Towards the

Development of a Predictive Model of

Long-Term Care Demand

For Northern Ireland and the

Republic of Ireland

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Chapter 1 Introduction

1.1 Overview of the development of two parallel models

This report describes the parallel development of models of long-term care need and utilisation for the Republic of Ireland and Northern Ireland. The methodological approach to the development of these models is the same but they differ in detail due to differences in data availability in the two jurisdictions. This parallel exercise offers an opportunity to compare need for and utilisation of care and the potential impact of demographic change on that need and utilisation in two different systems within the one small island. The authors have been careful throughout this report to qualify their estimates, projections and findings; and frequently, to compare alternative estimates and projections. North-South comparison of current provision and projected future utilisation should nonetheless be approached with caution due to: data limitations that require considerable estimation in assessing current utilisation and restrict the authors' ability to employ equivalent measures of utilisation; the number of factors known to influence utilisation which cannot be included in the models; and the potential to adopt alternative assumptions about the evolution of need or the relationship of need to utilisation.

The models project need for and utilisation of long-term care (LTC) in different settings by people aged 65 and over to the year 2021, taking 2006 as the base year for analysis. 2006 is chosen as the base year because of the availability of detailed data on population, disability and the relationship of disability to the utilisation of care from the 2006 Census of Population and 2006 National Disability Survey in the Republic of Ireland and the 2006 Northern Ireland Survey of Activity Limitation and Disability (NISALD) in Northern Ireland. The models assume that utilisation of care over the projection period will remain in the same proportions to population by age and gender or population with disability by age and gender that existed in 2006. Estimating utilisation of care in 2006 is therefore a key and challenging aspect of this analysis, which draws on diverse data sources in both the Republic and Northern Ireland.

Long-term care can be provided either at home by informal carers, typically family members, or by formal carers; or it can be provided in institutions, including nursing homes and long-stay hospitals. With the development in many countries of new forms of residential arrangements for older people such as sheltered housing, the OECD has observed that it is increasingly difficult to distinguish home care from institutional care. Cross-country comparisons can be difficult because the same term may describe a different kind of institution in different countries (OECD 2007a). Care may be delivered publicly, privately or by the voluntary sector, with or without state subsidy. In this analysis of the delivery and

utilisation of care in the Republic of Ireland and Northern Ireland, while every effort is made to compare like with like, there are differences in the systems of provision, in eligibility and in the forms in which care is delivered or statistically enumerated, which should heavily qualify any conclusions drawn from these comparisons.

The available data which have informed the development of the models in each jurisdiction are: demographic forecasts; disability rates; the age, gender and disability status of care recipients; and estimates of utilisation of residential long-term care, formal community care and informal care. Given the assumption that utilisation of care will remain in the same proportions as in the base year, the key data on which the projections are based are forecast growth and ageing of population; and the forecast evolution of disability. The models employ differing sources of forecast population growth in the two jurisdictions. Evidence of past trends in disability in the Republic of Ireland and limiting long-term illness in Northern Ireland is employed to forecast the future evolution of disability. Both models compare two central projection scenarios: in the first population growth and ageing are the sole drivers of utilisation; in the second, an assumption of declining disability qualifies the effect of population growth and ageing on utilisation. The basis for this assumption about the evolution of disability is explained and alternative approaches are discussed in the analysis.

The assumption of constant utilisation proportions may not of course be valid. The proportions in which care is utilised may change due to changing systems of eligibility; or the effect of reduced or increased supply of care in any setting; including informal care delivered by family members. The model projections, however, quantify need for care in all settings should utilisation proportions remain constant. Such projections then allow an estimation of the effects of a reduction of care in one setting on the requirement for care in another, in response to factors that change utilisation patterns.

The original aim of this study was to develop a predictive model of long-term care demand in all settings for both jurisdictions, which would supply an interactive tool for policy-makers that would assist in planning for the care needs of older people. That aim has been advanced but not wholly achieved in this analysis. To develop predictive forecasts would require going beyond the models' projections of future utilisation based on current utilisation patterns. Such development would be based on multi-variate analysis of a more comprehensive range of predictors of utilisation of care in each setting, which the available data were insufficient to support. As such data become available with the development of longitudinal surveys of ageing in both jurisdictions, there is potential to develop these models. The models, as developed, are an interactive tool in that they can readily generate updated projections, when more recent demographic forecasts, disability rate data or data on utilisation become available.

Since this analysis includes care which is supplied informally and unremunerated, its concept of "demand" for care goes beyond the conventionally understood economic use of the term as a function of price, income and preferences. Demand for care when extended to all settings in effect equates to need. Consideration of the economic drivers of demand would however be

necessary in a comprehensive analysis of the factors determining the balance of care in alternative settings. In further development, the model might take into account the effect of changes in the supply of care relative to need manifest in the price of privately purchased care and eligibility criteria or indeed rationing in the case of publicly funded care, if the data could support such an exercise. Such financial modelling was however beyond the intended scope of this study.

This study contributes to understanding of need for and utilisation of care by taking a broad view of how, where and by whom care is supplied. It is the first study for the Republic of Ireland or Northern Ireland which has analysed the utilisation of care and projected future utilisation in all settings. Although this modelling exercise has not achieved predictive forecasts, provided the caveats in relation to the underlying assumptions are understood, these projections provide a picture of possible future pathways of need and demand for LTC in Northern Ireland and the Republic of Ireland, which should assist policy-makers and advocates for older people in making a case for improved care provision and in analysing the impact on care of proposed policy changes.

1.2 Structure of this report

The next chapter reviews the international literature on the determinants of long-term care need and utilisation; and on modelling future need and utilisation. Chapter 3 describes the health and social care system in the Republic of Ireland, while Chapter 4 describes health and social care in Northern Ireland. Chapters 5 and 6 in the Republic of Ireland and Northern Ireland respectively examine in detail the evidence about the need for and utilisation of care in all settings, which informs the model projections. Chapter 7 describes the methodology adopted in the two models. Chapters 8 and 9 describe the modelling exercises for the Republic of Ireland and Northern Ireland sequentially. Chapter 10 compares and interprets the findings and projections for both jurisdictions.

1.3 Summary of findings

Subject to the caveat that comparison of the findings for the Republic of Ireland and Northern Ireland must be approached with caution because of the authors' inability to employ equivalent measures of utilisation, the main findings of this report are summarised below. The projections summarised here assume declines in disability rates; the alternative projections discussed in subsequent chapters do not assume disability declines and generate higher utilisation rates in 2021.

- Population ageing is expected to advance more rapidly in the Republic of Ireland in the years 2006-2021 with a 69% increase in population aged 65 and over and an 82% increase in population aged 80 and over;

- Population ageing is expected to increase population aged 65 and over by 40% and population aged 80 and over by 52% in the years 2006-2021 in Northern Ireland;

- There is longitudinal evidence of declines in disability rates for both jurisdictions - the utilisation projections summarised here assume continued declines in disability rates;

- The forecast decline between 2006 and 2021 in the prevalence of disability for people aged 65 and over in the Republic is 6.9% for people experiencing difficulty with activities of daily living (ADL) and 7.9% for people with substantial physical limitation, a proxy for severe disability;

- The forecast decline between 2006 and 2021 in the prevalence of disability for people aged 65 and over in Northern Ireland is 7.7% for people with ADL difficulty, as defined by NISALD;

- Alternative bases estimate residential long-term care utilisation in the Republic of Ireland in 2006 as between 4.4% to 4.8% of the population aged 65 and over; this utilisation rate reduces to 4.0% if limited-stay places are excluded;

- Residential long-term care utilisation including limited-stay utilisation is forecast to be between 4.2% to 4.7% of the population aged 65 and over in 2021 in the Republic;

- In Northern Ireland the residential LTC utilisation rate is estimated at 4.0% to 4.5% of population aged 65 and over depending on whether care homes alone or in combination with hospitals for older people are the basis for estimated utilisation. The omission due to data limitations of privately purchased residential care may make this range an under-estimate;

- Residential long-term care utilisation excluding hospitals for older people is projected to be 4.1% of the population aged 65 and over in 2021 in Northern Ireland;

- Alternative bases estimate formal home care recipients at between 8.9% and 10.5% of people aged 65 and over in the Republic of Ireland in 2006;

- Formal home care recipients are projected to decline to between 8.2% and 9.7% of the population aged 65 and over in the Republic in 2021 assuming current utilisation proportions remain constant;

- Data inadequacy prevents estimation of formal home care utilisation for all people aged 65 and over in Northern Ireland in 2006; estimated recipients with disability of formal home care provided by statutory providers were 4.7% of the Northern Ireland population aged 65 and over in 2006. This restriction to utilisation by persons with disability of care from statutory providers generates an understated measure of formal home care utilisation according to evidence from another study (McGee et al. 2005);

- Recipients with disability of formal home care from statutory providers are projected to reduce to 4.6% of the population aged 65 and over in Northern Ireland in 2021 assuming current utilisation proportions remain constant;

- Informal home care recipients with ADL difficulty who receive daily or all day informal care are estimated at 8.8% of the population aged 65 and over in the Republic in 2006;

- Informal home care recipients with ADL difficulty who receive daily or all day informal care are projected to decline to 8.1% of the population aged 65 and over in the Republic in 2021;

- Informal home care recipients with disability are estimated at 17.9% of the population aged 65 and over in Northern Ireland in 2006;

- Informal home care recipients with disability are projected to decline to 16.1% of the population aged 65 and over in Northern Ireland in 2021;

- Comparison of the data from the two disability surveys shows a much higher proportion of people aged 65 and over with ADL difficulty and living in the community who receive no help in the Republic at 14% compared to 2% in Northern Ireland.

While sharing the same island, the two jurisdictions have distinct health and social care systems and differing demographic profiles. This analysis shows that Northern Ireland is further along the curve of population ageing than the Republic of Ireland; and appears to have a more coherent and consistent system to assess need for and determine access to formal long-term care. More rapid population growth and ageing means that the challenges of meeting the care needs of older people are likely to be proportionately greater for the Republic than for Northern Ireland. The finding that Northern Ireland in one form or another meets the care needs of a higher proportion of its population with disability may reflect a better developed system of care needs assessment and its earlier experience of the demands of population ageing.

Chapter 2 Literature on Care of Older People

2.1 Introduction

The development in this report of a model of long-term care (LTC) need and utilisation and its application to the Republic of Ireland and Northern Ireland builds on the model for the Republic of Ireland developed in Wren (2009). This chapter reviews the international literature on determinants of demand for LTC and on modelling LTC demand, which informed that model and informs its further development in this report.

The next section reviews the strands in the international literature on determinants of LTC demand. Section 3 reviews approaches to modelling LTC demand. Section 4 describes modelling methodologies developed by the PSSRU (Personal Social Services Research Unit) for the UK (Wittenberg et al. 1998; Malley et al. 2006; Forder and Fernández 2009). Section 5 describes the development of models for Germany, Spain and Italy (Comas-Herrera and Wittenberg 2003). Section 6 reviews modelling of LTC demand in the Republic of Ireland. Section 7 concludes.

2.2 Determinants of LTC demand

In this analysis long-term care encompasses three elements: informal care supplied at home; formal care supplied at home; and residential care. The primary determinants of need for long-term care are: numbers of older people by age and gender; and the level of disability and dependence in the older population. Severe disability is generally regarded as a reasonable proxy of the need for long term care (Schulz 2004). However, actual demand for long term care in any setting is different to need (Wittenberg et al. 1998) and will be influenced by factors other than need including demographic and socio-economic factors as well as the availability of forms of care in other settings.

The factors which determine whether need will translate into demand for formal care include: household composition; marital status; socio-economic group; and severity of disability/morbidity. Demand for residential LTC may be stimulated by supply of long-term care leading to regional variation in demand patterns (McCann 2010). Demand for LTC in all settings may be affected by developments in the supply of acute care (Forder 2009). Differing eligibility regimes will also determine whether need translates into demand. While due to data limitations the model of long-term care demand in this report cannot incorporate all such factors, interpretation of its findings must be cognisant of the evidence on such issues.

2.2. 1 Determinants of demand - age

Institutionalisation rates increase with age, largely explained by the positive association between age and disability. Grundy and Jitlal (2007) in their analysis of 36,650 people aged 65 and older, living in the community in England and Wales in 1991 and still alive in 2001, showed that twenty-nine percent of those aged 80 and over in 1991 were in institutional care by 2001, compared to 2.5% of those aged 65-69 in 1991. In Northern Ireland, Connolly and O'Reilly (2009) noted that 20.7% of those aged 85 and over were admitted to care homes in a four year follow-up period, compared to 0.9% of those aged 65 to 69. In the Republic of Ireland, Wren (2009) estimated that the utilisation rate of residential LTC while an aggregate 4.8% for all people aged 65 and over in 2006, ranged from 0.8% of those aged 65-69 to 33.7% of those aged 95 and over.

2.2.2 Determinants of demand - health status, disability and proximity to death

In studies in the UK and Northern Ireland of the health and social factors associated with admission to residential LTC, clinical conditions are important, with one study noting that 90% of care home entrants had an identifiable medical condition which led to their admission (Bowman et al. 2004). In particular, dementia, stroke and falls are associated with an increased risk of admission (Challis D et al. 2000; Bowman et al. 2004; Connolly and O'Reilly 2009), with one study noting that more than 50% of residents had dementia, stroke or other neurodegenerative disease (Bowman et al. 2004). In their analysis, Bebbington et al (2001) noted that 69% of admissions were classified as having a physical health problem, while 43% were classed as having a mental health problem.

In a study of people aged 70 and over in the US, Weaver et al (2009) found that the extent to which increasing longevity increases per capita demand for long-term care depends on the degree to which utilisation is concentrated at the end of life. Overall, proximity to death significantly increased the probability of nursing home and formal home care use but availability of informal support significantly reduced the effect of proximity to death. Among married older people, proximity to death had no effect on institutionalisation. De Meijer et al (2011) in an analysis of spending on institutional and homecare for the entire Dutch population aged 55 and over found that people who lived alone or subsequently died from diabetes, mental illness, stroke, respiratory or digestive disease had higher LTC expenditure, while a cancer death was associated with lower expenditures. Proximity to death no longer determined home care expenditures when disability was controlled for.

McGrail et al (2000) employed linked data from British Columbia covering health and social care to compare the costs of care for all decedents to the costs for all survivors in chosen age categories for the years 1987-88 and 1994-95. They concluded that the costs of acute care rose with age but proximity to death was more important in determining costs. The additional costs of dying fell with age. Costs of nursing and social care rose with age and additional costs for the dying increased with age. They argued that in planning services it is important to

take into account the relatively larger impact of ageing on social and nursing care than on acute care.

Spillman and Lubitz (2000) combined US data from Medicare and other sources to estimate total national spending on health care, including long-term care/nursing home care expenditure, according to age at death. They found that spending from age 65 until death increased substantially with longevity, partially because of steep increases in nursing home expenditures for the oldest old. Spending in the last two years of life also increased with longevity, but reduced Medicare expenditures moderated the effect of increased nursing home expenditures. In common with the McGrail study for Canada, they concluded that in the United States, the effect of longevity on acute care costs differed from its effect on long-term care costs. Acute care costs increased at a reduced rate as age at death increased, whereas long-term care costs increased at an accelerated rate. Increases in longevity after the age of 65 might result in greater spending for long-term care, but the increase in the number of older people had a more important effect on total spending.

The evidence that disability, morbidity and proximity to death moderate the effect of age on LTC utilisation means that trends in the evolution of morbidity and disability are important in forecasting LTC need and demand. Over long time periods, there is clear evidence of deferred disability accompanying increased life expectancy (Fogel and Costa 1997; Waidmann and Manton 1998; Manton and Gu 2001). Over shorter periods, cross-country comparisons have shown some divergence in trends (OECD 2005, 2007b; Crimmins and Beltrán-Sánchez 2010). Some researchers examining the trends in chronic conditions on disability in older age suggest that this may lead to increased disability levels (Jagger et al. 2006; Balanda et al. 2010). On the other hand, the majority of studies that have used measures of basic and/or instrumental activities of daily living (ADL/IADL) such as feeding, dressing, personal care, moving about the home and preparing meals in assessing levels of disability have shown a declining trend. A recent review in *The Lancet* (Christensen et al. 2009) indicates that whilst there has been a reported increase in morbidities in older people over time, these morbidities are less likely to cause disability, or to result in disabilities that are as limiting to day-to-day functioning as had been noted in previous years, especially for those aged less than 85 years. Christensen et al. (2009) suggests that factors such as increased health knowledge and awareness (perhaps as a result of higher levels of educational attainment), earlier diagnosis and treatment, advances in the treatment of certain conditions, increased utilisation of health services, increased use of technological aids in the home and changing perceptions of disability may have contributed to declining disability rates among the older people.

There is clear evidence of declining disability for the Republic of Ireland over the years 2002-2006, trends which are factored into the Wren (2009) model and in this analysis and are discussed in Chapters 7 (Section 3) and 8. In the analysis of disability trends in Northern Ireland (Chapter 9) this study concludes that projected rates of disability are likely to fall a little in the short-term based on trends in survey-based self-reported morbidity levels.

2.2. 3 Determinants of demand - gender

Women have been found to be more likely to be admitted to residential LTC than males in the UK generally, in Northern Ireland and in the Republic of Ireland (Connolly and O'Reilly 2009; Grundy and Jitlal 2007; Wren 2009). Breeze et al (1999) found that in a 20 year follow-up study, 6% of women aged 55-64 at baseline and 23% of those aged 65-74 were admitted to a care home, compared to 3% and 14% of men in these age groups. Grundy (1992) notes that institutionalisation was higher for women than men in all age groups, though the differential was slight in the oldest age groups. McCann (2010) found that a higher proportion of women were admitted than men but that this was largely explained by poorer health and older age of females. Wren (2009) noted that in 2006 in the Republic of Ireland 66% of residents of long-stay units were women.

2.2.4 Determinants of demand - marital status, household composition and female labour force participation

The setting in which care is received and whether it is informal or formal is influenced by such socio-demographic characteristics as the marital status of the older person requiring care, their household composition and the availability of adult children. The finding in Weaver et al (2009) that among married older people in the US proximity to death had no effect on institutionalisation concurs with other studies which have found marital status to be a major determinant of long-term care use with the presence of a spouse considered as a potential source of informal care (Cutler and Sheiner 1988; Stearns et al. 2007). A consistent finding across the UK literature has been the lower risk of admission to care homes of currently married people compared to currently non married people (Connolly and O'Reilly 2009; McCann 2010; Grundy 1992; Grundy and Jitlal 2007).

Conversely, living alone at older ages has been found to be a significant predictor of formal LTC need because intense care needs can generally only be met informally by co-resident carers. A longitudinal study for the Netherlands found that while age is a very strong predictor of the use of long-term care services, people who live alone are more likely to use formal long-term care services than people who have co-resident carers (Portrait et al. 2000). Living alone has also been found to be a significant predictor of residential long-term care utilisation in Northern Ireland (Connolly and O'Reilly 2009); England (Wittenberg et al. 1998) and Germany (Klein 1996). Yoo et al (2004) in a longitudinal study for 15 countries from 1970 to 2000 found that availability of care by a spouse, proxied by the ratio of men to women at older ages, was associated with substantially reduced long-term care expenditure whereas availability of an adult child caregiver had a much smaller effect. The potential for improved male life expectancy to lead to reduced widowhood and greater care-giving by spouses is, however, tempered by increases in the proportion of separated and divorced people in developed countries (Kinsella and Velkoff 2001).

In an analysis of determinants of acute bed and formal long-term care utilisation across OECD countries Wren (2011) found that convergence between male and female life expectancy, caused by the greater rate of improvement in male than female life expectancy, had the effect of reducing both acute and long term care utilisation, in models controlling for age of population, death rates and female labour force participation. Such studies suggest that a model of long-term care demand should, insofar as data permit, include measures of household composition/marital status in addition to measures of disability/morbidity.

The presence of people other than the spouse in the household may also influence admission rates. One study showed that living with a spouse, a spouse plus other people, or as a lone parent with children led to lower admission risk than living alone, whereas living with other combinations of relatives or non-relatives, did not show a lower risk (Grundy 1997). Breeze et al (1999) found different impacts of living arrangements for the younger-old and older-old. Younger-old divorced or separated men had around a threefold excess risk and widowed men who were not living alone a relative risk of 2.3. In the older-old, among single and widowed men, only those who were not living alone were at increased risk while being divorced or separated had no influence. McCann et al (2011) found that living with children reduced the risk of admission to a care home. Amongst people living with a partner, those also living with children had the lowest overall risk of admission, 33% lower than those living as a couple.

Informal care and formal home care were found to be substitutes in a cross-sectional study for 11 EU countries (Bolin et al. 2008) while informal care was found to be an effective substitute for formal, home care only when the need was for low, unskilled care (Bonsang 2009). Availability of informal care is commonly proxied in models of long-term care demand by female labour force participation (Schulz et al. 2004; OECD 2006b). However, there is mixed evidence on the effects of female labour force participation on long-term care expenditure and on the association between parental need for care and women's labour market behaviour. Yoo et al (2004) found an unexpected negative association between the proportion of women in the labour force and LTC expenditures, which could reflect a shift to part-time work by women providing care for older relatives so that a rise in numbers of part-time working women would be negatively associated with formal LTC. This study concluded that projections of future long-term care demand should distinguish between female part-time and full-time work, with the former associated with decreases and the latter associated with increases in LTC expenditures.

Crespo and Mira (2008) found that within Europe there was a North-South gradient in the response of women to their parents' care needs following an adverse health shock. Although women in middle age whose parents suffered a health shock were less likely to be in paid employment, this association was stronger in Southern Europe than in Northern Europe. Such studies suggest a heterogeneity in the relationship of female labour force participation, informal care supply and care need, which may reflect the development of formal long-term care services; cross-country variability of rates of part-time employment; and cultural differences in the strength of family ties (Bolin et al. 2008; Reher 1998).

Mortensen et al (2004) pointed out that discussion of the social and economic consequences of ageing often conclude that the EU should increase the labour force participation of women and reverse the tendency towards early retirement. Yet in many countries and regions of Europe women, and notably middle-aged women, were involved in informal care-giving to older people. "In fact, a low labour-force participation rate for women is in many countries associated with a relatively low level of development of formal, institutionalised care-giving for the elderly." This study pointed out that in addition to disparities in labour force participation by women across Europe, there were disparities in part-time employment, which could enhance women's capacity to care for children and older people. Part-time employment accounted for a major part of the total activity rate for women in the Netherlands and in the UK and was also important in Belgium, Denmark, Germany, France, Austria and Sweden, but it was comparatively low in Greece, Spain, Ireland, Italy, Portugal and Finland. Spain, in contrast to most other EU countries did not have "any social provision system to cover catastrophic risks associated with old-age dependency. Consequently, LTC is mainly ensured by the families by means of informal care" (Mortensen et al. 2004: 18)

When Schulz (2004) analysed in detail utilisation of health and nursing care by older people in EU countries, she found that most informal long-term care recipients lived in households where care was predominantly given by members of the family – especially daughters, daughters-in-law and spouses, the majority of whom were aged from 30 to 59. Around 68% of caregivers in EU countries were women and 32% men. In most cases women retained primary responsibility for care and provided personal care, emotional support, meal preparation and housekeeping, while care-giving by men mainly included transportation, bills and banking, shopping and general monitoring. Women provided greater amounts of informal caring work than the average gender share represented. Schulz found that in all EU countries family structures were changing, with a fall in the proportion of older people living with their children. Opposing trends were a decrease in the share of widowed people in older age groups but an increase in the share of single and divorced people in younger and middle-aged groups. Numbers of potential caregivers in the oldest age groups might therefore increase due to increasing life expectancy but potential caregivers in the younger and middle-aged groups might decrease. These opposing trends of increasing female labour force participation and reducing disparity in male and female life expectancy with the potential consequence of older people surviving together longer as couples make future informal care supply uncertain.

Pickard (2002) found a drop in the provision of care from outside the household over the period 1985-1995 in the UK with a marked decrease in the number of people providing care to parents or parents-in-law but with provision of care to spouses increasing significantly. The total number of carers had declined while there had been an increase in the number of carers providing the most intensive care. Karlsson et al (2006) examined the effects of having male care-giving patterns converge to those of females (and vice versa) and found that under a baseline health improvement scenario there was likely to be a sufficient supply of care to meet demand provided care-giving patterns were sustained but, if female care-giving patterns converged to those of males, there would be a shortage of care. Pickard (2008) found no evidence of any convergence in the probability of people providing intense care to their older

parents; rather, the evidence suggested that the likelihood of female care-giving patterns converging to those of males had increased over time.

2.2.5 Determinants of demand - socio-economic status

There are several reasons why socio-economic factors might be associated with admission rates including the well-established association between socio-economic status and disability. Additionally those with greater socio-economic resources are better placed to pay for additional home care, and so postpone or avoid institutional admission (Grundy and Jitlal 2007). Wanless (2006: 32) noted: "a person's ability to pay for care also dictates the likelihood and intensity of social care use."

A general finding in the UK literature is the higher admission among more deprived individuals (McCann 2010; Hancock et al. 2002; Glaser et al. 2003; Grundy and Jitlal 2007; Grundy 1992; Breeze et al. 1999). McCann et al (2011b) found that those with access to a car were 42% less likely to be admitted than those without a car although he did not find education (a common indicators of socio-economic status) to have an association with admission risk. This may be expected as previous work has shown that education may not be a suitable indicator of socio-economic status in older people since most of today's older people have relatively few qualifications (Grundy and Holt 2001; Connolly et al. 2010). Hancock et al (2002) found no effect of income on care home entry risk.

A consistent finding across studies in the UK is the lower risk of admission among owner occupiers compared to renters (Breeze et al. 1999; Hancock et al. 2002; Grundy and Jitlal 2007). For example, in their analysis, Breeze et al (1999) found that men in rented accommodation had a 90% excess risk of institutionalisation and `women a 40–45% excess risk. While this association between housing tenure and admission may be related to unaccounted for higher levels of poor health among renters, it may also be explained by the method used to decide on financial entitlement to long term care in the UK. Housing assets are taken into account when deciding on entitlements – anyone (with some exceptions) with a house valued at greater than approximately £24,000 (€28,000) must meet the full cost of their care, which may act as a disincentive to institutional admission among home owners. This is supported by McCann et al (2011) who showed that the main difference in admission rates is between those who rent and those who own their homes; owning a house somehow alters the likelihood of being admitted but after that the value of that house makes little difference. This appears to reflect the deterrent effect of means testing which in many cases requires older home owners to sell their house if admitted to a residential or nursing home. Families may choose to increase the amount of informal care-giving (and perhaps paid care) to prevent the sale of this asset. Glaser et al (2003) found that owner-occupiers were significantly more likely than tenants to move to supported private households than to institutions, which suggests that older people may be more likely to move in with relatives (who may benefit from the house after their death).

2.2.6 Determinants of demand - region

Area level factors may influence the likelihood of admission to residential LTC. Beringer and Crawford (2003) note that in Northern Ireland, despite common guidelines for care management having been adopted, differences exist in the range and type of provision of homes even in geographically adjacent community Trusts commissioned by the same Health Board. They note that these differences are likely to reflect the diversity of factors which determine, on the one hand, the need for care and on the other, the funding devolved to localities for such care. Examples of these factors included the availability of places, the economic status of the populations and the assessment procedures adopted.

Banks et al (2006) showed variations in the proportion of older people living in care homes across UK local authorities with different levels of deprivation and urban/rural composition, with higher proportions of people living in care homes in rural and more affluent areas. It is not known how much of this variation was due to the characteristics of the people within these areas. In Northern Ireland, Connolly and O'Reilly (2009) found significant variation in the number of people admitted to a care home across ten health care trusts even after adjusting for the demographic and health characteristics of those living in each trust. McCann (2010) found that after adjusting for demographic and health characteristics, those in rural areas had a 20% lower risk of admission than people in urban areas. In addition, he noted that there were significant differences in admission rates across trusts with some evidence that trusts with greater supply of homes had higher admission. In the Republic of Ireland, Wren (2009) estimated that regional utilisation rates of residential LTC for population aged 65 years and over in 2006 varied markedly: Western (5.3%); Southern (4.9%); Dublin/North-East (4.7%); Dublin/Mid-Leinster (4.3%). There was also regional variation in the estimated availability of beds in proportion to regional age profile.

2.2.7 Determinants of demand - acute care supply

Models of the determinants of long-term care demand or expenditure generally do not take into account the effect on long-term care demand of acute care supply (Portrait et al. 2000; Schulz et al. 2004; Wanless 2006; OECD 2006a). However, there is evidence from a number of countries that acute and long-term care are substitutes. Studies of the determinants of acute utilisation in the UK have found that the availability of informal care or residential long-term care reduces acute care utilisation (Carr-Hill et al. 1994; Martin and Smith 1996). Forder (2009) found in a study of care home and hospital utilisation by older people in England that for each additional £1 spent on care homes, hospital expenditure falls by £0.35; and £1 additional hospital spend corresponded to just over £0.35 reduction on care home spend.

Werblow, Felder and Zweifel (2007) in a study in Switzerland found that health care expenditure (HCE) varied depending on whether older people were users of long-term care services. For deceased nonusers of LTC services, a falling age curve for all components of HCE except for inpatient care was observed, while survivors showed a weak age effect in

ambulatory and inpatient care once proximity to death was controlled for. The probability that surviving users of LTC services would incur LTC expenses markedly increased in old age, while most of the components of their conditional HCE showed a decreasing age profile.

In an assessment of the budgetary challenges posed by ageing, the European Commission (2001) distinguished between health and long-term care spending and found that while, after childhood, per capita health spending increased with age, in those states where expenditure levels for the highest age groups were estimated separately (Belgium, Denmark, Austria and Sweden), expenditure on health care appeared to decline somewhat for the oldest old groups. This study commented that the considerable cross-country differences in LTC spending levels per head reflected:

> "...radically different traditions in the provision of care for the elderly. In some Member States, care for the elderly is in large part formal, with a large share of formal care provided in an institutional setting, rather than in the homes of the elderly – thus leading to high levels of public spending on long-term care. In other countries the tradition of care is more for informal provision by family members. However, in those countries where there is limited public provision of formal care, some long-term care is likely to be provided through the health system, and thus is included in data on health care expenditure" (European Commission 2001: 36-37).

The adoption by Sweden of a policy of reducing acute care provision in the 1990s had pronounced effects on the provision of long-term care in institutions and the community. Following the 1992 ÄDEL Reform which transferred responsibility for LTC provision from county councils to municipalities, hospital bed numbers reduced by over 40 per cent in the years from 1993 to 2003 and numbers of LTC beds in nursing homes increased steeply. The transfer of many ill, older people into their care placed great strains on municipalities, caused greater targeting of home help services and increased informal care demands (Trydegård 2004; Glenngård et al. 2005; Rauch 2007).

2.3 Approaches to modelling need and demand for long-term care

The alternative approaches to modelling LTC need, demand and expenditure have been characterised as micro-simulation or macro-simulation models (Wittenberg et al. 1998). Micro-simulation models are based on representative samples, which are employed to simulate changes in individuals' disability status and long-term care utilisation and expenditure. Such models require regular surveys of the same large sample of individuals and have been employed in the US (Wiener et al. 1994) and in the UK (Forder and Fernández 2009).

Macro-simulation models group the population into sub-groups or cells. In a cell-based model the units of analysis are aggregates of individuals grouped by characteristics such as age and gender. Cell-based, macro-simulation models have been employed in the UK (Nuttall et al. 1994; Richards et al. 1996; Wittenberg et al. 1998; 2006; Malley et al. 2006; Wanless 2006); Ireland (Department of Social and Family Affairs 2002; Department of Health and Children 2008); and in other EU countries (Comas-Herrera and Wittenberg 2003). These models vary in their complexity largely reflecting data availability.

2.4 Methodology of Personal Social Services Research Unit models

A macro-simulation model developed by the PSSRU in the UK has evolved through a number of iterations (inter alia Wittenberg et al. 1998; Comas-Herrera and Wittenberg 2003; Malley et al. 2006; Wittenberg et al. 2008). The essential methodology projects numbers of older people divided by sub-groups or cells, which are defined by age, gender, dependency, household type, housing tenure (a proxy for socio-economic group) and receipt of informal care. Long-term care demand is projected based on current utilisation patterns with the probability of receiving health and social care attached to each cell.

A key aspect of this PSSRU methodology is that the probability of receipt of services is estimated by multi-variate analysis of the determinants of utilisation using data from the General Household Survey, a nationally representative population survey of individuals. The model analyses predictors of present use of formal domiciliary care to model future use. The estimated percentages receiving formal domiciliary services are fitted values from multi-variate logistic regression analysis. These fitted values are multiplied by the projected numbers of older people within each cell to produce numbers of service recipients. Estimated numbers of service recipients are multiplied by estimates of the average intensity of service receipt. Institutional residence is treated as another dependency category. Numbers of people in residential care are estimated from national statistics. Their proportionate breakdown by age, gender, previous household type and housing tenure is derived from PRSSU surveys of residential care and applied to the totals. From these estimates, the proportion of older disabled people in residential long-term care is estimated for the base year for subgroups of population and these proportions are used to make projections for future years (Wittenberg et al. 2006). The base case assumes unchanged age-specific dependency and unchanged relationships between receipt of care and age, dependency and household type. Alternative scenarios are modelled according to alternative sensitivity assumptions.

An adaptation of the PSSRU macro-simulation model projected likely future costs of care under a range of scenarios (Malley et al. 2006) for the Wanless Social Care Review, which was commissioned by the King's Fund to determine how much should be spent on social care for older people in England over the 20 years to 2026 and to consider appropriate funding arrangements (Wanless 2006). This Review based its projections on a combination of models employing micro-simulation and macro-simulation methods. A micro-simulation model projected the relationship between population ageing and onset of disability and need (Jagger

et al. 2006). The Review team also developed a static micro-simulation model of future funding options (Wanless 2006). The PSSRU cell-based macro-simulation model was linked to the University of Essex CARESIM model (Malley et al. 2006). CARESIM used British Family Resources Survey data to simulate what people would have to pay for care and supplied to the PSSRU model projections of the proportion of dependent older people eligible for local authority support and the proportion of gross costs met by users.

The approach to projecting service receipt in the Wanless Review differed from the standard PRSSU model, in adopting a normative basis for service use, related to desired outcomes. The Wanless Review Group modelled the relationship between need and demand for services and identified a cost-effective package of care by sub-group. This exercise was supported by research on quantitative, preference-based outcome measurement by Professor Ann Netten and colleagues at the PSSRU, University of Kent, who provided data to estimate how far services could improve outcomes for older people. Such outcome measures derived from the Older People's Utility Scale (OPUS) project which develops and values social outcomes found to be important to older people (Netten et al. 2002; 2005; 2006); the Relative Needs Formula project that measures the impact of services on these outcomes (Darton et al. 2006); and the home care user experience extension project.

The PSSRU also developed a dynamic micro-simulation (DMS) model taking an actual (sampled) population and simulating how people would respond to different social care systems (Forder and Fernández 2009). This DMS model developed from the static micro-simulation model developed by Wanless (2006). The Forder and Fernandez (2009) report was commissioned by the UK Department of Health to inform a Green Paper examining long-term care funding reform. The DMS model is designed primarily to consider the effects of changing the financial system. Whereas the Wanless model used data from the first wave of the English Longitudinal Study of Ageing (ELSA), due to limitations in the ELSA sample size the Forder and Fernandez model uses the British Household Panel Survey (BHPS). The BHPS is an annual survey consisting of a nationally representative sample of households recruited in 1991. This longitudinal survey provides details of wealth, levels of need, disability rates, health status, marital status, informal care-giving within the home, housing tenure, household composition and socio-economic characteristics. In this model care-giving outside the home is imputed from ELSA.

The DMS model determines people's needs and wealth/income and combines this with individual characteristics data for each person in the BHPS sample. Potential use of care and support is then calculated based on need and other characteristics. The model simulates the budget-constrained, needs-eligibility criteria applied by local councils in allocating financial support. Individuals that are eligible on needs grounds are assigned a potential level of support (the 'normative' level). Taking into account the means-tested funding system and the effect on behaviour of the imposition of charges, the model produces estimates of recipient numbers by type of care and calculates the level of public and private expenditure on care.

2.5 Macro-simulation models for Germany, Spain and Italy

Comas-Herrera and Wittenberg (2003) investigated the sensitivity of projections of future long-term care expenditure in Germany, Spain, Italy and the United Kingdom to changes in assumptions about demography, dependency, informal care, formal care and unit costs. This European Commission-funded study adjusted pre-existing LTC forecasting models for the UK, Germany and Spain and developed a model for Italy (with three regional variants) to enable comparable projections and sensitivity analyses.

Figure 2.1 Spanish model of LTC demand and expenditure

Users

N of people * Dependency rate * Utilization rate * Service Cost = Service Total Expenditure

Total Public Expenditure

Share of Public Expenditure

-Co-payment[1]

Share of Private Expenditure

+Co-payment

Total Private Expenditure

By:
Age
Gender

By dep type:
Independent
Moderate
Severe

By:
Age
Gender

By dep type:
- Independent
- Moderate
- Severe

By care type:
1. Formal:
1.1. Home care
a) Private
b) Public
1.2. Residential
1.3. Day care
2. Informal Care

By:
Age
Gender

Figure 1 Spanish LTC projections model

(1) In Residential and Day Care it is a % of the user's pensions

Source: Comas-Herrera and Wittenberg, 2003: Figure 1, page 110

All of these models are cell-based macro-simulations. Their level of complexity and sophistication varies depending on data availability. In all the models population is projected by age, gender and dependency level; and demand for LTC services is projected under the headings of informal services, formal home care and residential long-term care. A further step projects expenditure on LTC.

The UK model is the PSSRU model described above and is the most complex. Whereas in the UK model, future utilisation is forecast based on multi-variate analysis of the determinants of current utilisation, in the Italian model the proportion of each sub-group of the older

population by region, age, gender and dependency, who receive each service, is estimated and this proportion is held constant over time. In the Spanish model, utilisation patterns by dependency are held constant over time (Figure 2.1).

Figure 2.2 German model of LTC demand and expenditure
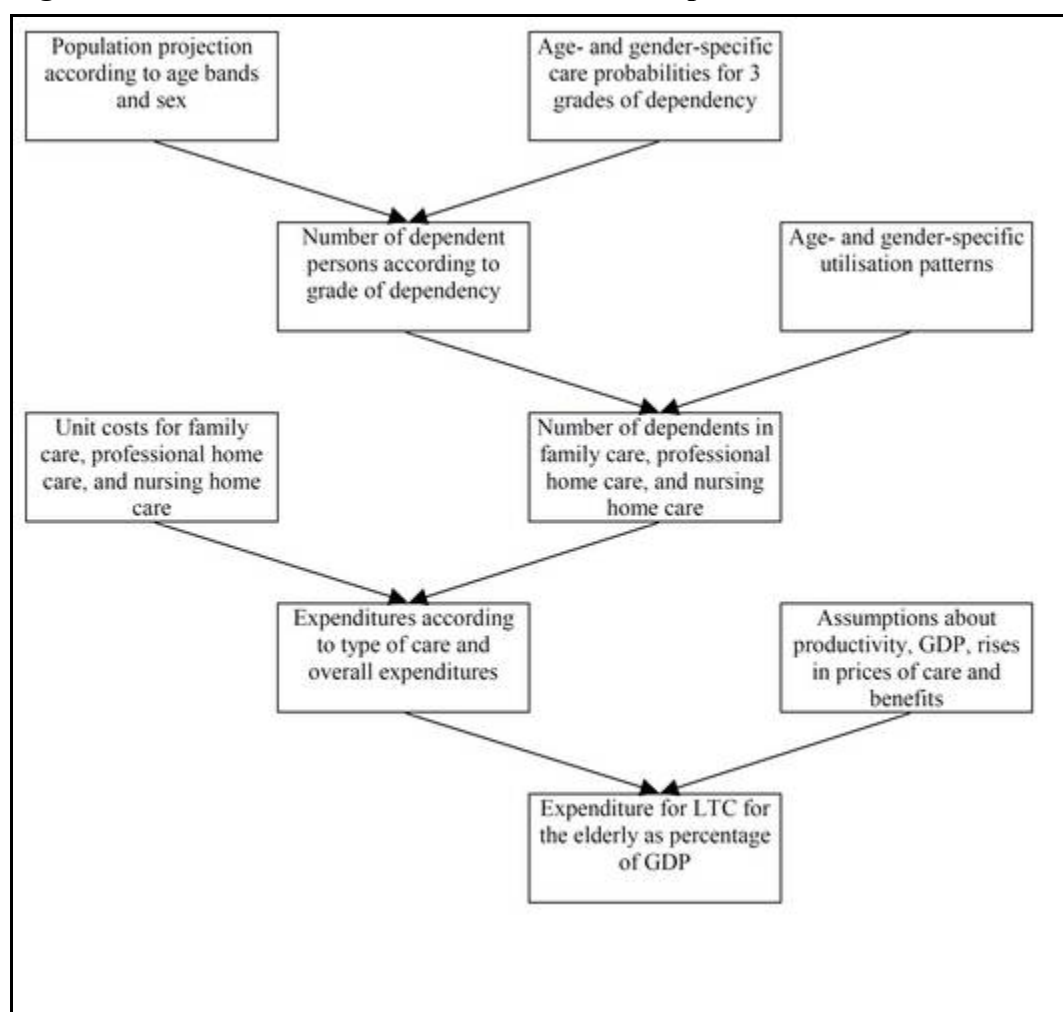
Source: Comas-Herrera and Wittenberg, 2003: Figure 1, page 98

In the German model, estimated age and gender-specific utilisation patterns are held constant over time (Figure 2.2). The degree of estimation required to establish the base case utilisation patterns in each country is highly variable. Only in the PSSRU model for the UK is there adequate data to employ multi-variate regression analysis to estimate functions for utilisation of domiciliary services.

2.6 Long-term care models in Ireland

Long-term care modelling in Ireland has necessarily followed the macro-simulation method because of the absence of longitudinal or cross-sectional surveys of individuals to support micro-simulation modelling. The Mercer report (Department of Social and Family Affairs

2002) was a first macro-simulation model of LTC demand for the Republic of Ireland. In the absence of Irish data on the prevalence of disability, Mercer applied UK data on disability prevalence, assuming centrally that healthy life expectancy would increase in line with total life expectancy. Other projections assumed static disability prevalence; reductions in disability rates exceeding the base projection; and increased disability rates. Mercer projected numbers of people aged 65 and over who would need long-term care from 2001-2051 by applying this range of projected levels of disability to population projections. While estimating current numbers in receipt of residential and community-based long-term care, the Mercer methodology made no specific forecasts of future utilisation patterns or numbers receiving alternative forms of care. The Mercer methodology is highly aggregated, with projections reported at the single-cell level of all people aged 65 and over. The Report of the Interdepartmental Working Group on Long Term Care, 2006 (Department of Health and Children 2008) updated these projections to take account of population change, without changing Mercer's disability prevalence projections or further developing the Mercer methodology.

The Wren (2009) model is a macro-simulation model which employed Irish disability trend data to project the evolution of disability and future residential LTC utilisation. Its approach is similar to the Spanish and Italian models in Comas-Herrera and Wittenberg (2003) but at a much more aggregated level and restricted to projected residential LTC utilisation. In effect, although projecting disability and need for care by single year of age and gender, the Wren (2009) model then aggregated projected residential LTC utilisation to the single-cell level of population aged 65 and over, assuming a constant age and disability-specific utilisation rate, based on estimated utilisation of residential LTC in the 2006 base year. The approach in this report builds on the Wren model by employing much greater disaggregation of projected residential LTC utilisation by age and gender and additionally projecting utilisation of care in non-residential settings. The methodology is explained further in Chapter 7.

2.7 Conclusions

The international literature supports a view of the determinants of LTC need and demand as multi-factorial encompassing: age, gender, disability, proximity to death, marital status, household composition, socio-economic status, housing tenure, region, and supply of care, whether informal, formal or in acute hospitals. The more complex models of LTC demand have been developed on the basis of survey data, which facilitate multi-variate analysis of the predictors of demand, in which the effects of factors such as age, disability and marital status can be distinguished. In the development of models for countries where there is inadequate data to support multi-variate analysis, the modelling approach has been to estimate utilisation of alternative forms of care in a base year by age and gender or by age, gender and level of dependency. Assuming that these proportions remain constant over time, future utilisation is projected based on demographic change alone or forecast disability rates. The latter approach is also followed in this analysis.

Chapter 3 Health and Social Care in the Republic of Ireland

3.1 Introduction

This chapter reviews the health and social care system in the Republic of Ireland, with particular emphasis on the provision of care services to older people. The next section is an overview of the Irish system of health and social care and of the commitments of the Government elected in 2011 to fundamental reform of the system. Section 3 reviews the system of health administration. Section 4 reviews health spending. Section 5 reviews care services for older people under the headings: residential care, home helps and home care packages.

3.2 Overview

Although the health care system in the Republic of Ireland is predominantly funded by the Exchequer from general taxation, there is no guarantee of universal or equitable access. An Expert Group report observed in 2010 that the Irish health care system had "some unusual features which make it very complex relative to other countries". These features included the entitlement/eligibility arrangements for free or subsidised care, the proportion of the population holding private health insurance and the complex cross over in the delivery (by professionals and institutions) of public and private health care (Department of Health and Children 2010).

In the Republic of Ireland, the majority of the population pays out-of-pocket fees for access to primary care supplied by self-employed general practitioners. A minority of the population is eligible for medical cards or GP-visit cards on the basis of either income or income and age combined, which give their holders access to GP care free at the point of delivery. Reflecting falling incomes, the proportion of adult men with medical cards increased from 24% in 2007 to 31% in 2010; and the proportion of adult women with cards increased from 34% to 41% (Central Statistics Office 2011). The income ceiling for eligibility is set higher for people aged 70 and over with the result that 88% in this age grouping were covered by medical cards in 2010. In 2006, the baseline year for the analysis in this report, all people aged 70 and over were eligible for medical cards. Means-testing was re-introduced with the onset of the banking and fiscal crisis in 2008.

The proportion of Irish adults who were covered by private health insurance fell from 49% in 2007 to 47% in 2010. A central motivation for purchasing private insurance is to ensure timely access to hospital care, whether in a public or private hospital (The Health Insurance Authority 2010). Public hospitals may earn additional income from treating private patients and are not obliged to operate a common waiting list for elective procedures. In 2010 14% of

medical card holders were on a waiting list for some procedure compared to 4% of those with private health insurance (Central Statistics Office 2011).

No definition of "community care" appears in Irish legislation, with the result that eligibility for services is unclear. While there is now standardised assessment for residential long-term care, this is not the case for community care services, such as home helps and home care packages (Brick et al. 2010). Some community services are available only for patients with medical cards. The Expert Group observed "the whole pattern of entitlement to community services is complex and confusing" (Department of Health and Children 2010).

The Fine Gael-Labour Government which came to office in March 2011 committed in its Programme for Government to introducing phased access to free GP care for the entire population in its term in office; and to introducing equal access to hospital care under a Universal Health Insurance system by 2016. In relation to care of older people, the Programme stated that:

> "Investment in the supply of more and better care for older people in the community and in residential settings will be a priority of this Government. Additional funding will be provided each year for the care of older people. This funding will go to more residential places, more home care packages and the delivery of more home help and other professional community care services. The Fair Deal system of financing nursing home care will be reviewed with a view to developing a secure and equitable system of financing for community and long-term care which supports older people to stay in their own homes." (Department of the Taoiseach 2011)

The analysis in this report is necessarily based on historical patterns of care and utilisation. The reform commitments of the new Government would, if realised, transform the system of health and social care. Their implementation, however, must take place within a challenging fiscal and economic environment, which was apparent in the HSE (Health Service Executive) National Service Plan 2012, which announced reductions in home help hours and recipients and closures of beds in public community nursing units (Health Service Executive 2012).

3.3 Health administration

The implementation of the Universal Health Insurance system will bring a new wave of reform to a system of health administration, which has undergone considerable change since 2005. In the Republic of Ireland, as in Northern Ireland, the funding and administration of health and social services are integrated. In the current system, responsibility for administration of the health system is devolved to the Health Service Executive (HSE) while responsibility for policy rests with the Department of Health, under the Minister for Health.

Within the Department of Health, the Office for Older People supports the Minister of State for Older People in exercising cross-departmental responsibilities. The Office comprises three Units – Services for Older People; Long Stay Charges; and Strategy Development.

Following the establishment of the HSE in 2005 to replace regionally-based Health Boards, its delivery and administrative structure separated responsibility for hospitals from responsibility for primary, community and continuing care, including long-term care of older people. In a subsequent restructuring in 2009, the Integrated Services Directorate (ISD) incorporated the previously separate offices of the National Director for Primary, Community and Continuing Care (PCCC) and the National Director for Hospitals (NHO). Four regional directors became responsible for managing health and social services in their regions through Integrated Service Area (ISA) managers (Brick et al. 2010). The new Government announced in December 2011 that legislation would be drafted to replace the HSE's board /chief executive structure with a directorate (or "transitional governance structure") as "a key component in the move towards UHI (Universal Health Insurance)". Seven directors would be appointed to oversee: Hospital Care, Primary Care, Mental Health, Children and Family Services, Social Care, Public Health and Corporate/Shared Services (Department of Health and Children 2011).

3.4 Health expenditure

Total public health expenditure has decreased in nominal terms from €15.2 billion in 2008 to an anticipated outturn of €14 billion in 2012. The allocation for public current spending on programmes under the "Older Persons and Fair Deal" heading was €1.4bn in 2012, 10.3% of the current or day-to-day health and social spending budget (Department of Finance 2012). Programmes funded from this sum include: home help services, day care services and residential services, whether directly provided by the state through the HSE or subsidised by the state and purchased from private and voluntary providers. In the OECD's international comparisons of health spending, in which social spending is excluded, Ireland's total health spending (public and private) has been estimated at 8.7% of GDP in 2008, the same proportion as the UK in that year (OECD 2010).

3.5 Care of older people - services and entitlement

3.5.1 Residential Long-Term Care

Cross-country comparisons of institutional care rates are difficult because of differing definitions of care. There is considerable divergence in institutional care rates internationally. It has been calculated that 4.8% of the population aged 65 and over in the Republic of Ireland were in receipt of long-term care in an institution in 2006, placing Ireland close to the average among countries with broadly comparable data (Wren 2009). Chapter 5 proposes a possible

alternative estimate of utilisation, which gives the Republic a utilisation rate of 4.4% of population aged 65 and over in 2006.

There are broadly three kinds of residential long-term care institution in the Republic of Ireland, as defined by their form of ownership: public, private or voluntary. Chapter 5 analyses in detail the data on the proportions of care provided in these settings. Whereas public and voluntary institutions were formerly the dominant setting for care, tax incentives have led to a recent increase in the number of private nursing homes so that this is now the most rapidly growing sector, while public care provision has been affected by fiscal constraints and public employment ceilings.

The system of access to and eligibility for publicly-funded or subsidised residential care was placed on a new statutory basis in 2009 with the introduction of the Nursing Home Support Scheme (NHSS), also referred to as the "Fair Deal" scheme. Formerly, and in the 2006 base year for this analysis, in a complex and inequitable system, state subsidy for residential LTC was subject to means-testing in public institutions or private nursing homes from which the HSE contracted beds; and subject to mean-testing and an assessment of dependency in non-contracted private nursing homes. The NHSS was introduced with the aim of making state support consistent and equitable across all settings (Pierce et al. 2010).

Applicants under the NHSS must have a Care Needs Assessment carried out by a health professional. The NHSS requires a co-payment from the resident based on a financial assessment of their income and assets, which can include their family home. The resident contributes 80% of assessable income and 5% of the value of any assets per annum above €36,000 for an individual or €72,000 for a couple. The 5% contribution based on land or property assets may be deferred and collected from the person's estate. When deferred, it is referred to as the "Nursing Home Loan". The principal residence is only included in the financial assessment for the first 3 years of a person's time in care. There is therefore a 15% or 'three year' cap on the amount of the value of their family home that must be contributed to their care (Department of Health 2011).

Residents may choose care in any nursing home on a HSE list of public, voluntary and approved private nursing homes that are participating in the scheme. The resident pays their contribution to the nursing home and the HSE pays the balance of the cost of care. Anecdotal evidence of delays or problems in both care and financial assessments for the scheme noted by Pierce, Fitzgerald and Timonen (2010) has also been supported by Age Action in a submission to this study (Roe 2011). Shortfalls in funding for the NHSS led to a temporary suspension of HSE financial support approval in 2011. The shortfall was attributed to "an unexpected and unexplained increase in the average length of stay for nursing home patients; the resultant higher net demand for nursing home places; and the increase in nursing home costs" (Department of Health 2011b). It has been estimated that almost 24,000 people would be in receipt of financial support in 2012 (Health Service Executive 2012). The NHSS is due to be reviewed in 2012.

3.5.2 Home Helps

The home help service was initially developed by voluntary, non-profit organisations. From the 1970s, health boards also came to employ home helps directly. Home helps provide domestic services such as cleaning, shopping, doing laundry and making meals; some home helps provide personal care and companionship. The establishment of the health care assistant role in the 1990s was the first publicly financed and publicly-provided, non-medical, home care service in Ireland. Community health care assistants provide personal care services, like washing, dressing and lifting, and helping in and out of bed (Timonen et al. 2006).

Home help is supplied by publicly-employed staff, by community and voluntary organisations and by private sector agencies. Individuals apply for home help services through the local public health nurse and an assessment of need is carried out to determine if they are suitable for home help. Home Help services are provided either directly by the Health Service Executive (HSE), or the HSE makes arrangements with other organisations to provide the service (Pierce et al. 2010). There has been survey evidence of significant differences in provision of home help services, depending on area of residence, with residents in the East more likely to avail of such services than their counterparts in the West (O'Hanlon et al. 2005). The home help service has no statutory basis and its patchy provision, combined with the system of state subsidy for residential care, biases utilisation towards residential care.

Home help services are financed through general taxation. Older people receiving home help may be asked to make 'voluntary' contributions which vary depending on the person's means and the locality (Timonen et al. 2006). Older people with the means to do so may choose to purchase care privately. Evidence reviewed in Chapter 5 shows that 11% of people aged 75 and over whom the 2006 National Disability Survey recorded as having a disability paid for help with everyday activities (Table 5.17, Chapter 5).

3.5.3 Home Care Packages

Funding for the Home Care Support Scheme, also known as the Home Care Packages (HCPs) scheme, was introduced in 2006 primarily to reduce the utilisation of hospital care and residential long-term care by older people. A Home Care Package (HCP) is defined by the HSE as consisting of "community services and supports which may be provided to assist an older person, depending on their individual assessed care needs, to return home from hospital or residential care or to remain at home." The HCP may comprise "paramedical, nursing, respite and/or home help and/or other services depending on the assessed care needs of the individual applicant" (Health Service Executive 2011).

The HCP scheme is financed through general taxation and has no legal basis (Pierce et al. 2010). The NESF (2009) noted that different amounts of funding were available for HCPs in different areas and that implementation of policy relating to the HCP scheme was variable. The HCP may consist of a combination of direct services, whether provided by public

agencies or purchased from private and voluntary agencies, and cash payments, to enable the recipient to purchase their own care. Home Care Packages are regarded as having made home-based care a more viable alternative (Pierce et al. 2010).

While in 2006, the base year for this analysis, the HCP scheme was at an early stage, the data reviewed in Chapter 5 show that the number of recipients has grown from 5,300 in 2006 to nearly 11,000 in 2011. Numbers of HCP recipients have continued to increase, while numbers of home help recipients have reduced since 2008 (Table 5.15 Chapter 5).

Chapter 4 Health and Social Care in Northern Ireland

4.1 Introduction

The National Health Service (NHS) in the United Kingdom (UK) was established in 1948, with a guiding principle of equity - health services were to be free at the point of use and financed entirely from taxation, which meant that, ceteris paribus, people paid according to their means. Since inception, the health services of England, Scotland, Wales and Northern Ireland have diverged, although all continue to offer free healthcare to UK residents at the point of use. A distinguishing feature of the health service in Northern Ireland is the integration of health and social services, which is believed to promote multi-disciplinary working and provide a more seamless provision of health and social care. Since political devolution in the late 1990s there has been increased divergence in the four health systems of the UK: for example, prescription charges were abolished in Northern Ireland in April 2010 and are to be abolished in Scotland in 2011, while in England entitlement to prescriptions remains means tested. There are also differences in entitlements to personal care across the four countries: older people receiving care at home in Northern Ireland are entitled to receive free personal care funded by the Health and Social Care trust irrespective of their financial status; however, older people in residential or nursing homes in Northern Ireland pay for personal care; while personal care in nursing and domiciliary settings is free in Scotland (CARDI 2010).

4.2 Health administration

The structure of the health and social services in Northern Ireland has recently undergone a substantial re-organisation following the Review of Public Administration. The new structure includes:

- A Health and Social Care Board which focuses on commissioning, resource management and performance management and improvement;

- A Public Health Agency which aims to improve and protect well-being;

- A Patient-Client Council that gives patients, clients and carers, and communities a voice on health; and

- A Business Service Organisation which provides business support and specialist professional services to the health system (Breen 2010).

There are five Health and Social Care (HSC) Trusts in Northern Ireland (Belfast, Northern, South Eastern, Southern and Western) which provide health and social care services on a regional basis.

4.3 Health expenditure

Since the mid-1990s, there has been a significant increase in health expenditure in Northern Ireland as well as in the UK as a whole, rising to approximately 11.5% of GDP in 2010. These increases were associated with significant increase in staff numbers and a decrease in waiting times for both inpatient and outpatient procedures; however, it remains to be seen how the current financial pressures will impact on waiting times, with funding for the health system to remain constant or decrease in the coming years. Usage of private health care has been traditionally lower in the UK than in other countries; in 2006, only 10.6% of the UK population subscribed to private medical insurance (Hawe 2009), compared to almost 50% in the Republic of Ireland.

Older people in Northern Ireland as in other developed countries are significant users of the health care system. In Northern Ireland, most health expenditure can be accounted for under one of nine programmes of care, including acute services, elderly care, mental health and primary health. Acute services tend to receive the largest share of expenditure, accounting for 41.8% of expenditure in 2008/9 (Northern Ireland Assembly 2011), followed by elderly care which included 23.3% of expenditure. However, older people use health services in programmes of care other than "elderly care"; for example 34% of all admissions to health and social care hospitals are to older people, meaning that health and social care expenditure for older people significantly exceeds this amount. Expenditure in the elderly care programme of care includes expenditure in a wide variety of areas, the largest being nursing and residential home care making up 37.5% of planned expenditure in 2008/09, followed by domiciliary care accounting for 20.1% of care (Iparraguirre 2009).

4.4 Care of older people - services and entitlement

A key aim of the Department of Health, Social Services and Public Safety (DHSSPS) in Northern Ireland is to support an increasing number of older people to live independent lives, preferably in their own homes. *Ageing in an Inclusive Society*, launched in 2005, sets out the approach to be taken by Government to promote and support the inclusion of older people in Northern Ireland (Office of the First Minister and Deputy First Minister 2005). One of the policy's six strategic objectives is "to deliver integrated services that improve the health and quality of life of older people". The strategy emphasised the importance for many older people of living independently. It gave a commitment to developing the range of services designed to meet the needs of older people, and to increasing the percentage of older people who receive the care they need in a domiciliary setting (Pierce et al. 2010).

Care for older people in Northern Ireland, as elsewhere, is delivered through a number of channels; these include informal caregivers, home help, domiciliary care, long term hospital care and institutional care. Older people living in their own homes can avail of support under the home help service. Home helps provide domestic and social care services to people in their own homes, the aim of which is to enable people to remain in their own homes for as long as possible, and therefore avoid or delay the need for admission to hospital or residential accommodation. Home help services are provided by the five HSC Trusts. In Northern Ireland unlike the rest of the UK, the supervision of home helps is largely undertaken by social work assistants. Such assistants are responsible for assessing need and recruiting home helps, as well as allocating services (Pierce et al. 2010). Once a need has been established, home help services are provided free of charge to those aged 75 and over, and those in receipt of income support or family credits; however, all others are subjected to a means test to establish their contribution to the cost of the service (DHSSPS 2010). In 2009, 17,527 persons aged 65 and over were in receipt of a home help service, 83% of whom were aged 75 or over (DHSSPS Community Information Branch 2009), with some evidence that the number has been decreasing over time (DHSSPS Community Information Branch 2000, 2006).

Care management was first proposed in Northern Ireland in 1990 in the White Paper 'People First: Community Care in Northern Ireland for the 1990s', and has since become a key component of long-term care for older people (DHSSPS 1990; Pierce et al. 2010). Care managers assess an individual's needs in respect of care at home and placement in care homes. A care package is the main form of care recommended for an individual through the care management process. Clients are initially screened to determine whether a care management assessment is necessary. If a client passes the initial screening, a care management assessment is carried out to determine the form of care which best meets the client's needs. At the end of the assessment, one of three types of care package may be recommended: domiciliary care, residential care or nursing home care (Pierce et al. 2010).

Up to 2007, the DHSSPS published a breakdown of the number of care packages assigned in each category, which in 2007 amounted to 9,608 domiciliary care packages (44.0% of total); 7,728 nursing home care packages (35.4%) and 4,497 residential care packages (20.6%) (DHSSPS Community Information Branch 2008). However, since then information on domiciliary care services provided in the community regardless of their complexity is provided separately. A survey of domiciliary care services in Northern Ireland for the period 20th-26th September 2009 showed that 23,377 people were in receipt of publicly funded domiciliary care, of whom 28% received intense domiciliary care (defined as 6 or more visits and more than 10 contact hours during the survey week), of whom 85% were aged 65 or over.

In Northern Ireland a distinction is made between residential care homes and nursing homes; the former being for people who can no longer manage in their own home, while the latter are care homes for people with a disability or illness that require nursing care on a regular basis. In 1998, the Royal Commission on Long-Term Care proposed that personal and nursing home care be provided free to older people in the UK. Between then and 2002, all parts of the UK

introduced free nursing care for older people in care homes. However, Scotland was the only country to offer free personal care for older people both in care homes and in domiciliary settings (Bell and Bowes 2006). Therefore in Northern Ireland, care home recipients will be responsible for personal care (including help with eating and washing) and hotel costs (accommodation and food).

The local HSC Trust is responsible for determining how much is payable for care home through a financial assessment, which examines both income and capital. A person must be left with £22.30 a week to spend as they choose after making their contribution towards care home fees. If an individual has over £23,250 in capital, they will be regarded as being able to meet the full cost of their care; capital between £14,250 and £23,250 is regarded as providing an income of £1 per week for every £250 of capital; capital below £14,250 is not taken into account. An individual's home may be regarded as capital; however, this will not be the case if certain people still live in the property, including a husband, wife or a close relative who is over the age of 60 or incapacitated. Figures from the DHSSPS for the year 2009/2010 show that 9,677 people aged 65 years and over were benefiting from residential care (31%) or nursing home care (69%) in Northern Ireland (DHSSPS Community Information Branch 2010c). However, the actual number in care homes is likely to be higher as these numbers do not include people who pay privately for their care home.

Chapter 5 Data analysis for the Republic of Ireland

5.1 Introduction

The first step to projecting need for and utilisation of long-term care is to analyse existing patterns of utilisation of care in all settings and how these patterns of utilisation relate to need for care. These relationships form the basis for projecting future need and utilisation. At its simplest, the definition of need for care might be assumed to be age. Adopting an assumption of constant age-related utilisation patterns, future utilisation might be forecast purely on the basis of the growth in numbers of people at older ages. This is a pure population growth scenario, which implicitly assumes static age-related disability and therefore static age-related need for care. However, evidence of improvements in age-related disability suggests that this would produce too high an estimate of future need for care and supports an analysis of disability rates, their evolution and the relationship of disability to utilisation. Future utilisation is then projected on the basis of the growth in numbers of people at older ages with levels of disability that indicate a need for care.

This chapter examines and analyses the data available to support projecting need and utilisation on both these bases: pure population growth; and forecast trends in disability. The first section examines the data available to support forecasts of population growth and ageing. Section 3 analyses the available data on disability rates, differentiating between a number of definitions of disability. Section 4 examines in overview evidence on utilisation of care in all settings by people with disability. The following three sections examine utilisation in each setting in greater detail: Section 5 examines the evidence of utilisation of residential long-term care; Section 6 examines the evidence of utilisation of care in the community, supplied by formal carers such as home helps; and Section 7 examines the evidence of utilisation of care in the community supplied by informal carers, typically family members.

Although the primary forecasts in this analysis assume that patterns of utilisation of care in different settings will remain constant, it is recognised that patterns of need for and utilisation of formal care in either residential or community settings are likely to change in response to the availability of informal carers. Since such carers are typically either spouses/partners or adult children, Section 8 examines evidence on household composition; and Section 9 evidence on female labour force participation. Section 10 concludes. In this chapter a picture is developed of patterns of utilisation in 2006, which is chosen as the base year for this analysis because of the availability of detailed data on population, disability and the relationship of disability to the utilisation of care from the 2006 Census of Population and 2006 National Disability Survey.

5.2 Demographic data

The primary sources of demographic data for this analysis are Census 2006 and the population projections of Morgenroth (2009). Although preliminary results for Census 2011 were published in September 2011, detailed Census volumes for 2011 population disaggregated by age or disability status were not available at the time of this analysis. (The implications for this analysis of the publication following its completion of the age breakdown of Census 2011 are reviewed in Chapter 10.) Although changing patterns of migration caused by the economic downturn make forecasting overall population a difficult exercise, for the purpose of this analysis the population of interest is aged 65 and over, forecasts of whose absolute numbers in the years to 2021 are largely independent of economic and migration assumptions. The share of such older people in the population will however change depending on birth rates and migration among younger people.

CSO (2011b) records a profound reversal in migration patterns in the years from 2006-2011, which reflects the economic downturn. In the three-year period 2005-2007, net inward migration is estimated to have averaged nearly 65,000 per annum. In the three-year period 2009-2011 net outward migration is estimated to have averaged 25,500 per annum. Were it sustained, the most significant effect of this reversal on long-term care demand and supply would be to increase the dependency ratio and reduce potential family care-givers for older people. Of the estimated 118,000 men and 89,000 women who emigrated in the years 2009-2011, 89% of both emigrant men and women were aged 15-44.

A majority of emigrants over these three years were not of Irish nationality, which may mean that a high proportion of these emigrants did not separate from older parents. However, the proportion of emigrants of Irish origin has been growing, reaching an estimated 40% in 2011. Sustained emigration of significant numbers of younger Irish women in particular would affect the availability of informal care-givers. The peak cohort for informal caring is aged 45-54 (discussed in Section 5.8). Emigration of women and men aged 35-44 would affect numbers of potential care-givers in that cohort over the ten years to 2021, the period covered by these forecasts. The upsurge in emigration has not been evident in the 45-64 year old age cohort, so these very large changes in emigration patterns will not greatly affect the numbers of people aged 65 years and over in the years to 2021.

Table 5.1 compares the Census 2011 preliminary count of total population with forecast total population from Morgenroth (2009), CSO (2008b) and CSO (2011b). The Morgenroth (2009) forecast comes closest to the actual count, which supports favouring the Morgenroth forecasts. CSO (2011b) notes the discrepancy between estimated 2011 population and Census 2011. The CSO plans to publish revised population estimates for the years 2007 to 2011 in 2012 following detailed analysis of the Census to determine how this differential arose.

Table 5.1 Census 2011 population count compared to earlier forecasts

	Morgenroth forecast	CSO 2011 estimation	CSO 2008 forecast	Census 2011 preliminary count
Total population 2011	4,624,000	4,484,300	4,676,000	4,581,300
Difference between actual and forecast	-42,700	97,000	-94,700	

Note: Morgenroth (2009) and CSO (2008b) M2F2 lower immigration and fertility assumptions.

In the absence of a Census 2011 population count by age and gender, the Morgenroth (2009) forecasts to 2021 of numbers of people aged 65 and over by single year of age (SYOA) and gender are employed in this analysis. Table 5.2 compares Morgenroth's forecasts for numbers of older people with those of CSO (2008b), the most recent CSO publication which forecasts beyond 2011. Morgenroth forecasts greater numbers of people aged 65 and over. The small 2.8% difference between the forecast populations suggests that should the Morgenroth (2009) forecasts prove overstated, the implications for projected need and utilisation will be equally marginal.

Table 5.2 Comparison of forecasts of population aged 65 and over

	Morgenroth forecast	CSO 2008 forecast	Difference in forecasts
2011	547,700	535,700	12,000
2016	663,400	645,900	17,500
2021	792,100	769,500	22,600

Morgenroth (2009) forecasts rapid absolute growth in numbers of older people between 2006 and 2021, with numbers aged 85 years and over more than doubling from 48,000 to nearly 106,000 and those aged 75-84 years increasing by over half from 157,000 to 248,000 (Table 5.3). As noted, these forecast numbers are largely independent of assumptions about growth rates and consequent immigration patterns although the share of population they represent is not. Whereas Morgenroth (2009) forecast that from 2006 to 2021, the proportion of population aged 65 years and over would increase from 11 per cent to 15.4 per cent and the proportions aged 80 and over and 85 and over respectively from 2.7 per cent to 4.0 per cent and 1.1 per cent to 2.1 per cent, there is a likelihood that sustained net outward migration in younger age cohorts may increase these older age shares of population.

Table 5.3 Forecast population by age cohort and gender 2006-2021

	2006	2011	2016	2021	Increase 2006-2021
MALE					
Aged 65-69	70,895	87,400	107,176	117,299	46,404
Aged 70-74	56,540	64,542	80,836	100,221	43,681
Aged 75-79	40,121	47,592	56,031	71,792	31,671
Aged 80-84	24,694	29,553	37,075	45,431	20,737
Aged 85-89	11,021	15,117	20,168	27,528	16,507
Aged 90 and over	3,824	5,764	9,600	15,035	11,211
FEMALE					
Aged 65-69	72,501	87,714	107,260	117,932	45,431
Aged 70-74	62,612	68,599	83,507	102,628	40,016
Aged 75-79	52,345	56,437	62,641	77,126	24,781
Aged 80-84	40,190	42,803	47,444	53,779	13,589
Aged 85-89	22,281	27,677	31,493	37,302	15,021
Aged 90 and over	10,902	14,447	20,145	25,993	15,091
TOTAL					
Aged 65-69	143,396	175,114	214,436	235,231	91,835
Aged 70-74	119,152	133,141	164,343	202,850	83,698
Aged 75-79	92,466	104,030	118,672	148,918	56,452
Aged 80-84	64,884	72,356	84,519	99,210	34,326
Aged 85-89	33,302	42,793	51,660	64,830	31,528
Aged 90 and over	14,726	20,212	29,746	41,028	26,302

Source: Morgenroth (2009)

5.3 Disability

The degree to which these forecast increases in numbers of people at older ages will generate need for long-term care (whether this is supplied formally or informally), will largely be determined by developments in disability rates. In general, severe disability is considered an acceptable proxy for the need for long-term care, so that defining and measuring disability is important in assessing LTC demand (Schulz 2004). Employing this definition of the need for care must however be subject to the caveat that in the Republic of Ireland, the current ill-defined and unsystematic determination of eligibility for formal home care leads to discrepancies between utilisation rates and the disability status of recipients, explored further in Section 6 below (Murphy 2011).

This analysis employs three definitions of disability. The first is the Census category of substantial physical limitation, which is adopted as a proxy for severe disability following the methodology of Wren (2009), an earlier study that explains in detail the rationale for selecting this definition of disability. Estimates of disability rates available by single year of age (SYOA) and gender from Census 2002 and Census 2006 show a declining rate. These provide a basis for forecasting disability rates and prevalence in the years to 2021, a forecasting methodology reviewed in Chapter 8. Figure 5.1 illustrates graphically the evidence from these

sources of declining overall disability prevalence in people aged 72 and over in the years from 2002 to 2006.

The second definition of disability employed in this analysis is some or more reported difficulty experienced by people with disabilities in performing defined everyday activities. The 2006 National Disability Survey estimates the prevalence of people with disability so defined and their utilisation of care in different settings. This source of data relating disability to utilisation was not available to the Wren (2009) study and enables the development of a much more detailed picture of utilisation, from which forecasts of utilisation of non-residential care can be developed.

Figure 5.1 Percentage of population aged 65 & over with a disability by year of age, Republic of Ireland 2002 and 2006
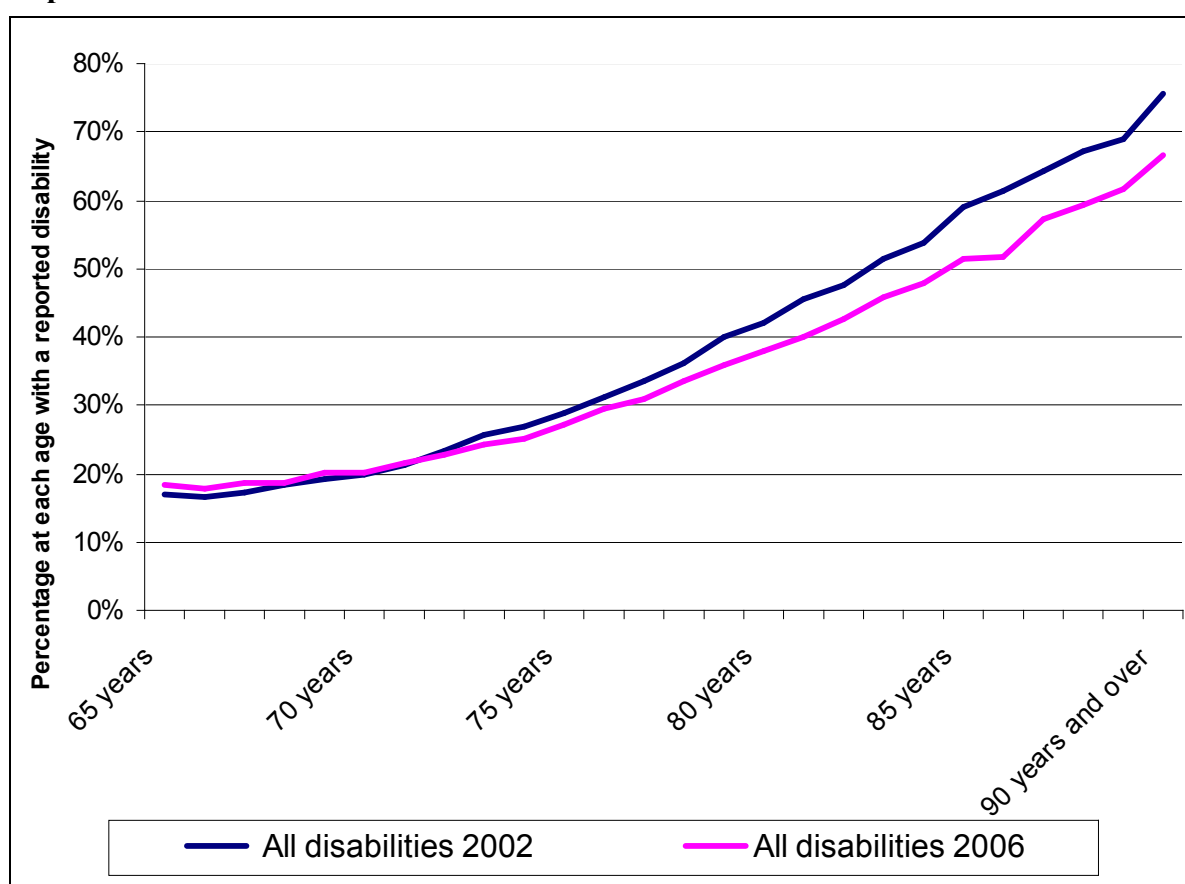
Source: Census of Population Disability Volumes, 2002 and 2006

The 2006 National Disability Survey (NDS) recorded the incidence of a wider range of disabilities among a sample of those who had reported a disability in the Census and surveyed a further sample of those who had not reported a disability. This revealed in particular that when experience of pain or breathing disabilities (such as asthma) are included among disabling conditions, this has a considerable impact on the reported prevalence of disability,

increasing the Irish disability rate from the 9.3 per cent recorded in Census 2006 to 18.5 per cent of the population, a rate which is closer to international experience (Central Statistics Office 2008). In some tabulations in this chapter, this NDS count of all persons with disability is used, which is the third definition of disability employed. The NDS recorded the levels of difficulty experienced by people with disabilities in accomplishing certain everyday tasks, such as taking a bath or shower, dressing, feeding one's self, going to the toilet and getting in and out of bed (Central Statistics Office 2010b: see Chapter 6 for full question). These defined activities are broadly compatible with the Activities of Daily Living (ADL) index originally developed by Katz et al (1963). ADL activities are tasks of everyday life with an emphasis on personal care, such as eating, bathing, dressing, toileting, and moving about.

There is evidence of difference in the prevalence of disability by gender according to the definitions of disability, sourced from Census 2006 and the 2006 National Disability Survey. Using the Census definition of substantial physical limitation, higher disability rates are recorded for women than for men in all 5-year age cohorts from 65 and over (Table 5.4). Based on survey evidence, the 2006 National Disability Survey estimates numbers in the overall population with some or more difficulty in everyday activities by two older age cohorts and by gender and again shows higher disability rates for women than for men (Table 5.5).

Table 5.4 Rates of substantial physical limitation/severe disability by age cohort and gender, Census of Population, Republic of Ireland 2006

	Aged 65 to 69	Aged 70 to 74	Aged 75 to 79	Aged 80 to 84	Aged 85 to 89	Aged 90 and over	Aged 65 and over
MALE							
Population	70,895	56,540	40,121	24,694	11,021	3,824	207,095
Population with severely limiting conditions	7,293	7,275	7,528	6,495	3,962	1,750	34,303
Severe disability rate	10%	13%	19%	26%	36%	46%	17%
FEMALE							
Population	72,501	62,612	52,345	40,190	22,281	10,902	260,831
Population with severely limiting conditions	7,649	9,422	12,240	13,919	10,410	6,457	60,097
Severe disability rate	11%	15%	23%	35%	47%	59%	23%
TOTAL							
Population	143,396	119,152	92,466	64,884	33,302	14,726	467,926
Population with severely limiting conditions	14,942	16,697	19,768	20,414	14,372	8,207	94,400
Severe disability rate	10.4%	14.0%	21.4%	31.5%	43.2%	55.7%	20.2%

Source: Census of Population Disability Volume 2006

Table 5.5 Persons with some or more difficulty in everyday activities resident in private households and communal establishments as percentage age cohort, 2006 National Disability Survey

	Aged 65 to 74	Aged 75 and over	Aged 65 and over
MALE			
Population	127,435	79,660	207,095
NDS count persons in private households and communal establishments with some or more difficulty everyday activities (Q2.1)	9,461	16,725	26,186
NDS count persons in private households and communal establishments with some or more difficulty everyday activities (Q2.1) as % age cohort	7%	21%	13%
NDS count persons in private households in age cohort with some or more difficulty everyday activities (Q2.1)	8,250	12,499	20,749
NDS count persons in private households with some or more difficulty everyday activities (Q2.1) as % age cohort	6%	16%	10%
FEMALE			
Population	135,113	125,718	260,831
NDS count persons in private households and communal establishments with some or more difficulty everyday activities (Q2.1)	12,497	35,700	48,197
NDS count persons in private households and communal establishments with some or more difficulty everyday activities (Q2.1) as % age cohort	9%	28%	18%
NDS count persons in private households in age cohort with some or more difficulty everyday activities (Q2.1)	11,129	24,858	35,987
NDS count persons in private households with some or more difficulty everyday activities (Q2.1) as % age cohort	8%	20%	14%
TOTAL			
Population	262,548	205,378	467,926
NDS count persons in private households and communal establishments with some or more difficulty everyday activities (Q2.1)	21,958	52,425	74,383
NDS count persons in private households and communal establishments with some or more difficulty everyday activities (Q2.1) as % age cohort	8%	26%	16%
NDS count persons in private households in age cohort with some or more difficulty everyday activities (Q2.1)	19,379	37,357	56,736
NDS count persons in private households with some or more difficulty everyday activities (Q2.1) as % age cohort	7%	18%	12%

Source: National Disability Survey 2006, Volume 2

Further confirmation of this gender difference in the prevalence of disability is provided by the First Results of The Irish Longitudinal Study on Ageing (TILDA). This first wave in a longitudinal study measures disability both by the ADL index and the Instrumental Activities of Daily Living (IADL) Scale (Lawton and Brody 1969). The IADL scale measures difficulty in carrying out such household activities as preparing a meal, doing household chores, shopping for groceries, making telephone calls, taking medications and managing money. TILDA's first wave surveyed only community-dwelling adults aged 50 and over who were capable of providing informed consent to their participation, excluding therefore people in residential long-term care settings and most of those with cognitive impairment. Future waves of TILDA which follow the original surveyed individuals will include people who move to residential long-term care or develop cognitive impairment, widening the scope of the study (Murphy 2011). The First Results from TILDA accord with the Census and NDS findings in reporting a higher prevalence of disability by both ADL and IADL measures for community-dwelling women than men (Barrett et al. 2011: Table 5.6).

Table 5.6 Comparison of disability prevalence in community-dwelling older people by age and gender, National Disability Survey and TILDA measures

	Aged 65 to 74	Aged 75 and over
MALE		
TILDA (ADL & IADL)	12.0%	23.0%
TILDA (ADL)	10.0%	17.0%
NDS private household (ADL)	6.5%	15.7%
FEMALE		
TILDA (ADL & IADL)	13.0%	32.0%
TILDA (ADL)	9.0%	20.0%
NDS private household (ADL)	8.2%	19.8%
TOTAL		
TILDA (ADL & IADL)	13.0%	28.0%
TILDA (ADL)	10.0%	18.0%
NDS private household (ADL)	7.4%	18.2%

Sources: 2006 National Disability Survey; TILDA percentages calculated from Table 7.8 page 214 Barrett et al, 2011

There is a close correspondence between the NDS estimate and the TILDA estimate of the prevalence of difficulty in ADL activities. The recorded prevalence for women aged 75 and over almost exactly coincides. The interviews for TILDA were conducted between 2009 and 2011, whereas the National Disability Survey was conducted in 2006. The higher prevalence of ADL difficulties in the younger age cohort for men and women and the older age cohort for men among the community-dwelling adults surveyed in TILDA compared to the adults surveyed in private households in the NDS could reflect a lower rate of utilisation of residential care by these age cohorts in 2009/2011 compared to 2006. It is also conceivable that the higher prevalence in TILDA reflects some element of reversal of the reducing

disability rate trend in the years 2002-2006, discussed in Chapter 7. Publication of the disability data from Census 2011 will provide further evidence to test these alternative hypotheses.

Application of disability data to forecasting

Whereas the Census-defined disability provides longitudinal evidence of disability trends which can inform disability rate forecasts, the NDS-defined disability measures are related to detailed evidence on patterns of utilisation of care, which can inform projected utilisation. In the following sections of this chapter, further sources of data are combined with this evidence to broaden the picture of utilisation of care in different settings in the 2006 base year. In Chapter 8, the 2006 data on the prevalence of disability by Census and NDS definitions is combined to generate forecast disability and projected disability-related utilisation. Table 5.7 compares the prevalence of disability in both community and residential settings, according to Census and NDS measures.

Table 5.7 Comparison of disability prevalence by age and gender in all settings, Census 2006 and 2006 National Disability Survey

	Aged 65 to 74	Aged 75 and over
MALE		
Census physical limitation	11.4%	24.8%
NDS (ADL in private household & communal establishments)	7.4%	21.0%
FEMALE		
Census physical limitation	12.6%	34.2%
NDS (ADL in private household & communal establishments)	9.2%	28.4%
TOTAL		
Census physical limitation	12.1%	30.6%
NDS (ADL in private household & communal establishments)	8.4%	25.5%

Sources: Census 2006; 2006 National Disability Survey

The NDS estimated prevalence of persons with some or more ADL difficulties is seen to be a more restricted measure of disability than the Census-defined substantial physical limitation. The methodology adopted in this analysis projects future utilisation of care based on the proportions of people with disabilities receiving care in alternative settings in the base year, assuming constant age/gender/disability status utilisation rates. However, due to its longitudinal availability, the forecast evolution of disability rates is based on the longitudinal evidence from the Census definition of disability. Chapter 7 explains the methodological steps in generating these forecasts.

5.4 Utilisation of care in all settings

The 2006 National Disability Survey (NDS) provides the first comprehensive source of information on care for people with disabilities in all settings (Central Statistics Office 2008, 2010b). Immediately following the NDS question recording level of ADL difficulty, interviewees living in private households were asked whether they received help with everyday activities; who helped them; and how often they received help. The interviewees were offered seven categories from which they might receive help: family living with them; family not living with them; friend or neighbour; carer or personal assistant; home help; public health nurse; or other person or voluntary organisation. It is common to receive help from more than one source. In a special tabulation for this study designed to identify the level of overlap between sources of care, the Central Statistics Office (CSO) divided the sources into two aggregate categories: informal care (family, friend, neighbour) and formal care (carer, personal assistant or home help). This division ignored whether recipients of care also received care from public health nurses or an "other person or voluntary organisation".

Although public health nurses play a central role in determining access to formal community care, their direct caring function is limited, with only 22% of recipients of their care receiving such care weekly or more frequently. The "other" category was difficult to assign between formal and informal care but the evidence suggests that help from such undefined sources is of relatively low intensity and a small proportion of overall help received. The NDS also estimates numbers of persons with ADL difficulty living in communal establishments such as a nursing home or hospital. The NDS therefore offers a comprehensive overview of the sources of care received by persons with ADL difficulty by two older age cohorts and by gender (Table 5.8).

Table 5.8 Numbers with any disability and with ADL difficulty and sources of care for persons with ADL difficulty, 2006 National Disability Survey

	MALE		FEMALE		TOTAL		
	65-74	75+	65-74	75+	65-74	75+	65+
Total with disability	21,700	25,000	23,100	47,600	44,900	72,600	117,500
Total with ADL difficulty	9,500	16,730	12,500	35,700	21,950	52,400	74,400
With ADL: living in communal establishment	1,250	4,235	1,400	10,800	2,560	15,040	17,690
living in private household	8,250	12,500	11,130	24,860	19,380	37,360	56,740
In private household receiving:							
Informal help only	5,569	6,144	5,856	9,601	11,425	15,745	27,170
Formal help only	297	164	689	902	986	1,066	2,052
Both informal and formal help	1,033	4,161	2,616	11,514	3,649	15,675	19,324
No help	1,352	1,948	1,932	2,789	3,284	4,737	8,021
Only help from public health nurse/ other	0	83	35	52	35	135	170

Note: columns and rows do not sum exactly due to rounding.

Primarily due to their higher life expectancy and consequently greater numbers at older ages but also due to their higher disability rates, women comprise the greater proportion of the older population with ADL difficulty. A higher proportion of men and women with ADL difficulty in both older age cohorts rely on care in the community rather than residential care (Figure 5.2).

Figure 5.2 Proportions in which help received from different sources by men and women aged 65-74 and 75 and over with ADL difficulty, 2006 NDS
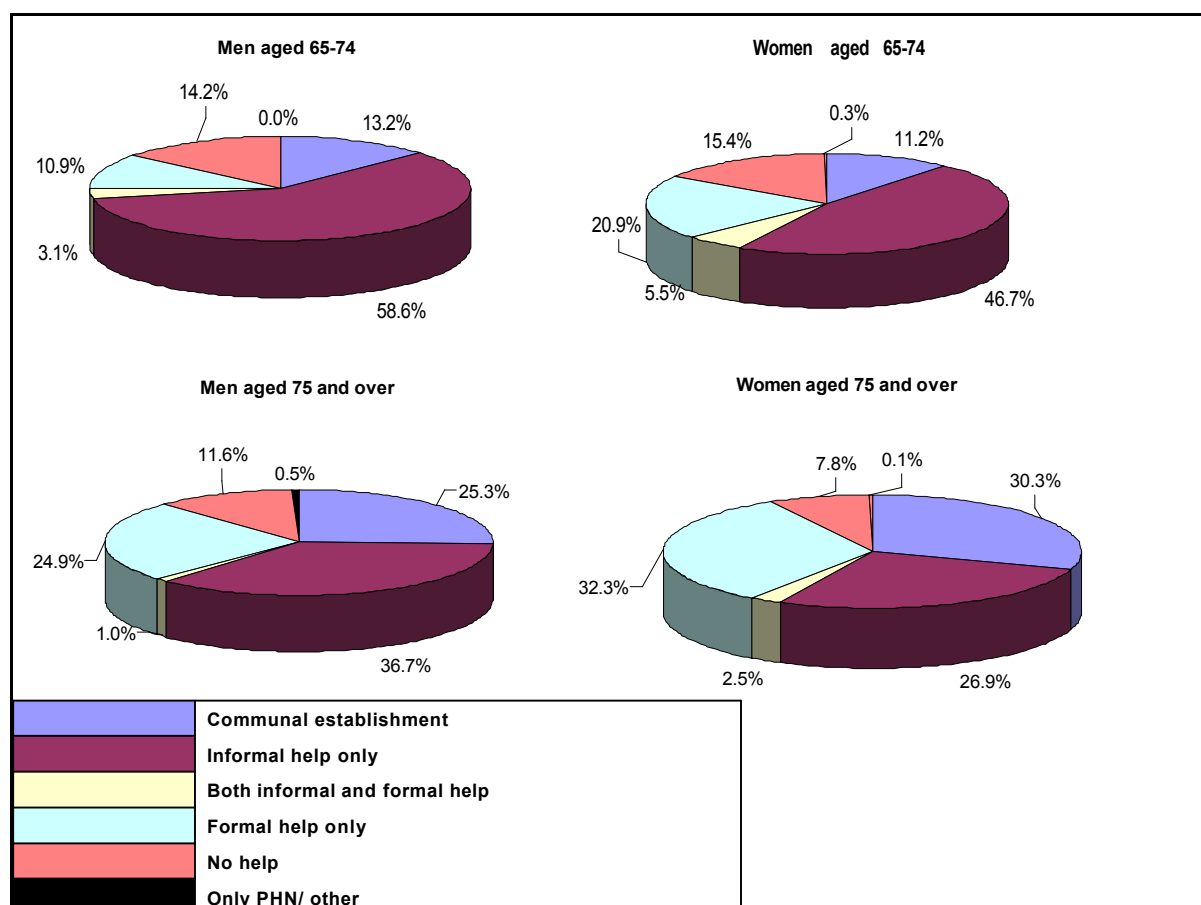
Note: No men aged 65-74 receive care only from PHN/other categories.

A large sub-group receives no help from any source. Examination of the proportion of care in the community which is delivered formally, informally or in some combination of formal and informal care reveals that the proportion of men who receive all care informally is greater than for women in either age cohort. Excluding receipt of care from public health nurses or the ill-defined "other" category, nearly two-thirds (59%) of men aged 65-74 with ADL difficulty receive care only from informal carers compared to 47% of women in this age cohort. The relative importance of formal sources of care (including communal residential care) increases with age and is greater for women than men. Most women aged 75 and over (65%) receive some source of formal care, including communal care, compared to 51% of men in this age cohort. The NDS evidence of the intensity with which care is delivered from these alternative sources is examined in Sections 6 and 7 below. Figure 5.3 illustrates the

proportions in which community care is received by people with ADL difficulty, excluding communal establishments.

Figure 5.3 Proportions in which help received by men and women aged 65-74 and 75 and over living in the community with ADL difficulty, 2006 NDS
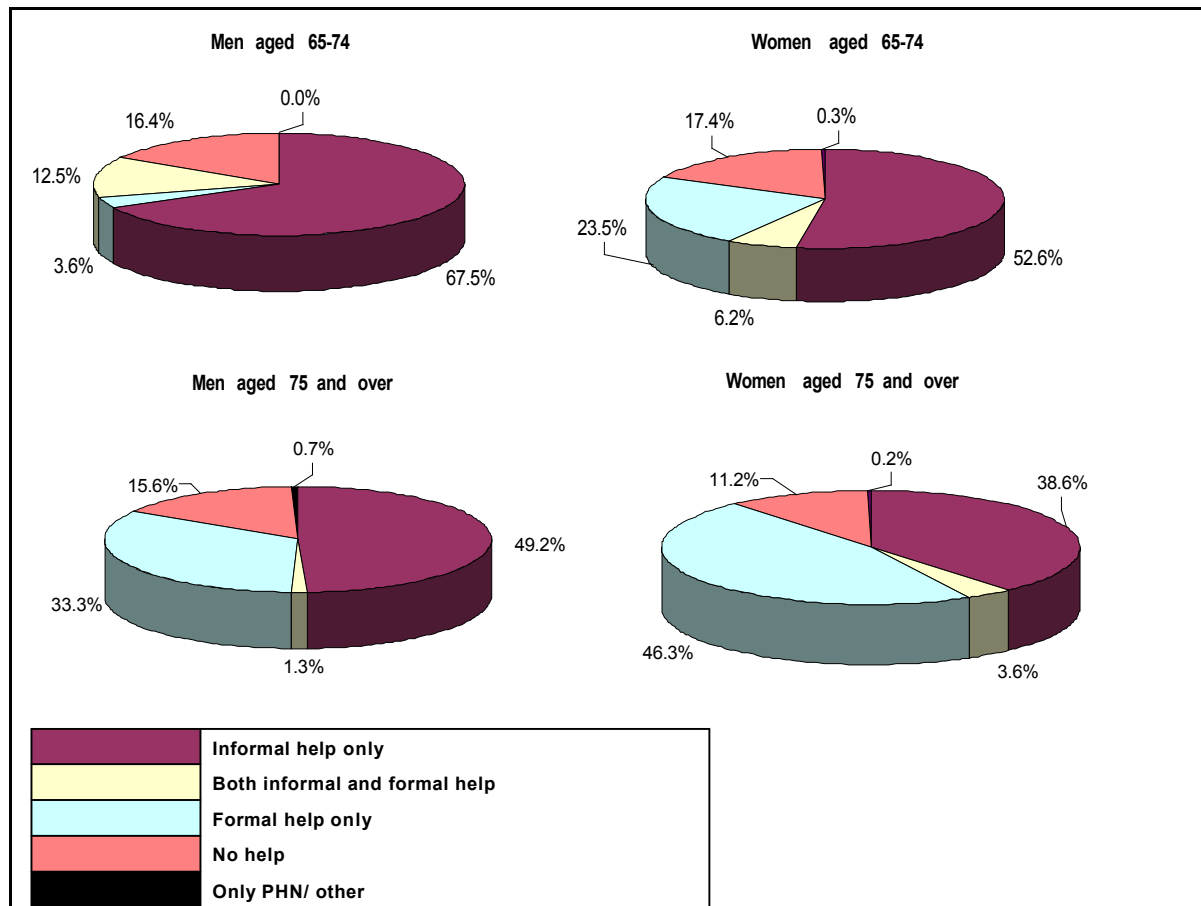
Note: This chart illustrates the same data as Figure 5.2 but excludes people with ADL difficulty living in communal establishments.

5.5 Residential care - analysis of current utilisation

The Republic of Ireland has as yet no consistent data series that provides longitudinal evidence of utilisation of residential long-term care. In this analysis, evidence from the 2006 National Disability Survey of utilisation by people with disabilities of communal establishments (nursing homes and hospitals) is combined with evidence from additional sources to provide two estimates of residential LTC utilisation in the 2006 base year. The further sources are the Department of Health and Children's (DOHC) Longstay Activity Statistics for 2006 and the Irish Nursing Homes Organisation's 2006 annual survey of private and voluntary homes.

Although the DOHC has published Longstay Activity Statistics from 1980 - 2008 based on a survey of public, voluntary and private long-stay institutions, the response rate to the survey has been variable and it tends to understate the private nursing home population in particular (Department of Health and Children 1997-2008). In the DOHC statistics public long-stay units include HSE welfare homes and newly defined "HSE extended care units", which umbrella definition encompasses former Health Board geriatric homes, geriatric hospitals, district hospitals and community hospitals. Since 2004, the Department has distinguished between longstay (over three months) and limited stay beds. That distinction is not made in this discussion. The Irish Nursing Homes Organisation published annual surveys of all registered private and voluntary nursing homes from 2003 - 2007 and subsequently for 2009/2010 (Irish Nursing Homes Organisation 2003-2010). Although the HSE has published a monthly series for public beds since 2009, this series has undergone changes in definition and is therefore neither directly comparable over time nor to the Department of Health series.

The definitions of long-term care institutions in the analysis in this chapter are much more inclusive than the care home category in the analysis of residential care in Northern Ireland in Chapter 6. This difference in the data means that any comparison of utilisation rates must be highly qualified, as it is in the concluding comparisons and discussion in Chapter 10. Following the method adopted in Wren (2009) overall residential long-term care utilisation by people aged 65 and over in 2006 is initially estimated by combining public, private and voluntary long-stay bed count and survey data on rates of occupancy and the age of residents from the DOHC and INHO surveys (Table 5.9).

Table 5.9 Estimated Numbers of Residential LTC beds and Residents, Sourced from DOHC/INHO 2006

	Beds	Occupancy Rate	Estimated numbers of residents	Estimated numbers of residents aged 65 & over
Public long and limited-stay institutions	9,488	88.5%	8,397	7,667
Private and voluntary nursing homes	17,909	89.4%	16,011	14,824
Total	27,397		24,408	22,491

Sources: Estimated public long-stay beds in 2006 from Department of Health and Children (2006); Occupancy rate and age distribution from Department of Health and Children (2006b); All private and voluntary home data from Irish Nursing Homes Organisation (2006).

When this estimate is compared to the NDS estimate of numbers of people with disabilities or ADL difficulties resident in communal establishments, the estimates of numbers of persons aged 65 and over in residential long-term care settings are reasonably consistent across the available sources (Table 5.10). Although the DOHC/INHO estimated population is greater than the NDS populations, the DOHC/INHO estimate is known to include residents who might not be regarded or regard themselves as having a disability or ADL difficulty. Approximately 16% of all residents in the DOHC survey across all categories of long or

limited-stay institution are present for reasons other than disability: social reasons (8.3%), convalescence or rehabilitation (4.8%) and "other" (3.1%). If it is assumed that this proportion applies to residents aged over 65, then the number of such older residents with disabilities in residential long-term care is in the range of 18,850 - 18,900, according to both the DOHC/INHO and NDS estimates.

Table 5.10 Comparison of estimated numbers of LTC Residents, DOHC/INHO and NDS 2006

Source	Category of residents in long or limited stay institution	Estimated number of residents aged 65 and over
LSAS/INHO	All residents	22,491
LSAS/INHO	Excluding residents whose main reason for residence was social, convalescence, rehabilitation or undefined	18,848
NDS	All with disabilities	18,900
NDS	ADL difficulties	17,609
NDS basis	All with disabilities plus assumed proportion for social reasons	20,611

This comparison of estimated populations suggests that there may be an over count in the DOHC/INHO estimate. The inclusion in the NDS count of people with disabilities who reside in hospitals suggests it should exceed the DOHC/INHO count of people with disabilities in residential LTC to a greater extent than in these estimates. On the other hand, it is clear from the DOHC/INHO surveys that the LTC resident population has heterogeneous reasons for residence, which are largely but not exclusively disability, which suggests that the NDS count could be an under count of LTC residents.

This analysis therefore follows the Wren (2009) methodology by taking the DOHC/INHO estimate of LTC residents as the primary (and higher) basis for estimated residential LTC utilisation rates in the 2006 base year. To examine the consequence if this is an over-estimation, the NDS count of all residents with disabilities is increased by assuming that residents are also admitted for social reasons in the proportion recorded in the DOHC survey. This generates the alternative (and lower) "NDS basis" estimate of LTC residents in Table 5.10. This alternative basis is used to estimate alternative 2006 residential LTC utilisation rates. For the primary utilisation calculation, estimated numbers of residents by older age cohort and gender are generated by applying the age and gender profiles of residents in public, private and voluntary homes from the DOHC Long-Stay Activity Statistics for 2006 to the estimated total LTC resident population of 24,408. Age and gender utilisation rates are estimated by expressing these populations as a percentage of the relevant age and gender cohort from Census 2006 (Table 5.11).

Table 5.11 Estimated numbers in and utilisation rates of residential long-term care by age cohort and gender, DOHC/INHO estimates 2006

	Aged 65 to 69	Aged 70 to 74	Aged 75 to 79	Aged 80 to 84	Aged 85 to 89	Aged 90 and over	Aged 65 and over
MALE							
Population	70,895	56,540	40,121	24,694	11,021	3,824	207,095
Estimated LTC residents	591	901	1,447	1,843	1,576	878	7,236
Percentage in age cohort in residential LTC	0.8%	1.6%	3.6%	7.5%	14.3%	23.0%	3.5%
FEMALE							
Population	72,501	62,612	52,345	40,190	22,281	10,902	260,831
Estimated LTC residents	502	1,067	2,109	3,780	4,239	3,558	15,255
Percentage in age cohort in residential LTC	0.7%	1.7%	4.0%	9.4%	19.0%	32.6%	5.8%
TOTAL							
Population	143,396	119,152	92,466	64,884	33,302	14,726	467,926
Estimated LTC residents	1,093	1,967	3,557	5,623	5,815	4,436	22,491
Percentage in age cohort in residential LTC	0.8%	1.7%	3.8%	8.7%	17.5%	30.1%	4.8%

For the alternative utilisation calculation, numbers of LTC residents with disabilities for the two older age cohorts and gender in the NDS are increased pro rata by the proportion of total residents admitted for social reasons in the DOHC survey, which generates utilisation rates for the two age cohorts (Table 5.12). This exercise shows that adopting the alternative bases for estimating numbers of LTC residents aged 65 and over generates two different utilisation rates, 4.4% and 4.8% of all people aged 65 and over, most of which divergence arises in the older old cohort aged 75 and over. Residential LTC utilisation rates are seen to increase with age and to be higher for women than men: over the age of 69 in the DOHC/INHO estimates; and over the age of 74 in the more aggregated NDS-basis estimates.

These utilisation rates express LTC residents as a proportion of population of the relevant age cohort. An alternative approach to analysing utilisation is to express LTC residents as a proportion of population with disability at that age. When expressed as a percentage of those with substantial physical disability, utilisation rates of women are seen to be lower than those of men up to the age of 84 using the DOHC/INHO utilisation estimates (Table 5.13).

Table 5.12 Estimated numbers in and utilisation rates of residential long-term care by age cohort and gender, NDS basis estimates 2006

	Aged 65 to 74	Aged 75 and over	Aged 65 and over
MALE			
Population	127,435	79,660	207,095
Population with disability in residential LTC	1,600	4,500	6,100
Total LTC residents incl. assumed admissions for social reasons	1,745	4,907	6,652
Percentage in age cohort in residential LTC	1.4%	6.2%	3.2%
(DOHC/INHO basis estimate, 2-cohort version)	(1.2%)	(7.2%)	(3.5%)
FEMALE			
Population	135,113	125,718	260,831
Population with disability in residential LTC	1,600	11,300	12,900
Total LTC residents incl. assumed admissions for social reasons	1,745	12,323	14,068
Percentage in age cohort in residential LTC	1.3%	9.8%	5.4%
(DOHC/INHO basis estimate, 2-cohort version)	(1.2%)	(10.9%)	(5.8%)
TOTAL			
Population	262,548	205,378	467,926
Population with disability in residential LTC	3,200	15,800	19,000
Total LTC residents incl. assumed admissions for social reasons	3,490	17,230	20,720
Percentage in age cohort in residential LTC	1.3%	8.4%	4.4%
(DOHC/INHO basis estimate, 2-cohort version)	(1.2%)	(9.5%)	(4.8%)

Table 5.13 Estimated utilisation rates of residential long-term care as percentage persons with substantial physical disability by age cohort and gender, 2006; DOHC/INHO basis higher estimated utilisation

	Aged 65 to 69	Aged 70 to 74	Aged 75 to 79	Aged 80 to 84	Aged 85 to 89	Aged 90 and over	Aged 65 and over
MALE							
Population with substantial physical disability	7,293	7,275	7,528	6,495	3,962	1,750	34,303
LTC residents (DOHC/INHO basis) as percentage of those with severe disability	8.1%	12.4%	19.2%	28.4%	39.8%	50.2%	21.1%
FEMALE							
Population with substantial physical disability	7,649	9,422	12,240	13,919	10,410	6,457	60,097
LTC residents (DOHC/INHO basis) as percentage of those with severe disability	6.6%	11.3%	17.2%	27.2%	40.7%	55.1%	25.4%
TOTAL							
Population with substantial physical disability	14,942	16,697	19,768	20,414	14,372	8,207	94,400
LTC residents (DOHC/INHO basis) as percentage of those with severe disability	7.3%	11.8%	18.0%	27.5%	40.5%	54.0%	23.8%

When expressed as a percentage of those with ADL difficulty which limits the analysis to two age cohorts, utilisation rates of women are lower than those of men up to the age of 74, using both the DOHC/INHO and NDS-basis utilisation estimates (Table 5.14). It would appear from this analysis that although women have consistently higher rates of disability by a number of measures, their utilisation of residential LTC is relatively lower than men's in younger-old age cohorts but relatively higher in the older-old age cohorts. It may be that these disparities reflect in the younger-old age cohorts the effects of end-of-life disability occurring at a younger age on average for men then for women; and in the older-old age cohorts the effects on women's utilisation of a higher proportion of women than men living alone due to their greater longevity.

Whereas in Wren (2009), projections of residential long-term care utilisation assumed a constant relationship of forecast population with severe disability to population resident in LTC at the highly aggregated level of total population aged 65 and over, in this analysis the projections are disaggregated by age cohort and gender, with alternative projections based on these alternative estimated utilisation rates.

Table 5.14 Estimated utilisation rates of residential long-term care as percentage persons with ADL difficulty by age cohort and gender, 2006; DOHC/INHO and NDS basis estimated utilisation compared.

	Aged 65 to 74	Aged 75 and over	Aged 65 and over
MALE			
Population with ADL difficulty	9,461	16,725	26,186
LTC residents (DOHC/INHO basis) as percentage of those with ADL difficulty	15.8%	34.3%	27.6%
LTC residents (NDS basis) as percentage of those with ADL difficulty	18.4%	29.3%	25.4%
FEMALE			
Population with ADL difficulty	12,497	35,700	48,197
LTC residents (DOHC/INHO basis) as percentage of those with ADL difficulty	12.6%	38.3%	31.7%
LTC residents (NDS basis) as percentage of those with ADL difficulty	14.0%	34.5%	29.2%
TOTAL			
Population with ADL difficulty	21,958	52,425	74,383
LTC residents (DOHC/INHO basis) as percentage of those with ADL difficulty	13.9%	37.1%	30.2%
LTC residents (NDS basis) as percentage of those with ADL difficulty	15.9%	32.9%	27.9%

5.6 Formal care in the community - analysis of current utilisation

This section reviews in greater detail the evidence on utilisation of formal care in the community from a number of complementary sources: the 2006 National Disability Survey; the HSE database on home help and home care package recipients; and the TILDA study, which conducted interviews spanning 2009 to 2011.

The HSE database was established in 2006, in which year it did not record recipients' ages. Since 2007 the database has separately recorded home help clients aged 65 and over; and since 2008 the database has also distinguished home care package clients by age. A Home Care Package (HCP) is defined by the HSE as consisting of "community services and supports which may be provided to assist an older person, depending on their individual assessed care needs, to return home from hospital or residential care or to remain at home." The HCP may comprise "paramedical, nursing, respite and/or home help and/or other services depending on the assessed care needs of the individual applicant" (Health Service Executive 2011). The HCP data include care packages provided by HSE employed staff or by voluntary or private providers, if assisted by a HSE cash grant.

Similarly, the home help data include home help delivered by HSE staff or funded by the HSE and delivered by voluntary or private providers. The data do not include privately purchased and supplied services and are not therefore comprehensive. In estimating overall numbers of formal home care recipients, home help and home care package recipients should not be aggregated because there is a high degree of overlap between the two categories. Consequently, the number of home help recipients is employed as the baseline estimate for formal home care utilisation. Numbers of home help recipients in total and aged 65 years and over are seen to have increased in the years from 2006 to 2008 and to have peaked in 2008 with reductions subsequently (Table 5.15). Numbers of home care package recipients in total and aged 65 years and over increased over the years 2006 to 2011.

Table 5.15 Home help and home care package recipients and home help hours, 2006-September 2011; Source: HSE database

	2006	2007	2008	2009	2010	Sept 2011
Home help recipients	49,578	54,736	55,366	53,791	54,011	51,166
Home help recipients aged 65+	41,596	44,014	46,536	45,622	45,752	43,672
Home help recipients aged 65+ as % age cohort	8.9%	9.2%	9.4%	8.9%	8.7%	8.0%
Home care package recipients	5,283	8,035	8,990	8,959	9,941	10,752
Home care package recipients aged 65+	5,146	7,826	8,386	8,372	9,335	9,929
Home care package recipients aged 65+ as % age cohort	1.1%	1.6%	1.7%	1.6%	1.8%	1.8%

Note: Degree of overlap between home help and HCP package recipients not known. Recipients aged 65+ of home help in 2006 and of Home Care Packages in 2006 and 2007 estimated based on average share of recipients aged 65+ in subsequent years. Data are point in time: month or year end.

There appears to have been an intensification of care within formal home care, while the proportion of the older population in receipt of such care has reduced. The HSE National Service Plan 2012 is explicit about this more targeted approach:

> "We will focus on the maintenance of home care packages at 2011 levels and on re-focusing home help services to prioritise personal care. Home care packages which support the most dependent to remain in their own homes will not be reduced in 2012 and the number of people in receipt of them will be the same as in 2011. There will be reductions of 4.5% nationally in the level of home help hours provided but this reduction will be compensated by a more rigorous approach to the allocation of these supports to ensure that the people most in need receive them by deprioritising non-personal care. Service efficiencies will mean that despite this level of reduction, the reduction in the number of people in receipt of home help services will be kept to 1.2%." (Health Service Executive 2012: 7)

The National Disability Survey records the percentage of people of all ages and by older age cohort who receive home help and carer/personal assistant services. The 21,378 recipients of either or both forms of care, who were aged 65 and over and with ADL difficulty in 2006, is much lower than the recipients of home help services of the same age, estimated from the HSE data. If this estimate, which is based on the age breakdown in later years, accurately reflects the age composition of home help recipients in 2006, the disparity with the NDS count of the percentage of older people with ADL difficulty receiving home help, carer or personal assistant services suggests that a substantial proportion of recipients of such services in the HSE count do not fit the NDS ADL definition.

Table 5.16 Recipients of formal home care 2006, HSE and NDS counts compared

	2006
HSE home help recipients:	
At all ages	49,578
Estimated numbers aged 65 and over	41,596
As % population aged 65 and over	8.9%
NDS home help and carer/personal assistant recipients with ADL difficulty:	
Numbers aged 65 and over	21,378
As % population aged 65 and over	4.6%
Population aged 65 and over	467,926

Source: HSE database and 2006 NDS

This finding accords with evidence from the first wave of TILDA, derived from interviews conducted with older people in the community over the years 2009 to 2011. Analysis of the TILDA data has shown that while 8.3% of those surveyed aged 65 and over received care from a home help or personal care attendant, a higher proportion of this grouping reported no

ADL difficulty (62%) than reported an ADL difficulty (38%). This study has found that the grouping without either ADL or IADL difficulty who received formal home care were in general older and living alone; and were more likely to have had health system contact in the previous 12 months than those who did not receive care. Significant numbers experienced loneliness. This has been interpreted as suggesting that factors such as pressure to free up acute care beds may trigger home-based social care (Murphy 2011: and Appendix to this chapter). The utilisation rate of formal home care of 8.3% of the TILDA sample aged 65 and over would convert into approximately 7.9% of the population of that age, when adjusted for the exclusion of older people in residential LTC from TILDA.

The evidence from TILDA and the HSE database suggests that the NDS utilisation data for people with disability or ADL difficulty under-represent the actual utilisation in 2006. While the HSE database does not include people who purchase home care privately, the estimated utilisation rate of home help services at 8.9% of population aged 65 and over in 2006 and in the range of 8.9% to 8.0% in the years 2009-2011 when the TILDA first wave was conducted, exceeds but does not greatly diverge from the adjusted TILDA estimate of the utilisation rate of home helps and personal care attendants at 7.9%. This discrepancy may reflect the exclusion from the TILDA interviews of people with such cognitive disability that they were incapable of providing informed consent to their participation. It emerges then that none of these sources can supply a comprehensive count of utilisation: the HSE database excludes privately purchased care; the NDS excludes persons who do not report disability; and the TILDA dataset excludes persons with significant cognitive impairment. This analysis combines the evidence from two of these sources - the HSE database and the NDS - to estimate utilisation of formal home care in 2006, the base year. The NDS provides data on the proportions of older people in the community who pay and do not pay for the help they receive with everyday activities. People with disability pay for care in greater numbers at older ages and proportionately more women pay than men (Table 5.17).

Table 5.17 Older people who pay for help with everyday activities, 2006

	Percentage with disability who pay for help with everyday activities	Numbers with disability	Population in Age Cohort	Numbers with disability who pay for help with everyday activities	% Population in Age Cohort who pay
MALE					
65-74	1.5	20,200	127,435	303	0.2%
75+	8.6	20,500	79,660	1,763	2.2%
FEMALE					
65-74	5.4	21,500	135,113	1,161	0.9%
75+	12	36,300	125718	4,356	3.5%
TOTAL					
65-74	3.5	41,700	262,548	1,460	0.6%
75+	10.8	56,700	205,378	6,124	3.0%
65+	7.7	98,400	467,926	7,583	1.6%

Source: 2006 National Disability Survey

Although from the NDS it appears that 7,583 people with disability paid for help with everyday activities in 2006, due to the practice of "voluntary" contribution to home help services provided by public organisations (described in Chapter 3), some proportion of these respondents may not in fact have purchased care from private providers and may be included in the HSE count of recipients of public home help services. For this reason formal home care utilisation is estimated on two bases in this analysis. The first - and lower - basis is the utilisation rate of home help services, derived from the HSE data, of 8.9% of people aged 65 and over in 2006. The second basis adds the NDS numbers paying for care to the numbers estimated from the HSE data as in receipt of publicly funded or delivered care. The second basis brings the total number of people aged 65 and over and in receipt of formal home care to 49,179, representing a 10.5% utilisation rate for the population aged 65 and over (Table 5.18). To enable disaggregated forecasts of home care utilisation based on 2006 utilisation patterns, this analysis assumes that these estimated utilisation rates in the population aged 65 and over can be further disaggregated by two older age cohorts and by gender according to the utilisation proportions for people with ADL difficulty in the NDS (Table 5.18). In forecasting future utilisation of formal home care in Chapter 8, this range of utilisation rates is employed to generate alternative forecasts.

**Table 5.18 Estimated utilisation of formal home care (home help, carer, personal assistant) 2006**

	Pop. in Age Cohort	NDS With ADL and formal home care	Percentage all aged 65+ with ADL and receiving such help	Basis 1 estimated utilisation	Basis 2 estimated utilisation	Basis 1 utilisation rates as % pop.	Basis 2 utilisation rates as % pop.
MALE							
65-74	127,435	1,330	6.2%	2,588	3,060	2.0%	2.4%
75+	79,660	4,325	20.2%	8,415	9,949	10.6%	12.5%
FEMALE							
65-74	135,113	3,306	15.5%	6,433	7,605	4.8%	5.6%
75+	125,718	12,416	58.1%	24,158	28,562	19.2%	22.7%
TOTAL							
65-74	262,548	4,636	21.7%	9,020	10,665	3.4%	4.1%
75+	205,378	16,742	78.3%	32,576	38,514	15.9%	18.8%
65+	467,926	21,378	100.0%	41,596	49,179	8.9%	10.5%

Sources and method: HSE numbers receiving home help services (Basis 1); NDS numbers paying for care added to HSE numbers (Basis 2) to generate total aged 65 and over in receipt of formal home care. NDS proportions disaggregated by age and gender of recipients of formal home care with ADL difficulty applied to total numbers in receipt of care estimated for the two Bases.

The TILDA first wave results report utilisation rates of formal home care by older age cohort surveyed. The combined utilisation rate of home helps and personal care attendants (assuming no overlaps) by people aged 70-79 is 7.1% and by people aged 80 and over is 22.5%, comparable rates to those generated above for two somewhat younger cohorts (Barrett et al, 2011).

5.7 Informal care in the community - analysis of current utilisation

This section reviews the evidence on utilisation of informal care in the community from the 2006 National Disability Survey; complemented by Census 2006 evidence on carers and the Quarterly National Household Survey Carers' Module conducted in 2009 (Central Statistics Office 2010a). The review of the NDS data on sources of care for people with ADL difficulty in Section 4 of this chapter recorded that 58.6% of men aged 65-74 with ADL difficulty receive care only from informal carers compared to 46.7% of women in this age cohort. While a high proportion of older people with ADL difficulty receive help from more than one source, older women receive proportionately more formal care - from home helps or public health nurses - than older men (Figure 5.4).

Figure 5.4 Home care for community-dwelling older people with ADL difficulty
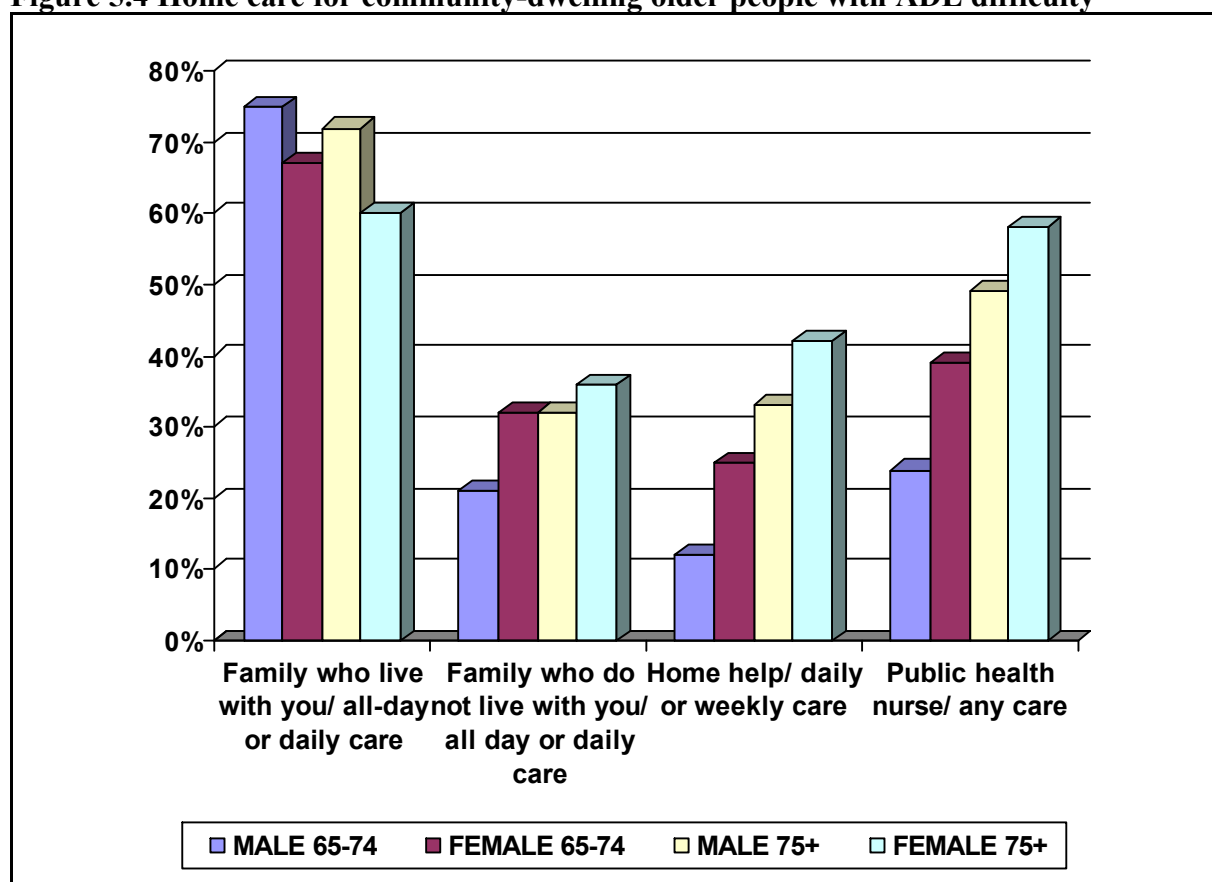
Source: 2006 National Disability Survey. Sources of home care as percentages of all people in private households in the age/gender cohort with ADL difficulty and receiving home care.

Informal carers provide most of the more frequent care that older people with disability receive; and within informal carer categories those who live in the same household as the person receiving care provide more intense care than those who do not cohabit. Nearly all care given by co-habiting family members is given on a daily or all-day basis; whereas less than 50% of care given by non-cohabiting family members is equally frequent (Table 5.19). In 2006, 46,495 people representing 9.9% of the population aged 65 and over, had ADL difficulty and received informal care from some source (Table 5.8). The majority of this

group, 41,018 people or 8.8% of the population aged 65 and over, received relatively intense daily or all-day informal care from one or more sources (Table 5.20). Cohabiting family members provided this intense care for 78% of the recipients of intense care and were the only source of such care for 55% of recipients. Cohabiting family members were the sole source of such intense family care for 66% of men aged 65-74 with ADL difficulty. Non-cohabiting family members provided this intense care for 38% of recipients and were the only such source of informal care for 14% of recipients. Friends or neighbours provided such care for 12% of recipients and were the only source of such informal care for 5%. A quarter (25%) of this grouping of people aged 65 and over with ADL difficulty who received intense care had two sources of such care, while 2% received intense care from all three sources (Table 5.20).

Table 5.19 Frequency of informal care of persons with ADL difficulty, 2006

Age	65-74	75+	65+
Population in age cohort	262,548	205,378	467,926
Family living in giving care			
Numbers receiving care	11,501	21,360	32,861
% of care given all day or daily	98.4%	96.9%	97.4%
% of age cohort receiving this intense care	4.3%	10.1%	6.8%
Family not living in giving care			
Numbers receiving care	10,268	23,593	33,861
% of care given all day or daily	43.1%	47.9%	46.4%
% of age cohort receiving this intense care	1.7%	5.5%	3.4%
Friend, neighbour giving care			
Numbers receiving care	4,929	11,297	16,226
% of care given all day or daily	29.9%	31.8%	31.2%
% of age cohort receiving this intense care	0.6%	1.8%	1.1%

Source: 2006 National Disability Survey

Table 5.20 Intense all-day/daily informal care received by persons with ADL difficulty from family and others, with care overlap

	Age	Recipients with only one source of intense informal care			All recipients of intense informal care from each source			Recipients of intense informal care from 2 sources	Recipients of intense informal care from 3 sources	All recipients of intense informal care from one or more sources
		Only friends/ neighbours not living with	Only family not living with	Only family living with	Friends/ neighbours not living with	Family not living with	Family living with			
MALE	65-74	293	372	3,931	708	1,479	5,140	1,214	101	5,911
	75+	434	964	5,119	1,192	3,384	7,567	2,480	222	9,219
	65+	727	1,336	9,050	1,900	4,863	12,707	3,694	323	15,130
% male intense care recipients		5%	9%	60%	13%	32%	84%	24%	2%	100%
FEMALE	65-74	203	967	4,228	765	2,948	6,171	1,964	186	7,548
	75+	952	3,547	9,095	2,404	7,906	13,139	4,383	363	18,340
	65+	1,155	4,514	13,323	3,169	10,854	19,310	6,347	549	25,888
% female intense care recipients		4%	17%	51%	12%	42%	75%	25%	2%	100%
TOTAL	65-74	497	1,339	8,159	1,474	4,427	11,311	3,178	287	13,460
	75+	1,386	4,511	14,214	3,595	11,290	20,705	6,862	585	27,558
	65+	1,883	5,850	22,373	5,069	15,717	32,016	10,040	872	41,018
% intense care recipients		5%	14%	55%	12%	38%	78%	25%	2%	100%

Source: 2006 National Disability Survey

The National Disability Survey does not identify the nature of the family relationships between the person receiving care and the care-giver. The 2009 Carer Module of the Quarterly National Household Survey (QNHS) provides complementary data. The QNHS estimated that there were 274,000 carers in 2009, representing 8% of the adult population, 10% of women and 6% of men. Of all carers, 43% were caring for a parent or parent-in-law and 11% for a spouse or partner; 13% of carers were aged 45-64 and 8% aged 65 and over. Of all carers, 68% were caring for a person aged 65 and over, which represented approximately 5.4% of the adult population in 2009. Among people being cared for who were aged 65 and over, 9% were receiving care from a spouse or partner; and 54% from their daughter/son or daughter/son-in law (Table 5.21). A higher proportion of men than women received care from a spouse or partner; a higher proportion of women than men and an increasing proportion with age, received care from their adult child or adult child's partner.

Table 5.21 Source of family care received by age of person receiving care 2009

	% receiving care from spouse/partner	% receiving care from daughter/son/in-law
MALE		
65-74	27	42
75-84	17	41
85+	9	54
65+	18	44
FEMALE		
65-74	13	56
75-84	4	58
85+	2	60
65+	5	58
TOTAL		
65-74	18	50
75-84	8	53
85+	4	58
65+	9	54

Source 2009 Carer Module of Quarterly National Household Survey, CSO special tabulation. The broad definition of caring in the QNHS captures care of varying intensity.

Although the QNHS finds that spouses or partners are a minority of those who provide informal care overall, they provide a significant proportion of the most intense care for older people with the highest care needs as evidenced by the NDS (Table 5.19) and by TILDA. In TILDA respondents with disabilities were asked to specify their primary carer. Of those surveyed by TILDA who were aged 50 and over with only ADL limitations, 83% did not receive any help, 13% were primarily helped by their spouse, 3.5% by a child, and 0.5% by a non-family member. Of those with IADL limitations, 26% received no help, 28% were primarily helped by a spouse, 26% by a child, 5% by relatives other than spouse and children, and 14% by non-family members. For those with combined IADL and ADL limitations, 12% did not receive any help, 33% were primarily helped by a spouse, 31% by children, 3% by other relatives, and 20% by non-family members (Barrett et al. 2011).

In order to project the effect of population growth and ageing on demand for care from informal carers assuming constant age and disability-related utilisation, it is necessary to combine the evidence on utilisation of informal care to achieve the best possible estimates of 2006 utilisation patterns. As in the case of formal care, relying on the 2006 NDS alone for estimates of utilisation in 2006 is likely to produce an underestimate. The Census evidence on carers combined with the 2009 QNHS offers complementary data. The broader definition of caring in the QNHS generates a higher proportion of the adult population providing care than in Census 2006.

In Table 5.22 QNHS 2009 evidence is applied to estimate a broader count of carers in 2006; and to estimate numbers engaged in caring for people aged 65 and over. The count of carers arrived at in this way is seen to exceed the 2006 NDS counts of informal givers of care to people with disability or ADL difficulty aged 65 and over. While this higher count is the preferred estimate of informal carers of people aged 65 and over in the 2006 base year, the NDS evidence on the sources of care for people with ADL difficulty (Tables 5.19 and 5.20) is the preferred basis for projecting more intense care-giving. This basis enables projections of informal home care utilisation based on 2006 utilisation patterns, disaggregated by two older age cohorts and by gender.

Table 5.22 Comparison of estimates of numbers giving and receiving informal care, 2006

	Informal carers/recipients of informal care	Informal carers as % of 2006 adult population in private households (15+)
Census 2006 count of informal carers	154,364	4.9%
QNHS 2009 count of informal carers applied to 2006 population	252,023	8.0%
QNHS 2009 % informal carers caring for people aged 65 and over applied to 2006 population	171,376	5.4%
2006 NDS count:		
Instances of persons with disability aged 65+ receiving care from family, friends and neighbours	110,220	3.5%
Instances of persons with ADL difficulty aged 65+ receiving intense all day/daily care from family, friends and neighbours	52,802	1.7%
Numbers of persons with ADL difficulty aged 65+ receiving intense all day/daily care from family, friends and neighbours	41,018	

Sources: Census 2006; 2009 Carer Module Quarterly National Household Survey; 2006 National Disability Survey. In all except the final count persons receiving care may receive care from more than one person.

5.8 Informal care supply

It is evident from the preceding analysis of utilisation of informal care that the most important givers of care to older people with care needs are their spouses or partners and their adult children or their children's partners. Trends in household composition indicate the future availability of care by older people for one another, while trends in female labour force participation are indicators of the availability of care by adult daughters for their parents.

5.8.1. Household composition

The international evidence reviewed in Chapter 2 found that living alone is a significant predictor of use of formal long-term care; and that convergence in the life expectancies of men and women with consequent reduction in the proportion of older people living alone is associated with reduced utilisation of formal long-term care and acute hospital beds (Wren 2011). Such findings are congruent with the evidence reviewed in this chapter that men receive proportionately more informal care; and older women proportionately more formal care. Although the proportion of the population aged 70 and over who were living alone rose from 22.5% in 1986 to 29% in 2006, the increase largely occurred in the first decade with the rate stabilising at 29% overall, representing 34% of women and 22% of men, in the 2002-2006 period.

Based on recent trends, Morgenroth (2009) forecast that the proportion of males aged 65 and over and living alone will remain constant, while the proportion of older women living alone will reduce partially because of a reduction in the proportion of never-married among those entering older age; and because greater forecast increase in male than female life expectancy improves couples' prospects of living longer lives together (Figure 5.5). Despite increased rates of separation and divorce, a higher proportion of older people could be expected to remain living with a partner in 2021 (Wren 2009). These changes in household composition will increase the potential for partners to care for one another at older ages.

Figure 5.5 Forecast percentage difference in surviving women & men at older ages, 2006-2021
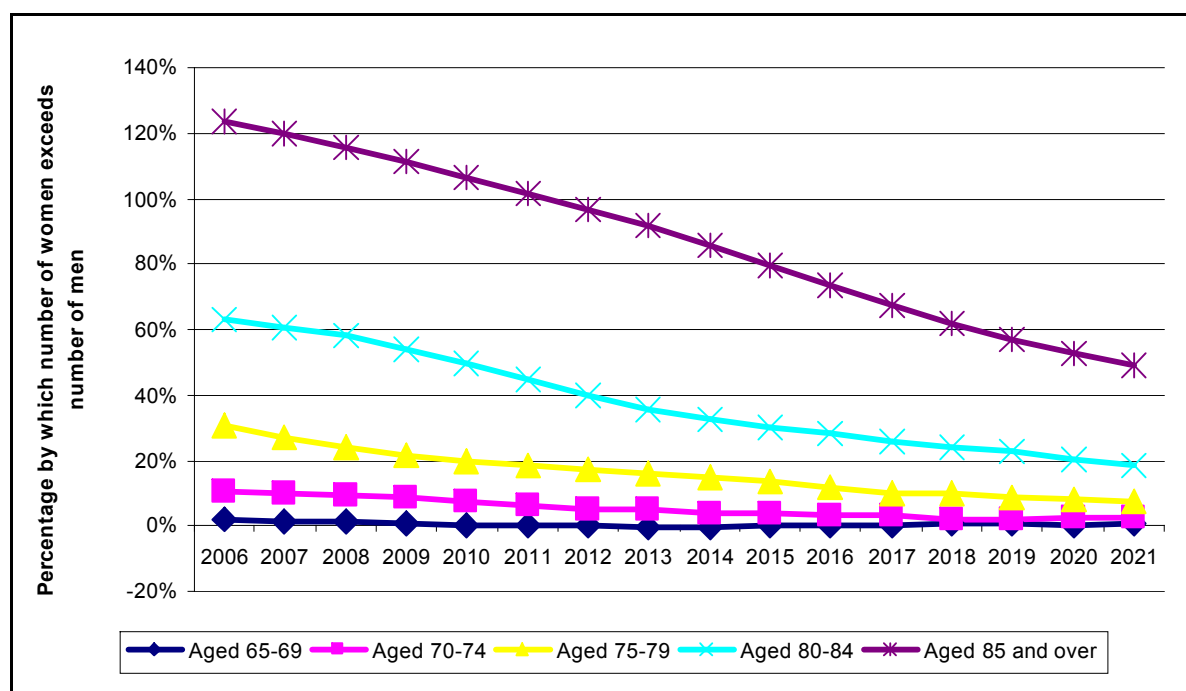
Source: Reproduced from Wren (2009) Calculated from Morgenroth (2009)

5.8.2. Female labour force participation

Conversely, increasing female labour force participation rates in Ireland are expected to reduce the potential supply of informal carers among the adult children of older people with care needs. Labour force participation increased from 34.4% of women in Ireland aged 15 and over in 1988 to 53% in 2006. In 2006 the 25-34 year old cohort had the highest participation rate of nearly 79%, compared to 67% for women in the 35-44 year old age cohort; 65% in the 45-54 year old age cohort; 48% for the cohort aged 55-59 and 29% for women aged 60-64. If younger cohorts maintain participation rates of close to 70 per cent in their later years, as seems probable, the supply of potential carers will be much diminished. In Census 2006, 23% of women aged 45-54 were engaged in unpaid caring for people with sickness or disability (Figure 5.6). This represented two-thirds of all women in that cohort who were not participating in the labour market, although of course some of these carers may also have been working full or part-time. CSO (2008) has predicted that labour force participation rates among women in this peak caring cohort will rise to 2021: from 65% to 69% and 61% to 63% for married women aged 45-49 and 50-54 respectively; and from 72% to 78% and 68% to 74% for unmarried women in these cohorts.

Figure 5.6 Unpaid carers of ill and disabled by age cohort and gender as percentage of population, 2006
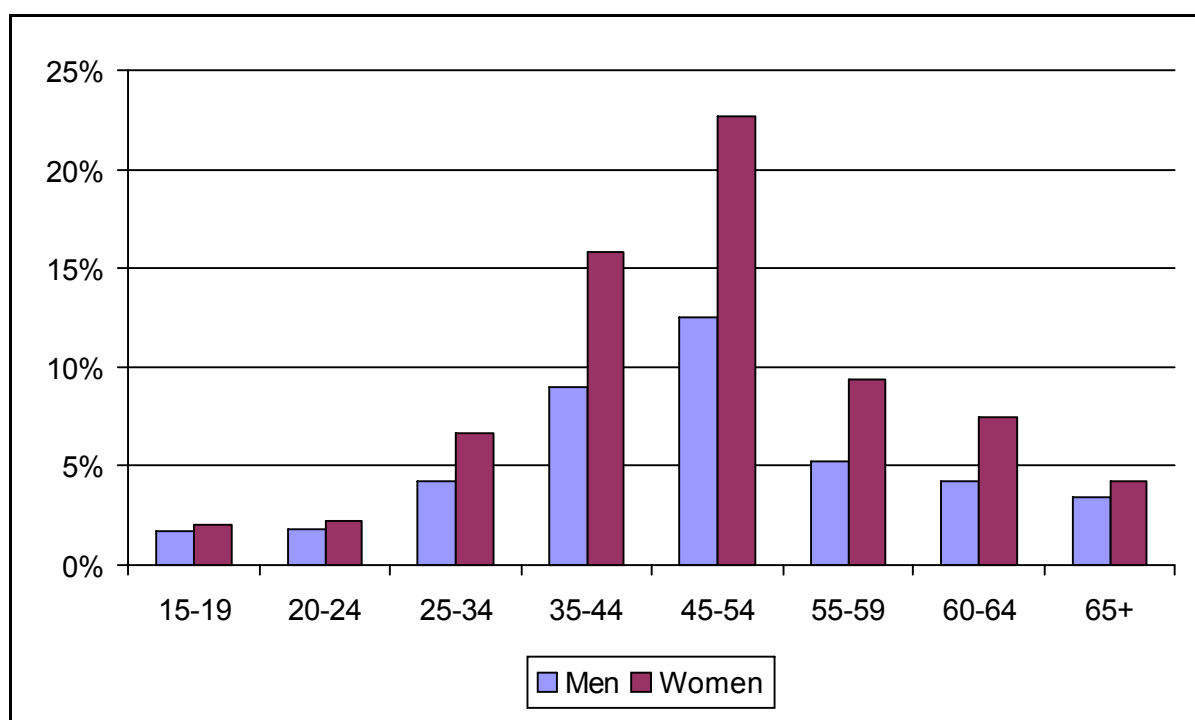
Source: Census 2006; Reproduced from Wren (2009)

5.9 Evidence of unmet need

Whereas in Wren (2009) numbers of older people experiencing delayed discharge from acute hospital were used as a proxy for unmet need for long-term care, it is clear from the evidence of the 2006 National Disability Survey that this is a very conservative measure. The NDS asked respondents about specified unmet needs. Respondents with disabilities and aged 65 and over who had unmet needs for care services numbered: 1,330 requiring 5-day residential care; 1,320 requiring full-time residential care; 1,200 requiring sheltered housing; and 3,890 requiring respite care. These categories of unmet need may overlap in the case of some respondents. However, conservatively, it can be concluded that an additional 1,300 people should be added to estimated utilisation of long-term residential care in 2006 to provide an estimate of utilisation that would meet unmet need; and that there is an additional need for substantially more places for respite care.

The need for respite care is not surprising given the evidence of considerable strain among carers in the 2009 Quarterly National Household Survey. A substantial proportion (28%) of carers aged 65 and over had a disability. Two thirds of carers caring for someone in the same household said that it was confining, half said that their sleep was disturbed, 41% said it was a physical strain and 38% reported feeling completely overwhelmed (CSO, 2009).

5.10 Conclusion

This chapter has reviewed need for and utilisation of care in different settings in the Republic of Ireland in 2006. Drawing on multiple data sources, a range of utilisation rates has been developed for residential long-term care; care by formal carers such as home helps and personal care attendants; and care by informal carers such as spouses, partners and adult children. The next chapter reviews the data on need for and utilisation of care in Northern Ireland. Subsequent chapters apply this evidence on need and utilisation to projecting future need for and utilisation of care.

Chapter 5 Appendix

Evidence from the first wave of The Irish Longitudinal Study on Ageing

Dr Catriona Murphy

Population based estimates of formal home care utilisation in Ireland have been obtained in a number of studies, these include the Health and Social Services for Older People studies (HeSSOP I and II) in 2000 and 2004, the Survey of Health Ageing and Retirement in Europe (SHARE) and most recently in the Irish Longitudinal Study on Ageing (TILDA). The completion of the first wave of TILDA in February 2011 provides a platform for extensive investigation of formal home care utilisation. A broad range of determinants of formal home care utilisation have been identified in the international literature. TILDA is well placed to support investigation of the predictors as a result of the combination of health, economic and social care data collected.

Strengths of the TILDA data include the sampling method, the large representative sample obtained and the interview and health assessment techniques employed. The sampling frame used was the RANSAM system based on the Geo-directory (Whelan 1979). The sample design involved multi-stage selection incorporating stratification and clustering. The sample consisted of over 8,000 people aged 50 years and over from over 6,000 households, representing a household response rate of 62%. Interview data were collected in the respondent's home via face-to-face computer-aided personal interviews (CAPI). CAPI involves converting the questionnaire into an electronic format that manages the correct routing of questions. This enables the interviewers to proceed smoothly to the next appropriate question without referring to previous answers or complex routing instructions. The use of CAPI minimizes interviewer measurement error and post survey error caused by manually uploading survey responses. Following the interview respondents were invited to take part in a health assessment either at a health assessment centre or conducted by a nurse in their own home. Wave one health assessments were completed in July 2011. This additional data will provide the opportunity to investigate the determinants of formal care utilisation using a combination of objective measures and self-reports from the interview.

Limitations to the TILDA data have also been identified with regard to the examination of formal home care utilisation in older people. In the first place, the target population for TILDA excluded individuals resident in institutions. Furthermore, individuals who were seriously cognitively impaired and unable to provide informed consent to participation were excluded from the first wave. The exclusion of this high need group may result in an underestimate of formal home care utilisation. This limitation will diminish in the second and subsequent waves of TILDA, as individuals who provided informed consent in the first wave

will be eligible to participate even if they become cognitively impaired in the inter-wave period.

The first wave of TILDA is also limited in the extent to which the intensity of formal home care, as measured by hours of care received, can be examined. Questions that relate to the intensity of care utilised are conditioned on prior self-report of a difficulty with an activity of daily living (ADL) or an instrumental activity of daily living (IADL). As a result, intensity of care data are not available for those that utilise formal home care services but report no difficulty with an ADL or IADL. Additional questions to capture this information have been proposed and accepted for inclusion in the questionnaire for the second wave.

Determinants of home care utilisation with particular emphasis on the relative utilisation by those with and without disability

An examination of the determinants of formal home care utilisation in community living older people was conducted using interview data from the first wave of TILDA. Formal home care was defined as the receipt of a home help service and of a personal care attendant service. In those aged 65 years and older, 8.3% (N=41,352) were found to utilise formal home care. Independent variables known to predict the use of formal home care services in other countries were identified in the literature. Logistic regression modeling was employed to identify the determinants of formal home care utilisation in Ireland. The findings revealed that in those aged 65 years and older, the key determinants of formal home care utilisation were IADL disability, older age and living alone.

IADL disability (difficulty with preparing hot meals, doing household chores, shopping for groceries, making telephone calls, taking medications and managing money) was a key driver of formal home care utilisation. ADL disability which reflects a higher order disability (difficulty with dressing including putting on shoes and socks, walking across a room, bathing or showering, eating, using the toilet, getting into and out of bed) was not found to be significant in the multivariable models. This finding suggests that having a need for assistance with domestic help drives the utilisation of formal home care to a greater extent than having a need for assistance with personal care. If this interpretation is correct, this raises questions about the ability of the current home care services to adapt to an increasingly dependent group of older people with personal care needs in the community.

Older age was found to play a key role in determining the utilisation of home care independently of other factors. The proportion utilising formal home care increased across the age groups from 1.7% of those aged 65-69 years to 32.8% of those aged 90 years and older. This heterogeneity of service use in older people serves to highlight the deficiencies inherent in using a cut off point of 65 years to define older age. This finding has significant implications for service delivery in the context of an increasing population of those in the oldest old age categories.

Living alone compared to living with a spouse or partner was a strong determinant of formal home care utilisation, independent of need characteristics in this study. The content of care provided to those living alone requires investigation to determine how much of the care provided is for social or supervisory reasons to monitor risk. Where the predominant need is for social interaction the use of community based resources may be an appropriate alternative to more expensive formal home-based care. If home care continues to be targeted at those who live alone regardless of need level, this has the potential to disadvantage older people who live with a spouse or others, yet experience a high level of unmet need despite the presence of others.

Apart from the three major determinants of formal home care utilisation discussed above, a number of other factors remained significant in the multivariable model, providing evidence that the home care resource is responsive to a wide range of need. For example, those who tested poorly for executive mental function were significantly more likely to receive home care than were those with good executive function. Formal home care utilisation was also significantly influenced by two other indicators of health care need: recent hospital admissions and poly-pharmacy.

Formal home care in those without an ADL or IADL disability

The majority of older people in this study (80.5%, N=402,506) reported no difficulty with an ADL or an IADL. An unexpected finding was that 4.7% (N=18,951) of this non-disabled group reported formal home care utilisation. Amongst those who were not disabled the characteristics of users and non-users of formal home care were compared. Those using formal home care were older and more of them lived alone than in the non-user group. This is consistent with the pattern of home care found in the population as a whole. The users of formal home care had lower levels of education, higher levels of medical card utilisation, their health status was lower and they were significantly more likely to have had a health system contact in the previous 12 months than were respondents who did not use formal home care. In Ireland the health system provides a gate keeping role in relation to home care.

These findings may reflect the fact that medical need is higher in the formal home care group and that their interaction with health care services play a role in facilitating access to service. Alternatively, it may reflect access to home care services through the acute care system, where there is constant pressure to free up beds, once patients are medically fit for discharge. As this study was cross-sectional, it was not possible to determine whether care was initiated during a hospital stay or in the community. However, it does raise the possibility that the assessment process differs depending on the location of the individual being assessed. Almost a fifth of the home care group experienced loneliness. This raises the possibility that the home care provided may be an attempt to provide companionship and human contact. Finally, receiving informal care from outside the household was a significant factor in explaining receipt of formal home care in the non-disabled group. This may be interpreted in two ways. Firstly, the advocacy role played by informal carers such as family members may assist in

negotiating access to formal care services. Secondly, the informal care network may have been exhausted or the need level of the care recipient may have been high resulting in the provision of a formal home care service.

Chapter 6 Data analysis for Northern Ireland

6.1 Introduction

This chapter examines and analyses the data available to support projecting need for and utilisation of long-term care in Northern Ireland. Section 2 examines data and forecasts for growth in the population aged 65 and over. Section 3 examines measures of health status and disability and estimates disability prevalence among those aged 65 years and over. Section 4 provides demographic information about the household composition of older people who responded to a dedicated disability survey carried out in Northern Ireland in 2006. Section 5 reviews data on both formal and informal care in the community and evidence of unmet need for care among older people in Northern Ireland. Section 6 provides an analysis of current residential care utilisation in Northern Ireland among those aged 65 years and over. Section 7 concludes.

6.2 Demographic data

The basic demographic profile and future population projections for the Northern Ireland population are produced by the Office for National Statistics (ONS), with input from the Northern Ireland Statistics and Research Agency (NISRA) and the Government Actuary Department (GAD) (McCrory et al. 2010). Projections are available by gender and single year of age from 2008 to 2058 on the NISRA website (NISRA 2011). The cohort component method is used by the ONS to produce population projections for the constituent countries of the UK (Office for National Statistics 2011). For each single year of age the population at baseline is aged one year to which is added the net inward migration and the expected number of surviving babies born during that year, while the expected number of deaths during the year is subtracted. The number of deaths is determined by applying the probability of dying to the population at the start of the year (plus the number of migrants). The number of births is calculated by multiplying the expected age-specific fertility rate for that year by the number of women (for single year of age). This is expected to produce a ratio of 1.05:1.00 male: female babies.

Table 6.1 Northern Ireland population projections in five-year periods from 2006-2021

	2006	2011	2016	2021	Increase 2006-2021
MALE					
Aged 65-69	33,280	39,437	42,959	44,969	11,689
Aged 70-74	26,920	29,733	35,870	39,449	12,529
Aged 75-79	20,051	22,370	25,312	31,103	11,052
Aged 80-84	12,756	14,443	16,954	19,841	7,085
Aged 85-89	5,861	6,969	8,887	11,257	5,396
Aged 90 and over	2,019	2,687	3,824	5,530	3,511
Aged 65 and over	100,887	115,639	133,806	152,149	51,262
Aged 65-74	60,200	69,170	78,829	84,418	24,218
Aged 75-84	40,687	46,469	54,977	67,731	27,044
Aged 85 and over	7,880	9,656	12,711	16,787	8,907
FEMALE					
Aged 65-69	36,843	42,755	46,047	46,661	9,818
Aged 70-74	32,529	34,404	40,182	43,504	10,975
Aged 75-79	28,651	28,854	30,940	36,535	7,884
Aged 80-84	22,007	23,204	23,976	26,298	4,291
Aged 85-89	12,037	14,030	16,338	17,817	5,780
Aged 90 and over	6,393	7,331	9,330	12,113	5,720
Aged 65 and over	138,460	150,578	166,813	182,928	44,468
Aged 65-74	69,372	77,159	86,229	90,165	20,793
Aged 75-84	69,088	73,419	80,584	92,763	23,675
Aged 85 and over	18,430	21,361	25,668	29,930	11,500
TOTAL					
Aged 65-69	70,123	82,192	89,006	91,630	21,507
Aged 70-74	59,449	64,137	76,052	82,953	23,504
Aged 75-79	48,702	51,224	56,252	67,638	18,936
Aged 80-84	34,763	37,647	40,930	46,139	11,376
Aged 85-89	17,898	20,999	25,225	29,074	11,176
Aged 90 and over	8,412	10,018	13,154	17,643	9,231
Aged 65 and over	239,347	266,217	300,619	335,077	95,730
Aged 65-74	129,572	146,329	165,058	174,583	45,011
Aged 75-84	109,775	119,888	135,561	160,494	50,719
Aged 85 and over	26,310	31,017	38,379	46,717	20,407

Source: NISRA 2010-based population projections (http://www.nisra.gov.uk/)

This process involves a number of assumptions about future fertility and mortality rates, and about future rates of net migration, though for the purposes of short-term predictions in the use of older person care services, the trends in fertility, and probably also in-migration, can be ignored. The mortality projections are provided by the Government Actuary Department (GAD) and are based around the historical trends in age-specific mortality from 1961-2007. Projections (and variations in these projections) also incorporate trends in other countries, cohort effects (such as those born around the early 1930s), as well as trends in other countries.

According to NISRA's population estimates (NISRA 2007), there was a total of 239,347 persons aged 65 years and over resident in Northern Ireland in 2006. Of these, 129,572 were persons aged 65 to 74 years (60,200 men; 46.5%); 109,775 were persons aged 75 years and over (40,687 men; 37.1%); and 26,310 (7,880 men; 30.0%) were persons aged 85 years and over. These estimates are inclusive of persons who were based in residential or nursing care homes at that time. Those aged 65 years and over represented 13.7% of the total population of Northern Ireland in 2006 (men 11.8%; women 15.6%). Table 6.1 shows the population estimates for 2006 for those aged 65 years and over in five-year age bands and for men and women. Population projections for this age group for 2011, 2016, and 2021 (based on the 2010 population), and the estimated population change between 2006 and 2021 are provided in Table 6.1 (also Chapter 9: Section 9.1.1 and Figure 9.1).

6.3.1 Measures of health status and disability

There are two aspects to future health needs; the first is mortality, the converse of which is life-expectancy; the second is morbidity or healthiness. In combination, these can be modelled to produce projections of healthy life-expectancy. This is regularly calculated by the Office for National Statistics (ONS) for Great Britain and has recently been reported by NISRA for Northern Ireland (McCrory et al. 2010). Both of these incorporate significant assumptions about the change in reported limiting illness and/or self-reported health status as recorded in surveys of residents in private households, as well as incorporating information on residents of long-stay communal establishments. Examination of trends in life expectancy (LE), healthy life expectancy (HLE), and disability free life expectancy (DFLE) by the ONS during the period 1981-2001 indicated that increases in LE exceeded increases in both HLE and DFLE, meaning that although the UK population are living longer, there is a greater likelihood that they are living longer in poorer health (Gray et al. 2006).

However, whether this represents a real increase in morbidity levels or greater expectations of good health aligned with an increased propensity to report levels of morbidity is unclear. The NISRA estimates only relate to the 2005/6-2009/10 period. Although there are many sources of information about the current health of the population, there are very few studies that can provide information about historical morbidity trends from which projections of future trends could be developed. To do this, data sources must (i) have used the same assessment instruments at each time point; (ii) have been repeated over significant periods of time; and (iii) have covered the whole population (or representative proportions thereof).

Surveys such as the Continuous Household Survey and the Health and Social Well-being Survey only cover private households in Northern Ireland. They exclude residents in communal establishments such as nursing and residential homes, and, with response rates of about 66%, suffer from possible responder bias. Another possible source of information on the current population health status would be the Census: health measures have been included in the 1991, 2001, and the most recent 2011 Census (though data from the 2011 Census had not been released at the time of this report). These measures have included questions regarding the presence of a limiting long-term illness (LLTI) and general health in the preceding year. Given the unique population coverage of the Census, the combination of these with mortality rates would have provided an opportunity to determine changes in HLE and DFLE; however, the wording and position of the questions have changed at each Census so that a comparison across time periods is not possible.

More dedicated disability surveys have been undertaken in Northern Ireland; these were in 1989/90 and in 2006/7 (McCoy and Smith 1992; NISRA Central Survey Unit 2006). The latter, the Northern Ireland Survey of Activity Limitation and Disability (NISALD), found that 18% of all people living in private households in Northern Ireland have some form of disability, 21% for adults and 6% for children. Therefore, the question on LLTI from the 2001 Census, and data from the NISALD, provide the most appropriate sources of information on current disability levels in Northern Ireland for those aged 65 years and over. The utility of each of these sources as a means of establishing current disability prevalence rates among those aged 65 years and over is examined below. The process of establishing a source for disability trends and applying them to population projection data to estimate future disability and long-term care (LTC) utilisation rates is described in Chapter 9.

6.3.2 Census 2001 disability prevalence data

The United Kingdom Census carried out in 2001 includes a question on LLTI which can be disaggregated by age and gender. However, as Figure 6.1 shows, the prevalence of LLTI starts at approximately 47% for those in the 65 to 69 age group (men 47.5%; women 45.7%), rising to approximately 72% for those aged 90 and over (men 72.3%; women 79.2%). This prevalence appears high in comparison with other sources, and the characteristic exponential increase in prevalence with age is missing. Although the 2001 Census offers sufficient numbers for disaggregation into fine age/gender groups, the estimates do not reflect the levels of disability that would equate to admission to care homes. These factors suggest that the Census 2001 data on LLTI are unsuitable as a basis for modelling trends in long-term care demand for those aged 65 years and over.

Figure 6.1 Prevalence of limiting long-term illness for men and women aged 65 and over, Northern Ireland 2001
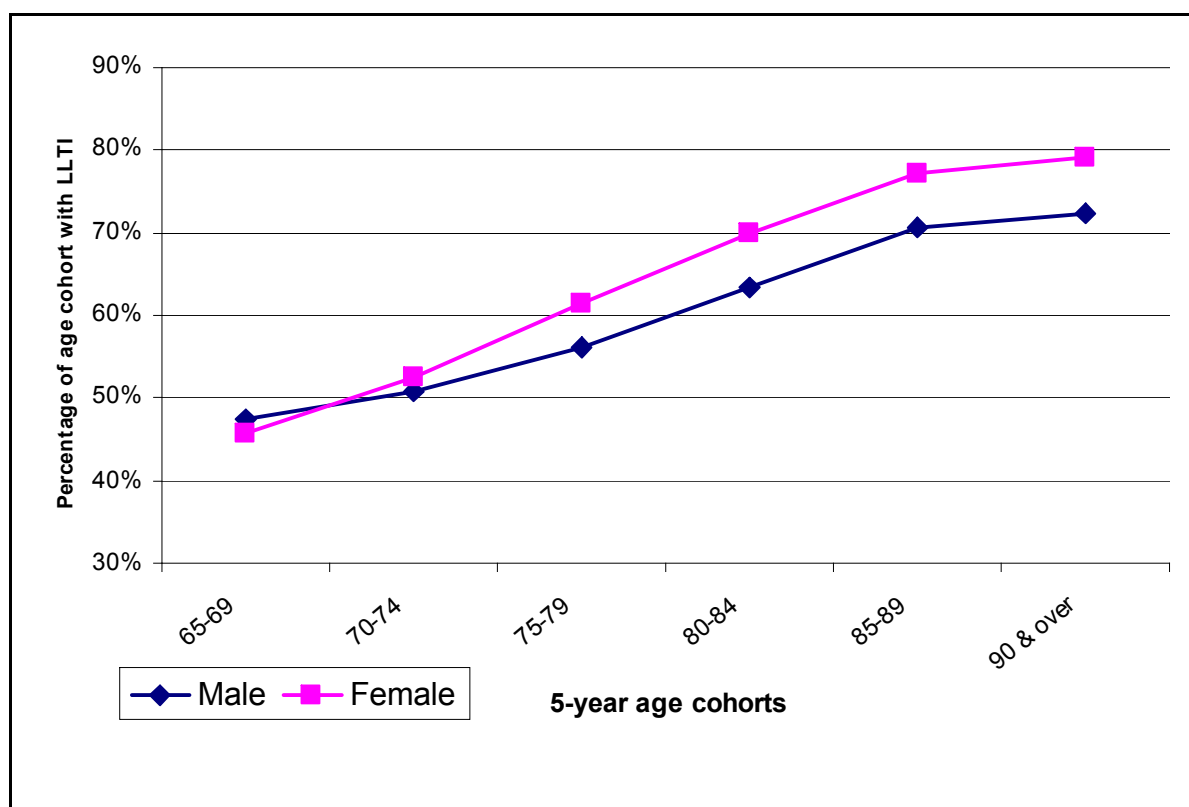

Source: 2001 UK Census

6.3.3 The Northern Ireland Survey of Activity Limitation and Disability

The NISALD is a dedicated disability survey that was carried out in 2006 by NISRA's Central Survey Unit. Stage one of this survey was designed to provide information on the type, prevalence, and severity of disability among children and adults resident in private households in Northern Ireland, and to assess the functional limitations associated with disability[i]. The domains of disability included in the NISALD were: seeing; hearing; speaking and communication; mobility; dexterity and coordination; pain; chronic illness; breathing; learning; intellectual/developmental disability; social/behavioural; memory; emotional/psychological/mental health; head injury, stroke, or brain injury; and any other disability not previously described. The survey also examined how, and to what extent, the care needs of the disabled were being met, both formally and informally, in the community. From an original sample of 18,517 adult respondents (males 47.8%) who took part in a filter interview in order to determine eligibility for inclusion in the survey, 3,543 were identified as having a disability and completed the full interview. This sample included 1,429 persons who were aged 65 years and over (males 600; 42%). With respect to how representative the NISALD samples are of the Northern Ireland population as whole, analyses carried out by NISRA indicated no evidence of bias (NISRA 2007b).

In order to compare Northern Ireland's disability prevalence rates with those in the Republic of Ireland, sensitivity analyses were conducted using the 2006 Census data for the Republic of Ireland as the basis for comparison (Central Statistics Office 2006). The Census question that was used was one that asks whether participants have 'a condition that substantially limits one or more basic physical activities'. This is available in the Republic of Ireland Census data by single year of age whilst the disability prevalence in Northern Ireland is available in five-year age bands. The Census data were plotted onto the graph generated from the Northern Ireland disability prevalence data (Figure 6.2).

Figure 6.2 Comparison NI disability prevalence with the Republic of Ireland 2006 Census physical disability prevalence for those aged 65 years and over
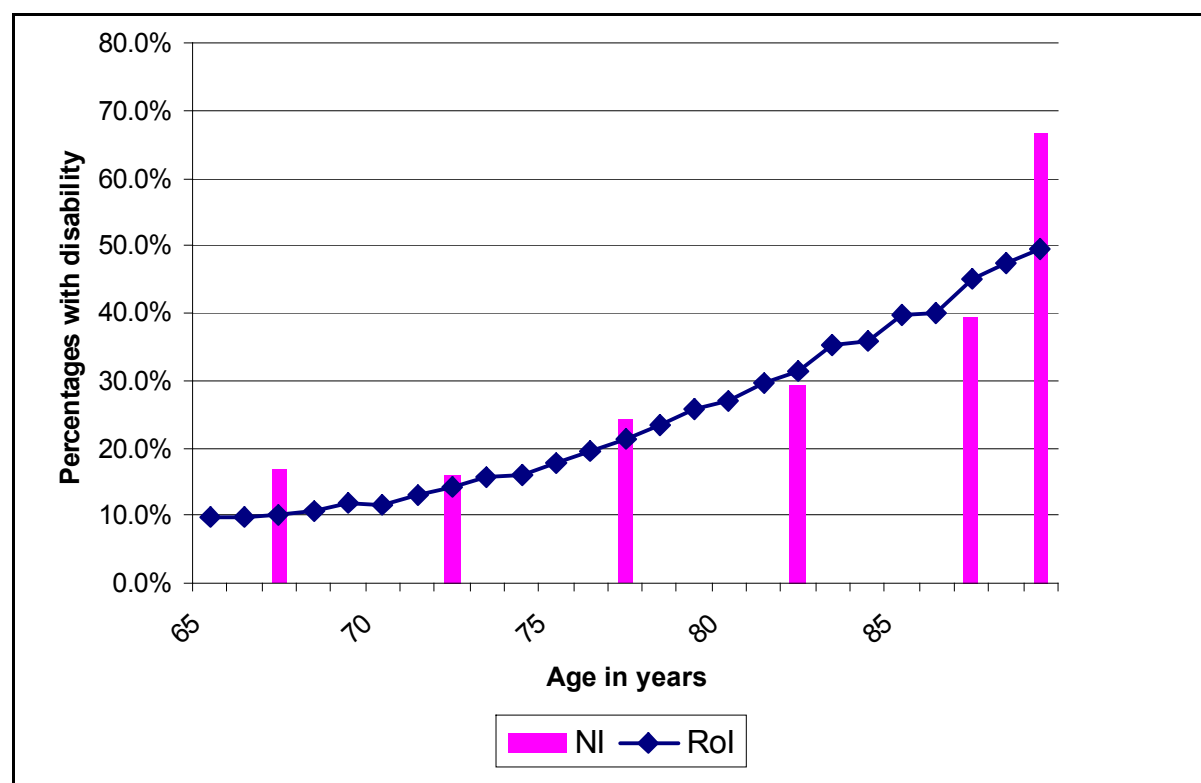
Source: Census 2006 for the Republic of Ireland; NISALD 2006 for Northern Ireland

It can be seen from Figure 6.2 that, whilst not a uniform fit across all ages/age groups, there is a relative similarity in the two sources of disability prevalence data (though the Northern Ireland data appear to provide higher rates of disability at the oldest age group than do the Republic of Ireland data). This comparison of disability rates will be relevant when the comparison of long-term care is presented. The decision was therefore taken to use the Northern Ireland disability prevalence rates from the NISALD data. Data in the NISALD are available in five-year age bands of 65-69, 70-74, 75-79, 80-84, 85-89, and 90 and over. Wherever possible, information will be presented at this level of age disaggregation. However, information will also be presented at more aggregated age levels (i.e., 65-74, 75-84, 85 years and over) where compatibility is required with other data sources that are restricted

to more aggregated age bandings. The following section describes the process of determining disability prevalence from the NISALD.

6.3.4 Determining disability prevalence from the NISALD

Given the wide range of disabilities that were included in the NISALD (a total of 15 different domains of disability), a decision was taken to focus on limitations in functional activities among the respondents rather than utilising a specific question on disability. The guiding principle was the necessity to ensure comparability with the methodology employed in the present report for the Republic of Ireland (Chapters 5 and 8). Within both the 2006 National Disability Survey and the NISALD datasets are two sets of broadly similar questions that identify those individuals who report difficulties with day-to-day activities such as personal care, preparing meals/feeding oneself, and general mobility/functioning within the home environment. In the NISALD, these questions appear in a part of the questionnaire that was only completed by those individuals who had already been deemed to have a disability. Table 6.2 provides a comparison of the content and wording of items, and the response options for these sets of questions in the NDS and NISALD datasets.

Table 6.2 Comparison of functional limitation questions in NDS and NISALD

NDS (Republic of Ireland)	NISALD (Northern Ireland)
Response options: 1=no difficulty; **2=some difficulty; 3=a lot of difficulty; 4=cannot do at all*** *Question:* **Do you have difficulty ....**	*Response options:* 1=slight; **2=fair amount; 3=great deal; 4=cannot do*** *Question:* **How much difficulty do you have ...**
... staying by yourself for a few days	No comparable question in NISALD
... taking a bath or shower by yourself	... with your personal care, such as bathing and dressing, toileting and taking medication
... going to the toilet by yourself	
... dressing yourself	
... feeding yourself	... with preparing your meals
... getting in and out of bed by yourself	... moving about inside your residence or using the services such as electricity and water

*Level of response included to identify persons with care needs

There is a slight difference in response options for the two surveys: there is a clear differentiation in the NDS between those who report 'no difficulty' and those who report 'some difficulty' and over. By contrast, the differentiation in the NISALD between 'slight' and 'fair amount' of difficulty is less clear. With respect to the NISALD, a decision was taken to include those who responded that they had a 'fair amount' of difficulty and above as indicative of a similar level of difficulty with functional day-to-day activities as those in the NDS who responded that they had 'some difficulty' and above. It was also decided that we would take the most inclusive approach by including respondents who reported difficulty with

any one of the three items from the NISALD listed in Table 6.2, though it was acknowledged that many individuals would have difficulties within all three areas of functioning, or within a combination of any two areas.

Responses to this question among those aged 65 years and over 'captured' 602 individuals, who represented 19.5% of the sample population (Table 6.3). As expected, examination by age group indicated an incremental increase in levels of difficulty with day-to-day activities with advancing age, from 15.8% for those aged 65 to 74 years, to 25.2% for those aged 75 years and over, and 34.7% for those aged 85 years and over. It was also evident that women had higher levels of difficulties with day-to-day activities than men across all age groups which reflect the higher levels of physical morbidity that are typical among women. This was particularly evident in the oldest age group. For example, for men and women in the 65 to 74 year age group, the levels of difficulty were 15.3% and 16.2% respectively; for men and women in the 75 years and over age group, the levels of difficulty were 22.1% and 27.3% respectively; and for men and women in the 85 years and over age group, the levels of difficulty were 23.7% and 40.7% respectively. Table 6.3 shows frequencies and percentages for the overall sample and by gender for those respondents who reported that they had some or more difficulty in functional day-to-day activities for disaggregated and aggregated age groups. It should be noted that the numbers are small when using the more disaggregated age groupings, especially at older ages (e.g. only 28 participants aged 90 years and over). Furthermore, examination of disability prevalence using the five-year age bands, both overall and by gender (Figure 6.3) indicates a stochastic pattern. This is likely to be due to the small sample size and the further reductions in sample sizes when the data are split for gender.

Table 6.3 Prevalence rates for disability using the NISALD data

	MALE		FEMALE		TOTAL	
	n	%	n	%	n	%
Aged 65-69	68	15.5	94	17.4	162	16.5
Aged 70-74	64	15.1	68	14.8	132	15.0
Aged 75-79	50	18.7	81	25.0	131	22.2
Aged 80-84	42	27.3	60	23.0	102	24.6
Aged 85-89	14	22.6	33	32.7	47	28.8
Aged 90 and over	4	28.6	24	61.5	28	52.8
Aged 65-74	132	15.3	162	16.2	294	15.8
Aged 75-84	92	21.9	141	24.1	233	23.2
Aged 85 and over	18	23.7	57	40.7	75	34.7
Aged 75 and over	110	22.1	198	27.3	308	25.2
Aged 65 and over	242	17.8	360	20.9	602	19.5

Source: 2006 Northern Ireland Survey of Activity Limitation and Disability

Figure 6.3 Disability prevalence rates at 5-year age bands, Northern Ireland 2006
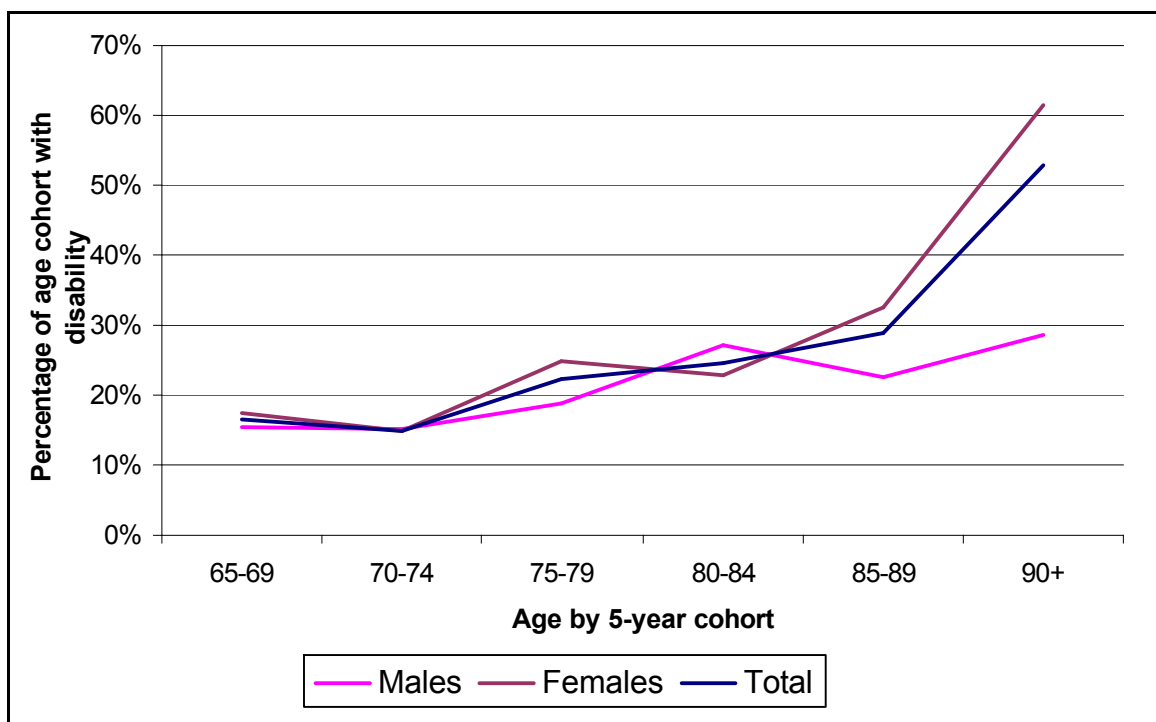

Source: derived from 2006 NISALD data

Figure 6.4 Disability prevalence aged 65 years and over, incl. and excl. in care homes
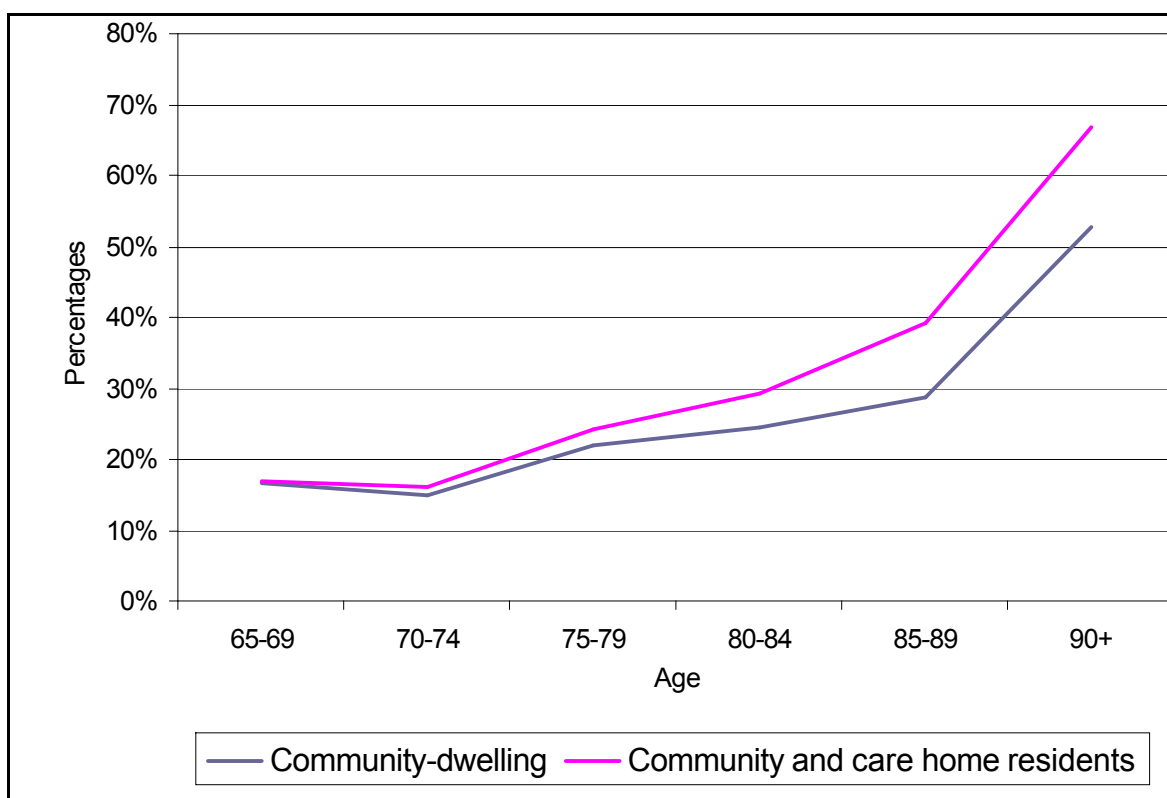
Source: 2006 Northern Ireland Survey of Activity Limitation and Disability

When the five-year age band NISALD data were applied to the 2006 population estimates for Northern Ireland in order to estimate disability prevalence in the general population (including and excluding those in care homes, Figure 6.4), there was some evidence of a 'smoothing out' of the lines, especially for the population that included those in care homes. However, there was still a drop in prevalence at the 70-74 year age group. On the basis of these findings, and in order to maximise sample sizes, projection analyses carried out in Chapter 9 are conducted at the 65 to 74 years and 75 and over age groupings.

6.3.5 Estimation of disability prevalence in the population

The NISALD only estimates the proportions of people in the non-institutionalised community with a significant disability. This omits people living in care homes, all of whom we will assume have significant levels of disability. Therefore, both the number with a disability in the community and the care home resident population must be combined to produce the correct estimate of disability for the whole population. Table 6.4 demonstrates the steps in this estimation. The estimation of the care home population employed here is described in Section 6 below. The effect of the relatively small numbers of older people surveyed in the NISALD on the estimates of disability in the community is evident and more so for men than for women. The prevalence for men looks uncharacteristically low at older ages, especially in contrast to that of women. The overall prevalence in women is greater than that of men (25.9% and 20.1% respectively) but this is primarily due to the larger proportion of older women; there is little difference in the age-specific rates, except at the oldest ages. Adding in the numbers of people in care homes makes only a modest change to the estimates of disability for the youngest old but has a significant impact at older ages.

6.4 Household composition

With respect to the household composition of those respondents with the designated level of functional limitation in the NISALD, analyses indicated that 21.2% of men and 34% of women aged 65 to 74 years (a total of 28.2%) were living alone. The percentage of men living alone in the 75 to 84 year age group (i.e., 22.8%) was similar to that for men in the 65 to 74 year age group. However, the percentage of women living alone in the 75 to 84 year age group had almost doubled to 62.4% when compared with the percentage for women aged 65 to 74 years. For the oldest age group (i.e., 85 years and over) the percentage of men living alone had increased to 61.1%, a substantial increase on men in the younger age groups. By the age of 85 years and over, 75.4% of women were living alone.

Table 6.4 Estimation of numbers of older people in the population with a disability, Northern Ireland 2006

	Aged 65-69	Aged 70-74	Aged 75-79	Aged 80-84	Aged 85-89	Aged 90 and over	Aged 65 and over
MALE							
Population	33,280	26,920	20,051	12,756	5,861	2,019	100,887
Community-dwelling	33,106	26,633	19,572	12,182	5,292	1,653	98,439
Community disability prevalence rate	15.5%	15.1%	18.7%	27.3%	22.6%	28.6%	17.7%
Community-dwelling with disability	5,131	4,022	3,660	3,326	1,196	473	17,808
Numbers in Residential LTC	174	287	479	574	569	366	2,448
Total with disability	5,305	4,308	4,139	3,899	1,765	838	20,256
% Population with a disability	15.9%	16.0%	20.6%	30.6%	30.1%	41.5%	20.1%
FEMALE							
Population	36,843	32,529	28,651	22,007	12,037	6,393	138,460
Community-dwelling	36,621	32,153	27,775	20,389	10,006	4,378	131,323
Community disability prevalence rate	17.4%	14.8%	25.0%	23.0%	32.7%	61.5%	20.7%
Community-dwelling with disability	6,372	4,759	6,944	4,690	3,272	2,692	28,729
Numbers in Residential LTC	222	376	876	1,618	2,031	2,015	7,137
Total with disability	6,594	5,135	7,820	6,307	5,303	4,708	35,866
% Population with a disability	17.9%	15.8%	27.3%	28.7%	44.1%	73.6%	25.9%
TOTAL							
Population	70,123	59,449	48,702	34,763	17,898	8,412	239,347
Community-dwelling	69,726	58,787	47,346	32,572	15,300	6,030	229,762
Community disability prevalence rate	16.5%	15.0%	22.0%	24.6%	28.8%	52.8%	19.4%
Community-dwelling with disability	11,505	8,818	10,416	8,013	4,406	3,184	46,342
Numbers in Residential LTC	397	662	1,356	2,191	2,598	2,382	9,585
Total with disability	11,901	9,480	11,772	10,204	7,005	5,566	55,927
% Population with a disability	17.0%	15.9%	24.2%	29.4%	39.1%	66.2%	23.4%

Note: this table demonstrates the steps in estimating disability prevalence in the population by applying the NISALD rates to community-dwelling older people and assuming that the population in care homes all have disability.

6.5 Care in the community and evidence of unmet need

6.5.1 Formal care in the community

The Department of Health, Social Services and Public Safety in Northern Ireland (DHSSPSNI) provides data on formal care in the community for all ages and disseminates data on this care in community statistics bulletins that are published every year. Services that are pertinent to the 65 years and over age group include domiciliary care service, home help service, and meals service. However, it should be noted that some home help and/or meals service would be included within a domiciliary care service, and available information does not allow us to determine what percentage of home help and/or meals service form part of a domiciliary care service and what percentage are provided as stand-alone services. The DHSSPSNI have ceased to report information on home help services since 2007, and now focus on providing more detailed information on domiciliary care services via annual 'Domiciliary Care Services for Adults in Northern Ireland' statistics bulletins.

The Community Statistics Bulletin for 2006/2007 reported that a total of 6,050 individuals aged 65 years and over were in receipt of a meals service of whom: 1,757 were aged 65 to 74 years; 2,455 were aged 75 to 84; and 1,838 were aged 85 years and over. Numbers in receipt of a meals service had increased by 63% from 3,716 in 2000/2001 to 6,050 in 2006/2007. The largest increase in meals service (135%) was for those aged 65 to 74 years, followed by those in the 85 years and over group (67%) and those aged 75 to 84 years (31%) (DHSSPS 2006/2007).

The DHSSPSNI defines domiciliary care as:

> " the range of services put in place to support an individual in their own home. Services may involve routine household tasks within or outside the home, personal care of the client and other associated domestic services necessary to maintain an individual in an acceptable level of health, hygiene, dignity, safety and ease in their home" (DHSSPS 2010b: 8).

The Community Statistics Bulletin for 2006/2007 reported that a total of 5,610 individuals aged 65 years and over were in receipt of a domiciliary care service. There are no statistics available at more disaggregated age groupings for this type of service or providing any assessment of intensity of care. The DHSSPSNI has recently moved towards a more in-depth assessment of both the numbers of those in receipt of domiciliary care services, and the degree of intensity of this type of service. For 2008, the DHSSPSNI reported that there were 6,004 individuals aged 65 years and over in receipt of 'intensive' domiciliary care, which is six or more visits, and more than 10 contact hours per week. The statistics for this service for 2009 and 2010 were 5,619 and 6,217 respectively. There is no breakdown of less intensive domiciliary service provision for those aged 65 years and over.

6.5.2 Informal care in the community and combinations of sources of care

Informal care in the community relates to care that is provided to those aged 65 years and over by a spouse/partner, sibling, offspring, other family members, friends and neighbours. In many cases individuals will receive care from a number of informal sources and this may also be supplemented by formal care provided by statutory health service providers and/or care provided by other organisations such as charities and voluntary bodies. In some instances older people may not receive any form of care.

To determine sources of care among respondents in the NISALD who had already been identified as having limitations in day-to-day activities and as therefore requiring care, this analysis focuses on a question within the survey that asked: "Can you tell me who, if anyone, helps you with the activities you have difficulty with?" Such activities related to aspects of daily living, for example, preparing meals, everyday housework, and personal care (such as dressing, bathing, etc.). Possible responses were: spouse/partner; son or daughter; parent; brother/sister; other relative; housemate, friend or neighbour; statutory health services provider; voluntary or charitable organisation; other person or organisation; and no one helps me. The NISALD data are not entirely comparable to the NDS data for the Republic of Ireland since the definitions employed implicitly separate privately purchased formal care from formal care from statutory providers. This makes it a complex task to identify all recipients of public and private formal home care combined or to separate a category that receives informal care only. Privately purchased home care would appear most likely to be included in the category of "other person or organisation". In this analysis responses have been aggregated into five categories of care:

- **Formal care (from statutory provider only or combined with other formal care providers):** Respondents are categorised as receiving formal care if they indicated that they were either receiving help only from a statutory health services provider or from a statutory health services provider combined with care from a voluntary or charitable organisation and/or other person or organisation.

- **Informal care only or combined with care from non-statutory provider:** Respondents are categorised as receiving informal care if they indicated that they were receiving help from a spouse/partner, son or daughter, parent, brother/sister, other relative, housemate, friend or neighbour. Additionally, any respondents who reported receiving care from these informal sources combined with care from non-statutory provider (i.e. a voluntary or charitable organisation and/or other person or organisation) are also deemed to be in receipt of informal care. This category could therefore include recipients of privately purchased care.

- **Informal care combined with care from statutory provider:** Respondents are categorised as receiving formal and informal care if they indicated that they were receiving help from both informal sources and a formal statutory provider. This category also includes any respondents who indicated that they were in receipt of care

from a voluntary or charitable organisation or other person or organisation in addition to both informal and statutory care.

- **Only care from non-statutory provider:** Respondents are categorised as receiving other care if they indicated that they were receiving help only from a voluntary or charitable organisation or other person or organisation.

- **No care:** The final category of respondents is those who indicated that they were not receiving any form of care.

Table 6.5 and Figure 6.5 show the frequencies and percentages for each of the five categories of care in the community for the sample overall and by age cohort and gender. Table 6.5 also shows frequencies and percentages for the more aggregated age groupings of 65 years and over and 75 years and over. Results indicate that for the youngest age group, the majority of respondents (approximately 85%) were receiving care from informal sources only or combined with care from non-statutory providers. Only a very small percentage of respondents in this age group were not receiving any care (3.1% overall). For the 75 to 84 year age group, results indicate that respondents were making somewhat more use of statutory sources of formal care or were receiving a combination of formal care from statutory sources and informal sources of care. An even smaller percentage of respondents than for the 65 to 74 year age group reported not receiving any care (1.3% overall). By the time respondents were in the oldest age group (85+), there was an almost equal reliance on informal care only or combined with non-statutory sources of formal care and informal plus statutory sources of care. There was also somewhat more reliance on statutory sources of care without informal care for this age group but this represents a relatively low level of usage, ranging from 7% for women and 11.1% for men. None of the respondents in this age group reported receiving no care.

Table 6.5 Frequencies and percentages for types and combinations of care provided in the community to those aged 65 years and over with ADL difficulty. NISALD 2006

	Aged 65-74		Aged 75-84		Aged 85 and over		Aged 65 and over		Aged 75 and over	
MALE	N	%	N	%	N	%	N	%	N	%
Informal care + care from statutory provider	8	6%	17	19%	9	50%	34	14%	26	24%
Informal care only or + care from non-statutory provider	113	86%	70	76%	7	39%	190	79%	77	70%
Formal care (statutory only/ + non-statutory provider)	3	2%	4	4%	2	11%	9	4%	6	5%
Only care from non-statutory provider	3	2%	-	-	-	-	3	1%	-	-
No care	5	4%	1	1%	-	-	6	3%	1	1%
FEMALE										
Informal care + care from statutory provider	15	9%	37	26%	26	46%	78	22%	63	32%
Informal care only or + care from non-statutory provider	137	85%	91	65%	25	44%	253	70%	116	59%
Formal care (statutory only/ + non-statutory provider)	2	1%	7	5%	4	7%	13	4%	11	6%
Only care from non-statutory provider	4	3%	4	3%	2	4%	10	3%	6	3%
No care	4	3%	2	1%	-	-	6	2%	2	1%
TOTAL										
Informal care + care from statutory provider	23	8%	54	23%	35	47%	112	19%	89	29%
Informal care only or + care from non-statutory provider	250	85%	161	69%	32	43%	443	74%	193	63%
Formal care (statutory only/ + non-statutory provider)	5	2%	11	5%	6	8%	22	4%	17	6%
Only care from non-statutory provider	7	2%	4	2%	2	3%	13	2%	6	2%
No care	9	3%	3	1%	-	-	12	2%	3	1%

Figure 6.5 Proportions in which care received by men and women living in the community with ADL difficulty by age and gender, 2006 NISALD
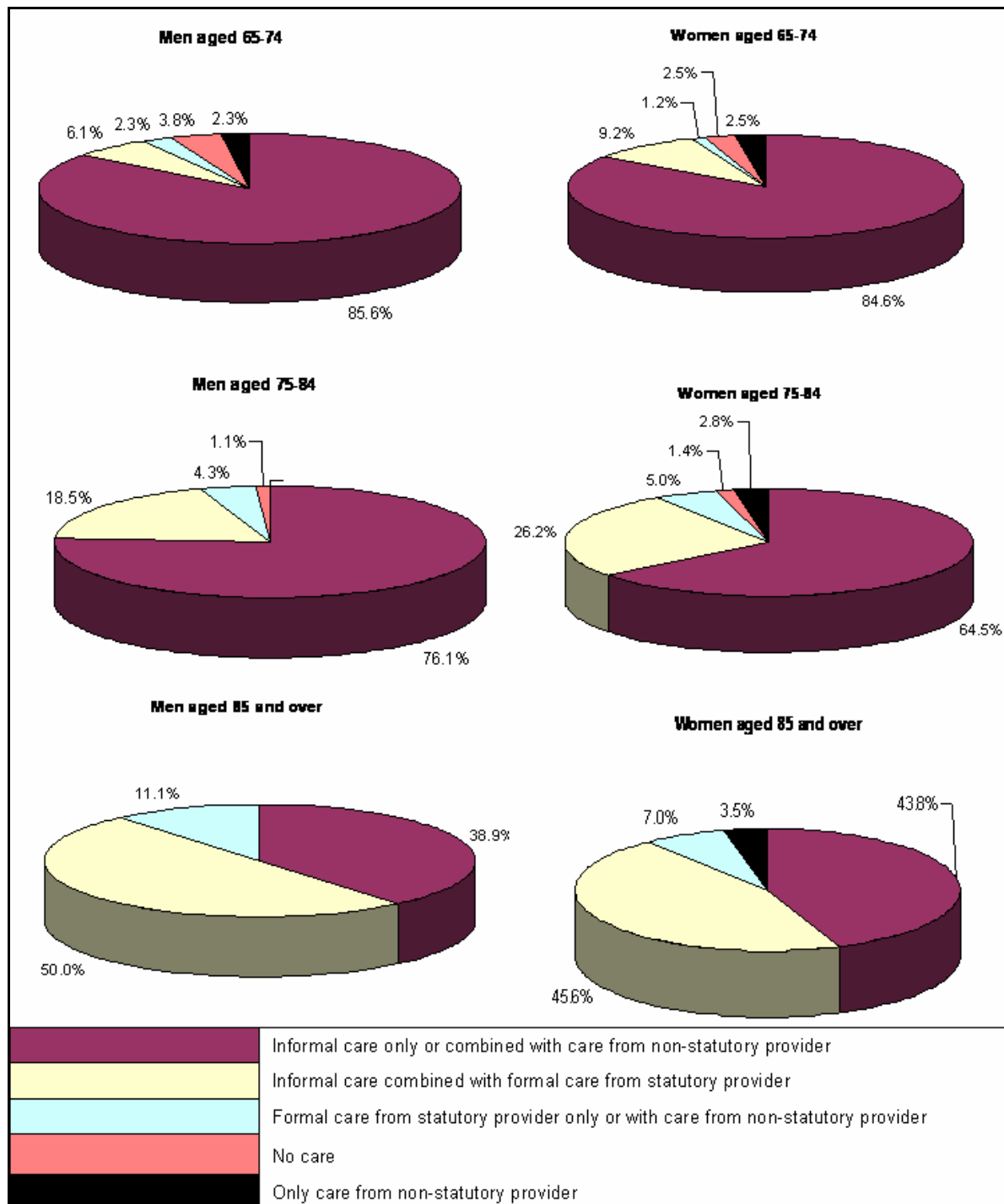
Note: these pie diagrams are not directly comparable with those for the Republic of Ireland in Chapter 5 (Figures 5.2 and 5.3). The pies do not include a category for informal care only.

6.6 Residential care - analysis of current utilisation

To project future utilisation rates of residential LTC, it is necessary to establish the current number of residents in nursing and residential homes in Northern Ireland. In practice this information is difficult to ascertain. The Regulation and Quality Improvement Authority (RQIA), who have a statutory responsibility for the registration, regulation and inspection of care homes, do not hold information about the number of residents in or admissions to care homes. The Northern Ireland Audit Office (NIAO) stated that in March 2009 there were 9,500 places occupied in care homes for the older people in Northern Ireland but information on yearly admissions was not available (Comptroller and Auditor General 2010).

The DHSSPSNI Elderly Care in the Community division carries out a census on the 31st March of each year to determine the number of service users in residential care. In 2010, there were 264 residential homes for older people in Northern Ireland providing 4,932 available places. These data exclude nursing homes. At the same census point there were 9,677 older people in Northern Ireland benefiting from residential care (31%) or nursing home care (69%) packages. This does not include private treatment in nursing and residential homes. Available spaces increased by 11% from 4,444 in 2005/6 to 4,932 in 2009/10. The increase in care packages over this time was smaller at 3%. The DHSSPSNI does not provide statistics on the number of new care packages issued each year (i.e., on the yearly admissions to care homes).

In light of the limitations in establishing accurate rates of care home utilisation or the age and gender of residents, these data had to be estimated from two alternative sources. The total number of residents in care homes was taken as the number of care packages allocated to those aged 65 years and over, derived from the DHSSPSNI's Community Statistics bulletin for Northern Ireland in 2006/2007 (DHSSPS 2006/2007). Since this source does not provide a breakdown of how care packages were allocated by age and gender, this was estimated from a separate exercise in which addresses of residences designated as Care Homes by the RQIA had been linked to people registered for a health card in Northern Ireland at the Business Services Agency. This produced an accurate list of people living in care homes, though because of data restrictions this was only possible for 2008 and was restricted to five-year age cohorts. The age-specific distributions in 2008 were then applied to the 2006 care package totals to give an estimated age/gender breakdown of care home residents in 2006, the assumption being that the distributions were unchanged over this two-year period. From these estimates it was possible to calculate: the proportion of the population in each age/gender group in care; and the proportion of those in each age/gender group with a disability who were in care (Table 6.6). These estimates are used in the modelling of projected utilisation in Chapter 9.

The approach adopted in this analysis for Northern Ireland of basing the definition of residential LTC utilisation on the number of care packages allocated to those aged 65 years and over has the effect of excluding residents who pay privately for care homes and people who reside in elderly care hospital beds, categories of residential LTC that are included in the

definition of residential LTC utilisation for the Republic of Ireland. The implication of such differing definitions for the comparability of the utilisation estimates and projections in this analysis is discussed in Chapter 10.

Table 6.6 Estimates of numbers and proportions of the population in care homes in Northern Ireland in 2006

	Aged 65-69	Aged 70-74	Aged 75-79	Aged 80-84	Aged 85-89	Aged 90 and over	Aged 65 and over
MALE							
Population	33,280	26,920	20,051	12,756	5,861	2,019	100,887
Numbers in residential care	174	287	479	574	569	366	2,448
% Population in care	0.5%	1.1%	2.4%	4.5%	9.7%	18.1%	2.4%
Total with disability	5,305	4,308	4,139	3,899	1,765	838	20,256
% With disability in care	3.3%	6.7%	11.6%	14.7%	32.2%	43.6%	12.1%
FEMALE							
Population	36,843	32,529	28,651	22,007	12,037	6,393	138,460
Numbers in residential care	222	376	876	1,618	2,031	2,015	7,137
% Population in care	0.6%	1.2%	3.1%	7.4%	16.9%	31.5%	5.2%
Total with disability	6,594	5,135	7,820	6,307	5,303	4,708	35,866
% With disability in care	3.4%	7.3%	11.2%	25.6%	38.3%	42.8%	19.9%
TOTAL							
Population	70,123	59,449	48,702	34,763	17,898	8,412	239,347
Numbers in residential care	397	662	1,356	2,191	2,598	2,382	9,585
% Population in care	0.6%	1.1%	2.8%	6.3%	14.5%	28.3%	4.0%
Total with disability	11,901	9,480	11,772	10,204	7,005	5,566	55,927
% With disability in care	3.3%	7.0%	11.5%	21.5%	37.1%	42.8%	17.1%

Note: this analysis of utilisation of residential care is limited to the population in care homes who are in receipt of care packages. Numbers in receipt of care packages in 2006 are disaggregated by age and gender in proportion to an analysis of residents in 2008 by linking datasets as described in text. Numbers with disability are estimated as demonstrated in Table 6.4.

6.7 Conclusion

This chapter has provided an overview of population estimates and current levels of disability and utilisation of care for those aged 65 years and over in Northern Ireland in 2006. Examination of sources of care in the community of persons with disability demonstrates reliance on informal care alone or in combination with non-statutory sources of care for the majority of the younger cohorts aged 65-74 and 75-84. There is an increasing use of both formal care from statutory providers and informal care provision with advancing age. There

were very few individuals aged 65 years and over who reported receiving no care in the community. Information presented in this chapter provides the basis for projecting residential and long-term care needs in the community in 2011, 2016, and 2021 in Chapter 9.

Chapter 7 Methodological approach

7.1 Introduction

Models of long-term care need and demand employ differing methodologies, largely dictated by data availability. Alternative approaches to modelling in the UK, Ireland, Germany, Spain and Italy were reviewed in Chapter 2. This chapter describes the modelling methodology in this report, the reasons for the approach adopted and examines the potential for the model to develop further with improved sources of data.

The next section discusses the data requirements of alternative approaches to modelling. Section 3 describes the methodology of the Wren (2009) model. This methodology and the analysis underlying it is described in greater detail in Layte et al (2009). The Wren (2009) model forms the basis for the model for the Republic of Ireland in this report. The model for Northern Ireland adopts the same methodology with variations resulting from employing differing data sources. Section 4 describes the modelling methodology for the Republic of Ireland in this report. Section 5 describes the modelling methodology for Northern Ireland. Section 6 concludes.

7.2 Data requirements for long-term care models

Data availability determines the nature and complexity of the models that can be applied to projecting long-term care demand and expenditure. The alternative approaches to modelling LTC demand, instances of which were discussed in Chapter 2, have been characterised as micro-simulation or macro-simulation models (Wittenberg et al. 1998). Micro-simulation models are based on representative samples, which are employed to simulate changes in individuals' disability status and long-term care utilisation. Macro-simulation models group the population into sub-groups or cells. In a cell-based model the unit of analysis is aggregates of individuals grouped by characteristics such as age and gender.

Micro-simulation models require individual-level surveys of the variables of interest. Longitudinal surveys support dynamic micro-simulation while cross-sectional survey data (or first wave data) can support static micro-simulation. Examples of such surveys are the English Longitudinal Study of Ageing (ELSA), which supplied data for the Wanless (2006) micro-simulation; the British Household Panel Survey (BHPS), which supplied data to the Forder

and Fernandez (2009) Personal Social Services Research Unit (PSSRU) micro-simulation model; and the Medical Research Council Cognitive Function and Ageing Study (MRC CFAS), a large-scale multi-centre longitudinal epidemiological study of ageing, which informed the micro-simulation model of population ageing and onset of disability developed by Jagger et al (2006) for the Wanless Review (2006).

No such longitudinal survey for the Republic of Ireland has been available for the analysis that has informed this report. The HESSOP (Health and Social Services for Older People) longitudinal study of community-dwelling older people was designed to identify their health and social needs, service use, and challenges to service delivery and take-up (Garavan et al. 2001; O'Hanlon et al. 2005). Its very small sample size (1,000 people aged 65 and over, with only 314 of the original participants providing full responses to the follow-up longitudinal study) limits its usefulness. The subsequent Irish first wave of the Survey of Health, Ageing and Retirement in Europe (SHARE) was also limited by a relatively small sample of community-dwelling people within Ireland (1,103 people aged 50 and over), albeit contributing to a much larger pan-European survey (Delaney et al. 2008).

The potential to undertake multi-variate analysis of predictors of utilisation of care by community-dwelling older adults in the Republic of Ireland has been greatly enhanced with the publication of the first wave results of The Irish LongituDinal Study on Ageing (TILDA) in 2011 (Barrett et al. 2011). This is the most detailed study on ageing ever undertaken in Ireland with a sample size of over 8,000 people aged 50 and over. While static micro-simulation modelling has become feasible with the publication of the TILDA first wave and dynamic micro-simulation modelling will be feasible with the publication of subsequent waves, such data were not available in time to inform the modelling in this report. The potential to apply analysis from the TILDA first wave to modelling determinants of community care utilisation is also limited because of the restriction of the first wave sample to individuals who could give informed consent to their participation and the consequent exclusion of older people with significant cognitive impairment. The Murphy (2011) analysis of determinants of home care utilisation using the TILDA first wave data has, however, contributed to the understanding of utilisation patterns in the Republic of Ireland developed in Chapter 5. The appendix to Chapter 5 discusses in more detail Murphy's findings and the potential of subsequent waves of TILDA to provide a progressively richer data source to support future modelling.

Cell-based, macro-simulation models can be more readily adapted to available data sources than micro-simulation models as the range of models reviewed in Chapter 2 demonstrated. Depending on their complexity, the data requirements for such models are:

1. Population projections by age and gender;
2. Disability prevalence or trends by age and gender;
3. Disability projections by age and gender;
4. Utilisation patterns of formal care by age, gender and disability status;
5. Utilisation of informal care by age, gender and disability status;

6. Household composition projections by age and gender;

7. Receipt of informal care by household type;

8. Housing tenure/socio-economic status/income and assets.

Whereas the PSSRU model for the UK has access to data from the General Household Survey which enables multi-variate analysis of the probability of receiving domiciliary care, the models for other European countries reviewed and adapted in Comas-Herrera and Wittenberg (2003) estimate current utilisation patterns and hold these patterns constant over time in projecting future demand for services, the approach adopted in this report. Data available to the Wren (2009) model met the first four requirements; data available to the extension of that model in this report meets the fifth requirement. The development of the longitudinal dimension of the TILDA survey should enable the addition of the data to meet the final three requirements.

7.3 Modelling approach of Wren (2009) model

The Wren (2009) model of long-term care need and demand in the Republic of Ireland was a cell-based macro-simulation. It was an advance on the Mercer model (Department of Social and Family Affairs 2002) in its application of new longitudinal Irish data on disability prevalence and evolution; and in its projections for residential long-term care demand at national and regional level. Although providing disaggregated forecasts of numbers of people with disabilities by single year of age and gender under a range of assumptions about the evolution of disability, in projecting residential long-term care utilisation, the 2009 version of this model projected at a highly aggregated, single-cell level for all people aged 65 and over.

The model benefited from the publication of the first comprehensive longitudinal data on the prevalence of disability in Ireland in the Census of Population for 2002 and 2006. The Census data show a marked decline in disability rates for men and women aged 65 and over across a range of definitions of disability (Table 7.1). An increase in disability prevalence at younger ages can be attributed to the expansion of the range of disabilities surveyed to include intellectual disability (Wren, 2009).

The model applies disability rate trends from evidence from the Census of Population for 2002 and 2006 to forecast disability rates to 2021 and then applies these rates to forecast population aged 65 and over. This relationship can be summarised as:

LTC need = Population aged 65 and over **X** Severe disability rate

This formula (applied across years of age for men and women) gives the forecast population with severe disabilities in any year. The model develops a number of assumptions about how disability rates might evolve, which are employed in alternative forecasts of the population with severe disabilities (Table 7.2)

Table 7.1 Annual average disability rate reduction or increase for men and women aged 65 and over in the years 2002-2006

%	Total with disabilities		A condition that substantially limits one or more basic physical activities		Difficulty in learning, remembering or concentrating		Difficulty in dressing, bathing or getting around inside the home		Difficulty in going outside the home alone	
Gender	F	M	F	M	F	M	F	M	F	M
Total	2.4	3.7	-1.5	-2.2	-2.2	1.4	-1.3	-1.4	-2.3	-1.8
65	2.3	2.3	-1.4	-1.5	-7.0	-4.4	-4.0	-1.6	-4.2	-3.4
66	1.8	1.4	-1.9	-1.9	-6.0	-6.7	-2.6	-2.0	-2.9	-3.0
67	2.8	0.9	-0.3	-2.2	-6.9	-4.6	-0.5	-3.5	-3.9	-6.0
68	0.4	0.7	-2.2	-2.4	-7.5	-5.8	-2.9	-2.1	-4.3	-3.0
69	0.5	1.9	-1.9	-0.5	-6.4	-6.7	-1.9	0.0	-3.3	-3.2
70	-0.1	0.6	-2.0	-1.4	-7.1	-8.1	-1.7	-2.1	-2.6	-4.8
71	-0.6	1.1	-1.1	-2.0	-7.8	-3.6	-2.5	-1.6	-2.4	-3.7
72	-1.0	-0.2	-1.6	-1.3	-8.4	-5.0	-2.7	-1.7	-3.7	-2.1
73	-1.6	-1.0	-1.5	-2.4	-6.7	-6.4	-1.6	-1.7	-2.7	-4.6
74	-2.0	-1.3	-2.0	-2.7	-5.9	-7.6	-1.8	-2.1	-3.7	-4.2
75	-2.0	-1.1	-1.9	-1.2	-9.2	-9.0	-3.2	-2.5	-4.1	-3.2
76	-1.9	-0.6	-1.1	-1.0	-7.8	-5.5	-2.5	-2.6	-2.6	-4.3
77	-2.2	-1.5	-1.3	0.1	-9.1	-7.8	-2.7	-0.2	-2.9	-2.5
78	-1.8	-1.6	-0.3	-1.4	-6.4	-7.8	-0.5	-1.7	-2.0	-3.8
79	-3.0	-1.8	-1.3	-0.3	-6.1	-6.0	-2.4	-2.6	-3.0	-3.6
80	-2.7	-2.4	-1.0	-1.0	-6.9	-6.7	-0.4	-1.3	-2.7	-3.2
81	-3.5	-2.5	-0.8	-1.3	-6.0	-6.5	-0.9	-1.6	-3.2	-3.9
82	-3.0	-2.3	-0.7	-0.1	-5.1	-4.6	-1.3	-0.8	-2.7	-1.6
83	-2.9	-2.6	0.8	0.7	-7.6	-6.0	-0.4	-0.6	-1.9	-2.9
84	-3.1	-2.4	-0.6	-0.4	-5.4	-2.2	-0.8	-0.9	-2.6	-2.8
85	-3.0	-3.9	-0.4	-1.0	-6.6	-4.4	-1.7	-1.2	-2.7	-3.5
86	-4.6	-3.4	-2.0	-1.9	-5.4	-7.9	-1.2	-2.4	-3.7	-3.7
87	-3.0	-2.2	-1.0	1.5	-4.8	-6.3	-0.9	0.6	-2.5	-0.7
88	-3.0	-3.0	-0.9	0.1	-5.9	-6.7	-1.0	-1.8	-3.0	-2.4
89	-2.4	-3.9	0.7	-2.0	-5.1	-6.8	-0.3	-4.0	-2.0	-3.3
90 +	-2.9	-3.8	-0.8	-0.9	-5.9	-5.4	-1.0	0.2	-2.7	-3.2

Source: Wren (2009) in Layte et al (2009), Table A2, Page 132. Calculated from disability volumes, Census of Population 2002 and 2006. Disability data aggregated at source for age 90 and over.

Table 7.2 Alternative disability rate forecasting assumptions and forecasts, Wren (2009) model

Disability Rate Forecasting Assumption	Forecast Disability Rate in Population Aged 65 and over in 2021
1. Static disability prevalence i.e. that the age and gender specific disability rates remain constant at 2006 levels	20.8%
2. The annual average rate of reduction in the disability rate maintains the age and gender specific rates of reduction observed for cognitive disabilities in the 2002-2006 period.	7.9%
3. The annual average rate of reduction in the disability rate maintains the age and gender specific rates of reduction observed for physically limiting conditions in the 2002-2006 period.	17.9%
4. The annual average rate of reduction in the disability rate maintains the age and gender specific rates of reduction observed for total disabilities in the 2002-2006 period.	16.6%
5. The annual average age- and gender-specific rates of reduction in the disability rate are estimated by linear interpolation from the annual average rates of reduction observed for cognitive disabilities for 2002-2006 to the Mercer base rate forecast (assumed to apply in 2021).	12.8%
6. The annual average age- and gender-specific rates of reduction in the disability rate are estimated by linear interpolation from the annual average rates of reduction observed for physically limiting conditions for 2002-2006 to the Mercer base rate forecast (assumed to apply in 2021).	18.6%
7. The annual average age- and gender-specific rates of reduction in the disability rate are estimated by linear interpolation from the annual average rates of reduction observed for total disabilities for 2002-2006 to the Mercer base rate forecast (assumed to apply in 2021).	17.8%

Source: Wren (2009) in Layte et al (2009)

The approach to modelling long-term care demand in this model and in its development in this report is statistical rather than econometric. A statistical approach to disability rate forecasting is compatible with the methodology underlying the demographic forecasts employed in the model. These were the the demographic forecasts of Morgenroth (2009) which are also employed in this report for reasons discussed in Chapter 5.

Morgenroth's population forecasts are underpinned by Whelan's work on mortality rates (Whelan 2008). The statistical approach adopted to forecast the evolution of disability rates was designed in Wren (2009) to be compatible insofar as possible with the Whelan/Morgenroth methodology. Whelan (2008) applies the 'targeting approach' used by the Government Actuary's Department (GAD) in making population projections in the UK. The three components of this approach as applied by Whelan are: to estimate short-term mortality trends by age and gender; to judge the long-term rate of improvement in the mortality rate for a target future year; and to interpolate between the observed short-term trend and the longer term trend assumed for the target year.

Whelan (2008) therefore forecast mortality rates by estimating the rate of improvement for each gender at each age over the period 2002 to 2005. Centrally, Whelan assumed that there is a cohort effect in this mortality rate improvement, i.e. that this rate of improvement in mortality will not be sustained and will decline over the twenty-five year period to 2031 to a long-term average improvement rate. Whelan found that the current rate of decline of mortality for males averaged 5% per annum across most ages, with little variation. For females, the current rate of decline oscillated with age about an averaged rate of 3.5% per annum. In Whelan's forecast a long term rate of decline of 1.5% per annum was assumed for all ages up to 90 years after calendar year 2031. It was assumed, because of the paucity of data, that there would be no mortality improvements at ages of 100 years upwards. For each year between 2005 and 2031, the mortality declines for that year were calculated by linear interpolation.

The methodology applied in Wren (2009) to forecasting disability rates followed the targeting approach to forecasting mortality rates in Whelan (2008). The preferred forecast was the sixth in Table 7.2 and followed Whelan in assuming a cohort effect in the improvement in disability. This forecast assumed that the rates of reduction in disability rates would converge from the rates of reduction observed for physically limiting conditions over the 2002-2006 period to the Mercer base rate forecast in 2021 (Department of Social and Family Affairs 2002).

These forecasts were generated in an Excel spreadsheet. The first step of the targeting approach, estimating short-term disability trends by age and gender, was implemented by an initial calculation of the annual average disability rate reduction by single year of age and gender over the years 2002-2006, given by the formula:

$$\Delta DR_{02-06} = (DR_{2006}/DR_{2002})^{1/4} - 1$$

Where $DR = $ Census of Population Disability Rate

The second required step of the targeting approach was to judge the long-term rate of improvement in the disability rate for a target future year. In the absence of long-run longitudinal evidence on the evolution of disability rates, the annual average reduction in the final forecast year, 2021, was assumed to be the base rate reduction in Mercer (Department of Social and Family Affairs 2002 : 71). Mercer's base rate combines the assumptions: that disability prevalence would remain unchanged at ages from 85 and over; that the rate of decline in disability rates for women aged 65-84 would be 0.9% p.a., which is not much lower than the 1.04% observed annual average rate of decline over the years 2002-2006; and that the rate of decline for men aged 65 to 84 would be 0.67%, approximately half the observed 1.23% annual average rate of decline over the years 2002-2006 (Wren 2009).

Although these assumptions derived from an earlier study with differing demographic and disability prevalence data, the justification for applying them in the Wren (2009) model was that they represented the previous, central forecast in the Irish literature, which represented a more pessimistic view of the probable evolution of disability than the observed 2002-2006

trends. The adoption of the Mercer base rates as long-term rates in the target year, 2021, did not greatly alter the forecasting outcome compared to an assumption of a continuation in the observed trend improvement in physical disability (Assumption 3 in Table 7.2). The net effect of assuming that the rate of improvement in physical disability rates declined over this period to converge to the Mercer base rate, as opposed to assuming that the rates of improvement in physical disability rates would continue at their 2002-2006 trend rate, was to increase the proportion of population aged 65 and over with forecast substantial physical limitation from 17.9% to 18.6%.

The third and final step in the targeting approach was to interpolate between the observed short-term trend and the longer term trend assumed for the target year. The rates of reduction in disability rates in the years between 2006 and 2021 are calculated by the formula:

$$\Delta DR_t = \Delta DR_{t-1} - (\Delta DR_{2021} - \Delta DR_{02-06})/\Delta T$$

Where $\Delta DR_{2021} = \text{Mercer base rate reduction}$

And $\Delta T = 2021 - 2006 = 15$

Finally the disability rate forecast by single year of age, gender and disabling condition was generated by the formula:

$$DR_t = (DR_{t-1} \times \Delta DR_t) + DR_{t-1}$$

Where $DR_t = \text{Forecast disability rate in year t}$

The alternative assumptions for the evolution of disability rates from 2006 were applied to the rates in the 2006 base year of Census-defined substantial physical limitation. These rates were chosen as a proxy for the prevalence of severe disability because their age and gender-specific prevalence at the aggregated level of two older age cohorts closely accorded with the severe disability rates recorded in the more detailed 2006 National Disability Survey (NDS) but were available by single year of age and gender whereas the NDS rates were only available at the two-cohort level.

Although generating highly disaggregated forecasts for the population with disabilities by single year of age and gender, the Wren (2009) model then re-aggregated to forecast population aged 65 and over with severe disability as in effect a single cell. In this macro-simulation an initial assumption of a constant residential LTC utilisation rate for the population aged 65 and over with severe disability was applied to project residential LTC utilisation in 2021. A further projection modelled the effect of including estimated unmet need for residential LTC based on delayed discharges from acute hospitals. A final scenario modelled the requirement if Irish LTC utilisation were equivalent to the utilisation rate in Sweden. Sweden was chosen as the comparator because proposed reductions in acute hospital capacity in Ireland by 2020 would re-configure care to resemble most closely the acute care supply in Sweden.

Due to data limitations, the Wren (2009) model did not project formal home care utilisation or informal care utilisation. The data available on utilisation of formal home care was limited to numbers of recipients of publicly-provided home help and hours of home help and there were no available sources for private care provision or linking formal domiciliary care or informal carers to the recipients of care, such as the General Household Survey or British Household Panel Survey, which supply data to the PSSRU models. The absence of provision for a unique personal identifier in health and social care datasets has been a serious obstacle to researchers in the Republic of Ireland who wish to analyse patterns or predictors of utilisation by linking existing datasets (Staines et al. 2010). In the Wren (2009) model, it was not possible to link receipt of formal or informal home care to population subgroups, whether defined by age and gender solely, or by age, gender, dependency and other individual/household attributes.

7.4 Modelling methodology for the Republic of Ireland

A number of new data sources, published subsequent to the development of the Wren (2009) model, have enabled its extension in this report in the modelling for the Republic of Ireland. These new sources are: a module of the 2009 Quarterly National Household Survey with data about carers and for whom they care (Central Statistics Office 2010a); and the second volume of the National Disability Survey, which published data on utilisation of formal and informal care and unmet need for care by age and disability status (Central Statistics Office 2010b). In the analysis in Chapter 5, these new data sources have allowed the estimation of utilisation of informal and formal home care by age, gender and dependency status, as well as more comprehensive estimation of unmet need. It is therefore possible in the versions of the model in this report to divide estimated population by age, gender and disability status into a number of sub-cells; and to assign to these cells current utilisation patterns. This more disaggregated approach is also followed in estimating residential LTC utilisation by age cohort and gender.

The model again applies the Morgenroth (2009) population forecasts and adopts two disability rate forecasting scenarios: in the first disability rates are assumed to remain constant and forecasts are based on pure population increase; the second scenario employs the preferred disability rate forecasting assumption described above (Assumption 6, Table 7.2). This rate of decline of disability rates is applied to generate forecasts both of population with severe disability and with ADL difficulty. The former forecast is on the same basis as in Wren (2009); the latter forecast takes as its baseline the 2006 National Disability Survey data on the prevalence by age cohort and gender of ADL difficulty in people with disabilities.

The modelling in this study does not include a pessimistic scenario, with assumed increases in age- and gender-specific disability rates. The authors have taken the view that the evidence in both jurisdictions justifies a preference for an assumption of continued disability rate declines. The more pessimistic scenario, based on pure population increase, assumes static disability rates. Since the modelling projects on the basis of recent trends in disability rates, further iterations of the model could update for a change in disability rate trends. This approach appears justified by the evidence (reviewed in Chapter 2) of a declining trend in disability in

the majority of studies that have used measures of basic and/or instrumental activities of daily living (ADL/IADL) in assessing levels of disability (Christensen et al. 2009).

Long-term care utilisation patterns are assumed to remain constant in relation to population by age and gender in the first scenario; and in relation to population with disability in the second. Given these assumptions there is, theoretically, no reason to differentiate between definitions of disability in the projections; it is the rate of change in the disability rate combined with the rate of population growth which determines the projection year utilisation. However, the two definitions are nonetheless employed in different projections because the population defined by ADL difficulty is limited to two age cohorts whereas the residential LTC utilisation estimates relative to population with severe disability can be generated at the level of six cohorts in the baseline year. Numbers with severe disability are forecast by single year of age (SYOA) and gender before aggregation into 6 or 2 cohorts. Numbers with ADL difficulty in any year are forecast for each of the 2 age cohorts by applying the rate of change in the severe disability rates (calculated for that cohort from SYOA data) to the ADL rate in the base year and multiplying the cohort population in the forecast year by that rate. The methodological steps to forecasting cohorts with disability by either definition starting from SYOA data compensate to some degree for understatement of the relative growth of the population in the oldest age cohorts. Nonetheless greater degrees of aggregation generate lower estimates of the effect of population growth and ageing on utilisation. The available utilisation data dictate the level of aggregation or number of cells in the final projections of utilisation. Table 7.3 shows the level of aggregation of the projection steps for the Republic of Ireland model, while Figure 7.1 illustrates the modelling steps.

Table 7.3 Aggregation and number of cells in Republic of Ireland model

Projection	Population aged 65 and over	Population with disability	Residential LTC utilisation	Formal home care utilisation	Informal home care utilisation
Degree of Aggregation	Single year of age and gender to age 100 and over	Severe disability: single year of age and gender to age 90 and over	DOHC/INHO basis: 5-year age cohorts from age 65 to 89; single cohort aged 90 and over, disaggregated by gender	2 age cohorts (65-74; 75 and over) and gender	2 age cohorts (65-74; 75 and over) and gender; 3 sources of care; plus sources of care combined
Cells	72	52	12	4	16
Degree of Aggregation		ADL difficulty: 2 age cohorts (65-74; 75 and over) and gender	NDS-basis: 2 age cohorts (65-74; 75 and over) and gender		
Cells		4	4		

The final utilisation projections are at the level of four cells in the case of formal home care - for men and women, aged 65-74 and 75 and over; at the level of 16 cells in the case of informal home care - the same 4 cells by age and gender multiplied by 3 sources of care and by instances where sources of care are combined; and at the level of 12 cells - 6 age cohorts for men and for women - in the case of residential LTC utilisation, when the projection is based on the more disaggregated DOHC/INHO estimate of utilisation in the 2006 base year. The maximum combination of projection cells is 28 and the minimum 20, depending on the basis for the residential care projection.

Figure 7.1 Republic of Ireland model
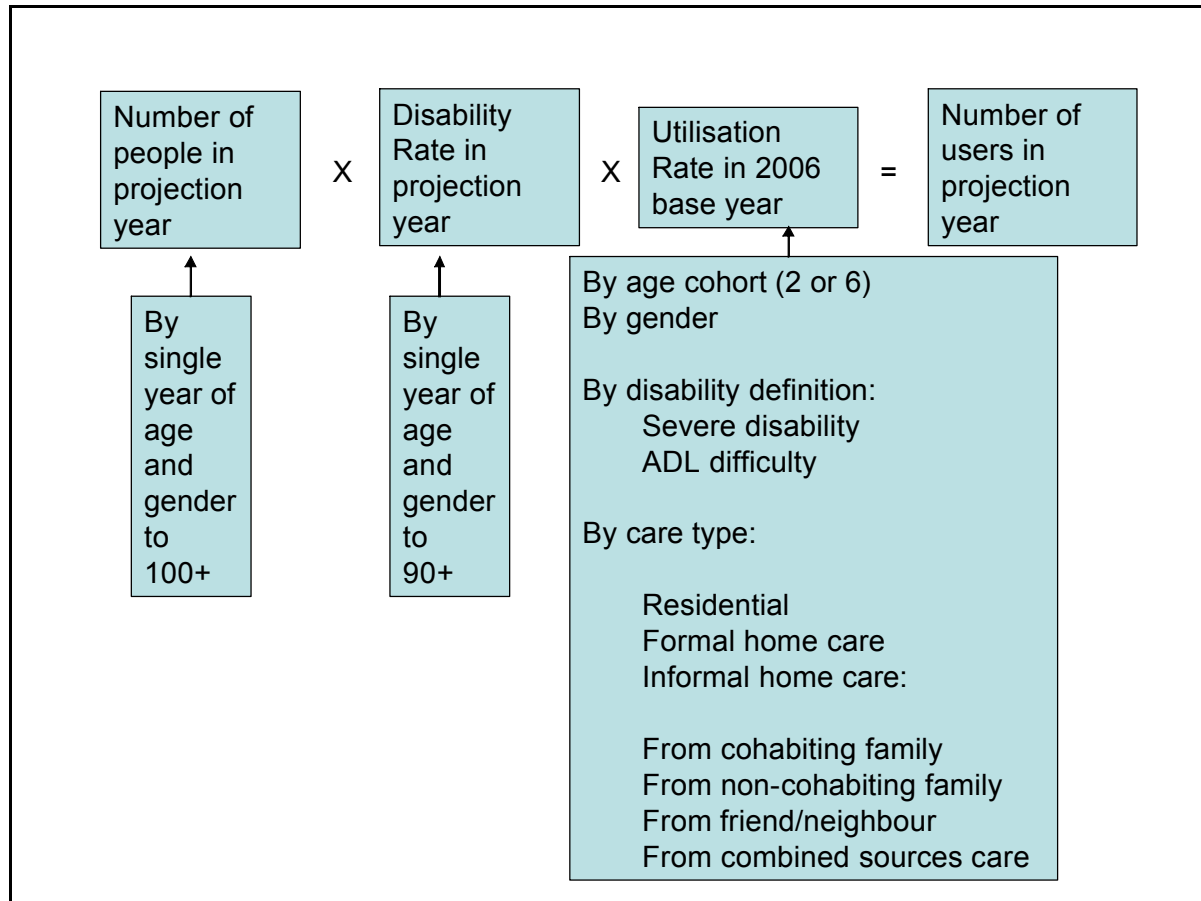
7.5 Modelling methodology for Northern Ireland

The Northern Ireland model is constructed by the same methodology but with some difference in the underlying assumptions. Population projections are by single year of age and gender; disability rate projections and utilisation estimates are by three age cohorts (65-74, 75-84 and 75 and over) and by gender. The two projection scenarios assume, as in the case of the Republic of Ireland model, either pure population increase with implicit constant age and gender-specific disability; or declining disability rates. The disability rate declines assume that the linear trend in limiting long-standing illness (LLTI) evident in the Continuous Household Survey for the years 1997/8 to 2010/2011 will continue to 2021, therefore

diverging from the Republic of Ireland assumption of a cohort effect. This appears justified by the degree of convergence between recent and historical trends, discussed in Chapter 9. Although the LLTI data are only available for two age cohorts (65-74 and 75 and over) to model the effect of growth in the oldest age groupings, the older age cohort is split into those aged 75-84 and an additional cohort aged 85 and over with assumed zero change in disability prevalence. Utilisation estimates and projections are generated in the Northern Ireland model for residential long-term care (care homes), for formal home care and for combinations of informal and formal care, whether from statutory or non-statutory providers. These are generated by 3 age cohorts and by gender. Figure 7.2 illustrates the Northern Ireland model.

Figure 7.2 Northern Ireland model
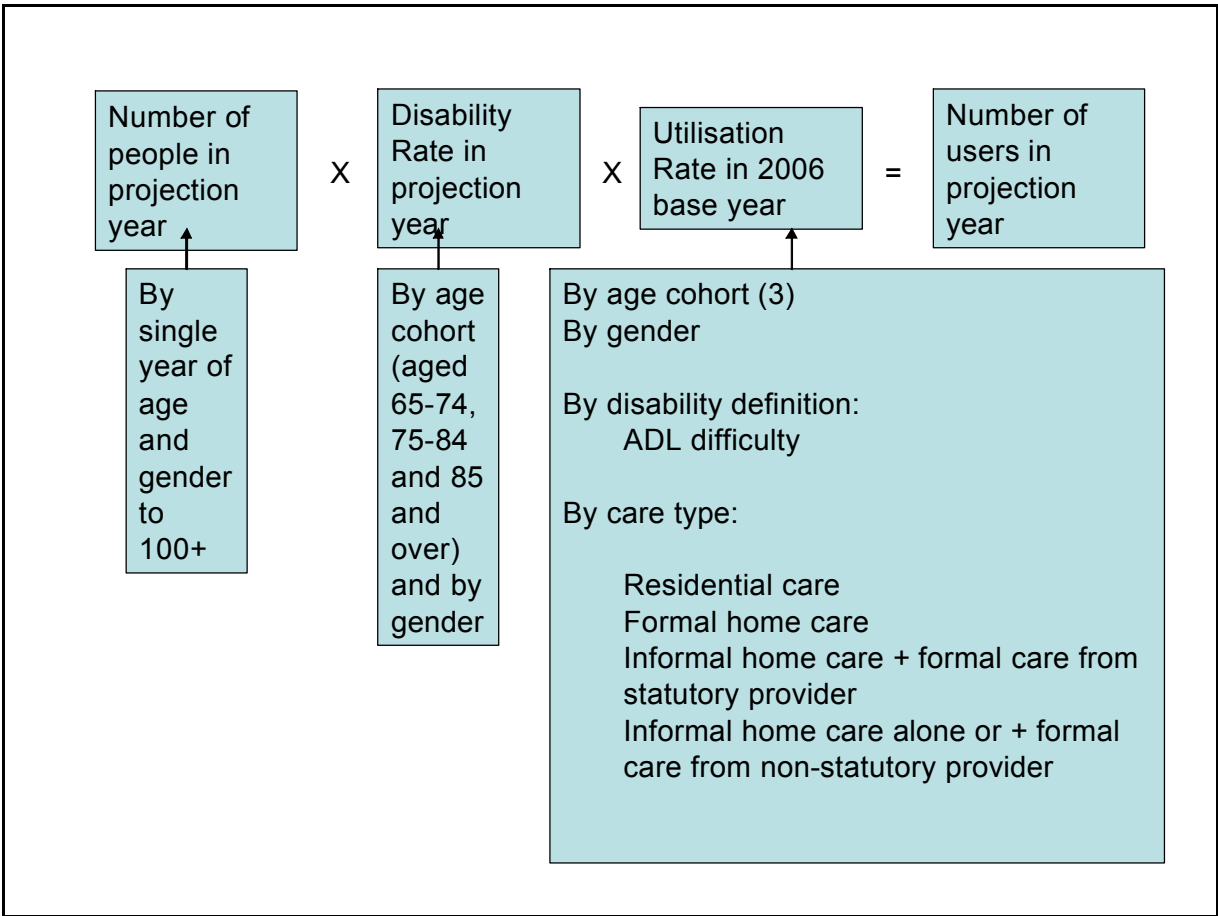
7.6 Conclusion

The methodology employed in this report to project long-term care utilisation for the Republic of Ireland and Northern Ireland shares a common approach. In both jurisdictions, projections are generated by cell-based macro-simulation models. Each model employs two scenarios: the effect of pure population increase and ageing on long-term care utilisation; and the effect on long-term care utilisation of population growth and ageing combined with forecast declines in disability rates. Each model applies evidence of disability rate declines to forecast future populations with disability.

In common with the models reviewed for other European countries (Comas-Herrera and Wittenberg 2003) the utilisation rates of long-term care in alternative settings are assumed to remain constant. In these models, utilisation is estimated from data for the 2006 base year for residential long-term care, formal home care and informal home care. The degree of estimation differs depending on the data available, as analysed in Chapters 5 and 6. Utilisation is assumed to remain at its age and gender-specific rates in the first projection scenario; and at its age, gender and disability state-specific rates in the second. The degree of aggregation of the projections is determined by the utilisation data available. It is recognised that the less aggregated the projection, the better it reflects the effects of population aging. The projections are, of course, dependent on their underlying assumptions. The implications of these assumptions and the effects of determinants of utilisation that are not included in the models are further discussed in the following chapters.

Chapter 8 Long-Term Care Projections for the Republic of Ireland

8.1 Introduction

This chapter projects utilisation of long-term care in the Republic of Ireland in residential institutions and the community, whether supplied formally or informally, over the years 2006-2021. These projections are based on the utilisation data analysed in Chapter 5; the population forecasts of Morgenroth (2009) and the disability forecasts of Wren (2009). The 2006 base year is chosen because of the availability of detailed demographic, disability and utilisation data for that year. Since this analysis is being conducted five years into the forecast period, this chapter examines the trends in provision of care, where data allow, in the years 2006-2011 to test the performance of the projection methodology.

The next section discusses the alternative scenarios adopted in the analysis to forecast need for care. Section 3 projects residential LTC utilisation. Section 4 projects utilisation of formal home care. Section 5 projects utilisation of informal home care. Section 6 summarises and concludes.

8.2 Forecasts of need for care

In this chapter, projections of utilisation of long-term care in different settings are based on three measures of future need for care. In the first scenario, need is assumed to rise in line with pure population growth i.e. age-related disability and age-related need for long-term care are assumed to remain static as population grows. Forecast population is sourced from Morgenroth (2009) as discussed in Chapter 5 (Table 5.3). The two alternative scenarios assume declining disability rates, derived from the evidence for 2002-2006, applied as explained in Chapter 7.

This trend evidence is applied to the forecast population in order to estimate numbers with disability defined according to the two alternative measures of disability, discussed in Chapter 5: Census-defined substantial physical limitation as a proxy measure of severe disability rates (Table 8.1); and difficulty in undertaking activities of daily living (ADL) as measured in the 2006 National Disability Survey (NDS) (Table 8.2).

Table 8.1 Forecast numbers with severe disability 2006-2021, Census-defined substantial physical limitation

Age cohort	Population	Persons severe disability	Disability Rate	Population	Persons severe disability	Disability Rate	Population	Persons severe disability	Disability Rate	Population	Persons severe disability	Disability Rate
		2006			2011			2016			2021	
MALE												
65-69	70,895	7,293	10.3%	87,400	8,324	9.5%	107,176	9,677	9.0%	117,299	10,169	8.7%
70-74	56,540	7,275	12.9%	64,542	7,615	11.8%	80,836	8,922	11.0%	100,221	10,652	10.6%
75-79	40,121	7,528	18.8%	47,592	8,632	18.1%	56,031	9,817	17.5%	71,792	12,098	16.9%
80-84	24,694	6,495	26.3%	29,553	7,576	25.6%	37,075	9,284	25.0%	45,431	11,026	24.3%
85-89	11,021	3,962	35.9%	15,117	5,346	35.4%	20,168	7,044	34.9%	27,528	9,633	35.0%
90+	3,824	1750	45.8%	5,764	2542	44.1%	9,600	4142	43.1%	15,035	6447	42.9%
65+	207,095	34,303	16.6%	249,968	40,033	16.0%	310,886	48,885	15.7%	377,306	60,024	15.9%
FEMALE												
65-69	72,501	7,649	10.6%	87,714	8,602	9.8%	107,260	10,011	9.3%	117,932	10,579	9.0%
70-74	62,612	9,422	15.0%	68,599	9,602	14.0%	83,507	10,981	13.1%	102,628	13,055	12.7%
75-79	52,345	12,240	23.4%	56,437	12,494	22.1%	62,641	13,274	21.2%	77,126	15,637	20.3%
80-84	40,190	13,919	34.6%	42,803	14,487	33.8%	47,444	15,609	32.9%	53,779	17,153	31.9%
85-89	22,281	10,410	46.7%	27,677	12,627	45.6%	31,493	14,176	45.0%	37,302	16,711	44.8%
90+	10,902	6457	59.2%	14,447	8275	57.3%	20,145	11315	56.2%	25,993	14519	55.9%
65+	260,831	60,097	23.0%	297,677	66,088	22.2%	352,490	75,365	21.4%	414,760	87,654	21.1%
TOTAL												
65-69	143,396	14,942	10.4%	175,114	16,926	9.7%	214,436	19,687	9.2%	235,231	20,748	8.8%
70-74	119,152	16,697	14.0%	133,141	17,217	12.9%	164,343	19,903	12.1%	202,850	23,707	11.7%
75-79	92,466	19,768	21.4%	104,030	21,126	20.3%	118,672	23,091	19.5%	148,918	27,735	18.6%
80-84	64,884	20,414	31.5%	72,356	22,063	30.5%	84,519	24,893	29.5%	99,210	28,179	28.4%
85-89	33,302	14,372	43.2%	42,793	17,973	42.0%	51,660	21,219	41.1%	64,830	26,343	40.6%
90+	14,726	8,207	55.7%	20,212	10,816	53.5%	29,746	15,457	52.0%	41,028	20,966	51.1%
65+	467,926	94,400	20.2%	547,646	106,121	19.4%	663,376	124,250	18.7%	792,067	147,677	18.6%

Table 8.2 Forecast numbers with ADL difficulty 2006-2021, National Disability Survey definition

Age cohort	Population	Numbers with ADL	ADL rate	Population	Numbers with ADL	ADL rate	Population	Numbers with ADL	ADL rate	Population	Numbers with ADL	ADL rate
		2006			2011			2016			2021	
MALE												
69-74	127,435	9,461	7.4%	151,942	10,351	6.8%	188,012	12,078	6.4%	217,521	13,522	6.2%
75+	79660	16,725	21.0%	98026	20,420	20.8%	122874	25,667	20.9%	159786	33,224	20.8%
65+	207,095	26,186	12.6%	249,969	30,771	12.3%	310,886	37,746	12.1%	377,307	46,746	12.4%
FEMALE												
69-74	135,113	12,497	9.2%	156,312	13,327	8.5%	190,767	15,367	8.1%	220,560	17,301	7.8%
75+	125718	35,700	28.4%	141365	39,730	28.1%	161724	45,115	27.9%	194200	53,119	27.4%
65+	260,831	48,197	18.5%	297,677	53,057	17.8%	352,491	60,483	17.2%	414,760	70,420	17.0%
TOTAL												
69-74	262,548	21,958	8.4%	308,255	23,678	7.7%	378,779	27,446	7.2%	438,081	30,823	7.0%
75+	205,378	52,425	25.5%	239,391	60,150	25.1%	284,597	70,783	24.9%	353,986	86,343	24.4%
65+	467,926	74383	15.9%	547,646	83828	15.3%	663,377	98229	14.8%	792,067	117,166	14.8%

These two alternative need forecasts are generated because although the degree of difficulty in ADL can be related to utilisation of care in all settings, it is available only at the two-cohort level of aggregation, whereas the severe disability rate proxy measure can be forecast by single year of age and gender and related to residential LTC utilisation at the more disaggregated 6-cohort level. The greater the disaggregation, the greater the degree to which the projected need reflects population ageing, an effect demonstrated in this chapter in the projections for residential LTC utilisation. The greater the degree of aggregation, the lower the forecast need for and projected utilisation of care. Both measures of disability are therefore employed in developing alternative projections of residential LTC utilisation. The severe disability measure is employed in projecting formal home care utilisation; whereas the alternative measure is employed in projecting the more intense informal home care utilisation which is required by people with ADL difficulty.

In order to forecast the ADL rate and future numbers with ADL difficulty, the forecast rate of decline in the severe disability rate is calculated at the same two-cohort level as the ADL rate and is then applied to the ADL rate. The effect of adopting the ADL measure of disability is to generate an alternative rate of decline in disability in the aggregate even though the same percentage decline in disability rates applies at the individual two-cohort level. This difference is a consequence of the differing proportions of persons with disability in the younger-old and older-old age cohorts depending on the definition of disability employed. The relatively lower rate of decline in the overall ADL-difficulty rate as compared to the severe disability rate reflects the relatively higher proportion of recorded ADL difficulties as compared to severe disability occurring in the older-old age cohorts. Improved life expectancy for men in particular causes a greater proportionate increase in these older age cohorts, so that the rate of the chosen definition of disability for men in this cohort has a disproportionate effect on the forecast overall disability rate (Tables 8.3 and 8.4). The three alternative forecast numbers of people in need of care are applied to projecting utilisation of care assuming that the relationships of need to utilisation remain constant at the most disaggregated level for which utilisation data are available in 2006.

Table 8.3 Comparison two-cohort and aggregate disability rate decline 2006-2021, by Census and National Disability Survey definitions

Age cohort	Severe disability rate	ADL rate	Severe disability rate	ADL rate	%change severe disability rate 2006-2021	%change ADL rate 2006-2021
	2006		2021			
MALE						
69-74	11.4%	7.4%	9.6%	6.2%	-16.3%	-16.3%
75+	24.8%	21.0%	24.5%	20.8%	-1.0%	-1.0%
65+	16.6%	12.6%	15.9%	12.4%	-4.0%	-2.0%
FEMALE						
69-74	12.6%	9.2%	10.7%	7.8%	-15.2%	-15.2%
75+	34.2%	28.4%	33.0%	27.4%	-3.7%	-3.7%
65+	23.0%	18.5%	21.1%	17.0%	-8.3%	-8.1%
TOTAL						
69-74	12.1%	8.4%	10.1%	7.0%	-15.8%	-15.8%
75+	30.6%	25.5%	29.2%	24.4%	-4.6%	-4.4%
65+	20.2%	15.9%	18.6%	14.8%	-7.6%	-6.9%

Table 8.4 Relative proportions with disability in each cohort by Census and National Disability Survey definitions and population growth rates by cohort

Age cohort	Pop.	Numbers with severe disability	Percentage of all with disability in each cohort	Numbers with ADL	Percentage of all with disability in each cohort	Pop.	Pop. Increase 2006-2021
			2006			2021	
MALE							
69-74	127,435	14,568	42.5%	9,461	36.1%	217,521	70.7%
75+	79,660	19735	57.5%	16,725	63.9%	159,786	100.6%
65+	207,095	34,303		26,186		377,307	82.2%
FEMALE							
69-74	135,113	17,071	28.4%	12,497	25.9%	220,560	63.2%
75+	125,718	43026	71.6%	35,700	74.1%	194,200	54.5%
65+	260,831	60,097		48,197		414,760	59.0%
TOTAL							
69-74	262,548	31,639	33.5%	21,958	29.5%	438,081	66.9%
75+	205,378	62,761	66.5%	52,425	70.5%	353,986	72.4%
65+	467,926	94,400		74,383		792,067	69.3%

8.3. Projected utilisation of residential long-term care

Since the basis for projecting the conversion of need into utilisation is the utilisation rate in 2006, these projections differentiate between the two alternative bases for estimating utilisation rates derived in Chapter 5. Residential long-term care utilisation is projected for 5 alternative scenarios:

1. Pure population basis for forecast need, utilisation rates as in DOHC/INHO estimates, population cohort-specific utilisation rates assumed constant (Table 8.5 and Appendix A Table A.1);

2. Pure population basis for forecast need, utilisation rates as in NDS-basis estimates, population cohort-specific utilisation rates assumed constant (Table 8.5 and Appendix A Table A.2);

3. Forecast need based on forecast population with severe disability, utilisation rates as in DOHC/INHO estimates, disability cohort-specific utilisation rates assumed constant (Table 8.5 and Appendix A Table A.3);

4. Forecast need based on forecast population with severe disability, utilisation rates as in NDS-basis estimates, disability cohort-specific utilisation rates assumed constant (Table 8.5 and Appendix A Table A.4);

5. Forecast need based on forecast population with ADL difficulty, utilisation rates as in DOHC/INHO estimates, disability cohort-specific utilisation rates assumed constant (Table 8.5 and Appendix A Table A.5).

Table 8.5 Summary projections of numbers of people aged 65 & over in residential LTC and of LTC utilisation rates in 2021 in 5 alternative scenarios

Scenario	Estimated nos in residential LTC	% aged 65 and over in res. LTC	Projected nos in residential LTC	% aged 65 and over in res. LTC	Increase in numbers in residential LTC	Annual Increase in numbers in residential LTC	Percentage change in residential LTC utilisation rate for people aged 65 & over
	2006		2021		2006-2021		
1	22,491	4.8%	42,254	5.3%	19,763	1,318	10.4%
2	20,720	4.4%	34,705	4.4%	13,985	932	0.0%
3	22,491	4.8%	36,993	4.7%	14,502	967	-2.1%
4	20,720	4.4%	32,993	4.2%	12,273	818	-4.5%
5	22,491	4.8%	36,080	4.6%	13,589	906	-4.2%

Scenario 1: The pure population forecasts at their most disaggregated and with the higher DOHC/INHO utilisation estimates for 2006 generate a projection that the proportion of population aged 65 and over in residential LTC would increase from 4.8% to 5.3% by 2021. The proportionately greater growth in the older age cohorts with relatively higher utilisation rates increases the utilisation rate for all people aged 65 and over despite assumed constant utilisation rates by age cohort (Table 8.5 and Appendix A Table A.1).

Scenario 2: When the same exercise is repeated using the lower NDS-basis estimated utilisation by age cohort in 2006, the relatively low 4.4% utilisation rate among all over 65 year olds is maintained to 2021 because the limitation of the projection to the two NDS age cohorts obscures the effect of the relatively greater growth in the older age cohorts (Table 8.5 and Appendix A Table A.2). Both these projections of utilisation are, however, predicated on constant age-specific disability, which is unduly pessimistic given the evidence of declining disability. Since the limitation to two cohorts reduces the full effect of population ageing, a more disaggregated basis for projecting utilisation is preferable.

Scenario 3: When residential LTC utilisation is projected on the assumptions of a reducing rate of severe disability, the DOHC/INHO utilisation estimate and constant residential LTC utilisation rates by cohort of people with severe disability, the decline in disability is seen to compensate to some degree for the growth in population in the older age cohorts (Table 8.5 and Appendix A Table A.3). The overall residential LTC utilisation rate for people aged 65 and over declines from 4.8% in 2006 to 4.7% in 2021. Although this scenario applies the preferred forecast method for the evolution of disability rates from Wren (2009), the projected overall residential LTC utilisation rate is higher than the 4.4% Wren (2009) projection. This difference arises because this is a more disaggregated projection and therefore better captures the effect of increasing numbers of people in the older age cohorts with higher disability rates and rates of residential LTC utilisation.

Scenario 4: In this scenario in order to relate population with disability to the NDS-basis utilisation rate, the forecast decline in severe disability rates applied in scenario 3 to six age

cohorts are here applied to two age cohorts. The combination of the lower estimated utilisation rate in 2006 and the relatively aggregated disability forecast generates the greatest percentage decline in the utilisation rate and the lowest projected utilisation of all the scenarios. Given the assumption of constant residential LTC utilisation rates by cohort of people with severe disability, the projected utilisation will remain the same whether the disability rate decline is applied to the population with severe disability or with ADL difficulty, if each projection exercise is at the same level of aggregation.

Scenario 5: This scenario shares the assumptions of scenario 3: reducing rates of disability, the DOHC/INHO utilisation estimate and constant residential LTC utilisation rates by cohort of people with disability. The measure of disability is ADL difficulty. This alternative measure should not generate different projections of utilisation from scenario 3 since the same forecast disability rate decline is assumed. The reason that the projections in this scenario differ from those in scenario 3 is that they are at the more aggregated two-cohort level and therefore understate the impact of population ageing and generate lower projected utilisation. The difference is, however, minimal at 0.1% of the utilisation rate or 2.5% of final estimated numbers in receipt of residential LTC. This scenario is included here to illustrate this aggregation effect, a factor which must be taken into account in projecting utilisation of care in non-residential settings below. These projections are necessarily restricted to the two-cohort level because the data relating need to utilisation in non-residential settings sourced from the 2006 National Disability Survey is available only at this level of aggregation.

Implications of residential LTC utilisation projections

There are good reasons to prefer scenario 3: it combines the more disaggregated and therefore fuller effects of ageing with forecast declines in disability rates based on the trend evidence of reducing disability, a more realistic picture than the first two pure population growth scenarios. Scenario 3 is, however, based on an estimate of residential LTC utilisation in 2006, which may be over-stated. The alternative scenario 4 uses the more conservative NDS-basis residential LTC utilisation estimate for 2006. It, however, has the disadvantage of being relatively aggregated so that it generates understated forecasts of ageing effects on the prevalence of disability. The same reservation applies to the final scenario 5 which is in effect a more aggregated and therefore less accurate version of scenario 3.

In summary, it can be said that while scenario 3 may be overstated and scenario 4 understated, these two scenarios provide a range for projected residential LTC utilisation, assuming the Morgenroth (2009) population forecasts, the Wren (2009) preferred forecast disability rate declines and a constant relationship of residential LTC utilisation to disability. The rate of decline in the residential LTC utilisation rate from 2006 to 2021 is therefore projected to be in the range of 2% to 4.5%. Despite this decline, the effect of population ageing will mean that an additional 12,300 to 14,500 people will become resident in long-term care by 2021 assuming current utilisation patterns. This would generate a residential LTC utilisation rate among people aged 65 and over in 2021 of between 4.2% and 4.7% and a requirement for an additional 820-970 residential LTC places on average per annum over the 15 years 2006-2021

(Table 8.5). The range for the projected annual need for LTC places increases through the period (Table 8.6).[ii] The five-yearly interval in which the projected annual need is highest differs in the two preferred scenarios. According to these scenarios, there will be an annual average requirement for an additional 800 - 1,090 places in the next five years from 2011-2016. This five-year projection assumes that the projected demand in the 2006-2011 period has been met and no further provision is needed to meet pent-up unmet demand.

Table 8.6 Implication of preferred projections for additional numbers in residential LTC over the years 2006-2021

Scenario	Increase in numbers in residential LTC	Annual average projected increase in numbers in residential LTC	Annual average projected increase in numbers in residential LTC, 5-yearly intervals		
	2006-2021		2006-2011	2011-2016	2016-2021
3	14,502	967	756	1,091	1,054
4	12,273	818	551	800	1,103

Due to the lack of a consistent time series for residential long-term care beds and residents in the Republic of Ireland the accuracy of these forecasts can not be definitively tested by examination of utilisation in the years 2006-2011 but there is evidence that there was a substantial increase in the number of older people in residential LTC settings in the years 2006 to 2009, which appears to have been within the projected range. The forecasts in this chapter, tabulated in detail in the Appendix, are generated at five-yearly intervals. In the five years 2006-2011, the preferred scenarios 3 and 4 in this chapter forecast an increase in LTC residents of between 551 and 756 annually (Table 8.6). The Irish Nursing Homes Association records an increase in private and voluntary home bed numbers from 17,909 in 2006 to 20,590 in early 2010 (INHO 2010). Given occupancy levels, this suggests an increase in residents from 16,011 to 17,790 over little more than three years, an increase of approximately 590 residents annually.

Before the onset of the economic and fiscal crisis in 2008, the HSE had opened a number of new public community nursing units. The HSE's series for public beds records 10,536 beds in 2009, which compares with an estimated 9,488 in 2006. Although these are not comparable counts, it would appear that overall public bed capacity also increased from 2006 to 2009. If these bed numbers were comparable and the bed occupancy were constant at approximately 89%, this would suggest the addition of approximately 1,048 residents or 230 additional residents annually in public facilities over these four years. If this estimate is accurate, when combined with the increase in numbers of residents in private and voluntary homes, the annual average increase in residents over the years 2006-2009 could have been in the region of 820 annually. Although this is a hypothetical calculation in the case of public bed capacity and utilisation, it can be inferred that numbers of people in residential LTC increased by an amount in the range of 600-800 annually in the years 2006-2009, which is compatible with the forecast range for the 2006-2011 period of 550 to 756 additional LTC residents annually.

Trends in the more recent provision and utilisation of residential LTC are rapidly changing and difficult to assess. A series of austerity budgets and constraints to filling posts in the

public sector has led to the closure of some and threatened closure of more public community nursing facilities. Meanwhile, the introduction of the Fair Deal scheme of nursing home support has had mixed effects: initially incentivising residential over community care; and more recently, due to funding constraints, leading to delays in moving into residential care and increased numbers of patients experiencing delayed discharge from acute hospitals. The HSE recorded that the monthly average number of patients experiencing delayed discharge from acute hospitals in September 2011 was 839 compared to 612 in September 2010 (HSE 2011b).

The projections in this chapter make clear that, notwithstanding fiscal and economic pressures, demographic developments will lead to a sizeable and mounting year-on-year requirement for additional residential long-term care capacity if utilisation rates among people with disability remain at 2006 levels; however it is provided and funded. If residential LTC capacity and access is inadequate, the probability is that this will rapidly become evident in pressures on the acute hospital system.

8.4. Projected utilisation of formal community long-term care

In Chapter 5 utilisation of formal home care is estimated on two alternative bases, which differ only in the estimated numbers of people paying privately for privately supplied care (Table 5.18). Evidence from the 2006 National Disability Survey about the proportion of formal home care purchased privately is combined with the HSE database count of numbers in receipt of publicly provided or funded home help services to estimate total numbers of people aged 65 and over in receipt of care from home helps, carers or personal assistants. The lower basis (Basis 1) estimates utilisation solely from the HSE database. The higher basis (Basis 2) adds NDS-estimated privately purchased home care for people with disabilities to the publicly provided or funded home care. Total utilisation is assumed to follow the NDS disaggregated patterns of utilisation by two age cohorts and gender for people with ADL difficulties aged 65 and over.

The projection scenarios for utilisation of formal home care are similar to those for residential LTC with the exception that all are at a two-age cohort level of aggregation because this is the most disaggregated level at which formal home care utilisation data are available to this analysis. As noted in the alternative residential LTC projections, the greater the degree of disaggregation the higher is projected utilisation because greater disaggregation better reflects the relative growth of the oldest old age cohorts with the highest utilisation rates of formal care. These relatively aggregated projections are therefore likely to underestimate future formal care demand.

Formal home care utilisation is projected for 4 alternative scenarios:

1. Pure population basis for forecast need, Basis 1 lower estimated utilisation, population cohort-specific utilisation rates assumed constant (Table 8.7 and Appendix A Table A.6);

2. Pure population basis for forecast need, Basis 2 higher estimated utilisation, population cohort-specific utilisation rates assumed constant (Table 8.7 and Appendix A Table A.7);

3. Forecast need based on forecast population with severe disability, Basis 1 lower estimated utilisation, disability cohort-specific utilisation rates assumed constant (Table 8.7 and Appendix A Table A.8);

4. Forecast need based on forecast population with severe disability, Basis 2 higher estimated utilisation, disability cohort-specific utilisation rates assumed constant (Table 8.7 and Appendix A Table A.9);

Table 8.7 Summary forecasts of numbers of people aged 65 & over using formal home care and formal home care utilisation rates in 2021, 4 alternative scenarios

Scenario	Estimated nos using formal home care	% aged 65 and over using formal home care	Projected nos using formal home care	% aged 65 and over using formal home care	Increase in numbers using formal home care	Annual Increase in numbers using formal home care	Percentage change in formal home care utilisation rate for people aged 65 & over
	2006		2021		2006-2021		
1	41,596	8.9%	69,161	8.7%	27,565	1,838	-1.9%
2	49,179	10.5%	81,629	10.3%	32,450	2,163	-1.8%
3	41,596	8.9%	65,267	8.2%	23,671	1,578	-7.4%
4	49,179	10.5%	77,164	9.7%	27,985	1,866	-7.2%

Table 8.8 Relative growth rates of population and numbers with severe disability by age cohort and gender in projection scenarios 1 to 4, 2006-2021

Age cohort	Percentage growth in age cohort 2006-2021	Percentage growth in nos with severe disability 2006-2021
MALE		
65-74	70.7%	42.9%
75+	100.6%	98.6%
65+	82.2%	75.0%
FEMALE		
65-74	63.2%	38.4%
75+	54.5%	48.8%
65+	59.0%	45.9%
TOTAL		
65-74	66.9%	40.5%
75+	72.4%	64.5%
65+	69.3%	56.4%

Scenario 1: The pure population forecasts with the lower Basis 1 utilisation estimates for 2006 generate a projection that the proportion of population aged 65 and over using formal home care would decrease from 8.9% to 8.7% by 2021. The proportionately greater growth in the older age cohorts of men than of women (Table 8.8) reduces overall utilisation because of the relatively lower utilisation rates of formal home care by men. As discussed in Chapter 5, this reflects the relatively high rates of receipt of informal care by men from their spouses and partners. By assuming constant age and gender- specific patterns of utilisation, this projection therefore captures some of the effect of converging life expectancies in reducing overall formal home care utilisation. However, the constant utilisation pattern assumption also means that the projection fails to capture the effect on older women's formal care utilisation of the survival of more men to provide care to their spouses. While this could make this projection an overestimate of formal home care utilisation, the degree of aggregation of the projection and its consequent inability to reflect the relative growth in the oldest old age cohorts makes it more likely that this is an underestimate of the pure population effects.

Scenario 2: In this scenario **t**he pure population forecasts with the higher Basis 2 utilisation estimates for 2006 generate a projection that the proportion of population aged 65 and over using formal home care would decrease from 10.5% to 10.3% by 2021. This projection differs from Scenario 1 only in starting from a higher estimate of utilisation.

Scenario 3: As observed in developing the projections for residential LTC, when the projections are at the same level of aggregation, it is the rate of change of the disability rate not the definition of disability employed which determines future utilisation once a constant ratio of age and gender-specific utilisation to population with disability is assumed over the projection period. In this scenario and scenario 4 the projection assumes constant formal home care utilisation rates by cohort of people with severe disability, here aggregated into two cohorts by gender, as in the scenario 4 residential LTC projection. The forecast decline in severe disability rates are also as applied in the residential LTC projections. With forecast declines in disability and the lower Basis 1 utilisation estimates for 2006 this scenario projects that the proportion of population aged 65 and over using formal home care would decrease from 8.9% to 8.2% by 2021.

Scenario 4: This scenario differs from Scenario 3 only in starting from a higher estimate of utilisation and generates a projection that the proportion of population aged 65 and over using formal home care would decrease from 10.5% to 9.7% by 2021.

Implications of formal home care utilisation projections

The preferred projections are Scenarios 3 and 4 which assume declining disability. In these scenarios, despite reduced overall utilisation rates of formal home care among people aged 65 and over, absolute numbers using formal home care are projected to increase from 2006 to 2021 by between 1,578 and 1,866 on average annually, with the annual increase rising over the projection period (Table 8.9). It should be recalled that this is projected utilisation not need. The assumed constant age-cohort and gender-specific utilisation is vulnerable to

changes in the supply of informal carers on the one hand and changes in the supply of public funding for formal home care or the affordability of privately purchased home care on the other.

Table 8.9 Implication of preferred projections for additional numbers using formal home care over the years 2006-2021

Scenario	Increase in numbers in receipt of formal home care	Annual average projected increase in numbers using formal home care	Annual average projected increase in numbers using formal home care, 5-yearly intervals		
	2006-2021		2006-2011	2011-2016	2016-2021
3	23,671	1,578	1,051	1,561	2,122
4	27,985	1,866	1,242	1,846	2,508

The projected average annual increase in utilisation over the five years from 2006 to 2011 of between 1,051 and 1,242 additional recipients of formal home care (Table 8.9) can be compared to the actual evolution of utilisation of publicly supplied or funded home care over the years 2006-2011, reviewed in Chapter 5 (Table 5.15 and Table 8.10). Despite erratic fluctuations in provision, there were an estimated annual average additional 415 recipients aged 65 and over of publicly provided or funded home help services in the years from 2006 to 2011, well below the projected numbers. Public home help provision would have exceeded the projected utilisation had it remained on the trajectory of the years 2007 and 2008. A reduction in services occurred following the onset of the fiscal and economic crisis in 2008. There are no available data on the growth in privately purchased formal home care services over this period. Annual average growth in provision of home care packages at 957 comes closer to the projected annual average growth in formal home care utilisation for these years for people aged 65 and over. This greater proportionate growth of home care packages could represent better targeting of formal home care towards people with greater need or, alternatively, could reflect pressures to provide intensive care at home for people awaiting discharge from acute hospitals.

Table 8.10 Estimates of additional numbers using publicly provided or funded formal home care over the years 2006-2021

	2006	2007	2008	2009	2010	Sept-2011	Average annual increase 2006-2011
Home help recipients aged 65+	41,596	44,014	46,536	45,622	45,752	43,672	
Annual increase in HH recipients aged 65+		2,418	2,522	-914	130	-2,080	415
Home care package recipients aged 65+	5,146	7,826	8,386	8,372	9,335	9,929	
Annual increase in HCP recipients aged 65+		2,680	560	-14	963	594	957

Source: HSE database. Home help recipients aged 65+ in 2006 and HCP recipients aged 65+ in 2006 and 2007 estimated based on proportions in subsequent years.

8.5 Projected utilisation of informal community long-term care

A number of measures of provision of informal community long-term care were examined in Chapter 5 (Section 5.7). Data on caring is compiled either primarily from interviews with carers, as in the 2009 Carers' Module of the Quarterly National Household Survey; or from the perspective of the people who receive care, as in the 2006 National Disability Survey. The composite picture developed in Chapter 5 indicates that while there are very large numbers of people (8% of the adult population in 2009) providing a variety of informal support to family members and others, the more intense care-giving is required by people with significant levels of disability. In this chapter projections are for the utilisation of this form of intense care-giving.

The basis for these projections is the NDS evidence on the sources of care for people with ADL difficulty (Table 5.20), which enables projections of informal home care utilisation based on 2006 utilisation patterns, disaggregated by two older age cohorts and by gender. The projected sources of care are those informal care sources in the NDS: family living with you; family not living with you; and friend or neighbour. Unlike the projections above for residential LTC and formal home care, no alternative estimate of utilisation is employed. In these projections the forecast population with disability is the population with ADL difficulty.

Informal home care utilisation is therefore projected for only 2 alternative scenarios but for three different sources of care, and for recipients of intense informal care from one or more sources, generating 8 projections in all:

1. A. Pure population basis for forecast need, population cohort-specific utilisation rates assumed constant, projected care from cohabiting family (Table 8.11 and Appendix A Table A.10);

2. A. Forecast need based on forecast population with ADL difficulty, disability cohort-specific utilisation rates assumed constant, projected care from cohabiting family (Table 8.11 and Appendix A Table A.11).

1. B. Pure population basis for forecast need, population cohort-specific utilisation rates assumed constant, projected care from non-cohabiting family (Table 8.11 and Appendix A Table A.12);

2. B. Forecast need based on forecast population with ADL difficulty, disability cohort-specific utilisation rates assumed constant, projected care from non-cohabiting family (Table 8.11 and Appendix A Table A.13).

1. C. Pure population basis for forecast need, population cohort-specific utilisation rates assumed constant, projected care from friend/neighbour (Table 8.11 and Appendix A Table A.14);

2. C. Forecast need based on forecast population with ADL difficulty, disability -cohort-specific utilisation rates assumed constant, projected care from friend or neighbour (Table 8.11 and Appendix A Table A.15).

1. D. Pure population basis for forecast need, population cohort-specific utilisation rates assumed constant, projected numbers of recipients of intense, informal care from one or more sources (Table 8.11 and Appendix A Table A.16);

2. C. Forecast need based on forecast population with ADL difficulty, disability -cohort-specific utilisation rates assumed constant, projected numbers of recipients of intense, informal care from one or more sources (Table 8.11 and Appendix A Table A.17).

Implications of informal home care utilisation projections

Consistently for the three types of care-giver, the scenario 1 pure population assumption generates projections that increase the informal care utilisation rate; whereas the preferred scenario 2 assumption of declining disability generates projected reductions in informal care utilisation rates (Table 8.11). In the pure population scenario, the relatively greater increase in numbers of older men who receive proportionately more care from their spouses/partners causes the greatest projected increase for the cohabiting family category of care-giving.

Table 8.11 Summary projections of numbers of people aged 65 & over with ADL difficulty receiving all day or daily informal home care from family, friends and neighbours in 2021 in 2 alternative scenarios

Scenario	Numbers receiving daily or all day informal care	% aged 65 and over receiving informal home care from this carer/all carers	Projected nos receiving daily or all day informal care	% aged 65 and over receiving informal home care from this carer/all carers	Increase in instances all day or daily informal home care	Annual Increase in instances all day or daily informal home care	Percentage change in specified informal home care utilisation rate for people aged 65 & over
	2006		2021		2006-2021		
A. Family living with							
1	32,016	6.8%	68,773	8.7%	36,757	2,450	26.9%
2	32,016	6.8%	50,470	6.4%	18,454	1,230	-6.9%
B. Family not living with							
1	15,717	3.4%	32,556	4.1%	16,839	1,123	22.4%
2	15,717	3.4%	24,681	3.1%	8,964	598	-7.2%
C. Friend/neighbour							
1	5,070	1.1%	10,810	1.4%	5,740	383	26.0%
2	5,070	1.1%	8,017	1.0%	2,947	196	-6.6%
D. Recipients of intense, informal care, one or more sources							
1	41,018	8.8%	71,189	10.7%	30,171	2,011	21.6%
2	41,018	8.8%	64,500	8.1%	23,482	1,565	-8.0%

In the preferred scenario 2, the proportion of people aged 65 and over who experience ADL difficulty and receive all day or daily care from a cohabiting family member reduces from 6.8% to 6.4%; the proportion in receipt of all day or daily care from a non-cohabiting family member reduces from 3.4% to 3.1%; and the proportion receiving such intense care from a friend or neighbour reduces from 1.1% to 1.0%. These reductions in rates of receipt of informal care reflect the reduction in the prevalence of ADL difficulty. It should be noted, however, that this is inevitably an underestimate of this prevalence because of the level of aggregation, which does not adequately reflect the relative growth in numbers of the oldest old with the greatest likelihood of experiencing ADL difficulty.

In both projection scenarios, the proportionate contribution of cohabiting family to all day or daily informal care increases from 60% of such instances in 2006 to 61% in 2021. This reflects the proportionately greater growth in the older age cohorts of men than of women and the relatively high rates of receipt of informal care by men from their spouses and partners. Whereas the assumption of constant age and gender- specific patterns of utilisation was found above to capture some of the effect of converging life expectancies and to have the effect of reducing projected overall *formal* home care utilisation, the assumption of age, gender and disability status-specific patterns of utilisation here has the effect of increasing the relative contribution of cohabiting care-givers to *informal* care. This relative contribution would appear higher if the modelling methodology captured changes in household composition with fewer older women living alone. The assumption of age, gender and disability status-specific patterns of utilisation fails to capture the probable increase in older women's receipt of care from cohabiting family members due to convergence in male and female life expectancy.

To convert such projected numbers of carers into numbers of recipients of intense care from one or more sources, it is further assumed that the same proportions of recipients would receive intense care from more than one informal care-giver in 2021 as in 2006 (Chapter 5 Table 5.20). In the pure population increase scenario, the number of people aged 65 and over with ADL difficulty in receipt of intense informal care increases from 41,018 in 2006 to 71,189 in 2021, representing an increase from 8.8% to 10.7% in the intense informal care utilisation rate for people aged 65 and over. Applying the preferred scenario 2 assumption of declining disability, the number of people aged 65 and over with ADL difficulty and in receipt of any form of intense, informal care is projected to increase to 64,500 in 2021, representing a reduction from 8.8% to 8.1% in the intense informal care utilisation rate for people aged 65 and over.

These projections can be viewed alternatively as projected numbers of required givers of intense care to older people with ADL difficulty. Assuming that cohabiting carers are by and large older spouses and partners; and non-cohabiting carers are largely adult daughters of the people requiring care, their projected numbers can be related to forecast population in 2021 (Table 8.12). Given these assumptions, in the preferred declining disability scenario 6.4% of the population aged 65 and over could be engaged in intense care of a spouse or partner with ADL difficulty in 2021. The probability is that this proportion will be higher than in this forecast because of the effect of convergence in male and female life expectancies. This increases to 8.7% in the pure population scenario. Given the same set of assumptions and

further assuming a 70% labour force participation rate for women aged 35-54 in 2021, in the preferred declining disability scenario 11% of women not in the paid labour force could be engaged in all day or daily care of older people with ADL difficulty. This increases to 14.3% in the pure population scenario. This forecast is based on the Morgenroth (2009) population projections. Given the subsequent development of outward migration in the younger age cohorts it is probable that such forecasts will be revised to reduce numbers in the middle age cohorts with the net effect that the proportion of women of working age engaged in intense care of their parents in older age will increase. This effect would, however, be moderated by convergence in male and female life expectancies and a probable higher than projected rate of care from cohabiting carers.

Table 8.12 Projected all day or daily care-givers as percentage of forecast categories of potential care-givers 2021

	2006 Actual	2021 Pure population projection	2021 Declining disability projection
Numbers giving all day or daily care to cohabiting family aged 65 and over with ADL difficulty	32,017	68,773	50,470
Population aged 65 and over	467,926	792,067	792,067
Intense cohabiting care-givers as % population aged 65 and over	6.8%	8.7%	6.4%
Numbers giving all day or daily care to non-cohabiting family aged 65 and over with ADL difficulty	15,717	32,556	24,681
Women aged 35-54	567,465	759,665	759,665
Intense non-cohabiting care-givers as % women aged 35-54	2.8%	4.3%	3.2%
Numbers of women aged 35-54 not in labour force if 70% female labour force participation		227,899	227,899
Intense non-cohabiting care-givers as % women aged 35-54 not in labour force		14.3%	10.8%

8.6 Concluding discussion

Projections of utilisation of care in all settings in this chapter have assumed two basic scenarios. In the first scenario, utilisation of care is driven purely by population growth, with assumed constant age-related disability and utilisation. The second scenario assumes constant disability-related utilisation of care, however disability is defined, and a decline in disability rates over the forecast period. In the case of both residential long-term care and formal home care, alternative projections have taken alternative baseline utilisation estimates, leading to lower and higher projected utilisation (Table 8.13).

The high pure population scenario leads to projected increases in residential LTC utilisation rates among people aged 65 and over and increased receipt of informal care but some reduction in formal care utilisation. This change in the balance of home care reflects the greater life expectancy and survival rates of men and their higher propensity to receive informal care from their spouses, whereas women surviving alone are more likely to receive formal care. The low pure population scenario generates projected unchanged residential LTC

utilisation which is a consequence of its limitation to two age cohorts and consequent understatement of the effect of population ageing.

Table 8.13 Summary of projected utilisation of care in all settings in 2021, as percentages of all people aged 65 and over and of those with severe disabilities

	Percentage in Residential LTC		Percentage receiving formal home care		Percentage with ADL difficulty and receiving all day or daily informal home care
	Low utilisation estimate	High utilisation estimate	Low utilisation estimate	High utilisation estimate	
	Percentage of all aged 65 and over in receipt of alternative forms of care				
2006 estimate	4.4%	4.8%	8.9%	10.5%	8.8%
2021 Pure population projection	4.4%	5.3%	8.7%	10.3%	10.7%
2021 Declining disability projection	4.2%	4.7%	8.2%	9.7%	8.1%
	Percentage of all aged 65 and over with severe disability in receipt of alternative forms of care				
2006 estimate	21.8%	23.8%	44.1%	52.1%	43.5%
2021 Pure population projection	21.8%	26.2%	46.8%	55.3%	44.5%
2021 Declining disability projection	22.5%	25.2%	44.2%	52.3%	43.7%

The high declining disability scenario generates a projected small drop in the residential LTC utilisation rate and larger drops in the utilisation rates of both formal and informal home care. The residential LTC projection is much more disaggregated than the home care projections and better reflects the effects of population ageing. The more aggregated home care projections may under-estimate future demand for care. The relative decline in projected formal home care utilisation is greater than the relative decline in projected informal home care utilisation reflecting the effect of the survival of more men on the balance between formal and informal care. This shift in balance is a consequence of the assumption of unchanged utilisation patterns by age and gender. The low declining disability scenario generates lower projected utilisation rates for residential and formal home care.

It must be emphasised that the projections in this chapter and summarised in Table 8.13 are qualified by their underlying assumptions about the continuance of 2006 utilisation patterns into 2021. The effects that the projections capture are population growth alone in the first scenario and combined with declining disability rates in the second. The effects on the balance between formal and informal care of changing household composition due to increased male life expectancy leading to a smaller proportion of older women living alone are not captured in this model. Projections for informal home care are limited to the forecast population with ADL difficulty with the most intense home care needs. In 2021 as in 2006, it

should be further assumed that there will be demand for less intense care from a wider population with age-associated disability or morbidity and need for care.

To estimate the proportion of the older population that would be in receipt of any informal care in 2021 requires an assumption about the development of demand for the less intense forms of informal care and the degree of overlap between formal and informal care. Instances of intense informal care provision represent approximately 31% of all instances of caring in 2006 (if the caring rates from the 2009 QNHS are applied to 2006 population as in Table 5.21 in Chapter 5). The measure of older persons with ADL difficulty and in receipt of intense daily or all day care has been the focus here as a better measure of intense care needs. If the instances of less intense care provision translated into care recipients at the same rate as for the more intense care provision, the population shares of recipients and projected recipients of care using the measures of greater or lesser intensity would compare as depicted in Figure 8.1. Recipients of any form of informal care are estimated on these assumptions as 28% of the population aged 65 and over in 2006 and are projected to increase to 29% in the pure population scenario and 26% in the declining disability scenario. These estimates for all older informal care recipients deriving from the 2009 QNHS applied to 2006 population appear conservative compared to survey evidence from 2003 that 49% of older people in the Republic received some form of informal care (McGee et al. 2008; discussed further in Chapter 10).

Figure 8.1 Percentage of population aged 65 and over receiving alternative forms of care, 2006 estimates and 2021 projections, alternative informal care measures
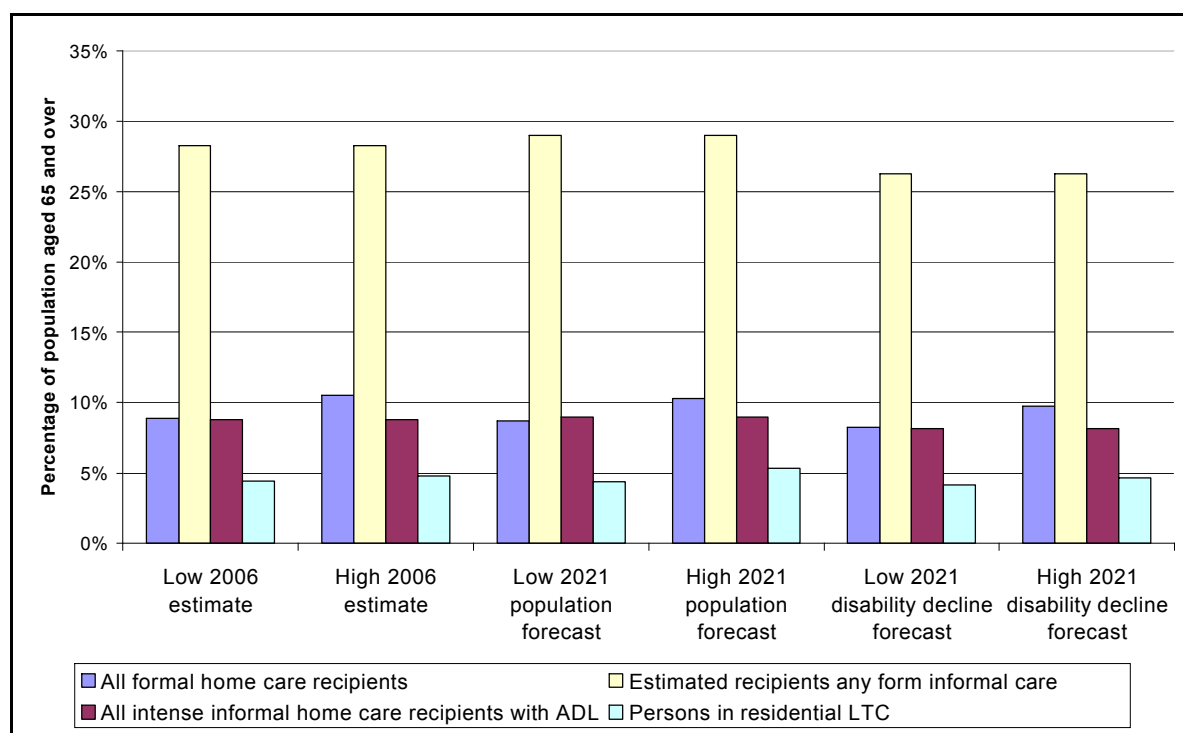
These actual and projected relative shares of care required by older people provide a context for discussion of future care needs. Whereas fewer than 5% of people aged 65 and over were in residential care in 2006, a further 9% to 10.5% were recipients of formal home care, 9% were receiving all day or daily care from informal carers and nearly 20% were receiving less

frequent informal care. In addition, as discussed in Chapter 5, there was known unmet need for either residential care (1,320 people) or respite care (3,890 people), constituting another 1% of people aged 65 and over. The requirement to meet this unmet need should be added to the projections for care utilisation in all settings generated in this chapter (Table 8.14). On current utilisation patterns and adopting an optimistic assumption of declining disability rates, the projected need for additional care from 2006-2021 is: 820 to 970 residential places annually; supply of formal home care to 1,600 to 1,860 additional people annually; and supply of intense all day or daily informal care to 1,565 additional people annually. Social, policy or economic developments that reduce the supply of any one of these forms of care or fail to increase it adequately can be expected to cause increased demand under one or both of the other headings.

Table 8.14 Preferred projections for additional care utilisation 2006-2021, RoI

	Residential LTC		Formal home care		All day or daily informal home care (for persons with ADL difficulty)
	Low	High	Low	High	
2006 estimates	20,720	22,491	41,596	49,179	41,018
2021 Declining disability projection	32,993	36,993	65,267	77,164	64,500
Projected annual average increase in the years 2006 - 2021	818	967	1,578	1,866	1,565

Chapter 9 Long-term Care Projections for Northern Ireland

9.1 Introduction

In Northern Ireland as in the Republic of Ireland, the population is ageing and the proportion of people who will need care both at home and in care homes will increase. In this chapter the effect of population ageing on the likely need for care in Northern Ireland is estimated. As in Chapter 8, two scenarios are explored: an optimistic one in which disability rates are generally assumed to continue their current rate of decline; and a more pessimistic scenario, in which it is assumed that rates of disability will remain static.

The anticipated increase in the Northern Ireland population between 2006 and 2021 by age and gender is reviewed in Section 2. Section 3 describes how rates of disability in Northern Ireland have been changing over recent years and develops an optimistic and a pessimistic scenario of future need based on disability. In Section 4 these population and disability rate projections are applied to estimate how many people are likely to be in residential LTC. Section 5 develops projections for utilisation of formal and informal care at home in the varying combinations analysed in Chapter 6. Section 6 concludes.

9.2 Characteristics of population change

Figure 9.1 shows the NISRA forecast population increase at older ages in Northern Ireland over the fifteen years from 2006 to 2021. The marked increased in the proportion of the very oldest is readily apparent and especially for men although even in 2021 the numbers of people aged 90 and over will remain relatively small and will constitute a comparatively small proportion of those aged 65 and over (3.9% of males and 6.9% of females).

9.3 Methodological overview of disability rate projection scenarios

The first step in projecting long-term care needs is to estimate how many people in Northern Ireland are likely to suffer from significant disability in the near future. This is achieved by analysis of existing trends. The only available data that provide a reasonable indicator of historical trends in disability come from the Continuous Household Survey (CHS, discussed in detail in Chapter 6). This survey asks respondents if they have any long-standing illness, disability or infirmity, and whether this limits activities in any way. There are 14 years of consecutive data available (1997/8 – 2010/11). For the population aged 65 and older, data are available disaggregated into two cohorts aged: 65 to 74; and 75 and over.

Figure 9.1 Percentage population change, 2006-2021, by age cohort and gender
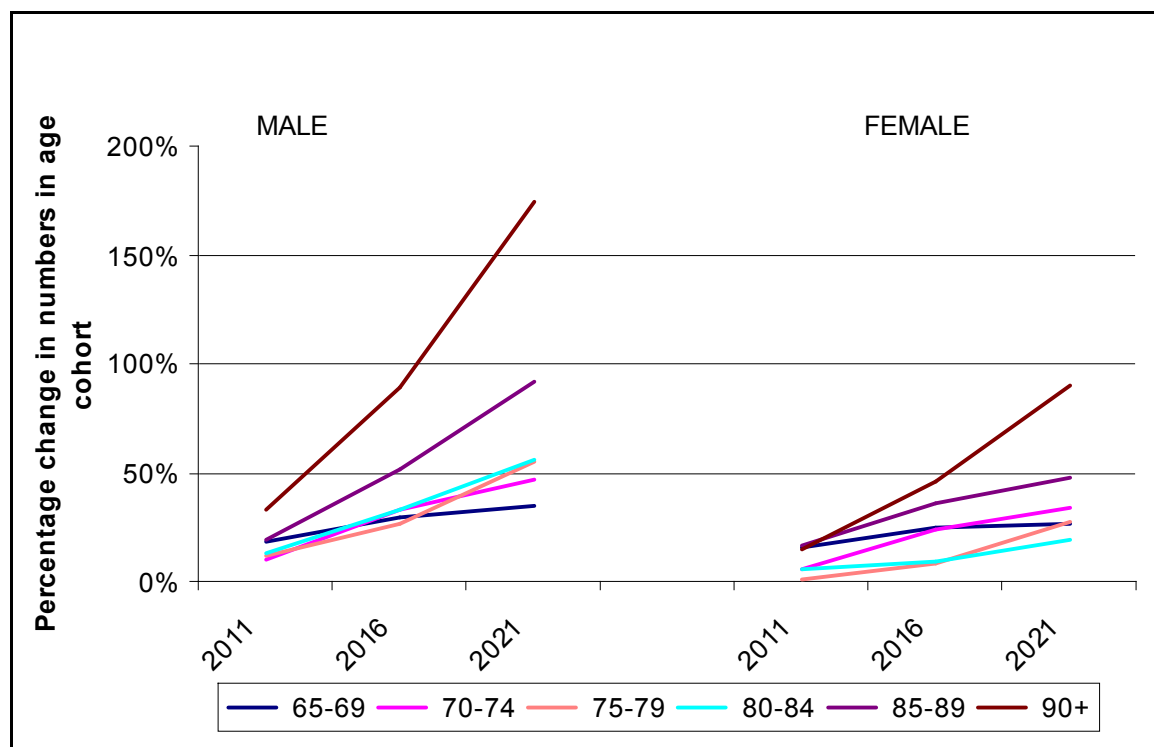
Source: NISRA 2010-based population projections (NISRA 2011)

The levels and trends for responses for males and females to the question on limiting long-standing illness in the CHS from 1997/1998 to 2010/2011 are shown in Figure 9.2 and are based on data shown in Table 9.1. With the exception of males aged 75 and over, the trends appear to be of a similar degree and, in contrast to the situation in the Republic of Ireland, the rate of improvement in self-reported disability appears to be shared equally between older and younger older people.

Table 9.1 Rates of reported limiting long-standing illness by age cohort and gender, Northern Ireland 1997/1998 to 2010/2011

	MALE		FEMALE	
	Aged 65-74	Aged 75 and over	Aged 65-74	Aged 75 and over
1997	42%	59%	50%	57%
1998	47%	51%	48%	56%
1999	43%	57%	47%	55%
2000	42%	58%	44%	60%
2001	49%	54%	45%	61%
2002	45%	55%	47%	54%
2003	41%	55%	49%	57%
2004	41%	46%	44%	60%
2005	36%	51%	48%	54%
2006	41%	46%	42%	53%
2007	45%	53%	46%	60%
2008	39%	53%	43%	53%
2009	40%	43%	43%	53%
2010	41%	46%	43%	56%

Source: Continuous Household Survey, 1997/98 - 2010/2011

Figure 9.2 Levels and linear trends in percentages of older people reporting a limiting long-standing illness, Northern Ireland 1997/8 – 2010/11
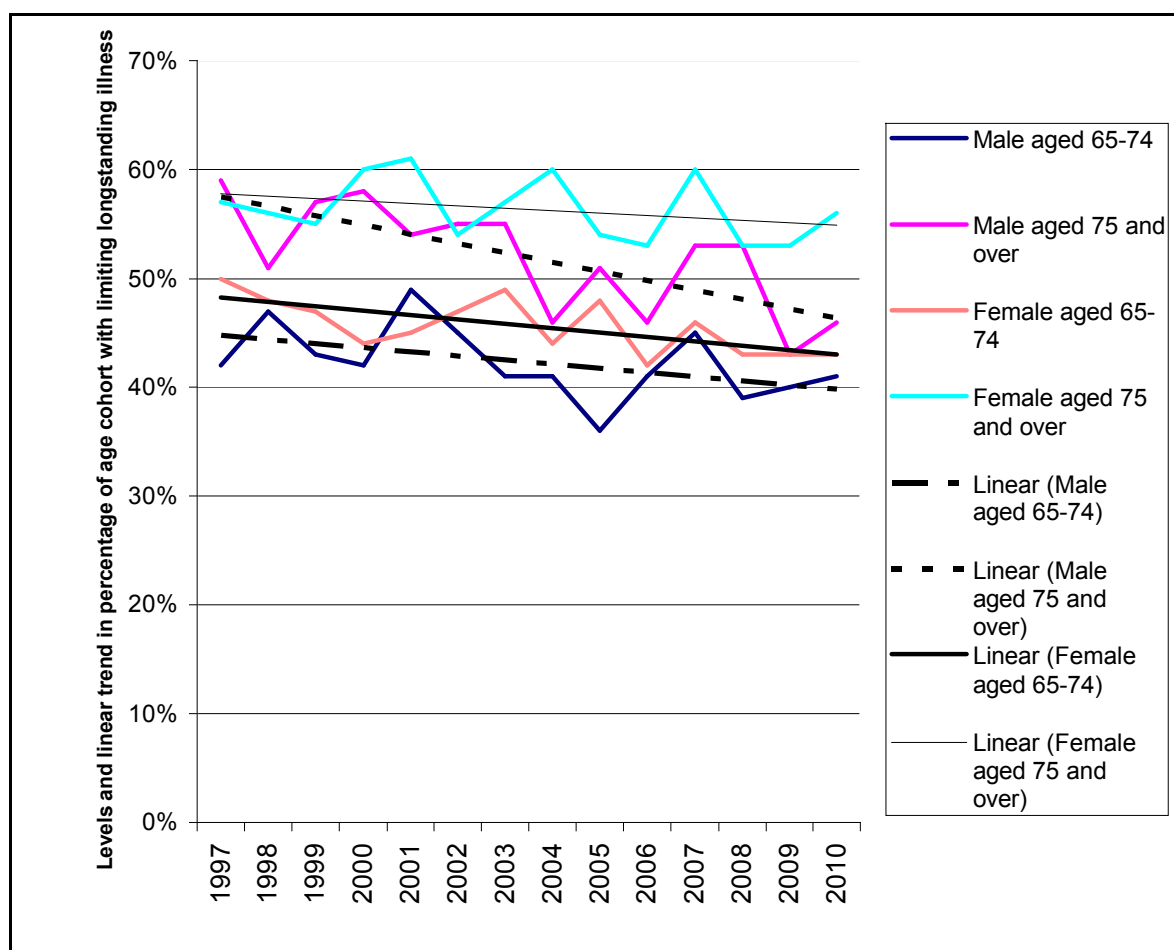
Source: Continuous Household Survey, 1997/8 – 2010/11

Therefore, the most optimistic model for Northern Ireland assumes that: older males and older females will experience the same rate of improvement; and this linear declining trend will continue until 2021. The relationship of these trends to the current and historical levels is shown in Figure 9.3. The current and historical levels of self-reported disability shown are the average for men and women in each age cohort. These rates of decline were then applied to Northern Ireland's disability rates for 2006, as derived from the NISALD (Chapter 6) and used to calculate the disability rates for 2011, 2016 and 2021. Initially, this modelling was undertaken for only two age groups, those aged 65 to 74 years, and those aged 75 years and over, in keeping with the trend analysis described above. However, as this underestimated the important rates of increase in population at older ages, and therefore produced a lower estimate of need than expected, an additional 85 years and over age group is incorporated to reflect better these age-related changes (Table 9.2). Given the lack of data on the trends in disability in this age group the calculations assume no change in their disability rates.

The prevalence of significant disability in the 65 and over population is estimated to increase by 43% if the current rates of disability persist and by 29% if disability rates decline. Although the projected rates of increase are almost twice as great in men as in women (38%

compared to 24% for the declining disability rate scenario), the projected absolute difference and overall numbers are greater for women. It is apparent that ageing of the population will result in large increases in numbers of people with a disability, despite falling morbidity and disability rates.

Figure 9.3 Most optimistic trends in disability rates in Northern Ireland
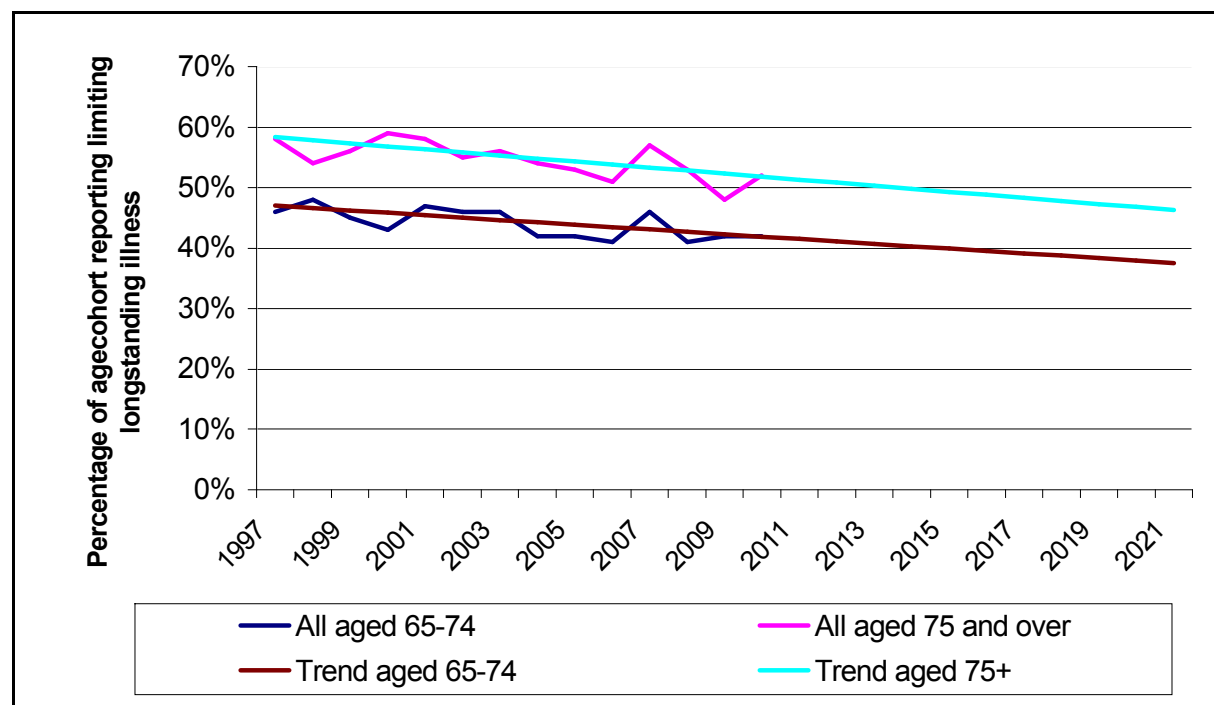
Source: Continuous Household Survey, 1997/98 - 2010/2011; and extrapolated trends

Table 9.2 Projected numbers of people with a significant disability under alternative scenarios, 2006-2021

	Assuming no change in disability rates				Assuming decline in disability rates			
	2006	2011	2016	2021	2006	2011	2016	2021
MALE								
65-74	9,614	11,046	12,589	13,481	9,614	10,547	11,451	11,654
75-84	8,039	9,020	10,357	12,483	8,039	8,601	9,392	10,740
85+	2,603	3,190	4,199	5,545	2,603	3,190	4,199	5,545
65+	20,256	23,256	27,144	31,510	20,256	22,337	25,042	27,939
FEMALE								
65-74	11,728	13,045	14,578	15,244	11,728	12,455	13,261	13,177
75-84	14,127	14,517	15,314	17,522	14,127	13,842	13,889	15,076
85+	10,010	11,602	13,942	16,257	10,010	11,602	13,942	16,257
65+	35,866	39,164	43,834	49,022	35,866	37,899	41,091	44,509
TOTAL	56,121	62,421	70,979	80,532	56,121	60,237	66,134	72,448

9.4 Projected utilisation of care homes

Projection of care home utilisation requires: official population projections to 2021; estimation of the future levels of disability at older ages; age- and gender-specific rates of care home utilisation in 2006; and the proportions of people with disability in care homes. It is, however, apparent from earlier discussion (Chapters 4 and 6) that the perfect data do not currently exist to model future needs for residential care provision in Northern Ireland. Although population projections are in single years and pose no limitations, some of the most significant limitations related to age are:

1. The description of population in care in 2006 is only available at five-year age bands;

2. In the modelling of current and future trends in disability, data are only readily available for the 65 to 74 and 75 and over age groups;

3. The NISALD data, which are used to assess current disability levels and detail the levels of met and unmet care of people with a disability, are relatively sparse at older ages and detailed disaggregation is therefore not possible. However, the data disaggregated for the 65 to 74 and 75 and over age groups are reasonably robust.

As in the projections for the Republic of Ireland in Chapter 8, the second step in the projection process is to apply the current rates of care home utilisation to future population projections under different scenarios. Since the future relationship between need (as measured by disability levels) and care home utilisation is unknown, it is explicitly assumed to be the same as in 2006. It is acknowledged that this relationship may change in future due to changes in provision of or accessibility to care homes, or of alternative modes of care including informal care and domiciliary care. Two projection scenarios are developed: one in which the level of disability at any age is unchanged as the population ages due to increasing life expectancy, and morbidity rates remain at 2006 levels; and a second scenario in which disability prevalence is assumed to continue to improve in line with current rates of improvement. The first of these scenarios is essentially the same as estimating utilisation based on the rate per population and the modelling can therefore be undertaken at five-year age bands. The results are shown in Table 9.3.

Table 9.3 Scenario 1: Projection of the number of people in residential LTC assuming the proportion of each age cohort in care remains the same

	Population				Cohort-specific residential LTC utilisation rate	Projected number of people in residential LTC			
	2006	2011	2016	2021		2006	2011	2016	2021
MALE									
65-69	33,280	39,437	42,959	44,969	0.5%	174	206	225	235
70-74	26,920	29,733	35,870	39,449	1.1%	287	317	382	420
75-79	20,051	22,370	25,312	31,103	2.4%	479	535	605	744
80-84	12,756	14,443	16,954	19,841	4.5%	574	650	762	892
85-89	5,861	6,969	8,887	11,257	9.7%	569	676	862	1,092
90+	2,019	2,687	3,824	5,530	18.1%	366	486	692	1,001
65+	100,887	115,639	133,806	152,149		2,448	2,870	3,529	4,385
FEMALE									
65-69	36,843	42,755	46,047	46,661	0.6%	222	257	277	281
70-74	32,529	34,404	40,182	43,504	1.2%	376	398	464	503
75-79	28,651	28,854	30,940	36,535	3.1%	876	882	946	1,117
80-84	22,007	23,204	23,976	26,298	7.4%	1,618	1,706	1,762	1,933
85-89	12,037	14,030	16,338	17,817	16.9%	2,031	2,367	2,756	3,006
90+	6,393	7,331	9,330	12,113	31.5%	2,015	2,311	2,941	3,818
65+	138,460	150,578	166,813	182,928		7,137	7,920	9,147	10,658
TOTAL	239,347	266,217	300,619	335,077		9,585	10,790	12,676	15,042

From exploration of the effect on modelling of using different aggregations of age, it is apparent that, compared to the calculations based on five-year aggregations, the effect of using only two age cohorts for ages 65 to 74 and 75 and over would lead to an underestimation of projected LTC utilisation of approximately 10.2% in 2021 (Table 9.4). This compares to only 2.2% if an 85 and over cohort is added. This difference arises because the additional age band better captures differential ageing of the population over time. All further modelling in this chapter includes an additional 85 and over age group.

Table 9.4 Effect of using different age groups to project residential LTC utilisation (assuming constant cohort-specific utilisation rates in future years)

	2006	2011	2016	2021
Using 6 age groups	9,585	10,790	12,676	15,042
Using only 65-74; 75+	9,585	10,413	11,659	13,511
Using only 65-74; 75-84; 85+	9,585	10,772	12,548	14,711

In the second scenario it is assumed that: disability rates decline in line with current trends as described above except for the cohort aged 85 and over where the prevalence is arbitrarily set at unchanged; and the proportion of those with a disability in residential LTC remains constant. Table 9.5 shows projected numbers with significant disability from this modelling exercise and consequent residential LTC utilisation projections.

Table 9.5 Scenario 2: Numbers of people with a significant disability and in residential LTC in 2006 base year and projections for 2011-2021, assuming declining disability rates

	Number of people with a disability				Number of people in residential LTC			
	2006	2011	2016	2021	2006	2011	2016	2021
MALE								
65-74	9,614	10,547	11,451	11,654	461	506	549	559
75-84	8,039	8,601	9,392	10,740	1,053	1,127	1,230	1,407
85+	2,603	3,190	4,199	5,545	934	1,145	1,507	1,990
65+	20,256	22,337	25,042	27,939	2,448	2,777	3,286	3,955
FEMALE								
65-74	11,728	12,455	13,261	13,177	598	635	676	671
75-84	14,127	13,842	13,889	15,076	2,494	2,443	2,452	2,661
85+	10,010	11,602	13,942	16,257	4,046	4,689	5,635	6,570
65+	35,866	37,899	41,091	44,509	7,137	7,767	8,762	9,903
TOTAL	56,121	60,237	66,134	72,448	9,585	10,544	12,048	13,858

Under Scenario 1 (no change in disability) it is projected that the number of people in residential LTC will increase from approximately 9,600 in 2006 to approximately 14,700 in 2021. Although the population aged 65 and over is forecast to increase by just over 40% between 2006 and 2021, the increase in residential LTC utilisation at 54% is projected to be greater. The proportionate increase is greater for males than females (75% and 46% respectively), though because of the greater proportion of older women, the absolute increase is projected to be greater for women (3,300 and 1,800 respectively). Under scenario 2, in

which the rate of improvement in disability rates continues at the current pace, the number of residential LTC places required is projected to be approximately 13,860 rather than 14,700 in 2021, an increase of 4,300 (45%) rather than 5,100 (54%). Again, the projected proportionate increase is greater for males than females (62% and 45% respectively), though because of the greater proportion of older women, the absolute increase is projected to be greater for women (2,800 and 1,500 respectively).

9.5 Projected utilisation of domiciliary care

In projecting utilisation of domiciliary services and unmet need for care for people with significant levels of disability, the following assumptions are made:

1. That population growth and levels of disability are as projected above;

2. That the relationship between need (as measured by the levels of significant disability) and domiciliary caring remains at 2006 levels; and

3. That the proportions in which this caring is supplied (whether formal, informal, or some combination of both) remains unchanged.

It was evident from Chapter 6 that people with a significant disability can receive a wide variety of combinations of formal and informal services. These are presented in the following analyses in the same categories as described previously: formal care (from statutory provider only or combined with other formal care providers): informal care combined with care from statutory providers; informal care only or combined with care from non-statutory providers: only care from non-statutory providers; and no care

Projected utilisation is a variation of utilisation in 2006. Almost three-quarters of older men and two-thirds of older women fell in the category who received only informal care or such care combined with care from a non-statutory provider. Women are more likely to receive a mixture of formal care from a statutory provider and informal care because they are more likely to live to an older age. The level of formal domiciliary care from a statutory provider increases sharply with age in both men and women, whether alone or in combination with informal care. Levels of informal care (with or without care from a non-statutory provider) are slightly higher for men than for women, though this is not surprising as men tend to have younger (and healthier) partners who can provide care whilst many older women will have outlived their partners. Only a small proportion of either men or women did not receive some formal or informal care. It should be noted that this analysis makes no allowance for the intensity or level of appropriateness of caring input.

Table 9.6 shows the projected levels of utilisation for Scenario 1 (assuming unchanged levels of disability), and Table 9.7 shows the projections if the levels of disability maintain their current falling trend. The projected percentage changes are summarised in Table 9.8.

Table 9.6 Scenario 1: assuming no decline in rates of disability. Projected numbers of people with significant disability utilising formal and informal domiciliary care according to the type of care received

	Informal care combined with care from statutory provider				Informal care only or combined with care from non-statutory provider				Formal care (from statutory provider only or combined with other formal care providers):				Only care from non-statutory provider/ No care			
	2006	2011	2016	2021	2006	2011	2016	2021	2006	2011	2016	2021	2006	2011	2016	2021
MALE																
65-74	555	637	726	778	7,836	9,003	10,260	10,988	208	239	272	292	555	637	726	778
75-84	1,291	1,448	1,663	2,004	5,315	5,964	6,848	8,254	304	341	391	472	76	85	98	118
85+	834	1,023	1,346	1,778	649	795	1,047	1,383	185	227	299	395	0	0	0	0
65+	**2,680**	**3,108**	**3,735**	**4,560**	**13,800**	**15,763**	**18,155**	**20,624**	**697**	**807**	**963**	**1,158**	**631**	**723**	**824**	**896**
FEMALE																
65-74	1,031	1,146	1,281	1,340	9,413	10,470	11,700	12,234	137	153	171	179	550	612	684	714
75-84	3,053	3,137	3,309	3,786	7,508	7,716	8,139	9,312	578	594	626	716	495	509	537	614
85+	2,721	3,153	3,789	4,418	2,616	3,032	3,643	4,248	419	485	583	680	209	243	291	340
65+	**6,804**	**7,437**	**8,379**	**9,544**	**19,537**	**21,217**	**23,483**	**25,795**	**1,134**	**1,231**	**1,380**	**1,575**	**1,254**	**1,362**	**1,511**	**1,668**
TOTAL	**9,484**	**10,545**	**12,115**	**14,104**	**33,337**	**36,980**	**41,638**	**46,419**	**1,831**	**2,039**	**2,343**	**2,733**	**1,884**	**2,085**	**2,335**	**2,564**

Table 9.7 Scenario 2: assuming constant decline in rates of disability. Projected numbers of people with significant disability utilising formal and informal domiciliary care according to the type of care received

	Informal care combined with care from statutory provider				Informal care only or combined with care from non-statutory provider				Formal care (from statutory provider only or combined with other formal care providers):				Only care from non-statutory provider/ No care			
	2006	**2011**	**2016**	**2021**	**2006**	**2011**	**2016**	**2021**	**2006**	**2011**	**2016**	**2021**	**2006**	**2011**	**2016**	**2021**
MALE																
65-74	555	609	661	672	7,836	8,596	9,333	9,498	208	228	248	252	555	608	661	672
75-84	1,291	1,381	1,508	1,725	5,315	5,687	6,210	7,101	304	325	355	406	76	81	89	101
85+	834	1,023	1,346	1,778	649	795	1,047	1,383	185	227	299	395	0	0	0	0
65+	**2,680**	**3,012**	**3,515**	**4,175**	**13,800**	**15,078**	**16,590**	**17,982**	**697**	**780**	**902**	**1,053**	**631**	**690**	**750**	**774**
FEMALE																
65-74	1,031	1,095	1,165	1,158	9,413	9,997	10,643	10,576	137	146	155	154	550	584	622	618
75-84	3,053	2,991	3,001	3,258	7,508	7,356	7,381	8,012	578	566	568	616	495	485	486	528
85+	2,721	3,153	3,789	4,418	2,616	3,032	3,643	4,248	419	485	583	680	209	243	291	340
65+	**6,804**	**7,239**	**7,956**	**8,834**	19,537	20,385	21,668	22,836	**1,134**	**1,197**	**1,306**	**1,450**	**1,254**	**1,312**	**1,400**	**1,486**
TOTAL	**9,484**	**10,251**	**11,471**	**13,009**	**33,337**	**35,463**	**38,258**	**40,818**	**1,831**	**1,977**	**2,208**	**2,503**	**1,884**	**2,001**	**2,149**	**2,260**

Table 9.8 Projected percentage increase in the level and type of domiciliary care for people aged 65 and over in Northern Ireland from 2006 to 2021

Type of domiciliary care	Projection scenario 1: Constant disability levels			Projection scenario 2: Declining disability levels		
	MALE	FEMALE	TOTAL	MALE	FEMALE	TOTAL
Informal care + care from statutory provider	70.1%	40.3%	48.7%	55.8%	29.8%	37.2%
Informal care only/+ care from non-statutory provider	49.5%	32.0%	39.2%	30.3%	16.9%	22.4%
Formal care (statutory provider only/ + other formal care provider):	66.2%	38.9%	49.3%	51.0%	28.0%	36.7%
Only care from non-statutory provider	40.2%	35.9%	36.8%	21.2%	22.7%	22.6%
No care	42.9%	27.7%	35.2%	23.4%	10.2%	16.7%

Under Scenario 1, by 2021 the number of people aged 65 and over receiving formal domiciliary care from statutory providers (whether alone or in combination with informal care) is projected to increase to approximately 17,000 from 11,300 in 2006, a 49% increase. This compares to the 43% increase in the population of people with a significant disability in the same period. The projected increase in informal caring of 17,700 is in keeping with the population increase. If the rates of disability continue to improve in line with current expectations (Scenario 2, Table 9.7), the proportions of older people utilising domiciliary care in future years is projected to reduce, though only by a modest amount, while the absolute numbers utilising domiciliary care will increase. In Scenario 2, by 2021 the projected absolute increase in numbers utilising formal domiciliary care from statutory providers is 4,200 (37%) and in numbers utilising informal domiciliary care with or without formal care is 11,000 (26%).

9.6 Conclusions

The government projections for the change in population in Northern Ireland show that the proportion of the population who are old will increase markedly, particularly at the oldest ages. While the proportion of population aged 65 and over is projected to increase from 239,000 in 2006 to 338,800 in 2021, a 42% change, the increase for those aged 85 and over will be approximately 32% for females and 51% for males. In 2021, people aged 65 and over are projected to constitute 17.5% of the Northern Ireland population.

The only currently viable indicator of trends in disability are data relating to levels of self-reported long-standing limiting illness which have been collected in the Continuous Household Survey on an annual basis for the last decade. Analyses of these data suggest that the prevalence of disability between 1997/8 and 2010/11 has been improving to some extent. This appears to be true for those aged 65 to 74 years and 75 years and over, and to be

generally similar for both men and women. These data provide trends for only those age groups but in order to capture better the greater proportionate increase amongst the oldest old this analysis introduces another category aged 85 and over, with a rate of improvement in disability arbitrarily set as zero.

The subsequent modelling of the data indicates that the greater increase in the oldest age groups produces a disproportionate projected increase in the numbers of people with a significant disability. Assuming unchanged utilisation rates of care in different settings relative to population by age cohort and gender (Scenario 1) or population with a disability (Scenario 2), the analysis in this chapter projects that numbers utilising residential LTC will reach approximately 14,700 in 2021 in Scenario 1 (a 54% increase) or approximately 13,800 in Scenario 2 (a 45% increase), compared to 9,600 in 2006. Numbers utilising formal domiciliary care from statutory providers are projected to increase from approximately 11,300 in 2006 to 17,000 in 2021 in Scenario 1 and approximately 15,500 in Scenario 2. In 2006, over 70% of those in the community with a significant disability were receiving informal caring alone or in combination with care from non-statutory providers; and a further 20% were receiving a combination of informal caring and formal domiciliary care from a statutory provider. While these proportions will not change substantially, the increases in the projected numbers receiving informal care will be 41% and 26% for Scenarios 1 and 2 respectively.

Tables 9.9 and 9.10 provide summaries of the main findings from this chapter. Whereas in the preceding chapter on the Republic of Ireland the available data supported estimates and projections of all recipients of formal and informal caring, in this chapter analysis of formal and informal care utilisation has been limited to the care of persons with significant disability. In the next chapter evidence from other studies is reviewed to assess the degree of comparability between the utilisation estimates and projections for the two jurisdictions in this study.

Table 9.9 Summary projections of care utilisation in all settings in 2021, as percentages of people aged 65 and over and of those with severe disability

	Residential LTC utilisation	Utilisation of formal home care (from statutory provider)	Utilisation of informal care (with or without formal care)
As percentage of population aged 65 and over			
2006 estimate	4.0%	4.7%	17.9%
2021 Pure population projection	4.5%	5.0%	18.1%
2021 Declining disability projection	4.1%	4.6%	16.1%
As percentage of population aged 65 and over with significant disability			
2006 estimate	17.1%	20.2%	76.3%
2021 Pure population projection	18.7%	20.9%	75.2%
2021 Declining disability projection	19.1%	21.4%	74.3%

Table 9.10 Preferred projections for additional care utilisation 2006-2021, NI

	Residential LTC	Formal home care (from statutory provider)	Informal care (for persons with disability)
2006 estimate	9,585	11,315	42,821
2021 Declining disability projection	13,858	15,512	53,827
Projected annual average increase in the years 2006 - 2021	285	280	734

Note: Since formal and informal aspects of care are not mutually exclusive, the categories of care above differ from those in Tables 9.6 and 9.7, which identify overlapping categories of care by recipient. For example, formal home care from statutory providers may be received in combination with informal care, as the only form of care, or in combination with formal care from other non-statutory providers. Table 9.7 separates these groupings into two categories: in 2021, 13,009 people are projected to receive care from informal sources and from statutory providers; and 2,503 people are projected to receive either formal care from a statutory provider only or in combination with care from a non-statutory provider. These categories sum to the 15,512 instances of formal home care utilisation from a statutory provider projected in Table 9.10 above.

Chapter 10 Comparison of and reflections on findings

10.1 Introduction

This study has generated projections of need for and utilisation of long-term care for older people in all settings in the Republic of Ireland and in Northern Ireland for the years 2006-2021. Alternative projections for each jurisdiction are based on the effect of forecast population growth and ageing alone; or in combination with forecasts of declines in disability rates and consequent declining age-specific need for care based on evidence of disability rate reductions. The projections for each jurisdiction assume that patterns of LTC utilisation will maintain either a constant relationship to age and gender; or to age, gender and disability status combined. The initial estimation of utilisation rates of residential and community care, whether supplied formally or informally, has been a challenging exercise for both the Republic of Ireland and Northern Ireland due to data deficiencies. Consequently, some projections for the Republic of Ireland have been based on alternative estimates of utilisation.

Interpretation of the results of these modelling exercises and comparison of utilisation estimates or projections must therefore be qualified by an awareness of the degree of estimation involved and the assumptions underlying the projections. Furthermore while the models, described in detail in Chapters 7 to 9, take into account the effects of age, gender and disability on utilisation, they do not factor in the effects of the many additional determinants of utilisation reviewed in Chapter 2. Longitudinal surveys like TILDA in the Republic of Ireland should facilitate multi-variate analysis of a wider range of predictors of utilisation to inform future development of these models. Insofar as the models project future utilisation based on an assumption of constant utilisation patterns, they follow the methodology adopted for models for Germany, Spain and Italy in Comas-Herrera and Wittenberg (2003), described in Chapter 2.

While sharing the same island, the two jurisdictions have distinct health and social care systems and differing demographic profiles. Northern Ireland is further along the curve of population ageing than the Republic of Ireland; and appears to have a more coherent and consistent system to assess need for and determine access to formal long-term care. Comparison of residential LTC utilisation in this study is at best tentative. Alternative bases put estimated utilisation in the Republic of Ireland in 2006 in a range from 4.0% to 4.8% of the population aged 65 and over; whereas in Northern Ireland the utilisation rate appears to be in the range of 4.0% to 4.5%, depending on whether care homes alone or in combination with hospitals for older people are the basis for estimated utilisation. The omission from the Northern Ireland data of a count of people purchasing residential LTC privately suggests that

the upper end of this estimated utilisation range may be an under-estimate. From this analysis it is not possible to describe residential LTC in either jurisdiction as relatively better endowed or over-utilised compared to the other.

In the case of formal home care utilisation (domiciliary or home help/personal care attendant services) the Northern Ireland data in this report are limited to people with disability, on which basis estimated utilisation in 2006 of formal home care from statutory providers is 4.7% of population aged 65 and over. Limitation of estimated utilisation to people with disability would capture approximately half the publicly funded or provided home care in the Republic of Ireland; including utilisation by people without defined disability and estimated utilisation by people who purchase care privately increases estimated formal home care recipients to between 8.9% and 10.5% of people aged 65 and over in the Republic of Ireland in 2006. The available data have not facilitated a more inclusive count for Northern Ireland, on which to base a comparison of provision. A North-South study based on 2004 survey data, discussed in this chapter, found higher rates of formal domiciliary care provision in Northern Ireland than the Republic (McGee et al. 2005).

The limitation of home care utilisation data to people with disability similarly restricts the estimation of informal care utilisation for Northern Ireland. An estimated 17.9% of population aged 65 and over had significant disability and received informal home care in NI in 2006. In the Republic of Ireland an estimated 28% of population aged 65 and over received some informal home care and approximately one third of these recipients (8.8% of people aged 65 and over) had significant disability and received intense all day or daily care. A further study with differing definitions of informal care yields higher utilisation estimates (McGee et al. 2008).

This chapter reviews in turn the data and projections for the Republic of Ireland and Northern Ireland under the headings of: demography (Section 2); disability (Section 3); residential LTC utilisation (Section 4); formal home care utilisation (Section 5); and informal home care utilisation (Section 6). Section 7 reviews and interprets the findings of this study; assesses the role that the differing health and social care systems described in Chapters 3 and 4 may have on the observed differences in utilisation patterns; and discusses how this modelling exercise might be further advanced.

10.2 Comparison of demographic data and forecasts

The population of Northern Ireland was approximately 40% of the population of the Republic of Ireland in 2006. The population of the Republic is forecast to experience more rapid increase so that the NI population would be 37% of the population of the Republic by 2021 (Table 10.1). However, the population forecasts for the Republic pre-date recent changes to net outward migration. The demographic basis for the forecasts in this study for the Republic of Ireland will therefore need to be reviewed in the light of the publication of detailed results from the 2011 Census of Population and subsequent forecasting revisions.

The proportions of population aged 65 and over and 80 and over were higher in Northern Ireland than in the Republic in the 2006 base year for these forecasts. Population ageing is expected to advance more rapidly in the Republic with a 69% increase in population aged 65 and an 82% increase in population aged 80 and over by 2021 compared to 40% and 52% increases respectively in Northern Ireland. The challenges of meeting the care needs of older people are therefore likely to be proportionately greater for the Republic than for Northern Ireland. The finding that Northern Ireland has a better developed system of care needs assessment may reflect its earlier experience of the demands of population ageing as much as its less laissez-faire tradition of health and social care provision.

Table 10.1 Demographic data and forecasts comparison

	Republic of Ireland		Northern Ireland	
	2006	2021 Forecast	2006	2021 Forecast
Population	4,239,848	5,132,633	1,741,619	1,919,410
Population aged 65 and over	467,926	792,067	239,347	335,077
% of population aged 65 and over	11.0%	15.4%	13.7%	17.5%
Population aged 80 and over	112,912	205,068	61,073	92,856
% of population aged 80 and over	2.7%	4.0%	3.5%	4.8%

 Notes: Republic of Ireland: Population for 2006 sourced from Census of Population (2006); 2021 forecasts sourced from Morgenroth (2009). Northern Ireland: Population for 2006 sourced from Registrar General's Annual Report for Northern Ireland, 2006; 2021 forecasts sourced from NISRA population projection estimates.

Following completion of the analysis in this study for the Republic of Ireland, the CSO published a revised 2011 population count and a breakdown by age and gender of Census 2011 (Central Statistics Office 2012). The revised population count increased 2011 population marginally to 4,588,252 compared to the preliminary count of 4,581,300. It remains the case that the Morgenroth (2009) population forecasts employed in this analysis come closer to this actual count than the alternative CSO forecasts reviewed in Chapter 5. In the case of forecast numbers of older people, however, the 2011 forecast in CSO (2008b) of 535,700 people aged 65 and over (Table 5.2 Chapter 5) accords very closely with the actual Census 2011 count of 535,393 people; whereas the Morgenroth (2009) forecast older population in 2011 employed in this analysis is higher than the Census 2011 count by 12,300 people or approximately 2%.

Were the forecasts of CSO (2008b) to prove equally accurate for 2021, this would suggest that the forecast population aged 65 and over from Morgenroth (2009) employed in this analysis is over-stated by 2.8% and that the forecast need for and projected utilisation of care should be revised downwards accordingly. Were such a reduction in forecast older population to translate into a proportionate reduction in projected numbers utilising residential long-term care, additional utilisation would reduce from 12,273 to 11,904 over the years 2006-2021 in the declining disability scenario. Revision of this magnitude in the projected utilisation rates for the Republic of Ireland can be seen to be marginal.

It would be premature to review the projections in this analysis until publication of the disability rate data from Census 2011 in late 2012, since numbers of older people with disabling conditions are of greater relevance to projecting LTC utilisation than overall numbers of older people. Furthermore, despite the accuracy of the CSO (2008b) forecast older population in 2011, publication of revised demographic forecasts based on the evidence of Census 2011 would better inform review of the demographic basis for the Republic of Ireland projections. Publication of data from the 2011 Census in Northern Ireland is not expected until late 2012 or early 2013

10.3 Comparison of disability data and forecasts

Although the analysis of disability prevalence in each jurisdiction benefits from the contemporaneous 2006 National Disability Survey (NDS) in the Republic and the Northern Ireland Survey of Activity Limitation and Disability (NISALD) in Northern Ireland, there are differences in survey methodology. The NDS includes people living in communal establishments; NISALD excludes them. Differences in survey questions were analysed in Chapter 6. Rates of self-reported disability can be affected even by minor differences in questions or survey context. Whereas the sample size in the NDS was 16,000 people, of whom 14,500 were drawn from respondents who had reported a disability in the 2006 Census of Population with the remainder drawn from the general population; the NISALD sample was proportionately smaller relative to the Northern Ireland population comprising 3,543 people identified as having a disability. Although the two surveys found comparable overall rates of disability in the population at 18.5% in the NDS and 18.0% in NISALD, their estimates of the prevalence of ADL difficulty in the older population are divergent (Table 10.2).

Table 10.2 Rates of disability within the overall population

	Republic of Ireland		Northern Ireland	
	2006	2021 Forecast	2006	2021 Forecast
Republic of Ireland definitions:				
NDS ADL difficulty (%)	15.9%	14.8%	-	-
Census significant disability (%)	20.2%	18.6%	-	-
Northern Ireland definition:				
NISALD ADL difficulty (%)	-	-	23.4%	21.6%

 Notes: Republic of Ireland: Disability rates in 2006 from Census 2006 substantial physical limitation; and 2006 National Disability Survey. Disability rate forecasts from Chapter 8. Northern Ireland: Disability rates in 2006 from the Northern Ireland Survey of Activity Limitation and Disability (NISALD). Disability rate forecasts from Chapter 9.

There is longitudinal evidence of declines in disability rates for both jurisdictions: from the 2002 and 2006 Censuses of Population in the Republic of Ireland; and from the trends in limiting longstanding illness in the Continuous Household Survey for Northern Ireland.

Disability rate projections for both jurisdictions are based on this evidence. In the Republic, the disability rate decline is assumed to converge to a lower long-run rate from the annual average rate of decline between 2002 and 2006, on the assumption that this is a cohort effect, i.e. the ageing of a generation which has experienced a unusually high rate of improvement in disability and health status. The forecast disability rate reduction is applied to either the population with Census-defined substantial physical limitation or the NDS-defined population with ADL difficulty to generate two alternative forecasts of the population with disability. In Northern Ireland, the linear declining trend in limiting longstanding illness for the years 1997/8 to 2010/11 is forecast to continue to 2021 and is applied to the NISALD-derived disability rates for 2006 to forecast population with disability.

Combined with forecast population by age and gender, these alternative forecasting methodologies generate comparable outcomes. The forecast decline in the prevalence of disability for people aged 65 and over in the Republic is 6.9% for people with ADL difficulty and 7.9% for people with substantial physical limitation, a proxy for severe disability. The forecast decline in the prevalence of disability for people aged 65 and over in Northern Ireland is 7.7% for people with ADL difficulty, as defined by NISALD. Comparable forecasting methodologies applied to differing base year prevalence results in differing prevalence forecasts (Table 10.2).

The optimistic assumption that recent declining trends in disability rates will persist informs one of two projection scenarios, with the second assuming that disability prevalence will cease to improve so that age and gender-specific disability rates remain at their 2006 levels. This alternative assumption generates the pure population projections for utilisation in both jurisdictions, which are invariably higher. There remains the theoretical possibility that disability rates will increase, perhaps as a consequence of the increase in obesity. This study does not project utilisation on this pessimistic basis in light of evidence of a declining trend in disability in the majority of studies that have used measures of basic and/or instrumental activities of daily living (ADL/IADL) such as feeding, dressing, personal care, moving about the home and preparing meals in assessing levels of disability. A recent review in *The Lancet* (Christensen et al. 2009; discussed in Chapter 2) indicates that whilst there has been a reported increase in morbidities in older people over time, these morbidities are less likely to cause disability, or to result in disabilities that are as limiting to day-to-day functioning as had been noted in previous years, especially for those aged less than 85 years.

10.4. Comparison of residential LTC data and projections

It is internationally recognised that cross-country comparison of residential LTC utilisation is particularly vexed due to differing definitions (OECD, 2007). This study has not, therefore, been uniquely challenged in this respect. In estimating utilisation of residential LTC in the Republic, two differing bases are employed. The first combines estimated bed numbers and occupancy rates from the Department of Health and Children's 2006 Longstay Activity Statistics and the Irish Nursing Home Organisation's 2006 survey to estimate population resident in LTC institutions aged 65 and over. The lower count of people with disabilities

resident in communal establishments from the NDS forms an alternative basis, combined with an estimate for residents who do not have a disability. In the Republic, these are inclusive counts of LTC institutions, including hospitals for older people, nursing homes, community welfare homes and some limited-stay or step-down services. The Northern Ireland analysis of residential LTC utilisation takes as its basis the number of residential care or nursing home care packages allocated to those aged 65 years and over in 2006/7. This utilisation estimate excludes both privately purchased residential care and alternative locations for care of older people such as hospitals for older people, which are included in the Republic of Ireland data.

The analysis of utilisation in Chapters 5 and 6 therefore offers a potentially misleading comparison of utilisation rates at 4.4% to 4.8% of people aged 65 and over in the Republic compared to 4.0% in Northern Ireland. These are the utilisation estimates on which the projections of utilisation increases in Chapters 8 and 9 are based. While these differing bases for estimated utilisation do not in any was invalidate the projections, qualified as they are by the assumption of constant utilisation proportions, they limit the usefulness of this analysis for comparative purposes. Table 10.3 illustrates alternative utilisation estimates: the utilisation rate in the Republic of Ireland reduces to between 4.0% to 4.3% if an adjustment is made for the approximately 10% of LTC beds which are in limited-stay institutions; the utilisation rate for Northern Ireland increases to 4.5% if it is assumed that the available hospital beds for older people have an 85% occupancy rate and would presumably increase further if there were a basis to include estimated privately purchased residential care.

The review of determinants of LTC utilisation in Chapter 2 discussed evidence from a number of countries that acute hospital care and long-term care are substitutes. Greater availability of acute bed capacity may reduce long-term care utilisation and vice versa. It is therefore relevant to compare acute bed capacity. Expressed in terms of beds per 1,000 population, Northern Ireland appears to have more beds than the Republic. If an adjustment is made for private hospital beds, the bed capacity appears comparable. However, expressed in terms of beds per 1,000 population aged 65 and over, the Republic appears more generously endowed. There is cross-country evidence that age of population is not significant in determining acute bed utilisation (Wren, 2011) so that the age-related ratio is not as significant a cross-country indicator of the adequacy of provision as some studies assume (PA, 2007). This evidence suggests that in 2006 acute care provision was comparable in the Republic and Northern Ireland, albeit accessed by very different systems.

Assuming declining disability rates but based on two different estimates of utilisation, the projections indicate that the Republic of Ireland would see an increase in LTC residents aged 65 and over of between 59% and 64% by 2021, if utilisation patterns remain constant. Assuming declining disability rates the projections indicate that Northern Ireland will see an increase of 44% in LTC residents aged 65 and over, as compared to 53% if no decline in disability is assumed. The relatively greater utilisation growth in the Republic reflects the relatively greater population ageing effect.

Table 10.3 Residential LTC utilisation data and projections comparison, differing definitions

	Republic of Ireland		Northern Ireland	
	2006 (est.)	2021 Preferred projection/ range	2006 (est.)	2021 Preferred projection/ range
Republic of Ireland LTC categories: public, voluntary and private long and limited stay institutions, including hospitals for older people				
Numbers aged 65 and over in residential LTC	20,720 - 22,490	32,993 - 36,993	-	-
Percentage aged 65 and over in residential LTC	4.4% - 4.8%	4.2% - 4.7%	-	-
Utilisation rate if limited stay institutions excluded	4.0% - 4.3%	-	-	-
Northern Ireland categories: publicly-funded care packages in nursing and residential homes				
Numbers aged 65 and over in residential LTC	-	-	9,585	13,858
Percentage aged 65 and over in residential LTC	-	-	4.0%	4.1%
Hospitals beds for older people	-	-	1,391	-
Utilisation rate if 85% occupancy of elderly care hospital beds assumed	-	-	4.5%	-
Acute hospital beds*:				
Numbers of acute beds	11,517	-	4,987	-
Beds per 1,000 population	2.7 (3.0)	-	2.9	-
Beds per 1,000 population aged 65+	24.6 (26.7)	-	20.8	-

Notes: Republic of Ireland: Acute hospital beds from OECD Health Database 2010. Figure in brackets includes estimated available private hospital beds. Percentages of population in residential LTC estimated in Chapter 5; forecasts developed in Chapter 8. Northern Ireland: Acute hospital beds from DHSSPSNI 'Hospital Statistics Bulletin: Inpatient and day case activity statistics 2010/11' (accessed 5th December 2011). Percentages of population in residential LTC estimated in Chapter 6; projections developed in Chapter 9. * Includes maternity beds. OECD definition used for Republic of Ireland includes only available, inpatient beds. NI definition is on the same basis.

10.5 Comparison of formal home care data and projections

The challenge of comparison across jurisdictions also extends to estimations of utilisation of formal home care from the data sources available for 2006 in the Republic of Ireland and Northern Ireland. While the two disability surveys record formal home care utilisation by persons with defined disability or ADL difficulty, analysis of alternative data sources for the Republic in Chapter 5 revealed a larger population in receipt of home help services than implied by the NDS. Since no single data source was comprehensive, two were combined to provide two alternative estimates of utilisation, which were then disaggregated by age cohort

and gender according to the NDS evidence. One basis for estimated formal home care utilisation in the Republic in 2006 is the count of home help recipients from the HSE database; the second basis augments that count with the NDS estimate of numbers paying for private home care services. In the data for the Republic home helps and personal care assistants or attendants are not distinguished.

In the case of formal home care utilisation (domiciliary or home help/personal care attendant services) the Northern Ireland data in this report are limited to people with disability who receive help from a statutory health services provider, on which basis estimated utilisation is 4.7% of population aged 65 and over. Limiting estimated home help recipients to those with disability would capture approximately half the publicly funded or provided home care in the Republic of Ireland; including utilisation by people without defined disability and estimated utilisation by people who purchase care privately increases estimated formal home care recipients to between 8.9% and 10.5% of people aged 65 and over in the Republic of Ireland in 2006 (Table 10.4).

Table 10.4 Formal home care utilisation data and projections comparison, differing definitions

	Republic of Ireland All recipients		Northern Ireland People with disability only	
	2006 (est.)	2021 Preferred projection/ range	2006 (est.)	2021 Preferred projection/ range
Republic of Ireland definition: HSE numbers in receipt of publicly provided or funded home help services; NDS count of percentage with disability paying for care added in higher estimate				
Numbers aged 65 and over receiving formal home care	41,596 - 49,179	65,267 - 77,164	-	-
Percentage aged 65 and over receiving formal home care	8.9% - 10.5%	8.2% - 9.7%	-	-
Northern Ireland definition: NISALD count of percentage with disability in receipt of formal home care from statutory health services provider				
Numbers aged 65 and over receiving formal home care	-	-	11,315	15,512
Percentage aged 65 and over receiving formal home care	-	-	4.7%	4.6%

Notes: Republic of Ireland: Percentage of population receiving formal home care estimated in Chapter 5; projections developed in Chapter 8. Higher estimates add NDS count persons paying for care to HSE count persons in receipt of home help services; lower estimates only HSE home help recipients. Northern Ireland: Percentage receiving formal home care estimated in Chapter 6; projections developed in Chapter 9. Utilisation estimated by applying NISALD data on the proportion of people with disability in receipt of home care to the population with disability and expressing this as a percentage of population in the age group.

As in the case of residential LTC utilisation, the superficial appearance of comparatively more generous formal home care provision in the Republic than in Northern Ireland is misleading, given the differing bases for the utilisation estimates, with the exclusion of privately purchased care and care for people without defined disability in the NI data A more valid comparison, in that the survey data were collected on the same basis in both jurisdictions, is provided by an interview-based study of 2,000 community-dwelling adults aged 65 and older,

half of whom were in the Republic and half in Northern Ireland in 2004 (McGee et al. 2005). This study found significant North / South differences for a range of services: in Northern Ireland 17% had received home help services, 6% personal care attendant services and 6% meals-on-wheels services in the preceding 12 months compared to 7%, 1% and 2% respectively in the Republic. Of 15 services compared, 9 were availed of by a higher proportion of older people in NI. No service was availed of more frequently in the Republic of Ireland than in Northern Ireland. Northern Ireland participants who used personal care attendants were more likely than their counterparts in the Republic to pay for these services.

While it may well be the case that the proportion of older people in receipt of home help and personal attendant services in the Republic increased from 8% in 2004, as in the McGee et al (2005) study, to between 8.9% and 10.5% in 2006, as suggested by the estimates in this study, it is highly improbable that the proportion of the Northern Ireland population in receipt of such services decreased to a 4.7% utilisation rate. The evidence from the McGee et al (2005) study combined with the evidence assessed in Chapter 6 suggests that in Northern Ireland, as in the Republic, a sizeable proportion of older people in receipt of formal home care are not defined as having a disability and/or pay for their care from non-statutory providers. The projections for future utilisation of formal home care in Northern Ireland in Table 10.4 and Chapter 9 must therefore be understood as projected utilisation by people with defined disability of home care from statutory providers and not as projected need for or utilisation of all formal domiciliary care in the older population as a whole.

10.6 Comparison of informal home care data and projections

Surveys of informal home care provision are often undertaken from the perspective of carers: enumerating carers and determining their input to caring and the demands upon them. Surveys of the recipients of care tend to restrict them by some other characteristic such as disability definition. In this analysis, the NDS and NISALD surveys are a rich source of data on informal care receipt by persons with disability or ADL difficulty. However, for the Republic of Ireland, it is evident from the 2009 Carers' Module of the Quarterly National Household Survey (QNHS), which unusually relates caregivers to care recipients, that this definition limits the estimates of recipients of informal care aged 65 and over and understates the need for informal support among a wider population without defined disability. The NDS-based informal home care utilisation data which form the basis for projected utilisation in the Republic are restricted to persons with ADL difficulty who receive all-day or daily care. Evidence from the 2009 QNHS forms the basis for estimated and projected utilisation of any informal care by all persons aged 65 and over. The Northern Ireland utilisation estimate and projection are based on NISALD and are for persons with disability receiving any form of informal care. Estimated and projected utilisation rates in Table 10.5 are not therefore comparable.

Table 10.5 Informal home care utilisation data and projections comparison, differing definitions

	Republic of Ireland		Northern Ireland	
	2006	2021 Preferred projection/ range	2006	2021 Preferred projection/ range
Republic of Ireland definitions:				
Numbers aged 65+ with ADL difficulty receive all day/daily informal home care	41,018	64,500	-	-
% aged 65+ who have ADL difficulty & receive all day/daily informal home care	8.8%	8.1%	-	-
% aged 65+ who receive any informal home care	28%	26%	-	-
Northern Ireland definition				
Numbers aged 65+ with disability receiving any informal home care			42,821	53,827
% aged 65+ who have disability & receive any informal home care	-	-	17.9%	16.1%
% aged 65+ living alone	25.9%	25.9%	33%*	-
Female labour force participation rate (15-64 RoI; 16-64 NI)	53.1%	-	61.7%	-
Part-time workers as percentage of women in the labour force	34.5%		39%**	
Male life expectancy at birth (years)	76.8	-	76.2	-
Female life expectancy at birth (years)	81.6	-	81.2	-
Difference between M and F life expectancy (years)	4.8	-	5.0	-

Notes: Republic of Ireland: Household composition for 2006 sourced from Census of Population (2006); 2021 forecast sourced from Morgenroth (2009). Female labour force participation rate and life expectancies sourced from Central Statistics Office Database (accessed 1st December 2011). Part-time female employment rate from ILO Percentage of population receiving all day, daily or some informal home care estimated in Chapter 5; projections developed in Chapter 8. Northern Ireland: Female participation rates in Northern Ireland are for women aged 16-64; *Percentage aged 65 and over living alone is the 2001 figure from Northern Ireland Census 2001 (NISRA). **Part-time female employment rate from ILO for UK in 2006. Information sourced from NISRA, Department of Finance and Personnel, 'Women in Northern Ireland' (2011) (accessed 1st December 2011). Percentages of population receiving any informal home care are estimated in Chapter 6; projections developed in Chapter 9.

These estimates must, furthermore, be qualified by the evidence from a community-based survey of people aged 65 and over in the Republic of Ireland and Northern Ireland conducted in 2003 which found much higher proportions of older people receiving some form of informal care. McGee et al (2008) found that 49% of people aged 65 and over in the Republic

and 48% in Northern Ireland had received some form of informal care in the preceding year. Within this grouping receiving informal care, care from non-resident relatives was the most common source of help (27% RoI and 30% NI). Spouses or partners provided informal care to 18% (21% RoI and 14% NI) but the proportion of spouses giving continuous care was higher in NI at 60% compared to 41% in RoI. Care was given by another relative in the same household to 16% (20% in RoI and 11% in NI). The results of the McGee et al (2008) study suggest that the estimates in this study may underestimate overall informal care utilisation and generate correspondingly understated projections. The projections for intense informal care utilisation by people with ADL difficulty for the Republic and any informal care utilisation by people with disability for Northern Ireland, while a good basis for assessing need for care-giving for people with disability, should be considered an under-estimate of the care needs of the wider population of older people.

Table 10.5 also compares some socio-demographic characteristics which would influence the supply of informal care. The literature review in Chapter 2 discussed the wide evidence that the setting in which care is received and whether it is informal or formal is influenced by such factors as the marital status of the older person requiring care, their household composition and the availability of adult children. Living alone at older ages is a significant predictor of formal LTC need because intense care needs can generally only be met informally by co-resident carers. There is evidence from 2001 that 33% of the Northern Ireland population was living alone, which compares to 26% of the population in the Republic in 2006. This is compatible with the higher proportion of older people in Northern Ireland and with the greater difference in life expectancies between men and women in Northern Ireland, which would give rise to a higher rate of widowhood than in the Republic. Such factors reduce numbers of potential co-resident carers and would be expected to give rise to greater need for and utilisation of formal home care and residential care. Northern Ireland also had a higher female labour force participation rate than the Republic in 2006. Even though this may be partially offset by a higher part-time working rate (if NI rates are as in the UK on average), the potential supply of care by adult daughters of their parents would be less in NI than the Republic. The very high participation rates by younger women in the Republic combined with their emigration patterns may change this comparative picture over the projection period, however. In summary, it would appear that although on the evidence of McGee et al (2008) overall Northern Ireland rates of informal caring may be comparable to those in the Republic, these informal carers are drawn from a relatively smaller pool of potential care-givers.

The two disability surveys conducted North and South in 2006 offer a snapshot view of two populations with disability and their sources of care under every heading. These surveys were the sources of pie diagrams showing the proportions of care received under different headings in Chapters 5 and 6. These diagrams are not directly comparable because the definition of formal home care provision in the NDS includes any provider of carer, home help or personal attendant services, so that in the analysis for the Republic in Chapter 5, this category includes privately purchased care, which is excluded in the NISALD definition employed in Chapter 6. A striking difference that does emerge from the two surveys is that a much higher proportion of people aged 65 and over with ADL difficulty and living in the community receives no help in the Republic at 14% compared to 2% in Northern Ireland. The unmet need for care in a

much higher proportion of people with identified ADL difficulty in the Republic of Ireland than in Northern Ireland suggests that NI has a more effective care system.

10.7 Reflections on policy implications of research findings

It is clear from the analysis in this report that both in the Republic of Ireland and Northern Ireland, population growth and ageing will present challenges to policy-makers, notwithstanding evidence of declines in disability rates and forecast reductions in age-specific need for care. There will be requirements for substantial increases in the provision of long-term care in every setting; and to the degree that socio-economic developments such as increased female labour force participation or emigration by younger women reduce the potential supply of informal care-givers, these requirements will fall more heavily on the formal care services, whether domiciliary or residential. The pressure of population ageing will be greater for the Republic than Northern Ireland as demonstrated in Table 10.6 which shows the projected average annual increases in care utilisation in the years 2006-2021 under the optimistic declining disability scenario.

Assuming that patterns of utilisation of alternative forms of care remain constant, and recalling that differing definitions of care pertain to the projections in each jurisdiction, the Republic of Ireland is faced with a projected annual average increase in utilisation of or requirement for residential LTC places of between 800 and 970 approximately per annum over the years 2006-2021, contrasting with an annual requirement for an additional 285 publicly-funded residential or nursing home care packages in Northern Ireland. Assuming constant utilisation patterns, Northern Ireland would require additional formal domiciliary care from statutory providers for 280 people with disability annually; whereas utilisation of publicly provided home care by all older persons in the Republic is projected to increase by approximately 1,600 annually.

Uncertainty about utilisation estimates must qualify the North-South comparisons in this report. Differing definitions of residential long-term care complicate comparison of residential care utilisation. The bringing together of available sources on formal and informal home care make clear that care recipients are not confined to persons with defined disability, the source of much of the available survey data on receipt of care. While the comparisons are qualified by these data uncertainties, there would appear to be clear evidence from the two disability surveys that the care assessment system in the Republic is less effective since it leaves a relatively high proportion of the older population with disability with unmet need for care.

Among differences between the care systems for older people in the Republic of Ireland and Northern Ireland identified by Pierce et al (2010) is the existence of a legal basis for Northern Ireland's home help services while there is no legal basis in the Republic for home help services or home care packages. Furthermore, as described in Chapter 4, in Northern Ireland there is an integrated system of assessment by care managers of an individual's needs in respect of care at home and placement in care homes. Following the assessment, three types of care package may be recommended – domiciliary care, residential care or nursing home

care. There is, as yet, no such integrated system in the Republic. Survey evidence has shown significant differences in provision of home help services, depending on area of residence in the Republic (O'Hanlon et al. 2005).

Table 10.6 Summary of preferred projections for care utilisation, RoI and NI, NB. Differing definitions of care in each jurisdiction

Republic of Ireland

	Residential LTC		Formal home care		All day or daily informal home care
	Low estimate	High estimate	Low estimate Publicly provided	High estimate Includes privately purchased	For persons with ADL difficulty
2006 estimates	20,720	22,491	41,596	49,179	41,018
2021 Declining disability projection	32,993	36,993	65,267	77,164	64,500
2006-2021 Projected increase in utilisation	12,273	14,502	23,671	27,985	23,482
Projected annual average increase in the years 2006 - 2021	818	967	1,578	1,866	1,565

Northern Ireland

	Residential LTC	Formal home care	Informal care
	Publicly-funded care packages	From statutory provider	For persons with disability
2006 estimate	9,585	11,315	42,821
2021 Declining disability projection	13,858	15,512	53,827
2006-2021 Projected increase in utilisation	4,273	4,197	11,006
Projected annual average increase in the years 2006 - 2021	285	280	734

The evidence in this study that the next decade will see steep increases in demand for long-term care in the Republic, when combined with the fiscal constraints which are placing pressure on existing public service provision, are persuasive arguments for the establishment of a statutory basis for eligibility for domiciliary care and the implementation of an integrated system for care needs assessment for residential and domiciliary care to ensure better targeting of resources to meet need in the most appropriate setting.

The original aim of this study was to develop a predictive model of long-term care demand in all settings for both jurisdictions, which would supply an interactive tool for policy-makers. That aim has been advanced but not wholly achieved in this analysis. The models are interactive insofar as they can readily generate updated projections, when more recent demographic forecasts, disability rate data or data on utilisation become available. To develop predictive forecasts would require going beyond the models' projections of future utilisation based on current utilisation patterns. As richer data become available with the development of longitudinal surveys of ageing in both jurisdictions, there is potential to develop these models by multi-variate analysis of a more comprehensive range of predictors of utilisation of care in each setting.

The models project need for and utilisation of care not economic demand for care, as expressed in prices or LTC expenditure. These are utilisation models not financial models. Further development of the modelling of long-term care demand could seek to include the effect on utilisation of personal incomes and wealth; of pricing in the private market for care; and of eligibility regimes in public provision. Individual-level data from sources such as The Irish Longitudinal Study on Ageing (TILDA) should facilitate the development of more complex models.

This is the first study for the Republic of Ireland or Northern Ireland which has analysed the utilisation of care and projected future utilisation in all settings. Although the assumed constancy in patterns of utilisation may be subject to variation and care needs may be met in differing settings or by differing combinations of carers from those assumed here, the projections of growing overall need for long-term care in Northern Ireland and the Republic of Ireland should assist policy-makers and advocates for older people in achieving improved care provision.

Appendix A

Chapter 8 projection scenario tables

Table A.1 Scenario 1: Projected numbers in residential long-term care, pure population effects, DOHC/INHO utilisation estimate

Age cohort	Pop.	Numbers in residential LTC (est.)	% of age cohort in residential LTC	Pop	Projected numbers residential LTC	% of age cohort in residential LTC	Pop	Projected numbers residential LTC	% of age cohort in residential LTC	Pop	Projected numbers residential LTC	% of age cohort in residential LTC
		2006			2011			2016			2021	
MALE												
65-69	70,895	591	0.8%	87,400	729	0.8%	107,176	894	0.8%	117,299	978	0.8%
70-74	56,540	901	1.6%	64,542	1,028	1.6%	80,836	1,288	1.6%	100,221	1,597	1.6%
75-79	40,121	1,447	3.6%	47,592	1,717	3.6%	56,031	2,021	3.6%	71,792	2,590	3.6%
80-84	24,694	1,843	7.5%	29,553	2,206	7.5%	37,075	2,767	7.5%	45,431	3,391	7.5%
85-89	11,021	1,576	14.3%	15,117	2,162	14.3%	20,168	2,884	14.3%	27,528	3,936	14.3%
90+	3,824	878	23.0%	5,764	1,323	23.0%	9,600	2,203	23.0%	15,035	3,451	23.0%
65+	207,095	7,236	3.5%	249,969	9,164	3.7%	310,886	12,057	3.9%	377,307	15,943	4.2%
FEMALE												
65-69	72,501	502	0.7%	87,714	607	0.7%	107,260	742	0.7%	117,932	816	0.7%
70-74	62,612	1,067	1.7%	68,599	1,169	1.7%	83,507	1,423	1.7%	102,628	1,749	1.7%
75-79	52,345	2,109	4.0%	56,437	2,274	4.0%	62,641	2,524	4.0%	77,126	3,108	4.0%
80-84	40,190	3,780	9.4%	42,803	4,026	9.4%	47,444	4,463	9.4%	53,779	5,058	9.4%
85-89	22,281	4,239	19.0%	27,677	5,266	19.0%	31,493	5,992	19.0%	37,302	7,097	19.0%
90+	10,902	3,558	32.6%	14,447	4,715	32.6%	20,145	6,574	32.6%	25,993	8,483	32.6%
65+	260,831	15,255	5.8%	297,677	18,057	6.1%	352,491	21,718	6.2%	414,760	26,311	6.3%
TOTAL												
65-69	143,396	1,093	0.8%	175,114	1,336	0.8%	214,436	1,636	0.8%	235,231	1,795	0.8%
70-74	119,152	1,967	1.7%	133,141	2,197	1.7%	164,343	2,710	1.6%	202,850	3,345	1.6%
75-79	92,466	3,557	3.8%	104,030	3,991	3.8%	118,672	4,545	3.8%	148,918	5,698	3.8%
80-84	64,884	5,623	8.7%	72,356	6,232	8.6%	84,519	7,230	8.6%	99,210	8,449	8.5%
85-89	33,302	5,815	17.5%	42,793	7,428	17.4%	51,660	8,876	17.2%	64,830	11,034	17.0%
90+	14,726	4,436	30.1%	20,212	6,038	29.9%	29,746	8,778	29.5%	41,028	11,934	29.1%
65+	467,926	22,491	4.8%	547,646	27,221	5.0%	663,377	33,776	5.1%	792,067	42,254	5.3%

Table A.2 Scenario 2: Projected numbers in residential long-term care, pure population effects, NDS-basis utilisation estimate

Age cohort	Pop.	Numbers in residential LTC (est.)	% of age cohort in residential LTC	Pop	Projected numbers residential LTC	% of age cohort in residential LTC	Pop	Projected numbers residential LTC	% of age cohort in residential LTC	Pop	Projected numbers residential LTC	% of age cohort in residential LTC
		2006			2011			2016			2021	
MALE												
65-74	127,435	1,745	1.4%	151,942	2,080	1.4%	188,012	2,574	1.4%	217,521	2,978	1.4%
75+	79,660	4,907	6.2%	98,026	6,039	6.2%	122,874	7,569	6.2%	159,786	9,843	6.2%
65+	207,095	6,652	3.2%	249,969	8,119	3.2%	310,886	10,144	3.3%	377,307	12,822	3.4%
FEMALE												
65-74	135,113	1,745	1.3%	156,312	2,019	1.3%	190,767	2,464	1.3%	220,560	2,848	1.3%
75+	125,718	12,323	9.8%	141,365	13,856	9.8%	161,724	15,852	9.8%	194,200	19,035	9.8%
65+	260,831	14,068	5.4%	297,677	15,875	5.3%	352,491	18,316	5.2%	414,760	21,884	5.3%
TOTAL												
65-74	262,548	3,490	1.3%	308,255	4,099	1.3%	378,779	5,038	1.3%	438,081	5,827	1.3%
75+	205,378	17,230	8.4%	239,391	19,895	8.3%	284,597	23,421	8.2%	353,986	28,879	8.2%
65+	467,926	20,720	4.4%	547,646	23,994	4.4%	663,377	28,459	4.3%	792,067	34,705	4.4%

Table A.3 Scenario 3: Projected numbers in residential long-term care: declining rate severe disability, DOHC/INHO utilisation estimate

	Nos with severe disability	Numbers in residential LTC (est.)	Residential LTC as % nos with severe disability	% of age cohort in residential LTC	Projected numbers residential LTC	% of age cohort in residential LTC	Projected numbers residential LTC	% of age cohort in residential LTC	Projected numbers residential LTC	% of age cohort in residential LTC
			2006			2011		2016		2021
MALE										
65-69	7,293	591	8.1%	0.8%	675	0.8%	785	0.7%	824	0.7%
70-74	7,275	901	12.4%	1.6%	943	1.5%	1,105	1.4%	1,319	1.3%
75-79	7,528	1,447	19.2%	3.6%	1,660	3.5%	1,887	3.4%	2,326	3.2%
80-84	6,495	1,843	28.4%	7.5%	2,150	7.3%	2,635	7.1%	3,129	6.9%
85-89	3,962	1,576	39.8%	14.3%	2,126	14.1%	2,802	13.9%	3,832	13.9%
90+	1750	878	50.2%	23.0%	1,275	22.1%	2,077	21.6%	3,233	21.5%
65+	34,303	7,236	21.1%	3.5%	8,828	3.5%	11,290	3.6%	12,662	3.4%
FEMALE										
65-69	7,649	502	6.6%	0.7%	564	0.6%	657	0.6%	694	0.6%
70-74	9,422	1,067	11.3%	1.7%	1,087	1.6%	1,243	1.5%	1,478	1.4%
75-79	12,240	2,109	17.2%	4.0%	2,153	3.8%	2,287	3.7%	2,695	3.5%
80-84	13,919	3,780	27.2%	9.4%	3,935	9.2%	4,239	8.9%	4,659	8.7%
85-89	10,410	4,239	40.7%	19.0%	5,142	18.6%	5,773	18.3%	6,805	18.2%
90+	6457	3,558	55.1%	32.6%	4,560	31.6%	6,235	31.0%	8,000	30.8%
65+	60,097	15,255	25.4%	5.8%	17,441	5.9%	20,435	5.8%	24,331	5.9%
TOTAL										
65-69	14,942	1,093	7.3%	0.8%	1,239	0.7%	1,441	0.7%	1,518	0.6%
70-74	16,697	1,967	11.8%	1.7%	2,030	1.5%	2,348	1.4%	2,797	1.4%
75-79	19,768	3,557	18.0%	3.8%	3,813	3.7%	4,175	3.5%	5,020	3.4%
80-84	20,414	5,623	27.5%	8.7%	6,084	8.4%	6,874	8.1%	7,788	7.8%
85-89	14,372	5,815	40.5%	17.5%	7,269	17.0%	8,575	16.6%	10,637	16.4%
90+	8,207	4,436	54.0%	30.1%	5,834	28.9%	8,312	27.9%	11,234	27.4%
65+	94,400	22,491	23.8%	4.81%	26,269	4.80%	31,725	4.78%	36,993	4.7%

Table A.4 Scenario 4: Projected numbers in residential long-term care: declining rate severe disability, NDS-basis utilisation estimate

	Nos with severe disability	Nos in residential LTC (est.)	Residential LTC % nos with severe disability	% age cohort in res. LTC	Projected nos in residential LTC	% age cohort in res. LTC	Projected nos in residential LTC	% age cohort in res. LTC	Projected nos in residential LTC	% age cohort in res. LTC
	2006				2011		2016		2021	
MALE										
65-74	14,568	1,745	12.0%	1.4%	1,909	1.3%	2,228	1.2%	2,494	1.1%
75+	19,735	4,907	24.9%	6.2%	5,992	6.1%	7,531	6.1%	9,748	6.1%
65+	34,303	6,652	19.4%	3.2%	7,900	3.2%	9,759	3.1%	12,242	3.2%
FEMALE										
65-74	17,071	1,745	10.2%	1.3%	1,861	1.2%	2,146	1.1%	2,416	1.1%
75+	43,026	12,323	28.6%	9.8%	13,714	9.7%	15,573	9.6%	18,335	9.4%
65+	60,097	14,068	23.4%	5.4%	15,575	5.2%	17,718	5.0%	20,751	5.0%
TOTAL										
65-74	31,639	3,490	11.0%	1.3%	3,770	1.2%	4,373	1.2%	4,909	1.1%
75+	62,761	17,230	27.5%	8.4%	19,705	8.2%	23,104	8.1%	28,084	7.9%
65+	94,400	20,720	21.9%	4.4%	23,475	4.3%	27,477	4.1%	32,993	4.2%

Table A.5 Scenario 5: Projected numbers in residential long-term care: declining ADL difficulty rate, DOHC/INHO utilisation estimate

	Nos with ADL difficulty	Nos in residential LTC (est.)	Residential LTC % nos with ADL difficulty	% age cohort in res. LTC	Projected nos in residential LTC	% age cohort in res. LTC	Projected nos in residential LTC	% age cohort in res. LTC	Projected nos in residential LTC	% age cohort in res. LTC
	2006				2011		2016		2021	
MALE										
65-74	9,461	1,492	15.8%	1.2%	1,632	1.2%	1,632	1.2%	2,132	1.2%
75+	16,725	5,744	34.3%	7.2%	7,013	7.2%	7,013	7.2%	11,410	7.2%
65+	26,186	7,236	27.6%	3.5%	8,645	3.5%	8,645	3.5%	13,543	3.6%
FEMALE										
65-74	12,497	1,569	12.6%	1.2%	1,673	1.1%	1,929	1.0%	2,172	1.0%
75+	35,700	13,687	38.3%	10.9%	15,232	10.8%	17,297	10.7%	20,365	10.5%
65+	48,197	15,256	31.7%	5.8%	16,905	5.7%	19,226	5.5%	22,537	5.4%
TOTAL										
65-74	21,958	3,061	13.9%	1.2%	3,305	1.1%	3,561	0.9%	4,304	1.0%
75+	52,425	19,431	37.1%	9.5%	22,245	9.3%	24,310	8.5%	31,776	9.0%
65+	74,383	22,492	30.2%	4.8%	25,550	4.7%	27,871	4.2%	36,080	4.6%

Table A.6 Scenario 1: Projected numbers receiving formal home care, pure population effects, Basis 1 utilisation estimate

Age cohort	Pop.	Numbers receiving formal home care (est.)	% of age cohort receiving formal home care	Pop	Projected numbers receiving formal home care	% of age cohort receiving formal home care	Pop	Projected numbers receiving formal home care	% of age cohort receiving formal home care	Pop	Projected numbers receiving formal home care	% of age cohort receiving formal home care
		2006			2011			2016			2021	
MALE												
65-74	127,435	2,588	2.0%	151,942	3,039	2.0%	188,012	3,760	2.0%	217,521	4,350	2.0%
75+	79,660	8,415	10.6%	98,026	10,391	10.6%	122,874	13,025	10.6%	159,786	16,937	10.6%
65+	207,095	11,003	5.3%	249,969	13,430	5.4%	310,886	16,785	5.4%	377,307	21,288	5.6%
FEMALE												
65-74	135,113	6,433	4.8%	156,312	7,503	4.8%	190,767	9,157	4.8%	220,560	10,587	4.8%
75+	125,718	24,158	19.2%	141,365	27,142	19.2%	161,724	31,051	19.2%	194,200	37,286	19.2%
65+	260,831	30,591	11.7%	297,677	34,645	11.6%	352,491	40,208	11.4%	414,760	47,873	11.5%
TOTAL												
65-74	262,548	9,020	3.4%	308,255	10,542	3.4%	378,779	12,917	3.4%	438,081	14,937	3.4%
75+	205,378	32,576	15.9%	239,391	37,533	15.7%	284,597	44,076	15.5%	353,986	54,224	15.3%
65+	467,926	41,596	8.9%	547,646	48,075	8.8%	663,377	56,993	8.6%	792,067	69,161	8.7%

Table A.7 Scenario 2: Projected numbers receiving formal home care, pure population effects, Basis 2 utilisation estimate

Age cohort	Pop.	Numbers receiving formal home care (est.)	% of age cohort receiving formal home care	Pop	Projected numbers receiving formal home care	% of age cohort receiving formal home care	Pop	Projected numbers receiving formal home care	% of age cohort receiving formal home care	Pop	Projected numbers receiving formal home care	% of age cohort receiving formal home care
		2006			2011			2016			2021	
MALE												
65-74	127,435	3,060	2.4%	151,942	3,647	2.4%	188,012	4,512	2.4%	217,521	5,221	2.4%
75+	79,660	9,949	12.5%	98,026	12,253	12.5%	122,874	15,359	12.5%	159,786	19,973	12.5%
65+	207,095	13,009	6.3%	249,969	15,900	6.4%	310,886	19,872	6.4%	377,307	25,194	6.7%
FEMALE												
65-74	135,113	7,605	5.6%	156,312	8,753	5.6%	190,767	10,683	5.6%	220,560	12,351	5.6%
75+	125,718	28,562	22.7%	141,365	32,090	22.7%	161,724	36,711	22.7%	194,200	44,083	22.7%
65+	260,831	36,167	13.9%	297,677	40,843	13.7%	352,491	47,394	13.4%	414,760	56,435	13.6%
TOTAL												
65-74	262,548	10,665	4.1%	308,255	12,400	4.0%	378,779	15,195	4.0%	438,081	17,572	4.0%
75+	205,378	38,514	18.8%	239,391	44,343	18.5%	284,597	52,071	18.3%	353,986	64,057	18.1%
65+	467,926	49,179	10.5%	547,646	56,743	10.4%	663,377	67,266	10.1%	792,067	81,629	10.3%

Table A.8 Scenario 3: Projected numbers receiving formal home care: declining rate severe disability, Basis 1 utilisation estimate

	Nos with severe disability	Numbers receiving formal home care (est.)	Formal home care as percentage numbers with severe disability	% of age cohort receiving formal home care	Projected numbers receiving formal home care	% of age cohort receiving formal home care	Projected numbers receiving formal home care	% of age cohort receiving formal home care	Projected numbers receiving formal home care	% of age cohort receiving formal home care
	2006				2011		2016		2021	
MALE										
65-74	14,568	2,588	17.8%	2.0%	2,831	1.9%	3,304	1.8%	3,699	1.7%
75+	19,735	8,415	42.6%	10.6%	10,274	10.5%	12,914	10.5%	16,716	10.5%
65+	34,303	11,003	32.1%	5.3%	13,106	5.2%	16,218	5.2%	20,415	5.4%
FEMALE										
65-74	17,071	6,433	37.7%	4.8%	6,860	4.4%	7,911	4.1%	8,906	4.0%
75+	43,026	24,158	56.1%	19.2%	26,885	19.0%	30,529	18.9%	35,945	18.5%
65+	60,097	30,591	50.9%	11.7%	33,745	11.3%	38,440	10.9%	44,852	10.8%
TOTAL										
65-74	31,639	9,020	28.5%	3.4%	9,692	3.1%	11,215	3.0%	12,605	2.9%
75+	62,761	32,576	51.9%	15.9%	37,159	15.5%	43,444	15.3%	52,662	14.9%
65+	94,400	41,596	44.1%	8.9%	46,851	8.6%	54,658	8.2%	65,267	8.2%

Table A.9 Scenario 4: Projected numbers receiving formal home care: declining rate severe disability, Basis 2 utilisation estimate

	Nos with severe disability	Numbers receiving formal home care (est.)	Formal home care as percentage numbers with severe disability	% of age cohort receiving formal home care	Projected numbers receiving formal home care	% of age cohort receiving formal home care	Projected numbers receiving formal home care	% of age cohort receiving formal home care	Projected numbers receiving formal home care	% of age cohort receiving formal home care
	2006				2011		2016		2021	
MALE										
65-74	14,568	3,060	21.0%	2.4%	3,348	2.2%	3,907	2.1%	4,373	2.0%
75+	19,735	9,949	50.4%	12.5%	12,147	12.4%	15,269	12.4%	19,763	12.4%
65+	34,303	13,009	37.9%	6.3%	15,495	6.2%	19,175	6.2%	24,137	6.4%
FEMALE										
65-74	17,071	7,605	44.5%	5.6%	8,110	5.2%	9,352	4.9%	10,529	4.8%
75+	43,026	28,562	66.4%	22.7%	31,786	22.5%	36,095	22.3%	42,498	21.9%
65+	60,097	36,167	60.2%	13.9%	39,896	13.4%	45,447	12.9%	53,027	12.8%
TOTAL										
65-74	31,639	10,665	33.7%	4.1%	11,458	3.7%	13,258	3.5%	14,902	3.4%
75+	62,761	38,514	61.4%	18.8%	43,934	18.4%	51,363	18.0%	62,262	17.6%
65+	94,400	49,179	52.1%	10.5%	55,391	10.1%	64,622	9.7%	77,164	9.7%

Table A.10 Scenario 1A: Projected numbers receiving daily or all day informal care from cohabiting family, pure population effects

Age cohort	Pop.	Numbers receiving all day or daily care from family living with	% of age cohort receiving intense cohabiting family care	Pop.	Projected numbers receiving all day or daily care from family living with	% of age cohort receiving intense cohabiting family care	Pop.	Projected numbers receiving all day or daily care from family living with	% of age cohort receiving intense cohabiting family care	Pop.	Projected numbers receiving all day or daily care from family living with	% of age cohort receiving intense cohabiting family care
	2006			2011			2016			2021		
MALE												
65-74	127,435	5,140	5.9%	151,942	9,022	5.9%	188,012	11,164	5.9%	217,521	12,916	5.9%
75+	79,660	7,567	16.0%	98,026	15,637	16.0%	122,874	19,600	16.0%	159,786	25,488	16.0%
65+	207,095	12,707	6.1%	249,969	24,659	9.9%	310,886	30,764	9.9%	377,307	38,405	10.2%
FEMALE												
65-74	135,113	6,171	4.6%	156,312	7,139	4.6%	190,767	8,713	4.6%	220,560	10,074	4.6%
75+	125,718	13,138	10.5%	141,365	14,773	10.5%	161,724	16,901	10.5%	194,200	20,295	10.5%
65+	260,831	19,309	7.4%	297,677	21,912	7.4%	352,491	25,614	7.3%	414,760	30,368	7.3%
TOTAL												
65-74	262,548	11,311	4.3%	308,255	16,161	5.2%	378,779	19,877	5.2%	438,081	22,990	5.2%
75+	205,378	20,705	10.1%	239,391	30,410	12.7%	284,597	36,501	12.8%	353,986	45,783	12.9%
65+	467,926	32016	6.8%	547,646	46,571	8.5%	663,377	56,378	8.5%	792,067	68,773	8.7%

Table A.11 Scenario 2A Projected numbers receiving daily or all day informal care from cohabiting family, declining disability

	Nos with ADL difficulty	Numbers receiving all day or daily care from family living with	Intense cohabiting family care as percentage numbers with ADL	% of age cohort receiving intense cohabiting family care	Projected numbers receiving all day or daily care from family living with	% of age cohort receiving intense cohabiting family care	Projected numbers receiving all day or daily care from family living with	% of age cohort receiving intense cohabiting family care	Projected numbers receiving all day or daily care from family living with	% of age cohort receiving intense cohabiting family care
	2006				2011		2016		2021	
MALE										
65-74	9,461	5,140	54.3%	4.0%	5,623	3.7%	6,562	3.5%	7,346	3.4%
75+	16,725	7,567	45.2%	9.5%	9,239	9.4%	11,613	9.5%	15,032	9.4%
65+	26,186	12,707	48.5%	6.1%	14,862	5.9%	18,175	5.8%	22,378	5.9%
FEMALE										
65-74	12,497	6,171	49.4%	4.6%	6,581	4.2%	7,588	4.0%	8,543	3.9%
75+	35,700	13,138	36.8%	10.5%	14,621	10.3%	16,603	10.3%	19,548	10.1%
65+	48,197	19,309	40.1%	7.4%	21,202	7.1%	24,191	6.9%	28,092	6.8%
TOTAL										
65-74	21,958	11,311	51.5%	4.3%	12,204	4.0%	14,150	3.7%	15,890	3.6%
75+	52,425	20,705	39.5%	10.1%	23,860	10.0%	28,216	9.9%	34,580	9.8%
65+	74,383	32,016	43.0%	6.8%	36,064	6.6%	42,366	6.4%	50,470	6.4%

Table A.12 Scenario 1B: Projected numbers receiving daily or all day informal care from non-cohabiting family, pure population effects

Age cohort	Pop.	Numbers receiving all day or daily care from family not living with	% of age cohort receiving intense non-cohabiting family care	Pop.	Projected numbers receiving all day or daily care from family not living with	% of age cohort receiving intense non-cohabiting family care	Pop.	Projected numbers receiving all day or daily care from family not living with	% of age cohort receiving intense non-cohabiting family care	Pop.	Projected numbers receiving all day or daily care from family not living with	% of age cohort receiving intense non-cohabiting family care
	2006			2011			2016			2021		
MALE												
65-74	127,435	1,480	2.7%	151,942	4,035	2.7%	188,012	4,993	2.7%	217,521	5,776	2.7%
75+	79,660	3,384	6.1%	98,026	5,985	6.1%	122,874	7,503	6.1%	159,786	9,756	6.1%
65+	207,095	4,864	2.3%	249,969	10,020	4.0%	310,886	12,495	4.0%	377,307	15,533	4.1%
FEMALE												
65-74	135,113	2,947	2.2%	156,312	3,409	2.2%	190,767	4,161	2.2%	220,560	4,811	2.2%
75+	125,718	7,906	6.3%	141,365	8,890	6.3%	161,724	10,170	6.3%	194,200	12,213	6.3%
65+	260,831	10,853	4.2%	297,677	12,299	4.1%	352,491	14,331	4.1%	414,760	17,023	4.1%
TOTAL												
65-74	262,548	4,427	1.7%	308,255	7,444	2.4%	378,779	9,154	2.4%	438,081	10,587	2.4%
75+	205,378	11,290	5.5%	239,391	14,875	6.2%	284,597	17,673	6.2%	353,986	21,969	6.2%
65+	467,926	15717	3.4%	547,646	22,320	4.1%	663,377	26,826	4.0%	792,067	32,556	4.1%

Table A.13 Scenario 2B Projected numbers receiving daily or all day informal care from non-cohabiting family, declining disability

	Nos with ADL difficulty	Numbers receiving all day or daily care from family not living with	Intense non-cohabiting family care as percentage numbers with ADL	% of age cohort receiving intense non-cohabiting family care	Projected numbers receiving all day or daily care from family not living with	% of age cohort receiving intense non-cohabiting family care	Projected numbers receiving all day or daily care from family not living with	% of age cohort receiving intense non-cohabiting family care	Projected numbers receiving all day or daily care from family not living with	% of age cohort receiving intense non-cohabiting family care
			2006			2011		2016		2021
MALE										
65-74	9,461	1,480	15.6%	1.2%	1,619	1.1%	1,889	1.0%	2,115	1.0%
75+	16,725	3,384	20.2%	4.2%	4,132	4.2%	5,193	4.2%	6,722	4.2%
65+	26,186	4,864	18.6%	2.3%	5,751	2.3%	7,083	2.3%	8,837	2.3%
FEMALE										
65-74	12,497	2,947	23.6%	2.2%	3,143	2.0%	3,624	1.9%	4,080	1.8%
75+	35,700	7,906	22.1%	6.3%	8,799	6.2%	9,991	6.2%	11,764	6.1%
65+	48,197	10,853	22.5%	4.2%	11,941	4.0%	13,615	3.9%	15,844	3.8%
TOTAL										
65-74	21,958	4,427	20.2%	1.7%	4,762	1.5%	5,513	1.5%	6,195	1.4%
75+	52,425	11,290	21.5%	5.5%	12,930	5.4%	15,184	5.3%	18,486	5.2%
65+	74,383	15,717	21.1%	3.4%	17,692	3.2%	20,698	3.1%	24,681	3.1%

Table A.14 Scenario 1C: Projected numbers receiving daily or all day informal care from friends/neighbours, pure population effects

Age cohort	Pop.	Numbers receiving all day or daily care from friend or neighbour	% of age cohort receiving intense care from friend or neighbour	Pop.	Projected numbers receiving all day or daily care from friend or neighbour	% of age cohort receiving intense care from friend or neighbour	Pop.	Projected numbers receiving all day or daily care from friend or neighbour	% of age cohort receiving intense care from friend or neighbour	Pop.	Projected numbers receiving all day or daily care from friend or neighbour	% of age cohort receiving intense care from friend or neighbour
		2006			2011			2016			2021	
MALE												
65-74	127,435	709	0.9%	151,942	1,421	0.9%	188,012	1,759	0.9%	217,521	2,035	0.9%
75+	79,660	1,192	2.4%	98,026	2,339	2.4%	122,874	2,932	2.4%	159,786	3,813	2.4%
65+	207,095	1,901	0.9%	249,969	3,761	1.5%	310,886	4,691	1.5%	377,307	5,848	1.5%
FEMALE												
65-74	135,113	765	0.6%	156,312	885	0.6%	190,767	1,080	0.6%	220,560	1,249	0.6%
75+	125,718	2,404	1.9%	141,365	2,703	1.9%	161,724	3,093	1.9%	194,200	3,714	1.9%
65+	260,831	3,169	1.2%	297,677	3,588	1.2%	352,491	4,173	1.2%	414,760	4,962	1.2%
TOTAL												
65-74	262,548	1,474	0.6%	308,255	2,306	0.7%	378,779	2,839	0.7%	438,081	3,283	0.7%
75+	205,378	3,596	1.8%	239,391	5,042	2.1%	284,597	6,025	2.1%	353,986	7,527	2.1%
65+	467,926	5,070	1.1%	547,646	7,349	1.3%	663,377	8,863	1.3%	792,067	10,810	1.4%

Table A.15 Scenario 2C Projected numbers receiving daily or all day informal care from friends/neighbours, declining disability

	Nos with ADL difficulty	Numbers receiving all day or daily care from friend or neighbour	Intense care from friend or neighbour as percentage numbers with ADL	% of age cohort receiving intense care from friend or neighbour	Projected numbers receiving all day or daily care from friend or neighbour	% of age cohort receiving intense care from friend or neighbour	Projected numbers receiving all day or daily care from friend or neighbour	% of age cohort receiving intense care from friend or neighbour	Projected numbers receiving all day or daily care from friend or neighbour	% of age cohort receiving intense care from friend or neighbour
		2006			2011		2016		2021	
MALE										
65-74	9,461	709	7.5%	0.6%	776	0.5%	905	0.5%	1,013	0.5%
75+	16,725	1,192	7.1%	1.5%	1,455	1.5%	1,829	1.5%	2,368	1.5%
65+	26,186	1,901	7.3%	0.9%	2,231	0.9%	2,734	0.9%	3,381	0.9%
FEMALE										
65-74	12,497	765	6.1%	0.6%	816	0.5%	941	0.5%	1,059	0.5%
75+	35,700	2,404	6.7%	1.9%	2,675	1.9%	3,038	1.9%	3,577	1.8%
65+	48,197	3,169	6.6%	1.2%	3,491	1.2%	3,979	1.1%	4,636	1.1%
TOTAL										
65-74	21,958	1,474	6.7%	0.6%	1,591	0.5%	1,846	0.5%	2,072	0.5%
75+	52,425	3,596	6.9%	1.8%	4,131	1.7%	4,867	1.7%	5,945	1.7%
65+	74,383	5,070	6.8%	1.1%	5,722	1.0%	6,713	1.0%	8,017	1.0%

Table A.16 Scenario 1D: Projected numbers receiving daily or all day informal care from one or more sources, pure population effects

Age cohort	Pop.	Numbers receiving all day or daily care from one or more sources	% of age cohort receiving intense care	Pop.	Projected numbers receiving all day or daily care from one or more sources	% of age cohort receiving intense care	Pop.	Projected numbers receiving all day or daily care from one or more sources	% of age cohort receiving intense care	Pop.	Projected numbers receiving all day or daily care from one or more sources	% of age cohort receiving intense care
		2006			2011			2016			2021	
MALE												
65-74	127,435	5,911	7.2%	151,942	10,992	7.2%	188,012	13,601	7.2%	217,521	15,736	7.2%
75+	79,660	9,219	19.0%	98,026	18,618	19.0%	122,874	23,338	19.0%	159,786	30,348	19.0%
65+	207,095	15,130	7.3%	249,969	29,610	11.8%	310,886	36,939	11.9%	377,307	46,085	12.2%
FEMALE												
65-74	135,113	7,548	5.6%	156,312	8,732	5.6%	190,767	10,657	5.6%	220,560	10,657	5.6%
75+	125,718	18,340	14.6%	141,365	20,623	14.6%	161,724	23,593	14.6%	194,200	23,593	14.6%
65+	260,831	25,888	9.9%	297,677	29,355	9.9%	352,491	34,250	9.7%	414,760	34,250	8.3%
TOTAL												
65-74	262,548	13,460	5.1%	308,255	19724	6.4%	378,779	24258	6.4%	438,081	24258	6.4%
75+	205,378	27,558	13.4%	239,391	39241	16.4%	284,597	46930	16.5%	353,986	46930	16.5%
65+	467,926	41,018	8.8%	547,646	58965	10.8%	663,377	71189	10.7%	792,067	71189	10.7%

Table A.17 Scenario 2D: Projected numbers receiving daily or all day informal care from friends/neighbours, declining disability

	Nos with ADL difficulty	Numbers receiving all day or daily care from one or more sources	Intense care recipients as percentage numbers with ADL	% of age cohort receiving intense care	Projected numbers receiving all day or daily care from one or more sources	% of age cohort receiving intense care	Projected numbers receiving all day or daily care from one or more sources	% of age cohort receiving intense care	Projected numbers receiving all day or daily care from one or more sources	% of age cohort receiving intense care
			2006			2011		2016		2021
MALE										
65-74	9,461	5,911	62.5%	4.6%	6,467	4.3%	7,546	4.0%	8,448	3.9%
75+	16,725	9,219	55.1%	11.6%	11,256	11.5%	14,148	11.5%	18,313	11.5%
65+	26,186	15,130	57.8%	7.3%	17,723	7.1%	21,694	7.0%	26,761	7.1%
FEMALE										
65-74	12,497	7,548	60.4%	5.6%	8,049	5.1%	9,282	4.9%	10,450	4.7%
75+	35,700	18,340	51.4%	14.6%	20,410	14.4%	23,177	14.3%	27,289	14.1%
65+	48,197	25,888	53.7%	9.9%	28,460	9.6%	32,459	9.2%	37,738	9.1%
TOTAL										
65-74	21,958	13,460	61.3%	5.1%	14,516	4.7%	16,828	4.4%	18,898	4.3%
75+	52,425	27,558	52.6%	13.4%	31,666	13.2%	37,325	13.1%	45,602	12.9%
65+	74,383	41,018	55.1%	8.8%	46,182	8.4%	54,153	8.2%	64,500	8.1%

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i Stage two of the NISALD will provide information on disability among those in communal establishments; however, results of NISALD stage two were not available at the time of this report,

ii Although the forecasts in this chapter have been generated from more disaggregated information than the Wren (2009) forecasts, and have the benefit of an alternative source of data on utilisation in the NDS, the Wren (2009) preferred forecasts fall within the preferred forecast range generated in this analysis. Wren (2009) forecast a 4.4% overall utilisation rate in 2021 and a requirement for an additional 850 residential places p.a. in the years from 2006 to 2021, which increased to 4.5% and 890 places when adjustment was made for unmet need.