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Fuel Poverty, Older People and Cold Weather: An All-Island Analysis

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Foreword

The scale of the impact which a piece of research can have on shaping and influencing public policy can be greatly determined sometimes by the timing of its publication. Like all communications, its impact is greater when there is a receptive audience.

That should certainly be the case with this research regarding older people and fuel poverty. Administrations from both jurisdictions on this island are currently working hard to find the best approach to ensuring that all citizens, and especially some of the most vulnerable in society, remain sufficiently warm in their homes.

Fuel poverty is an issue for governments across the world at the moment. The world's population is ageing, global fuel prices are rising and many people are struggling to afford enough energy to remain well and warm at home. The current economic recession and the increased pressure it has placed on the public purse, has made a difficult task even harder.

But if governments are to tackle the fuel poverty issue effectively and efficiently, they must first understand the contributing factors which leave older people so vulnerable. The authors of this report have done an excellent job in highlighting these key factors in an Irish context. For the uninitiated, some of it may make shocking reading.

The study also provides a fuller picture of the impact which fuel poverty has on older people by researching the response and behaviour of those who are struggling to heat their homes. The inclusion of many of their quotes is a stark reminder to us all that fuel poverty is not about statistics, but about people. The hardship, loneliness and worry they have endured are captured in their responses.

The challenge now is for our policy makers and planners to use this research to strategically address the issue and end the suffering.

Eamon Timmins,
Head of Advocacy & Communications,
Age Action.

Executive Summary

This report covers a number of different aspects of fuel poverty and older people.

1. An exploration of existing government survey data from Northern Ireland and the Republic of Ireland with a particular focus on older people and conducting additional targeted analyses where required.
2. An original survey in the Republic of Ireland exploring the lived experience of older people in cold weather.
3. A feasibility study of data logging thermometers placed in the homes of older tenants in local authority accommodation.
4. Analysis of excess winter mortality among older people including a consideration of differences between the two jurisdictions.

Older people on the island of Ireland, as in many other countries, experience a 'dual burden' in terms of fuel poverty. They are more likely to experience fuel poverty and are also particularly vulnerable to health and social harm as a result of this experience. The numbers of older people vulnerable to ill-effects from cold homes will rise as numbers of people aged 80 and over, and those living with chronic illness or disability, increase.

There were significant differences observed between expenditure-based, and subjective (EU-SILC) based fuel poverty indicators, for older people, and between Northern Ireland and Republic of Ireland data. This data required careful interpretation.

The higher levels of fuel poverty recorded for older people on the island of Ireland appeared to be driven by all aspects of the fuel poverty model - poor housing condition, energy inefficient housing, rising fuel prices and low income. The majority of older people live in their own home and these homes tend to be older properties which are detached or semi-detached. Older people on the island are over-represented among houses which are in poor condition and which lack central heating in both jurisdictions. Lacking central heating was a more common experience for older people in the Republic of Ireland than in Northern Ireland. Data on energy efficiency measures were not comparable North/South but similar patterns were observed. Older people were less likely than the general population to have attic/loft or wall insulation or double glazing.

Older people were also vulnerable from an income point of view. This would seem to be a particular issue in Northern Ireland where rates of income poverty are significantly increasing. In both jurisdictions older people were heavily reliant on social transfers to keep them out of poverty. Coupled with this, there is evidence that many older people are not claiming their full entitlements.

Oil dependency was a particular issue in Northern Ireland. Very significant increases were observed in the price of heating oil, as well as electricity and gas in recent years. There was little available research evidence on the relationship between the older consumer and heating oil suppliers.

The interface between fuel poverty and tenure, living alone, rural location, and chronic illness or disability was explored through the survey data. Older people living alone emerged as a particularly vulnerable group in terms of low income, poor housing condition and lower energy efficiency compounded by low occupancy. Also, there was a concentration of risk factors for fuel poverty among the older age groups (75+) in terms of lacking central heating, poor housing condition and less adoption of energy efficiency measures. Older people in Northern Ireland living in rural areas were more likely to lack central heating, have poor housing condition and experience fuel poverty. There was no evidence of a rural/urban difference in fuel poverty observed among older people in the Republic of Ireland. Of older people reporting no central heating in the Republic of Ireland, around one quarter had at least one form of disability and older people with a disability were more likely to lack central heating than older people without a disability.

In terms of the survey of older people's experience of cold weather, data from 722 questionnaires was analysed. The questionnaire was distributed using groups and services interfacing with older people and the sample cannot be considered representative. The questionnaire was carefully designed based on input and advice from a number of stakeholders, and piloted. Key findings from the survey include:

- 24.1% of the sample described their home as too cold.
- 62.2% of older people were very or somewhat worried about the price of heating their home, but a far smaller percentage were worried about being cut off by their utility supplier.
- 51.1% of the sample stated that they went without necessities such as food and clothing in order to pay for heat over the winter period.
- 8.1% of the sample used the oven for additional heat during cold snaps.
- There was evidence of careful budgeting and debt aversion with over half the sample stating they saved in order to pay their heating bill while 10% felt they could not afford to save for this purpose.
- There was a strong preference for cash payments for fuel.
- Draughts, dampness and mould were frequently reported.
- Storage heaters were common and generally unsatisfactory.
- The findings raise safety concerns for some older people in terms of lack of carbon monoxide monitors, blocking vents, infrequent boiler servicing and chimney sweeping, and a high frequency of reported falls.
- Associations were observed between self-rating the home as cold and poor housing condition, lacking central heating and having to forego other necessities in order to pay for fuel as well as aspects of social exclusion and ill-health/disability.
- During the cold weather, most older people responded by keeping their heating on for longer, staying indoors and consuming hot meals and drinks.

In terms of the feasibility study of data logging thermometers, these were placed in the homes of tenants in 13 senior citizens sheltered housing units in the Dublin area. The loggers collected data on temperature, relative humidity and dew point from May to August 2011. Results for the mean, maximum and minimum values have been presented. The pilot study showed that temperatures were within the acceptable range in these summer months. Temperatures appeared to be affected not just by the age, design and

construction of the building but also by the residents' behaviours. We have demonstrated that one can easily monitor the temperature and humidity conditions in homes, with relatively cheap non-obtrusive equipment.

The analysis of excess winter mortality in older people included a consideration of differences between the two jurisdictions. Previous analysis on cold-related deaths in Dublin, led by Dublin Institute of Technology, showed that each 1 degree Celsius drop in temperature was associated with a 2.6% increase in total mortality over the subsequent 40 days. Daily mortality data from Ireland and Northern Ireland for the time period 1986 to 2006 was analysed. This showed significant declines in the absolute annual mortality rate for cardiovascular disease and stroke, with less impressive declines observed for respiratory disease. Rates in Northern Ireland were consistently higher for all causes over the time period studied. The number of overall excess winter deaths on the island has decreased over time, but there is still a significant difference between winter and non-winter mortality rates. The excess winter mortality rate has declined for cardiovascular disease, stroke and respiratory disease, indicating significant improvements in population health over the 20 years.

A list of policy recommendations arising from the research is presented in Chapter 7.

CHAPTER 1

Introduction to the project

The research presented in this report is the culmination of 18 months of work which has been funded by The Centre for Ageing Research and Development in Ireland (CARDI). The research is concerned with older people and how they cope with cold weather, and whether they are able to keep sufficiently warm in winter. This report is structured into a number of distinct chapters, with each chapter dealing with a specific aspect of the fuel poverty issue.

Chapter 2 sets the scene in relation to the definitions of fuel poverty, and outlines the issues in respect of fuel poverty comparing Northern Ireland and the Republic of Ireland. It also brings together an analysis of existing data in relation to fuel poverty and highlights the salient issues.

Chapter 3 undertakes a short review of policy issues in the area of fuel poverty, again with particular emphasis on the main differences between policy in Northern Ireland and the Republic of Ireland.

Chapter 4 presents an analysis of mortality patterns over a twenty year period, comparing Northern Ireland and the Republic of Ireland, reviewing how patterns have changed over this time period, and excess winter mortality.

Chapter 5 represents the major aspect of this study, namely the outcome of the survey of older people. Over 700 older people completed a detailed questionnaire in respect of housing conditions, finances, and various other social aspects of relevance. A detailed discussion of these results are presented within the chapter.

Chapter 6 relates to a small pilot study of temperatures and humidity in a number of local authority housing units in Dublin, this aspect of the study was to determine the feasibility of conducting a more comprehensive measurement campaign.

Chapter 7 provides an overall discussion and summary of the work together with the key findings and recommendations.

Appendices provide supporting background information to the chapters. For example, a compilation of the "free" comments section of the questionnaire, where respondents were able to write their own comments is included as an appendix. These are extremely informative and give an insight into the lives of older people in Ireland, some of the comments are very moving and clearly reflect the feelings and issues facing people in Ireland in 2011.

We are currently in an economic situation where utility costs are rising by double digit levels on an annual basis, while at the same time there are no matching increases in the support mechanisms for those solely dependent on State support/pensions.

Government's ability to address fuel poverty is necessarily affected by budgetary restraints and economic recession. In both jurisdictions, attempts are being made to improve the targeting of fuel poverty measures to protect the most vulnerable and provide support to the most in need. It is therefore vitally important that fuel poverty strategies and the range of measures linked to them are fully informed of the situation of older people.

The information contained in this report will be of interest to:

- Older people
- Policy makers
- Politicians
- Advocacy groups
- Government departments
- Health and social service providers
- Tenants and landlords
- Carers
- Utility regulators
- Utility companies
- Housing associations
- Organisations involved in retrofitting older people's homes
- Community and voluntary groups

We hope that this report will contribute to an evidence-based approach to developing policy and measures to protect the health and wellbeing of older people in cold weather.

CHAPTER 2

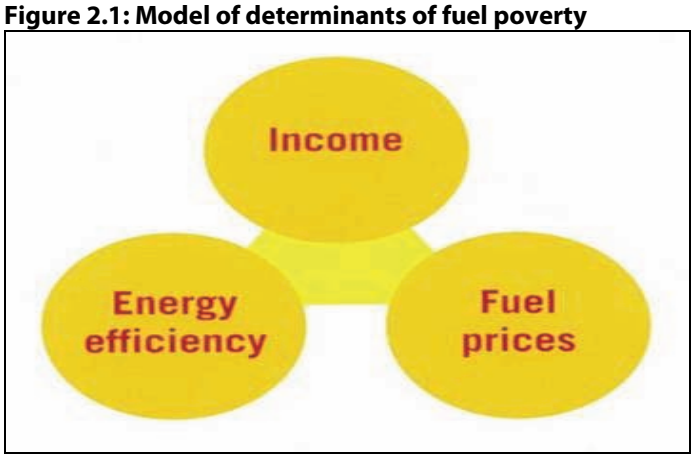
Fuel poverty and older people in the Republic of Ireland and Northern Ireland

Authors: Helen McAvoy & Eimear Barrett

2.1 Understanding fuel poverty in the Republic of Ireland and Northern Ireland

Fuel poverty refers to a situation when someone is unable to afford to heat their home to a level that is healthy and safe. An important aspect of fuel poverty among older people is the requirement that people go without other essentials in order to keep warm. Fuel poverty is caused by the interaction of high fuel prices, low income and poor energy efficiency in the home, as depicted in Figure 2.1.

Figure 2.1: Model of determinants of fuel poverty



The conceptual basis of fuel poverty is well understood but there is considerable diversity in how it is measured and defined in terms of government policy. The most commonly understood measure of fuel poverty is derived from the proportion of disposable income (usually 10%) spent on energy in the home, including heat and light. This so-called 'expenditure method' is common to both the Republic of Ireland and Northern Ireland but the figures are not comparable as quite different methodologies underpin the data.

In the Republic of Ireland, national survey data from the Household Budget Survey 2005 has been used to calculate levels of fuel poverty. Projections based on this data estimated that 19.4% of all Irish households (n= 301,368) were fuel poor in 2008 (Scott et al, 2008).

In Northern Ireland data from the National House Condition Survey is used, employing a more complex formula which directly assesses a range of factors including household energy efficiency. National House Condition Surveys are operated in each of the UK jurisdictions, allowing broad comparisons of fuel poverty levels on a UK basis. The 2009 House Condition Survey estimated that 44% of households (n=302,310) were in fuel poverty in Northern Ireland (Northern Ireland Housing Executive, 2009).
A Preliminary Review *Defining Fuel Poverty in Northern Ireland* was commissioned by the Department for Social Development in 2010 and published in early September 2011. This review produced a different method for considering fuel poverty in Northern Ireland,

based on households spending twice the median Northern Ireland spend on domestic fuels (i.e. spending 18% rather than a set 10%). Using this threshold the fuel poverty prevalence rate could be considered to be 13% in 2009, compared to 44% when a 10% threshold is used. The Review concluded that the UK-wide approach (10% threshold) is fully fit for purpose and we should continue to use it. However, using the 18% threshold can be useful for targeting resources to those most in need at local level. Due to timing issues, it was not possible to consider figures relating to 18% threshold among older people in Northern Ireland in this report (Liddell et al, 2011).

The 'subjective method' of measuring fuel poverty is based on self reporting of difficulties with keeping the home adequately warm. In the Republic of Ireland this is measured annually through the European Survey of Income and Living Conditions (EU-SILC) by asking respondents whether they are able to keep the house adequately warm or whether they have had to go without heating in the last year because they could not afford it.

In the Republic of Ireland a formal government definition of energy poverty has recently been set out in Warmer Homes – A Strategy for Affordable Energy Poverty in Ireland (Department of Communications, Energy and Natural Resources published (2011).

2.2 Understanding fuel poverty from an ageing perspective

Older people are recognised as having a higher risk of experiencing fuel poverty. Furthermore, older people are particularly vulnerable to health and social harm associated with this experience of fuel poverty. We have attempted in this project to explore this 'dual burden' among older people.

Recent consultations with older people in the Republic of Ireland show that older people are concerned about meeting their home heating costs and see this as a significant aspect of their quality of life and standard of living (Office for Older People, 2010).

Increasing life expectancy means that many people are now living in their own homes for a decade, even two or three decades, after they retire. Older people generally express a strong preference to stay living in their own homes, even in the face of ill-health or disability, rather than living in a care home setting (Cullen et al, 2009). Facilitating older people to heat their homes easily and affordably can support them to maintain their independence and autonomy over their financial affairs and living circumstances. Conversely, when an older person becomes impoverished and/or socially excluded as a result of paying their heating bills this is a serious threat to wellbeing.

Associated with increased life expectancy, more people are living with chronic disease and disability. Those older people with chronic disease and disability are especially vulnerable to the negative effects of fuel poverty and living in a cold damp home. The effectiveness of supported self-management programmes for people with chronic conditions would be enhanced by a commitment to optimise the home environment so that it is conducive to optimal physical and mental health.

A recently published review presents convincing evidence on the health impacts of cold homes and fuel poverty. There are strong relationships between cold temperatures and cardiovascular and respiratory morbidity and mortality. Strong associations are also

observed between fuel poverty and mental ill-health. Cold housing negatively effects dexterity, due to reduced blood circulation to the extremities, and increases the risk of accidents and injuries in the home (Marmot Review Team, 2011).

In the UK, episodes of severe winter weather, when ambient temperatures fall below 5°C are associated with peaks in general practitioner consultations, hospital admissions, and cardiovascular deaths among older people. However evidence from focus groups suggested that the association between cold weather and the increased risk of having a heart attack or stroke was not common knowledge among older people and carers in the UK (Gascoigne et al, 2010).

2.3 Findings from an exploration of national data relevant to fuel poverty and older people in the Republic of Ireland and Northern Ireland

Our approach

We reviewed published data relevant to fuel poverty and older people in the Republic of Ireland and Northern Ireland. Our review encompassed official government figures based on national survey data and associated analyses published by government departments or academic researchers. In addition, and where we felt data was lacking, we conducted specific targeted secondary analysis of selected datasets from Northern Ireland and the Republic of Ireland, to deepen our understanding of fuel poverty among older people.

In exploring routinely published data, data on older people and fuel poverty is generally presented on a household basis. Household analyses are appropriate to inform policy measures which relate to the house (e.g. energy efficiency schemes). Household analyses are also useful to inform household based social protection measures like the fuel allowance. However, household analyses can sometimes have the disadvantage of masking the true extent of fuel poverty among older people as individuals. Also many social protection measures, including pensions, are individual rather than household based. Our analysis allowed us to provide new data which complements the published figures on households while also allowing us to explore fuel poverty from a more sociological perspective.

People age 65 and over are often considered as a homogenous group. With the increasing number of old-older people and their increased vulnerability to ill-effects from living in a cold home, we tried to include a greater level of age disaggregation where possible. Our analysis considers the situation of subgroups of older people, namely those who live alone, those who have a chronic illness or disability and rural dwelling older people. These potentially vulnerable groups were selected on the basis of findings from existing research in the Republic of Ireland and Northern Ireland indicating particular vulnerabilities among older people living alone and rural-dwellers. The term 'vulnerable' has many meanings in the fuel poverty policy domain, for example 'vulnerable customers' are identified in one way by utility suppliers and afforded special treatment by virtue of being on a vulnerable customers register. Concepts of vulnerability differ, although not largely so, between high level government policy, electricity and gas companies, schemes working to improve energy efficiency in homes and indeed among older people themselves.

Older people with chronic illness/disability were considered here in light of existing evidence of vulnerability to harm from the fuel poverty experience and living in a cold home.

Methodology

The Irish Social Science Data Archive provided the following datasets for the purposes of this project:

- Census 2006 COPSAR anonymised microfile
- Household Budget Survey 2005
- European Survey of Income and Living Conditions (EU SILC) 2008
- Irish National Survey of Housing Quality 2002 (Nesstar)

Data was stored on a secure server in IPH in keeping with the Data Protection Act. Analysis was conducted using SPSS (PASW v.18).

Data from the Recycling and Energy Conservation Module of the Quarterly National Household Survey 2005 was not available. Data outputs from analysis on this survey were produced by the Central Statistics Office based on a template developed by the Institute of Public Health in Ireland (IPH). SPSS outputs from analysis on the Northern Ireland House Condition Survey were produced by the Northern Ireland Housing Executive, based on a template developed by IPH. Census data on central heating and house type and age were produced by the Central Statistics Office and the Northern Ireland Statistics and Research Agency, based on a template developed by IPH.

A summary of the datasets used in the analyses is shown in Table 2.1.

Table 2.1: Datasets used in the analyses

Dataset	Year	Jurisdiction
Census	2006	Republic of Ireland
Census	2002	Northern Ireland
House Condition Survey	2009	Northern Ireland
European Survey of Income and Living Conditions	2008	Republic of Ireland
Household Budget Survey	2005	Republic of Ireland
Quarterly National Household Survey – Energy conservation module	2005	Republic of Ireland
Irish National Survey of Housing Quality	2002	Republic of Ireland

- Datasets for an in-depth analysis of fuel poverty in the Republic of Ireland are lacking, with the most recent comprehensive data on housing condition compiled in 2002.
- Data from Census 2011 (Republic of Ireland and Northern Ireland) was not available at the time of analysis.

2.4 Results

This section begins by presenting a housing profile of older people – patterns of demography, tenure, house type and age of property. Data is then presented on the type of heating systems used. This baseline knowledge underpins an appropriate understanding of the figures presented on fuel poverty and its determinants in the latter part of the results section.

The results of this aspect of the analysis are presented in ten sections:

A. An ageing population – implications for fuel poverty
B. Living circumstances of older people
C. Tenure of older people
D. Type of accommodation
E. Age of older people's homes
F. General condition of older people's homes
G. How older people heat their homes
H. How common is fuel poverty among older people?
I. Exploring of determinants of fuel poverty among older people – energy efficiency, income and fuel prices
J. Exploring relationships between fuel poverty and tenure, living alone, rurality and chronic illness or disability

A. An ageing population – implications for fuel poverty

The all-island population is ageing. Northern Ireland's population aged 60-74 years is estimated to have increased by 21.7% between 2001 and 2011 and the population aged 85 and older increased by 35.4%. It is projected that the proportion of those aged 75 and older will increase by a further 35.8% between 2011 and 2021. Remarkably the oldest-old aged 85 and over, are expected to increase by 51% (Northern Ireland Assembly, 2011).

Figures 2.2 and 2.3 show that the Republic of Ireland and Northern Ireland have very similar patterns of age and gender distribution among their older citizens. Of note, there are a greater proportion of older women in older-old categories, which reflects the greater life expectancy among women. In the Republic of Ireland, 55.2% of older people are female and in Northern Ireland 57.1% are female. This male to female ratio in both jurisdictions begins to differ considerably in the 80-84 years and 85 years and older categories. In the 80-84 years group, 60.7% are female in the Republic of Ireland and 62.7% are female in Northern Ireland and these figures rise to 68.4% and 69.7% in the 85 years and older category.

Figure 2.2: Numbers of older people in the Republic of Ireland by age and gender (2009)

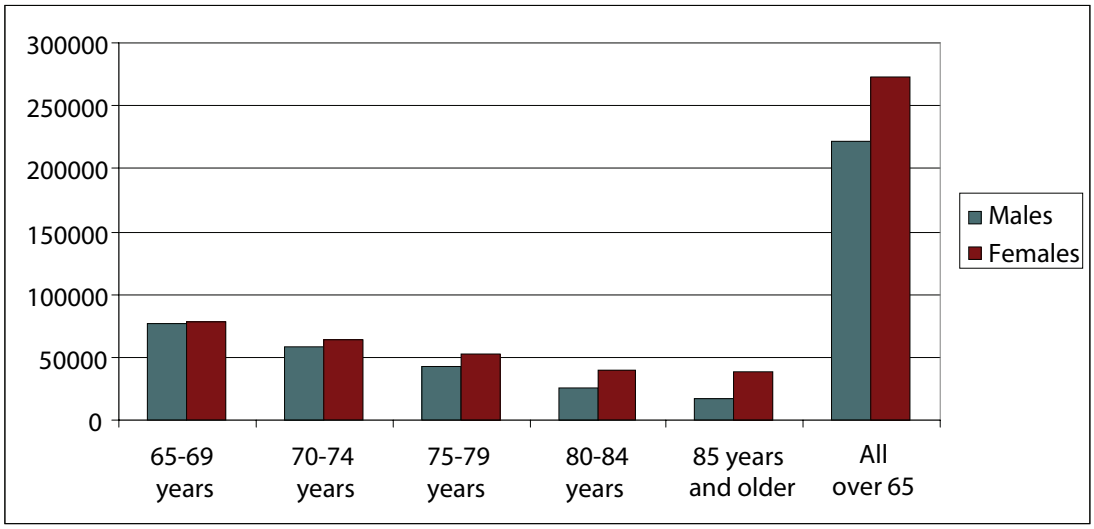
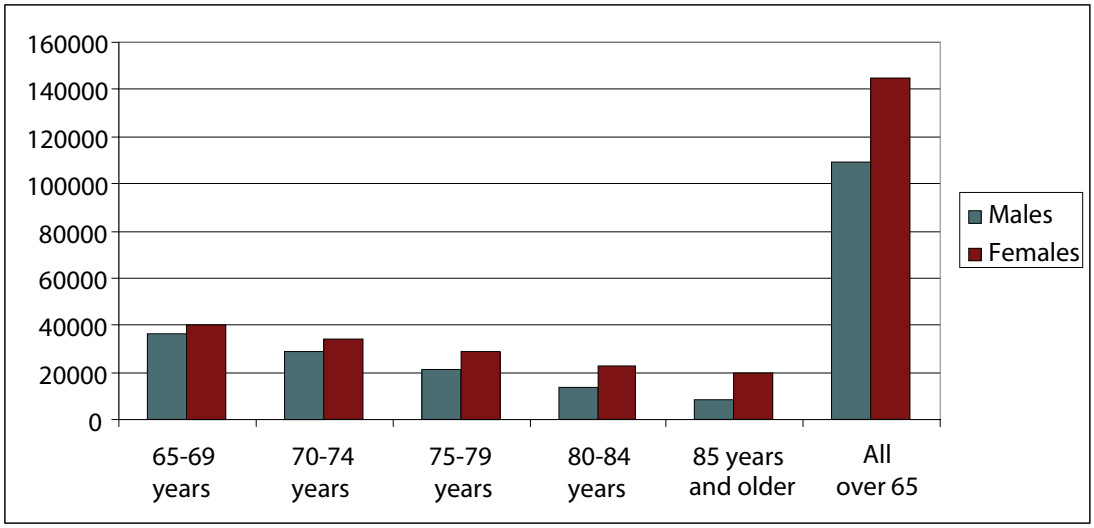


Figure 2.3: Numbers of older people in Northern Ireland by age and gender (2009)



Source: Figures are 2009 mid-year estimates produced by Central Statistics Office and the Northern Ireland Statistics and Research Agency based on Census 2006 and Census 2002. Figures here will differ from that presented in subsequent tables which are based directly on Census 2006 and Census 2002 data, and not on estimates.

Implications of patterns of population ageing for a consideration of fuel poverty

This pattern of population ageing where there are an increasing number of older-old people has implications for fuel poverty policy. Advanced age can make an older person especially vulnerable to harm from cold temperatures, and particularly when there is associated illness or disability. Many of this group will be women who have outlived their spouse, are widowed and living alone, a group that has been identified as being at particular risk of income poverty and housing deprivation in the Republic of Ireland and Northern Ireland (Layte et al, 1999).

B. Living circumstances of older people

Table 2.2 presents the proportion of older people living in private households and living in communal establishments for different age groups. The results presented in the following sections (C to I) refer only to those older people living in private households, with the

assumption that those older people residing in communal establishments are having their heating needs met and are not exposed to the experience of fuel poverty.

Table 2.2: Older people living in private households and communal establishments (Republic of Ireland and Northern Ireland)

Age group (years)	Living in private households % of individuals				Living in communal establishments % of individuals	
	Living alone		Living with others			
	NI	RoI	NI	RoI	NI	RoI
65 to 69	22.5	19.4	76.3	78.3	1.1	2.3
70 to 74	30.8	25.1	67.1	71.7	2.1	3.2
75 to 79	37.9	31.7	57.5	62.5	4.6	5.8
80 to 84	43.3	35.4	47.1	53.1	9.5	11.5
85 & over	41.8	31.7	34.0	43.7	24.2	24.6
65 & over	**32.7**	**26.7**	**61.6**	**66.5**	**5.7**	**6.8**

Data from Census 2006 (Republic of Ireland) and Census 2002 (Northern Ireland). Percentages represent % of all individuals in that age group.

There were 121,157 older people living alone in the Republic of Ireland, of which nearly two thirds are women. 80,486 older people lived alone in Northern Ireland, of which three quarters were women.

There were significant gender and geographical patterns related to older people living alone. For example in Dublin City, 38.4% of all persons aged 65 and over in private households are older women living alone, the highest percentage in the State with a similar pattern observed in Belfast (Data from StatCentral - Census 2006).

Implications of patterns of living arrangements for a consideration of fuel poverty

Roughly one quarter of older people in the Republic of Ireland and roughly one third of people in Northern Ireland live alone. The proportion of the older population and indeed the total population who are living alone is increasing over time (Fahey et al, 2007). There are obviously particular challenges associated with heating a home on a single income due to economies of scale. The energy efficiency challenges facing older people who are living alone need to be carefully considered. The situation where a single older person may still occupy a family home with many vacant rooms is especially noteworthy. In this case the idiom of '*asset rich and income poor*' may be especially appropriate. The greater proportion of older people living alone in Northern Ireland is significant in this regard.

For a more in-depth consideration of the situation of older people living alone and fuel poverty refer to section J (ii), page 43.

C. Tenure of older people

Owner occupancy, with or without a mortgage, remains the dominant tenure for older people in the Republic of Ireland and Northern Ireland. However, there are significant differences in tenure of older people in the two jurisdictions. There is a greater proportion of older people in social housing and also renting from a private landlord in Northern Ireland. These differences are shown in Table 2.3.

Table 2.3 Older people living in private households: tenure by age group

Age group (years)	Tenure % of individuals					
	Owner Occupied		Social Housing		Private Rented	
	NI	RoI	NI	RoI	NI	RoI
65 to 69	76.1	89.7	19.2	8.6	4.7	1.7
70 to 74	72.4	90.1	21.6	8.4	6.0	1.5
75 to 79	68.2	90.2	24.6	8.3	7.2	1.5
80 to 84	63.8	90.4	27.3	7.9	8.9	1.7
85 & over	60.1	89.0	28.6	8.8	11.2	2.1
65 & over	**70.4**	**89.9**	**22.8**	**8.4**	**6.7**	**1.6**

Source of data: Census 2006 (Republic of Ireland) and Census 2002 (Northern Ireland)

Implications of tenure for a consideration of fuel poverty

Tenure is an important consideration. It dictates who is responsible for the upkeep and condition of the home – either the home owner, the private landlord or social housing providers, government or otherwise. As owner occupancy is the most common arrangement, responsibility for housing condition, heating supply maintenance and cost tends to rest exclusively with the older homeowner. Tenure can also dictate eligibility for retrofitting schemes intended to improve energy efficiency. The smaller proportion of older people in the Republic of Ireland in social housing is certainly in need of further consideration and investigation.

The most severe levels of fuel poverty recorded in the UK were amongst tenants in private rented accommodation, so this group are a concern (Palmer et al, 2008). Although there is a small number of older people recorded as living in private rented accommodation on the island of Ireland, this is likely to be an especially vulnerable group, a theme further explored later in this report.

A more in-depth consideration of tenure and fuel poverty and older people is presented in section J (i), page 42.

D. Type of accommodation

The most common form of accommodation occupied by older people on the island is a detached house, followed by semi-detached and terraced properties. Less than 10% of people in Northern Ireland and less than 5% of older people in the Republic of Ireland occupy flats/bedsits/apartments.

The higher proportion of older people in Northern Ireland living in flat/bedsit/apartment accommodation may reflect a greater tendency to occupy social housing and a greater proportion of older people living alone.

Table 2.4: Older people in private households – type of dwelling occupied by age group (Republic of Ireland and Northern Ireland)

Age group (years)	Dwelling Type % of individuals									
	Detached		Semi-detached House		Terraced		Flat/Bedsit Apartment		Other or Not Stated	
	NI	RoI	NI	RoI	NI	RoI	NI	RoI	NI	RoI
65 to 69	41.4	52.8	26.2	23.9	26.6	18.1	5.6	3.0	0.2	2.0
70 to 74	38.6	52.9	27.1	23.0	26.6	18.4	7.4	3.4	0.2	2.3
75 to 79	37.1	51.7	27.0	22.7	26.0	19.3	9.7	3.7	0.2	2.5
80 to 84	36.6	52.1	25.4	22.0	25.0	19.5	12.7	3.9	0.2	2.5
85 & over	35.5	53.6	23.6	20.3	24.8	18.8	15.7	4.6	0.3	2.6
65 & over	**38.6**	**52.6**	**26.3**	**22.9**	**26.1**	**18.6**	**8.7**	**3.5**	**0.2**	**2.3**

Source of data: Census 2006 (Republic of Ireland) and Census 2002 (Northern Ireland)

Implications of house type for a consideration of fuel poverty

Between two thirds and three quarters of older people living in private households on the island reside in detached or semi-detached houses. This is widely recognised as a risk factor for fuel poverty and emerged as a significant factor associated with fuel poverty in multivariate analyses conducted on Irish data (Scott et al, 2008). Detached houses are often larger and can be harder to heat, lacking the insulation afforded by an adjoining property.

E. Age of older people's homes

Table 2.5: Older people in private households: age of dwelling by age group (Republic of Ireland)

Age Group (years)	Year of construction of dwelling (% of individuals)					
	Before 1919	1919-1940	1941-1960	1961-1980	1981 - 1995	1996 or later
65-69	14.7	11.8	11.6	40.9	10.8	7.6
70-74	18.0	13.5	15.8	33.5	9.8	6.7
75-79	20.8	14.3	21.2	26.0	9.3	5.5
80-84	23.8	14.8	24.0	20.8	9.0	4.6
85 & over	27.1	15.4	23.7	18.3	8.7	4.0
65 & over	**18.9**	**13.4**	**17.1**	**31.7**	**9.9**	**6.3**

Source of data: Census 2006 (Republic of Ireland)
'Not stated' have been excluded here so row totals do not sum to 100%.

Table 2.6: Older people in private households: age of dwelling by age group (Northern Ireland)

Age group (years)	Year of construction of dwelling (%)			
	Pre-1919 - 1944	1945-1964	1965-1980	After 1980
65-74	20.1	18.8	28.4	32.7
75+	30.6	25.8	21.4	22.3
65 & over	**25.2**	**22.2**	**25.0**	**27.7**

Source of data: Northern Ireland House Condition Survey 2009

Unsurprisingly, older people were far more likely to occupy older houses. Nearly half of all older people in the Republic of Ireland lived in homes built before 1960 compared to one fifth of the general population occupying pre 1960 homes.

In the Republic of Ireland 81.1% of older people and 72.4% of older people in Northern Ireland occupied homes built before 1980. Overall older people in Northern Ireland tended to occupy more modern-build homes than in the Republic of Ireland. This may be related to higher numbers living in social housing.

It is also notable that older-old homes tended to be occupied by older people. Of all pre-1919 dwellings in the Republic of Ireland, 46% are occupied by older people.

The Irish National Survey of Household Quality (2002) found that householders living in homes built before 1940 were twice as likely to report a major problem with heating, than the general population. Eight per cent of households living in properties built before 1940 reported major problems with leaks/dampness compared to 1% of households where the property was built after 1990 (Watson and Williams, 2003).

Implication of age of the dwelling for a consideration of fuel poverty

Older properties are generally harder to heat. The inclusion of energy efficiency standards in building regulations is a relatively recent phenomenon in both jurisdictions, really only making an impact from the early 1990's. Older properties are more likely to be solid wall and may lack a central heating system or have the original older heating systems still in place. The cost of retrofit for such properties can be substantial.

F. General housing condition of older people's homes

In Northern Ireland housing condition is generally assessed according to whether it meets or fails a fitness standard or a decent homes standard. This approach is common to other jurisdictions in the UK.

The 2009 Northern Ireland House Condition Survey found that 1% of all houses were unfit and 0.8% of houses where the household reference person is 60-74 years old are unfit. However where the household reference person was 75 years or older, 2.6% of houses were deemed unfit and this was more than double that of any other age group specified. Of all unfit houses in Northern Ireland, 32.3% have a household reference person 75 or older, and a further 17.7% have a household reference person aged 60-74 years. Therefore half of all unfit houses in Northern Ireland have a household reference person who is aged 65 or older (Northern Ireland Housing Executive, 2009).

43,500 Northern Ireland homes where the household reference person was an older person, failed the decent homes standard. Where the household reference person was aged 75 or older, 28% of dwellings were considered 'not decent'. A higher proportion of pensioner households were recorded as non-decent homes. However, it is also notable that there are a lower proportion of non-decent dwellings in Northern Ireland than in the rest of the UK (Data provided by the Northern Ireland Housing Executive).

Unlike Northern Ireland, house conditions are not routinely recorded or reported on in the Republic of Ireland. There is no unfitness or decent homes standard nor is a regular house condition survey undertaken.

The most recently available nationally representative data on housing condition is the Irish National Survey of Housing Quality conducted in 2002. Unlike the Northern Ireland House Condition Survey, this data is purely based on self-reporting and not on an assessment of housing condition by trained survey staff.

Thirteen per cent of all Republic of Ireland households reported problems with the condition of the house. Twenty-two per cent of lone older households reported problems with condition compared to 16% of other older person households. Interestingly older person households were no more likely to report major problems with leaks/dampness or heating than the general population. However, the proportion of lone older households reporting these problems was higher than the proportion of other older person households. The household type with the highest average number of problems with household condition comprised an older person living alone (Watson and Williams, 2003).

Implications of findings on housing condition for fuel poverty and older people

Older people are more likely than the general population to occupy housing that is in generally poor condition. We can state this with a stronger degree of certainty in Northern Ireland where recent, objective data exists from the House Condition Survey 2009. There is a significant information gap on housing condition in the Republic of Ireland making any North/South comparison of housing condition impossible.

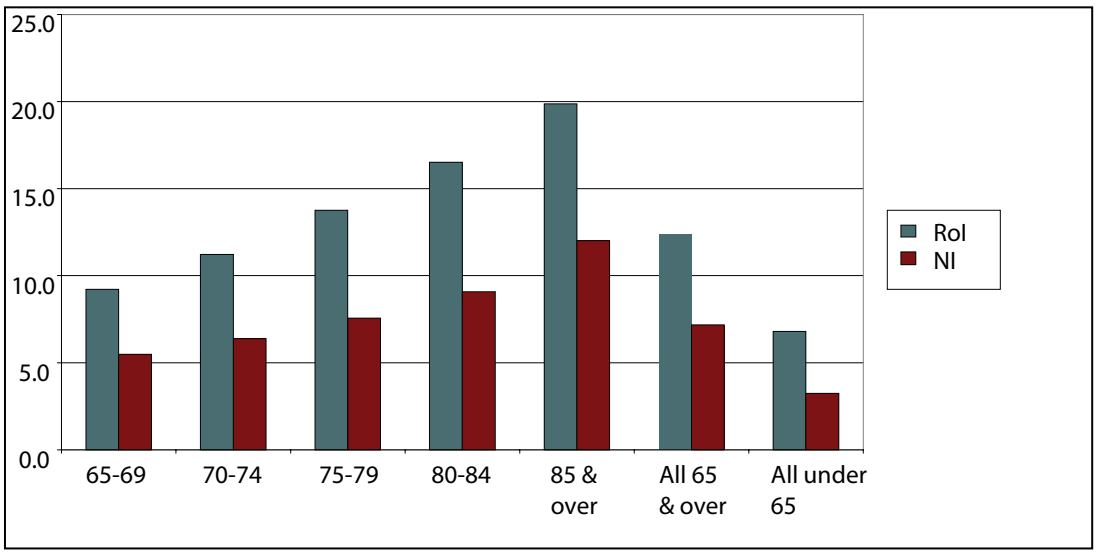
The Northern Ireland data is suggestive of a deterioration in housing condition associated with advancing age. The 75 and over age group have worse housing condition and in view of their increased risk of chronic illness and disability, this is a major concern.

However, it would seem that there is a concentration of issues relating to housing condition in older people's homes in the Republic of Ireland, as distinct from issues relating to other aspects of housing quality such as problems with accommodation space, residential area or affordability (Watson and Williams, 2003) and this would be reinforced by recent findings from the EU-SILC data (Central Statistics Office, 2010).

The housing condition of older people living alone seems worse than that of other older person household types in both jurisdictions.

G. How older people heat their homes

Figure 2.4: Older people in private households, lack of central heating (%) by age (Republic of Ireland and Northern Ireland)



Data from Census 2006 (Republic of Ireland) and Census 2002 (Northern Ireland)

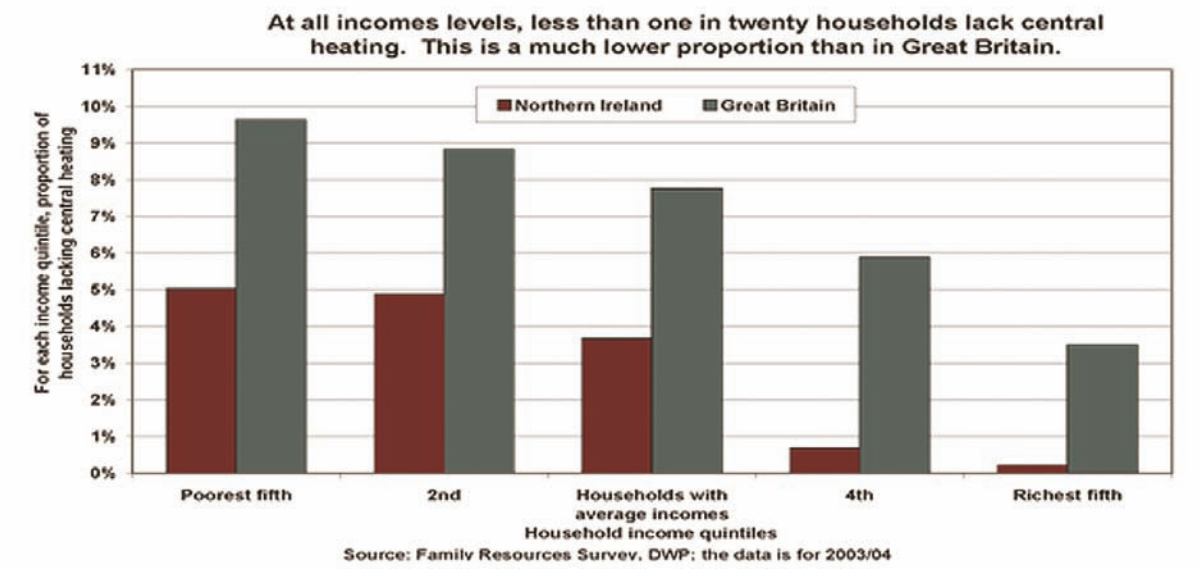
The majority of older people on the island of Ireland can avail of central heating in their home. However, 12.4% of older people in the Republic of Ireland have no central heating, as compared to 7.2% of older people in Northern Ireland.

The homes of older people were more likely to lack central heating than those occupied by persons under 65 years of age in both jurisdictions. An association between age and lack of central heating was also observed *within* the over 65 group. Therefore in both jurisdictions, persons aged 85 and over emerged as the age group most commonly lacking central heating. In Northern Ireland, 12% of people aged 85 and over lacked central heating and in the Republic of Ireland, 19% of people aged 85 and over lacked central heating.

Previous analysis of EU-SILC Republic of Ireland data from 2004 showed that older men were more likely than older women to lack central heating and hot water (Prunty, 2007). In the Republic of Ireland, older people living alone were more likely than other older people to lack central heating.

Older people in Northern Ireland were less likely than those in the Republic of Ireland to lack central heating. The observed lower proportions of Northern Irish homes lacking central heating applied to the general population and not just older people. This pattern has also been observed in comparisons between Northern Ireland and Great Britain, based on analysis of the Family Resources Survey.

Figure 2.5: Comparison of proportion of households lacking central heating, Northern Ireland and across the UK



Graph reproduced with permission from the Poverty Site (www.poverty.org.uk)

Implications of lack of central heating for consideration of fuel poverty

Lack of central heating has important implications for older people in heating their homes. Households lacking central heating are recognised as a high risk group for fuel poverty and are sometimes targeted in retrofitting programmes. The use of alternatives to central heating for example, plug-in electric or gas heaters and open fires are highly energy inefficient and therefore costly. There may also be significant fire and safety concerns to consider in some cases.

Recent analyses on mortality differentials in the Republic of Ireland reported statistically significant relationships between lack of central heating and mortality. Persons living in accommodation without central heating experienced a mortality rate which was significantly higher than that for persons living in centrally heating dwellings (656 compared with 492). Male mortality rates exceeded those for females for the central heating variable (Central Statistics Office, 2010).

Households in the Republic of Ireland with central heating are more likely than those without it to be very satisfied with their heat source type, ease of use and amount of heat available, control over the level of heat and running cost of the system (Watson and Williams, 2003).

The increased permeation of central heating in houses on this island in the last decade is a significant achievement. However, older people's homes are still over-represented among those properties without central heating. In particular, the observed lack of central heating among people of advanced age (80+) is of concern as this group may be especially vulnerable to harm associated with indoor environments that are difficult to heat.

Type of fuel used by older people for central heating

Table 2.7: Older people in private households – type of fuel used for central heating (Republic of Ireland and Northern Ireland)

Age of household reference person (years)	Type of fuel used for central heating					
	Mains gas		Oil/dual		Other	
	RoI	NI	RoI	NI	RoI	NI
65-74	25.4	10.9*	59.0	79.2	15.6	9.4*
75+	24.5	14.3	57.8	68.0	17.7	17.2
65 & over	**25.1**	**12.6**	**58.5**	**73.8**	**16.4**	**13.2**

Source: Northern Ireland House Conditions Survey 2009 and Household Budget Survey 2005
** Figures for 'mains gas' and 'other' were small in the 65-74 year age group so figures should be treated with caution*

Most older people on this island depend on oil or dual systems for their central heating. The proportion of older people dependent on oil in Northern Ireland is significantly higher than the Republic of Ireland, but not that different from the Northern Ireland population as a whole. There is significant diversity in terms of the types of fuel used in the 'other' category, although these would seem to mainly be electricity or solid fuel based systems. There is a higher proportion of older people in the 'other' category than in the general population.

Implications of type of fuel used for a consideration of fuel poverty

The high level of dependence on heating oil among older people is significant. This means that older people must rely on individual oil suppliers at local level. Being an unregulated industry, price and minimum delivery amount are at the discretion of the supplier. This issue is further discussed in section I (iii) fuel prices, page 40.

There is some diversity evident in the fuels that older people use for central heating but this may be only part of the picture. The degree to which older people may need to supplement their central heating with additional heating appliances or an open fire cannot be readily assessed from the data.

Home heating is the majority energy cost in Irish homes, with a smaller but significant cost attributed to lighting, cooking and other household appliances.

The protections offered by the regulation of gas and electricity and the provision of 'free' or subsidised units/social tariffs may be of great benefit those older people reliant on mains gas or electricity for their heating. However, these interventions will have limited use in helping those older people reliant on oil, and this group are the majority in both jurisdictions.

H. How common is fuel poverty among older people?

Our analysis uses a suite of core fuel poverty indicators. This includes subjective measures, as reported by older people themselves in responses to national surveys, as well as objective assessments based on expenditure on fuel or direct assessments of housing condition.

Table 2.8: Core fuel poverty indicators used in the analyses

Indicator	Year	Source	Jurisdiction
Spending >/= 10% of disposable income on heat and light	2005	Household Budget Survey (HBS)	Republic of Ireland
Spending >/= 10% of disposable income on heat and light	2009	House Condition Survey	Northern Ireland
Gone without heating in the last year because could not afford	2008	EU-SILC	Republic of Ireland
Unable to keep house adequately warm	2008	EU-SILC	Republic of Ireland
Home fails thermal comfort standards	2009	House Condition Survey	Northern Ireland

Older people and fuel poverty indicators – a word of caution

There are limitations to the use of subjective measures or 'self reporting' of fuel poverty among older people. In Northern Ireland as across the UK, it is observed in the house condition surveys that older people tend to report their housing condition and comfort of their home very favourably with limited agreement with objective measures (Northern Ireland Housing Executive, 2009). This mismatch has been demonstrated in a regression analysis of factors associated with fuel poverty in the Republic of Ireland. This analysis found that the age effect differs in the regression model used – having a 'chief economic supporter' over 65 years of age implied a much lower risk of fuel poverty compared to the reference category of <65 using subjective measures, whereas no significant effect was found in the expenditure/objective models (Scott et al, 2008). This phenomenon has also been reported in UK data with less overlap between subjective measures of fuel poverty and income poverty than between objective measures and income poverty. Furthermore, analyses noted little overlap between fuel poverty using subjective measures and fuel poverty using objective measures. Pensioners were less likely to report that they were unable to keep their living rooms warm than working age people, despite substantial evidence of fuel poverty on expenditure and housing condition measures in this age group (Palmer et al, 2008).

Data on debt and arrears on utility bills may also be inappropriate indicators of fuel poverty in older people. This is based on the knowledge that older people are generally debt-averse. A recent report produced by the Institute of Fiscal Studies in the UK, confirmed the fact that older people will 'go without' rather than go into debt (Beatty et al, 2011). Using such a measure could therefore under-estimate the scale and severity of fuel poverty among older people. In any case, the majority of older people in the Republic of Ireland and Northern Ireland use oil/dual systems for their central heating where most oil providers expect payment on delivery and 'debt' on a utility bill may not be an appropriate concept. For these reasons, we did not include this measure in this analysis.

Fuel poverty in the Republic of Ireland: EU-SILC and HBS

Table 2.9: Subjective indicators of fuel poverty among older people in the Republic of Ireland

Survey of Income and Living Conditions 2008

Age group (years)	Unable to keep the house adequately warm	Had to go without heating in the last year because could not afford it
65 and over	2.5%	3.8%
General population	3.1%	5.9%

Data refers to percentages of older people living in private households from an un-weighted analysis. It was not possible to disaggregate within the over 65 age group within the EU-SILC anonymised microfile provided.

Table 2.10: Expenditure-based indicators of fuel poverty among older people in the Republic of Ireland

Household Budget Survey 2005

Age group (years)	Males	Females
Under 65	13%	12.1%
65 and over	20%	23.9%

22.1% of people aged 65 and over were paying 10% or more of disposable household income on heat and light in 2005.

When the head of household was aged less than 65, 13.6% were in fuel poverty on this measure. When the head of household was aged 65 and over this rose to 25.3%.

When the head of household was aged 65-74 years, 23.2% were paying 10% or more on heat and light, when the head of household was aged 75 and over this rose to 39.8%.

Fuel poverty in Northern Ireland: NIHCS 2009

Table 2.11: Northern Ireland House Condition Survey indicators of fuel poverty among older people 2009

Age group (years)	In fuel poverty	Severe fuel poverty
Under 65	35.8%	8.4%
65 and over	65.1%	17.9%

Severe fuel poverty is defined as spending 20% or more of disposable income on heat and light using the House Condition measure.

13.7% of the 65-74 year old age group were recorded as being in severe fuel poverty, as compared to 22.4% of the over 75 year old age group.

What do the national figures tell us about fuel poverty and older people in the Republic of Ireland and Northern Ireland?

In the Republic of Ireland, the proportion of the overall population reporting that they cannot keep the home adequately warm has risen year on year since 2007, according to

the EU-SILC figures. People at risk of poverty were vulnerable with 8.3% reporting that they cannot keep the home warm and 17% reporting that they went without heating sometime in the last year (Central Statistics Office, 2010). Older person households were actually less likely than other household types to be in fuel poverty on the EU-SILC measure.

However, findings from the Household Budget Survey using the expenditure method present a different picture. Between one in five and one in four older people were in fuel poverty using the expenditure methods and this was higher than the younger population. It should be noted that these figures relate to 2005 prior to significant fuel price rises and are therefore almost certainly depict an under-estimation of the current situation. Analysis conducted by the ESRI using 2008 projections of the HBS data found age was significant in a multivariate regression of the expenditure method overall. Over 35% of older people living alone were spending more than 10% of their disposable household income after tax on fuel and electricity. A clustering of fuel poverty among single person households was clearly observed (Scott et al, 2008).

In Northern Ireland around 43.7% of households were considered to be in fuel poverty in 2009. Also in 2009, 52.9% of households where the household reference person is aged 60-74 (n=80,110) and 75.8% households where the household reference person is aged 75 or older (n= 68,790) were in fuel poverty.

Of all Northern Ireland households in fuel poverty, 22.8% had a household reference person aged 75 or older and 26.5% had a household reference person aged 60-74. Therefore, households where the head of household was an older person accounted for nearly half of all fuel poor households in Northern Ireland.

When considering the findings from the Republic of Ireland and Northern Ireland, it is important to note that the data is not comparable as quite different survey methodologies and definitions are used.

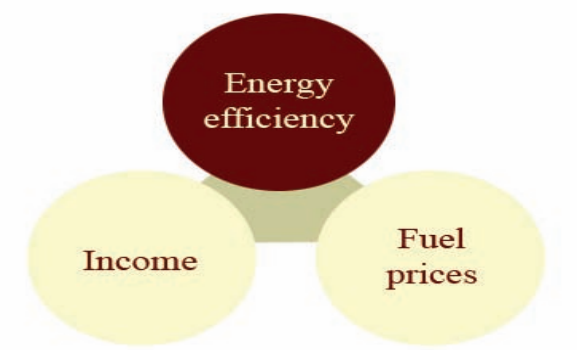
Overall the EU-SILC fuel poverty figures for older people in the Republic of Ireland, suggested that older people were no more likely than the general population to report going without heating or being unable to keep the house warm. However, there are a significantly higher proportion of older people in fuel poverty using the expenditure method.

The risk of fuel poverty is concentrated among older people living alone in both jurisdictions. Also, the proportion of older people in fuel poverty increases with age with the over 75's experiencing higher levels.

The Northern Ireland data presents a different picture with a more consistent association between old age and fuel poverty. In keeping with the trend of worsening outcomes with advancing age in terms of lacking central heating (section G) and poor housing condition (section F), the risk of fuel poverty appears to also increase with increasing age i.e. the oldest-old are at greatest risk of fuel poverty. In view of their higher risk of chronic illness and disability and their increasing biological vulnerability to cold indoor temperatures, this is a concern.

I. Exploration of determinants of fuel poverty among older people – energy efficiency, income and fuel prices

(i) ***Energy efficiency***



An energy efficient home offers protection, especially for income poor households, from experiencing fuel poverty and being unable to keep the house adequately warm. Factors influencing a householders capacity to heat the home at an affordable cost considered in two categories - the condition of the home and energy use behaviours, as listed below.

Housing factors

- condition of the home in term of insulation, draughts
- exposure of home, geographic location, type
- energy efficiency of heating system or appliances
- size of home relative to number of occupants (occupancy)

Behavioural factors

- amount of time spent indoors
- management of heating controls, bills, energy conserving activities and appliances
- debt aversion
- traditional/cultural attachment to use of certain fuels e.g. turf or solid fuels

We have seen from the evidence presented in sections E and F that older people are far more likely to occupy houses that are harder to heat. This is largely related to the tendency of older people to occupy homes that are detached/semi-detached and that were built more than 30 years ago and are in generally poorer condition. This section presents data on another facet of this phenomenon - the integration of energy efficiency measures into older people's homes. The data relates to 'housing factors' including insulation, double glazing, and draught stripping. Information on the behavioural aspects of energy efficiency in older people is not included as this data is not routinely available in national survey data, although inferences can certainly be drawn from the findings of the cold weather survey in Chapter 5.

Data for the Republic of Ireland was drawn from the Energy Conservation and Recycling Module of the Quarterly National Household Survey 2005. Published data from the Irish National Survey of Housing Quality 2002 was also considered. Data for Northern Ireland was drawn from the Northern Ireland House Condition Survey 2009. The data are presented in Table 2.12.

Table 2.12: Energy efficiency/insulation measures in homes of older people (Republic of Ireland)

Age group (years)	Attic/loft insulation	Double glazing	Draught stripping	Lagging jacket	CFL bulbs
65-74	73.6%	73%	48.6%	74.7%	36.4%
75+	58.5%	62.2%	45.1%	67.1%	25.2%
65 & over	**66.0%**	**67.9%**	**46.5%**	**70.9%**	**31.0%**

Source: Quarter 3 Recycling and Energy Efficiency Module of the Quarterly National Household Survey 2005.
Presence of these measures = full or partial.

Data on older person households was not presented distinctly in the published results of the Quarterly National Household Survey Recycling and Energy Conservation report (Central Statistics Office, 2007). However, the national data demonstrated significantly lower installation rates for energy conservation measures for dwellings built pre-1961 and rented dwellings. Nationally, 76.2% of households reported attic/loft insulation, 79.3% reported double glazing, 47% reported draught stripping, 78.3% reported a lagging jacket and 38.7% reported CFL light bulbs.

Table 2.13: Energy efficiency/insulation measures in homes of older people (Northern Ireland)

Age group (years)	Attic/loft insulation	Double glazing	Wall insulation	Hot water cylinder insulation	SAP rating ≥60
65-74	96.0%	91.6%	83.8%	93.6%	43.5%
75+	91.0%	83.7%	76.21%	91.2%	42.7%
65 & over	**93.6%**	**87.9%**	**80.0%**	**92.5%**	**43.1%**

Source: Northern Ireland House Condition Survey 2009.
Wall insulation = full cavity/ partial cavity/ internal or external wall insulation;
Attic insulation = less than 100mm/100-150mm/more than 150mm/don't know thickness;
Double glazing = full/partial.

Occupancy and energy efficiency

There has been a considerable reduction in density of occupancy on the island in the last decade with an increase in the number of people living alone. Older people are the age group most likely to be living alone. This has significant implications in terms of energy efficiency of homes. Twenty-one per cent of older people living alone in the Republic of Ireland reported that relative to their needs they felt their accommodation was too big. Sixteen per cent of other older person households also felt their accommodation was too big. Density of accommodation is strongly related to tenure. Low occupancy occurs generally among owner occupiers, with those living in social housing less likely to report the property was too big (Watson and Williams, 2003).

Approximately 128,637 older people were considered to be living in 'low occupancy' housing in Northern Ireland according to Census 2002 (using the Northern Ireland Statistics and Research Agency measure). Low occupancy is derived as +2 or more 'spare rooms in the home' on the Northern Ireland Census occupancy rating. This rating assumes that every household including one person households requires a minimum of two common rooms excluding bathrooms. The proportion of this group lacking central heating was similar to that for all older people (6.4% and 7% respectively). Rates of low

occupancy among older people in Northern Ireland were high with 61.1% of older people occupying homes with an occupancy rating of +2.

Implications of findings on energy efficiency for a consideration of fuel poverty

Data in Tables 2.12 and 2.13 are not comparable due to different methodologies. The Northern Ireland data is based on an assessment of the house undertaken through the House Condition Survey, whereas the Irish data is based on self-reporting as part of a general household survey. Respondents to surveys in the Republic of Ireland have limited information on the structural features of their accommodation that are not directly visible (Watson and Williams, 2003). Furthermore, Northern Ireland data is considerably (approximately 4 years) more recent than the Republic of Ireland data. Overall, older people in the Republic of Ireland were less likely to have insulation/energy efficiency measures than the general population.

There were no figures for wall insulation available in the Quarterly National Household data. However, the Irish National Survey for Housing Quality has presented figures for wall insulation. These figures showed that older person households were the household type most likely to lack wall insulation. Over 45% of older person households reported no wall insulation, compared to 24% of all households (Watson and Williams, 2003)

Data from the Republic of Ireland suggests a decline in the proportion of homes with attic/wall insulation with age *within* the over 65 years group. In other words, this form of insulation was less likely to be present in older people's homes and this trend is accentuated the older the stated age of the householder. This would mirror to some extent the observation on central heating in section G.

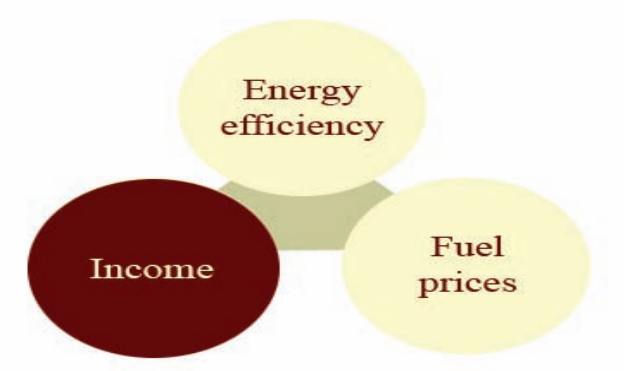
In Northern Ireland, the proportion of older people's homes with attic/loft insulation and double glazing is high. In keeping with the findings from the Republic of Ireland data, the older age group (75+) were consistently less likely than the 65-74 age group to enjoy the insulation measures in Table 2.13.

Taken together, and not withstanding the lack of comparability permissible with data from the two jurisdictions, it would appear that the oldest-old are more likely to live in energy inefficient and poorly insulated homes.

Republic of Ireland data suggests low levels of usage of simple low cost energy conservation methods such as CFL light bulbs and lagging jackets among older people. It is however notable that this data was collected in 2005, prior to the introduction of legislation on CFL bulbs, so figures should have increased since then.

A repeat of the 2005 energy conservation module of the Quarterly National Household Survey would be timely.

(ii) Income



Low income households are at risk of fuel poverty - there may simply not be enough money to cover basic heating costs. However, fuel poverty and income poverty are not synonymous. Examination of the interface between fuel poverty and income poverty in households in the Republic of Ireland and Northern Ireland is complex and not carried out for this report. However, an analysis of the English House Condition Survey estimated that of the approximately 3 million households in fuel poverty, 63.3% were in income poverty. Therefore, over one third of fuel poor householders were *not* income poor and evidence suggests that fuel poverty is increasingly becoming a problem for the middle class (Palmer et al, 2008). This has significant implications in terms of the efficacy of policy measures which aim to address fuel poverty by targeting the income poor.

A household is generally considered to be in consistent poverty if its equivalised household income is less than 60% of the median household income for that country. Income poverty rates for Northern Ireland are variously reported according to both the Northern Ireland and the Great Britain median income thresholds.

Republic of Ireland figures for poverty are derived from the European Survey of Income and Living Conditions (EU-SILC). Older people living alone had the lowest average net disposable household income of any other household group in 2009 at €17,985. However a less stark picture emerges when equivalised income is used. Equivalised income is calculated using an equivalence scale which assigns a value to each member of the household in proportion to their needs.

Persons aged 75 and over had the lowest equivalised disposable income of any other age group, with over-65's still comparatively worse than other age groups. Notably, the annual household disposable income of people aged 75 and over declined by 6% between 2008 and 2009 and 1.4% for those aged 65 and over. These declines were less significant in an assessment of equivalised income, with some net gains recorded for older people and older 'couple' households.

However, the assessment of poverty and deprivation among older people in the Republic of Ireland using these measures has limitations (Daly, 2009). Concerns centre around a number of issues including the use of a defined income poverty 'line' to decide whether you are income poor or not. As older people are clustered closely just above and just below the poverty line, the dichotomous measure can be misleading. Furthermore, the meaning of self-reported deprivation of certain measures for older people is unclear and

the tendency of older people to report favourably on material circumstances has been emphasised in section H.

Among older people living alone, 58.3% reported a weekly net disposable equivalised income less than €289.58. This would place more than half of older people living alone in the lowest three income deciles with most of their income reliant on the State pension. The proportion of older people living alone reporting a weekly net disposable equivalised income at or less than State pension level was considerably higher than other older person households (i.e. those households comprising two or more adults of which at least one is aged 65 or over).

Interestingly, while at risk of poverty (income poverty) figures for older people have been volatile in recent years, there has been an increase in the percentage of older people reporting two or more deprivation indicators in recent years and this seems to be higher in the over 75s. This would indicate that economic recession may be having an impact on what older people can afford.

In Northern Ireland, pensioners have the highest overall absolute income poverty rate. Twenty-two per cent of pensioners in Northern Ireland were recorded as living in low-income households by the *Households Below Average Income* measure for 2008/09. This figure is based on a low-income threshold of the 60% of median UK income after deducting housing costs. This rate is higher than that in any of the Great Britain regions. The proportion of pensioners in absolute income poverty is showing an increasing trend in Northern Ireland but not in the rest of the UK (Office of the First Minister and Deputy First Minister, 2010).

The number of entitled non-recipients of Pension Credit in Northern Ireland, the benefit most clearly related to poverty levels, has been estimated at 42,758 and the monetary value of this unclaimed benefit has been estimated at £74.3 million.

Implications of poverty trends on the island for fuel poverty

There are some notable differences in patterns of income poverty for older people in the Republic of Ireland and Northern Ireland.

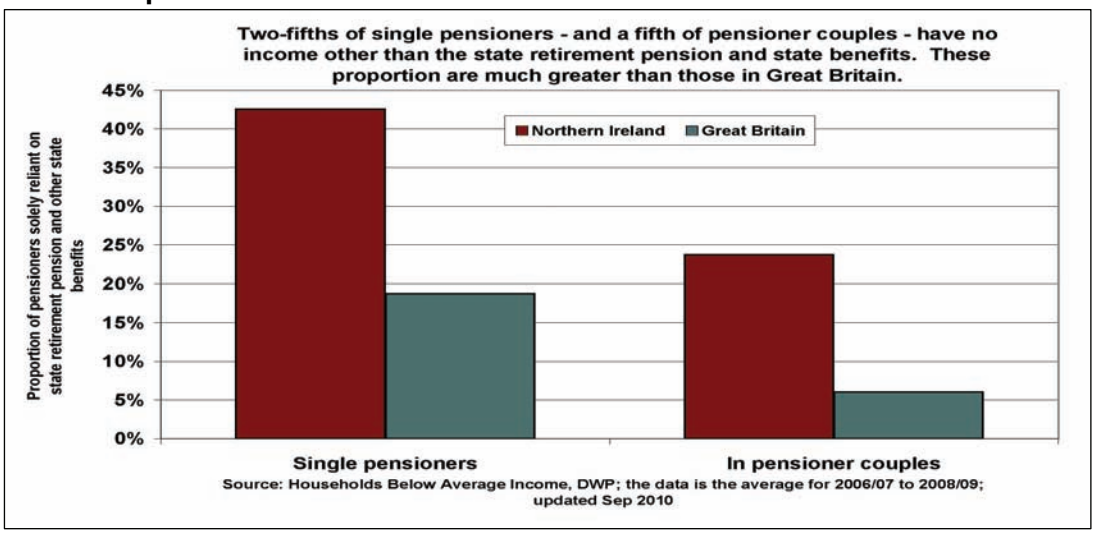
The at risk of poverty/relative income poverty rates for older people in the Republic of Ireland and the UK have decreased over time, (comparing 2002/03 to 2007/08) whereas the rates for older people in Northern Ireland increased (Office of the First Minister and Deputy First Minister, 2010).

The relative income poverty rate for pensioners in Northern Ireland increased from 24% in 2002/03 to 31% in 2008/09, when using a UK median. The rate increased from 19% to 25% using a Northern Ireland median.

Pensioner households in Northern Ireland are more tightly concentrated just above and just below the income poverty line, than other age groups in the population.

In Northern Ireland, the relative income poverty rate for pensioners excluding State social transfers was 77% in 2008/09. Older people in Northern Ireland are reliant to a greater extent on the insulating effect of social transfers compared to the UK as a whole. Similarly in the Republic of Ireland, when social transfers were excluded, the 'at risk of poverty rate' of persons aged 65 and over was 88%. When social transfers were included, this risk fell to 9.6%. This shows the very heavy reliance of older people in both jurisdictions on social protection to keep them above the poverty line.

Figure 2.6: Reliance of pensioners on State retirement pensions and benefits in Northern Ireland compared to the UK

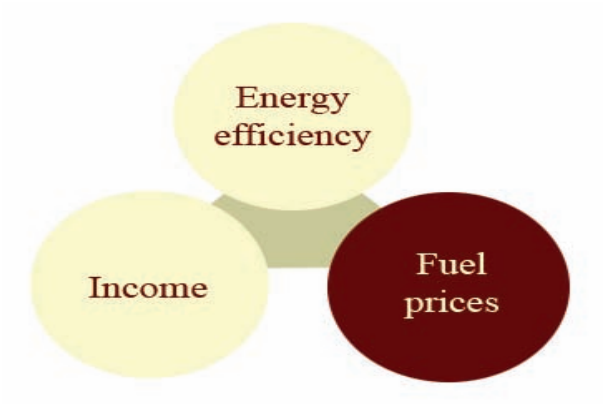


Graph reproduced with permission from the Poverty Site.

There is a significantly higher proportion of older people in Northern Ireland than in Great Britain that have no other income except State pension and benefits, and this is particularly so for older people who are living alone.

Pensioners in Northern Ireland are over twice as likely to have no savings (48%) than pensioners in the UK (21%). Pensioner households in Northern Ireland have a higher proportion of weekly spend on necessities than any other type of household. Of pensioner household expenditure, 50% was spent on necessities. This indicates little reserve for spending on rising or unexpected heating costs.

(iii) Fuel prices



The price of heating oil
The preceding section has shown that the majority of older people on the island of Ireland are reliant on oil for their central heating. The cost of heating oil fluctuates according to international oil markets over which we have no control. Overall the price of heating oil has risen in the last two years in both jurisdictions. Average prices of 1000 litres of oil have risen from €500/€550 in August 2009 to around €800 in August 2011 in the Republic of Ireland. Similarly 900 litres of oil in Northern Ireland rose from £300/£350 to around £500 in the same period (Source: cheapestoil.ie and cheapestoil.co.uk).

The price of electricity and gas in the Republic of Ireland and Northern Ireland
Liberalisation of the electricity generation and supply markets in the Republic of Ireland in recent years, as well as differing tariffs and home system efficiencies, means it is difficult to easily interpret and present the end-cost to the consumer. The decision to liberalise the electricity generation and supply markets in the Republic of Ireland in recent years seems to have produced mixed results for the consumer.

However, the findings in chapter 5 showed that only around 20% of older people reported having switched electricity or gas supplier, and that 'switchers' tended to be middle income older people with the highest and lower income groups less likely to switch.

In July 2011, Bord Gáis Energy announced that gas prices would increase by 12% from August 2011. Upward prices in gas will also affect prices in electricity from September 2011 and these recent increases have been approved by the Energy Regulator. Most international research in this area argues that energy prices are set to increase over the coming decade – price increases that will be passed on to the consumer, irrespective of how many companies are in the Irish market.

Implications of patterns of fuel prices for fuel poverty and older people

Fuel prices are increasing and these increases have put, and will continue to put, pressure on older people to meet their heating bills, particularly when there is cold weather. Moreover, rising fuel costs will increase the proportion of older people experiencing fuel poverty and the severity of that fuel poverty.

As well as costs, it is important to consider that the heat delivered per unit of fuel is dependent to a significant extent on the efficiency of the boiler or system being used. Older people relying on older or simply unserviced boilers may therefore be achieving less heat per euro/pound spent on oil or gas. The findings in chapter 5 indicate that over 20% of older people had not had their boiler serviced in the last year. While utility companies may routinely send reminders in terms of servicing gas boilers, this is not the case for oil.

There are particular concerns in terms of the interface between the supplier and customer to negotiate issues of payment, quantity and delivery of heating oil. Home heating oil suppliers are private businesses - it is an unregulated industry but one in which the 'savvy' customer can exercise some choice by comparing costs and services between differing suppliers. However, on the other hand, this may leave certain older consumers vulnerable. It is a concern that reports of oil suppliers increasing the cost of heating oil during periods of severe cold weather surfaced in Northern Ireland in early 2011. It is also a concern that

older people may simply be unable to pay for minimum tank fills of 300 or 500 litres, and the option of spreading payments may not be available to them. (Figures from chapter 5 would indicate that one third of older people using oil would generally order 500 litres or less, with 6% reporting that they would order 'the minimum amount available'). In recent years, small barrels of heating oils have become available in garage forecourts which can be transported home and emptied into the tank by the householder. As well as offering poor value for money, the transport and emptying of these barrels could pose a significant health and safety risk for older people.

Another issue particular to oil is when an older person 'runs out' of oil (whereas you cannot 'run out' of mains electricity or gas except for disconnection for whatever reason). In severe snow and ice, oil supply vehicles may be unable to access an older person's home to replenish the tank.

Oil dependency is more pronounced in Northern Ireland, where reliance on oil is an especially notable feature of border counties which are distanced from mains gas supply networks. It is also notable that people living in border counties in both jurisdictions report higher levels of income poverty and deprivation and a higher proportion of older housing (Central Statistics Office, 2010; Watson and Williams, 2003) suggesting that the border region may exhibit particular vulnerabilities in terms of fuel poverty among older person households.

J. Exploring relationships between fuel poverty and tenure, living alone, rurality and chronic illness or disability

(i) Fuel poverty and tenure

Tenure is an important consideration in understanding fuel poverty and older people and more importantly, in deciding the balance and nature of policy measures to address it. As section C showed, most older people are owner-occupiers and this means that the responsibility for home maintenance, energy efficiency and heating costs lies with the older person themselves.

While poverty and social housing are often assumed to be invariably linked in the general population, this assumption may not be appropriate to the situation of older people. Of pensioners in Northern Ireland living in accommodation owned with a mortgage, over half fall in the bottom two income quintiles before housing costs. A recent analysis of income distributions among older people in Northern Ireland by tenure led the authors to caution against poverty reduction measures focusing on pensioners in social housing (Iparraguire, 2009). Similarly, an analysis of Irish data showed that the income poverty rate of older owner-occupiers was actually higher than that for renters/rent-free (Prunty, 2007).

Table 2.14: Tenure and lacking central heating among older people (Republic of Ireland and Northern Ireland)

Tenure	% of older people in that tenure category who reported they lacked central heating	
	NI	RoI
Owner occupied	6.3% (n=9344)	11.2% (n=40598)
Social housing	6.3% (n=3044)	20.2% (n=6733)
Private rented	19.5%(n=2743)	24.1% (n=5018)
TOTAL	**7.2%**	**12.7%**

Source: Republic of Ireland Census 2006 and Northern Ireland Census 2002

Over three quarters of fuel poor older person households in Northern Ireland are owner occupied. Similarly, of all 'not decent' housing, 77.5% is owner occupied and of all older person households failing the thermal comfort standard, 81.1% are owner occupied.

Data on tenure and fuel poverty among older people based on the EU-SILC database was not suitable for analysis in this aspect of the study.

Table 2.15: Household Budget Survey (2005): Indicators of fuel poverty among older people in the Republic of Ireland

Older people (age 65 and over)	
Tenure	**% in fuel poverty**
Owner occupier	24.9%

Household Budget Survey 2005
Figures for older people resident in social housing and in private rented accommodation not presented in view of small numbers in the sample.

Table 2.16: Fuel poverty and tenure: older people in Northern Ireland

Tenure	% in that tenure category in fuel poverty	
	Over 65(%)	Under 65 (%)
Owner occupied	69.3%	25.8%
Social housing	44.2%	55.1%
Other	84.7%**	52.0%

Northern Ireland House Condition Survey 2009
*** Figures for older people in the 'other' category should be interpreted with caution due to small numbers in the sample.*

Implications of the findings on tenure and fuel poverty among older people

In Northern Ireland, there is a similar permeation of central heating into privately owned homes and socially rented homes occupied by older people. However, in the Republic of Ireland, rates of no central heating were higher among social housing tenants and tripled for tenants renting from a private landlord, compared to owner occupiers.

While the number of older people renting privately is small their risk of lacking central heating is extremely high indicating that they are at very high risk of fuel poverty.
The pattern suggests that attention should be paid to the housing condition of older tenants renting from private landlords and the housing condition of younger tenants who are likely to continue renting as they enter retirement age. This group needs to be better

understood as there may be other vulnerabilities including aspects of divorce/marital separation and social exclusion.

(ii) Fuel poverty and living alone

Single person households of all ages are a high risk group for fuel poverty. It is therefore significant that living alone is more common among older people than in the general population. Single person households are vulnerable due to economies of scale within the household budget. Despite there being only one income available to pay for heating the home, the home will need to be heated to the same level.

There were 121,157 persons aged 65 and over living alone in the Republic of Ireland in 2006, representing 28.7% of all older people in the Republic of Ireland. There were 80,486 older people living alone counted in the 2002 Northern Ireland Census. The experience of being older and living alone is gendered; 21.9% of older men live alone, compared to 34.3% of older women.

It has been suggested that the growing tendency for older people to live alone does not necessarily mean a corresponding rise in the risk of isolation, as historical marriage trends mean that older people are now more likely to have children (Fahey et al, 2007).

Interestingly, within the national poverty figures in the Republic of Ireland in 2009, the evidence of deprivation among older people living alone when compared to working age population and other single person households is difficult to interpret. For example, in a recent analysis of 'at risk' of poverty rate, adults less than 65 years living alone reported double the rate of at risk of poverty than older people living alone (Central Statistics Office, 2009 (Figure 2b)) However, perhaps this is also a concern as it may be reasonable to assume that those adults living alone now will become the older people living alone of the future.

Older people living alone in the Republic of Ireland were more likely than other older person households to report that they went without heating in the last year. Older people living alone were also twice as likely to report that they were unable to keep the home adequately warm, and this figure exceeded slightly the national average.

Table 2.17: EU-SILC measures of fuel poverty for older people living alone and other older person households (Republic of Ireland, 2009)

	Household: 1 person aged >65	Households: 2 or more persons at least one aged >65	All households
Went without heating in the last year	7.2%	4.2%	7.3%
Unable to keep the home adequately warm	5.1%	2.5%	4.1%

Source: European Survey of Income and Living Conditions, 2009.

Analysis of the Household Budget Survey in the Republic of Ireland also showed a clustering of households comprising single adults with over 35% of older people living alone experiencing fuel poverty using the expenditure method (Scott et al, 2008).

Among all single person households, the fuel poverty rate in 2005 was 29.7%. Where the head of household is over 65 this was 35.8% and where the head of household is under 65 this is 23.5% (based on in-house analysis of the Household Budget Survey 2005). In interpreting these figures it is important to consider that the situation may have changed considerably since 2005. The new Affordable Energy Strategy estimates that 49.1 % of all older people living alone are in energy poverty, equivalent to 94,647 households.

The 2009 Northern Ireland House Condition Survey reported a remarkable fuel poverty rate of 84.1% among older people living alone. This can be compared to 46.2% among other older person households, and a rate of 65.1% if considering all older person households. Of all households in fuel poverty, 29.2% are lone older person households (n=88, 340) and a further 15.9% are older couples (n=48,000). Of all fuel poor older people 64.5% are living alone.

Of the 93,266 older people estimated to be living alone in Northern Ireland, 78,391 are in fuel poverty and 25,714 are estimated to live in non-decent homes (not mutually exclusive categories). Unsurprisingly, the percentage of lone older households occupying unfit housing is three times that of older couples (2.6% of lone older households occupy unfit housing and 0.7% of older couples (related or otherwise) occupy unfit housing). Of all houses failing thermal comfort, 28.7% is occupied by lone older people (n= 18,570 houses), and a further 11.5% by older couples (n= 7,450).

Table 2.18: Poor housing conditions and living alone among older people in Northern Ireland (2009)

Living alone?	Not Decent home	Fails thermal comfort	Median SAP
Living alone	27.6%	19.2%	53.9
Not living alone	14.6%	8%	63.6

Data from Northern Ireland House Condition Survey 2009 based on age of household reference person

Central heating and living alone

In the Republic of Ireland, 19.3% of older people (n=23,442) who lived alone reported no central heating in 2006. This percentage exceeds the percentage of observed for all older persons, and far exceeds that for the general population and the population under 65. There were 41,175 older person households where the household reference person was 65 or older that lacked central heating. Roughly half of those households lacking central heating were older people living alone.

Table 2.19: Central heating and living alone (Republic of Ireland and Northern Ireland)

Household type	Lacking central heating	
	NI	RoI
Living alone and age 65+ (100%)	9.6%	19.3%
Households with at least one person of pensionable age (100%)	7.2%	14%

Source: Northern Ireland Census 2002 and Republic of Ireland Census 2006

In Northern Ireland 9.6% of older people living alone reported no central heating in Census 2002. In parallel with the pattern observed for older people in general, among

older people living alone the proportion lacking central heating increased with age from 8.2% of 65-74 year olds to 14.1% of the over 85 age group.

Implications of relationship between fuel poverty and living alone for older people

Older people living alone are an especially vulnerable group in both jurisdictions. Evidence suggests that this phenomenon is driven by a range of factors, and not simply a consequence of economies of scale in heating a home on a single income. For example, there is evidence of a greater tendency towards lacking central heating and poor condition housing. The National Survey of Housing Quality in the Republic of Ireland showed that the highest average number of problems with housing conditions were reported by older people living alone. Almost half of all older people living alone reported no wall insulation (Watson and Williams, 2003).

In addition there is some evidence of income vulnerability in the type of older person who lives alone.

Older people living alone may be vulnerable to social exclusion and mental ill-health by virtue of being widowed or divorced/separated. Therefore the health and social impacts of living in a cold home for this group should be afforded particular consideration.

(iii) Fuel poverty and rurality

Older people in the Republic of Ireland are more likely than others to live in rural rather than urban areas, although most live in towns (Fahey et al, 2007). Of all older people living in private households in Northern Ireland, 33.4% live in rural areas.

There is evidence to suggest that the cost of living may be higher for older people living in rural areas, particularly in terms of paying for transport. There is also evidence of vulnerabilities for rural older people in at least two of the determinants of fuel poverty set out in Figure 2.1, namely low income and poor energy efficiency housing. For example, pensioner relative income poverty rates appear particularly high in rural areas of Northern Ireland. Relative income poverty rates among rural pensioners are estimated as 36%, compared to 26% in other areas. Twenty-eight per cent of rural pensioners are considered to experience absolute income poverty (Office of the Minister and Deputy First Minister, 2010). Also, rural dwellings in Northern Ireland are more likely to be older properties (Rural Community Network, 2007).

Table: 2.20: Older people and no central heating by urban/rural location (Republic of Ireland and Northern Ireland)

Rurality	% aged 65 and over lacking central heating	
	NI	RoI
Rural:		
as a % of all people 65+ living in a rural area	10.8%	16.5%
as a % of all people 65+	3.6%	7.7%
Urban:		
as a % of all people 65+ living in an urban area	5.4%	9.4%
as a % of all people 65+	3.6%	5%

Source: Northern Ireland census 2002 and Republic of Ireland Census 2006

In the Republic of Ireland, among older people living in urban areas, 9.2% (n=26,919) report no central heating. Among older people living in rural areas, 16.1% (n=41,334) report no central heating.

Table 2.21: Fuel poverty by rural/ urban area Republic of Ireland

Rurality	% aged 65 and over	
	Had to go without heating	Unable to keep house adequately warm
Rural	3.6%	2.0%
Urban	4.0%	2.9%

Based on an unweighted analysis of EU-SILC 2008

No significant difference was observed in the proportion of older people in fuel poverty in rural and urban areas using the expenditure method based on the Household Budget Survey 2005. Where the head of household is aged 65 or older in a rural area, the fuel poverty rate was approximately 26.6%, while for people age 65-74 years this rate was 23.9%. For people 75 years and older the rate increased to 30.7%.

Table 2.22: Fuel poverty by rural/urban area (Northern Ireland)

Rurality	Based on age of household reference person 65 or older
	In fuel poverty (%)
Rural	71.7% of rural older people in fuel poverty
Other	62.4% of urban older people in fuel poverty

Source: Northern Ireland House Condition Survey 2009

In Northern Ireland rates of fuel poverty among urban and rural people aged less than 65 were roughly comparable (36.5% of rural under 65s in fuel poverty; 35.5% of urban under 65s in fuel poverty).

Implications of relationship between fuel poverty and rurality among older people

Rural older people are a significant at risk group for fuel poverty in Northern Ireland, although there is little evidence of this pattern in the Republic of Ireland. The association

between rurality and fuel poverty in Northern Ireland is a feature of older people but not of the general population.

The absence of a clear relationship between rurality and fuel poverty in the Republic of Ireland is interesting. It is worthwhile to note that a multivariate analysis of the Household Budget Survey conducted by the ESRI did not find significant urban/rural differences. However this analysis found that farmers were the occupational group most likely to report fuel poverty (odds ratio of 1.54 relative to non-manual workers) (Scott et al, 2008).

The observed relationship between rurality and lack of central heating for older people may be related to a range of social, cultural and environmental factors including distance from mains gas in border or island areas, older housing and less disposable income available for housing improvements or maintenance.

(iv) Fuel poverty and chronic illness or disability

The health impacts of cold homes have been recently documented in a comprehensive review conducted by the Marmot Review Team in the UK. The review presents evidence of associations between cold homes and a range of physical and mental morbidity. For older people with existing cardiovascular and respiratory disease, a cold damp home can diminish their life expectancy and quality of life. For example, living in a house with indoor air temperatures at or below 16°C is associated with a greater risk of respiratory infection and exacerbations of asthma (Marmot Review Team, 2011).

This section examines the relationship between fuel poverty variables and chronic illness/disability variables, as recorded in national datasets. No causal relationships can be assumed.

Table 2.23: Central heating and long-term illness/disability among older people (Republic of Ireland and Northern Ireland)

Northern Ireland:	
Percentage of all older people with a limiting long term illness who lack central heating	7.4%
Republic of Ireland:	
Percentage of all older people with a disability who lack central heating	13.9%

Source: Northern Ireland Census 2002 and Republic of Ireland. Census 2006

In the Republic of Ireland of those older people who lack central heating, over one quarter have at least one form of disability, and this equates to around 19,608 older people. Older person households with disabled older people were slightly more likely to lack central heating (16.5%) than those older person households with no disability or disabilities.

Table 2.24: Fuel poverty and chronic illness/disability among older people (Republic of Ireland)

Chronic illness/disability	Had to go without heating	Unable to keep house adequately warm
Yes	5.1%	3.5%
No	2.5%	1.4%

Data based on an unweighted analysis of of EU-SILC 2008 (aged 65+)

There was no suitable variable on chronic illness/disability in the Household Budget Survey (HBS) to explore the relationship with the expenditure method.

In Northern Ireland, analysis of the House Condition Survey suggests that of all older people in fuel poverty, more than half report a long-term health problem that limits their activities. Conversely, 69.8% of those older people with a long-term health problem that limits their activities are in fuel poverty. The experience of fuel poverty was less common for older people with no such health problems (59.7%) (Northern Ireland Housing Executive, 2009).

Census 2006 indicated that there were 23,325 people aged 65 years or older who identified themselves as a carer; 10.5% of those who identified themselves as carers were therefore older people themselves. A greater proportion of older carers lacked central heating, compared to the general population of carers (9.3% and 5.8% respectively). It is not possible to deduce from the data which of these carers were also caring for an older person in their own home.

Implications of relationship between chronic illness/disability and fuel poverty for older people

Older people with chronic illness and/or disability seem more likely to be in fuel poverty. This may be due in part to the increased risk of poverty and deprivation experienced by this group. However, there would also appear to be evidence of poor housing conditions. This data supports previous analysis which showed that there was a significant but weak effect of central heating on the likelihood of having a chronic illness (Prunty, 2007).

2.5 Key findings

- Older people experience a 'dual burden' in terms of fuel poverty. They are more likely to experience fuel poverty and are also particularly vulnerable to health and social harm as a result of this experience.

- The higher levels of fuel poverty recorded for older people were driven by poor housing condition, energy inefficient housing, rising fuel prices and low incomes.

- The numbers of older people vulnerable to ill-effects from cold homes will increase as part of significant increases in the numbers of people aged 80 years and over and those living with chronic illness or disability.

- Self-reported 'subjective' measures of fuel poverty and levels of debt/arrears should be interpreted with caution in the context of older people. Expenditure based methods may have greater validity for this age group.

Energy efficiency

- The majority of older people lived in their own home and these homes tended to be older properties which were detached or semi-detached.

- Nearly half of all older people in the Republic of Ireland lived in properties built before 1960.

- Older people were over-represented among houses in poor condition and which lacked central heating in both jurisdictions.

- The large proportion of older people that live alone and the low occupancy of some older people's homes creates a particular challenge in creating an energy efficient home.

- Data on energy efficiency measures were not comparable North/South but similar patterns were observed. Older people were less likely than the general population to have attic/loft or wall insulation or double glazing.

Income

- Older people in both jurisdictions were heavily reliant on social transfers to keep them out of poverty.

- Older people living alone were especially vulnerable to missing out on economies of scale while living on low incomes.

Fuel prices

- The costs of electricity and gas are rising.

- The cost of heating oil has risen significantly in recent years. There is little available data on the interface between the older consumer and heating oil suppliers.

Vulnerable subgroups of older people

- There was a concentration of risk factors for fuel poverty among the older age groups (75+) in terms of lacking central heating, poor housing condition and less adoption of energy efficiency measures.

- Roughly one quarter of older people in the Republic of Ireland and roughly one third of older people in Northern Ireland lived alone and this group was especially vulnerable to fuel poverty and were mostly women.

- Older people living alone were a vulnerable group in terms of fuel poverty. They were more likely than other older people to lack central heating, occupy poor condition housing and have little insulation.

- Older people in Northern Ireland living in rural areas were more likely to lack central heating, had poor housing condition and experienced fuel poverty.

- Of older people in the Republic of Ireland reporting no central heating, around one quarter had at least one form of disability. Older disabled people were more likely than the non-disabled to lack central heating.

North/South differences

- Data on housing condition and energy efficiency were not directly comparable on a North/South basis.

- Much of the data used in the Republic of Ireland was out of date, particularly that relating to housing conditions.

- Low incomes would seem to be more of a driving factor for fuel poverty in Northern Ireland. Income poverty among older people in Northern Ireland has been increasing in recent years.
- A greater proportion of older people in Northern Ireland lived alone, and a greater proportion lived in social housing, when compared to the Republic of Ireland.

- There was a concentration of fuel poverty among rural older person households in Northern Ireland but this pattern was not observed in the Republic of Ireland data.

CHAPTER 3

Fuel poverty policy in the Republic of Ireland and Northern Ireland

Author: Helen McAvoy

The policy landscape – fuel poverty and older people in the Republic of Ireland and Northern Ireland

Republic of Ireland

The new Programme for Government committed to publish a fuel poverty strategy. An Interdepartmental Group on Affordable Energy has been developing this strategy since 2010 and the group is co-chaired by the Department of Energy, Communications and Natural Resources and the Department of Social Protection.

The strategy Warm Homes – A Strategy for Affordable Energy in Ireland was published in November 2011and makes recommendations on the adoption of a government definition of energy poverty and a range of actions across the relevant departments including energy, social protection, environment, housing and health.

Due to the extremely close scheduling of the publication of this report and the Strategy it was not possible to consider in any depth the particular policy impacts in respect of older people.

The affordable energy strategy will have an important role to play in co-ordinating departmental and agency actions which directly address fuel poverty. These key actions will certainly relate to social protection benefits and allowances, utility regulation and schemes to improve energy efficiency of housing in the owner-occupier, social housing and rental sectors. However, there are many policies which may have an important supporting role to play in preventing the situation where an older person lives in a home that they cannot afford to heat to a level that is healthy and safe. These would include policies relating to pension provision, family carers, the support of community groups and the prevention and management of chronic illness. For example, the ongoing support for policies relating to vaccination for influenza and streptococcal disease will contribute to preventing illness and death for older people living in cold housing.

Northern Ireland

Warmer Homes (Department for Social Development, 2011) is Northern Ireland's fuel poverty strategy. It prioritises targeting resources to the most vulnerable. The particular situation of fuel-poor older people features strongly in the strategy. The measures proposed which relate to benefit uptake, the development of oil stamp savings scheme and a greater emphasis on disabled people would have particular benefits for older people.

In this vein, the targeting of boiler replacement schemes to over 60s is also beneficial. Interestingly, this most recent fuel poverty strategy makes particular mention of

addressing equity release as a means by which the issues of low occupancy and living alone might be counterbalanced. However, whether such schemes would be acceptable to older people remains to be seen.

The recently published preliminary review *Defining Fuel Poverty in Northern Ireland* produced a new type of fuel poverty indicator based on a household spending twice the Northern Ireland median spend on fuel i.e. a threshold of 18%, rather than the 10% (Liddell et al, 2011). The authors propose that this is a supplementary indicator and not a replacement for the existing 10% based indicator. It is hoped that the use of this measure could assist in targeting those most in need within an overall policy framework that is committed to prioritising those experiencing severe fuel poverty. As older people are over-represented among those households in severe fuel poverty, it would seem that this approach will improve targeting for vulnerable older people.

However, it would seem that age-proofing the balance of interventions proposed in all fuel poverty policies would be beneficial. Furthermore, it is also worth developing approaches to ensure that resources are allocated on the basis of need within the older age group for example with due consideration to older people living alone, the older-old and older women.

CHAPTER 4

Excess Winter Mortality
Comparisons between Republic of Ireland and Northern Ireland

Authors: Patrick Goodman & Stephen Browne

4.1 Introduction

It is well established that in many countries there is significantly more mortality in winter than in summer. Clearly, in some instances some of this excess winter mortality can be explained in terms of epidemics such as influenza, however there are many studies which have taken account of influenza, and still demonstrate a strong relationship between increased mortality and cold temperatures.

A study of temperature-related mortality for Dublin showed that cold temperatures were associated with increased all-cause mortality. These effects extended for 2 to 3 weeks; and were not just an immediate acute effect and were observed in all age groups with the biggest effects among older people. Each 1°C decrease in temperature was associated with a 2.6% increased total mortality over the subsequent 40 days. These effects of temperature on mortality in Dublin were similar to reports from other European studies (Goodman et al, 2004).

Gemmell et al (2000) reported that each 1°C reduction in weekly average temperature in Scotland was associated with an approximately 1% increase in total mortality, which persisted for several weeks, Donaldson and Keatinge (1997) reported that lower mean temperatures in the Republic of Ireland - East of England were associated with excess deaths from all causes. The maximum effects were observed 3 days after the cold peak and effects lasted out to 40 days. Keatinge and Donaldson (2001) reported that a 1°C decrease in temperature was associated with 3% increase in total deaths over the next 24 days in greater London. Others have also reported strong associations between increased mortality and prolonged periods of cold weather in London (Eurowinter Group, 1997; Wilkinson et al, 1999).

It is against this background that we explored winter mortality on the island of Ireland, comparing the Republic of Ireland with Northern Ireland, and comparing the winter and summer periods. A clear message from the literature is that cold weather effects can act over a prolonged time period, and that it is not just one or two cold days that effect people. It seems that long periods of cold weather appear to weaken those who are susceptible, and that if the cold weather continues they may get progressively weaker and eventually die, while if temperatures rise they may recover.

Housing conditions and the ability to keep warm plays a key role in whether old people can survive the winter and this is taken in conjunction with their general health to begin with.

Causes of death

Excess winter mortality is not normally recorded as being from hypothermia, but cold weather interacts to trigger deaths from existing cardiovascular disease (CVD) and/or respiratory conditions.

These temporal associations with mortality vary with cause of death. In Dublin, Goodman et al (2004) reported an immediate effect of cold on cardiovascular mortality that decreased over the subsequent 3 weeks. They reported a net effect of each 1°C decrease in temperature associated with a 2.5% increase in cardiovascular mortality over the succeeding 40 days, while in the Netherlands (Huynen et al, 2001) reported a 1.7% increase in cardiovascular mortality in the 30 days after each 1°C temperature decrease. In Scotland, ischaemic heart disease mortality increased by around 1% in the week of, and the week after, a 1°C decrease in temperature (Gemmell et al, 2000). Winter deaths in London due to coronary thrombosis were reported to peak about 2 days after a cold spell (Keatinge, 2002).

In the US (Braga et al, 2002) found that both high and low temperatures were associated with increased cardiovascular mortality. The effect of high temperatures on cardiovascular deaths was restricted to the day of, and the day after the heat events, whereas the effects of cold temperatures persisted for several days.

When one considers respiratory deaths, Goodman et al (2004) reported for Dublin that in the 40 days after each decrease of 1°C in temperature, respiratory deaths increased by 6.7%. In the Netherlands, a 5.2% increase in respiratory deaths after each 1°C decrease in average monthly temperature was reported (Huynen et al, 2001). The cold effects on respiratory mortality were strongest 2 to 4 weeks after the cold event. Winter respiratory deaths were reported to peak about 12 days after a cold spell (Keatinge, 2002). In Scotland respiratory deaths increased by about 1% 1 to 2 weeks after a decrease of 1°C in weekly mean temperature (Gemmell et al, 2000).

General practitioner visits by the older people for respiratory disease in London were found to rise by 10.5% for each 1°C drop in temperature (Hajat and Haines, 2002). In summary, warm temperatures have an immediate effect on mortality, specifically cardiovascular mortality. Cold temperatures have strong effects on both cardiovascular and respiratory mortality that can persist from days to weeks.

4.2 Methods

We obtained daily mortality data for Northern Ireland from the General Registry Office of the Northern Ireland Statistics and Research Agency and for the Republic of Ireland from the Central Statistics Office. The data was aggregated to produce weekly, monthly and yearly deaths. We further segregated the data to produce all cardiovascular deaths (ICD-9 codes 390-429, ICD-10 codes I01-I52), all respiratory deaths (ICD-9 codes 460-519, ICD-10 codes J0-J99) and deaths from stroke (ICD-9 codes 430-438 and ICD-10 codes I60-I69). We also included total (non-accidental) deaths (ICD-9 codes 001-799, ICD-10 codes A00-R99). We analysed the data for age groups (65-74 years old, 75-84 years old and 85 years and older). These particular causes of death were selected as they had previously been shown in other studies as demonstrating strong seasonal trends.

In order to compare mortality between the Republic of Ireland and Northern Ireland we considered the Census population data for each country and calculated the specific death rates for age and gender, using the population numbers in each category and subcategory in the analysis.

For the purposes of this report we have concentrated on presenting data for each of the census years over the 20 year period, that is 1986, 1991, 1996, 2002, 2006.

4.3 Results

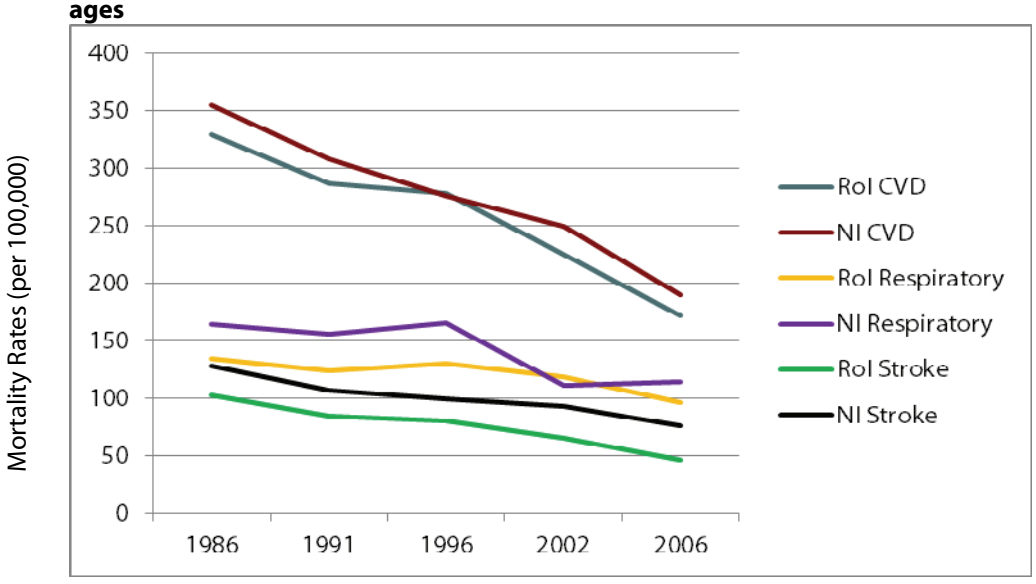
Comparison of mortality rates between Northern Ireland and the Republic of Ireland over time, by causes and age groups

Although the population of both Northern Ireland and the Republic of Ireland have increased since 1986, there has been a general decline across the annual mortality rates for all ages from cardiovascular disease (CVD), respiratory disease and stroke in the Republic of Ireland from 1986 to 2006 (see Figure 4.1). What is of particular note is that the rates in Northern Ireland are consistently higher for all causes.

A key observation from Figure 4.1 is that there is a general downward trend in mortality rates over the study period, this reflects the improvement in the overall health status and health care over this time, in spite of the rising population. The total population of the Republic of Ireland has increased by 19.7% from 3,540,643 in 1986 to 4,239,848 in 2006. The male population of the Republic of Ireland has also increased by 19.9% from 1,769,698 in 1986 to 2,121,082 by 2006 whereas the female population has increased by 19.6% from 1,770,953 to 2,118,677 over the same time period.

In Northern Ireland, the total population has increased by 10% from 1,566,800 in 1986 to 1,741,619 in 2006. The male population of Northern Ireland has increased by 11.1% from 768,400 to 853,404 over the 20-year period while the female population has increased by 10.1% from 798,400 to 888,215 over the same period (see Figure 4.1).

Figure 4.1: Annual Mortality Rates for the Republic of Ireland (RoI) and Northern Ireland (NI) for all ages



4.4 Excess Winter Mortality Results

This section presents an analysis of the winter mortality, comparing rates with summer and comparing Northern Ireland and the Republic of Ireland. As part of this study, summer was defined as the months of June to August inclusive while winter was defined as December, January and February. The data for the summer of one year was analysed with the data for the following winter, that is summer 1986 and winter 1986/7 and this was repeated for each of the census years in this study.

Figure 4.2: Comparison of Summer and Winter CVD Mortality Rates for Republic of Ireland and Northern Ireland (all ages)

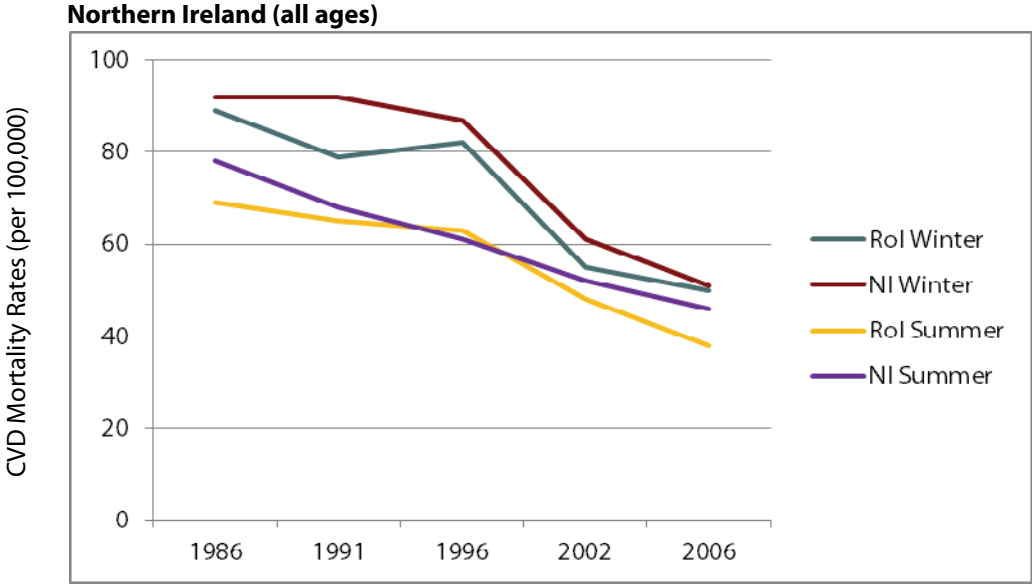


Figure 4.2 illustrates the general downward trend in cardiovascular mortality over time, which, as already mentioned is partly due to improvements in health care. The graph also clearly illustrates the differences between winter and summer mortality rates. Over time there is a slight convergence but the seasonal differences are still quite marked, highlighting the effect of cold weather on mortality patterns.

When one considers the differences between Northern Ireland and the Republic of Ireland, the rates in the Republic of Ireland are lower, both for summer and winter, however these are seen to converge closer to each other over time.

Figure 4.3: Comparison of Summer and Winter Respiratory Mortality Rates for Republic of Ireland and Northern Ireland (all ages)

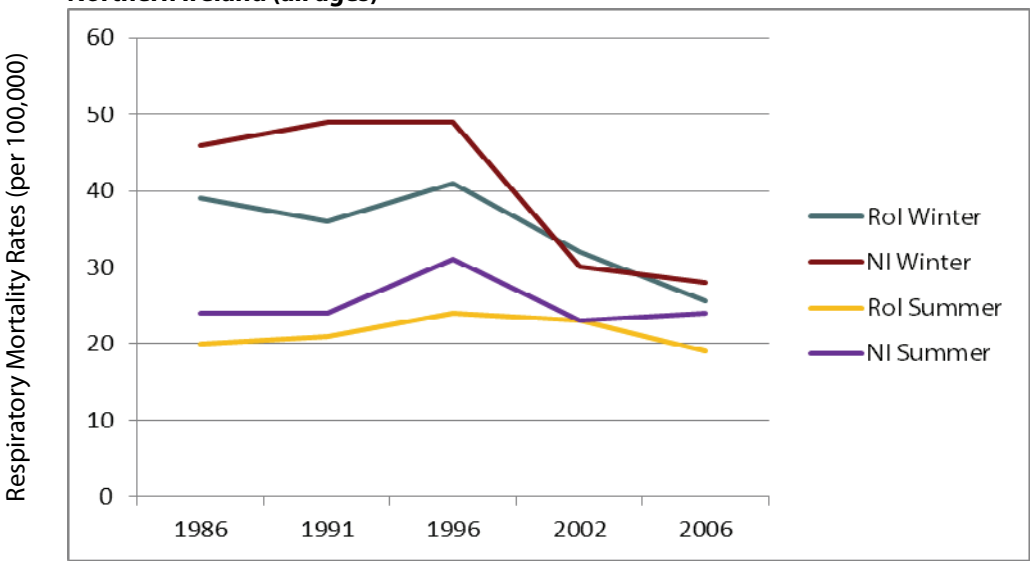
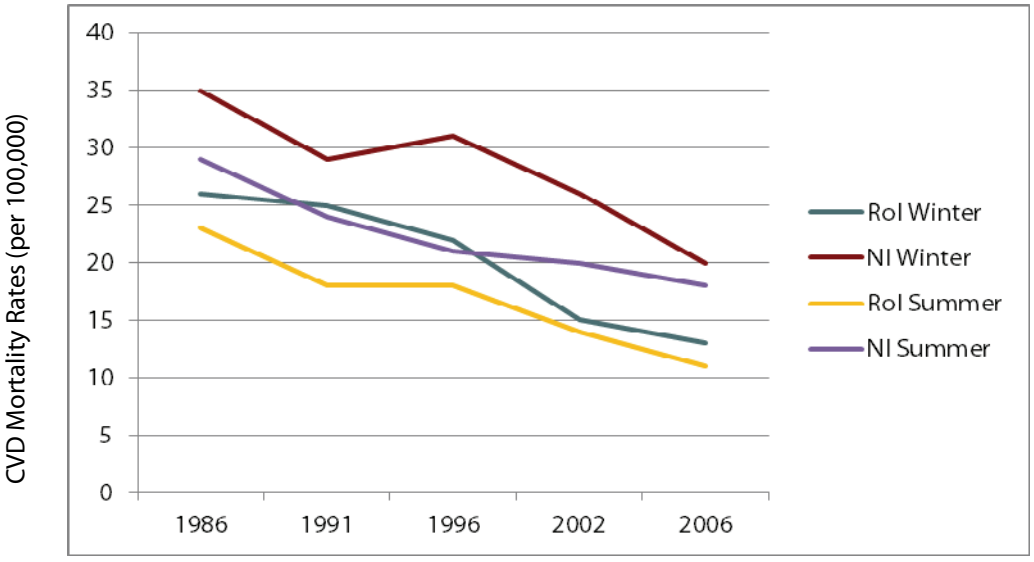


Figure 4.3 illustrates the comparison between the summer and winter mortality rates from respiratory disease in the Republic of Ireland and Northern Ireland. We observe significantly higher rates in Northern Ireland compared to the Republic of Ireland, particularly for winter, some of this is possibly due to coding differences for respiratory deaths. But it does consistently indicate higher rates in Northern Ireland than the Republic of Ireland, but as with cardiovascular disease, the rates are seen to decrease overtime, and again there is evidence of convergence with time between the two regions. The graph clearly illustrates the excess winter mortality for these causes compared with summer.

Figure 4.4: Comparison Summer and Winter Mortality Rates from Stroke for Republic of Ireland and Northern Ireland

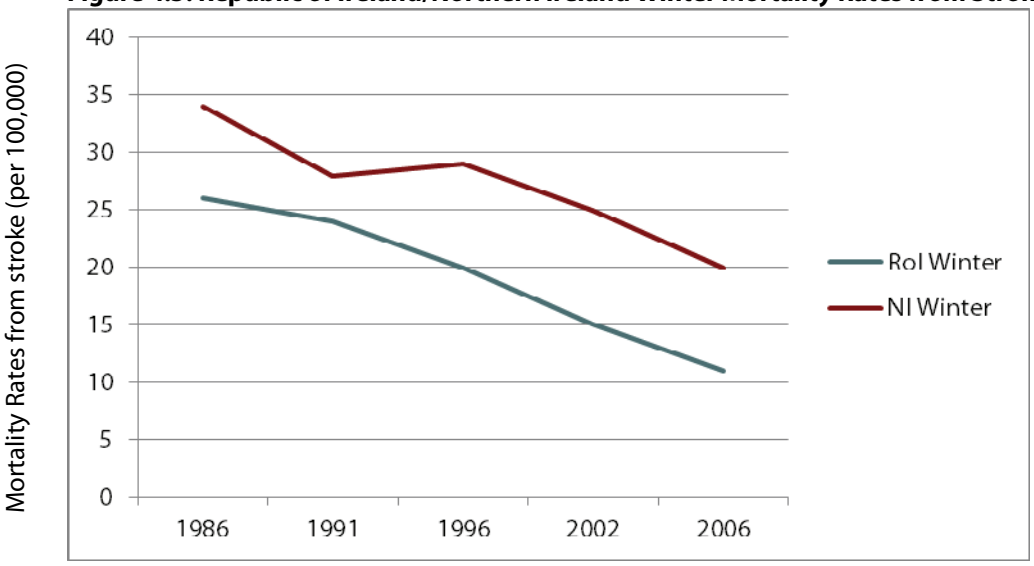


When we consider mortality from stroke, (Figure 4.4) we again see a strong downward trend over time, and we also see the strong winter/summer differences, with higher mortality in winter, again reflecting the excess winter mortality phenomena. A key issue is that the rates in Northern Ireland are considerable higher, and in fact the summer rates in

Northern Ireland are more like the winter rates in the Republic of Ireland. These differences may well be real differences in the way health care is provided, although systematic differences in the coding of deaths may also account for some of the differences.

The following graphs focus on the winter mortality rates. Stroke deaths have been selected for illustration purposes, as these showed a distinct difference between the two jurisdictions.

Figure 4.5: Republic of Ireland/Northern Ireland Winter Mortality Rates from Stroke



The following three graphs illustrate the winter stroke deaths, by age groups, 65-74, 75-84 and 85 years and older.

Figure 4.6: Winter Mortality Rates from Stroke in Republic of Ireland and Northern Ireland 65-74 year old age group

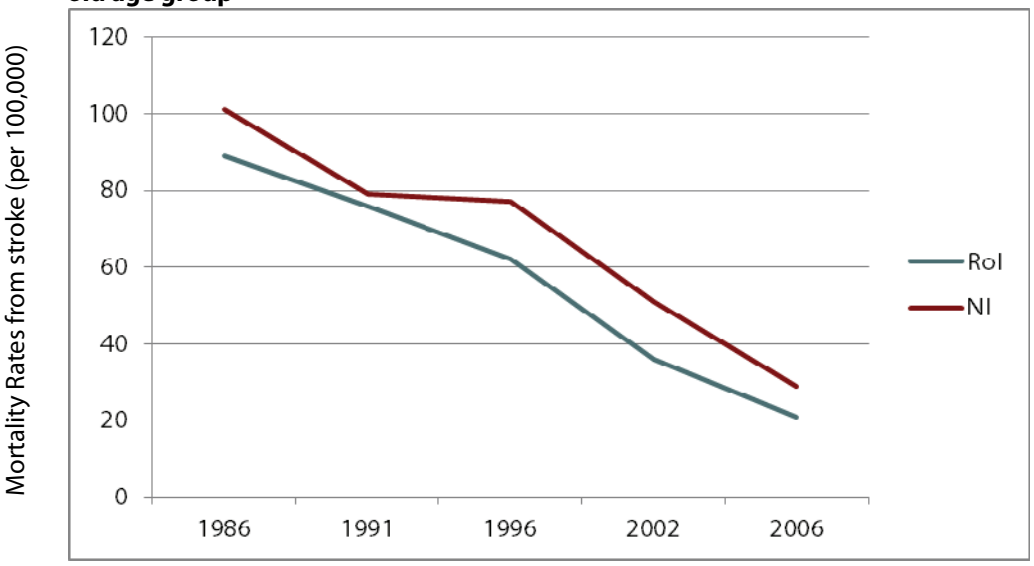
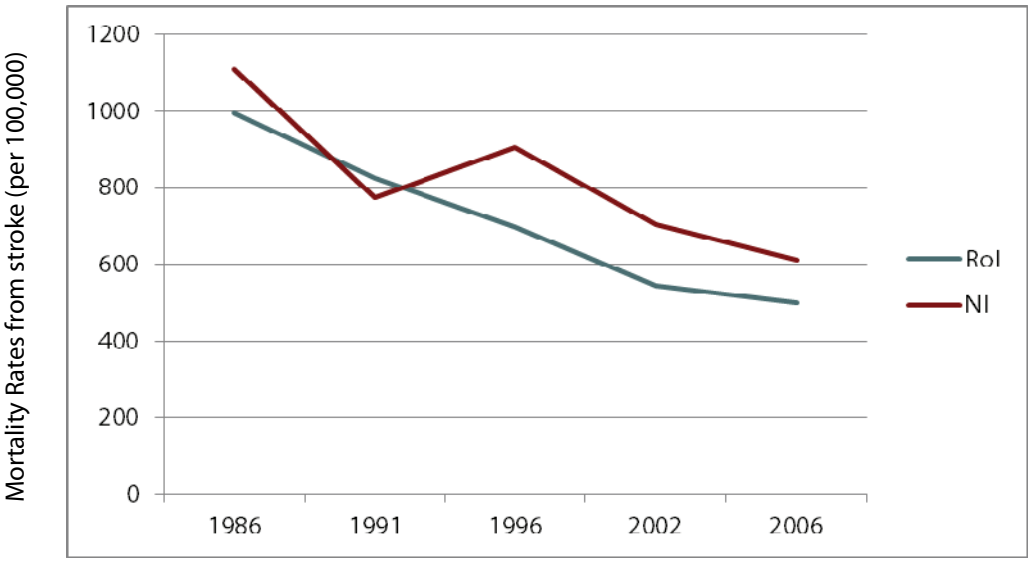


Figure 4.7: Winter Mortality Rates from Stroke in Republic of Ireland and Northern Ireland age 85 years and over



When age of death is considered, we still see the big differences between Northern Ireland and the Republic of Ireland, with rates in Northern Ireland being consistently higher than the Republic of Ireland, across all the age groups.

Obviously death rates among older ageing groups (85+ years) increase significantly, and these are also reflected in the overall deaths rates by cause of death.

4.5 Discussion and Key Findings

Although the populations of the Republic of Ireland and Northern Ireland have increased in the last 20 years, mortality rates have been falling over the same period. In general, Northern Ireland experienced higher mortality from CVD, respiratory, and mortality rates from stroke, in all ages. This is also similar when one considers the various age groups. What is seen is that the mortality rates from all of the selected categories are seen to converge closer together with time.

Some of the differences observed between Northern Ireland and the Republic of Ireland might be explained by systematic differences in the coding of deaths however this would not explain all of the observed differences. It is quite clear that rates for all of these causes have been higher in Northern Ireland in winter compared to the Republic of Ireland, and there may be a myriad of factors giving rise to this, for example, diet, health care, housing conditions. We have observed that these differences have narrowed with time.

Key Findings

- Mortality has decreased even though the populations have increased and are also ageing. Mortality rates have dropped significantly over the past 20 years.

- For the mortality categories chosen, winter mortality rates are significantly higher than the summer rates for the same causes.

- Mortality rates were higher in Northern Ireland compared to the Republic of Ireland, but the differences have narrowed significantly over time.

- Northern Ireland experienced a higher mortality rate from CVD, respiratory and stroke than the Republic of Ireland in all ages, though the differences have narrowed with time.

- Excess winter mortality for cardiovascular, respiratory and stroke among older people was observed for all years and is present in both Northern Ireland and the Republic of Ireland.

Additional work

This work has set the foundations for ongoing detailed research into climate and health in this age group. Now that the datasets have been compiled, it is planned to conduct further analysis comparing Northern Ireland and the Republic of Ireland. We will use a time series approach, and also investigate the lag structures between exposure to cold temperatures and mortality. The support of CARDI will be acknowledged in all ongoing work.

CHAPTER 5

A survey exploring the impact of cold weather on older people

Authors: Noëlle Cotter, Eugene Monahan, Helen McAvoy, Patrick Goodman

5.1 Overview and Research Design

In parallel to the secondary analysis funded by CARDI, this section outlines primary research undertaken by the team.[1] The aim of this research was to learn about the lived experience of older householders in the Republic of Ireland adding depth to the findings from national data.

The two other principal strands of this research are the all-island research data on fuel poverty among older people and the all-island data on cold related mortality. Therefore, the all-island overview of the impact of cold weather on older people is complimented by original research which gives a sense of how older people react and alter their behaviours in response to the cold weather. In other words, this chapter gives a sense of what happens inside the homes of older people living in the Republic of Ireland. Added to this dimension are qualitative data relating these experiences among older people.

The severe cold weather experienced over the winter of 2010/11 afforded a unique opportunity to ask respondents how and if they altered their behaviour during this time. In general, older people were found to be coping reasonably well with the severe weather experienced during the winter. Despite being fearful of heating costs, older people appeared to be generally keeping their heating on the entire time they were indoors, and people were staying indoors as much as possible. Respondents were mindful to eat hot food and consume hot drinks throughout the day, and extra clothing and blankets were key features of the cold weather behaviours. However, despite this generally good picture, there was evidence that slightly more than half the sample were cutting back on other household necessities to heat their homes, and fuel bills appeared to cause a good deal of concern, in particular anticipated fuel bills.

Research design and methods

A survey was considered the most appropriate method of obtaining information about older people's behaviours during cold weather. The research design process involved considerable input from agencies who work with older people, and the research team are very grateful for their assistance. The final questionnaire can be seen in Appendix 1. The aims of the survey were to establish:

- How older people in the Republic of Ireland dealt with the recent cold weather.

[2] Professor Patrick Goodman, Dublin Institute of Technology and Dr. Helen McAvoy, Institute of Public Health in Ireland led this research strand. Dr. Noëlle Cotter was the project research officer funded through CARDI. Professor Goodman and Eugene Monahan, Dublin City Council, also undertook to examine older people's household temperatures see chapter 6.

- What fuels older people are using in their homes and how they are managing these systems – if they need supplementary heat sources, efficiency of these systems and the financial implications of the need to keep warm.
- What type of energy efficiency measures older people are using.
- Demographic information to include health and disability.

The self-completed professionally printed questionnaire was designed to be in a large clear font, and the final page was perforated for respondents to tear out and keep and included details of different services and schemes they could find useful. The questionnaire appeared long due to the enlarged font size as well as provision of multiple response categories to save time for the respondent; however piloting revealed that the questionnaire did not take more than 20 minutes to complete, with some people taking longer and completing the questionnaire in stages. The questionnaire could also take longer if people decided to include their own comments in the free text spaces provided.

The questionnaire was distributed using networks with access to older people established by the research team. Therefore, a reminder to complete the questionnaire could not be distributed. The networks that assisted in distribution are listed in the acknowledgements, and particular thanks should be given to the Rural Transport Network, in particular these networks based in Cavan and Donegal, Energy Action, Age Action, Clúid Housing Association and the St. Vincent de Paul Society. Dublin City Council liaison officers were also very generous with their time in assisting this research.

Over 2,000 questionnaires were distributed and 722 completed and valid questionnaires were returned. Age Action, Rural Link and the Institute of Public Health in Ireland (IPH) put the questionnaire on their websites to reach as many people as possible. A password protected database was established for the returned questionnaires and analysis was undertaken using SPSS (PASW v.18), however there were no identifying characteristics recorded in these data. Respondents were asked to return their questionnaires in a freepost envelope. In addition, a free phone service was set up to enable people to contact the research team if they wanted to complete the questionnaire by phone, ask any questions or request a copy of the final report.

Limitations

There are limitations to this research. Aside from the response rate (approximately 36% when on-line recruiting is excluded), as noted above a reliance on networks for distribution means that the sample of respondents is not representative although the team did endeavour to ensure a spread across the country. The use of networks may also mean that there is a hidden population of older people not accessed who may be particularly vulnerable, due in part to their isolation.

Self-completion of a questionnaire that appeared to be long may have been off-putting for certain older people, in particular people with eyesight, literacy or concentration limitations. It is possible that people who did complete the questionnaire were people who were particularly interested in this area, for example, people who find their homes very cold and suffer badly during the winter, or people who have recently undertaken

improvement works in their homes and therefore are particularly interested in energy efficiency at the time of receiving the questionnaire.

Self-completion also means that questions were skipped or inaccurate information given. For example, respondents may not be fully informed about their insulation or heating systems and find these questions difficult to answer, however this potentially demonstrates limited knowledge that if improved could help older people to budget more efficiently, plan for the cold weather and make informed decisions around their heating methods, costs, benefits and entitlements.

In relation to the sample from Dublin City Council properties (n=178) the majority of the questionnaires were distributed via the liaison officers with responsibility for the sheltered housing complexes. Approximately 25% of the sample was assisted by Dublin City Council liaison officers in completing the questionnaire, as some may have had difficulty in completing the questionnaire as stated above. The remaining 75% were self completed. The majority of the questionnaires were returned via the liaison officers to the research team.

This research was exploratory in nature, and does not claim national representation however all reasonable attempts were made to spread the questionnaire among the greatest diversity of older people as possible. Due to the small number, analysis was unable to utilise multivariate methods however descriptive statistics and some bivariate analysis was feasible.

Ethics

The research team did not ask the agencies to provide distribution lists for the purposes of confidentiality, and the survey form included a confidentiality guarantee. As mentioned, although there was no way of identifying respondents, all data was stored with password protection and every effort made to comply with the self assessment checklist on the data protection commissioner's website.[2] In addition, ethical approval was sought and granted from the DIT ethics committee.

5.2 Results and analysis of the questionnaire data

This results section provides:

- A profile of respondents; an overview of respondent demographics and characteristics including health.
- Household and home details; including the self reported condition of the home and heating system details.
- Cold weather behaviours undertaken by the sample.

All percentages given below are valid percentages, in other words, percentages are based on the total amount of people who answered that question, not the total amount of people in the sample unless otherwise stated.

[2] http://www.dataprotection.ie/ViewDoc.asp?fn=/documents/responsibilities/3k.htm&CatID=55&m=y

Respondents were given space to write in any comments they wished to have recorded, and some of these are included in this section. However, these cannot be considered representative rather they have been selected to emphasise a point or to give a flavour of principal attitudes or concerns.

5.3 Profile of Respondents

Location

The majority of the sample lived in Dublin (n=419, 60.1%) evident also in the description of the type of area they lived with 72% stating they live in an urban city or suburb. Respondents living in Cavan (n=95, 13.6%), Cork (50, 7.2%), Galway (n=29, 4.2%), Wexford (n=19, 2.7%) also returned surveys in relatively high numbers. Kerry (n=15, 2.2%), Donegal (n=11, 1.6%) and Wicklow (n=10, 1.4%) were the next most commonly stated counties. The remaining 7% were spread throughout the country.

Table 5.1: Classification of type of area respondents' live

live in an urban city or suburb	500
live in a rural area with no neighbours close by	74
live in a rural village or town or in a rural area with neighbours close by	120

Table 5.1 above outlines respondents' descriptions of where they live and demonstrates that this sample were, in the main, not particularly geographically isolated if having neighbours is taken as a crude approximation. Interaction and support from neighbours does not automatically follow-on from proximity, however comments made with regard to the cold weather indicated that neighbours were checking in on these respondents.

> ***During the severe weather, neighbours phoned and did my shopping seeing another person was nice, as I was unable to go out. Having non-perishable food stuffs in my store was a big help.***
>
> ***I have very good neighbours, particularly the younger ones who called regularly and got shopping for me during the cold snap.***

Although younger neighbours may have done this, support is not guaranteed and there was a general unease with regard to cold weather isolation among some respondents.

> ***I eventually ended up on my own for Christmas with no worthwhile dinner for 3 days plenty of older people had to cancel their Christmas plans and were also on their own. …… It was a very stressful time for us.***
>
> ***Fear of sub zero temp as last winter can cut off vital utilities gas, electricity, water……overhead lines are liable to be broken by being overloaded by ice and snow. Our estate is fed by these.***
>
> ***Area isolated for 4 days during snow/ice.***

Isolation in general, not just in cold weather was a concern with several people citing the value of the rural transport services. Although this may be a research artefact of the network through which respondents obtained the survey.

> ***Could not get out of house for a period of 10 days during snow no callers or contact. Could not survive without rural transport services.***

5.4 Tenure and form of accommodation

As would be expected among a sample of older Irish people, the majority were home owners (n=368, 51.8%). There were 190 people (26.7%) who rented from a local authority, while a further 139 people rented from a voluntary or cooperative housing body, or lived in sheltered accommodation. Just two people rented from a private landlord, and six people had moved in with family or friends, either to the main house or an immediately adjacent property. Therefore, this research did not reach the, albeit small percentage of older people in the private rented sector – see chapter two for private rented sector national-level data. Older people in institutional care were not included in this research. The majority of the Dublin City Council tenants were in sheltered housing and in some cases their heating was centrally controlled by a communal boiler. This was also the case for some of the housing association tenants. There is a large percentage of apartment/flat dwellings, most likely due to sampling in Dublin City Council and voluntary and cooperative residences. Social housing residents are over-sampled in comparison to the national picture, and this facilitates particular attention on low income older people living alone.

Table 5.2: Form of residence

	total sample	lone person households
Apartment/flat	201 (28.9%)	177 (35.1%)
Terraced house	109 (15.7%)	95 (18.9%)
Semi detached house	104 (14.9%)	66 (13.1%)
Bungalow	86 (12.4%)	53 (10.5%)
Bedsit	78 (11.2%)	78 (15.5%)
Detached house	60 (8.6%)	35 (6.9%)

5.5 Income

Respondents were asked to state either the weekly or monthly household income after tax. Responses are recorded in Table 5.3 below.

Table 5.3: Household income

Weekly income (after tax)	Number (total sample)	Percentage (total sample)	Lone households number	Lone households percentage
Under €150	28	4.1%	24	4.9%
€151- €200	106	15.6%	99	20.2%
€201 - €220	101	14.9%	94	19.2%
€221 - €250	172	25.4%	163	33.3%
€251 - €350	104	15.3%	75	15.3%
€351 - €450	71	10.5%	18	3.7%
€451 - €600	57	8.4%	13	2.7%
€601 - €800	22	3.2%	4	.8%
over €800	17	2.5%	-	-
Total	678	100%	490	100%

The majority of respondents' household incomes were at the State pension levels. It is possible that people filled out their own information only and did not include the incomes of other residents who may have been living with them. This can be tempered by the fact that the majority of the sample (over 73%) was living alone and therefore income information is reasonably precise. The pattern for respondents with higher incomes is biased towards those stating that they have private pensions.

5.6 Age

The age range of persons completing the questionnaire was from age 48 to age 99 (mean: 72.55 years old). There were 13 people under age 60.[3] Of people between the ages of 85 and 99 (n=47), the majority lived alone. There appeared to be a relationship between living alone and older mean age. People who lived alone had a mean age of 73.2 years old.

5.7 Occupancy and Marital Status

The majority of people in this sample lived alone (n=528, 73.1%). There were a further 169 people (23.4%) who lived with one other person. There were only 25 people (3.4%) who had three or more other residents living with them. Although many of these two (or more) households were couples living together (n=172), there were many people living with younger relatives or siblings. The high numbers of people living alone will be reflected in a later section's discussion of loneliness among respondents. The marital status of the sample is outlined in Table 5.4.

[3] The 48 year old was living with a 71 year old, the 50 year old lived with a 92 year old and people between ages 54 and 56 lived alone but had serious disabilities. Above age 57 was considered acceptable for this survey.

Table 5.4: Marital Status

widowed	married	single (never married)	divorced/ separated	civil partnership/ living as if married
292 (40.8%)	169 (23.6%)	158 (22%)	94 (13.1%)	3 (.4%)

The occupancy rate for the residences in this sample demonstrated that in general people were not living in homes that were particularly oversized, with most people living in homes that had three or less bedrooms. As discussed above, this is potentially indicative of the numbers of people in local authority/voluntary and cooperative accommodation, as it would be expected that older people would tend to inhabit slightly larger houses in which they had raised their children. These forms of residences tend to compound the fuel poverty situation by not only having a larger area to heat, but also by virtue of being older and requiring greater upgrading. Instead, this sample demonstrates relatively few lone resident respondents were in homes of four or more bedrooms – less than 6% of the total sample.

Lone resident households had an average of 1.82 bedrooms, while households with two residents had a mean of 2.92 bedrooms. Three person households had a mean number of 3.47 bedrooms, and beyond this there would appear to be overcrowding with four person households averaging 3 bedrooms.

Table 5.5: Occupancy rate

	1 resident	2 residents	3 or more residents	Total
Bedsit	75			75
1 bedroom	148	11		159
2 bedrooms	100	32	3	135
3 bedrooms	118	83	10	21
4 bedrooms	37	33	7	77
5 or more bedrooms	6	4	3	13

5.8 Health Status

Overwhelmingly respondents described their health status as fair to very good (90%) despite there being just 24.6% of the total sample who did not list a long term health problem. In total, 66.6% of the sample listed between one and three long term health problems. A further 8.6% reported four to six long term health problems and just one person reported ten long term health problems. When expressed as a total percentage of the number of people who stated they have a long term health condition, 54.2% state that this is adversely affected by cold weather.

Older people have a tendency to consider their self-rated health in more positive terms than an objective indicator might otherwise state (as discussed in chapter two). This is evident in some of the comments outlined.

I describe my health as 'good' – even though I suffer from Parkinson's disease and arthritis, I can still live a normal life, with very little disruption (i.e. my walk is affected)

As long as I am mobile, and above ground I tend not to panic or bitch about situation

5.9 Mobility and principal illnesses

Arthritis was the most commonly occurring long term health problem with 42.6% of the total sample stating they had it. Diabetes and circulation problems were also frequently occurring.

Ninety-seven people (13.4% of the total sample) had fallen outside their homes in the past six months, 79 (11% of the total sample) had fallen inside their homes but just 15 people had fallen both inside and outside their homes and been admitted to hospital of a total 130 people who had been admitted to hospital (11.5%). However when falls are taken separately the number more than doubles; there were 38 people who fell outside their home who also said they had been hospitalised in the last year (23.2%) while 36 people who fell inside their home had been hospitalised (27.7%). Almost 20% of the total sample used some form of mobility aid, with the most common (15.5%) being a walking aid only (2.1% of the total sample said a walking aid in addition to a stair-lift and/or a wheelchair).

The majority of the total sample, 73.4%, had a GMS card (n=530) or a GP only card (n=85, 11.7% of the total sample). Eight people said they had both – six of these lived alone, but two lived with one other person and may have responded on their behalves also, so there was potentially at least four people who did not fully understand the differences between these cards. There were 173 respondents who have private health insurance but 103 of these also have a GMS card and 12 had a GP only card. Overall, visits to the GP were common with 75.5% of the total sample stating that they visited their GP more than once a year.

There was a relatively high compliance rate with H1N1 and general anti-flu vaccines. Of the total sample 63.1% had the yearly flu vaccine and 41.1% had the H1N1 vaccination. In total, 36.2% received both vaccines.

5.10 Social connectivity and loneliness

As would be expected for a sample of people who have, in the main, completed a questionnaire received via their social networks, there was a high level of contact with others, and potentially a reasonably low level of weakening independence – evident by the infrequent use of day centres. Fifteen people who use day centres also received meals on wheels services.

Table 5.6: Social connectivity

How many times a fortnight…	Never	1-2 times	3-4 times	Over 4 times	Totals
Have visitors in your home (friends, family, neighbours)	63 (9.8%)	210 (33%)	143 (22.4%)	222 (34.8%)	638 (100%)
Go out to visit friends	87 (17%)	237 (46.5%)	83 (16.3%)	102 (20%)	509 (100%)
Go out to visit family	92 (17%)	239 (44.2%)	109 (20%)	100 (18.5%)	540 (100%)
Go out for hobbies/ social activities	90 (17.3%)	184 (35.5%)	111 (21.4%)	133 (25.6%)	518 (100%)
Go out for meals/ eat out	137 (28.1%)	270 (55.4%)	41 (8.4%)	39 (8%)	487 (100%)
Go to a day centre	275 (60.5%)	105 (23.1%)	38 (8.3%)	36 (8%)	454 (100%)

Despite the level of contact with social networks, being lonely either 'frequently' or 'all the time' was not uncommon in this sample, with 80 people stating these responses; and 9 of these people lived with one or more other people. Most commonly people were 'occasionally' lonely (n=330, 49.2%), however this means that of the total number of people who answered the question on loneliness (n=671), 61.2% were 'occasionally' lonely to lonely 'all the time'. This is very similar to recent research findings published by the Older People's Commission of the Society of St Vincent De Paul (Walsh and Harvey, 2011) which revealed that loneliness was the biggest individual problem faced by older people living alone.

People who live with others were the least likely to experience loneliness. One respondent wrote, in the margin beside stating that she was lonely 'almost all the time', that her husband had died within the previous year and another woman wrote that she was still grieving for her husband who had died ten years earlier.

Table 5.7: Loneliness and number of residents

	Living alone	Living with 1 other person	Living with 2 other people	Living with more than 2 other people
Never lonely	153 (22.8%)	95 (14.2%)	10 (1.5%)	3 (.4%)
Occasionally lonely	272 (40.5%)	52 (7.7%)	4 (.6%)	2 (.2%)
Frequently lonely	43 (6.4%)	4 (.6%)	1 (.1%)	
Lonely almost all the time	28 (4.2%)	3 (.4%)		1 (.1%)

In the comments, loneliness appeared to often be tied to a fear of what was to come, with regard to physically being able to manage as well as a fear of entitlements being withdrawn (fuel allowance, travel pass, household benefits package).

> ***I live alone it's very lonely and I feel responsible for maintenance on my home also I feel very nervous on my own I worry a lot about being able to manage***
>
> ***I am very, very lonely, this is my biggest problem – it is eating me away. Please do not let them take away the free travel pass or means test it. It is my lifeline as I can get out of the house.***
>
> ***I worry all the time that if the free gas allowance was ever stopped I would not be able to pay the bill. I also feel my weekly income is not enough to live on and pay bills etc.***

Echoing this final comment, another couple stated that they imagined their relative comfort would not be sustained if they were living alone.

> ***We are a couple but if we lived alone the answers may be slightly different and more worry***

The experience of loneliness appeared to have significant relationships with experiences of not being able to keep the home warm during cold weather. Experiencing loneliness was associated with going without necessities such as food or clothing during the previous winter's cold weather to keep the home warm, as well as self-rating the home as 'too cold'.

5.11 Condition of the home

The large numbers of people living in apartments, flats and bedsits is evident in the dates that homes were recorded as being built; 32% were built since 1981. Although there were mixed comments with regard to the build quality of apartments.

> ***My apartment was not built for long term living and more money has to be spent on insulation. Storage heating is a waste of energy and very inefficient.***
>
> ***Our flat is a new build it is very cheap to heat.***

However, the modal response for year the home was built was between 1941 and 1980 (43.1%), and these were more likely to be bungalows, terraced, semi-detached, detached and end of terrace homes. This reflects the results of Census 2006 as outlined in chapter two; 48.8% of private homes inhabited by people over age 65 were constructed between 1941 and 1980. Thirty-two people were able to definitively state that their homes were constructed before 1899.

Draughts, dampness, and mould were concerns among the total sample. In total, 109 respondents recorded having damp, mould or black stains on walls, windows, doors or

ceilings equating to 15% of the total sample. There were 209 respondents (29% of the total sample) who recorded having draughts in their home. A total of 151 people (21% of the total sample) stated they had door draught excluders, but just 44 of these also reported having draughts, indicating that perhaps the experience of having draughts was more widespread but respondents did not feel that the draughts were problematic due to the presence of draught excluders.

Nine percent of the total sample reported having draughts as well as damp/mould in their homes. The comments section revealed that there were rooms in homes that could be worse than others due to for example, draughts, and that this was where the supplementary heat sources could be placed.

> ***Too many vents in walls of houses… You could be blown out of the bed it is so bad … it would freeze the rats in my bedroom as a result of the vents…***
>
> ***In the winter my kitchen and dining room are as cold as fridges. I don't think the walls are insulated. The window frames are metal and they retain the cold. It is nearly impossible to go into these rooms because of the cold. My daughter had to buy me a Kosangas fire and I use this with my normal storage heaters. The cylinders are expensive.***

Respondents were more inclined to give information about the glazing and lagging jackets in their homes than wall, cavity and pipe insulations, however they were aware of attic insulation. This possibly demonstrates how the 'easy-wins' of energy efficiency have permeated the public consciousness in the past few years. Given the self-completed nature of this survey it is possible that figures should be higher for other insulation measures that people are unaware came as standard with their home – this may be particularly acute for people in rented properties.

There were 508 people – 70.3% of the total sample - who recorded having at least double glazing on at least half their homes' windows. Many respondents altered the question to read that their entire homes were double glazed. A further 384 people (over 53% of the total sample) had water cylinder lagging jackets and 280 had attic insulation (almost 39% of the total sample). There were 164 respondents who had the combination of at least double glazing on half their homes windows, attic insulation and water cylinder lagging jackets (22.7% of the total sample). However, having double glazing, attic insulation or lagging jackets does not tell us about the quality of these measures:

> ***The windows are supposed to be double glazed but there's draughts coming in everywhere***

Despite lack of information about insulation other than attic insulation, there were 119 respondents who recorded having pipe insulation – possibly indicative of information learned during the previous two cold winters when many people's pipes froze. It is also likely this number should be far higher as many homes were of reasonably modern construction and it is unlikely that this number would be so low.

Alongside these insulation measures, 397 people recorded having energy saving light bulbs in most of the rooms in their home – 55% of the total sample. There were 38 people who knew their homes had a BER rating but 21 of these did not know what their BER was. This may be very few people with a BER but is indicative of people potentially living in homes for extended periods of time – BERs are not usually obtained unless you are moving, renting or having upgrade works undertaken which include a BER rating. Of the 17 people who did know their BER rating, 9 people had a BER of C1 or higher, with 3 people having BER ratings of A2 or higher. Nineteen people who said they had a BER also stated they had improvements to make their home warmer in the last five years.

There were 36 people who received improvements to their home through the Housing Aid for Older People Scheme (less than 5% of the total sample), 26 (3.6%) through the Warmer Homes Scheme and 19 (2.6%) through the Home Energy Savings Scheme. A further 6 people received improvements through a combination of these Schemes. It is possible that people did not know the source of their improvements – the figures for beneficiaries of the Warmer Homes Scheme should be higher given the high number of potential respondents accessed through Energy Action. Forty-five people definitively stated that they had received improvements through local authority schemes, though this figure may be higher as other people mentioned getting grants for specific items. The 'improvements' listed also varied, and people referred to non-heating related improvements such as rewiring or downstairs facilities.

There was a high rate for having a smoke alarm (n=651, 90.2% of the total sample), however the numbers of people with carbon monoxide alarms was low (n=76, 10.5% of the total sample). It is possible that people are unaware that they have carbon monoxide alarms as these look similar to smoke alarms. Of the people who had carbon monoxide monitors, 58 used mains gas, two had LPG/bottled gas/gas tank as their source of central heating.

5.12 Heating Systems

The majority of the sample reported having central heating (n=597, 83.5%), while a small number reported they did not have central heating (n=112, 15.7%).[4] This is a slightly higher figure than identified at the national level in chapter two of 12.4% of older people in the Republic of Ireland not having central heating.

Over 64% of people with central heating used mains gas, while 160 people used oil (26.7%). Five people use gas and solid fuel and 17 people use oil and solid fuel, 11 people used solid fuel only as their central heating source. Thirteen people who stated they had central heating stated they used electricity, of these four people stated they used electric storage heaters as supplementary heat sources.[5] There were just six people who used

[4] There were a small number of alternative responses provided; four people did not use their central heating system although they have one. Two do not use their mains gas and instead use electricity, and the two other respondents do not use their central heating system for respiratory illness reasons. An additional person had their mains gas removed, and another person thought that gas was too dangerous to use.

[5] In general, if a respondent stated they had electric central heating and stated they had electric storage heaters this information was recoded as electric storage heating was not considered central

LPG/bottled gas/gas tank while one person used this source as well as listing oil, electricity and solid fuel for their central heating.

As gas and oil were the principal forms of central heating, these will be focused on. In addition to being the principal forms, these more mainstream forms of heating possibly provide greater reliability of information.

Table 5.8: Central heating details

Yes, I have a central heating system (n=597)				
	mains gas (n=381)		**oil** (n=160)	
Are you able to control the temperature of your central heating system?	**Yes**	**No**	**Yes**	**No**
	327 (85.8%)	34 (8.9%)	134 (83.7%)	15 (9.3%)
Boiler type	**Communal***	**Individual**	**Communal***	**Individual**
	51 (13.3%)	319 (83.7%)	3 (1.8%)	137 (85.6%)
Is your boiler serviced every year?	**Yes**	**No**	**Yes**	**No**
	299 (78.4%)	49 (12.8%)	97 (60.6%)	52 (32.5%)
Yes, water shortages during Dec-Jan affected my use of central heating	73 (19.1%)		38 (23.7%)	
Top 3 (and none) supplementary heating sources	1) Electric plug in heaters (n=115, 30.1%) 2) Solid fuel (n=18, 4.7%) 3) Electric plug in heaters and solid fuel (n=10, 2.6%) No supplementary heat source used (n=138, 36.2%)		1) Electric plug in heaters (n=38, 23.7%) 2) Solid fuel (n=34, 21.2%) 3) Electric plug in heaters and solid fuel (n=23, 14.3%) No supplementary heat source used (n=15, 9.3%)	

*Communal boilers are used in some Dublin City Council residences.

Therefore 36.2% of people who used mains gas did not use a supplementary heat source, whereas just 9.3% of people who use oil did not use a supplementary heat source.

The majority of respondents did not use an open fire to heat their home (76.2%). However, among those who did use an open fire, the type of solid fuel used in the open fires or gas/stoves/cookers was generally a mixture but coal and logs (wood or eco) were the commonly used.

heating for this survey. However, in these 13 cases caution was exercised as the impression was given that there was an electrical central heating system as well as electric storage heaters.

Fifty-five percent of people who answered the question on changing from an open fire if a grant was available stated that their solid fuel fire was not their main source of central heating. Despite non-reliance on open fires, there were a relatively high proportion of people who ensured that their chimneys were swept within the last two years (58.9%). Just 57 people stated they had either never had their chimney swept or that it was swept over two years ago.

Nobody who never had their chimney swept stated that they used solid fuels solely to heat/supplement a heating system in their homes. Seven people who did have solid fuel to help heat their homes and never swept their chimneys, also mentioned another heat source such as electric plug in heaters. Therefore it is possible that people who had never swept their chimneys had rarely, if ever, used fireplaces. Thus, there may not be as great a risk of chimney-fires as thought at first glance at the data. However, a comment revealed at least one chimney fire among the sample with the unfortunate outcome of leaving the resident with no central heating.

> ***I had solid fuel heating in my home up to last year. I no longer use an open fire because of a chimney fire in which the chimney was damaged. I cannot afford to replace the chimney, so I no longer have central heating that was run off the back boiler.***

5.13 Fuel deliveries

The majority of people who used oil had it delivered less than three times a year which potentially demonstrates careful budgeting. There appeared to be a relatively high number of people who paid for their oil by cash (45.6% of people who stated they had oil heating systems) or who possibly paid by cash;[6] which may be a security concern if people are keeping cash lump sums in their homes. Respondents also tended to pay for solid fuel with cash but as these would be in smaller quantities there may be less of a security risk.

5.14 Bills

The predominant use of mains gas for heating over the winter months is apparent when gas and electricity bills are compared for the winter months below. Although overall in the lower ranges, gas bills tend to be higher than electricity, although electricity bills are obviously more common among the entire sample as the non-heat energy source.

Table 5.9: Bi-monthly bills

	Gas bill x 2 months		electricity bill x 2 months
€0-50	32	€0-50	131
€51-100	87	€51-100	189
€101-150	55	€101-150	82
€151-200	55	€151-200	62
€201-249	40	€201-249	43
over €250	62	over €250	41
Don't know	18	Don't know	27

[6] Seven people stated they paid for their oil as 'one lump sum' or in 'instalments'.

Among the people who stated the cost of their electricity bill as being over €200 as well as mentioning they used a supplementary heating source (n=80), just 14 did not mention electric storage heaters and/or electric plug-in heaters as their supplementary source.

There were 391 people who save to pay their energy bills while 75 cannot afford to save. As a percentage of the total sample, this means that over half, 54% consciously had to save for their energy bills while 10.4% did not even have this luxury available to them; they could not afford to save. Nine people had their electricity/gas cut off in the previous 5 years due to delayed payment of bills. There were 16 respondents each who were in gas or electricity arrears. Surprisingly, just 7 of these people were in arrears in both, and just one of these respondents who was in gas arrears was one of the people who had their electricity/gas cut off in the previous 5 years due to delayed payment of bills.

Overall, the most common method of paying for gas and electricity was cash. This would indicate that people are either paying their bi-monthly bills in a post office, or they are paying a small amount off as a percentage of their pension at the same time as they collect these each week. The Household Budget Scheme could be particularly useful for these people to assist with their money management.

In terms of getting the best value for money, there was a low level of switching suppliers. Among those who did switch supplier, people who earned the most and least were the ones who tended not to switch. Whereas middle-income (for this sample) people were the most likely to switch – however overall people did not mention switching.

5.15 Cold weather behaviours and costs

Concern about costs

With regard to costs, respondents were asked if the price of heating their homes worried them, and also if they worried about being cut off. The discrepancy between these responses demonstrates that although worried, respondents were not concerned about being cut off; possibly because they will go without other expenditures to ensure that being cut off is never a possibility.

Table 5.10: What do you think about the price of heating your home?

I am very worried about the price	182 (27.1%)
I am somewhat worried about the price	236 (35.1%)
It is not something I think about	137 (20.4%)
I am not very worried	59 (8.8%)
I am not at all worried	58 (8.6%)

Table 5.11: Are you worried about your electricity or gas being cut off due to you not being able to pay your bill?

I am very worried	82 (12.3%)
I am somewhat worried	105 (15.8%)
It is not something I think about	149 (22.4%)
I am not very worried	120 (18.1%)
I am not at all worried	208 (31.3%)

As older people are debt averse they will pay their bills but may forgo other necessities – 322 people (51.1%) of people stated they did this over the winter period – to ensure they do not slip into arrears. This is evident in the low rate of arrears within this sample. The worry about the price could be that rising prices and a greater need to use a heating system through advanced age, deterioration of housing conditions and severe weather events, could mean less money for other areas of the household budget. There were just 64 people (9.8%) who stated they were both very worried about the price and very worried about being cut off. At the other end of the scale there were 17 people (2.6%) who stated they were very worried about the price but were not at all worried about being cut off. The comments section facilitated some articulation of how people coped:

> ***[in response to question 50] 'I am not at all worried' because, I know I'll pay it! Regardless of how many cuts I have to make in my personal budget. Food, leisure, pleasure – when it comes down to it, eat and heat are simple!***

Of the people who stated that they used their heating systems more during the cold snap a large majority (71%) were concerned about their bills because of this. Although people who earned the most tended towards being less worried than those on standard State pension payments levels, overall people at all income levels were worried about their bills due to the cold snap.

There were 56 people who stated that the price of heating their home was not something they thought about to something that did not worry them at all, who also stated that their winter bills were a concern. This may be attributable to the exceptional weather; people did not typically worry about their heating bills however the severe winter caused them to use their heating system excessively which would create concern. There can also be other concerns associated with heating systems, the following respondent stated that he/she had not serviced the gas boiler this year because "I can't afford it" and went on to state:

> ***Gas boiler is over 15 years old I worry about it breaking down. It's very expensive to get a new boiler.***

Poverty Indicators and keeping warm

The survey included the ESRI indicators of deprivation.
[7] According to this scale, lacking two or more items is indicative of consistent poverty. There were 488 people who answered 'yes' to nine items or less on this scale. However,

[7] The official Government approved poverty measure used in The Republic of Ireland is consistent poverty, developed independently by the Economic and Social Research Institute (ESRI). This measure identifies the proportion of people, from those with an income below a certain threshold (less than 60% of median income), who are deprived of two or more goods or services considered essential for a basic standard of living. The consistent poverty measure was devised in 1987 using indicators of deprivation based on standards of living at that time. The Government in 2007 accepted the advice of the ESRI to revise the deprivation indicators to better reflect current living standards and, in particular, to focus to a greater degree on items reflecting social inclusion and participation in society.

this result should be interpreted with some caution. There were 75 people who did not give any responses, and as this was a self-completed survey, people may not have answered all the questions in addition people may have felt certain questions did not apply to them. For example, some respondents could have stated 'no' to the item 'I can replace any worn out furniture' interpreting this as I do not need to replace my furniture. Other items that could have been interpreted ambiguously are the items around socialising and food – people may not do these listed for mobility and disability or isolation reasons. The more robust items could be 'I can buy new not second hand clothes' – 101 people said they could not do this. The majority of people stated they could 'keep my home adequately warm' (n=512), however 81 people said they could not. One person who had stated they could keep their home adequately warm wrote in the margins "at a very high price". Thirty-six people said they had to go without heating during the last year through lack of money; 18 of these people stated their income as less than €220 per week. However, the condition of respondent's homes and their debt aversion can be reflected in the fact that 13 people who stated they had to go without heating during the last year through lack of money earned €221-€450 per week, and a further 3 people earned in excess of this. Seventy-five people avoided cooking to save on gas/electricity in the last 12 months and 54 of these people earned €250 or less per week.

In total, 112 people stated needing assistance in paying their bills in the previous 12 months. The most common sources of help were friends or family – 51 people took assistance from friends and family alone, while a further 10 people received help from friends and family alongside another source. Credit Unions and/or banks were also commonly used.[8] Charitable organisations helped 21 respondents while community welfare officers' assisted 11 people and more worryingly 5 people used moneylenders. Some people did remark on their financial concerns:

Not enough income to live on

I am worried all the time in case I just grind to a halt financially

… like a lot of people on benefits, I've lost €16 pw in total, in the past 2 budgets and losing the Christmas allowance, while dealing with general increases in basic living expenses. The only way in which to cope has to be, economise in other ways. I go out less, I eat more frugally, basically I cope. I live from day to day – is that what 'a decent life' is supposed to be? (and there's worse off than me! I know)

Fuel Allowance

There was some confusion over the allowances generally, but the fuel allowance information could be double-checked – respondents were asked at the beginning of the

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[See: http://www.socialinclusion.ie/poverty.html#howcan accessed 22.08.2011]

[8] 24 people used them solely, 7 others used them alongside another source of help.

survey if they received this allowance, just 366 people said they did. Towards the end of the survey, respondents were again asked about the fuel allowance – how much of it they spent of fuel and if they got the additional winter payment. There were 430 people who stated they spent between all and less than half of their fuel allowance on fuel. Thus, a discrepancy of 64 people – although 44 people said they did not know how much of it they spent/did not spend any of it on fuel. This leaves 20 people unaccounted for.
The Fuel Allowance was a much needed payment with almost 85% spending all of it on fuel, but just 300 people were sure they received the additional winter payment of €40. However, this possibly shows a lack of knowledge about the categories of assistance received as anyone who got the fuel allowance automatically got this additional payment. The severe winter appeared to have particularly impacted on the importance of this allowance.

> ***During very cold weather it was necessary to have central heating on continuously day and night. The fuel allowance did not cover the extra cost of this.***

Given the information provided in the survey, it is not possible to definitively state if people were receiving their full entitlements and/or did not know what labels were assigned to the various State benefits. Again, considering the fuel allowance – it can be assumed that anyone in receipt of a contributory/non-contributory/ transition/ widow(er)/blind or invalidity pension who lives alone or with another person who would qualify in their own right should be receiving the fuel allowance. However, to receive this there cannot be savings or investments above €58,000 or a combined weekly household income of more than €100 above the maximum State pension for the individual's situation. In addition, people who lived with others may be providing income information based on themselves rather than the wider household. To demonstrate the numbers of people who did not know their entitlements or who did not know what they were receiving, Table 5.12 provides information on the household income and receipt of the fuel allowance (anyone earning, conservatively, below €220 should be received the fuel allowance). In addition, this Table also shows the income and fuel allowance receipt by one person households who should not have any additional income to disallow this allowance.

Table 5.12: Household income and fuel allowance for lone person households

Household income per week	Total sample	Fuel allowance	1 person resident income	1 person resident fuel allowance received
under €150	28 (4.1%)	15	24	12
€151-200	106 (15.6%)	52	99	51
€201-220	101 (14.9%)	62	94	58
€221-250	172 (25.4%)	110	163	105
€251-350	104 (15.3%)	61	75	46
€351-450	71 (10.5%)	32	18	3
€451-600	57 (8.4%)	18	13	3
€601-800	22 (3.2%)	1	4	
over €800	17 (2.5%)	2		
Total	678	353	490	278

Therefore, for at least the first three rows where the income level goes up to €220 – the first and second columns (highlighted yellow), and the third and fourth columns (highlighted green) should match. If a single person household earns under €150 per week they should definitely be receiving the fuel allowance unless there are extenuating, albeit unlikely, circumstances whereby they are disqualified through their savings and investments. Instead, half of the single person households with this income state they are receiving fuel allowance. It can be speculated that people were not aware of their entitlements or were not completing the survey correctly by mistake or through lack of knowledge.

I am just reaching old age pension. I don't know what other entitlements I can apply for.

I don't know what I am entitled to. Heating very bad as night storage heater is of no use as it does not heat for full day as it comes on at 11pm till 7 you would not think it was on and is a waste of money.

I need to check if I have all the info to my entitlements

The Smokeless Fuel Allowance[9] is an additional €3.90 per week paid alongside the Fuel Allowance, yet only 9 people out of the 21 people who reported getting the smokeless fuel allowance reported getting the main fuel allowance. Eighteen respondents who stated they receive the Smokeless Fuel Allowance also stated they spend all of their Fuel Allowance on their fuel.

[9] Will be abolished from September 2011.

In considering the most well-known benefit – the free travel pass, similar patterns emerge. There were 541 people who stated they received the free travel pass. However, this pass is given to anyone age 66 and over who is resident in the Republic of Ireland – it is issued automatically when you receive a State pension. Being conservative, it can be estimated by looking at the pension information and subtracting the people who receive any monies from a private pension only or transition pension, there should be at least 624 people receiving the free travel pass automatically. Despite this, information about the free travel pass was the entitlement that was recorded as the most frequently occurring, possibly because of being a physical rather than a virtual entitlement.

In a similar vein; just one person had a coin operated or debit card electricity meter, while 3 respondents said they had a smart meter. There were 35 people who said they had a prepaid meter for gas or electricity and none of these people responded to any combination of these responses. Therefore, these people were clear about their systems. However, there were 12 respondents who were not potentially entirely happy with these prepay meters; as 12 people who stated they had a prepay meter for gas/electricity also stated they would not be interested in getting a prepay meter. It is to be assumed that they are referring to the other source (gas/electricity) when they state this. However there may be other reasons why they did not want a prepay meter for their other energy needs. There were just 56 people interested in a prepay meter, and 3 people who would be interested in an additional meter and had one already. Just 2 people had meters for both gas and also electricity.

Based on percentages of the total sample, 72.3% (n=522 people) who recorded having a mobile phone, 96.2% (n=695) have a colour television and 85.7% (n=619) have a radio. There were 456 people who recorded having all three of these (63.1%).

Considering this high level of television and radio ownership it is unsurprising that 85% of the total sample watch or listen to the weather forecast everyday which has interesting implications for dissemination of cold weather information and appropriate responses for older people. When a cold weather warning is announced the principal responses are to stay indoors at home using the heating more than usual, and ensuring that there are adequate fresh and tinned food supplies in the home. These are behaviours which would indicate that public announcements are being followed.

Cold Weather Behaviours

In general, people were content with the temperature of their home (n=503, 74.3%), with 11 people (1.6%) stating their home was too warm in winter and 163 stating it was too cold (24.1%). However, this is self-rated, and there is no information available on the actual appropriate temperature of these homes. An individual could be living in cold conditions that they are accustomed to but their body could be under considerable thermal stress. Similarly, as previously discussed older people tend to be more positive when undertaking self-rating than objective indicators would otherwise state.

Respondents who stated that their homes were 'too cold' did not differ considerably from the larger sample in core demographics. However, it is interesting to note that of these 163, just 27 did not list having at least one chronic/long-term illness (16.5%) versus 24.6% of the total sample, potentially indicating the interactions between existing chronic illness

and cold temperatures. Similarly, arthritis was slightly more common among this 'too cold' sample[10] and over half listed having a disability (53.4% compared with the total sample of 37.1%). No one in the 'too cold' sub-sample with a mental health problem said they were 'never' lonely, while this applied for nine people in the wider sample. Household conditions showed some expected and statistically significant differences between the wider sample and this 'too cold' sub-sample; 72.2% of the subsample (versus 83.5%) reported having central heating, while 27.7% did not have an operational central heating system (versus 15.7% of the wider sample).[11] In addition, the experience of mould and damp in the home[12] (32%) and draughts[13] (57.1%) was more acute for the sub-sample. This sub-sample were also more likely to have had less money to spend on other necessities due to the cost of keeping the home warm in December 2010 (72.7%).[14]

During the winter, respondents tended towards keeping their heating on during the day time for at least 6 hours (63.9%), while almost 20% kept it on for between four and six hours. This echoed the length of time spent indoors over the same period; 88.8% of respondents spent most to all of the day inside their homes.
This potentially demonstrates that people were willing to use their heating systems in spite of concern over the cost, but they may have reduced the temperature on their central heating systems and had it on for longer to keep costs down.

Respondents were asked about their reactions to cold weather; people were most likely to keep warm by staying active indoors with the heating on, eating hot food and having hot drinks and using hot water bottles or electric blankets and using extra clothing layers and bed covers (see Table 5.13). Wearing additional clothing (as well as many other listed responses), though a good measure to provide additional heating, cannot be considered an adequate response to a cold indoor temperature. The body will still have to work harder to maintain heat in the extremities such as the feet, hands and head and therefore the body may be still under some thermal stress.

However, these could all be considered sensible responses to cold weather and potentially reflects well on the publicity campaigns for older people during the winter. Although there are relatively few respondents stating that their responses to cold weather include going to bed early to keep warm, heating fewer rooms in their homes and/or sleeping in the living room because their bedrooms were cold, there are enough for concern. Also concerning, are the number of people who went elsewhere to keep warm and save on heating costs. One respondent mentioned in her comments that the library and cinema were winter destinations for him/her to keep warm.

In addition to these, blocking vents, chimneys and drinking alcohol can have adverse health effects in terms of ventilation and air quality in the home for the former two, and the latter can actually decrease the body temperature and make cold-related illnesses

[10] Though not statistically significant 49.7% compared with the total sample of 42.6% [χ 2(1)=3.35, p=.067]
[11] [χ 2(1)=17.37, p<.001]
[12] [χ 2(1)=36.52, p<.001]
[13] [χ 2(1)=62.31, p<.001]
[14] [χ 2(1)=27.921, p<.001]

worse. The survey particularly warned[15] people that blocking their vents was not advisable, and the person who stated they blocked up their chimney volunteered this information, it was not a pre-populated category. Five people who stated they blocked their vents also stated they have a carbon monoxide monitor.

Table 5.13: Responses to Cold Weather

564 (78.1%)	I used my heating system/fire more than usual
486 (67.3%)	I had at least one hot meal everyday
406 (56.2%)	I drank hot drinks throughout the day
402 (55.6%)	I stayed inside my home
394 (54.5%)	I used extra covers on my bed
338 (46.8%)	I used a hot water bottle/electric blanket(s)
221 (30.6%)	I wore a coat or used a blanket indoors
216 (30%)	I kept active indoors
197 (27.2%)	I went to bed earlier to keep warm
150 (20.7%)	I heated only 1 or 2 rooms in the home
62 (8.5%)	I blocked vents
59 (8.1%)	I used the oven for additional heat
49 (6.7%)	I drank alcohol to keep warm
40 (5.5%)	I went somewhere else to keep warm and save on heating costs
21 (2.9%)	I slept in the living room because the bedroom was too cold
10 (1.3%)	I went for a walk/walked my dog/kept active outdoors (walking and gardening)
	used an electric heater (2 people), I was in hospital (3 people), none of these (2 people), I went to a relatives house (3 people)
1 person each	I wore more clothes, I wore gloves indoors, I have meals delivered to me, I went the complex day room, alcohol and smoking, blocked up my chimney, I was at work, I kept my heating on 24 hours 7 days a week.

Number of these cold weather actions taken

There were 15 listed actions (plus 'other') that respondents could have taken, and they were also provided with space to write in additional actions (see appendix 1, question 52). As there were few additional actions listed, the focus here is on the pre-populated list. Forty-one people listed none of these actions, while 184 people listed between one and three actions. The majority of people took between four and seven actions (n=358), while 139 people took between eight and thirteen actions. Therefore, in sum, beyond using the heating system more, cold weather behaviours could be divided into two principal categories:

[15] Alcohol was provided as a prompted response without warnings, it is excessive consumption that could prove more problematic and this nuance could not be expressed in a survey footnote. People who are drinking excessively are most likely to do this irrespective of the weather.

1. Eating hot food and having hot drinks. These were the most commonly employed techniques to cope with the cold weather.
2. Using extra layers; this included extra clothes indoors, blankets, bed covers, hot water bottles/electric blankets.

As mentioned, although it did occur, spatial shrinkage was not a very common feature in this sample – gauged by the responses to heating fewer rooms and sleeping in the living room. It should be noted however that of the 21 people who sleep in their living rooms, 3 live in bedsits. Although almost 30% of the total sample mentioned keeping active indoors, given that this sample appeared to be reasonably mobile, this seems to be a low percentage. At least one respondent mentioned doing exercises that she/he had been taught in a day centre.

Finally, although certain responses may seem like wise ploys, such as using extra bed clothes, for some older people in this sample this may be not only a response to a dip in outdoor temperatures, but also a response to poor housing conditions.

> ***[why is the home too cold?] Because the cold comes through the walls… On top of my bed clothes I wear 2 jackets in bed and I cover my head and ears. I wore a cap and cover my ears in bed. I wear socks in bed. All day and night [heating is on] It's very hard to explain but your hands and outside the blanket is fresing [freezing] cold… I go to bed at 9pm and in the day all day indoors [during the winter]***
>
> ***The living room is freezing. I wear 3 duvets all over the weather. The storage heaters are useless with very high bills and no heat.***

5.16 Key Findings

It must be reiterated that these results are not representative of the national picture but rather are the results of a sizable unrepresentative sample of older people in the Republic of Ireland. However, there was a geographic spread across the country and older age cohort providing some diversity in the sample. In addition, this research was facilitated to access people in rented accommodation – local authority, voluntary and cooperative. This was a great advantage rather than focussing only on home owners who would comprise the majority of older people in the Republic of Ireland, possibly a more nuanced view was obtained, albeit people in the private rented sector were not accessed. The information obtained from this work should be of value and use to those working with older people (statutory or voluntary) and should help to inform policy.

- The majority of the sample respondents were living on incomes at the State pension-level, and this required some frugality and careful budgeting with regard to heating homes.
- Older people were not living in over-sized homes, and there may be a greater concern around build quality than the unit footprint.

- Damp, mould and draught levels featured in people's homes, and given their incomes, they may not be in a position to improve these situations.
- 24.1% of the sample described their homes as 'too cold'. These people tended towards describing a poorer housing condition and were more likely to have forgone other necessities to pay their energy bills.
- 15.7% of the sample had no central heating – slightly more than the national picture as stated in chapter two.
- Storage heaters appeared to be both common and inefficient.
- There was a tendency to deal with cash for bill payment.
- Over half the sample needed to save to pay their energy bills while over 10% could not afford to save.
- People will not forgo heat due to financial pressure although 71% worry about their bills, and they may forgo other household necessities to pay these bills.
- Common cold weather behaviours included staying indoors with the heating on, consuming hot goods and using extra layers. Some concerning cold weather behaviours did present, but not in great numbers.
- Loneliness appeared to be a problem, particularly for older people living alone.

5.17 Summary and conclusions

Overall, the sample of respondents, though not representative were not entirely dissimilar from the national picture as presented in chapter two. The majority of older people were homeowners receiving pension incomes at the State-level, who were living alone in small residences built between 1941 and 1980 which in the main had central heating. However, over a quarter of respondents were local authority tenants and almost one-fifth were residing in the voluntary and cooperative sector. In general, respondents had good social networks and appeared to have good neighbours and relatives who could help them out when needed. This informal network could not be entirely relied on during severe weather, when younger people would possibly also have difficulty getting around. In addition, having good social networks did not preclude the experience of loneliness with over 60% of the sample stating they were lonely occasionally to all the time – the most lonely were people living alone. The severe weather did appear to cause concern for some older people, and it is possible that of the 97 who fell outdoors in the preceding six months that this was attributable to the ice. Despite this, almost the entire sample who answered the self-rated health question stated their health as fair to good. This was against the backdrop of over 75% reporting a long term health problem. Arthritis, diabetes and circulatory disorders were the most frequently occurring – and over half reported that their long term health condition was worse in winter time.

Dampness, mould and draughts were not uncommon among the sample, and supplementary heat sources were popular, in particular electric plug-in heaters. Solid fuel was less common than might have been expected even when apartments/flats are accounted for, and was not necessarily used to heat the home. Reasonable maintenance was kept of systems; with boilers regularly serviced and chimneys swept. People who had oil fired central heating tended towards using supplementary heating sources to a greater extent. Most of the sample who did not have central heating, had storage heating and this was not well-regarded in the comments that were made.

A similar pattern emerges in terms of knowledge about insulation and energy saving measures in the home as emerges among knowledge about entitlements. Respondents were unsure, or perhaps did not have, a great deal of knowledge about items that were not tangible. Respondents knew about the free travel pass, energy saving bulbs, double glazed windows and attic insulation, but were more uncertain about the fuel allowance and other benefits, as well as pipe and wall insulation. This need for something tangible mirrored the method through which bills were paid – cash is the most common method of payment for all energy related bills which would lead to the conclusion that people are paying small amounts in their local post offices with each pension collection. For people with oil fired central heating this could be a concern, with larger amounts of cash being stored as most people with oil only received 3 or less deliveries per year.

There appeared to be a high level of concern about severe weather and the impact this would have on heating bills. Heating was not something older people seemed willing to sacrifice, and appeared to be using their heating systems for the same amount of time as they spent in their homes during the winter. In lieu of this, over half were cutting back on other necessities in their household budgets to ensure that their bills could be met. Although this affected people with lower incomes to a greater extent, the complexity of fuel poverty is evident in the fact that respondents with higher incomes also worried; indicative of the condition of homes and the unwillingness and inability to incur debt.

In response to cold weather, older people used their heating systems more, despite concern about the costs, consumed hot products and wore more clothes and used blankets. The majority of people took between 4 and 7 cold weather actions such as these, with a much smaller number of people demonstrating spatial shrinkage.

Despite this just under one-quarter of the sample reported that their homes were too cold with the majority of people claiming satisfaction with the household temperature. Housing conditions and health status for these respondents rating their homes as 'too cold' were significantly poorer than the general sample.

Therefore, it can be concluded that older people in this sample are responding to the public warnings about how they should behave in cold weather, and there is some evidence that younger people are also responding to encouragements to check on older neighbours. Overall, older people in this sample appear to be coping well; but they are subject to worry and a sizeable proportion inhabit homes that are not maximising current knowledge about insulation and efficiency.

There are certain elements that are outside older people's control; fuel prices and the quality of the housing stock. There is also the possibility that older people are down-playing their concerns and situations – evident in their health data and the information they give about their homes while also in the main stating they are happy with the temperature.

CHAPTER 6

Analysis of temperature data from data logging thermometers

Authors: Eugene Monahan & Patrick Goodman

6.1 Introduction

This investigation was undertaken subsequent to the primary research on the impact of cold weather on older people. Unlike the other strands of the research this sample represents information gathered from a small number of sites within a specific geographical area. This part of the research was in no way a comprehensive all-island study and was only intended to be a pilot project.

Unlike the questionnaire aspect of the project, this requires that we have knowledge of where the thermometers are, so that they can be retrieved for analysis, and therefore has more confidentiality issues associated with it. Rather than embark on a full scale monitoring of temperatures and humidity in dwellings of older people, it was decided to conduct a small pilot study to test the feasibility of the equipment and the information generated, which it is proposed will be used for a larger scale follow on study.

The thermometers were kindly sponsored by a grant from the Sustainable Energy Authority of Ireland (SEAI).

The outcomes from the temperature monitoring and relative humidity and dew point[16] monitoring which was conducted at 13 local authority senior citizens sheltered housing units within the Dublin area, are presented in this chapter. The results are presented in both table and graph outputs. The results of this study give us an indication of the temperatures, relative humidity and dew point of the housing environment in which the occupants are living over a period of time and how these parameters fluctuate within that period. For the purposes of this study we will focus on the temperature results.

Overall the indoor temperature results were satisfactory, being above 15°C all of the time in all units monitored, with the exception of site number 2. However it must be considered that these readings were taken during the spring/summer months. The limitations of the survey are obvious in that it was a small sample taken from a specific geographical area and at a time of the year when outside temperatures are at their highest. In addition the placing of the loggers in occupied homes meant it could not be guaranteed that loggers would not be interfered with and therefore results affected.

6.2 Research design and methods

The research was carried out in 13 local authority senior citizens sheltered housing units within the Dublin area. All units surveyed were within sheltered housing complexes which varied in age, design and heating systems. The units surveyed within each complex were either 1 bed or bedsit.

[16] In short, the dew point is a temperature at which the air becomes saturated.

The information was gathered using data loggers which measured temperature (°C), relative humidity (%) and dew point (%) The logger used was the OM-EL-USB 2 Series pictured below.

Figure 6.1 Data Logger

The loggers were programmed to record temperature (°C), relative humidity (%) and dew point (%) at 30 minute intervals. Once programmed the logger was placed in each residence to be surveyed. In the case of a bedsit unit, the logger was placed in the bedsit area and in the case of a 1-bed unit the logger was placed in the main living area or the room most frequently occupied by the tenant. The tenant in each case was requested not to interfere with the data logger.

The temperature (°C), relative humidity (%) and dew point (%) parameters were monitored over a long period of time, as continuous monitoring was necessary to show the ranges in readings over the period. The period of monitoring varied between 3 and 4 months depending on the unit surveyed.

When the data loggers were removed from the surveyed units, the recording function was stopped and the data collected was then downloaded and exported into Microsoft Excel. Once the data was exported to Excel only the readings recorded within the period the loggers were in the units was analysed.

6.3 Results

The results for the mean, maximum and minumum values for the parameters measured at all 13 sites is presented in Table 6.1 below. The full set of data for 7 of the sites is presented below in graph form. As stated above for the purposes of this study we will focus on the temperature readings.

The logger was set to record the temperature (°C) at 30 minute intervals over a period of 3-4 months depending on the site surveyed. The recording was carried out between April and August 2011. The logger has a temperature range of -35 to 80°C and an accuracy of

±0.5°C. The logger has a memory of 16000 temperature readings and a battery life of 1 year.

Table 6.1: Results of readings for temperature, relative humidity and dew point for all sites

	Temperature °C				Relative Humidity %			Dew Point %		
	Mean	Max	Min	Range	Mean	Max	Min	Mean	Max	Min
Site 1	18.9	23	16.5	16.5-23	65.4	84.5	47.5	12.3	19.3	6.7
Site 2	23.9	26	7.5	7.5-22.9	49.8	64.5	41.5	11.9	15.6	-3.5
Site 3	19.8	22.5	16.5	16.5-22.5	58.7	77	44.5	11.4	17.3	6.2
Site 4	20.4	23	17.5	17.5-23	54.6	67.5	40.5	10.9	16.5	5.3
Site 5	23.8	30	18.5	18.5-30	44.9	60	25.5	11.0	16.8	4.5
Site 6	21.	25	17	17-25	53.4	70.5	35.5	11.0	16.6	4.7
Site 7	21.3	27.5	18	18-27.5	53.	81	33	11.3	21.8	4.1
Site 8	22.4	24.5	19	19-24.5	52.1	68	35	12.1	17.1	4.5
Site 9	21	29.5	18	18-29.5	54.6	80.5	33.3	11.4	18.5	5.6
Site 10	20.0	22.5	18	18-22.5	73.8	85.5	56	15.2	18.8	9.4
Site 11	21.3	26	17	17-26	56.5	75.5	43	12.2	17.2	6.8
Site 12	19.9	32.5	15	15-32.5	57.4	82.5	27	11.1	17.4	2.1
Site 13	20.9	25.5	18	18-25.5	53.1	76	33	10.0	17.7	4.1

The average temperature for each site surveyed varied from 18.9°C at site 1 to 23.8°C at site 5. The differences in average temperatures recorded between sites 1 and 5 may be partially explained by the fact that site 1 was built over 30 years ago whilst site 5 was built 2 years ago and would have been constructed to required energy rating standard. In general it was found that the higher average tempertures were recorded at the more recently constructed sites. Sites 2, 5 and 8 had the highest average temperatures recorded and were all built in the last 2-3 years.

The highest recorded temperature was 32.5 °C at site 12. This is looked at in more detail in figure 6.8. The lowest recorded temperature was 7.5 °C at site 2. This does not make sense but it may be the case that the logger was interfered with by the occupant. The loggers were placed in locations where it was hoped they would not be disturbed and the occupant was requested not to interfere with them. The lowest temperature recorded excluding that at site 2 was 15 °C at site 12.

Table 6.2: Data logging period for all sites surveyed

Site 1	15/04/11-9/08/11	**Site 8**	20/04/11-09/08/11
Site 2	28/04/11-11/08/11	**Site 9**	07/05/11-08/08/11
Site 3	14/04/11-09/08/11	**Site 10**	07/05/11-09/08/11
Site 4	19/04/11-10/08/11	**Site 11**	07/05/11-09/08/11
Site 5	19/04/11-10/08/11	**Site 12**	07/05/11-09/08/11
Site 6	20/04/11-09/0811	**Site 13**	07/05/11-16/08/11
Site 7	05/05/11-16/08/11		

Despite this being a small sample there was quite a lot of variance between sites monitored. It is evident from looking at the graphs for sites 1, 2, 3 and 10 that the temperature did not significantly fluctuate but sites 5, 9 and 12 do show significant changes in temperature over the period of monitoring. Site 12 in particular shows both significant fluctuations in temperature and a large range in temperature with the maximum recorded value 32.5ºC and the minumum value 15ºC. It is difficult to determine the reason for the significant variance in temperature at site 12 as we are not familiar with the occupant. However it may be that the temperature is being significantly affected by the heating being turned on and off.

Figure 6.2: Temperature, relative humidity and dew point readings for site 1

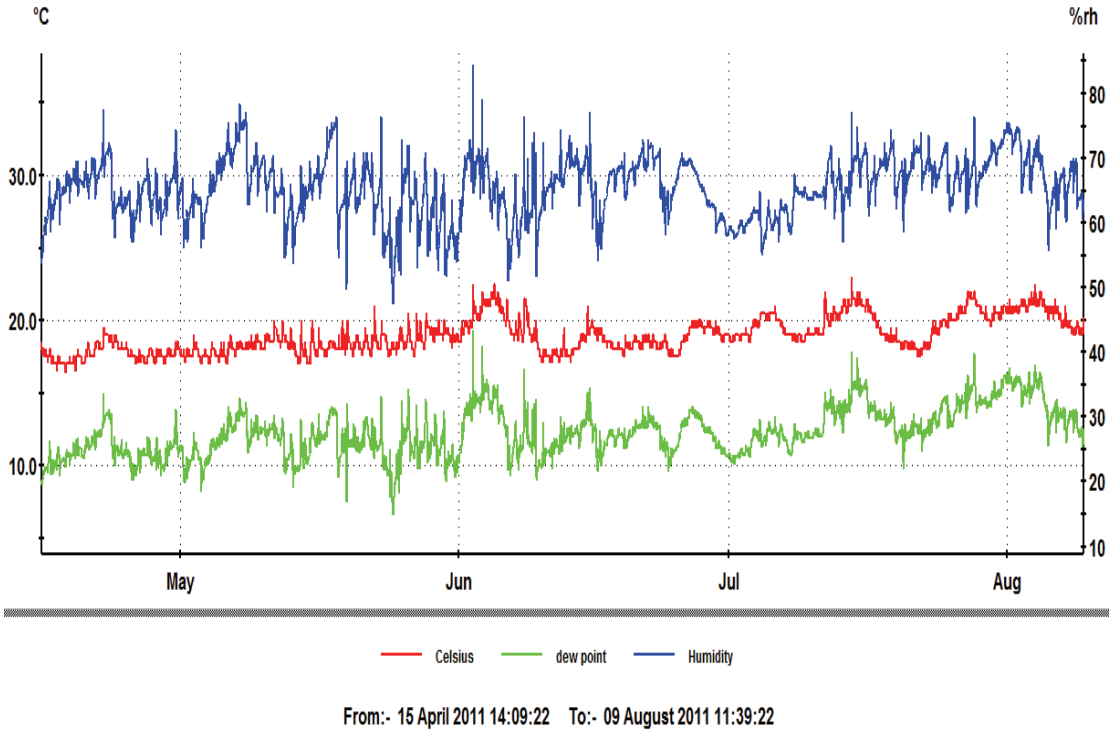
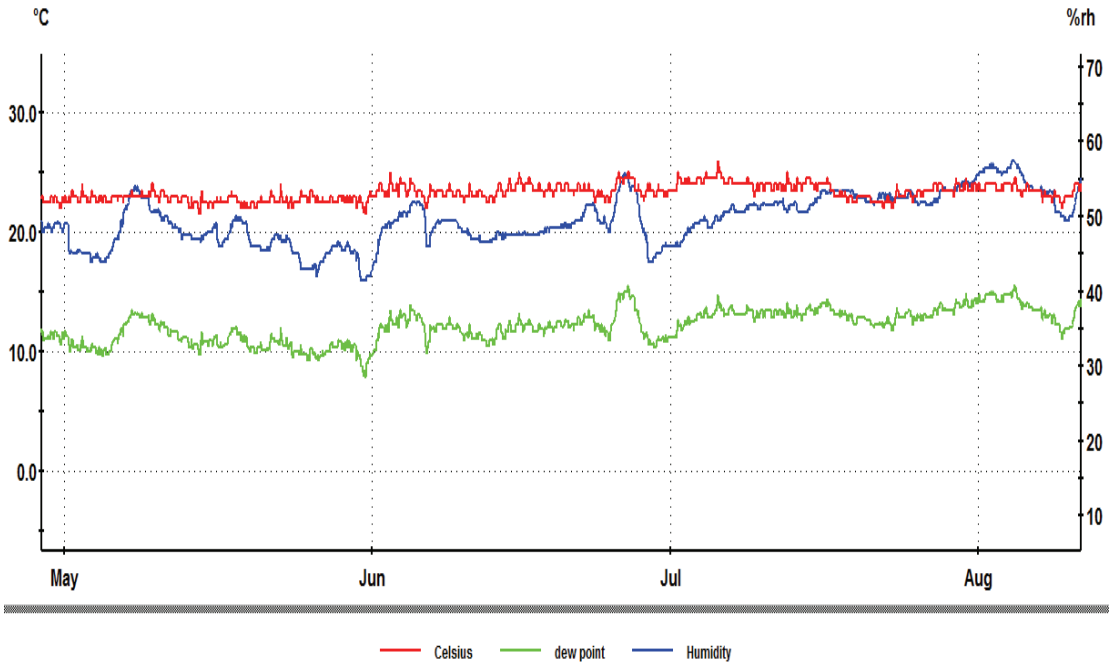
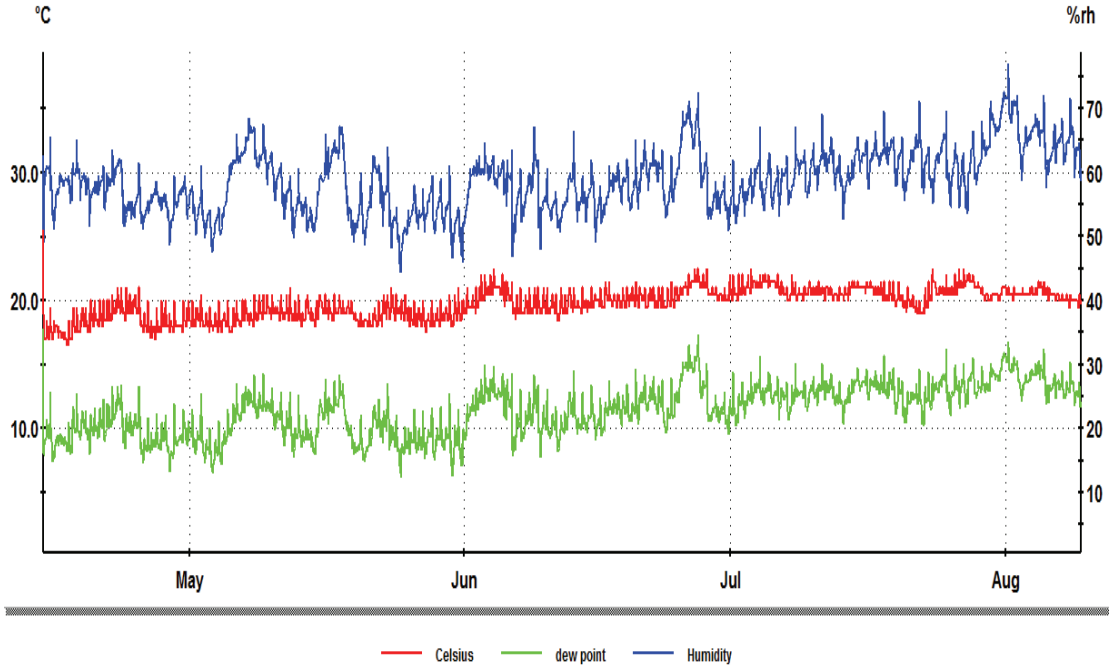


Figure 6.3: Temperature, relative humidity and dew point readings for site 2



From:- 28 April 2011 16:40:03 To:- 11 August 2011 09:10:03

Figure 6.4: Temperature, relative humidity and dew point readings for site 3



From:- 14 April 2011 13:09:03 To:- 09 August 2011 12:39:03

Figure 6.5: Temperature, relative humidity and dew point readings for site 5

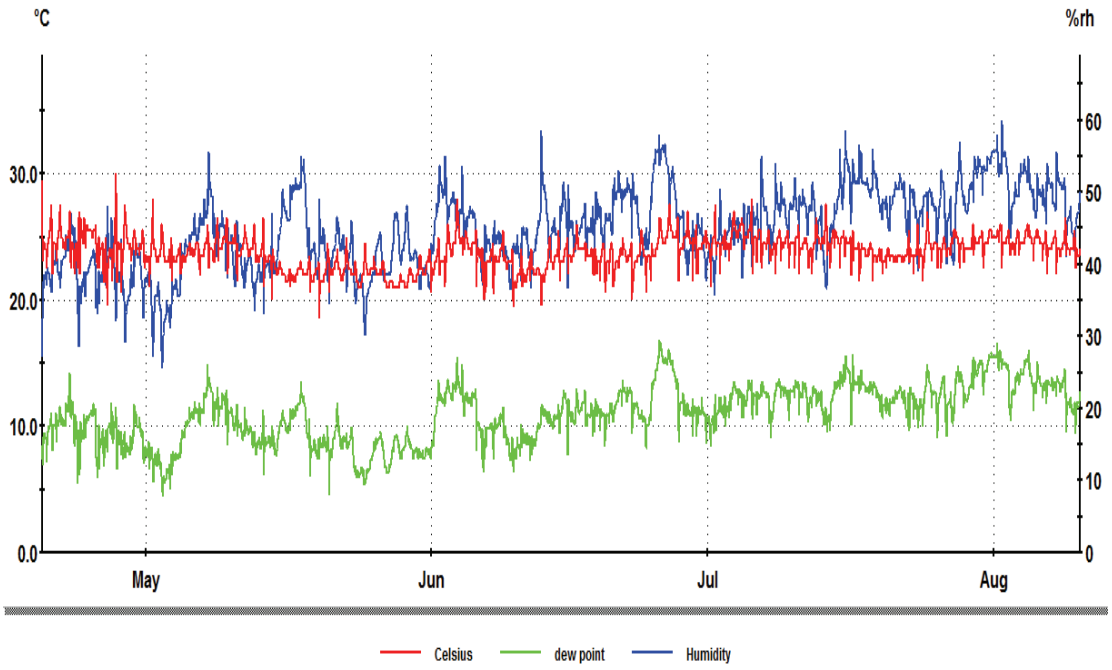


Figure 6.6: Temperature, relative humidity & dew point readings for site 9

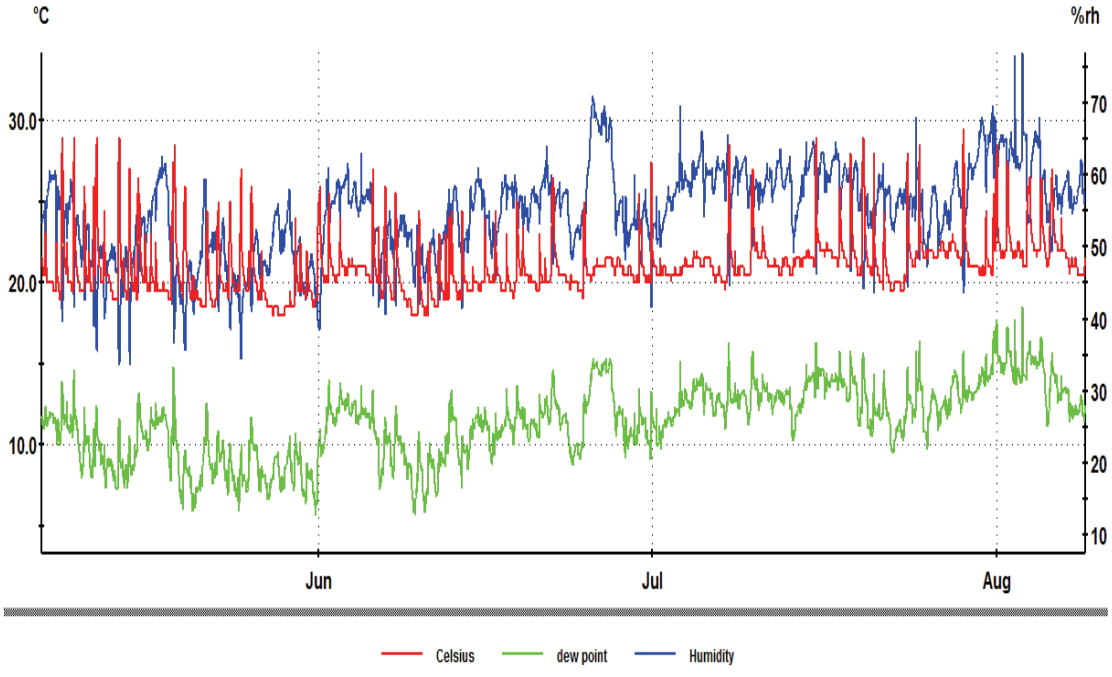


Figure 6.7: Temperature, relative humidity & dew point readings for site 10

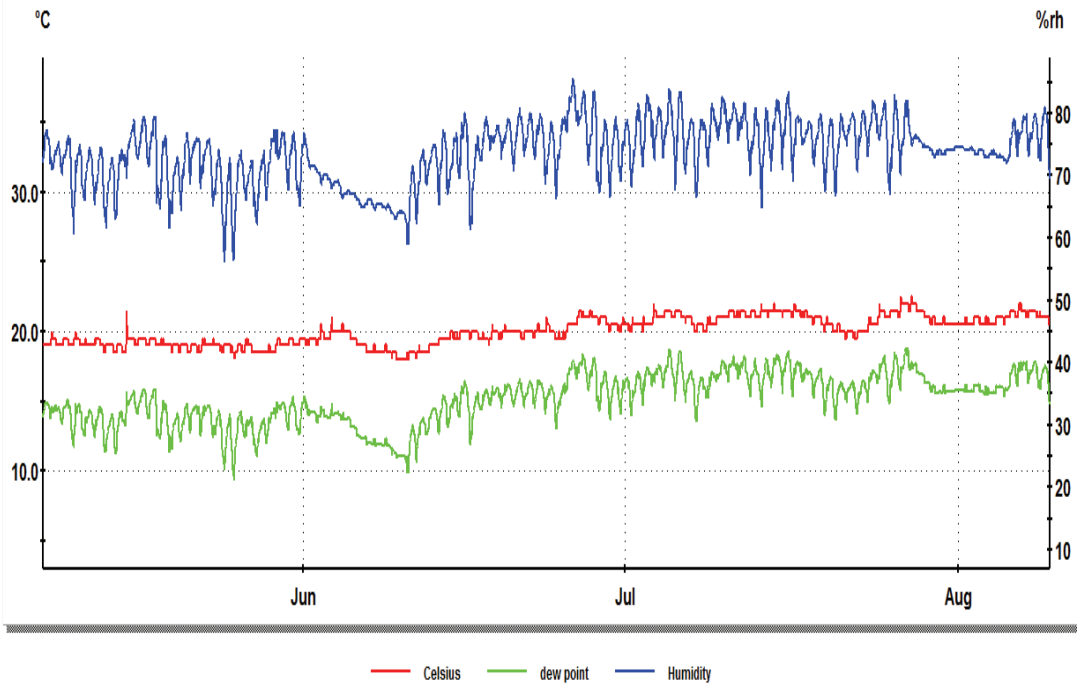
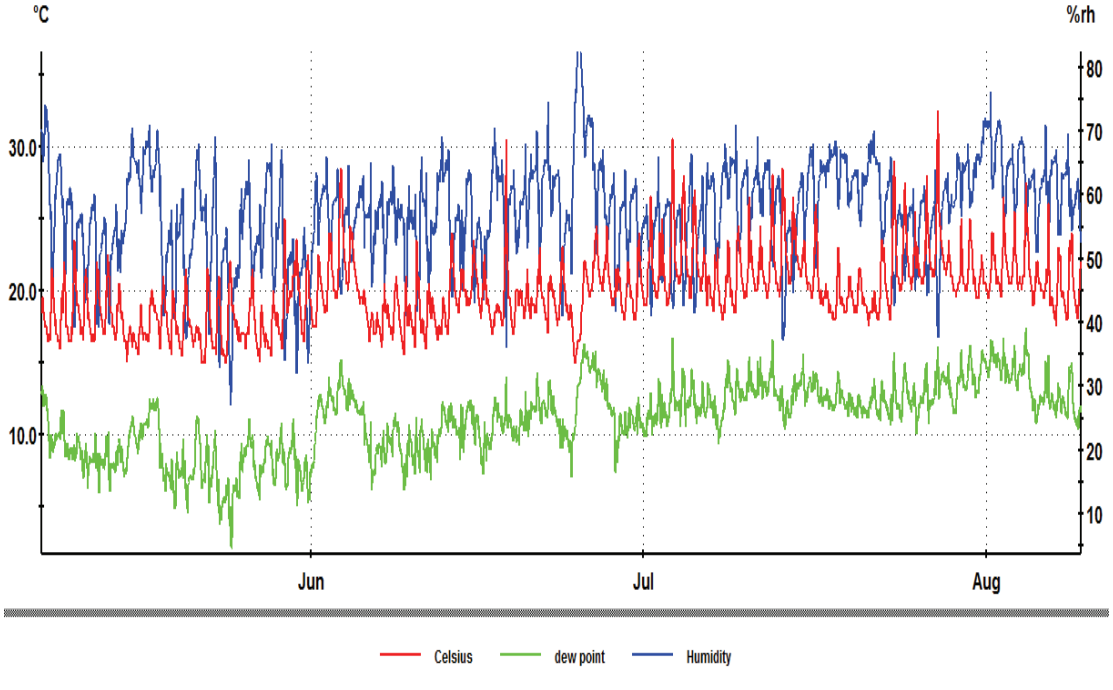


Figure 6.8: Temperature, relative humidity & dew point readings for site 12



6.4 Conclusions

The World Health Organization (1984) *The Effects of the Indoor Housing Climate on the Health of the Elderly* states that an indoor environment between 18ºC and 24ºC offers little thermal threat to appropriately clothed individuals. However it has been recommended that dwellings inhabited by older people should be 2-3ºC higher than for young people. Whilst based on the WHO recommendation these temperatures recorded at the sites surveyed would appear to be reasonably adequate it must be remembered that they are referring to recommended ambient temperatures during winter.

In truth we cannot draw too many conclusions from this survey with regard to the average ambient temperatures recorded, as a newly built house constructed to the current energy efficiency standards could potentially maintain an average ambient temperature within the recommended range whilst using very little heating during the summer months.

It can be concluded from the results that people are reacting differently to the outside weather conditions. In some cases the temperture remains relatively constant while in other sites the temperature appears to fluctuate significantly. Whilst the temperatures appear to be affected by the age, design and construction of the building, the habits of the occupants also seem to have an impact on the variances in the temperatures recorded i.e. the degree to which they are occupying the house and the degree to which they are using their heating.

6.5 Recommendations

This was a pilot study, but it has clearly demonstrated the usefulness of the equipment and that it can play a role in providing quantative data on temperatures in dwellings over a long period of time.

The Large Analysis & Review of European Housing and Health Status (LARES) was carried out by the WHO in a number of cities throughout Europe between 2002 and 2003. *The LARES survey of the WHO Regional Office for Europe* (2007) identified indoor temperatures as one of the most prominent housing issues. A substantial amount of the surveyed population reported frequent problems in all seasons with cold temperatures, although 47% of all households report too cold temperatures in winter and/or the transient season.

It is clear from LARES that the problem of cold temperatures in the home is not confined to any particular season but that it is more prominent during the winter. Overall it would be recommended that a more comprehensive survey should be carried out. The survey should cover various housing stock including private, local authority, voluntary and private rented. The survey should cover a larger geographical area, should be ideally carried out during the winter and for a mimimum period of 3 months. The monitoring should also include relative humidity and dew point to give a greater indication of the overall impact on the health of the occupant and the housing and health link.

In Britain significant changes in indoor temperatures have been noted over time. The average temperature inside the home during the winter has risen from 12°C in 1970 to 18°C in 2006. The average external temperature however, has remained relatively constant over the same period. These changes are thought to be associated at least in part with the installation of more efficient and extensive heating and insulation (Uttley et al, 2008). It

would be recommended that a study should include obtaining the external temperatures from Met Eireann over the period of monitoring and cross-referencing these with the indoor air temperatures.

The UK's Warm Front evaluation looked at temperatures in the home before and after retrofit. Prior to retrofit, householders maintained daytime temperatures of around 19°C and 17°C in living rooms and bedrooms respectively. After retrofit, temperatures increased to 21°C and 20°C in living rooms and bedrooms respectively. Even so, post-retrofit temperatures lower than 16°C prevailed in 21% of living rooms and almost 50% of bedrooms (Oreszczyn et al, 2006). This shows the importance of knowledge of both the housing surveyed and the occupants. It is therefore recommended that in order to fully utilise the data collected and develop links with potential fuel poverty and health impacts, it will be necessary to collect or have access to data relating to the housing surveyed and the occupants.

CHAPTER 7

Discussion, Conclusions and Recommendations

Authors: Noëlle Cotter, Helen McAvoy, Patrick Goodman

Fuel poverty is typically described in terms of the confluence of three factors; fuel costs, household income and the energy efficiency of the home. Chapter two has clearly demonstrated a 'perfect storm' of these factors for older people. Energy prices are rising while social transfers are being reduced/stagnating and many older people do not have sufficient income to make their homes more energy efficient.

Older people tend towards residing in older properties – most likely in the homes in which they lived all their adult lives. These properties by virtue of their age are less likely to have modern insulation and other efficiency measures installed. In addition, as older people both in Northern Ireland and the Republic of Ireland are mainly owner occupiers, the burden of home maintenance must be absorbed into their household budgets. In addition, the tendency for older people to be sole occupiers who may spend long periods of time in their homes does not lend to energy economies of scale. In other words, a home will need to be heated to the same level irrespective of the number of occupants, in particular irrespective of the number of occupants with an income. This was echoed through chapter five where a married couple particularly commented that they would be far worse off if they were on their own in terms of their energy costs. All of these factors progressively worsen through the age cohorts, with the older-old (age 80+) living in the oldest properties which are not well-insulated and lack central heating.

Overall, older people are more likely than the general population to experience at least one chronic illness, and may also have at least one disability as evident in chapter five. Therefore, older people may be more likely to be housebound to some extent and vulnerable to the effects of cold temperatures through aggravation of existing conditions. The effects of cold homes are demonstrated in chapter four in terms of excess winter mortality, with people over age 65 more likely to die in the weeks following a cold snap with a particular emphasis on cardiovascular disease, respiratory disease and stroke. This is particularly worrying given the preceding two severe winters of 2009/10 and 2010/11.

EU SILC data (CSO, 2010) demonstrates that the percentage of all people who state they have gone without heating at some stage in the last year has consistently risen between 2007 and 2009. This also holds when two person and single person older households are extrapolated. This potentially shows that there is a cohort of older people who are not managing on low incomes even with economies of scale.[17]

[17] All people 'gone without heating at some stage in the last year' – 6% (2007), 6.3% (2008), 7.3% (2009). One adult over age 65 households – 5.5% (2008), 7.2% (2009). Two adult households where at least one adult is over age 65 – 3.5% (2008), 4.2% (2009).
For the indicator 'unable to afford to keep the home adequately warm', one adult over age 65 households – 4.3% (2008), 5.1% (2009) and for two adult households where at least one adult is over age 65 – 3% (2008), 2.5% (2009).
For more detailed information on EU SILC see chapter two.

Evidence from survey research documented in chapter five supports the national data discussed in chapters two and four, but it should be emphasised that, throughout, this data is not referring to the majority of older people. Research outlined in chapter five also supports recently released data from the CSO[18] which generally provides an optimistic picture for older people in comparison to the total population. Older people appear to be coping well in response to these latest winter cold snaps on the island of Ireland. Older people are staying indoors with their heating systems in use, they are wearing more layers indoors and being mindful of eating hot food and having hot drinks. However, it is a concern that over half (51.1%) of the sample in chapter five are going without other necessities such as food or clothing in order to pay their energy costs. This appears to be reflected in their worry about energy prices, but lack of concern about being cut off. Older people may be debt averse and understand the importance of keeping warm so therefore other areas of the household budget may suffer in order to keep the home at an acceptable temperature. Warm, but at what price?

From health and ageing policy perspectives the research presented in this report has many important findings. A key element of current ageing policy is the importance both to the individual (and potentially to the Exchequer) of ensuring that people in Ireland can 'age in place'. In other words, that they are able to remain in their own homes for as long as feasible. Therefore, rather than extending life expectancy alone, there is also a need to ensure quality of life throughout these extended years. Indoor temperature, influenced by the quality of the housing stock and efficiency (and presence) of a modern central heating system, is essential to ensure a reduction in excess winter mortality and in assisting better management of chronic conditions. Aside from physical health, good mental health is influenced by home environment. Older people may become socially excluded through diversion of their incomes to keeping warm rather than being used as part of their social participation in clubs or other groups. In addition, the stress and worry of receiving an energy bill for debt-averse older people may have consequences for mental health. Although beyond the scope of a report on fuel poverty, loneliness was a key finding of the survey research and echoes recent findings from the Older People's Commission (SVP, 2011).

Key recommendations from this research are outlined below, however what may be most important for the current generation of older people, as well as future generations, is the improvement of the national housing stock. Ireland has experienced the largest expansion of its housing stock over the Celtic Tiger era that is unlikely to be repeated. It is clear from the figures presented in chapters 2 and 5 that the construction boom did not impact on housing that older people tend to currently inhabit. However, for the housing units that were constructed, this housing stock must be maintained at the most robust and regulated (and implemented) level of building standards to ensure that older people in the future age in energy efficient dwellings. With regard to existing stock, retrofitting would have numerous benefits not only for the current householders, but also for the depressed construction industry, the housing stock into the future, our reliance on imported fossil fuels, as well as for compliance with international carbon regulations. Reliable data on the living conditions of older people, particular in the Republic of Ireland,

[18] http://www.cso.ie/releasespublications/documents/silc/2009/elderly20042009.pdf [accessed 5 October 2011]

is still limited and this research was able to demonstrate through a small pilot project that the temperature and humidity conditions of the home can be monitored with relatively inexpensive and unobtrusive equipment. This shows the scope for a National House Condition Survey analogous to those in the UK, and may be particularly timely given the sudden ceasing of construction on this island. This survey, and any other future surveys, should be particularly cognisant of the potential problems with using utility bills/arrears and self-rated measures for assessing the experience of fuel poverty. However, establishing a baseline picture is not enough; certain actions will need to be taken immediately to ensure that, as stated by Taoiseach Enda Kenny, that the Republic of Ireland will be "the best place in which to raise a family and grow old with dignity and respect"[19] and in the context of the recent appointment of a Commissioner for Older People in Northern Ireland to "deliver a strong independent voice for older people" (Northern Ireland Programme for Government, 2011).[20]

Recommendations:

- Addressing fuel poverty among older people should represent a distinct priority within fuel poverty policy and across the full range of programmes.

- Reducing fuel poverty in the population is an important component of healthy and positive ageing. Heating the home easily and without undue hardship can facilitate people to stay healthy, preserve their independence and stay living in their own home as they age. It is therefore also good value for money.

- Improving the housing condition of older people's homes to a level comparable with the rest of the population could form an immediate priority action within national policies relating to housing, fuel poverty and energy efficiency.

- Policy commitments aimed at ensuring that older people are at least as likely as the general population to have central heating should be considered, and could be monitored through the Census data.

- In order that fuel poverty policy in the Republic of Ireland be evidence-based and targeted to those most in need, up-to-date data on older people's household budgets and house condition is urgently required.

- Health policies aimed at preventing and better managing chronic disease have been recently developed in both jurisdictions. Consideration should be given to the role of tackling fuel poverty for people with chronic disease or at risk of chronic disease in order to deliver optimal outcomes.

- The development of a standardised tool to assess whether an older person is at risk from a cold home environment is recommended. The tool could then be used

[19] http://debates.oireachtas.ie/dail/2011/07/05/00004.asp (accessed 5th October 2011)
[20] http://www.peterrobinson.org/MainNewsArticles.asp?ArticleNewsID=3831 (accessed 5th October 2011)

across the full range of services interfacing with older people (for example social and health services, housing, local authority).

- The EU-SILC indicators of fuel poverty in the Republic of Ireland may under-represent the scale of fuel poverty experienced by older people and should be interpreted with caution in policy development.

- In Northern Ireland, Liddell et al (2011) have developed measures for severe fuel poverty which could assist in identifying those most in need of home interventions.

- Fuel poverty among older people should be understood in the context of the overall household budget. The 'opportunity cost' associated with spending less on food or other necessities in order to heat the home needs to be better quantified and understood.

- Older people should be encouraged and facilitated to access their full income entitlements and social protection benefits and packages, particularly those relating to fuel and heating.

- Full explanations of heating costs and how to use timers and get the most out of energy sources should be a priority for service providers.

- Older people are spending a lot on heating highly energy inefficient older dwellings ('heating the sky'). Tackling fuel poverty among older people will contribute significantly to improving the energy efficiency of the domestic housing sector at national level, and assist in meeting climate change targets.
- Single person households irrespective of the age of the householder should form a specific focus in fuel poverty policy.

- The long-term health and social impacts of fuel poverty among older people could be suitably explored through longitudinal studies of older people with a view to informing policy and cost-benefit analyses.

- Reviews of income supports relevant to older people living alone occurring as part of national Budgets should take into account their particular vulnerability to fuel poverty.

- Reviews of income supports for older people in general should take note of their reliance on State supports to keep them out of income poverty.

- Consideration should be given to the adoption of a minimum acceptable energy efficiency standard for older people's housing to be applied across all housing sectors.

- Geo-coded data from Census 2011 (Republic of Ireland and Northern Ireland) could be mined to direct interventions and resource to areas with low levels of central heating, older housing and high numbers of older people living alone.

- A code of practice for oil suppliers should be explored with a view to optimising the situation of fuel poor older customers.

- Adjustment of the social protection benefits and allowances within national budgets should consider the high vulnerability to fuel poverty of the following groups of older people
    - older people living alone
    - people who are over 80
    - older people with a disability
    - older women

- The situation of older tenants in private rented accommodation appears particularly acute. Better profiling of this poorly understood group would help inform an effective approach.

- The widespread access to mobile phones, as well as the attention paid to the weather forecast could be considered appropriate and useful methods for highlighting information with regard to cold weather and responses as identified in chapter five. Thus far, the messages seem to have been getting through, but this needs to be sustained.

- 30% of the survey sample mentioned keeping active indoors as a cold weather response. Given the high relatively high levels of social connection (for example visiting others) there may be scope for encouraging indoor exercise for more mobile older people during cold weather. Aside from improving circulation, this could also improve mental health (given the levels of loneliness) and reduce the number of falls in this group.

- Local authorities will need to be resourced to provide a better response during severe cold weather; in terms of assisting isolated older people as well as clearing footpaths – clearing roadways is not sufficient as many older people are pedestrians and may use walking aids.

- People who have oil fired central heating should have more options in terms of payment and supplier. Northern Ireland provides good examples of initiatives for energy brokering which would also be beneficial for older people in the Republic of Ireland.

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APPENDIX 1

Chapter 5

Questionnaire

The questionnaire outlined below is not the format received by respondents however it is a complete list of all questions asked.

SOME INFORMATION ABOUT YOU AND YOUR HOUSEHOLD
Please tick as many boxes as apply to you

1. Please tick if you are currently:

- ☐ married
- ☐ single (never married)
- ☐ widowed
- ☐ divorced or separated
- ☐ part of a civil partnership
- ☐ living as if you are married

2. Please tick if you:

- ☐ live in an urban city or suburbs
- ☐ live in a rural area with no neighbours close to your home
- ☐ live in a rural town or village

3. Could you write in the space provided the town, area or city that you live in?
(for example: Newbridge, Co. Kildare) _____

4. Please tick if you:

- ☐ rent your home from a local authority
- ☐ rent your home from a private landlord
- ☐ rent your home from a housing association (for example, Respond, Cluid) or live in sheltered housing
- ☐ own your home
- ☐ live with family
- ☐ other. Please specify:

_____

5. How many times every fortnight would you:

	Never	1-2 times	3-4 times	Over 4 times
Have visitors in your home (friends, family, neighbours)	☐	☐	☐	☐
Go out to visit friends	☐	☐	☐	☐
Go out to visit family	☐	☐	☐	☐
Go out for hobbies/social activities	☐	☐	☐	☐
Go out for meals/eat out	☐	☐	☐	☐
Go to a day centre	☐	☐	☐	☐

6. Please tick, if anyone in the household receives:

- ☐ contributory pension
- ☐ non contributory pension
- ☐ transition pension
- ☐ private pension
- ☐ both private & state pensions
- ☐ invalidity pension
- ☐ widow/widower's pension
- ☐ blind pension

7. Please tick if anyone in the household receives any of these:

- ☐ disability allowance
- ☐ Household Benefit Allowance (gas/electricity allowance, free TV licence, telephone allowance)
- ☐ fuel allowance
- ☐ smokeless fuel allowance
- ☐ living alone allowance
- ☐ rent allowance
- ☐ carers allowance
- ☐ free travel pass
- ☐ home help service

8. How much money comes into your home after tax, including money from benefits and allowances?

Please remember, this information is confidential and will only be used for research purposes.

Please answer either per week OR per month – whichever is easiest for you.

Household Income:

Per week		**Per month**	
under €150	☐	under €650	☐
€151 - €200	☐	€651 - €867	☐
€201 - €220	☐	€868 - €954	☐
€221 - €250	☐	€955 - €1,084	☐
€251 - €350	☐	€1,085 - €1,517	☐
€351- €450	☐	€1,518 - €1,950	☐
€451 - €600	☐	€1,951 - €2,600	☐
€601- €800	☐	€2,601 - €3,467	☐
Over €800	☐	Over €3,468	☐

If you would prefer to write in a figure:

€_____ per week OR € _____ per month

9. Please include in the table below details on who lives in your home.

(Put your own details as person 1)

	Age	Male or female	Please write in the box below the relationship of each person to you. For example: • Husband • Wife • Child • Grandchild	Occupation - please write in the box below if this person is: • retired • unemployed • home duties • employed • not working due to illness or disability • student • child • a carer
Person 1 – **YOU**			**SELF**	
Person 2				
Person 3				
Person 4				
Person 5				

10. What is the job (or was the previous job) of the head of household?

_____

SOME INFORMATION ABOUT YOUR HOME

Please tick as many boxes as apply to you

11. What type of property do you live in?

☐ I live in a bedsit
☐ I live in an apartment/flat

What floor are you on? _____

Is there a lift? ☐ yes ☐ no
Is that lift usually in working order? ☐ yes ☐ no

☐ end of terrace house
☐ terraced house
☐ semi-detached house
☐ detached house
☐ bungalow
☐ caravan/mobile home

☐ other. Please specify: _____

12. How many bedrooms do you have?

_____

13. When was your home built?

☐ after 2006
☐ 2001-2006
☐ 1997-2000
☐ 1991-1996
☐ 1981-1990
☐ 1971-1980
☐ 1961-1970
☐ 1941-1960
☐ 1900-1940
☐ before 1899

☐ I don't know

14. In winter, which room is the warmest in your home?

_____

15. In winter, which room do you occupy most during the day?

_____

16. Which of the following features do you have in your home?

- ☐ single glazed windows
- ☐ at least half my windows are double glazed windows
- ☐ at least half my windows are triple glazed windows
- ☐ water cylinder lagging jacket
- ☐ door draft excluders
- ☐ window draft excluders
- ☐ floor insulation
- ☐ pipe insulation
- ☐ attic insulation
- ☐ cavity wall insulation
- ☐ internal wall insulation
- ☐ external wall insulation
- ☐ none of these
- ☐ I don't know

17. Which of these items do you have in your home?

- ☐ mobile phone
- ☐ smoke alarm
- ☐ colour television
- ☐ internet access
- ☐ carbon monoxide monitor
- ☐ radio
- ☐ pendant alarm/remote monitoring system

18. Please tick if your home has:

- ☐ had the electricity/gas cut off for delayed payment of bills in the last 5 years
- ☐ been put on the vulnerable persons register for electricity/gas
- ☐ a prepaid meter for gas or electricity
- ☐ a smart meter
- ☐ a coin operated or debit card electricity meter
- ☐ damp, mould or black stains on walls, windows, doors or ceilings
- ☐ damp table salt
- ☐ energy saving light bulbs in most rooms
- ☐ draughts

19. Does your home have a building energy rating (BER) certificate?

☐ yes ☐ no ☐ I don't know

20. If yes, what is the building energy rating (BER)?

☐ A1 ☐ A2 ☐ A3 ☐ B1 ☐ B2 ☐ B3
☐ C1 ☐ C2 ☐ C3 ☐ D1 ☐ D2
☐ E1 ☐ E2 ☐ F ☐ G ☐ I don't know

21. Please tick if you have received any of the following publications in the past year:

☐ Keep Well & Warm booklet ☐ Entitlements for Over Sixties booklet

☐ booklets on energy efficiency from the ESB, Bord Gais, Airtricity or any other provider

22. Has your home had major improvements to make it warmer in the last 5 years (for example, a new central heating system, attic insulation installed)?

☐ yes ☐ no ☐ I don't know

23. Has your home received improvements through any schemes?

☐ Warmer Homes Scheme
☐ Home Energy Savings Scheme
☐ Housing Aid for Older People Scheme
☐ a local authority scheme

☐ other. Please specify _____

SOME INFORMATION ON THE FUELS YOU USE IN YOUR HOME

Please tick as many boxes as apply to you

24. Do you have a central heating system?
(that is a heating system that uses a furnace or boiler to generate heat)

☐ yes
☐ no (Please go to question 30)

25. Which type of fuel or fuels does your central heating system use?

☐ mains gas
☐ oil
☐ electricity
☐ solid fuel
☐ LPG/bottled gas/gas tank
☐ other. Please specify _____

☐ I don't know

26. Are you able to control the temperature of your central heating system?

☐ yes ☐ no

27. What type of boiler does your central heating system operate on?

☐ communal boiler. This is when a boiler is shared by the entire building.
☐ individual boiler. This is when a boiler is individual to your home.

28. Is your boiler serviced every year?

☐ yes ☐ no

29. Did water shortages during December-January affect your use of central heating?

☐ yes ☐ no

30. Do you use any of these to help heat your home?

- ☐ bottled gas
- ☐ electric storage heaters
- ☐ electric plug-in heater
- ☐ solid fuels (wood, coal, turf)
- ☐ other. Please specify _____
- ☐ none of these

31. Please select all the ways you heat water for bathing?

- ☐ mains gas
- ☐ oil
- ☐ electricity (kettle)
- ☐ solid fuel
- ☐ LPG/bottled gas/gas tank
- ☐ other.

Please specify _____

☐ I don't know

32. Do you use an open fire to heat your home?

☐ yes (go to the **red** section - questions 33 - 36) ☐ no

If NO and you use oil to heat your home go to the blue section (questions 37-38).

If NO and you do **not** use oil to heat your home go to question 39

33. What solid fuel would you mainly use on your open fire/aga/stove/cooker?

- ☐ turf
- ☐ peat briquettes
- ☐ coal
- ☐ wood-logs
- ☐ eco-logs
- ☐ other. Please specify: _____

34. Are these delivered to you?

☐ yes ☐ no

35. When was your chimney swept last?

- ☐ Never
- ☐ In the last 2 years
- ☐ Over 2 years ago
- ☐ Not applicable

36. If you use solid fuel as your main source of central heating would you change to oil/gas central heating if a grant was available?

☐ I do not use an open fire as my main source of central heating

☐ yes ☐ no

IF YOU USE OIL TO HEAT YOUR HOME PLEASE GO TO QUESTION 37

IF YOU DO NOT USE OIL TO HEAT YOUR HOME PLEASE GO TO QUESTION 39

37. How many litres of heating oil do you generally have delivered in your order?

- ☐ the minimum amount
- ☐ less than 300 litres
- ☐ 300-500 litres
- ☐ 501-700 litres (half a tank)
- ☐ 701-900 litres
- ☐ 901-1000 litres (full tank)
- ☐ 1000 litres or more

38. How often do you purchase heating oil in a year? _____

39. If you receive a gas bill and/or an electricity bill, approximately how much do each of these bills cost you every 2 months during cold weather?

Gas Bill	**Electricity Bill**
☐ €0 - €50	☐ €0 - €50
☐ €51 - €100	☐ €51 - €100
☐ €101 - €150	☐ €101 - €150
☐ €151 - €200	☐ €151 - €200
☐ €201 - €249	☐ €201 - €249
☐ over €250	☐ over €250
☐ €0 - €50	☐ €0 - €50
☐ €51 - €100	☐ €51 - €100
☐ €101 - €150	☐ €101 - €150
☐ €151 - €200	☐ €151 - €200
☐ €201 - €249	☐ €201 - €249
☐ over €250	☐ over €250
☐ I don't know	☐ I don't know

40. Do you save up to pay for oil, electricity, gas and/or solid fuel?

☐ yes ☐ no ☐ I cannot afford to save

41. Are you in arrears with your gas bill? ☐ yes ☐ no

42. Are you in arrears with your electricity bill? ☐ yes ☐ no

43. Would you be interested in having a pre-pay electricity or gas meter installed in your home?

☐ yes ☐ I have a pre-pay electricity meter

☐ no ☐ I have a pre-pay gas meter

44. Please select how you pay for oil, electricity, gas and solid fuel?

	Oil	Electricity	Gas	Solid fuel
It is part of my rent	☐	☐	☐	☐
Cash	☐	☐	☐	☐
Cheque	☐	☐	☐	☐
Laser Card	☐	☐	☐	☐
Credit Card	☐	☐	☐	☐
Direct Debit	☐	☐	☐	☐
One lump sum	☐	☐	☐	☐
Instalments	☐	☐	☐	☐
Other payment	☐	☐	☐	☐
A relative pays it	☐	☐	☐	☐
I have free units	☐	☐	☐	☐
Pre-pay meter	☐	☐	☐	☐
Not applicable	☐	☐	☐	☐

45. Have you switched your electricity account from one supplier to another to save money (Airtricity, Bord Gais, ESB)?

☐ yes ☐ no

SOME INFORMATION ON THE IMPACT OF COLD WEATHER ON YOU AND YOUR HOUSEHOLD

Please tick as many boxes as apply to you

46. During the winter, do you think your home is:

☐ too warm
☐ just right. Neither too warm nor too cold.
☐ too cold. If your home is too cold, why is this?

_____

47. During the winter, how many day time hours do you have your heating on for?

- ☐ less than 1 hour
- ☐ 1 – 2 hours
- ☐ 2 – 4 hours
- ☐ 4 – 6 hours
- ☐ 6 – 10 hours
- ☐ more than 10 hours

48. During the winter, how much time do you spend indoors at home on a typical day?

- ☐ 1 - 2 hours
- ☐ 2 - 4 hours
- ☐ most of the day
- ☐ all day
- ☐ other. Please specify: _____

49. What do you think about the price of heating your home?

- ☐ I am very worried about the price
- ☐ I am somewhat worried about the price
- ☐ It is not something I think about
- ☐ I am not very worried
- ☐ I am not at all worried

50. Are you worried about your electricity or gas being cut off due to you not being able to pay your bill?

- ☐ I am very worried
- ☐ I am somewhat worried
- ☐ It is not something I think about
- ☐ I am not very worried
- ☐ I am not at all worried

51. Thinking of <u>before Christmas</u> (December 2010) during the cold snap, did the cost of keeping your house warm mean that there was less money available to spend on other necessities, for example food or clothing?

☐ yes ☐ no

52. Before Christmas, during the cold snap, how did you keep warm?

(Remember, you can tick all the boxes that apply to you)

- ☐ I used my heating system/fire more than usual.
  Are you concerned about your bills because of this? ☐ yes ☐ no
- ☐ I stayed inside my home
- ☐ I used a hot water bottle/electric blanket(s)
- ☐ I wore a coat or used a blanket indoors
- ☐ I blocked vents[21]
- ☐ I went to bed earlier to keep warm
- ☐ I used the oven for additional heat
- ☐ I heated only one/two rooms in the home
- ☐ I slept in the living room because the bedroom was too cold
- ☐ I used extra covers on my bed
- ☐ I had at least one hot meal everyday
- ☐ I drank hot drinks throughout the day
- ☐ I drank alcohol to keep warm (for example, whiskey)
- ☐ I went somewhere else to keep warm and save on heating costs (for example, library, pub, shopping centre)
- ☐ I kept active indoors
- ☐ other. Please specify _____

53.

Yes	No	
☐	☐	I have two pairs of strong shoes
☐	☐	I have a warm waterproof overcoat
☐	☐	I can replace any worn out furniture
☐	☐	I can buy new, not second-hand, clothes
☐	☐	I can have a roast joint or its equivalent once a week
☐	☐	I can keep my home adequately warm
☐	☐	I can buy presents for family or friends at least once a year
☐	☐	I can have family or friends for a drink or meal once a month
☐	☐	I eat meals with meat/fish/vegetarian equivalent every second day
☐	☐	I had a morning/afternoon/evening out in the last fortnight for entertainment
☐	☐	I had to go without heating during the last year through lack of money
☐	☐	I use meals on wheels

[21] This is not recommended

54. Have you avoided cooking to save on electricity or gas in the last 12 months?

☐ yes ☐ no

55. If you have received help to pay your bills in the last 12 months, please tick who you received assistance from:

☐ friends/family
☐ charitable organisations such as Saint Vincent de Paul, ALONE
☐ your Community Welfare Officer (Exceptional Needs Payment)
☐ a moneylender
☐ a credit union or bank
☐ other. Please specify _____

56. If you receive the fuel allowance, how much of it would you generally spend on fuel?

☐ all
☐ more than half
☐ less than half
☐ none
☐ I don't know
☐ I do not receive the fuel allowance

57. An additional once-off fuel allowance payment of €40 was to be paid with some welfare payments between 22 December 2010 and 7 January 2011. Did you get this?

☐ yes ☐ no ☐ I don't know

58. Do you generally watch or listen to the weather forecast everyday?

☐ yes ☐ no

59. How do you respond to cold weather warnings?

- ☐ I do not do anything different
- ☐ I use my heating system more than usual
- ☐ I make sure I have adequate fuel in my home
- ☐ I make sure I have adequate fresh and tinned food supplies
- ☐ I stay indoors at home
- ☐ I call a relative
- ☐ other. Please specify _____

60. Who would you contact if your heating system broke down?

_____

☐ I do not know who to contact

SOME INFORMATION ON YOUR HEALTH AND WELLBEING

Please tick as many boxes as apply to you

61. Would you say your health is:

- ☐ very good
- ☐ good
- ☐ fair
- ☐ bad
- ☐ very bad

62. Please tick if you:

- ☐ have a full GMS medical card
- ☐ have a GP only medical card
- ☐ have health insurance e.g. VHI, Quinn, Aviva etc.
- ☐ receive visits from the public health nurse/district nurse
- ☐ have Home Help visits – receive home help or formal carers who call in
- ☐ received the H1N1 (swine flu) vaccination in the last year
- ☐ get a yearly flu vaccine
- ☐ other services. Please specify _____

63. If you do not receive the flu vaccine why not?

_____

64. In the last 6 months have you:

- ☐ had pneumonia
- ☐ had a stroke
- ☐ had a heart attack
- ☐ had a mental health problem
- ☐ had a blood pressure problem
- ☐ had a fall outside your home
- ☐ had a fall inside your home
- ☐ been admitted to hospital

65. How often do you visit a GP?

- ☐ I never visit a GP
- ☐ less than once a year
- ☐ at least once a year
- ☐ more than once a year

66. Are you lonely:

- ☐ never
- ☐ occasionally
- ☐ frequently
- ☐ almost all the time

67. Do you use:

☐ a walking aid ☐ a stair lift ☐ a wheelchair

68. If you smoke, how many cigarettes do you smoke a day?

_____

69. If you have long-term health problems please indicate what type you have:

- ☐ breathing disorders (such as asthma, chronic bronchitis or emphysema)
- ☐ heart disease (such as angina, heart failure or have had a heart attack)
- ☐ problems with circulation (such as peripheral vascular disease (PVD), ulcers or chilblains on your legs)
- ☐ stroke (or mini-strokes (TIA's))
- ☐ allergies
- ☐ arthritis
- ☐ diabetes
- ☐ mental health difficulties (such as diagnosed depression or schizophrenia)
- ☐ chronic pain
- ☐ cancer
- ☐ other. Please specify _____

70. Are any of these health problems affected by cold weather?

☐ yes ☐ no

71. If you have a disability, please state if your disability is related to:

- ☐ eyesight
- ☐ hearing
- ☐ mobility
- ☐ mental health
- ☐ a learning disability
- ☐ other. Please specify _____

THANK YOU FOR TAKING THE TIME TO COMPLETE THIS SURVEY

In the space below, please provide us with any other information that you feel is relevant:

APPENDIX 2

Chapter 5

Comments made by survey respondents

Additional comments made by Cold Weather Survey Respondents [any comments that could be considered identifying have been removed]:

NC4:
Food very expensive in local shops supermarkets too far away for pensioners to carry home

NC6:
Just happy to have good general health. Many thanks.

NC9;
Not enough income to live on

NC10:
In the winter my kitchen and dining room are as cold as fridges. I don't think the walls are insulated. The window frames are metal and they retain the cold. It is nearly impossible to go into these rooms because of the cold. My daughter had to buy me a kosangas fire and I use this with my normal storage heaters. The cylinders are expensive.

NC12:
I fell on the ice on Dec 8th and broke my […]. Therefore I was inside most of December only for that I would have been out in the snow because I like it!!

NC15:
There is a preservation order in our home. [Name] surveyed the house and stated the house could not be insulated by reason of construction. This is a widespread problem in the Dublin area and is confounded by one legal problem with another. Perhaps this problem should be raised with the relevant authorities.

NC22:
Clear information about grants, available for insulation etc

NC25;
Sensors, lights, door locks. Peace of mind in the cold long winter nights and days. Grants made available for drylining damp kitchens and doors in old houses.

NC26:
Our flat is a new build it is very cheap to heat

NC54:
I am just reaching old age pension. I don't know what other entitlements I can apply for.

NC64:
Could not get out in the cold weather. Getting cabin fever.

TB1:
During very cold weather it was necessary to have central heating on continuously day and night. The fuel allowance did not cover the extra cost of this.

NC72:
Would be totally isolated without the rural transport service. Gets to town 2 days a week. Does 10 mins exercise in the home every day. Shown these at day centre

NC 76: area isolated for 4 days during snow/ice

NC78:
Installed solid fuel stove in 2010 very fuel efficient

NC79:
Could not get out of house for a period of 10 days during snow no callers or contact
Could not survive without rural transport services

NC84:
The living room is freezing. I wear 3 duvets all over the weather.
The storage heaters are useless with very high bills and no heat

NC98:
I don't know what I am entitled to. Heating very bad as night storage heater is of no use as it does not heat for full day as it comes on at 11pm till 7 you would not think it was on and is a waste of money.

NC111:
We have a car which helps me get out to activities on most days

NC112:
The windows are supposed to be double glazed but there's draughts coming in everywhere

NC121:
Comments section: during December 2010 I was without water from Monday to Sunday 20th to 26th due to frozen pipes although water was supplied to attic tank did not benefit due to frozen pipes! Neighbour helped out with buckets of water for washing and toilet had to depend on relatives to bring in drinking water a journey of 6 miles on bad roads.

NC137:
The central heating is inadequate in our bungalows and I have my bills of over €240 to €86 per 2 months. Due to my angina and bad circulation I need heat. I also had to insulate my water pipes myself in the attic before Christmas 2010.

NC138:
Attic insulated but still very draughty. Ice cold walls inside.
Mobility at times is a problem due to pain.
Due to the very high ceilings in my sheltered house in the kitchen comb. Area – the heating system is not at all adequate and is very costly to run.

NC142:
The overall building has time-controlled heating/lighting. I can control my own-sometimes only by switching on additional heaters at other times.
(in response to question 50) 'I am not at all worried' because, I know I'll pay it! Regardless of how many cuts I have to make in my personal budget. Food, leisure, pleasure – when it comes down to it, eat and heat are simple!

Health problem (allergies) affected by the dust in having the heating on
Comments –
Not really, except – like a lot of people on benefits, I've lost €16 pw in total, in the past 2 budgets and losing the Christmas allowance, while dealing with general increases in basic living expenses. The only way in which to cope have to be, economise in other ways. I go out less, I eat more frugally, basically I cope. I live from day to day – is that what 'a decent life' is supposed to be? (and there's worse off than me! I know)

NC157:
(written in beside q64) 'been admitted to hospital' hip replacement

NC164:
I feel there is a lot of older people in our area that we should be looking out for. Meals on wheels do a great job as they can keep a check on them. I think we need to be more caring about them.

NC169:
Had long johns
I use oil

NC171:
A friend helped me filling in the form as I'm dyslexic

NC178:
My husband is on illness benefit (will not work again). I have to work part time as we get no state benefits. I have a doctor only card and pay €120 a month on medication.

NC185:
During the severe weather, neighbours phoned and did my shopping seeing another person was nice, as I was unable to go out. Having non-perishable food stuffs in my store was a big help.

NC189:
From the same person who only uses storage heaters and won't turn on the gas due to the cost – I would like to heat it [home] more
Q51 – would have been less but I turned heat on and off
Q53 – re food and entertaining – if kept simple. Q 54 – stopped making recipes using too much gas or oven

NC198:
MABs pay my electricity
I live the same way all year very careful with money
Q 61 – I won't tick a box because I do not want to be negative

NC208:
I am not good at walking anymore. Have to take taxis especially when shopping or any other outing I might have to do. I get no help with this. No public transport here.

NC210:
Question 46 – storage heating is best in the morning, good during the day but very poor from 6pm until 11pm

NC224:
Why has all the health authorities forgotten about polio sufferers

NC239:
(question 55) other -> we skimp

House very very cold end house

NC242:
I live alone it's very lonely and I feel responsible for maintenance on my home also I feel very nervous on my own I worry a lot about being able to manage

NC246:
I needed my front door sealed insulated and tank covered and my LA refused because my attic was insulated and they were only doing the whole package – have you ever heard such stupidity I had made their job easer.

NC248:
The gas field off co mayo should be tapped into asap

NC249:
I would like to live in a warmer house as this house is that old it's very hard to keep warm in the winter

NC284:
Question 51 – food [i.e. went without food to pay for fuel]

NC310:
Maybe a slight dislexia, can read a bit but not to much had to get somebody else to feel out this form.

NC311:
A good survey

NC317:
To many vents in walls of houses. Lots of people say this. All vents are put where the wind blows most from. You could be blown out of the bed it is so bad. Where did this idea come from. Why build a house and then put vents in it to blow you out of it it would freeze the rats in my bedroom as a result of the vents. Ha ha.

NC344:
Money problems

NC346:
I am very, very lonely, this is my biggest problem – it is eating me away.
Please do not let them take away the free travel pass or means test it. It is my lifeline as I can get out of the house.

NC353:
Maybe send a larger envelope with questionnaire for return

NC362:
I think it's terrible that my widow's pension was reduced by 8 euros per week. This makes a big difference to me.

Chronic pain – knee and hip have knee replacement

Have health insurance – leaving cannot afford it

NC368:
buy food/house insurance/car insurance/clothes and I am on BTEA for my ongoing course. I am worried all the time in case I just grind to a halt financially and regards real mobility all on 180 pw or if at college I get 150 extra per week

NC370:
There is no insulation over the porch ceiling. During the cold winter weather when I opened the trap door to let heat up, there was ice on the inside of the felt, and the insulation on the ceiling was wet, because it was dripping down on it. There is too much condensation in the attic.
Thanks to DIT for taking an interest in the senior citizens!

NC374:
The SEAI does not offer a grant towards having cavity block walls pumped with insulation material. When last I costed it was €1500 approx. at a loss to understand why! Friends who had this work done say it is cost effective.

NC377:
I had solid fuel heating in my home up to last year. I no longer use an open fire because of a chimney fire in which the chimney was damaged. I cannot afford to replace the chimney, so I no longer have central heating that was run off the back boiler.

NC381:
No, not interested in changing from solid fuel to oil/gas CH if a grant was available – too expensive even with grant and too messy a job
Electricity free units – not enough of them
I don't cook much anyway

NC383:
I need to check if I have all the info to my entitlements

NC385:
I have no heating in my house except coal and 2 bottled gas super sayers…….very costly

NC398:
But even with the heat on (gas heating) the draught comes in from the back door and kitchen window and also the draught comes down the chimney.
Q28 – I haven't got it serviced yet this year (I can't afford it)
Made the switch to bord gais
Gas boiler is over 15 years old I worry about it breaking down. Its very expensive to get a new boiler.
Plan A with VHI
I don't smoke my wife does (10 a day)
My wife suffers from arthritis in ankle and knee. I suffer from asthma and arthritis in right ankle

NC401:
Lonely –but I read a lot and listen to radio
Comment:
Thank you for sending leaflet. I found it really interesting, as I live in a country area, it's quite isolated, but healthy.

NC407:
Could do with attic insulating and new windows ect.
NC422:
I only get €132.90 per week, €10 for over 80 it used to be €122.90. pay rent out of that I should get the full pension. Thank you.

NC423:
We are a couple but if we lived alone the answers may be slightly different and more worry

NC428:
[details given] we should be supplied with a 18 or 12 seater van or mini bus to take us to visit other old people around Connemara. We should have more day parties.

On top of my bed clothes I wear 2 jackets in bed and I cover my head and ears.
I wore a cap and cover my ears in bed.
I wear socks in bed.

[why is the home too cold?] too cold. Because the cold comes through the walls.
All day and night [heating is on] It's very hard to explain but your hands and outside the blanket is fresing cold.

I go to bed at 9pm and in the day all day indoors [during the winter]

NC429:
I exercise a lot, classes walking etc

NC433:
I have very good neighbours, particularly the younger ones who called regularly and got shopping for me during the cold snap.

NC439:
[identifying information removed]…. I eventually ended up on my own for Christmas with no worthwhile dinner for 3 days plenty of older people people had to cancel their Christmas plans and were also on their own. There should have been a help line broadcasted during that time from the Government for those in need of immediate help.

I thought it was important to bring this to your attention as many older people who were left on their own due to the snow, did not know where to telephone for help.
It was a very stressful time for us.

NC447:
As long as I am mobile, and above ground I tend not to panic or bitch about situation

On jobseekers allowance

Health improves during winter
9 days without heat [q29 did water shortages during Dec-Jan affect your use of CH?]

NC452:
[I wore a coat or used a blanket indoors] sleeping bag
[avoided cooking] for green reasons

You seem to have no expectation that people will wear appropriate clothes during cold weather. Clothes are far more cost effective than having to use heating and far "greener".
A bias towards "vulnerability"??

NC470:
[lists a number of chronic ailments] Hence, my ability to keep house is very limited. I must pay for any repairs, painting or decorating which I can ill afford.

NC471:
We try to walk as much as possible and have a large garden to keep

NC476:
The use of automated phone systems (e.g. dial one for x problem, 2 for y problem) should not be used for OAP helplines or information lines. Pre-notice calling cards should be used by public nurses e.g. "Nurse xyz will visit you in 3 days, on x date @ x time". Not all older people people can take these messages by phone and get to record person's name, date and time of visit.

NC479:
Age Action is a good source of information.
… Polio survivors suffer very much from cold and a warm home is a priority and I do not go out in cold or bad weather. I have also learned to manage my health problems.
NB: you do not acknowledge how important telephone contact is for the housebound. I would be lonely if I could not talk to friends.

NC483:
Re: The Warm Project where you can get your house insulate you must have a fuel allowance. I think the age of the house should also be considered i.e. no cavity walls. No damp course when this house was built in the late 1800s or thereabouts. It is very costly to get dry lining and double glazed windows.

NC487:
Gas and esb reading is very erratic

NC490:
Remove VAT on heating oil for over 65s. this is an extra tax which has to come out of pension.

NC498:
Fear of sub zero temp as last winter can cut off vital utilities gas, electricity, water as already remarked overhead lines are liable to be broken by being overloaded by ice and snow. Our estate is fed by these. Corp. estates are fed by underground cables.

NC503:
Aging in the Republic of Ireland is very frightening – we worked all our life to provide for retirement, but now it looks like it would have been better to rely on State handouts.

NC504:
Better life now than grand mothers or indeed mothers.
Public libraries good in winter, also the cinema.

NC505:
Have a dog – great therapy + companionship – you should have added a question on costs of keeping a dog a) food b) supplements when ageing c) vet bills. Runs expensive unless you carry insurance.

NC507:
Due to the very bad weather over the winter, I reopen the chimney just in case the gas supply could not come through.
During the summer I will be buying coal logs etc to have some kind of heat.

NC509:
Thank you.
My apartment was not built for long term living and more money has to be spent on insulation. Storage heating is a waste of energy and v inefficient.

NC513
My husband is less healthy than I am but at the moment we can both drive which is a great benefit. I can drive to the bus stop and use my bus pass to get to the city.

NC514:
I often wonder how much longer will I be fit to live alone

NC515:
I describe my health as 'good' – even though I suffer from Parkinson's disease and arthritis, I can still live a normal life, with very little disruption (ie my walk is affected)

NC520:
I get a phonecall each morning from 'friendly call' [place name] to see if I am ok and remind me of hospital appointments or tablets to take.

NC521:
I avoided the severe cold in Jan feb by visiting with my daughter in [abroad] – bliss!
NC522:
I should like to use a computer in my home

NC530:
I live alone – my daughter put an extension onto house – added on extra bedrooms etc – we both have our own independent houses private entrances etc lives there with her family. Next house is a few fields away. I am quite lucky!

NC532:
I have never had a visit from the local health nurse or local clergy.

NC533:
Being alone is bad. To go out is expensive. Have to be very careful with money.

NC538:
Inability to travel during bad weather due to living in rural area – authorities too slow to clear roads

NC541:
I think older people should get more help with heating their homes

NC542:
I am likely to require a knee replacement in the near future. I have had 3 major claims on my health insurance in the last 3 years.

em06 j2: To have fuel allowance all year round.
em10 j2: It would be nice to have a separate bedroom.
em13 j3: My flat is cold during winter months, very little insulation in front of house, lot of cold air from front door and bathroom.
em20 b1: Medical check-ups once a week, high blood pressure and cholesterol, doctor's card or medical card would do.
em24 b2: … Damp on walls in kitchen, takes long time to get anything fixed.
em26 b2: Happy with life, look after myself.
em27 b2: Difficulty with mobility if does not stay on medication.
em28 b2: All accounts in the bank and all bills paid by direct debit-no worries. Have learned to deal with stroke and make most of life and eat well as advised by day hospital.
em29 b2: Incapable of looking after own affairs without assistance of sister. Bills paid via post office budget scheme.
em32 b3: Son calls in and checks regularly. Sister doesn't call so unable to go to mass. Home help comes once a week, otherwise look after myself and cook and clean.
em33 b3: Electricity automatically comes out of disability allowance. Meals on wheels on Friday. GP calls regularly and also attend hospital but I tell him I will continue drinking whiskey and smoking.
em35 b3: Overall condition of property very draughty.
em39: Special needs daughter insists on using more heat as she does not understand. She was in the house 24/7 during December as she could not travel to her services because of weather.
em43 k2: I am a cancer patient as well as a diabetic. I was also in hospital before Christmas with a lung infection and need my living-room at the right temperature.
em58 c3: Have central heating installation but can't afford to use gas, just use electric.
em60 c4: I would like to get a disabled pass for my daughter's car as she takes me where I have to go.
em66 c5: It would be nice to have a separate bedroom.
em76 o1: Does not use the mains gas central heating as affects asthma and does not receive gas or ESB bills.
Due to overweight problems unable to walk and sits in bed all day.
em86 o3: Don't use heating much, it affects my breathing.
em104: Flat is very cold, I would benefit if I had my external walls insulated. The cold in the winter is sometimes unbearable. I have to use an open fire as gas is not enough. It does still be cold during the winter even with gas on and fire. If I need my heating, I have to put it on, I have no choice.
em114: On disability benefit. Heating included in rent. Would be nice to bring back Christmas bonus, it would be a great help.
em120: We have central heating in every room. We have double glazed windows in every room and under floor heating in the bathroom.

em122 n3: People in bed-sits should be entitled to 1 bed units

em124 n3: Been in bedsit for 11 years and on waiting list for 1 bed flat for 5 years. I feel more could be done.

em125 n3: I worry all the time that if the free gas allowance was ever stopped I would not be able to pay the bill. I also feel my weekly income is not enough to live on and pay bills etc. €225 weekly-€23 fuel allowance and €7:70 living alone allowance, remainder is €193.

em135 n1: Heating turned off at night during winter

em140 f1: Can we have communal heating

em157 d1: An immersion heater for hot water would help. Dental costs, public toilets in city, rising cost of heating-difficulty for older people.

em159 d2: I would like the extra fuel allowance or the winter fuel allowance (Oct-April), I have very bad circulation and heat is good

APPENDIX 3

Chapter 6
Temperature and relative humidity data logger (Dew point indication via windows software)

OM-EL-USB-2
TEMPERATURE AND RELATIVE HUMIDITY DATA LOGGER
(DEW POINT INDICATION VIA WINDOWS SOFTWARE)

TEMPERATURE
Range: -35 to 80°C (-31 to 176°F)
Resolution: 0.5°C(1°F)
Accuracy: OM-EL-USB-2: ±0.5°C (±1.0°F);
HUMIDITY
Range: 0 to 100% RH
Resolution: 0.5% RH
Accuracy 20 to 80% RH;
DEW POINT
Accuracy (overall error in the calculated dew point for RH measurements from 40 to 100% RH @ 25°C): ±2°C (±4°F)
GENERAL
Memory: 16,000 temperature and 16,000 relative humidity readings
Logging Interval: 10 seconds to 12 hours
Operating Temperature Range: -35 to 80°C (-31 to 176°F)
Alarm Thresholds: High/low alarm thresholds for % RH and temperature, selectable in software
Start Date/Time: Selectable in software
Status Indicators (LEDs): Red and green
Software: Windows 98/2000/XP/VISTA
Power: 12 AA 3.6 V lithium battery (included)
Battery Life: 1 year typical (depends on sample rate, ambient temperature and use of alarm LEDs)
Weight: 57 g (2 oz)
Dimensions: See dimensional drawing above

Notes

Notes