented accommodation. Of the smaller clusters, there was one which stood out in healthy dietary terms, (being highest in its expenditure on *fruit and vegetables* and lowest in its expenditure on *foods high in fats and sugars*), but this cluster, which was also distinguishable in respect of the high proportion of married couples with small or no families, contained only 3% of the total households.

There was one cluster which dominated in the North, containing almost two in every five (38%) of households. It was characterised, in dietary terms, in respect of its low expenditure on *fruit and vegetables* and, in socio-economic terms, by its low-income. (That a cluster which is 'extreme' in these respects may dominate the clustering patterns is reflective of the skewed distribution of the variables used in the clustering.) Of the five other clusters, all of which accounted for a relatively sizeable and even proportion of the households, two might be considered to have the healthiest dietary patterns, (being highest jointly in their expenditure on *fruit and vegetables* and almost jointly lowest in their expenditure on *foods high in fats and sugars*) and were distinguishable in socio-economic terms, by one being more representative of managerial occupations whilst the other was more representative of professional occupations. Together they accounted for just over a quarter (26%) of households in the North.

Cluster differentiation was seen to be sharper in the Republic than in the North, (a finding which is consistent with those discussed earlier), with the relative heterogeneity of the Republic being reflected in the presence of smaller 'residual' clusters. Conversely, the relative homogeneity of the North was reflected in less clearly differentiable social characteristics of the respective clusters, (though, as is noted elsewhere, the richer socio-economic data available for the Republic may also contribute to this.) However, whereas clusters of households in the Republic were distinguishable, in dietary terms, in respect of expenditure on *cereals, breads and potatoes*, *fruit and vegetables* and *foods high in fats and sugars*, clusters of households in the North were also distinguishable in respect of expenditure on *meat, fish and poultry*.

For both the Republic and the North, *cereals, breads and potatoes* were the highest mean quantity for each cluster. This result is consistent to previous findings where *bread, cereal rice and pasta* consumption were reported as one of the highest mean quantity consumed (Ledikwe et al., 2003).

The alignment of Republic and Northern clusters was investigated. There was found to be correspondence, in both dietary and socio-economic terms, of the two numerically dominant clusters (accounting for 30% and 38% of their respective total households). Beyond this, direct alignment of clusters proved difficult. The comparative size of the clusters containing households with more healthy patterns of dietary expenditure has been implicitly noted above.

## 4.2 Cost of living

In identifying how much it costs a low-income two parent, two children household to live a life compliant with general societal norms in the Republic and Northern Ireland, inequity in healthy lifestyle choices on the island of Ireland has been highlighted, as have the underlying issues of affordability and accessibility to socially acceptable choices both within and between the two jurisdictions.

Food, housing and transport are the main budgetary drivers for a two adult, two children family type living in the

Republic of Ireland and Northern Ireland and will be discussed later in this section. Comparing the standard baskets between North and South, each income scenario, but in particular, the family with two unemployed adults in the Republic of Ireland, is close to 100% spending capacity. When alcohol, tobacco and car ownership are included in the budgets, disposable incomes for all income scenarios in both jurisdictions fall short of the minimum requirement to purchase these baskets of goods. Price similarities are seen in *household services, leisure goods and leisure services* costs in both regions. Personal costs (which includes child care) increases substantially for the family with two workers.

The baskets purchased in Northern Ireland are typically more affordable than those purchased in the Republic for the three family income scenarios. Food prices vary considerably between North and South with the baskets being €36.35 cheaper in Northern Ireland. *Personal care* prices are substantially more expensive in the Republic of Ireland when compared to Northern Ireland, with the main cost differential being seen in medical costs, which are almost five times cheaper in the North. *Child care*, a financial burden in both regions, having significant bearing on the financial shortfall for the family with two working parents, is substantially more affordable in Northern Ireland, costing on average €23.37 less per week than in the Republic. There is a considerable variation in housing costs on the island of Ireland with housing overall being more expensive in Northern Ireland. However, within the Republic of Ireland there is a marked regional variation in household rents and refuse collection charges due to varying local authority charges.

Food

Component one of the research highlights that a higher percentage of disposable income is spent on food in the Republic of Ireland compared to Northern Ireland. It is unlikely that food is of more importance to people living in the Republic of Ireland but rather, as demonstrated by the budget standard data, this difference is due to the food basket being more expensive to purchase in the Republic of Ireland than Northern Ireland, hence the higher proportion of disposable income spent on weekly food shopping.

It is generally accepted that in the rich developed world the main structural barriers to healthy food choices are an excess availability of processed food, restricted access to healthy food, its relative affordability and levels of disposable income (Dowler, 1998). The type of retail outlet accessible to individuals determines the range of foodstuffs available and the prices paid (Watson, 2001). These factors run in parallel with the amount of money an individual or household allocates to food expenditure.

In this study two types of weekly food basket were compiled, based on purchasing patterns and the healthy eating guidelines of the food pyramid and the food plate, one using low-cost own brand lines and another based on market brand items. The food baskets for all three family income scenarios, irrespective of region or car ownership, contribute to a substantial proportion of the weekly family budget ranging from 25% to 36% of the budget in the Republic and from 23% to 36% in Northern Ireland. While food prices in both regions follow the same patterns, costs are substantially cheaper in Northern Ireland. Using average prices, the food basket is 22% cheaper in Northern Ireland compared to the Republic of Ireland. Until recently the Republic of Ireland was a signatory to the Groceries Order, which prevented retailers selling certain grocery goods at less than the invoice price. In effect this restricted price competition and hence resulted in consumers paying prices higher than they could be. Analysis of food prices undertaken by the Competition Authority estimates the Groceries Order cost the equivalent of €481 per year for the average Irish household. Since June 2001, food items covered by the Groceries Order have increased in price by 7.4%, whereas food items not covered by the Order have decreased by 5.1% (Consumer Strategy Group, 2005). The recent abolishment of the Grocery Orders bill by the Department of Enterprise, Trade & Employment is expected to reduce the cost of groceries by about €500 per year. Unlike the Republic, Northern

Ireland has not had such a policy in place and there appears to be more competitive prices, as observed by the estimated food budget standards.

By far the cheapest place to purchase the healthy basket of food in both regions is in the Foreign (e.g. Aldi, Lidl) outlet but the range of items available there is not exhaustive. Interestingly, the second least expensive place to purchase the basket of foods is in the Multiples (e.g. Dunnes, Tesco) and is where the best range of food items is available with both market brand and own label pricing options. In Ireland, as in the UK, the most common type of retail outlet used by low-income groups is that of Groups/Symbols (e.g. Mace, Supervalu, Centra) followed by the more local independent traders (Dowler, 1998, Friel and Conlon, 2004, Robinson et al., 2000). These retail outlets represent local supermarkets and corner shops and, as indicated in the data, have a limited selection of fruit, vegetables and wholemeal alternatives, not many low fat products and little or no fresh meat, fish and poultry. In contrast almost all Groups/Symbols and Independents stocked every item from the high fat/high sugar food group in the food baskets. These types of outlet carry a very limited number of own brand lines. It must be noted, that when calculating the overall cost of each food basket, when items were not available in a particular retail outlet, prices from the nearest multiple outlet were substituted. Utilising these prices most likely underestimated the total cost of each food basket purchased in the Groups/Symbols and Independent outlets. Own brand options are limited in the Groups/Symbols. It is certainly true that in Ireland, as in the UK (Food Commission, 2001) the kind of outlets in which socially disadvantaged people shop are less likely to carry a good range of healthy foods and when they do they are more expensive.

Considering that these budgets do not take into account costs of food purchased for consumption outside of the home, financial constraint appears to curtail the possibility of partaking in socially acceptable behaviours such as eating out. Our basket prices do not allow for a personal margin. In today's society, the disposable income that could meet these minimal costs may be posited as a necessary pre-condition of health.

Housing

Housing costs could have major implications for a household's living standards and experience of poverty. The relationship between housing tenure and health is well documented as is the fact that local authority tenants are more at risk of poverty than people living in other types of housing (Breysse et al., 2004, Howden-Chapman, 2004, Macintyre et al., 2003). A higher proportion of households in Northern Ireland, 23%, reside in local authority rented accommodation compared to only 8% in the Republic of Ireland (CSO and NISRA, 2003). A recent Eurobarometer study investigating social precariousness between 1993 and 2001 reported a huge increase in the numbers of people on low incomes in the Republic of Ireland who had problems in paying the rent, while the same increase was not seen in Great Britain (EC, 2002).

Certainly, this research highlights marked differences in and pressures from housing costs both within and between regions. Within the Republic of Ireland, the regional variation is due to fluctuations in rent charges and waste management between each local authority, for example, a family with two unemployed adults in Galway pay almost the same rent (€51.86) as a couple with one full-time worker in Cork (€53.20). The charges in Northern Ireland are more consistent across different regions, however, they are higher than those in the Republic and impose a greater financial burden on the family. For the family scenarios including workers, the required proportion of the budget for housing is almost 10% higher in Northern Ireland, ranging from 22% to 27% compared to the Republic which ranges from 14% to 17%.

Transport

The use of the car has changed dramatically from its first appearance in our society in the late 19th century to present times (Urry, 2000). In present day society the car is an essential part of everyday living and society has adapted by increasing the convenience of accessing services by car. If neighbourhoods are perceived unsafe for walking, household characteristics, such as car ownership, might have a greater weight in determining access to healthy lifestyle opportunities than distance to the store or exercise facility (Frank and Engelke, 2001, Friel and Harrington, 2005).

Transport costs are 23% less expensive in Northern Ireland, irrespective of car ownership, compared to the Republic of Ireland. The financial burden of car ownership is estimated to be €94.78 and €74.68 per week, in the Republic of Ireland and Northern Ireland respectively. These costs have substantial health and social impacts on families who are already at 100% spending capacity or above and have implications for access and availability to various services and facilities. This is especially pertinent when one takes into account the recent trend of shopping complexes being built on the outskirts of towns and cities, necessitating the use of a car or some other form of automobile transport to access them. Including a car in the household basket decreases the proportion of the budget available to spend on food and other essential living commodities.

Budgets and Financial Capacity

The findings of the research indicate that the incomes of two adult, two children households living in the Republic of Ireland and Northern Ireland reliant on the current minimum wage and welfare payments, are insufficient to meet the needs of the family. Evidence-based studies of health needs of other population groups are now warranted.

Each income scenario for two adult, two children household's in the Republic and Northern Ireland is at almost 100% spending capacity or above, not taking into account the purchase of alcohol, tobacco and car ownership. Households in the Republic of Ireland with one full-time and one part-time worker and households with two unemployed adults have a larger financial deficit than counterparts in Northern Ireland. The financial capacity of households with one full-time worker in Northern Ireland have a larger shortfall compared to similar households in the Republic.

In the Republic of Ireland, considering the six budgets for the three income scenarios, the largest financial shortfall affects the least well-off family, the family with two unemployed adults. This budget, including car ownership, alcohol and tobacco, has a shortfall of almost a third of its income. For a two adult, two children household with one full-time and one part-time worker, after food, the next major budgetary cost is *personal costs* which includes *childcare*.

In Northern Ireland, comparing all six budgets, the greatest shortfall, including car ownership, alcohol and tobacco, occurs for the two adult two children household unit with one full-time worker. This family type has a weekly financial shortfall of €147.25. Food and housing combined contribute to over half (56%) of the standard budget costs. As in the Republic of Ireland, for the household with two workers, *personal costs* contribute a substantial proportion of the budget. This proportion increases from 0.71% for the standard budget for the family with one full-time worker to 14% for the standard budget for the family with two workers.

These data suggest that the financial capacity of the various income scenarios for a two adult, two children household unit is stretched, both in the Republic and Northern Ireland. As identified in other developed economies, the low-cost but acceptable budget standards identified major shortfalls in financial capacity of vul-

nerable populations, where the cost of a basket of goods required to live in a healthful manner exceeded the levels of social welfare benefit (Parker et al, 1998). Dobson and colleagues (Dobson et al., 1994) highlighted how financially constrained households see food as a flexible item within the controllable household budget and when other necessary household expenditure is taken into consideration the food budget is reduced. Within Ireland, the general consensus is that social welfare payments are not explicitly linked to a standard of adequacy and bear little relation to the cost of living in Ireland today (CPA, 2001). Based on our findings it is unlikely that, at current levels of financial resource, low-income households in Ireland are in a position to allocate the high expenditure necessary for healthy eating.

Research worldwide is establishing basic needs for personal health and well-being (Morris et al., 2000, Parker, 2002, Saunders, 2000). However, according to Morris and Deeming (Morris and Deeming, 2004, Morris et al., 2000), official acceptance of this consensual evidence into policy tends to be slow, partial and unsystematic, resulting in avoidable health deficits, waste of human potential and costs to society. Comparisons can be drawn between our budget standards and those developed in the UK, Australia and the United States (Johnson et al, 2001, Parker et al, 2001, Saunders, 2000), with the main budgetary drivers, and consequently, the determinants of available financial resources, being food, housing and transport, albeit contributing different proportions to the different budgets. Food was the main contributor to the budgets in the Republic of Ireland and Northern Ireland, whereas housing was the main contributor to budgets in the UK, Australian and American studies cited above, with food being the second substantial contributor (Johnson et al, 2001, Parker et al, 2001, Saunders, 2000). Interestingly, in the UK the contribution of food decreased from being the main financial driver of budgets developed in 1998 (Parker et al), followed by housing, only to be second to housing in 2001 (Parker et al, 2001). This illustrates, as was the case in the present research, the vulnerability of food within these budgets. As has been shown elsewhere (Dowler, 1997, Friel and Conlon, 2004, Nelson M et al, 2002), food is where budgeting economies are often made by those on low incomes, depending on the financial demand of other budgetary components. The change observed in our food budgets, when items such as car ownership, cigarettes and personal costs were included in the total budgets, in both the Republic and Northern Ireland highlights the potential squeeze food could experience when a household is allocating money to a number of commodities.

## 4.3 Study Limitations

Component 1 of the study used household level purchasing data to investigate social variation in dietary habits. Overall it has been shown that household survey data can be used to estimate food availability for consumption for different populations, particularly when the survey data are recorded in quantities. However, for the purposes of dietary intake estimation, it is important to recognise the limitations posed by these types of data. There is no information concerning losses and waste of food in the Northern Ireland National Food Survey and the Republic of Ireland Household Budget Survey, possibly leading to an overestimation of food consumed. The Department of Environment, Food and Rural Affairs provide a separate Food Wastage Pilot Survey 1998-1999, which estimated the proportion of food and drink purchased but not consumed. This will allow a prediction of the percentage of food wasted in the North and in the Republic.

The unit of analysis for our study has been the household level. This allows no account to be made for the distribution of food availability within households. It is known, particularly within developing countries, that where food items are scarce distribution may privilege male members of the household. Whereas, the consequences of food poverty in the two jurisdictions under study are not nearly as extreme as would be experienced in the poorest of developing countries, the general phenomenon of privileging certain households members in the face of scarcity *may* be present in a less extreme form.

The comparability of food items in the North and the Republic was defined by the DAFNE report. In order to predict quantities in the Republic, the DAFNE report was used to compare each food item. However, some food items were dropped due to incompatibility and therefore the sample size was reduced to 114.

Food quantities are estimated at the household level, possibly leading to less variation between clusters. Individual level data may offer more variation between the clusters. It was considered incorrect to simply divide by the number of individuals in the household, which assumes children are measured the same as adults. Within the DAFNE project, modelling was used to calculate equivilised food expenditure and availability at the individual level. This approach may be applied to our data in the future.

Two categories of locality were formed, based on the data collected in the HBS, *urban and rural*. Questions have been raised concerning whether the two locality categories really represent different living conditions in the participating countries. The issue of the degree of urbanisation needs to be further studied.

Some technical limitations to the methods employed should also be noted. Although a Tobit model was applied in order to predict the price of food items for the Republic, there was a slight margin of error between actual and predicted price. However, from examining the data there appears to be a difference of only 1 or 2 pence, which is minimal.

When examining data a class dependent unrestricted model was acknowledged as providing the best fit for the data. However, in previous literature it has been recommended that a partially restricted class dependent model may be assigned to continuous data (Vermunt and Magidson, 2000b). Given the sample size and the number of parameters the computer package was unable to produce results within a feasible time period. Therefore an unrestricted dependent model was used and compared to an unrestricted class independent model.

In many respects, it has to be acknowledged that the major limitation of the first component of this research is that the power of the methods of analysis employed exceeded the quality of the data that was available to support them. The essence of the approach, which clusters on the basis of both the dietary and structural features of the data, rather than just clustering on the dietary features and treating the structural ones as endogenous, can provide a very powerful explanatory vehicle. However, to apply the approach across two separate jurisdictions requires a high degree of compatibility between the data sets employed. Ideally, employing a common data set, it would have been possible to undertake a single clustering process and examine, post hoc, the respective representation of clusters, North and South.

Component 2 of the study is based on the development of budget standards. A budget standard is a complex series of judgments about which there is always likely to be some degree of disagreement (Saunders, 1998). A number of assumptions had to be made. These budgets assume that the family are in good health, are not repaying debts/loans and that the house they reside in is of an acceptable standard meeting all health, safety and fire regulations. The food budget assumes a typical Irish diet. It does not include ethnic or cultural traditions or vegetarian diets. Aspects of living that were costed included *housing, transport, clothing, fuel, personal care, and social integration* (including holidays and leisure pursuits). These components provide for, or assume freedom from physical and psychological stresses that lead to ill health. The costs related to these components are assumed to occur in a society in which education, basic health care and social justice are available and accessible.

Whilst these budgets attempt to be all encompassing, the final budgets excluded any margin for personal choice, for contingencies or emergencies, e.g. personal savings or pension plans, thus underestimating the real minimal costs of healthy living. These exclusions could have serious financial, and ultimately health, implications. Lack

of pensions for example will increase the likelihood of poverty in old age and thus the associated health and social inequalities. In the housing basket the rent costs included related solely to local authority rentals. However Fahy et al 2004 highlighted that private sector tenants are burdened with far higher housing expenditures than any other tenant category and experience serious financial constraints as a result (Fahey et al., 2004b).

Inevitably too, there are inefficiencies in purchasing. This budget standard methodology does not take account of peoples coping strategies, does not measure 'budgeting practice' at all, only its outcome in terms of potential or practice. These inefficiencies have been estimated to add an additional 6% to the cost of the budgets (Deeming, 2005). Intra-household issues and resource allocations are not investigated and an equal distribution of resources within the household is assumed.

Due to the diversity of circumstances in which real-life households live, it is important not to generalise the findings of this report for all lower paid households with children. These budgets are specific to a household comprising two adults and two children, aged 10 years and 4 years, who reside in an urban area. However, while they are not directly applicable to other family types in different regions, the methodology developed can be used to assess different circumstances. The budgets should be regarded as indicative rather than prescriptive, i.e. they represent levels of spending on all aspects of day-to-day life that are likely to be appropriate for such low-income families.

# 5. Conclusion

This report is a critical first step in providing information that helps identify those populations living on the island of Ireland who are at risk of poor diet-related health outcomes. It identifies, from an all island perspective for the first time, living costs which may compromise healthy living. The report has characterised, using routinely collected data, the types of diet on the island of Ireland and demonstrated the main socio-economic and demographic drivers of those patterns. Identifying population groups at risk of a nutritionally unbalanced diet on the island of Ireland will facilitate targeted intervention and is necessary as part of an integrated nutrition surveillance mechanism.

A basic human right is the ability to enjoy a minimum standard of living such that it is not detrimental to health. The report has described the development of budget standards for the Republic and Northern Ireland and illustrated how this approach is useful in assessing household living standards and household financial capacity. The advantage of this report of low-cost budgets is that it is based on Irish circumstances, values and conditions in 2005 and thus has the potential to provide a better understanding of the circumstances of households with low standards of living on this increasingly affluent island.

The majority of people experiencing social disadvantage, and in some occasions poverty, are rarely in this situation through any fault of their own. Rather, the societal distribution of wealth, a person's place within the social hierarchy and their experience of the social structures, sets their level of resource and ultimately restricts or supports access to the fundamental conditions of health. The proposed budget standard research is not aiming to tell individuals and households how much money they should be spending on food and other items nor what they should be buying. Rather, it is hoped that in the interest of public health and social equity, the budget standards will aid in the development of informed policy and financial provision that is underpinned by minimum income standards for healthy living. The dietary data will provide policy-makers with the information required to target interventions and funding to address unmet needs within the communities.

A whole of government approach is necessary to address the crosscutting social, retail, dietary and health implications of this research. ***safe*food**, with its all island remit, is well-placed to further this agenda in both jurisdictions.

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# Endnotes

[1] At least 20 minutes at a time of mild exercise on four or more days of the week and/or moderate or strenuous exercise on three or more days of the week.

[2] Consistent poverty is defined as being below 50%-60% of average household income and experiencing enforced basic deprivation.

[3] The Tobit Model was developed by Tobin (1958) to handle situations where data congregates around an extreme value, in this case zero. Although the value is zero, Tobin postulated that it was still a measure that needed to be included as omitting the zero observations would create bias.

[4] Republic of Ireland: Food Pyramid Recommendations (Appendix 1.2)
Cereals, breads and potatoes: 6 or more servings daily
Fruit and vegetables: 4 or more servings daily
Dairy products: 3 servings daily
Meat, fish and alternatives: 2 servings daily
Top shelf (foods high in fat and high in sugar): eat sparingly
Northern Ireland: Food Plate recommendations (Appendix 1.3)
Cereals, breads and potatoes: should make up about a third of the diet
Fruit and vegetables: 5 or more daily servings
Lean meat, poultry, fish and alternatives: at least two portions of fish should be consumed per week
Milk and dairy foods: moderate amounts of foods from this group should be consumed, particularly those of the low fat variety
Fats and oils: foods containing fats and sugars should be included in the diet as little as possible

[5] Income is *equivilised* to make the figures comparable between the North and the Republic to allow for varying household size and composition. Since a given income will provide a different standard of living to the individuals in a large versus a small household, *equivalence* scales are used to adjust for differences in household size and composition.

[6] Total household expenditure was employed in the Republic following guidance from the CSO, who expressed reservations about the reliability of income data in the HBS; no such reservations were expressed concerning income data from the NFS. Both measures are equivilised to make income comparable by allowing for varying household size.

[7] Republic of Ireland: Food Pyramid recommendations (Appendix 1.2)
Cereals, breads and potatoes: 6 or more servings daily
Fruit and vegetables: 4 or more servings daily
Dairy products: 3 servings daily
Meat, fish and alternatives: 2 servings daily
Top shelf (foods high in fat and high in sugar): eat sparingly

[8] Northern Ireland: Food Plate recommendations (Appendix 1.3)

Cereals, breads and potatoes: should make up about a third of the diet
Fruit and vegetables: 5 or more daily servings
Lean meat, poultry, fish and alternatives: at least two portions of fish be consumed per week
Milk and dairy foods: moderate amounts of foods from this group should be consumed, particularly those of the low fat variety
Fats and oils: foods containing fats and sugars should be included in the diet as little as possible

# Appendices

## Appendix 1

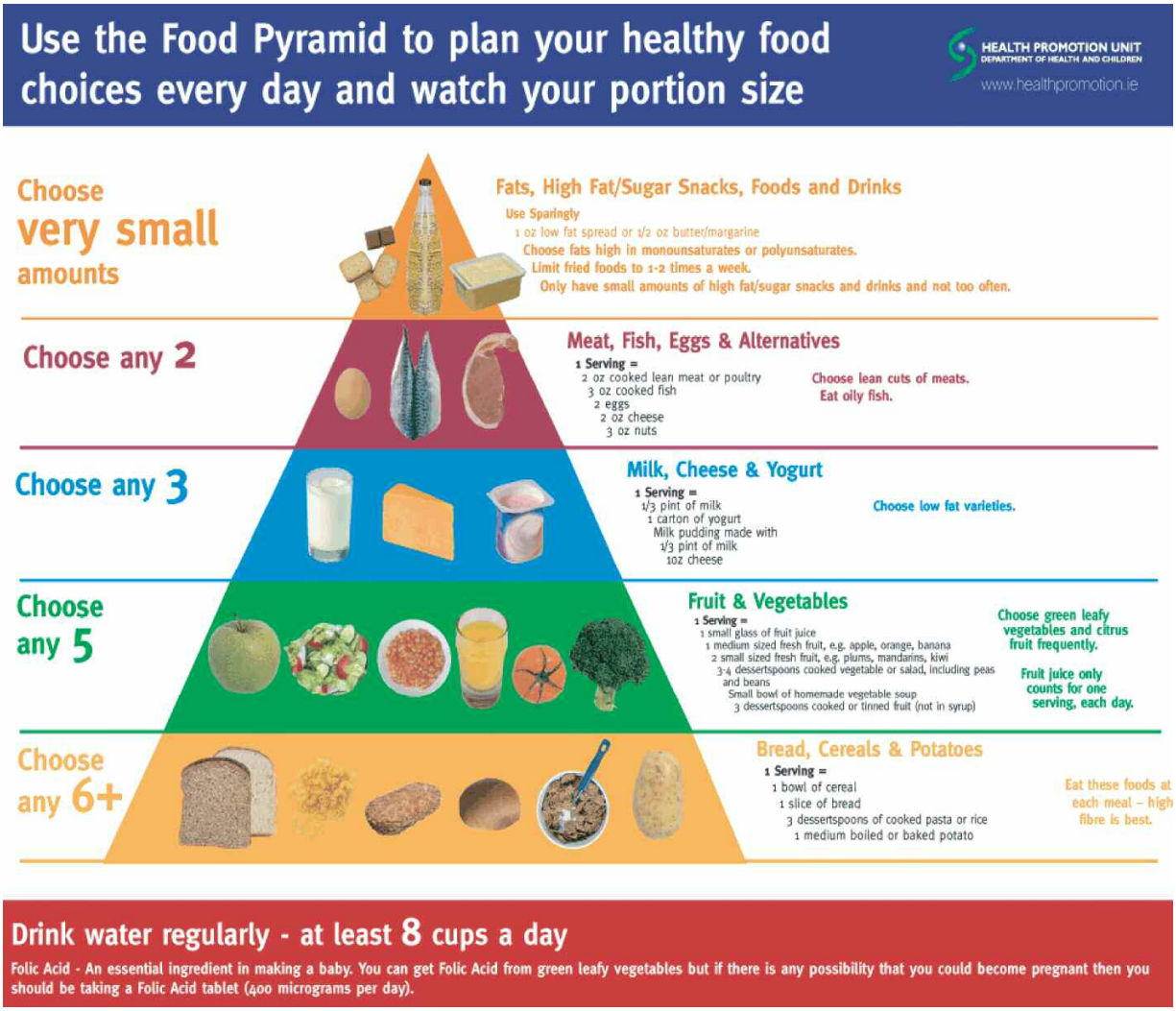
### 1.1 Characteristics of households in the Republic and the North

| NORTH | | | | | |
|---|---|---|---|---|---|
| **Variable** | **Obs** | **Mean** | **Std.Dev.** | **Min.** | **Max.** |
| **DEMOGRAPHIC** | | | | | |
| Age of spouse | 905 | 50.27514 | 16.91698 | 17 | 93 |
| Age of HoH | 906 | 51.80243 | 16.94579 | 17 | 93 |
| Adult aged 64+ | 909 | 0.291529 | 0.454717 | 0 | 1 |
| No. of persons aged 16-17 | 909 | 0.090209 | 0.286639 | 0 | 1 |
| No. of persons aged 12-15 | 909 | 0.134213 | 0.341069 | 0 | 1 |
| No. of persons aged 08-11 | 909 | 0.147415 | 0.354714 | 0 | 1 |
| No. of persons aged 05-07 | 909 | 0.116612 | 0.321134 | 0 | 1 |
| No. of persons aged 01-04 | 909 | 0.148515 | 0.355805 | 0 | 1 |
| Family composition | 909 | 3.982398 | 2.783233 | 1 | 11 |
| Social class | 909 | 257.1089 | 312.404 | 1 | 998 |
| Alcohol | 909 | 0.138614 | 0.345733 | 0 | 1 |
| **ECONOMIC FACTORS** | | | | | |
| Equivilised total income | 909 | 199.4329 | 155.9121 | 0 | 1829.535 |
| Employed | 909 | 0.859186 | 0.348021 | 0 | 1 |
| Unemployed | 909 | 0.140814 | 0.348021 | 0 | 1 |
| **ACCESS** | | | | | |
| Housing tenure | 909 | 2.182618 | 1.229988 | 1 | 5 |
| Region | 909 | 0.569857 | 0.495369 | 0 | 2 |

**REPUBLIC**

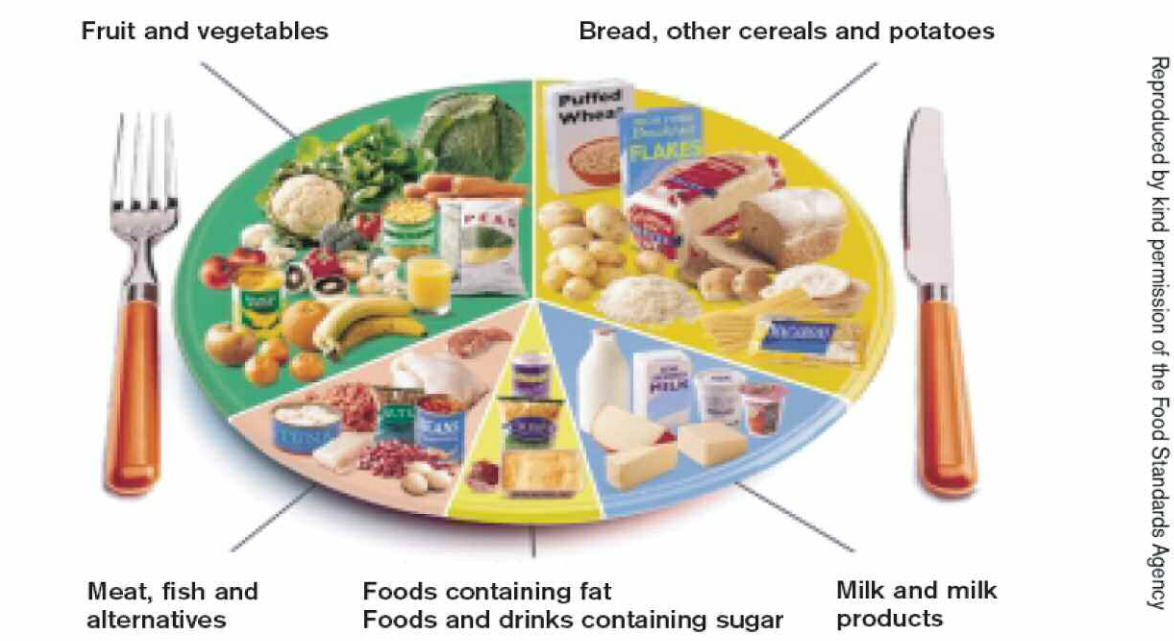
| Variable | Obs | Mean | Std. Dev. | Min. | Max. |
|---|---|---|---|---|---|
| **DEMOGRAPHIC** | | | | | |
| Males under 5 years | 7628 | 0.109465 | 0.312242 | 0 | 1 |
| Males aged 5-13 years | 7628 | 0.196382 | 0.397287 | 0 | 1 |
| Males aged 14-20 years | 7628 | 0.158495 | 0.365229 | 0 | 1 |
| Males under 21-44 years | 7628 | 0.417541 | 0.493186 | 0 | 1 |
| Males aged 45-64 years | 7628 | 0.323938 | 0.468007 | 0 | 1 |
| Males aged 65 plus | 7628 | 0.156922 | 0.363751 | 0 | 1 |
| Females under 5 years | 7628 | 0.105794 | 0.307595 | 0 | 1 |
| Females aged 5-13 years | 7628 | 0.153776 | 0.360757 | 0 | 1 |
| Females aged 14-20 years | 7628 | 0.195071 | 0.396281 | 0 | 1 |
| Females aged 21-44 years | 7628 | 0.471421 | 0.499215 | 0 | 1 |
| Females aged 45-64 years | 7628 | 0.322889 | 0.467612 | 0 | 1 |
| Females aged 65 plus | 7628 | 0.18419 | 0.387664 | 0 | 1 |
| Family composition <18 years | 7628 | 5.34216 | 2.891531 | 1 | 9 |
| Marital status of HoH | 7628 | 2.388831 | 2.036791 | 1 | 6 |
| Education of HoH | 7560 | 2.490476 | 1.445546 | 0 | 6 |
| Education of spouse | 5023 | 2.620745 | 1.257437 | 0 | 6 |
| Social class spouse | 7628 | 2.211982 | 1.970752 | 1 | 7 |
| Social class HoH | 7628 | 3.720897 | 1.742985 | 1 | 7 |
| Cigerettes | 7628 | 0.4434976 | 0.4968298 | 0 | 1 |
| Alcohol | 7628 | 0.7353173 | 0.4411931 | 0 | 1 |
| **ECONOMIC FACTORS** | | | | | |
| Equivilised total expenditure | 7628 | 281.7083 | 197.8032 | 23.96 | 3174.35 |
| Work status of spouse | 7628 | 4.328789 | 4.687555 | 0 | 16 |
| Work status of HoH | 7628 | 5.66623 | 4.514101 | 0 | 16 |
| Hours worked of spouse | 7628 | 7.982564 | 14.72362 | 0 | 60 |
| **ACCESS** | | | | | |
| Region | 7628 | 1.992003 | 1.117961 | 1 | 4 |
| Type of shopping | 7628 | 0.895648 | 0.305737 | 0 | 1 |
| Car ownership | 7628 | 0.766387 | 0.423157 | 0 | 1 |
| House tenure | 7628 | 1.987546 | 1.371659 | 1 | 7 |

## 1.2 Republic of Ireland's food pyramid




NOTE: Since the time of writing, the national recommendations for the consumption of fruit and vegetables has increased from '4 or more servings per day' to '5 servings per day'.

## 1.3 Northern Ireland's food plate

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***Fruit and vegetables*** - eat at least five portions a day. This includes fresh, frozen, dried, canned and juiced varieties. Don't add butter, margarine or creamy sauces to cooked vegetables or use mayonnaise or salad cream on salads.

***Bread, other cereals and potatoes*** - eat at least one serving of foods from this group at every meal, but don't fry them or add butter, margarine or creamy sauces. The higher fibre versions (eg wholemeal or wheaten bread, brown rice or pasta, wholegrain breakfast cereals) are more satisfying so they'll help stop you feeling hungry.

***Meat, fish and alternatives*** - eat two servings a day, choosing from poultry, fish and lean red meats. Try to use cooking methods which don't add extra fat, eg grilling, stewing, dry roasting, casseroling, or microwaving. Avoid fatty meats and try to eat fewer processed meat products, like sausages, sausage rolls and burgers.

***Milk and milk products*** - have two or three servings of these foods every day. Choose lower fat versions of these foods, such as semi-skimmed or skimmed milk, low fat yogurts and lower fat cheeses, such as Edam, cottage cheese and reduced fat cheddar.

***Foods containing fat and foods containing sugar*** - try to eat these foods less often and in smaller amounts. Use butter, margarine or low fat spreads sparingly on bread and don't add them to cooked vegetables or potatoes. Avoid fried food. Have hot drinks without sugar or use an artificial sweetener if necessary.

**Table 1.4** **Previous literature on dietary patterns and the socio-demographic characteristics associated with the groups**

| Year | Authors | Country | Model | Dependent Variable | Independent Variables | No. of Dietary Patterns |
|---|---|---|---|---|---|---|
| 2004 | Villegas R., Salim A., Collins, P. Flynn A., Perry I.j | ROI | K-means<br><br>. | 22 food groups<br>20 nutrients | Age, gender, education, marital status, living alone, car ownership, house ownership, smoking status, socio-economic status, BMI, anthropometric, serum homocysteine, physical activity, glucose intolerance, hypertension, CVD, CHD, homocysteine | 3 patterns identified:<br>1=Traditional diet<br>2=Prudent diet<br>3=Alcohol & convenience food |
| 1990 | Barker M., Mc Clean S., Thompson K., Reid, N. | NI | Principal component analysis | 41 food groups | Age, gender, marital status, smoking status, socio economic status, BMI, region, religion, household size, alcohol status | 4 patterns identified:<br>1= Traditional Ulster diet<br>2= Diverse cosmopolitan diet<br>3= Fast & convenience food<br>4=Meat and two vegetables |
| 2001 | Pryer J.A., Nichols, R., Elliott P., Thakrar B., Brunner E., Marmot, M. | UK | Hierarchical agglomerative (stepwise) clustering algorithim | 51 food / beverage groups (weight) macro/micro nutrient | Age, gender, marital status, smoking status, socio-economic status, BMI, region, receiving benefits, race, food supplement users | 4 patterns identified:<br>Men<br>1= Convenience food/ **beer diet**<br>2= Traditional British **diet**<br>3= Mixed sweet diet<br>**4= Healthier diet** |

| Year | Authors | Country | Model | Dependent Variable | Independent Variables | No. of Dietary Patterns |
|---|---|---|---|---|---|---|
| | | | | | | **Women**<br>1 = Traditional British diet<br>2 = Healthier cosmopolitan diet<br>3 = Convenience food diet<br>4 = Healthier but sweet diet |
| 1992 | Hulshof K., Wedel M., Lowik, M., Kok F., Kistemaker C., Hermus R., ten Hoor F., Ockhuizen Th. | Netherlands | K-means | Food nutrients | Age, gender, education, living alone, smoking status, socio-economic status, BMI,region, household size, alcohol status, weekday, use of nutritional supplements, coffee consumption, hours of sleep, dietary regime, education | 8 dietary patterns: clusters 1,2,4 and 5 dietary quality was poor, clusters 3, 6, 7,8 were in accordance with dietary recommendations |

# APPENDIX 2

## 2.1 7-day menu for a 2 parent, 2 children household (NI)

| | Day 1 | Day 2 | Day 3 | Day 4 | Day 5 | Day 6 | Day 7 |
|---|---|---|---|---|---|---|---|
| **Breakfast** | 4 glasses of apple juice, 4 Weetabix, 8 slices of white toast, pint of milk | 4 glasses of orange juice, 4 bowls of Cornflakes, 8 slices of wholemeal toast, pint of milk | 4 glasses of orange juice, 4 Weetabix, 8 slices of white toast, pint of milk | 4 glasses of apple juice, 4 bowls of Cornflakes, 8 slices of wholemeal toast, pint of milk | 4 glasses of orange juice, 4 Weetabix, 8 slices of white toast, pint of milk | 4 glasses of apple juice, omelette: 6 eggs, 1 onion, milk, 8 slices of wholemeal bread | 8 saus -ages, 4 back rashers, 8 slices of white toast, tea |
| **Mid-morning snack** | 4 bananas | 4 apples | 4 bananas | 4 apples 4 yogurt | 4 bananas | | 4 apples |
| **Main meal** | **Tuna Quick Bake:** 2 cans tuna, 1 onion, 1 can of mushroom soup, 1 teaspoon of Worchester sauce, 6 slices brown bread. Served with broccoli & carrots. 4 glasses of milk. | **Minced Beef & Vegetable Pie:** minced beef, 1 onion, 2 carrots, 1pkt of beef and vegetable soup, 5 potatoes, low fat milk, cold water. 4 glasses of milk. | **Salmon Surprise:** 1pkt of cream of mushroom soup, flour, water, 1 tin of peas, 5 potatoes, 1 large tin of salmon, grated cheese, milk. 4 glasses of milk. | **Cabbage & Bacon:** 1 cabbage, 8 slices of bacon, 1 onion, 8 potatoes. 4 glasses of milk. | **Stuffed Pork Chops in Foil:** 4 pork chops, mixed herbs, 8 mushrooms, flour, lemon juice. Served with mixed frozen veg. 4 glasses of milk. | **Burgers & Oven Chips:** minced beef, breadcrumbs, mixed herbs, 1 onion, 1 egg, flour, 2 tomatoes, grated cheese. 4 glasses of Coke | **Chicken & Vegetable Casserole:** 4 chicken portions, 3 carrots, 2 onions, 6 mushroo- ms, chicken stock, water, lemon juice, mixed herbs. 4 glasses |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | | | of milk. 4 slices of rhubarb pie & ice-cream |
| **Mid-afternoon snack** | 4 yogurts | | 4 yogurts | 4 slices of swiss roll | 4 yogurts | 4 yogurts | |
| **Light meal** | **Melted cheese and ham toasted sandwiches:** 8 slices of white bread, 8 slices of ham, 4 tomatoes | 2 tins of beans, 8 slices of wholemeal bread | **Bacon Surprise:** 8 slices of white bread, butter, grated cheese, 8 back rashers | 2 tins of spaghetti, 8 slices of wholemeal bread | **Cheese & ham toasted sandwiches:** 8 slices of white bread, 8 slices of ham, cheese, 2 tomatoes & tea | 4 bananas, 8 slices of wholemeal bread & tea | **Potato cakes:** flour, baking powder, 3 pots, butter, veg. oil |
| **Evening snack** | 8 biscuits & tea | 4 bananas & tea | 8 pancakes & tea | 8 cream crackers, cheese, 2 tomatoes & tea | 4 slices of swiss roll & tea | 8 biscuits & 4 glasses of milk | 8 cream crackers, cheese, 2 tomatoes & tea |

## 2.2 7-day menu for a 2 parent, 2 children household in ROI

| | Sunday | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday |
|---|---|---|---|---|---|---|---|
| **Breakfast** | 4 glasses of orange juice, 4 boiled eggs, 8 slices of white toast | 4 glasses of orange juice, 4 bowls of Special K, 8 slices of white toast, pint of milk | 4 glasses of orange juice, 4 bowls of Special K, 8 slices of white toast, pint of milk | 4 glasses of orange juice, 4 bowls of Special K, 8 slices of white toast, pint of milk | 4 glasses of apple juice, 4 bowls of porridge & 8 slices of white toast | 4 glasses of apple juice, 4 bowls of porridge & 4 slices of wholemeal toast | 4 glasses of apple juice, 8 sausages & 8 slices of wholemeal toast |
| **Mid-morning snack** | 4 oranges | 4 apples | 4 apples | 4 bananas | 4 bananas | 4 bananas | |
| **Main meal** | **Beef Stew:** stewing beef/ round steak, 1 stock cube, white flour, 2 carrots, 1 onion, 8 potatoes, 4 glasses of milk, 4 slices of apple tart custard & ice-cream | **Bacon Cabbage:** & 8 potatoes, 4 glasses of milk | **Pork Casserole:** diced pork, 4 carrots, 6 mushrooms, curry powder, 1 tin of tomatoes, mixed herbs, veg stock & 6 potatoes, 4 glasses of milk | **Chilli Con Carne:** with minced beef, rice, 1 onion, 1 pepper, 1 tin of tomatoes, chilli powder, 1 tin of kidney beans, 4 glasses of milk | **Chicken & Broccoli Pie:** 4 chicken fillets, 1 onion, 1 carrot, 1 tin of chicken soup,broccoli, curry powder, milk, breadcrumbs, cheese, 4 glasses of milk | **Vegetable Pasta Bake:** 1 onion, 1 green pepper, 8 mushrooms, 1 tin of tomatoes, tomato sauce, wholemeal breadcrumbs, cheese sauce, pasta, 4 glasses of milk | **Pizza, Oven Chips & Tinned Peas:** toppings on pizza include pineapple, chicken & mushrooms, 4 glasses of milk |
| **Mid-afternoon snack** | | 4 yoghurts | 4 slices of wholemeal bread & cheese | | 4 biscuits | 4 fruit scones | 4 yoghurts |
| **Light meal** | **Cold Plate:** 4 slices of turkey & 4 | 2 tins of spaghetti & 8 slices of | 2 tins of vegetable soup, 4 | **Cheese & Bacon Toasted Sandwiches:** | 2 tins of spaghetti & 8 slices of | 8 slices of wholemeal bread with | **French Toast:** 6 eggs, milk, veg oil & 8 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | slices of ham, 8 slices of wholemeal, bread, lettuce & 4 tomatoes | wholemeal toast | slices of wholemeal bread | 8 slices of white bread, 8 rashers, 4 tomatoes, 1 onion & cheese | white toast | cheese & 4 slices of ham, 4 yoghurts | slices of wholemeal bread, 4 yoghurts |
| **Evening snack** | 8 cream crackers with cheese | 8 biscuits & tea | 8 biscuits & tea | 4 fun-sized bars | 8 biscuits & tea | 8 biscuits & tea | 4 glasses of milk & biscuits |

## 2.3 Local authority rent for different locations in the Republic of Ireland

| A couple with two children, 1 full-time worker. National minimum wage: €7.00 per hour x 37.5hrs | Rent Charge € |
|---|---|
| Cork City | 53.20 |
| Dublin City | 46.83 |
| Fingal | 42.70 |
| Limerick City | 36.50 |
| Galway City | 48.00 |
| **Average** | **45.45** |

| A couple with two children, 1 full-time worker and 1 part-time worker. Full-time National minimum wage: €7.00 x 37.5 hours Part-time National minimum wage: €7.00 x 20 hours | Rent Charge € |
|---|---|
| Cork City | 56.40 |
| Dublin City | 52.03 |
| Fingal | 48.90 |
| Limerick City | 48.00 |
| Galway City | 76.00 |
| **Average** | **56.27** |

| A Couple with two children, in receipt of Unemployment Benefit. Total Unemployment Benefit €281.10 | Rent Charge € |
|---|---|
| Cork City | 37.10 |
| Dublin City | 30.77 |
| Fingal | 30.90 |
| Limerick City | 40.50 |
| Galway City | 51.86 |
| **Average** | **38.26** |

## Republic of Ireland budget standards

### 2.4 Budget standard for family, 2 adults, 2 children with one full-time worker on minimum wage

| | NON-CAR OWNERS | | | |
|---|---|---|---|---|
| | Average | % of Total Basket Cost | Minimum | Maximum |
| Food and non alcoholic drinks | 161.23 | 34.63 | 127.46 | 185.24 |
| Housing | 77.52 | 16.65 | 63.08 | 89.26 |
| Transport | 25.94 | 5.57 | 25.94 | 25.94 |
| Clothing and Footwear | 46.34 | 9.95 | 46.34 | 46.34 |
| Educational Costs | 15.11 | 3.25 | 15.11 | 15.11 |
| Personal Costs | 4.40 | 0.95 | 4.40 | 4.40 |
| Personal Care | 22.54 | 4.84 | 22.54 | 22.54 |
| Household Goods | 21.98 | 4.72 | 21.98 | 21.98 |
| Household Services | 33.26 | 7.14 | 33.26 | 33.26 |
| Physical Activity | 21.69 | 4.66 | 21.58 | 22.36 |
| Leisure Goods | 15.56 | 3.34 | 15.56 | 15.56 |
| Leisure Activities | 19.97 | 4.29 | 19.97 | 19.97 |
| **TOTAL BASKET COST (STANDARD)** | **465.54** | 100.00 | **417.22** | **501.96** |
| Plus Alcohol | 40.00 | | 40.00 | 40.00 |
| Plus Tobacco | 28.80 | | 12.34 | 43.20 |
| **TOTAL BASKET COST (incl. ALCOHOL & TOBACCO)** | **534.34** | | **469.56** | **585.16** |
| **HOUSEHOLD CASH INCOME** | **471.82** | | **471.82** | **471.82** |
| **WEEKLY SHORTFALL (STANDARD)** | **6.28** | | **54.60** | **-30.14** |
| **WEEKLY SHORTFALL (incl. ALCOHOL & TOBACCO)** | -62.52 | | **2.26** | -113.34 |
| | **CAR OWNERS** | | | |
| Food and non alcoholic drinks | 161.23 | 30.17 | 127.46 | 185.24 |
| Housing | 77.52 | 14.51 | 63.08 | 89.26 |
| Transport | 94.78 | 17.74 | 94.78 | 94.78 |
| Clothing and Footwear | 46.34 | 8.67 | 46.34 | 46.34 |
| Educational Costs | 15.11 | 2.83 | 15.11 | 15.11 |
| Personal Costs | 4.40 | 0.82 | 4.40 | 4.40 |
| Personal Care | 22.54 | 4.22 | 22.54 | 22.54 |
| Household Goods | 21.98 | 4.11 | 21.98 | 21.98 |
| Household Services | 33.26 | 6.22 | 33.26 | 33.26 |

| | | | | |
|---|---|---|---|---|
| Physical Activity | 21.69 | 4.06 | 21.58 | 22.36 |
| Leisure Goods | 15.56 | 2.91 | 15.56 | 15.56 |
| Leisure Activities | 19.97 | 3.74 | 19.97 | 19.97 |
| **TOTAL BASKET COST (STANDARD)** | **534.38** | 100.00 | **486.06** | **570.80** |
| Plus Alcohol | 40.00 | | 40.00 | 40.00 |
| Plus Tobacco | 28.80 | | 12.34 | 43.20 |
| **TOTAL BASKET COST (incl. ALCOHOL & TOBACCO)** | **603.18** | | **538.40** | **654.00** |
| | | | | |
| **HOUSEHOLD CASH INCOME** | **471.82** | | **471.82** | **471.82** |
| | | | | |
| **WEEKLY SHORTFALL (STANDARD)** | -62.56 | | -14.24 | -98.98 |
| **WEEKLY SHORTFALL (incl. ALCOHOL & TOBACCO)** | -131.36 | | -66.58 | -182.18 |

## 2.5 Budget standard for a family, 2 adults, 2 children with one full-time, one part-time worker on minimum wage

| | NON-CAR OWNERS | | | |
|---|---|---|---|---|
| | Average | % of Total Basket Cost | Minimum | Maximum |
| Food and non alcoholic drinks | 161.23 | 27.34 | 127.46 | 185.24 |
| Housing | 90.82 | 15.40 | 79.67 | 113.20 |
| Transport | 39.19 | 6.65 | 39.19 | 39.19 |
| Clothing and Footwear | 46.34 | 7.86 | 46.34 | 46.34 |
| Educational Costs | 15.11 | 2.56 | 15.11 | 15.11 |
| Personal Costs | 102.05 | 17.30 | 102.05 | 102.05 |
| Personal Care | 22.54 | 3.82 | 22.54 | 22.54 |
| Household Goods | 21.98 | 3.73 | 21.98 | 21.98 |
| Household Services | 33.26 | 5.64 | 33.26 | 33.26 |
| Physical Activity | 21.69 | 3.68 | 21.58 | 22.36 |
| Leisure Goods | 15.56 | 2.64 | 15.56 | 15.56 |
| Leisure Activities | 19.97 | 3.39 | 19.97 | 19.97 |
| **TOTAL BASKET COST (STANDARD)** | **589.74** | 100.00 | **544.71** | **636.80** |
| Plus Alcohol | 40.00 | | 40.00 | 40.00 |
| Plus Tobacco | 28.80 | | 12.34 | 43.20 |
| **TOTAL BASKET COST (incl. ALCOHOL & TOBACCO)** | **658.54** | | **597.05** | **720.00** |
| | | | | |
| **HOUSEHOLD CASH INCOME** | **530.51** | | **530.51** | **530.51** |
| | | | | |
| **WEEKLY SHORTFALL (STANDARD)** | **-59.23** | | **-14.20** | **-106.29** |
| **WEEKLY SHORTFALL (incl. ALCOHOL & TOBACCO)** | **-128.03** | | **-66.54** | **-189.49** |

| | CAR OWNERS | | | |
|---|---|---|---|---|
| | Average | % of Total Basket Cost | Minimum | Maximum |
| Food and non-alcoholic drinks | 161.23 | 24.98 | 127.46 | 185.24 |
| Housing | 90.82 | 14.07 | 79.67 | 113.20 |
| Transport | 94.78 | 14.69 | 94.78 | 94.78 |
| Clothing and Footwear | 46.34 | 7.18 | 46.34 | 46.34 |
| Educational Costs | 15.11 | 2.34 | 15.11 | 15.11 |
| Personal Costs | 102.05 | 15.81 | 102.05 | 102.05 |
| Personal Care | 22.54 | 3.49 | 22.54 | 22.54 |
| Household Goods | 21.98 | 3.41 | 21.98 | 21.98 |
| Household Services | 33.26 | 5.15 | 33.26 | 33.26 |
| Physical Activity | 21.69 | 3.36 | 21.58 | 22.36 |
| Leisure Goods | 15.56 | 2.41 | 15.56 | 15.56 |
| Leisure Activities | 19.97 | 3.09 | 19.97 | 19.97 |

| | | | | |
|---|---|---|---|---|
| **TOTAL BASKET COST (STANDARD)** | **645.33** | **100.00** | **600.30** | **692.39** |
| Plus Alcohol | 40.00 | | 40.00 | 40.00 |
| Plus Tobacco | 28.80 | | 12.34 | 43.20 |
| **TOTAL BASKET COST (incl. ALCOHOL & TOBACCO)** | **714.13** | | **652.64** | **775.59** |
| | | | | |
| **HOUSEHOLD CASH INCOME** | **530.51** | | **530.51** | **530.51** |
| | | | | |
| **WEEKLY SHORTFALL (STANDARD)** | **-114.82** | | **-69.79** | **-161.88** |
| **WEEKLY SHORTFALL (incl. ALCOHOL & TOBACCO)** | -183.62 | | -122.13 | -245.08 |

## 2.6 Budget standard for family, 2 adults, 2 children, 2 unemployed

| | NON-CAR OWNERS | | | |
|---|---|---|---|---|
| | Average | % of Total Basket Cost | Minimum | Maximum |
| Food and non alcoholic drinks | 161.23 | 35.72 | 127.46 | 185.24 |
| Housing | 70.16 | 15.55 | 57.09 | 87.86 |
| Transport | 22.48 | 4.98 | 22.48 | 22.48 |
| Clothing and Footwear | 46.34 | 10.27 | 46.34 | 46.34 |
| Educational Costs | 15.11 | 3.35 | 15.11 | 15.11 |
| Personal Costs | 1.00 | 0.22 | 1.00 | 1.00 |
| Personal Care | 22.54 | 4.99 | 22.54 | 22.54 |
| Household Goods | 21.98 | 4.87 | 21.98 | 21.98 |
| Household Services | 33.26 | 7.37 | 33.26 | 33.26 |
| Physical Activity | 21.69 | 4.81 | 21.58 | 22.36 |
| Leisure Goods | 15.56 | 3.45 | 15.56 | 15.56 |
| Leisure Activities | 19.97 | 4.42 | 19.97 | 19.97 |
| **TOTAL BASKET COST (STANDARD)** | **451.32** | 100.00 | **404.37** | **493.70** |
| Plus Alcohol | 40.00 | | 40.00 | 40.00 |
| Plus Tobacco | 28.80 | | 12.34 | 43.20 |
| **TOTAL BASKET COST (incl. ALCOHOL & TOBACCO)** | **520.12** | | **456.71** | **576.90** |
| **HOUSEHOLD CASH INCOME** | **388.28** | | **388.28** | **388.28** |
| | | | | |
| **WEEKLY SHORTFALL (STANDARD)** | -63.04 | | -16.09 | -105.42 |
| **WEEKLY SHORTFALL (incl. ALCOHOL & TOBACCO)** | -131.84 | | -68.43 | -188.62 |
| | **CAR OWNERS** | | | |
| | Average | % of Total Basket Cost | Minimum | Maximum |
| | | | | |
| Food and non alcoholic drinks | 161.23 | 30.79 | 127.46 | 185.24 |
| Housing | 70.16 | 13.40 | 57.09 | 87.86 |
| Transport | 94.78 | 18.10 | 94.78 | 94.78 |
| Clothing and Footwear | 46.34 | 8.85 | 46.34 | 46.34 |
| Educational Costs | 15.11 | 2.89 | 15.11 | 15.11 |
| Personal Costs | 1.00 | 0.19 | 1.00 | 1.00 |
| Personal Care | 22.54 | 4.30 | 22.54 | 22.54 |
| Household Goods | 21.98 | 4.20 | 21.98 | 21.98 |
| Household Services | 33.26 | 6.35 | 33.26 | 33.26 |
| Physical Activity | 21.69 | 4.14 | 21.58 | 22.36 |
| Leisure Goods | 15.56 | 2.97 | 15.56 | 15.56 |
| Leisure Activities | 19.97 | 3.81 | 19.97 | 19.97 |

| | | | | |
|---|---|---|---|---|
| **TOTAL BASKET COST (STANDARD)** | **523.62** | **100.00** | **476.67** | **566.00** |
| Plus Alcohol | 40.00 | | 40.00 | 40.00 |
| Plus Tobacco | 28.80 | | 12.34 | 43.20 |
| **TOTAL BASKET COST (incl. ALCOHOL & TOBACCO)** | **592.42** | | **529.01** | **649.20** |
| | | | | |
| **HOUSEHOLD CASH INCOME** | **388.28** | | **388.28** | **388.28** |
| | | | | |
| **WEEKLY SHORTFALL (STANDARD)** | -135.34 | | -88.39 | -177.72 |
| **WEEKLY SHORTFALL (incl. ALCOHOL & TOBACCO)** | -204.14 | | -140.73 | -260.92 |

## Northern Ireland budget standards

### 2.7 Budget standard for family, 2 adults, 2 children with one full-time worker on minimum wage

| | NON-CAR OWNERS | | | |
|---|---|---|---|---|
| | Average | % of Total Basket Cost | Minimum | Maximum |
| | EURO | | EURO | EURO |
| Food and non alcoholic drinks | 143.98 | 29.15 | 89.72 | 165.70 |
| Housing | 134.90 | 27.31 | 134.40 | 135.39 |
| Transport | 19.99 | 4.05 | 19.99 | 19.99 |
| Clothing and Footwear | 50.20 | 10.16 | 50.20 | 50.20 |
| Educational Costs | 12.50 | 2.53 | 12.50 | 12.50 |
| Personal Costs | 3.53 | 0.71 | 3.53 | 3.53 |
| Personal Care | 9.45 | 1.91 | 9.45 | 9.45 |
| Household Goods | 27.38 | 5.54 | 27.38 | 27.38 |
| Household Services | 34.82 | 7.05 | 34.82 | 34.82 |
| Physical Activity | 18.16 | 3.68 | 17.38 | 19.08 |
| Leisure Goods | 16.41 | 3.32 | 16.41 | 16.41 |
| Leisure Activities | 22.59 | 4.57 | 22.59 | 22.59 |
| **TOTAL BASKET COST (STANDARD)** | **493.90** | 100.00 | **438.36** | **517.03** |
| Plus Alcohol | 40.45 | | 40.45 | 40.45 |
| Plus Tobacco | 30.79 | | 13.19 | 46.18 |
| **TOTAL BASKET COST (incl. ALCOHOL & TOBACCO)** | **565.14** | | **492.01** | **603.67** |
| | | | | |
| **HOUSEHOLD CASH INCOME** | **472.58** | | **472.58** | **472.58** |
| | | | | |
| **WEEKLY SHORTFALL (STANDARD)** | -21.32 | | 34.22 | -44.45 |
| **WEEKLY SHORTFALL (incl. ALCOHOL & TOBACCO)** | -92.56 | | -19.43 | -131.09 |
| | **CAR OWNERS** | | | |
| | Average | % of Total Basket Cost | Minimum | Maximum |
| | EURO | | EURO | EURO |
| Food and non alcoholic drinks | 143.98 | 26.25 | 89.72 | 165.70 |
| Housing | 134.90 | 24.59 | 134.40 | 135.39 |
| Transport | 74.68 | 13.61 | 74.68 | 74.68 |
| Clothing and Footwear | 50.20 | 9.15 | 50.20 | 50.20 |
| Educational Costs | 12.50 | 2.28 | 12.50 | 12.50 |
| Personal Costs | 3.53 | 0.64 | 3.53 | 3.53 |
| Personal Care | 9.45 | 1.72 | 9.45 | 9.45 |
| Household Goods | 27.38 | 4.99 | 27.38 | 27.38 |

| | | | | |
|---|---|---|---|---|
| Household Services | 34.82 | 6.35 | 34.82 | 34.82 |
| Physical Activity | 18.16 | 3.31 | 17.38 | 19.08 |
| Leisure Goods | 16.41 | 2.99 | 16.41 | 16.41 |
| Leisure Activities | 22.59 | 4.12 | 22.59 | 22.59 |
| **TOTAL BASKET COST (STANDARD)** | **548.59** | 100.00 | **493.05** | **571.72** |
| Plus Alcohol | 40.45 | | 40.45 | 40.45 |
| Plus Tobacco | 30.79 | | 13.19 | 46.18 |
| **TOTAL BASKET COST (incl. ALCOHOL & TOBACCO)** | **619.83** | | **546.70** | **658.36** |
| | | | | |
| **HOUSEHOLD CASH INCOME** | **472.58** | | **472.58** | **472.58** |
| | | | | |
| **WEEKLY SHORTFALL (STANDARD)** | **-76.01** | | **-20.47** | **-99.14** |
| **WEEKLY SHORTFALL (incl. ALCOHOL & TOBACCO)** | **-147.25** | | **-74.12** | **-185.78** |

## 2.8 Budget standard for family, 2 adults, 2 children with one full-time, 1 part-time worker on minimum wage

| | NON-CAR OWNERS | | | |
|---|---|---|---|---|
| | Average | % of Total Basket Cost | Minimum | Maximum |
| | EURO | | EURO | EURO |
| Food and non alcoholic drinks | 143.98 | 26.13 | 89.72 | 165.70 |
| Housing | 134.90 | 24.48 | 134.40 | 135.39 |
| Transport | 30.17 | 5.47 | 30.17 | 30.17 |
| Clothing and Footwear | 50.20 | 9.11 | 50.20 | 50.20 |
| Educational Costs | 1.39 | 0.25 | 1.39 | 1.39 |
| Personal Costs | 78.07 | 14.17 | 78.07 | 78.07 |
| Personal Care | 9.45 | 1.72 | 9.45 | 9.45 |
| Household Goods | 27.38 | 4.97 | 27.38 | 27.38 |
| Household Services | 34.82 | 6.32 | 34.82 | 34.82 |
| Physical Activity | 18.16 | 3.29 | 17.38 | 19.08 |
| Leisure Goods | 0.00 | 0.00 | 0.00 | 0.00 |
| Leisure Activities | 22.59 | 4.10 | 22.59 | 22.59 |
| **TOTAL BASKET COST (STANDARD)** | **551.10** | 100.00 | **495.56** | **574.23** |
| Plus Alcohol | 40.45 | | 40.45 | 40.45 |
| Plus Tobacco | 30.79 | | 13.19 | 46.18 |
| **TOTAL BASKET COST (incl. ALCOHOL & TOBACCO)** | **622.34** | | **549.21** | **660.87** |
| | | | | |
| **HOUSEHOLD CASH INCOME** | **560.41** | | **560.41** | **560.41** |
| | | | | |
| **WEEKLY SHORTFALL (STANDARD)** | 9.32 | | 64.86 | -13.82 |
| **WEEKLY SHORTFALL (incl. ALCOHOL & TOBACCO)** | -61.93 | | 11.21 | -100.45 |
| | **CAR OWNERS** | | | |
| | Average | % of Total Basket Cost | Minimum | Maximum |
| | EURO | | EURO | EURO |
| Food and non alcoholic drinks | 143.98 | 23.11 | 89.72 | 165.70 |
| Housing | 134.90 | 21.65 | 134.40 | 135.39 |
| Transport | 74.68 | 11.99 | 74.68 | 74.68 |
| Clothing and Footwear | 50.20 | 8.06 | 50.20 | 50.20 |
| Educational Costs | 12.50 | 2.01 | 12.50 | 12.50 |
| Personal Costs | 78.07 | 12.53 | 78.07 | 78.07 |
| Personal Care | 9.45 | 1.52 | 9.45 | 9.45 |
| Household Goods | 27.38 | 4.39 | 27.38 | 27.38 |
| Household Services | 34.82 | 5.59 | 34.82 | 34.82 |
| Physical Activity | 18.16 | 2.91 | 17.38 | 19.08 |

| | | | | |
|---|---|---|---|---|
| Leisure Goods | 16.41 | 2.63 | 16.41 | 16.41 |
| Leisure Activities | 22.59 | 3.62 | 22.59 | 22.59 |
| **TOTAL BASKET COST (STANDARD)** | **623.13** | 100.00 | **567.59** | **646.27** |
| Plus Alcohol | 40.45 | | 40.45 | 40.45 |
| Plus Tobacco | 30.79 | | 13.19 | 46.18 |
| **TOTAL BASKET COST (incl. ALCOHOL & TOBACCO)** | **694.38** | | **621.24** | **732.90** |
| | | | | |
| **HOUSEHOLD CASH INCOME** | **560.41** | | **560.41** | **560.41** |
| | | | | |
| **WEEKLY SHORTFALL (STANDARD)** | -62.72 | | -7.18 | -85.85 |
| **WEEKLY SHORTFALL (incl. ALCOHOL & TOBACCO)** | -133.96 | | -60.83 | -172.49 |

## 2.9 Budget standard for a family, 2 adults, 2 children with 2 unemployed

| | NON-CAR OWNERS | | | |
|---|---|---|---|---|
| | Average | % of Total Basket Cost | Minimum | Maximum |
| | Euro | | Euro | Euro |
| Food and non alcoholic drinks | 143.98 | 35.80 | 89.72 | 165.70 |
| Housing | 47.90 | 11.91 | 47.52 | 48.52 |
| Transport | 17.32 | 4.31 | 17.32 | 17.32 |
| Clothing and Footwear | 50.20 | 12.48 | 50.20 | 50.20 |
| Educational Costs | 12.50 | 3.11 | 12.50 | 12.50 |
| Personal Costs | 1.46 | 0.36 | 1.46 | 1.46 |
| Personal Care | 9.45 | 2.35 | 9.45 | 9.45 |
| Household Goods | 27.38 | 6.81 | 27.38 | 27.38 |
| Household Services | 34.82 | 8.66 | 34.82 | 34.82 |
| Physical Activity | 18.16 | 4.51 | 17.38 | 19.08 |
| Leisure Goods | 16.41 | 4.08 | 16.41 | 16.41 |
| Leisure Activities | 22.59 | 5.62 | 22.59 | 22.59 |
| **TOTAL BASKET COST (STANDARD)** | **402.17** | 100.00 | **346.75** | **425.43** |
| Plus Alcohol | 40.45 | | 40.45 | 40.45 |
| Plus Tobacco | 30.79 | | 13.19 | 46.18 |
| **TOTAL BASKET COST (incl. ALCOHOL & TOBACCO)** | **473.41** | | **400.40** | **512.06** |
| | | | | |
| **HOUSEHOLD CASH INCOME** | **427.70** | | **427.70** | **427.70** |
| | | | | |
| **WEEKLY SHORTFALL (STANDARD)** | **25.53** | | **80.95** | **2.28** |
| **WEEKLY SHORTFALL (incl. ALCOHOL & TOBACCO)** | -45.71 | | 27.30 | -84.36 |
| | **CAR OWNERS** | | | |
| | Average | % of Total Basket Cost | Minimum | Maximum |
| | EURO | | EURO | EURO |
| Food and non alcoholic drinks | 143.98 | 31.33 | 89.72 | 165.70 |
| Housing | 47.90 | 10.42 | 47.52 | 48.52 |
| Transport | 74.68 | 16.25 | 74.68 | 74.68 |
| Clothing and Footwear | 50.20 | 10.92 | 50.20 | 50.20 |
| Educational Costs | 12.50 | 2.72 | 12.50 | 12.50 |
| Personal Costs | 1.46 | 0.32 | 1.46 | 1.46 |
| Personal Care | 9.45 | 2.06 | 9.45 | 9.45 |
| Household Goods | 27.38 | 5.96 | 27.38 | 27.38 |
| Household Services | 34.82 | 7.58 | 34.82 | 34.82 |
| Physical Activity | 18.16 | 3.95 | 17.38 | 19.08 |
| Leisure Goods | 16.41 | 3.57 | 16.41 | 16.41 |

| | | | | |
|---|---|---|---|---|
| Leisure Activities | 22.59 | 4.92 | 22.59 | 22.59 |
| TOTAL | 459.53 | 100.00 | 404.11 | 482.79 |
| Plus Alcohol | 40.45 | | 40.45 | 40.45 |
| Plus Tobacco | 30.79 | | 13.19 | 46.18 |
| **TOTAL BASKET COST (incl. ALCOHOL & TOBACCO)** | **530.77** | | **457.76** | **569.42** |
| | | | | |
| **HOUSEHOLD CASH INCOME** | **427.70** | | **427.70** | **427.70** |
| | | | | |
| **WEEKLY SHORTFALL (STANDARD)** | -31.83 | | 23.59 | -55.08 |
| **WEEKLY SHORTFALL (incl. ALCOHOL & TOBACCO)** | -103.07 | | -30.06 | -141.72 |