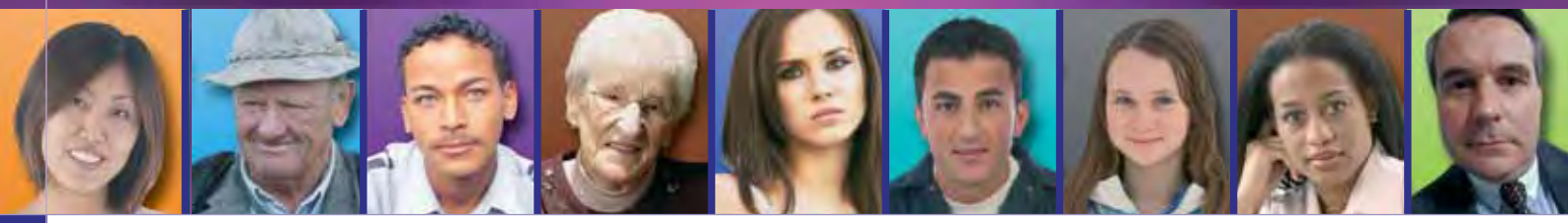
Making Chronic Conditions Count:

Hypertension
Stroke
Coronary Heart Disease
Diabetes



A systematic approach to estimating and forecasting population prevalence on the island of Ireland

Association of Public Health Observatories
The Centre of Excellence for Public Health Northern Ireland
HRB Health Research Board
Centre for Health and Diet Research

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Authors: Kevin P Balanda, Steve Barron, Lorraine Fahy, Aisling McLaughlin

February 2010

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Making Chronic Conditions Count: Hypertension, Stroke, Coronary Heart Disease, Diabetes. A systematic approach to estimating and forecasting population prevalence on the island of Ireland.

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Abbreviations

APHO	Association of Public Health Observatories
CHD	Coronary heart disease (angina or heart attack in the context of this study)
CoE (NI)	Centre of Excellence for Public Health Northern Ireland
CSDH	Commission on the Social Determinants of Health
CSO	Central Statistics Office (Republic of Ireland)
DHSSPS	Department of Health, Social Services and Public Safety (Northern Ireland)
Diabetes UK (NI)	Diabetes UK (Northern Ireland)
DoHC	Department of Health and Children (Republic of Ireland)
FAO	Food and Agriculture Organisation of the United Nations
HRB CHDR	Health Research Board Centre for Health and Diet Research (Republic of Ireland)
HSE	Health Service Executive (Republic of Ireland)
HSfE	Health Survey for England
INIsPHO	Ireland and Northern Ireland's Population Health Observatory, Institute of Public Health in Ireland
IPH	Institute of Public Health in Ireland
(the) Island	The island of Ireland
LGD	Local Government District (Northern Ireland)
LHO	Local Health Office Area (Republic of Ireland)
NISRA	Northern Ireland Statistics and Research Agency
OECD	Organisation for Economic Cooperation and Development
PHA	Public Health Agency (Northern Ireland)
QOF	Quality and Outcomes Framework
SLÁN	Survey of Lifestyle, Attitudes and Nutrition (Republic of Ireland)
WHO	World Health Organization

Foreword

Chronic diseases cause significant morbidity and mortality, and result in poorer quality of life for many people in the Republic of Ireland and Northern Ireland. In both jurisdictions there are also considerable financial costs to health and social care, and to the economy.

Accurate estimates and forecasts of the population prevalence of chronic diseases help us identify need, plan and develop disease prevention and management programmes, and monitor performance.

This important study shows that we can expect a substantial rise in the number of people living with a chronic disease. This is because our population is growing, ageing and lifestyle risk factors such as obesity are becoming more common. The study's importance is all the greater as most chronic diseases and their complications are preventable.

Previously the Institute of Public Health in Ireland systematically developed estimates and forecasts for diabetes at national and local levels. Those figures have been widely used and made a significant contribution to policy, service planning and public health practice.

This new study extends that systematic approach to hypertension, coronary heart disease (angina and heart attack) and stroke as well as updating earlier diabetes figures. It documents the chronic disease epidemic we are facing over the next 15 years and the challenges posed to our population, our health and social care systems, and our economies.

It describes the unequal way in which the burden of chronic disease is distributed in Northern Ireland and the Republic of Ireland and highlights the pressing need for a greater emphasis on prevention, tackling health inequalities and addressing the social determinants of health. This requires action across government and by many sectors. Considerably greater benefits can be achieved by influencing policies of the non health sector than by health policies alone.

This work is a timely response to a key public health issue. In Northern Ireland it will help inform the current review of the public health strategy, Investing for Health, and in the Republic of Ireland it will make a vital contribution to the intersectoral work that is such an important part of improving the prevention and management of chronic diseases. We commend the Institute and its academic partners and look forward to the next phase of this work which will include other chronic diseases and further improvements in methodology.

Dr Tony Holohan
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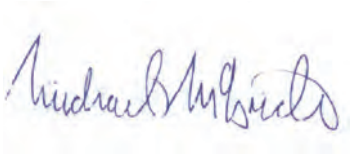
Department of Health and Children
Republic of Ireland



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Executive Summary

This report contains estimates and forecasts of the population prevalence[1] of four chronic conditions: hypertension, coronary heart disease (angina and heart attack), stroke and diabetes (Type 1 and Type 2 combined). It shows how their prevalence varies across the island and what change is expected between 2007, 2015 and 2020.

Chronic conditions are responsible for a significant proportion of early deaths. They reduce quality of life in many of the adults living with them, represent substantial financial costs to patients and the health and social care system, and cause a significant loss of productivity to the economy.

Although the population is living longer, chronic conditions have reduced the quality of the extra years that have been gained. There is evidence in the Republic of Ireland, the United Kingdom and Europe, that over recent decades, while life expectancy has increased, healthy life expectancy has not kept up (www.ehemu.eu).

The burden of conditions is expected to rise because our population will grow, it will age and some risk factors such as obesity will become more common. Unless we address this growing burden we may continue to add more years to our lives without adding more life to those years.

Chronic conditions occur more frequently among the poor and vulnerable. A range of interrelated factors including the social determinants of health such as poverty, unemployment and the environment, smoking, alcohol consumption, diet and physical activity are established risk factors for chronic conditions. These risk factors are distributed unevenly across society.

The Study

Estimates and forecasts of the population prevalence of chronic conditions quantify how many people have these conditions; in this report they are described by sex, age, place of residence and characteristics of the area.

To date reliable sub-national estimates and forecasts of the population prevalence of chronic conditions have not been available on the island. This study deals with recent (2007) and future (2015 and 2020) population prevalence of four conditions: hypertension, angina and heart attack (CHD), stroke and diabetes (Type 1 and Type 2 combined)[2]. The full report contains figures for Local Health Offices (LHOs) in the Republic of Ireland and Local Government Districts (LGDs) in Northern Ireland, broken down by sex, age and local socio-economic circumstances.

1 Population prevalence refers to both diagnosed and undiagnosed cases.
2 Findings are based on models that incorporate the effects of demographic characteristics (sex, age and ethnicity), local socio-economic circumstances and lifestyle factors (obesity and smoking). The diabetes model is based on physical measurements, the hypertension model is based on a combination of self-reported and physical measurements, and the stroke and CHD models are based on self-reported measurements. See Chapter 2 of the full report and its technical supplement for further details.

Key Findings

KEY FINDING 1:

Very large numbers of adults across the island live with hypertension, angina and heart attack (CHD), stroke and diabetes.

The prevalence of each of these conditions:

- Increases dramatically with age.
- Tends to be higher in the northern and western parts of the island, and lower around Dublin.
- Is generally higher amongst males.

These differences reflect variation in demographic characteristics (sex, age and ethnicity), local socio-economic circumstances and lifestyle factors (obesity and smoking) across the island.

Table 1 presents population prevalence rates in 2007. In that year:

- Nearly 1.25 million adults aged 16 years and over (396,000 in Northern Ireland and 852,000 in the Republic of Ireland) have high blood pressure.
- Almost 206,000 adults aged 16 years and over (75,000 in Northern Ireland and 131,000 in the Republic of Ireland) have ever had angina or a heart attack.
- Nearly 92,000 adults aged 16 years and over (33,000 in Northern Ireland and 59,000 in the Republic of Ireland) have ever suffered a stroke.
- Over 210,000 adults aged 20 years and over (67,000 in Northern Ireland and 144,000 in the Republic of Ireland) have diabetes (Type 1 and Type 2 combined).

Table 1: Demographic variation in population prevalence rates in 2007

	Males	Females	Persons	16-44 yrs	45-64 yrs	65-74 yrs	75+ yrs
Hypertension							
Northern Ireland	29.8%	27.6%	28.7%	9.2%	39.6%	65.1%	71.9%
Republic of Ireland	26.7%	23.4%	25.1%	8.7%	38.4%	64.0%	70.9%
Angina and heart attack (CHD)							
Northern Ireland	6.5%	4.5%	5.4%	0.4%	6.1%	16.5%	22.4%
Republic of Ireland	4.7%	3.0%	3.8%	0.3%	5.0%	14.1%	19.1%
Stroke							
Northern Ireland	2.4%	2.4%	2.4%	0.3%	2.0%	6.8%	11.8%
Republic of Ireland	1.8%	1.7%	1.7%	0.3%	1.7%	5.9%	10.3%
Diabetes (Type 1 and Type 2 combined)							
	Males	**Females**	**Persons**	**20-29 yrs**	**30-59 yrs**	**60+ yrs**	
Northern Ireland	4.5%	6.0%	5.3%	0.5%	3.1%	13.4%	
Republic of Ireland	3.9%	5.1%	4.5%	0.6%	3.0%	13.2%	

Except for diabetes, the prevalence estimates for these chronic conditions are more common amongst males[3].

The prevalence of each of these conditions increases dramatically with age. For example, in 2007 the percentage of adults in Northern Ireland who have high blood pressure rose from 9.2% amongst 16-44 year olds, to 39.6% amongst 45-64 year olds, to 65.1% amongst 65-74 year olds, and to 71.9% amongst adults aged 75 years and over. The same pattern is observed in the Republic of Ireland and amongst males and females. This is not surprising given that each of the conditions generally reflects influences whose effects accumulate over time and tend to express themselves later in life.

KEY FINDING 2:

Between 2007 and 2020, the burden of chronic conditions is expected to increase dramatically in both Northern Ireland and the Republic of Ireland. By 2020:

- The number of adults with these chronic conditions will increase by around 40% in the Republic of Ireland and by around 30% in Northern Ireland.
- Relatively more (compared to 2007) of the burden of these conditions will be borne by adults in the older age groups.

Larger increases are expected in the Republic of Ireland because its population is projected to grow more than Northern Ireland's population.

Except for diabetes, these forecasts do not incorporate changes in lifestyle factors such as obesity and smoking.

Table 2 illustrates how the number of people living with each of these chronic conditions is expected to increase dramatically between 2007 and 2020 in both Northern Ireland and the Republic of Ireland.

3 This reflects the findings of the underlying population-based reference studies. Other studies have reported different findings about diabetes prevalence amongst males and females. See full report and its technical supplement for further details.

Table 2: Number of cases and prevalence rates in 2007, 2015 and 2020 in Northern Ireland and the Republic of Ireland

	2007		2015		2020	
	n	%	n	%	n	%
Hypertension						
Northern Ireland	395,529	28.7%	448,011	30.3%	481,867	31.7%
Republic of Ireland	851,658	25.1%	1,050,591	26.8%	1,192,415	28.3%
Angina and heart attack (CHD)						
Northern Ireland	75,158	5.4%	87,848	5.9%	97,255	6.4%
Republic of Ireland	130,703	3.8%	166,985	4.3%	195,243	4.6%
Stroke						
Northern Ireland	32,941	2.4%	38,405	2.6%	42,457	2.8%
Republic of Ireland	58,778	1.7%	74,493	1.9%	86,845	2.1%
Diabetes (Type 1 and Type 2 combined)						
Northern Ireland	67,262	5.3%	82,970	6.0%	94,219	6.6%
Republic of Ireland	143,618	4.5%	193,240	5.2%	232,644	5.9%

- In 2007 nearly 852,000 adults in the Republic of Ireland (25.1%) have high blood pressure. By 2020 this is expected to rise to over 1,192,000 (28.3%). This represents a 40% increase in the numbers of people affected - an additional 341,000 adults - in less than 15 years.
- In 2007 nearly 396,000 adults in Northern Ireland (28.7%) have high blood pressure. By 2020 this is expected to rise to nearly 482,000 (31.7%). This represents a 22% increase – an additional 86,000 adults – in less than 15 years.
- In 2007 nearly 131,000 adults in the Republic of Ireland (3.8%) have ever had a CHD. By 2020 this is expected to rise to over 195,000 (4.6%). This represents a 50% increase – an additional 65,000 adults – in less than 15 years.
- In 2007 over 75,000 adults in Northern Ireland (5.4%) have ever had a CHD. By 2020 this is expected to rise to over 97,000 (6.4%). This represents a 30% increase – an additional 22,000 adults – in less than 15 years.
- In 2007 almost 59,000 adults in the Republic of Ireland (1.7%) have ever had a stroke. By 2020 this is expected to rise to almost 87,000 (2.1%). This represents a 48% increase – an additional 28,000 adults – in less than 15 years.
- In 2007 almost 33,000 adults in Northern Ireland (2.4%) have ever had a stroke. By 2020 this is expected to rise to over 42,000 (2.8%). This represents a 29% increase – an additional 10,000 adults – in less than 15 years.
- In 2007 nearly 144,000 adults in the Republic of Ireland (4.5%) have diabetes (Type 1 and Type 2 combined). By 2020 this is expected to rise to over 233,000 (5.9%). This represents a 62% increase – an additional 89,000 adults – in less than 15 years.
- In 2007 over 67,000 adults in Northern Ireland (5.3%) have diabetes (Type 1 and Type 2 combined). By 2020 this is expected to rise to over 94,000 (6.6%). This represents a 40% increase – an additional 27,000 adults – in less than 15 years.

For each chronic condition, higher prevalence rates amongst older adults along with an ageing population mean that the percentage of all adults with these conditions who belong to the older age groups will increase. For example, in the republic of Ireland the percentage of all adults who have ever had a stroke who are aged 65 years and over will rise from 62.8% in 2007 to 67.1% in 2020. In Northern Ireland the percentage will rise from 67.2% to 71.2%.

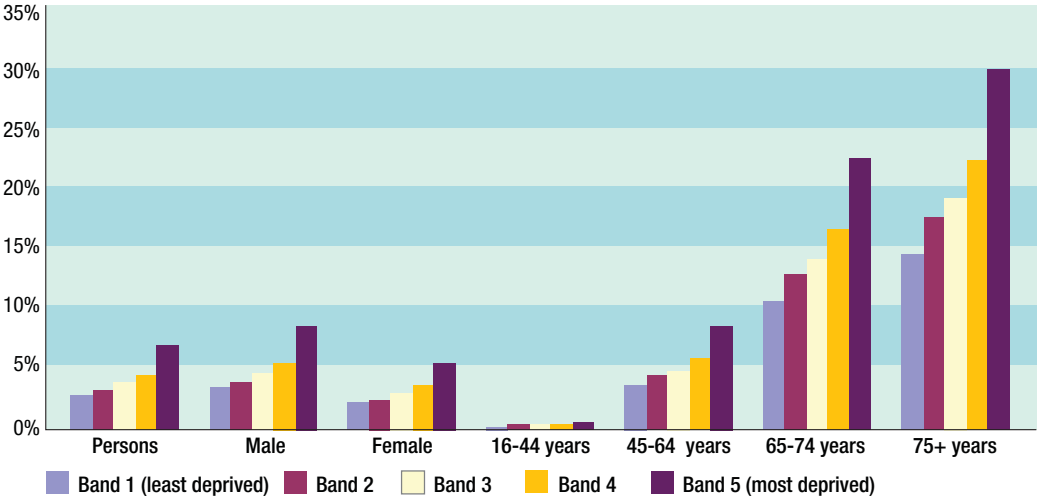
KEY FINDING 3:

Local socio-economic circumstances affect the prevalence of chronic conditions in an area. Adults living in more deprived areas are more likely to be living with a chronic condition.

Generally speaking, this is true across all chronic conditions, amongst males and females, in each age group, and in both the Republic of Ireland and Northern Ireland.

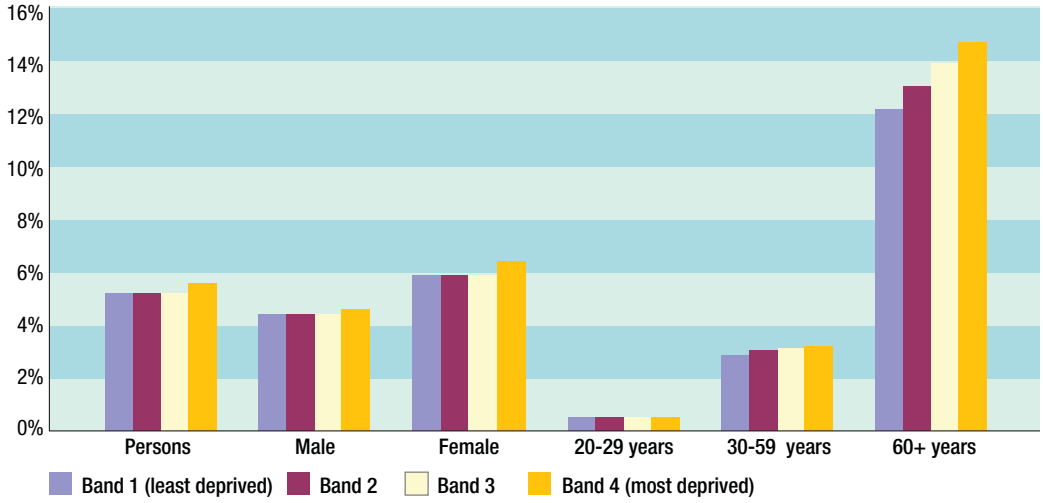
Figures 1 and 2 below illustrate how the prevalence of angina and heart attack (CHD), and diabetes, in an area increases as the local socio-economic circumstances (as measured by an area's local deprivation score) worsen.

Figure 1: Population prevalence rates of angina and heart attack (CHD) amongst adults; across the deprivation bands[4] in the Republic of Ireland within each sex and age group (2007).



4 LGDs in Northern Ireland and LHOs in the Republic of Ireland were grouped into bands according to their deprivation scores. See the main report's technical supplement for definition of deprivation bands.

Figure 2: Population prevalence rates of diabetes amongst adults; across the deprivation bands[4] in Northern Ireland within each sex and age group (2007).



The effect of local socio-economic circumstances is similar amongst males and females, and across all age groups. This is true for each chronic condition.

The contrast between the most deprived areas and the least deprived areas is sometimes quite large. For example, CHD prevalence in the most deprived areas in the Republic of Ireland is almost 2.5 times that in the least deprived areas. Although direct North-South comparisons are not possible because of methodological differences (see the main report's technical supplement), in Northern Ireland CHD prevalence in the most deprived areas is about 1.5 times that in the least deprived areas.

4 LGDs in Northern Ireland and LHOs in the Republic of Ireland were grouped into bands according to their deprivation scores. See the main report's technical supplement for definition of deprivation bands.

Prevention, inequalities and the social determinants of health

Like many developed countries, life expectancy in the Republic of Ireland and Northern Ireland is increasing.

Between 1985 and 2000 the Republic of Ireland experienced a 47% reduction in deaths from heart disease (CHD) amongst those aged 25–84 years. A recent application of the IMPACT model to the Republic of Ireland found that 44% of this reduction could be attributed to more effective treatment. Improvements in population-level risk factors such as smoking prevalence, mean cholesterol concentrations and blood pressure levels had a greater effect (Bennett et al, 2006). While modern cardiology treatments had gained many thousands of life-years, twice as many life-years were generated by relatively modest reductions in major population-level risk factors (Kabir et al, 2007).

WHO (World Health Organization) estimates that 80% of heart disease, stroke and Type 2 diabetes, and 40% of cancer could be avoided if major risk factors were eliminated.

The WHO Strategy for Chronic Disease recommends that countries adopt an integrated strategy that incorporates population-level disease prevention programmes as well as targeted disease management programmes that focus on individuals at high risk (WHO, 2008).

Despite this, the Organisation for Economic Cooperation and Development (OECD) estimates that only 3% of total healthcare expenditure goes towards population-based disease prevention programmes. More focus on prevention is clearly needed.

A range of interrelated factors including the social determinants of health such as poverty, education, housing and the physical environment as well as smoking, alcohol consumption, diet and physical activity are established risk factors for chronic conditions.

These risk factors are distributed unevenly across society and efforts to reduce the burden of chronic conditions must address the causes of these uneven distributions.

The variation across a range of factors - age, sex, geography and local socio-economic conditions - observed in this study in the prevalence of chronic conditions means it is essential that chronic disease prevention programmes take these factors into account[5]. The recent publication *Tackling Health Inequalities: an All-Ireland Approach to Social Determinants* reviewed the key social determinants in the Republic of Ireland and Northern Ireland and highlighted possible policy responses to reduce health inequalities (Farrell et al, 2008).

5 Similar variations in quality of care, care outcomes and mortality suggest that the same is true for chronic disease management programmes.

Recommendations

A review of key government policies across the island would identify opportunities to incorporate the three Principles of Action identified by the WHO Commission on the Social Determinants of Health. These are:

- Improving daily living conditions.
- Tackling the inequitable distribution of power, money and resources.
- Measuring and understanding the problem and assessing the impact of action.

The following recommendations emphasise the importance of a stronger focus on prevention, tackling inequalities using a social determinants of health and life course perspective, and the crucial importance of building appropriate information systems to support these efforts.

CHRONIC DISEASE PREVENTION

A stronger focus on prevention is urgently needed. Key government policies and supporting policies and strategies need to promote healthier lifestyles and strengthen the early assessment and diagnosis of chronic conditions.

Chronic disease prevention programmes need to take a life course perspective with a strong focus on early childhood, and develop interventions based on the needs of vulnerable and disadvantaged groups.

CHRONIC DISEASE MANAGEMENT

Equity should be incorporated more strongly into the implementation of key government policies and should be extended beyond access and quality of care to reflect the definition used in the WHO Commission on the Social Determinants of Health.

Chronic disease management programmes must be based on need and not ability to pay. An understanding of current and future prevalence and how it varies with factors such as age, sex, geography and local socio-economic circumstances is an essential prerequisite for good planning and monitoring of chronic disease management.

Appropriate models of integrated care that involve a greater role for primary care and community care sectors should be developed.

RESEARCH AND DATA GAPS

Further research into the impact of chronic diseases on the population, the health and social care system, and the economy is required. This research should consider the magnitude of the burden of these conditions (including financial costs); how it is distributed across the population; how that burden might change in the future; and the implications for the health and social care workforce and its training requirements.

Alongside patient registers, a system of standardised population prevalence estimates and forecasts (available at national and sub-national level) should be developed and maintained.

Prevalence estimates and forecasts should be incorporated into routine local data collections such as the core data set for the Republic of Ireland's Primary Care Teams and the community profiles that will support local government in Northern Ireland.

A comprehensive and standardised system for monitoring risk factors (overweight/obesity, nutrition, physical activity and smoking) at the national and sub-national level should be established and maintained.

Relevant data on social determinants of health should be incorporated into clinical, service and public health information systems - including chronic disease patient registers and local data collections - and used to help plan, deliver and evaluate chronic disease prevention and management programmes.

Performance indicators which can be used to measure differences in disease prevention and management between population subgroups should be developed and used to plan and monitor efforts to reduce health inequalities.

1 Introduction

CHAPTER 1. INTRODUCTION

Burden of Chronic Conditions

This report contains estimates and forecasts of the prevalence of four chronic conditions: hypertension, coronary heart disease (angina and heart attack), stroke and diabetes. It shows how their prevalence varies across the island of Ireland and what changes are expected between 2007, 2015 and 2020.

Chronic conditions are responsible for a significant proportion of early deaths. WHO estimates that chronic diseases, representing 60% of all deaths, are by far the leading cause of mortality in the world (WHO/FAO, 2003). In more developed parts of the world this percentage is even higher. For example, conditions such as cancer, heart disease, stroke, chronic respiratory diseases and diabetes account for 86% of all deaths in the WHO region for Europe (WHO, 2005)

The burden of these conditions on the island of Ireland is expected to rise because the population will grow, it will age and some risk factors such as obesity will become more common.

Chronic conditions reduce quality of life in many of the adults living with them, represent substantial financial costs to patients themselves and the health and social care system, and cause a significant loss of productivity to the economy.

Poorer quality of life

Although the population is living longer, chronic conditions have reduced the quality of the extra years that have been gained. There is evidence in the Republic of Ireland, the United Kingdom and Europe that life expectancy has increased over recent decades while healthy life expectancy has not kept up (www.ehemu.eu). For example; male life expectancy at age 65 years increased in the Republic of Ireland from 13.5 years in 1995 to 16.9 years in 2006. In the same period male healthy life expectancy at age 65 years was unchanged from 9.2 years in 1995 to 9.1 years in 2006. The percentage of the years of life after age 65 that is spent in good health decreased from 68% in 1995 to 54% in 2006. Unless we address the growing burden of chronic conditions we may continue to add more years to our lives without adding more life to those years.

Health and social care costs

Patients with chronic conditions are heavy users of health and social services. For example, it is estimated that three quarters of the healthcare expenditure in the Republic of Ireland is allocated to the management of chronic diseases. Approximately 80% of GP consultations and 60% of hospital bed days are related to chronic diseases and their complications. Chronic diseases account for two thirds of emergency medical admissions to hospitals. Healthcare costs and the risk of avoidable inpatient admission increases dramatically with the number of co-morbidities (DoHC, 2008).

Costs to business

The rising cost of lost productivity associated with chronic conditions is a growing burden and threatens the sustainability of many businesses, according to a recent report (World Economic

Forum, 2008). Losses in productivity are caused by disability, unplanned absences, reduced workplace effectiveness, increased accidents and negative impacts on the quality of work and customer service. Depression, fatigue and sleeping problems - risks that are often associated with chronic conditions - have the largest impact on productivity. Similar to health and social care costs, co-morbidities multiply the losses in productivity. The report found that productivity losses associated with chronic conditions are as much as 400% more than the costs of treating chronic disease.

The uneven distribution of burden

A range of interrelated factors including the social determinants of health, smoking, alcohol consumption, diet and physical activity are established risk factors for chronic conditions. The burden of chronic conditions and these risk factors are distributed unevenly across society. They occur more frequently among the poor and vulnerable. Efforts to reduce the burden of chronic conditions must address the causes of these uneven distributions.

Prevention

WHO estimates that 80% of heart disease, stroke and Type 2 diabetes, and 40% of cancer could be avoided if major risk factors were eliminated.

Much of the recent improvement in chronic disease mortality has been attributed to improvements in the level of major population-level risk factors. For example, between 1985 and 2000 the Republic of Ireland experienced a 47% reduction in deaths from heart disease amongst those aged 25–84 years. A recent application of the IMPACT model to the Republic of Ireland found that 44% of this reduction could be attributed to more effective treatment. Improvement in population-level risk factors such as smoking prevalence, mean cholesterol concentrations and blood pressure levels had a greater effect (Bennett et al, 2006). An associated study found that while modern cardiology treatments had gained many thousands of life-years, twice as many life-years were gained by relatively modest reductions in major population-level risk factors (Kabir et al, 2007). This occurred despite estimates that only 3% of total healthcare expenditure goes towards population-based prevention and public health programmes (OECD). Kabir et al conclude that 'effective policies, such as the promotion of healthy diets, and weight reduction, together with the recent nationwide workplace smoking ban, will be essential to maintain and further enhance health gain' (Kabir et al, 2007).

Social Determinants of Health

How can further improvements in the level of population-level risk factors be achieved?

The prevalence of most of the major population-level risk factors for chronic conditions is much higher in particularly vulnerable populations. The variation in the prevalence of chronic conditions across a range of factors - age, sex, geography and local socio-economic circumstances - means it is essential that chronic disease prevention programmes take these factors into account[6].

6 Similar variations in quality of care, care outcomes and mortality suggest that the same is true for chronic disease management programmes.

Social issues also play a key role and influence, to varying degrees, the prevalence of these risks across the whole population. The WHO's Commission on the Social Determinants of Health emphasises that the social determinants of health - such as poverty, education, housing and the physical environment - must also be taken into account if we hope to promote healthier lifestyles and reduce health inequalities. The effects of these determinants accumulate over time and often persist in later generations. The Commission identified three Principles of Action that should underpin efforts to promote health and equity in health. They are:

- To improve daily living conditions
- To tackle the inequitable distribution of power, money and resources
- To measure and understand the problem, and assess the impact of action (CSDH, 2008).

The recent publication *Tackling Health Inequalities: An All-Ireland Approach to Social Determinants* reviewed the key social determinants in the Republic of Ireland and Northern Ireland and highlighted possible policy responses that could reduce health inequalities (Farrell et al, 2008).

Key Government Frameworks for Chronic Disease

This section focuses on the Republic of Ireland's *Policy Framework for the Management of Chronic Diseases* (DoHC, 2008) and Northern Ireland's *Service Framework for Cardiovascular Health and Wellbeing* (DHSSPS, 2009). In both jurisdictions, the implementation of these policies is supported by a range of further policy and strategy documents addressing specific issues[7].

High level of government support

In both jurisdictions there is a high level of government support for efforts to prevent and manage the burden of chronic conditions.

In the Republic of Ireland, the Department of Health and Children (DoHC) published *Building Healthier Hearts: Introduction to the Report of the Cardiovascular Health Strategy Group* in 1999 (DoHC, 1999). In 2008 the DoHC launched *Tackling Chronic Disease: Policy Framework for the Management of Chronic Disease* (DoHC, 2008). Amongst its key challenges for action, the Health Service Executive's *Corporate Plan 2008-2011* lists the prevention and management of chronic diseases (HSE, 2008)

In June 2009, Northern Ireland's Department of Health, Social Services and Public Safety (DHSSPS) published *Service Framework for Cardiovascular Health and Wellbeing* (DHSSPS, 2009). This framework considers hypertension, coronary heart disease, stroke and diabetes. Overarching Standards and Performance Indicators are defined for each condition as well as Health Improvement / Prevention.

7 In the Republic of Ireland these include existing health and primary care strategies and a new cardiovascular strategy including stroke (under consideration). In Northern Ireland, they include the forthcoming Obesity Prevention Framework, the Investing for Health strategy (under review) and a service framework for Older People's Health and Wellbeing (planned).

Broadly similar approaches

There also are strong similarities in the approaches to the prevention and management of chronic conditions in the two jurisdictions.

Reflecting the emerging evidence from other countries and developments in best practice that are advocated by the World Health Organization (WHO, 2008), the approach in both jurisdictions focuses on:

- Population directed disease prevention and health promotion
- Patient-centred care and self care
- Greater patient and public participation in care
- Muliti-disciplinary care teams and intersectoral working
- Need to address inequalities in outcomes.

Both jurisdictions are exploring models of care delivery such as models of shared care that are integrated across organisational boundaries and include a greater role for the primary care and community care sectors. For example, the Republic of Ireland is rolling out multi-disciplinary Primary Care Teams across the country. In Northern Ireland there have been significant reforms in planning, commissioning and service delivery arrangements including establishment of a Public Health Agency (PHA) and a stronger role for local government.

The whole service spectrum

WHO's *Strategy for Chronic Disease* recommends that countries adopt an integrated strategy that incorporates population-level disease prevention programmes as well as targeted disease management programmes that focus on individuals at high risk (WHO, 2008).

Key frameworks on the island reflect this recommendation. The Republic of Ireland's *Tackling Chronic Disease: Policy Framework for the Management of Chronic Disease* is explicitly framed around 'Disease Prevention Programmes' and 'Disease Management Programmes'. Northern Ireland's *Service Framework for Cardiovascular Health and Wellbeing* sees the whole service spectrum as incorporating: Prevention / Promotion / Protection / Lifestyle; Assessment and Diagnosis; Treatment and Care; Ongoing care / Chronic Disease Management; and End-of-life Care / Palliative Care.

The frameworks focus more on the treatment and management end of the spectrum while issues relating to chronic disease prevention tend to be addressed in associated documents such as the Northern Ireland strategy *Investing for Health*. Issues relating to chronic disease prevention tend to be addressed in associated documents such as (public) health strategies.

Tackling health inequalities

Key documents in the Republic of Ireland and Northern Ireland acknowledge that the burden of chronic diseases is unequally distributed across the population and recognise the need to tackle health inequalities. One of the six 'dimensions of quality' in Northern Ireland's *Service Framework for Cardiovascular Health and Wellbeing* is equity. Equity is also one of the four principles underpinning the Republic of Ireland's health strategy *Quality and Fairness: A Health System for You* (DoHC, 2001).

The key framework documents on the island tend to interpret equity in terms of access to - and quality of - care. The background to Policy Requirement 9 of the Republic of Ireland's *Tackling Chronic Disease: Policy Framework for the Management of Chronic Disease* states that 'access to differing levels of care should be equitable'. Northern Ireland's *Service Framework for Cardiovascular Health and Wellbeing* takes equity to mean 'health and social care which does not vary in quality because of personal characteristics such as age, gender, ethnicity, race, geographical location or socio-economic status-based and are capable of being measured'. In Northern *Ireland's Service Framework for Cardiovascular Health and Wellbeing* the Performance Indicators of Equity measure overall population levels rather than differences between population subgroups.

However, Northern Ireland's public health strategy *Investing for Health* (DHSSPS, 2002) sets regional targets of halving the gap in life expectancy between the Northern Ireland life expectancy and the life expectancy of people living in the fifth most deprived electoral wards.

A focus on behaviour change

Key government policy documents in the Republic of Ireland and Northern Ireland emphasise the need to promote healthier lifestyles and address population-level risk factors. For example, the Overarching Standards for Health Improvement / Prevention in Northern Ireland's *Service Framework for Cardiovascular Health and Wellbeing* are defined for smoking and smoking cessation, physical inactivity, healthy eating support and advice, and hazardous/harmful alcohol consumption. While key government policies have a strong focus on behaviour change, they have less emphasis on the socio-economic factors and other social determinants of health – the 'causes of the causes' – that underpin them.

Why Population Prevalence?

Estimates and forecasts of the population prevalence of chronic conditions quantify how many people live with these conditions and describe them in terms of sex, age and characteristics of their place of residence.

In turn, these tell us something about undiagnosed cases (when the estimates and forecasts are coupled to patient registers), and help us plan and design disease prevention and management efforts. They are needed at sub-national level to support planning and delivery of services to meet local needs.

Current Study

Until now, reliable sub-national estimates and forecasts have not been available on the island of Ireland.

The Association of Public Health Observatories (APHO) (www.apho.org.uk) and its partner[8] were commissioned by the English Department of Health to develop models to estimate and forecast the population prevalence of a number of chronic conditions. These models incorporate the effects of demographic characteristics (sex, age and ethnicity), local socio-economic circumstances and lifestyle issues (obesity and smoking). Diabetes and hypertension models are, to some degree, based on physical measurements. The other models are based on self-reported health status only[9].

In 2006 and 2007, IPH adapted one of these models and published population prevalence estimates and forecasts for diabetes on the island of Ireland (IPH 2006, IPH 2007).

This study extends that work to include hypertension, angina and heart attack (CHD), stroke as well as updates of previous diabetes estimates and forecasts. It was undertaken by Ireland and Northern Ireland's Population Health Observatory (INIsPHO), in the Institute of Public Health in Ireland (IPH), and our academic partners: the HRB Centre for Health and Diet Research (HRB CHDR) in the Republic of Ireland and the Centre of Excellence for Public Health (CoE (NI) in Northern Ireland.

The report contains estimates for 2007 and forecasts for 2015 and 2020 of the population prevalence for hypertension, angina or heart attack, stroke and diabetes (Type 1 and Type 2 combined) amongst adults. These are broken down by age, sex and area[10]. An 'adult' is someone aged 16 years and over, except for diabetes where an 'adult' is someone aged 20 years and over. Figures are presented for each LHO in the Republic of Ireland and each LGD in Northern Ireland.

8 The diabetes model was developed in collaboration with Brent PCT and University of Sheffield, prior to the models for the other conditions.
9 See this report's technical supplement for more details.
10 Ethnicity is incorporated into the modelling but is not reported here.

2 Estimating and Forecasting Prevalence

CHAPTER 2. ESTIMATING AND FORECASTING PREVALENCE

Introduction

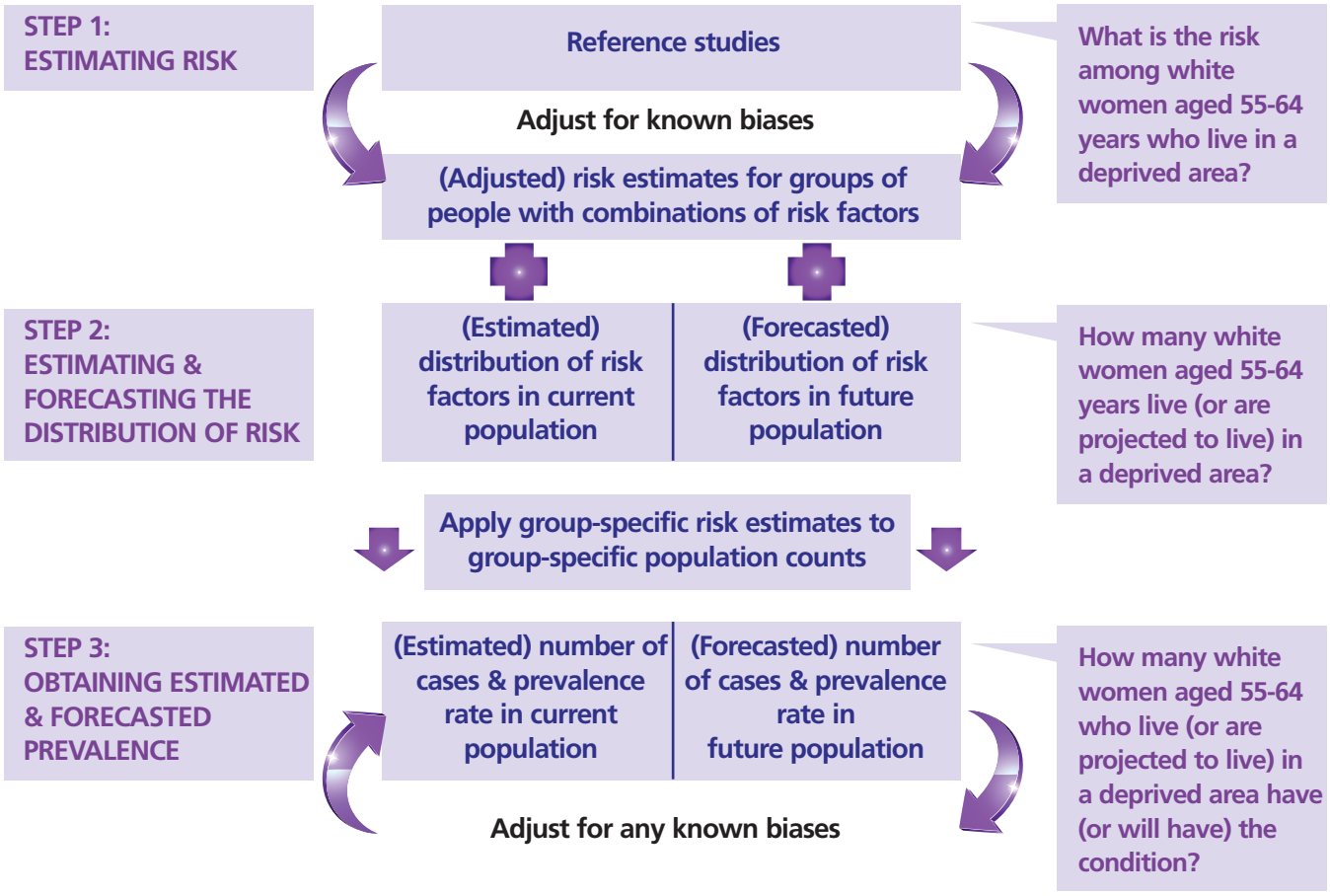
Initially, APHO, Brent PCT and University of Sheffield developed a model to estimate and forecast the population prevalence of diabetes. Subsequently, APHO was commissioned by the English Department of Health to develop models to estimate and forecast the population prevalence of a number of other chronic conditions.

INIsPHO has adapted these models to estimate the prevalence of hypertension, angina and heart attack (CHD), stroke and diabetes on the island of Ireland. This chapter summarises how the APHO models were applied; full details of methods can be found in this report's technical supplement which can be downloaded from www.apho.org.uk.

How the Models Work

Each model involves three simple steps that are described below.

Figure 2.1: How the models work



Step 1: Estimating risk

Reference studies were used to reliably estimate the risk that a person with a particular combination of risk factors will have the condition. For example, what is the risk among white women aged 55-64 years living in a deprived area? In the case of diabetes, some additional adjustment for known biases in the reference studies was also made.

Step 2: Estimating and forecasting the distribution of risk

The next step was to calculate the number of people with these particular combinations of risk factors in the current and future population across the island. For example, how many white women aged 55-64 years live (or are projected to live) in a deprived area in 2007, 2015 and 2020?

Step 3: Obtaining estimated and forecasted prevalence

Group-specific risk estimates were then applied to corresponding group-specific population counts to estimate and forecast the number of people with the condition and the population prevalence rate of the condition. For example, how many white women aged 55-64 years living in a deprived area have (or will have) the condition? In the case of diabetes, some additional adjustment for known biases was also made.

Step 1: Estimating Risk

Table 2.1 describes the definition, the reference studies and the risk factors used in the models for each condition.

Table 2.1: Definition, reference studies and risk factors for each condition

Condition	Definition	Reference studies	Risk factors
Hypertension	Measured systolic blood pressure (SBP) ≥ 140mmHg or measured diastolic blood pressure (DBP) ≥ 90mmHg or taking medicine prescribed for high blood pressure*.	Health Survey for England (2003 and 2004 combined).	Age, Sex, Ethnicity, Area deprivation.
Angina or heart attack (CHD)	Answered YES to the question 'Ever told by a doctor that you have angina or have had a heart attack?'	Health Survey for England (2003 and 2004 combined).	Age, Sex, Ethnicity, Area deprivation, Smoking.
Stroke	Answered YES to the question 'Ever told by a doctor that you have had a stroke?'	Health Survey for England (2003 and 2004 combined).	Age, Sex, Area deprivation, Smoking.
Diabetes (Type 1 and Type 2 combined)	According to WHO diagnostic criteria (1985) based on Glucose Tolerance Test.	Coventry Diabetes Study (Simmons, Williams and Powell, 1991). London-Brent Study (Chaturvedi, McKeigue and Marmot, 1993). Welsh Study (Harvey, Craney and Kelly, 2002).	Age, Sex, Ethnicity, Area deprivation, Obesity.

*Being hypertensive includes controlled, uncontrolled and untreated hypertension

Hypertension, coronary heart disease and stroke

Reference studies for hypertension, CHD and stroke consisted of analyses of the combined data from the Health Survey for England (HSfE) 2003 and 2004. Two models were developed for each condition:

- A 'complete' model that included all the HSfE risk factors which were included in the final variable-selection logistic regression model
- A 'local' model that only included the risk factors from the 'complete' model for which population data were available at the relevant local geographical levels.

While each 'complete' model performed slightly better than the corresponding 'local' model, all three 'local' models performed well in predicting disease status.

APHO used the 'local' model to estimate and forecast population prevalence in Local Authorities and Primary Care Trusts in England. INIsPHO also used the 'local' model to estimate and forecast population prevalence in LHOs in the Republic of Ireland and LGDs in Northern Ireland.

Diabetes

The model for diabetes was based on three reference studies: the Coventry Diabetes Study (Simmons, Williams and Powell, 1991), the London-Brent Study (Chaturvedi, McKeigue and Marmot, 1993) and the Welsh Study (Harvey, Craney and Kelly, 2002).

Step 2: Estimating and Forecasting the Distribution of Risk

The distribution of risk factors in LHOs in the Republic of Ireland and LGDs in Northern Ireland was estimated for the years 2007, 2015 and 2020. If risk factor data were not available at LHO or LGD level then the distribution of risk factor at a larger geographical area was applied to all LHOs or LGDs within that area.

Area-level population estimates and projections for 2007, 2015 and 2020, broken down by age and sex were provided by the Central Statistics Office (CSO) and the Northern Ireland Statistics and Research Agency (NISRA) (personal communication). It was assumed that the ethnic profile, from Census 2001 in Northern Ireland and Census 2006 in the Republic of Ireland applied in 2007, 2015 and 2020.

The *New Measures of Deprivation for the Republic of Ireland* (Haase and Pratschke, 2008) were used for area-level deprivation scores in the Republic of Ireland. The *Northern Ireland Multiple Deprivation Measure 2005 (NISRA, 2005)* was used for area-level deprivation scores in Northern Ireland. It was assumed that an area's deprivation level has not changed (and will not change) since these deprivation scores were calculated.

Smoking data were obtained from Survey of Lifestyle, Attitudes and Nutrition (SLÁN) 2007 (Morgan et al, 2008) in the Republic of Ireland and Continuous Household Survey 2007/2008 (NISRA, 2008) in Northern Ireland. It was assumed that an area's smoking profile has not changed (and will not change) since these data were collected. Current and future obesity prevalence was modelled using data from HSfE 1991-2006 (Department of Health, 2008)

Step 3: Obtaining Estimated and Forecasted Prevalence

Prevalence estimates for 2007 and prevalence forecasts for 2015 and 2020 were produced for each LHO in the Republic of Ireland and each LGD in Northern Ireland. Figures were broken down by age, sex, ethnicity (where applicable) and local area deprivation bands.

3 Hypertension

CHAPTER 3. HYPERTENSION

This chapter relates to adults (aged 16 years and over) who have high blood pressure. Measured blood pressure on a sample (of approximately 55%) of survey respondents and self-reported use of hypertension medication were used to determine blood pressure status[11].

Detailed estimates and forecasts of hypertension prevalence, broken down by sex and age within each area, are given at the end of the chapter.

KEY POINTS: HYPERTENSION

In 2007 nearly 852,000 adults in the Republic of Ireland (25.1%) have high blood pressure. By 2020 this is expected to rise to over 1,192,000 (28.3%). This represents a 40% increase – an additional 341,000 adults – in less than 15 years.

In 2007 nearly 396,000 adults in Northern Ireland (28.7%) have high blood pressure. By 2020 this is expected to rise to nearly 482,000 (31.7%). This represents a 22% increase – an additional 86,000 adults – in less than 15 years.

Hypertension is more common amongst males than females.

Hypertension prevalence rates increase with age. Nearly three out of four (71%) adults aged 75 years and over have high blood pressure. In 2020 relatively more of the adults with high blood pressure will belong to the older age groups.

While high hypertension prevalence rates are observed in many parts of the island, prevalence rates are noticeably lowest around Dublin.

Local socio-economic circumstances affect hypertension prevalence. Across all age groups, hypertension tends to be more common in more deprived areas.

Hypertension prevalence is slightly higher in Northern Ireland than in the Republic of Ireland. North-South differences in the current and future hypertension prevalence are chiefly due to differences in current and (projected) future demographic and socio-economic profiles.

11 Adults are defined to be 'hypertensive' if their hypertension is 'controlled' (SBP <140mmHg and DBP <90mmHg and taking medicine prescribed for high blood pressure), 'uncontrolled' (SBP ≥140mmHg and/or DBP ≥90mmHg and taking medicine prescribed for high blood pressure) or 'untreated' (SBP ≥140mmHg and/or DBP ≥90mmHg and not taking medicine prescribed for high blood pressure). See this report's technical supplement for more details.

National Estimates in 2007

In 2007, a quarter (25.1%) of adults in the Republic of Ireland (851,658 people) and 28.7% of adults in Northern Ireland (395,529 people) have high blood pressure.

The estimated hypertension prevalence rate (25.1%) in the Republic of Ireland is lower than estimates from other survey studies. Direct comparisons with these studies, however, are confounded by important differences in methodology.

- The SLÁN 2007 survey (Morgan et al, 2008) uses the same definition of high blood pressure in its physical examination sub-study of adults aged 45 years and over. It reports that that 60% of adults aged 45 years and over have high blood pressure; higher than the estimated 51.8% prevalence rate in our study.
- In the CSO's Quarterly National Household Survey 2007 (CSO, 2008) 10% of adults aged 18 years and over have ever been told by a doctor that they had high blood pressure. This is not comparable to our national prevalence estimate because it includes people who have had high blood pressure at any time in the past, it is not based on physical measurement and it excludes people with undiagnosed high blood pressure[12].

The estimated hypertension prevalence rate (28.7%) in Northern Ireland is broadly similar to estimates from other studies:

- It is higher (28.7% compared to 11.7%) than the Quality and Outcomes Framework (QOF) estimate that is based on primary care data (DHSSPS, 2007). However, this is not unexpected because the QOF covers all ages while this report covers adults aged 16 years and over.
- The Health and Social Wellbeing Survey 2005-2006 reports that 25% of adults aged 16 years and over have ever been told by a doctor or nurse that they have high blood pressure (DHSSPS, 2007). This estimate is similar to our national prevalence estimate although it is based on somewhat different methodology - the estimate includes people who have had high blood pressure at any time in the past, it is not based on physical measurement and it excludes people with undiagnosed high blood pressure.

Again, direct comparisons are confounded by important differences in methodology.

Hypertension prevalence in England in 2007 is estimated to be 30.0% (HSfE, 2007). The percentages of adults with high blood pressure in the three countries (the Republic of Ireland, Northern Ireland and England) are slightly different. This is chiefly due to differences in their demographic and socio-economic profiles. In particular, both Northern Ireland and England have an older population than the Republic of Ireland.

12 In the SLÁN 2007 survey, approximately 60% of respondents with measured high blood pressure had not been diagnosed (Morgan et al, 2008).

Demographic Variation in 2007

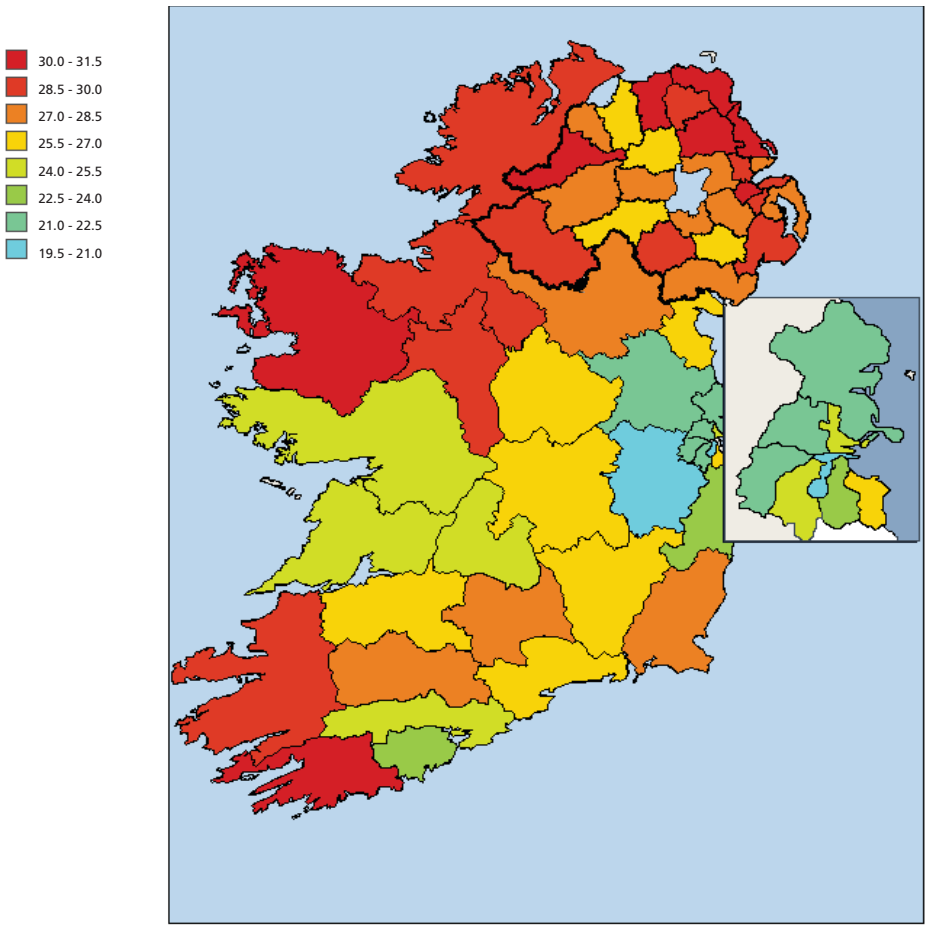
Slightly more males than females have high blood pressure. This is true in both the Republic of Ireland (male 26.7%, female 23.4%) and Northern Ireland (male 29.8%, female 27.6%).

Hypertension is more common in older age groups. Just less than three out of four adults aged 75 years and over in Northern Ireland (71.9%) and the Republic of Ireland (70.9%) have high blood pressure.

Ethnicity does not contribute much to North-South differences because neither jurisdiction has a large 'non-white' ethnic population.

Geographic Variation in 2007

Figure 3.1: Percentage of adults who have high blood pressure; across Local Health Offices (LHOs) in the Republic of Ireland and Local Government Districts (LGDs) in Northern Ireland (2007).



From INIsPHO eData http://www.inispho.org/eData

In addition to the higher hypertension prevalence rate in Northern Ireland, areas with high hypertension prevalence rates occur across the island. Quite noticeably, hypertension prevalence is lowest in parts of Dublin and its surrounds.

Socio-economic Variation in 2007

Local socio-economic circumstances in an area affect hypertension prevalence although, like diabetes, the effect does not seem to be as strong as it is for CHD and stroke.

Figure 3.2: Percentage of adults who have high blood pressure; across deprivation bands[13] in the Republic of Ireland within each sex and each age group (2007).

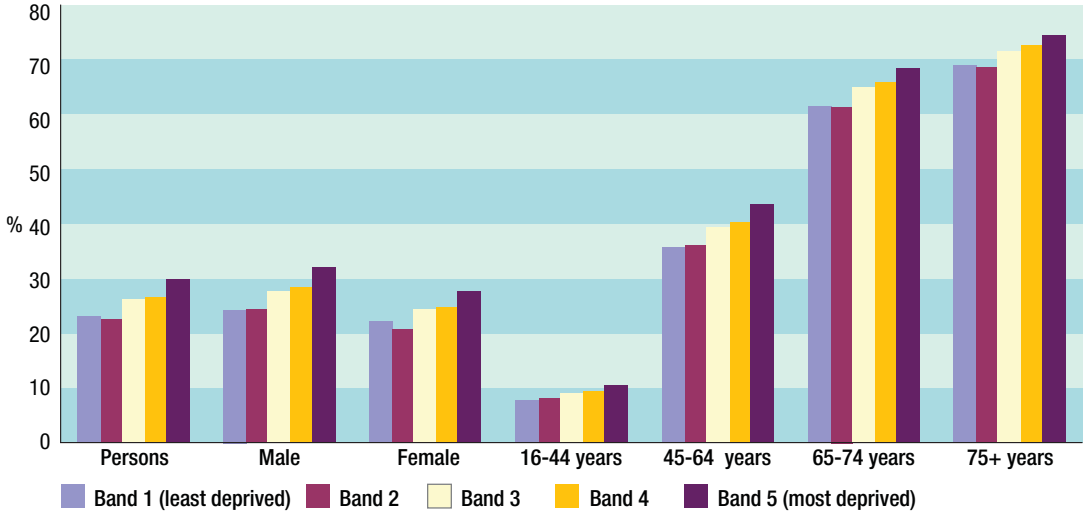
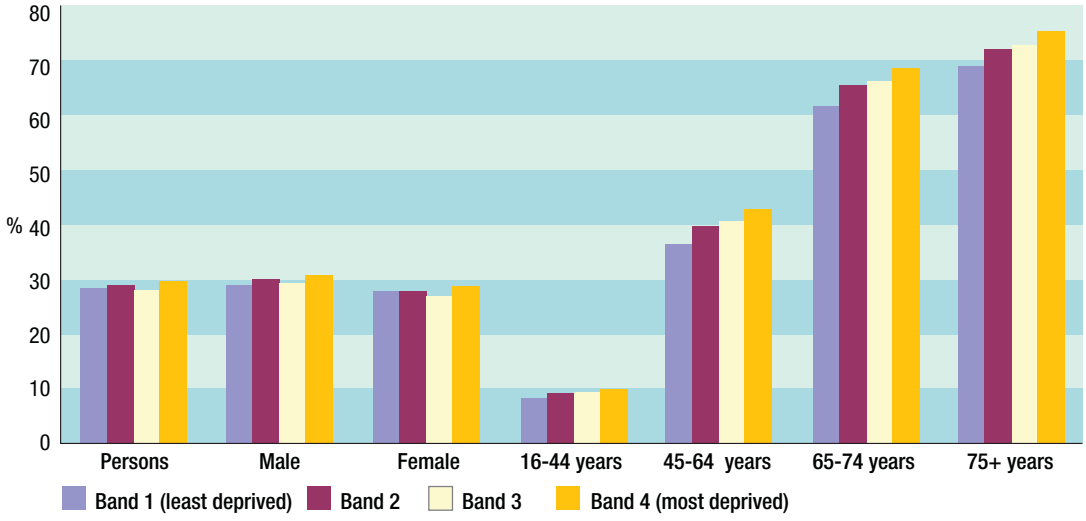


Figure 3.3: Percentage of adults who have high blood pressure; across deprivation bands[13] in Northern Ireland within each sex and each age group (2007).



13 See this report's technical supplement for definitions of the deprivation bands.

The effects of local socio-economic circumstances are observed in both jurisdictions but are more apparent in the Republic of Ireland[14]. In the Republic of Ireland hypertension prevalence in the most deprived LHOs is 1.3 times what it is in the least deprived LHOs. In Northern Ireland hypertension prevalence in the most deprived LGDs is almost 1.1 times what it is in the least deprived LGDs.

Within each age group and in both jurisdictions, hypertension prevalence rates increase as you move from the least deprived areas to the most deprived areas. Like diabetes, local socio-economic circumstances do not appear to have an effect amongst either males or females in Northern Ireland.

How Hypertension Prevalence Will Change Between 2007 and 2020

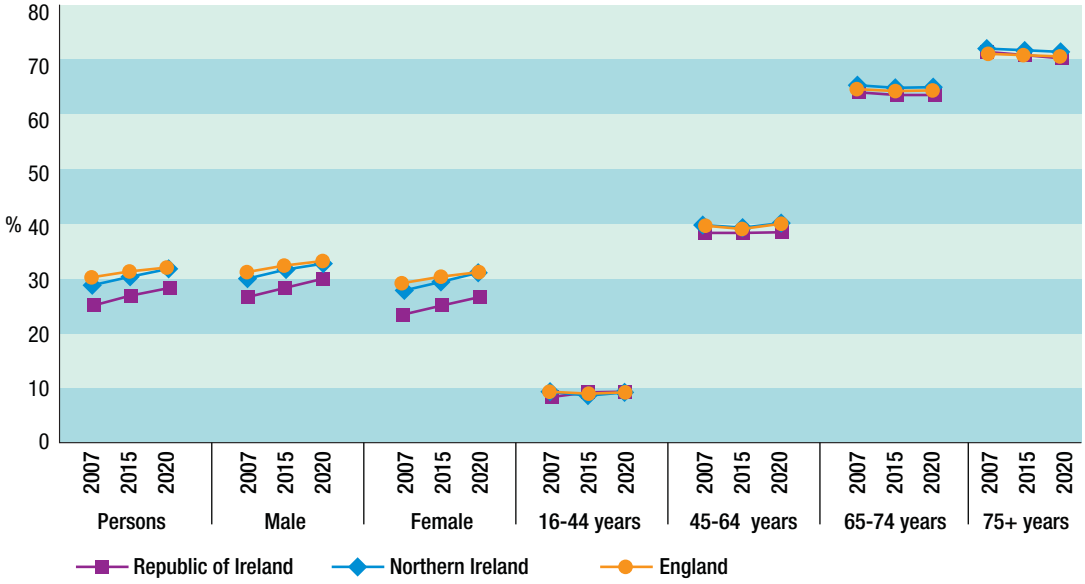
The percentage of adults with high blood pressure is expected to increase over time:

- In Northern Ireland it is expected to increase from 28.7% in 2007 to 30.3% in 2015 to 31.7% in 2020.
- In the Republic of Ireland it is expected to increase from 25.1% in 2007 to 26.8% in 2015 to 28.3% in 2020.

With an increasing and ageing population, far more adults will have high blood pressure in 2020 than in 2007. The number of adults in Northern Ireland with high blood pressure is expected to rise from 395,529 in 2007 to 481,867 in 2020; an increase of 86,338 adults (or 21.8%). The number of adults in the Republic of Ireland with high blood pressure is expected to rise from 851,658 in 2007 to 1,192,415 in 2020; an increase of 340,757 adults (or 40.0%). A proportionally larger increase is expected in the Republic of Ireland because its population is projected to increase more than Northern Ireland's.

14 Direct North-South comparison is confounded by the fact there are five deprivation bands in the Republic of Ireland but only four deprivation bands in Northern Ireland. See this report's technical supplement for details.

Figure 3.4: Expected changes in the percentage of adults in the Republic of Ireland, Northern Ireland and England who have high blood pressure; within each sex group and age group (2007, 2015, 2020).



Amongst males and females, and in each age group, similar changes in hypertension prevalence rates are expected in each country (the Republic of Ireland, Northern Ireland and England).

An ageing population profile and higher hypertension prevalence rates in older age groups mean that a growing percentage of adults with high blood pressure will belong to the older age groups. Between 2007 and 2020, the percentage of adults with high blood pressure who are aged 65 years and over will rise in the Republic of Ireland from 37.0% to 41.6%. In Northern Ireland the percentage will rise from 42.0% to 46.7%.

Table 3.1: Demographic and geographic variation in the percentage of adults in the Republic of Ireland who have high blood pressure (2007).

	Males (16+ years)		Females (16+ years)		Persons (16+ years)		16-44 years		45-64 years		65-74 years		75+ years	
Local Health Office	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence
Carlow / Kilkenny	13,552	27.9%	11,635	24.5%	25,187	26.2%	4,929	9.1%	10,953	39.2%	4,927	64.8%	4,378	71.4%
Cavan / Monaghan	14,113	29.5%	11,910	25.9%	26,024	27.7%	4,916	9.5%	11,069	40.5%	5,043	65.7%	4,995	72.2%
Clare	11,499	26.6%	9,961	23.4%	21,460	25.0%	3,827	8.2%	9,485	36.2%	4,276	61.2%	3,872	68.2%
Donegal	18,297	32.0%	15,792	27.5%	34,089	29.7%	6,428	10.3%	14,713	43.2%	6,767	68.1%	6,181	74.2%
Dublin North	20,988	24.1%	18,903	20.7%	39,891	22.4%	8,584	7.9%	17,579	36.1%	8,361	61.3%	5,366	68.4%
Dublin North Central	13,121	25.2%	12,724	23.7%	25,844	24.4%	5,609	8.5%	9,459	39.2%	5,474	65.0%	5,303	71.9%
Dublin North West	17,427	23.4%	15,472	20.1%	32,898	21.7%	8,918	8.8%	13,115	38.5%	5,795	64.9%	5,071	71.9%
Dublin South City	12,165	21.5%	10,961	19.1%	23,127	20.3%	5,592	7.4%	9,318	35.4%	4,077	61.5%	4,140	69.1%
Dublin South East	10,715	24.1%	11,018	22.5%	21,733	23.2%	4,280	7.6%	8,656	36.1%	4,386	61.5%	4,410	69.1%
Dublin South West	15,813	27.0%	14,689	23.6%	30,503	25.3%	6,387	9.0%	13,750	40.2%	5,999	65.9%	4,368	72.5%
Dublin West	12,691	24.4%	10,767	20.3%	23,458	22.3%	6,411	9.3%	10,329	39.4%	3,768	65.9%	2,950	72.8%
Dun Laoghaire South Dublin	13,416	27.2%	14,148	25.5%	27,564	26.3%	4,279	7.8%	11,285	35.7%	6,312	61.5%	5,688	68.8%
Galway	24,990	27.1%	21,515	23.1%	46,505	25.1%	9,603	8.7%	19,560	39.1%	9,068	64.7%	8,274	71.4%
Kerry	16,738	30.1%	14,850	27.1%	31,588	28.6%	5,258	9.2%	13,717	39.7%	6,515	64.8%	6,098	71.5%
Kildare / West Wicklow	18,288	22.7%	14,770	18.6%	33,058	20.7%	8,105	8.0%	15,463	35.3%	5,293	61.3%	4,197	68.4%
Laois / Offaly	15,279	27.8%	12,802	23.8%	28,081	25.8%	5,708	9.1%	12,139	39.1%	5,439	64.8%	4,795	71.2%
Limerick	16,854	27.9%	14,953	24.5%	31,808	26.2%	6,074	8.8%	13,787	39.5%	6,517	64.8%	5,429	71.5%
Longford / Westmeath	12,634	28.2%	11,073	24.5%	23,706	26.3%	4,604	9.0%	10,239	39.3%	4,621	64.8%	4,242	71.6%
Louth	11,993	27.7%	10,736	24.1%	22,729	25.8%	4,901	9.4%	9,782	40.3%	4,313	65.8%	3,732	72.7%
Mayo	15,642	31.7%	14,019	28.7%	29,661	30.2%	4,671	9.5%	12,607	40.5%	6,229	65.7%	6,154	72.4%
Meath	15,068	23.4%	12,399	19.5%	27,467	21.5%	6,469	8.1%	12,350	35.5%	4,751	61.2%	3,897	68.4%
North Cork	9,538	29.0%	8,504	26.6%	18,042	27.8%	3,207	9.2%	7,679	39.4%	3,646	64.8%	3,511	71.6%
North Lee - Cork	17,648	26.6%	15,361	23.0%	33,009	24.8%	7,195	9.0%	14,526	39.5%	6,297	64.9%	4,991	71.6%
North Tipperary / East Limerick	10,093	25.6%	8,732	22.7%	18,825	24.2%	3,436	7.8%	8,131	36.1%	3,844	61.2%	3,415	68.2%
Roscommon	7,471	30.9%	6,573	28.6%	14,044	29.8%	2,203	9.4%	5,821	39.4%	2,990	64.7%	3,030	71.4%
Sligo / Leitrim / West Cavan	11,130	30.3%	9,850	26.9%	20,980	28.6%	3,437	9.1%	9,007	39.4%	4,279	64.7%	4,257	71.4%
South Lee - Cork	17,070	24.1%	16,161	21.6%	33,231	22.8%	6,656	7.6%	13,899	35.5%	6,932	61.5%	5,743	68.8%
South Tipperary	10,562	29.5%	9,257	26.5%	19,820	28.0%	3,426	9.2%	8,534	39.4%	4,075	64.8%	3,784	71.3%
Waterford	13,431	28.2%	12,012	25.0%	25,442	26.6%	4,849	9.0%	10,837	39.4%	5,339	64.8%	4,418	71.5%
West Cork	6,771	31.7%	6,040	29.0%	12,811	30.4%	1,943	9.5%	5,368	39.7%	2,819	64.7%	2,681	71.4%
Wexford	15,247	29.4%	13,369	25.7%	28,616	27.5%	5,503	9.6%	12,385	40.4%	6,088	65.7%	4,640	72.3%
Wicklow	10,775	25.0%	9,682	21.7%	20,457	23.3%	4,050	8.0%	9,249	35.8%	3,987	61.3%	3,172	68.6%
Republic of Ireland	**451,019**	**26.7%**	**400,639**	**23.4%**	**851,658**	**25.1%**	**171,455**	**8.7%**	**364,792**	**38.4%**	**168,229**	**64.0%**	**147,182**	**70.9%**

Table 3.2: Demographic and geographic variation in the percentage of adults in the Republic of Ireland who have high blood pressure (2015).

	Males (16+ years)		Females (16+ years)		Persons (16+ years)		16-44 years		45-64 years		65-74 years		75+ years	
Local Health Office	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence
Carlow / Kilkenny	16,711	29.7%	14,157	26.6%	30,868	28.2%	5,487	9.5%	13,105	39.2%	6,633	64.8%	5,643	71.0%
Cavan / Monaghan	17,081	31.0%	14,259	27.4%	31,340	29.3%	5,480	9.7%	12,979	40.5%	6,913	65.7%	5,968	71.8%
Clare	13,948	28.0%	11,983	25.5%	25,930	26.8%	4,243	8.5%	10,930	36.3%	5,894	61.2%	4,863	67.9%
Donegal	22,159	33.6%	18,918	29.1%	41,077	31.4%	7,153	10.6%	17,255	43.2%	9,277	68.0%	7,392	73.9%
Dublin North	26,242	25.6%	23,014	21.9%	49,256	23.7%	10,310	8.5%	21,046	36.2%	10,957	61.3%	6,943	68.0%
Dublin North Central	16,382	27.2%	15,490	25.3%	31,872	26.2%	6,557	9.1%	11,322	39.4%	7,162	64.9%	6,831	71.5%
Dublin North West	21,594	25.0%	18,750	21.4%	40,344	23.2%	10,537	9.4%	15,686	38.7%	7,585	64.9%	6,536	71.5%
Dublin South City	15,055	23.2%	13,282	20.4%	28,337	21.8%	6,535	7.9%	11,150	35.5%	5,339	61.4%	5,313	68.7%
Dublin South East	13,424	25.8%	13,412	23.8%	26,836	24.8%	5,073	8.2%	10,362	36.2%	5,739	61.5%	5,662	68.7%
Dublin South West	19,648	29.0%	17,829	25.0%	37,477	26.9%	7,521	9.6%	16,450	40.4%	7,852	65.9%	5,653	72.1%
Dublin West	15,683	26.0%	13,033	21.5%	28,716	23.7%	7,630	9.9%	12,354	39.5%	4,935	65.8%	3,797	72.5%
Dun Laoghaire South Dublin	16,950	29.1%	17,280	26.8%	34,230	27.9%	5,135	8.4%	13,505	35.9%	8,258	61.5%	7,332	68.4%
Galway	30,300	28.6%	25,967	24.0%	56,267	26.2%	11,283	9.2%	23,247	39.4%	12,074	64.7%	9,663	71.0%
Kerry	20,596	32.5%	17,910	29.1%	38,506	30.8%	5,766	9.6%	16,182	39.7%	8,806	64.7%	7,752	71.0%
Kildare / West Wicklow	24,673	24.8%	19,933	20.5%	44,606	22.7%	9,821	8.4%	20,301	35.3%	8,720	61.2%	5,765	68.0%
Laois / Offaly	19,260	29.5%	15,692	26.0%	34,953	27.9%	6,527	9.7%	14,967	39.3%	7,500	64.8%	5,959	70.8%
Limerick	20,374	29.4%	17,989	26.9%	38,363	28.2%	6,688	9.2%	15,883	39.6%	8,982	64.8%	6,810	71.2%
Longford / Westmeath	15,942	30.0%	13,558	26.7%	29,500	28.4%	5,257	9.6%	12,629	39.4%	6,373	64.7%	5,241	71.3%
Louth	14,441	29.1%	12,846	25.5%	27,286	27.3%	5,470	9.7%	11,476	40.3%	5,910	65.8%	4,430	72.4%
Mayo	19,089	33.3%	16,904	29.5%	35,993	31.4%	5,521	10.0%	14,998	40.9%	8,294	65.7%	7,180	72.0%
Meath	20,467	25.5%	16,792	21.5%	37,259	23.6%	7,864	8.6%	16,213	35.5%	7,827	61.2%	5,354	68.0%
North Cork	11,697	31.3%	10,249	28.6%	21,946	30.0%	3,513	9.6%	9,057	39.5%	4,927	64.8%	4,450	71.2%
North Lee - Cork	21,385	28.8%	18,448	24.9%	39,833	26.8%	7,867	9.5%	17,135	39.6%	8,505	64.8%	6,326	71.2%
North Tipperary / East Limerick	12,232	27.1%	10,512	24.9%	22,744	26.0%	3,787	8.2%	9,368	36.2%	5,298	61.2%	4,291	67.8%
Roscommon	9,132	32.4%	7,925	29.4%	17,057	30.9%	2,610	9.8%	6,922	39.8%	3,981	64.7%	3,543	70.9%
Sligo / Leitrim / West Cavan	13,531	31.9%	11,802	28.4%	25,333	30.2%	3,827	9.3%	10,562	39.4%	5,867	64.7%	5,079	71.1%
South Lee - Cork	20,775	26.3%	19,463	23.5%	40,238	24.9%	7,240	8.1%	16,390	35.6%	9,357	61.4%	7,250	68.4%
South Tipperary	13,099	31.4%	11,296	28.7%	24,396	30.1%	3,817	9.6%	10,211	39.4%	5,487	64.8%	4,880	71.0%
Waterford	16,587	30.1%	14,646	27.2%	31,233	28.6%	5,397	9.4%	12,965	39.5%	7,188	64.8%	5,683	71.2%
West Cork	8,398	34.1%	7,301	31.0%	15,699	32.6%	2,143	9.9%	6,333	39.8%	3,813	64.7%	3,411	71.0%
Wexford	18,837	31.2%	16,298	27.8%	35,135	29.5%	6,143	10.0%	14,816	40.5%	8,198	65.7%	5,977	72.0%
Wicklow	14,765	27.4%	13,197	23.9%	27,962	25.6%	4,916	8.5%	12,137	35.7%	6,566	61.3%	4,343	68.2%
Republic of Ireland	**560,456**	**28.5%**	**490,135**	**25.1%**	**1,050,591**	**26.8%**	**197,116**	**9.1%**	**437,937**	**38.5%**	**230,219**	**63.9%**	**185,318**	**70.5%**

Table 3.3: Demographic and geographic variation in the percentage of adults in the Republic of Ireland who have high blood pressure (2020).

	Males (16+ years)		Females (16+ years)		Persons (16+ years)		16-44 years		45-64 years		65-74 years		75+ years	
Local Health Office	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence
Carlow / Kilkenny	18,796	31.3%	15,948	28.6%	34,744	30.0%	5,604	9.8%	14,540	39.4%	7,715	64.8%	6,884	70.9%
Cavan / Monaghan	19,031	32.6%	15,924	29.1%	34,955	30.9%	5,608	10.0%	14,175	40.5%	8,084	65.7%	7,088	71.6%
Clare	15,600	29.2%	13,353	27.2%	28,952	28.3%	4,385	8.8%	11,787	36.4%	6,915	61.2%	5,866	67.7%
Donegal	24,711	35.2%	21,109	30.8%	45,820	33.0%	7,339	10.9%	18,847	43.3%	10,847	68.1%	8,787	73.6%
Dublin North	30,305	26.8%	26,175	22.7%	56,480	24.7%	11,281	8.8%	24,050	36.2%	12,860	61.3%	8,290	67.8%
Dublin North Central	18,881	28.8%	17,636	26.4%	36,517	27.6%	7,026	9.3%	12,951	39.4%	8,405	64.9%	8,135	71.3%
Dublin North West	24,711	26.4%	21,246	22.3%	45,957	24.4%	11,313	9.6%	17,956	38.7%	8,902	64.9%	7,787	71.3%
Dublin South City	17,249	24.6%	15,068	21.3%	32,317	22.9%	6,970	8.2%	12,768	35.5%	6,266	61.4%	6,314	68.5%
Dublin South East	15,515	27.2%	15,268	24.8%	30,783	26.0%	5,479	8.4%	11,839	36.2%	6,736	61.5%	6,729	68.5%
Dublin South West	22,635	30.4%	20,250	25.9%	42,885	28.1%	8,123	9.8%	18,795	40.4%	9,215	65.9%	6,752	71.9%
Dublin West	17,970	27.3%	14,766	22.4%	32,736	24.8%	8,277	10.2%	14,148	39.5%	5,792	65.8%	4,520	72.2%
Dun Laoghaire South Dublin	19,777	30.3%	19,744	27.6%	39,521	28.9%	5,658	8.7%	15,437	35.9%	9,691	61.5%	8,735	68.2%
Galway	33,751	30.1%	29,275	25.4%	63,026	27.7%	11,819	9.5%	25,468	39.4%	14,378	64.8%	11,361	70.8%
Kerry	23,161	34.3%	20,120	30.8%	43,281	32.6%	5,871	9.9%	17,820	39.9%	10,289	64.7%	9,301	70.8%
Kildare / West Wicklow	29,169	26.5%	23,786	22.3%	52,955	24.4%	10,268	8.6%	24,188	35.3%	10,807	61.2%	7,692	67.8%
Laois / Offaly	21,784	31.5%	17,755	28.4%	39,539	30.0%	6,591	10.1%	16,732	39.4%	9,053	64.7%	7,163	70.6%
Limerick	22,709	30.7%	20,022	28.8%	42,730	29.8%	6,859	9.5%	17,128	39.7%	10,535	64.8%	8,208	71.1%
Longford / Westmeath	18,051	31.9%	15,358	29.1%	33,409	30.6%	5,316	10.0%	14,121	39.6%	7,693	64.7%	6,279	71.1%
Louth	15,974	30.6%	14,303	27.2%	30,276	28.9%	5,595	10.0%	12,534	40.4%	6,913	65.8%	5,235	72.1%
Mayo	21,453	34.8%	19,154	30.9%	40,607	32.8%	5,868	10.3%	16,424	40.8%	9,878	65.7%	8,437	71.8%
Meath	24,284	27.3%	20,099	23.4%	44,382	25.4%	8,220	8.7%	19,316	35.5%	9,700	61.2%	7,146	67.8%
North Cork	13,115	33.1%	11,506	30.4%	24,621	31.8%	3,564	9.9%	9,971	39.7%	5,757	64.8%	5,330	71.0%
North Lee - Cork	23,742	30.5%	20,595	26.6%	44,337	28.6%	7,955	9.7%	18,867	39.7%	9,935	64.8%	7,579	71.0%
North Tipperary / East Limerick	13,677	28.3%	11,719	26.7%	25,396	27.5%	3,901	8.4%	10,103	36.3%	6,215	61.2%	5,178	67.7%
Roscommon	10,280	33.9%	8,986	30.7%	19,266	32.3%	2,775	10.2%	7,583	39.7%	4,741	64.7%	4,167	70.8%
Sligo / Leitrim / West Cavan	15,142	33.5%	13,204	30.0%	28,346	31.8%	3,928	9.6%	11,535	39.4%	6,859	64.7%	6,025	70.8%
South Lee - Cork	23,162	28.0%	21,807	25.1%	44,969	26.5%	7,335	8.3%	18,037	35.8%	10,929	61.4%	8,667	68.2%
South Tipperary	14,817	33.0%	12,770	30.7%	27,587	31.9%	3,914	9.9%	11,335	39.7%	6,383	64.7%	5,956	70.8%
Waterford	18,674	31.6%	16,520	29.2%	35,194	30.5%	5,513	9.7%	14,396	39.7%	8,360	64.8%	6,925	71.0%
West Cork	9,502	35.9%	8,225	32.6%	17,726	34.3%	2,203	10.2%	6,974	39.9%	4,456	64.7%	4,094	70.8%
Wexford	21,201	32.8%	18,364	29.8%	39,565	31.4%	6,291	10.3%	16,449	40.7%	9,535	65.7%	7,290	71.8%
Wicklow	17,647	29.1%	15,888	25.8%	33,535	27.5%	5,158	8.6%	14,453	35.7%	8,137	61.3%	5,786	68.0%
Republic of Ireland	**636,473**	**30.0%**	**555,942**	**26.6%**	**1,192,415**	**28.3%**	**206,008**	**9.4%**	**490,724**	**38.5%**	**271,980**	**63.9%**	**223,704**	**70.3%**

Table 3.4: Demographic and geographic variation in the percentage of adults in Northern Ireland who have high blood pressure (2007).

	Males (16+ years)		Females (16+ years)		Persons (16+ years)		16-44 years		45-64 years		65-74 years		75+ years	
Local Government District	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence
Antrim	5,690	28.5%	5,238	25.7%	10,928	27.1%	2,083	9.3%	4,703	39.7%	2,332	64.9%	1,810	71.5%
Ards	8,809	29.3%	8,779	27.5%	17,588	28.4%	2,419	8.2%	7,634	36.6%	3,932	61.3%	3,603	68.5%
Armagh	6,428	30.2%	6,161	26.9%	12,589	28.5%	2,032	8.8%	5,339	39.6%	2,785	64.9%	2,433	71.7%
Ballymena	7,437	31.1%	7,455	29.4%	14,892	30.2%	2,265	9.3%	6,042	39.9%	3,404	64.9%	3,180	71.7%
Ballymoney	3,420	29.9%	3,279	27.7%	6,699	28.8%	1,124	9.3%	2,743	39.5%	1,474	64.9%	1,358	71.5%
Banbridge	4,770	26.7%	4,537	24.8%	9,307	25.7%	1,593	8.2%	3,864	35.8%	2,021	61.4%	1,830	68.4%
Belfast	30,747	30.9%	33,808	29.3%	64,554	30.1%	11,148	9.6%	24,446	42.4%	14,002	68.3%	14,958	75.0%
Carrickfergus	4,304	28.3%	4,300	26.0%	8,604	27.1%	1,302	8.1%	3,556	35.8%	1,961	61.3%	1,785	68.6%
Castlereagh	7,287	29.5%	7,889	28.3%	15,176	28.8%	2,071	8.3%	5,774	35.4%	3,505	61.4%	3,827	68.5%
Coleraine	6,858	31.6%	6,973	29.7%	13,831	30.6%	1,977	9.1%	5,611	39.6%	3,313	64.9%	2,930	71.7%
Cookstown	3,874	28.7%	3,596	26.2%	7,470	27.4%	1,392	9.2%	3,142	40.4%	1,530	65.8%	1,407	72.4%
Craigavon	9,916	29.4%	9,630	27.3%	19,546	28.3%	3,544	9.5%	8,123	40.3%	4,222	65.9%	3,657	72.5%
Derry	11,940	29.9%	11,271	26.4%	23,210	28.1%	4,743	10.1%	10,185	42.4%	4,645	68.2%	3,637	74.7%
Down	7,861	29.5%	7,472	27.5%	15,333	28.5%	2,568	9.1%	6,449	39.5%	3,274	64.9%	3,042	71.7%
Dungannon	5,813	27.8%	5,386	25.7%	11,199	26.8%	2,080	8.9%	4,591	39.3%	2,364	64.9%	2,164	71.7%
Fermanagh	7,333	30.4%	6,742	28.0%	14,075	29.2%	2,225	9.1%	5,966	39.6%	2,983	64.8%	2,902	71.5%
Larne	3,937	32.2%	3,821	29.6%	7,758	30.8%	1,112	9.3%	3,326	39.9%	1,808	64.9%	1,512	71.6%
Limavady	3,838	28.2%	3,309	25.6%	7,147	26.9%	1,451	9.6%	3,113	40.5%	1,412	65.8%	1,172	72.4%
Lisburn	12,339	29.7%	12,244	26.6%	24,583	28.1%	4,181	9.0%	10,492	39.2%	5,273	64.9%	4,637	71.7%
Magherafelt	4,597	27.5%	4,107	25.1%	8,704	26.4%	1,703	9.0%	3,605	39.2%	1,794	64.9%	1,602	71.4%
Moyle	2,123	32.9%	2,045	30.0%	4,168	31.4%	594	9.4%	1,746	41.0%	971	65.8%	857	72.5%
Newry and Mourne	10,258	29.0%	9,556	25.9%	19,814	27.4%	3,708	9.2%	8,369	40.2%	4,198	65.8%	3,538	72.6%
Newtownabbey	9,577	30.8%	9,761	28.7%	19,339	29.7%	2,973	9.1%	7,897	39.4%	4,339	64.9%	4,130	71.7%
North Down	9,129	29.7%	9,797	29.3%	18,926	29.5%	2,388	8.1%	7,830	36.7%	4,109	61.3%	4,599	68.8%
Omagh	5,734	29.2%	5,244	26.2%	10,977	27.7%	2,013	9.3%	4,721	40.1%	2,235	65.8%	2,008	72.5%
Strabane	4,782	31.8%	4,329	28.5%	9,111	30.1%	1,712	10.4%	3,781	43.3%	1,993	68.2%	1,625	74.3%
Northern Ireland	**198,803**	**29.8%**	**196,727**	**27.6%**	**395,529**	**28.7%**	**66,402**	**9.2%**	**163,047**	**39.6%**	**85,879**	**65.1%**	**80,202**	**71.9%**

Table 3.5: Demographic and geographic variation in the percentage of adults in Northern Ireland who have high blood pressure (2015).

	Males (16+ years)		Females (16+ years)		Persons (16+ years)		16-44 years		45-64 years		65-74 years		75+ years	
Local Government District	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence
Antrim	6,716	29.6%	6,264	26.5%	12,980	28.0%	2,183	8.9%	5,207	38.7%	3,115	64.9%	2,476	71.3%
Ards	10,285	32.0%	10,337	29.8%	20,621	30.8%	2,268	8.0%	8,115	36.0%	5,840	61.3%	4,398	68.1%
Armagh	7,540	31.3%	7,193	28.3%	14,733	29.7%	2,167	8.8%	5,891	39.4%	3,576	64.8%	3,099	71.3%
Ballymena	8,451	32.8%	8,596	31.5%	17,048	32.1%	2,158	9.0%	6,654	39.1%	4,132	64.9%	4,104	71.5%
Ballymoney	4,218	32.0%	3,944	29.7%	8,162	30.8%	1,168	9.3%	3,300	39.2%	1,958	64.9%	1,736	71.1%
Banbridge	5,883	28.4%	5,598	26.8%	11,480	27.6%	1,630	8.0%	4,819	35.9%	2,700	61.3%	2,330	68.4%
Belfast	31,480	31.8%	33,365	30.1%	64,845	30.9%	10,672	9.7%	24,984	42.6%	13,896	68.3%	15,292	74.6%
Carrickfergus	5,253	32.0%	5,124	28.8%	10,377	30.4%	1,133	7.8%	4,354	36.0%	2,528	61.3%	2,361	68.0%
Castlereagh	7,667	30.7%	8,316	30.6%	15,984	30.6%	1,699	7.7%	6,355	35.6%	3,741	61.5%	4,189	68.4%
Coleraine	7,542	34.8%	7,569	32.9%	15,111	33.8%	1,644	8.8%	5,909	39.7%	3,838	64.8%	3,719	71.3%
Cookstown	4,620	30.3%	4,180	27.5%	8,799	28.9%	1,509	9.3%	3,530	40.6%	2,007	65.8%	1,753	72.0%
Craigavon	11,745	30.3%	11,273	27.8%	23,017	29.0%	3,844	9.2%	9,336	39.9%	5,235	65.9%	4,602	72.2%
Derry	13,843	32.6%	13,217	29.1%	27,060	30.8%	4,507	10.1%	11,850	42.3%	5,951	68.2%	4,752	74.2%
Down	9,179	31.5%	8,767	29.2%	17,946	30.3%	2,543	8.9%	7,411	39.3%	4,247	64.8%	3,744	71.4%
Dungannon	7,337	27.6%	6,365	25.6%	13,702	26.6%	2,660	9.1%	5,516	39.1%	2,922	64.9%	2,604	71.3%
Fermanagh	8,541	32.2%	7,789	29.7%	16,330	31.0%	2,322	9.3%	6,709	39.7%	3,827	64.8%	3,472	71.1%
Larne	4,414	35.0%	4,208	31.8%	8,621	33.4%	942	8.8%	3,559	39.4%	2,257	64.8%	1,863	71.1%
Limavady	4,497	30.9%	3,995	29.2%	8,492	30.1%	1,384	9.8%	3,603	40.3%	1,947	65.8%	1,558	72.3%
Lisburn	14,360	31.5%	14,394	28.6%	28,754	30.0%	4,060	8.7%	11,874	38.9%	6,820	64.8%	6,000	71.5%
Magherafelt	5,503	28.7%	4,826	26.7%	10,328	27.8%	1,850	9.2%	4,324	39.1%	2,203	64.9%	1,951	71.3%
Moyle	2,376	34.1%	2,248	31.2%	4,623	32.6%	590	9.2%	1,888	40.7%	1,118	65.8%	1,027	71.9%
Newry & Mourne	12,356	30.0%	11,304	26.9%	23,661	28.5%	4,034	9.1%	9,954	40.1%	5,079	65.8%	4,595	72.2%
Newtownabbey	10,278	32.2%	10,804	31.5%	21,082	31.9%	2,608	8.7%	8,369	39.2%	5,105	64.9%	5,000	71.6%
North Down	9,988	31.8%	10,780	32.0%	20,768	31.9%	2,170	8.0%	7,710	36.3%	5,610	61.4%	5,278	68.3%
Omagh	6,841	30.8%	6,185	28.2%	13,026	29.5%	2,108	9.3%	5,537	40.6%	2,876	65.8%	2,505	72.2%
Strabane	5,456	34.7%	5,002	30.8%	10,458	32.8%	1,574	10.2%	4,285	42.7%	2,461	68.2%	2,138	74.2%
Northern Ireland	**226,368**	**31.4%**	**221,642**	**29.3%**	**448,0111**	**30.3%**	**65,430**	**9.1%**	**181,044**	**39.5%**	**104,990**	**65.0%**	**96,547**	**71.6%**

Table 3.6: Demographic and geographic variation in the percentage of adults in Northern Ireland who have high blood pressure (2020)

	Males (16+ years)		Females (16+ years)		Persons (16+ years)		16-44 years		45-64 years		65-74 years		75+ years	
Local Government District	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence
Antrim	7,351	30.2%	7,015	27.3%	14,366	28.7%	2,324	8.9%	5,627	39.2%	3,212	64.8%	3,203	71.2%
Ards	11,104	33.6%	11,389	31.6%	22,493	32.6%	2,220	8.1%	8,559	36.7%	6,091	61.3%	5,623	67.7%
Armagh	8,196	32.2%	7,917	29.5%	16,114	30.8%	2,248	8.9%	6,265	39.7%	3,836	64.8%	3,765	71.1%
Ballymena	9,058	34.0%	9,321	32.9%	18,379	33.5%	2,175	9.1%	6,975	39.6%	4,391	64.9%	4,837	71.4%
Ballymoney	4,726	33.5%	4,402	31.0%	9,128	32.3%	1,168	9.2%	3,744	39.9%	2,074	64.9%	2,142	70.9%
Banbridge	6,583	29.6%	6,347	28.3%	12,929	29.0%	1,682	8.1%	5,334	36.4%	3,012	61.3%	2,901	68.2%
Belfast	31,835	32.8%	33,410	31.3%	65,245	32.0%	10,508	10.0%	25,030	43.5%	13,792	68.2%	15,915	74.4%
Carrickfergus	5,806	34.4%	5,675	31.0%	11,480	32.6%	1,060	7.8%	4,679	37.0%	2,830	61.2%	2,911	67.7%
Castlereagh	7,768	31.9%	8,540	32.6%	16,308	32.3%	1,592	7.8%	6,396	37.1%	3,805	61.4%	4,515	68.4%
Coleraine	7,835	36.6%	7,923	35.6%	15,759	36.1%	1,479	8.9%	5,944	40.3%	3,959	64.8%	4,376	71.1%
Cookstown	5,093	31.5%	4,592	28.8%	9,685	30.2%	1,590	9.6%	3,805	41.0%	2,149	65.8%	2,141	71.9%
Craigavon	12,952	31.2%	12,444	28.6%	25,395	29.9%	4,165	9.5%	10,204	40.6%	5,521	65.8%	5,506	72.1%
Derry	14,944	34.4%	14,590	31.6%	29,534	32.9%	4,442	10.4%	12,669	43.1%	6,674	68.2%	5,750	74.1%
Down	9,959	32.9%	9,687	30.8%	19,646	31.8%	2,622	9.2%	7,841	40.0%	4,715	64.8%	4,468	71.2%
Dungannon	8,477	28.3%	7,131	26.3%	15,608	27.4%	3,020	9.5%	6,324	39.4%	3,226	64.8%	3,039	71.1%
Fermanagh	9,315	33.6%	8,569	31.4%	17,883	32.5%	2,343	9.5%	7,145	39.8%	4,360	64.8%	4,035	70.9%
Larne	4,631	36.9%	4,463	33.6%	9,094	35.2%	893	8.9%	3,680	40.6%	2,303	64.8%	2,217	70.9%
Limavady	4,896	32.9%	4,461	32.1%	9,357	32.5%	1,292	9.9%	3,884	40.6%	2,210	65.8%	1,970	72.2%
Lisburn	15,447	32.9%	15,839	30.3%	31,286	31.5%	4,166	9.0%	12,550	39.9%	7,262	64.8%	7,307	71.3%
Magherafelt	6,142	30.2%	5,331	28.2%	11,472	29.2%	1,852	9.3%	4,854	39.5%	2,486	64.8%	2,280	71.3%
Moyle	2,524	35.6%	2,418	32.7%	4,942	34.1%	592	9.4%	1,911	41.1%	1,245	65.7%	1,195	71.7%
Newry and Mourne	13,726	30.8%	12,549	28.0%	26,275	29.4%	4,396	9.4%	10,791	40.7%	5,726	65.8%	5,362	72.0%
Newtownabbey	10,565	33.3%	11,432	33.6%	21,997	33.5%	2,444	8.7%	8,541	40.0%	5,268	64.9%	5,743	71.4%
North Down	10,429	33.1%	11,422	33.9%	21,851	33.5%	2,098	8.2%	7,673	36.9%	5,701	61.4%	6,380	68.1%
Omagh	7,529	32.2%	6,846	29.9%	14,375	31.1%	2,184	9.6%	5,843	41.0%	3,336	65.8%	3,012	72.1%
Strabane	5,850	36.6%	5,415	32.7%	11,265	34.6%	1,470	10.1%	4,620	43.0%	2,608	68.1%	2,566	74.1%
Northern Ireland	**242,740**	**32.6%**	**239,127**	**30.8%**	**481,867**	**31.7%**	**66,025**	**9.3%**	**190,890**	**40.1%**	**111,791**	**64.9%**	**113,161**	**71.3%**

4 Angina and Heart Attack (CHD)

CHAPTER 4. ANGINA AND HEART ATTACK (CHD)

This chapter relates to adults (aged 16 years and over) who have ever been told by a doctor that they have angina or have had a heart attack. We refer to this as coronary heart disease (CHD)[15].

Detailed estimates and forecasts of CHD prevalence, broken down by sex and age within each area, are given at the end of the chapter.

KEY POINTS: ANGINA AND HEART ATTACK (CHD)

In 2007, nearly 131,000 adults in the Republic of Ireland (3.8%) have ever had a CHD. By 2020 this is expected to rise to over 195,000 (4.6%). This represents a 50% increase – an additional 65,000 adults – in less than 15 years.

In 2007, over 75,000 adults in Northern Ireland (5.4%) have ever had a CHD. By 2020 this is expected to rise to over 97,000 (6.4%). This represents a 30% increase – an additional 22,000 adults – in less than 15 years.

CHD is more common amongst males than females. The CHD prevalence rate amongst males is nearly 50% higher than amongst females.

CHD prevalence increases with age. About one in five adults aged 75 years and over have ever had a CHD. In 2020 relatively more of the adults living with CHD will belong in the older age groups.

CHD tends to be most common in northern parts of the island and least common around Dublin.

Local socio-economic circumstances affect CHD prevalence. Amongst males and females, and across all age groups, CHD tends to be more common in more deprived areas.

CHD prevalence is higher in Northern Ireland than in the Republic of Ireland. North-South differences in the current and future CHD prevalence are chiefly due to differences in current and (projected) future demographic and socio-economic profiles and smoking rates.

National Estimates in 2007

In 2007, 3.8% of adults in the Republic of Ireland (130,703 people) and 5.4% of adults in Northern Ireland (75,158 people) have ever had a CHD.

The estimated CHD prevalence rate (3.8%) in the Republic of Ireland is higher than estimates from other survey studies. Direct comparisons with these studies, however, are confounded by important differences in methodology.

15 'Heart murmur', 'abnormal heart rhythm' and 'any other heart trouble' are also recognised as coronary heart diseases. However, they are not within the definition of CHD used here.

- In the SLÁN 2007 survey (Morgan et al, 2008) 2% of adults aged 18 years and over report having had a doctor-diagnosis of angina in the previous 12 months. Less than 1% report having had a doctor diagnosis of a heart attack in the previous 12 months.
- In the CSO's Quarterly National Household Survey 2007 (CSO, 2008) 2% of adults aged 18 years and over report ever having had a doctor-diagnosis of angina. One per cent report ever having had a doctor-diagnosis of heart attack.

The estimated CHD prevalence rate (5.4%) in Northern Ireland is also higher than estimates from other studies:

- It is higher (5.4% compared to 4.2%) than the Quality and Outcomes Framework (QOF) estimate that is based on primary care data (DHSSPS, 2007). However, this is not unexpected because the QOF covers all ages while this report covers adults aged 16 years and over.
- The Health and Social Wellbeing Survey 2005-2006 found that 6% of adults aged 16 years and over have ever been told by a doctor that they have had angina and 3% have ever been told by a doctor that they have had a heart attack (DHSSPS, 2007).

Again, direct comparisons are confounded by important differences in methodology.

CHD prevalence in England in 2007 is estimated to be 5.6% (APHO, 2008). The percentage of people who are living with a CHD is lower in the Republic of Ireland than it is in either Northern Ireland or England. This is chiefly due to differences in these countries' demographic and socio-economic profiles, and smoking rates. In particular, both Northern Ireland and England have an older population than the Republic of Ireland.

Demographic Variation in 2007

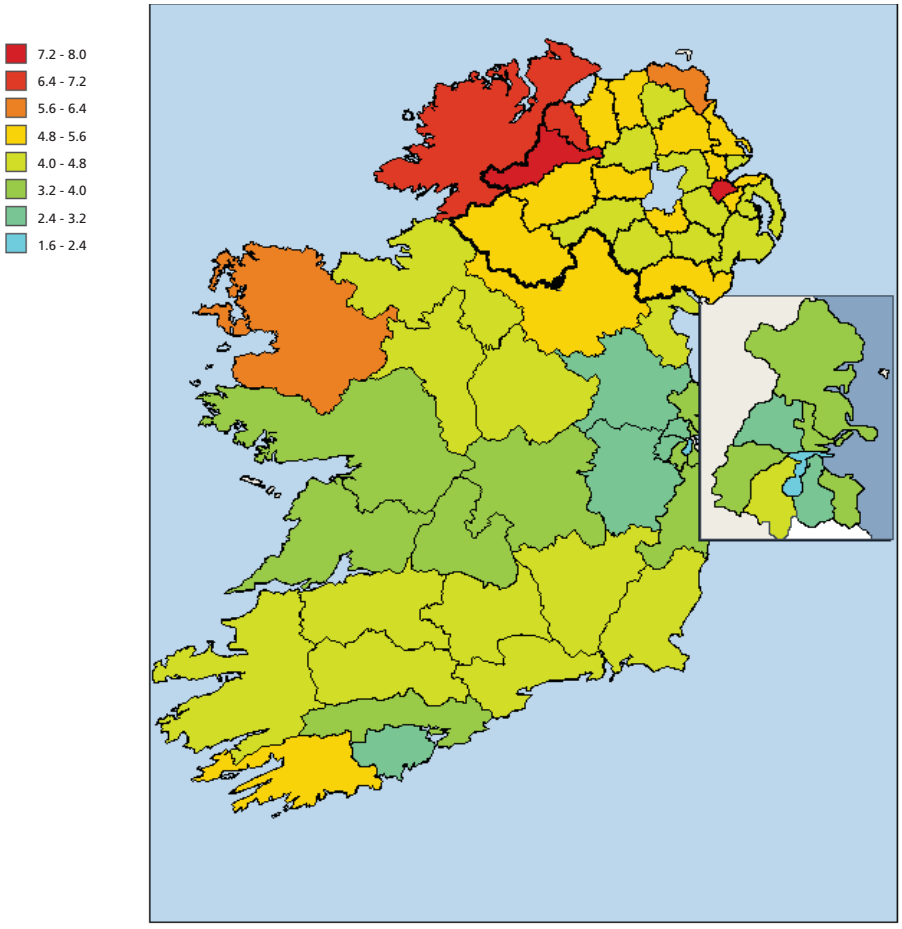
More males than females have ever had a CHD. This is true in both the Republic of Ireland (male 4.7%, female 3.0%) and Northern Ireland (male 6.5%, female 4.5%).

These CHDs are more common in older age groups. Approximately one in five adults aged 75 years and over in Northern Ireland (22.4%) and the Republic of Ireland (19.1%) have ever had angina or a heart attack.

Ethnicity does not contribute much to North-South differences because neither jurisdiction has a large 'non-white' ethnic population.

Geographical Variation in 2007

Figure 4.1: Percentage of adults who have ever had angina or a heart attack; across Local Health Offices (LHOs) in the Republic of Ireland and Local Government Districts (LGDs) in Northern Ireland (2007).



From INIsPHO eData http://www.inispho.org/eData

In addition to the higher CHD prevalence rate in Northern Ireland, nearly all of the areas with higher CHD prevalence rates are in northern parts of the island. The exceptions are Mayo LHO and West Cork LHO. CHD prevalence rates tend to be lowest in parts of Dublin and its surrounds.

Socio-economic Variation in 2007

Local socio-economic circumstances in an area affect CHD prevalence.

Figure 4.2: Percentage of adults who have ever had angina or a heart attack; across the deprivation bands[16] in the Republic of Ireland within each sex and each age group (2007).

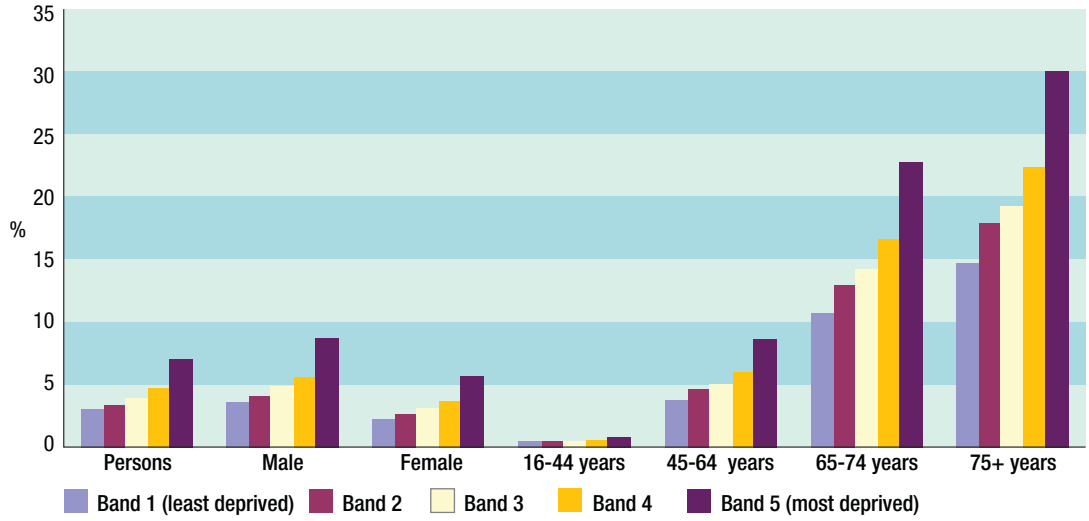
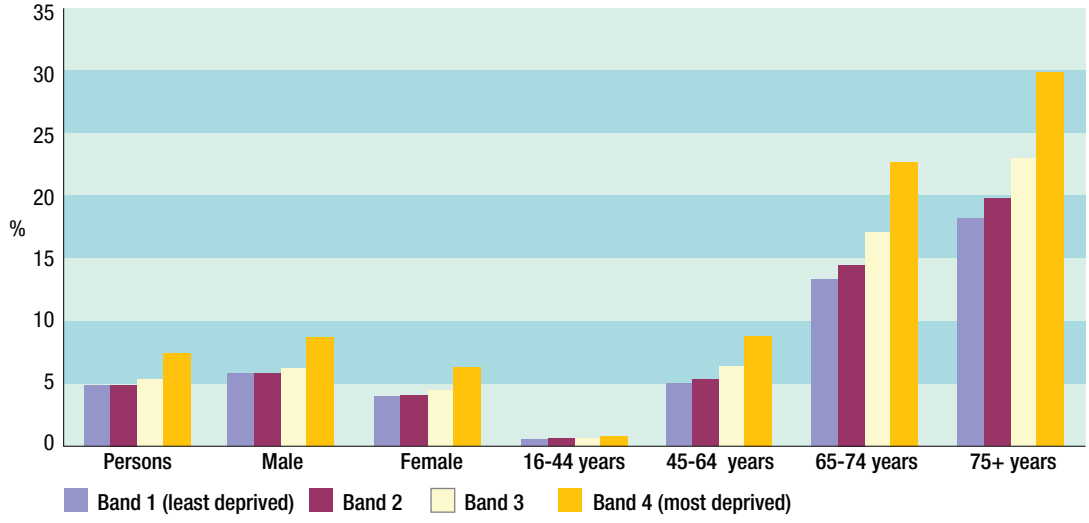


Figure 4.3: Percentage of adults who have ever had angina or a heart attack; across the deprivation bands[16] in Northern Ireland within each sex and each age group (2007).



16 See this report's technical supplement for definitions of the deprivation bands.

Within each age group, and amongst males and females, CHD prevalence rates increase as you move from the least deprived areas to the most deprived areas. These effects are observed in both the Republic of Ireland and Northern Ireland[17]. In the Republic of Ireland CHD prevalence in the most deprived LHOs is almost 2.5 times what it is in the least deprived LHOs. In Northern Ireland CHD prevalence in the most deprived LGDs is 1.5 times what it is in the least deprived LGDs. The effect of local socio-economic circumstances on CHD prevalence rates appears to be the same amongst males and females, and does not seem to depend on age.

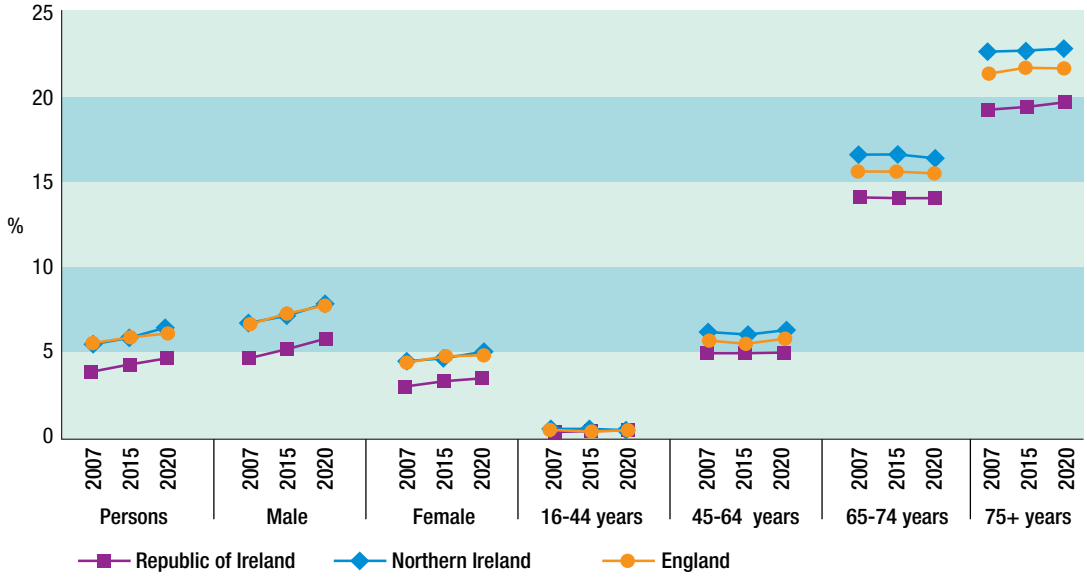
How CHD Prevalence Will Change Between 2007 and 2020

The percentage of adults who have ever had angina or a heart attack is expected to increase over time:

- In Northern Ireland, it is expected to increase from 5.4% in 2007 to 5.9% in 2015 to 6.4% in 2020.
- In the Republic of Ireland, it is expected to increase from 3.8% in 2007 to 4.3% in 2015 to 4.6% in 2020.

With a growing and ageing population, far more adults will be living with a CHD in 2020 than in 2007. The number of adults in Northern Ireland living with a CHD is expected to rise from 75,158 in 2007 to 97,255 in 2020; an increase of 22,097 adults (29.4%). The number of adults in the Republic of Ireland living with a CHD is expected to rise from 130,703 in 2007 to 195,243 in 2020; an increase of 64,540 adults (or 49.4%). A proportionally larger increase is expected in the Republic of Ireland because its population is projected to increase more than Northern Ireland's.

Figure 4.4: Expected changes in the percentage of adults in the Republic of Ireland, Northern Ireland and England who have ever had angina or a heart attack; within each sex group and age group (2007, 2015, 2020).



17 Direct North-South comparison is confounded by the fact there are five deprivation bands in the Republic of Ireland but only four deprivation bands in Northern Ireland. See this report's technical supplement for details

Amongst males and females, and in each age group, similar changes in CHD prevalence rates are expected in each country (the Republic of Ireland, Northern Ireland and England).

Like stroke, differences between CHD prevalence rates in the three countries appear to be greater in the older age groups.

An ageing population profile and higher CHD prevalence rates in older age groups mean that a growing percentage of adults living with CHD will belong to the older age groups. Between 2007 and 2020, the percentage of adults living with CHD who are aged 65 years and over will rise in the Republic of Ireland from 58.7% to 62.8%. In Northern Ireland the percentage will rise from 62.2% to 66.0%.

Table 4.1: Demographic and geographic variation in the percentage of adults in the Republic of Ireland who have ever had a heart attack or angina (2007).

	Males (16+ years)		Females (16+ years)		Persons (16+ years)		16-44 years		45-64 years		65-74 years		75+ years	
Local Health Office	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence
Carlow / Kilkenny	2,336	4.8%	1,468	3.1%	3,803	4.0%	186	0.3%	1,375	4.9%	1,066	14.0%	1,177	19.2%
Cavan / Monaghan	2,878	6.0%	1,789	3.9%	4,667	5.0%	217	0.4%	1,636	6.0%	1,265	16.5%	1,549	22.4%
Clare	2,020	4.7%	1,247	2.9%	3,268	3.8%	156	0.3%	1,203	4.6%	904	12.9%	1,005	17.7%
Donegal	4,887	8.5%	3,131	5.4%	8,019	7.0%	383	0.6%	2,932	8.6%	2,233	22.5%	2,471	29.7%
Dublin North	3,411	3.9%	2,252	2.5%	5,662	3.2%	331	0.3%	2,212	4.5%	1,741	12.8%	1,378	17.6%
Dublin North Central	2,219	4.3%	1,671	3.1%	3,890	3.7%	183	0.3%	1,181	4.9%	1,149	13.6%	1,377	18.7%
Dublin North West	2,597	3.5%	1,855	2.4%	4,452	2.9%	305	0.3%	1,603	4.7%	1,223	13.7%	1,321	18.7%
Dublin South City	1,586	2.8%	1,111	1.9%	2,697	2.4%	186	0.2%	943	3.6%	704	10.6%	863	14.4%
Dublin South East	1,545	3.5%	1,168	2.4%	2,713	2.9%	148	0.3%	893	3.7%	750	10.5%	921	14.4%
Dublin South West	2,983	5.1%	2,087	3.4%	5,070	4.2%	254	0.4%	2,019	5.9%	1,467	16.1%	1,331	22.1%
Dublin West	2,093	4.0%	1,449	2.7%	3,542	3.4%	267	0.4%	1,470	5.6%	928	16.2%	877	21.6%
Dun Laoghaire South Dublin	2,071	4.2%	1,525	2.8%	3,596	3.4%	153	0.3%	1,153	3.7%	1,078	10.5%	1,212	14.7%
Galway	4,287	4.6%	2,697	2.9%	6,983	3.8%	344	0.3%	2,446	4.9%	1,977	14.1%	2,216	19.1%
Kerry	3,049	5.5%	1,939	3.5%	4,988	4.5%	201	0.4%	1,748	5.1%	1,407	14.0%	1,631	19.1%
Kildare / West Wicklow	2,725	3.4%	1,684	2.1%	4,409	2.8%	318	0.3%	1,904	4.4%	1,110	12.8%	1,076	17.5%
Laois / Offaly	2,617	4.8%	1,598	3.0%	4,215	3.9%	216	0.3%	1,515	4.9%	1,176	14.0%	1,308	19.4%
Limerick	2,907	4.8%	1,897	3.1%	4,803	4.0%	221	0.3%	1,741	5.0%	1,399	13.9%	1,443	19.0%
Longford / Westmeath	2,180	4.9%	1,407	3.1%	3,587	4.0%	174	0.3%	1,286	4.9%	1,004	14.1%	1,124	19.0%
Louth	2,275	5.2%	1,562	3.5%	3,838	4.4%	217	0.4%	1,429	5.9%	1,073	16.4%	1,119	21.8%
Mayo	3,364	6.8%	2,168	4.4%	5,532	5.6%	210	0.4%	1,870	6.0%	1,570	16.6%	1,882	22.1%
Meath	2,332	3.6%	1,452	2.3%	3,784	3.0%	258	0.3%	1,527	4.4%	997	12.9%	1,001	17.6%
North Cork	1,689	5.1%	1,112	3.5%	2,801	4.3%	121	0.3%	968	5.0%	785	14.0%	927	18.9%
North Lee – Cork	2,879	4.3%	1,889	2.8%	4,768	3.6%	267	0.3%	1,838	5.0%	1,344	13.8%	1,318	18.9%
North Tipperary / East Limerick	1,760	4.5%	1,094	2.8%	2,854	3.7%	132	0.3%	1,024	4.5%	809	12.9%	890	17.8%
Roscommon	1,409	5.8%	879	3.8%	2,288	4.8%	86	0.4%	733	5.0%	653	14.1%	815	19.2%
Sligo / Leitrim / West Cavan	2,055	5.6%	1,291	3.5%	3,346	4.6%	131	0.3%	1,141	5.0%	933	14.1%	1,141	19.2%
South Lee – Cork	2,397	3.4%	1,661	2.2%	4,058	2.8%	236	0.3%	1,410	3.6%	1,194	10.6%	1,219	14.6%
South Tipperary	1,912	5.3%	1,200	3.4%	3,112	4.4%	132	0.4%	1,076	5.0%	884	14.0%	1,021	19.2%
Waterford	2,350	4.9%	1,530	3.2%	3,881	4.1%	183	0.3%	1,372	5.0%	1,150	14.0%	1,176	19.0%
West Cork	1,290	6.0%	807	3.9%	2,097	5.0%	78	0.4%	685	5.1%	615	14.1%	719	19.2%
Wexford	3,065	5.9%	1,964	3.8%	5,028	4.8%	249	0.4%	1,827	6.0%	1,526	16.5%	1,427	22.2%
Wicklow	1,776	4.1%	1,176	2.6%	2,951	3.4%	161	0.3%	1,157	4.5%	831	12.8%	802	17.4%
Republic of Ireland	**78,943**	**4.7%**	**51,761**	**3.0%**	**130,703**	**3.8%**	**6,703**	**0.3%**	**47,317**	**5.0%**	**36,945**	**14.1%**	**39,737**	**19.1%**

Table 4.2: Demographic and geographic variation in the percentage of adults in the Republic of Ireland who have ever had a heart attack or angina (2015).

	Males (16+ years)		Females (16+ years)		Persons (16+ years)		16-44 years		45-64 years		65-74 years		75+ years	
Local Health Office	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence
Carlow / Kilkenny	3,033	5.4%	1,818	3.4%	4,851	4.4%	216	0.4%	1,646	4.9%	1,436	14.0%	1,552	19.5%
Cavan / Monaghan	3,635	6.6%	2,157	4.1%	5,792	5.4%	248	0.4%	1,913	6.0%	1,740	16.5%	1,892	22.8%
Clare	2,578	5.2%	1,529	3.3%	4,106	4.2%	179	0.4%	1,391	4.6%	1,246	12.9%	1,290	18.0%
Donegal	6,169	9.4%	3,783	5.8%	9,951	7.6%	437	0.6%	3,429	8.6%	3,070	22.5%	3,016	30.1%
Dublin North	4,451	4.3%	2,771	2.6%	7,222	3.5%	436	0.4%	2,655	4.6%	2,300	12.9%	1,831	17.9%
Dublin North Central	2,932	4.9%	2,059	3.4%	4,991	4.1%	238	0.3%	1,418	4.9%	1,515	13.7%	1,819	19.1%
Dublin North West	3,401	3.9%	2,280	2.6%	5,681	3.3%	398	0.4%	1,923	4.7%	1,614	13.8%	1,746	19.1%
Dublin South City	2,069	3.2%	1,365	2.1%	3,434	2.6%	234	0.3%	1,132	3.6%	930	10.7%	1,138	14.7%
Dublin South East	2,028	3.9%	1,436	2.6%	3,464	3.2%	189	0.3%	1,072	3.7%	989	10.6%	1,214	14.7%
Dublin South West	3,889	5.7%	2,566	3.6%	6,455	4.6%	332	0.4%	2,422	5.9%	1,935	16.2%	1,766	22.5%
Dublin West	2,716	4.5%	1,779	2.9%	4,495	3.7%	350	0.5%	1,763	5.6%	1,225	16.3%	1,157	22.1%
Dun Laoghaire South Dublin	2,730	4.7%	1,878	2.9%	4,608	3.8%	197	0.3%	1,384	3.7%	1,422	10.6%	1,606	15.0%
Galway	5,403	5.1%	3,247	3.0%	8,650	4.0%	430	0.3%	2,932	5.0%	2,626	14.1%	2,662	19.6%
Kerry	3,980	6.3%	2,369	3.8%	6,349	5.1%	235	0.4%	2,067	5.1%	1,915	14.1%	2,132	19.5%
Kildare / West Wicklow	3,941	4.0%	2,323	2.4%	6,264	3.2%	414	0.4%	2,490	4.3%	1,837	12.9%	1,522	18.0%
Laois / Offaly	3,451	5.3%	1,984	3.3%	5,435	4.3%	260	0.4%	1,885	5.0%	1,625	14.0%	1,665	19.8%
Limerick	3,710	5.4%	2,333	3.5%	6,043	4.4%	252	0.3%	2,014	5.0%	1,929	13.9%	1,849	19.3%
Longford / Westmeath	2,876	5.4%	1,742	3.4%	4,618	4.4%	210	0.4%	1,600	5.0%	1,386	14.1%	1,421	19.3%
Louth	2,865	5.8%	1,886	3.7%	4,752	4.8%	248	0.4%	1,672	5.9%	1,475	16.4%	1,357	22.2%
Mayo	4,245	7.4%	2,603	4.5%	6,848	6.0%	263	0.5%	2,244	6.1%	2,085	16.5%	2,256	22.6%
Meath	3,394	4.2%	2,007	2.6%	5,400	3.4%	336	0.4%	1,997	4.4%	1,651	12.9%	1,416	18.0%
North Cork	2,203	5.9%	1,358	3.8%	3,561	4.9%	141	0.4%	1,145	5.0%	1,068	14.0%	1,207	19.3%
North Lee – Cork	3,722	5.0%	2,308	3.1%	6,030	4.1%	312	0.4%	2,173	5.0%	1,828	13.9%	1,717	19.3%
North Tipperary / East Limerick	2,250	5.0%	1,344	3.2%	3,594	4.1%	151	0.3%	1,184	4.6%	1,115	12.9%	1,143	18.1%
Roscommon	1,781	6.3%	1,054	3.9%	2,835	5.1%	107	0.4%	880	5.1%	867	14.1%	981	19.6%
Sligo / Leitrim / West Cavan	2,605	6.1%	1,555	3.7%	4,160	5.0%	150	0.4%	1,334	5.0%	1,283	14.2%	1,393	19.5%
South Lee – Cork	3,112	3.9%	2,032	2.5%	5,143	3.2%	271	0.3%	1,666	3.6%	1,623	10.7%	1,584	14.9%
South Tipperary	2,491	6.0%	1,488	3.8%	3,980	4.9%	153	0.4%	1,288	5.0%	1,191	14.1%	1,347	19.6%
Waterford	3,054	5.5%	1,899	3.5%	4,953	4.5%	213	0.4%	1,643	5.0%	1,550	14.0%	1,547	19.4%
West Cork	1,692	6.9%	987	4.2%	2,679	5.6%	91	0.4%	810	5.1%	837	14.2%	941	19.6%
Wexford	3,975	6.6%	2,437	4.2%	6,412	5.4%	290	0.5%	2,187	6.0%	2,056	16.5%	1,880	22.6%
Wicklow	2,598	4.8%	1,630	3.0%	4,228	3.9%	210	0.4%	1,512	4.5%	1,376	12.8%	1,131	17.8%
Republic of Ireland	**102,976**	**5.2%**	**64,009**	**3.3%**	**166,985**	**4.3%**	**8,192**	**0.4%**	**56,869**	**5.0%**	**50,746**	**14.1%**	**51,177**	**19.5%**

Table 4.3: Demographic and geographic variation in the percentage of adults in the Republic of Ireland who have ever had a heart attack or angina (2020).

	Males (16+ years)		Females (16+ years)		Persons (16+ years)		16-44 years		45-64 years		65-74 years		75+ years	
Local Health Office	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence
Carlow / Kilkenny	3,567	5.9%	2,092	3.8%	5,659	4.9%	231	0.4%	1,836	5.0%	1,673	14.0%	1,918	19.7%
Cavan / Monaghan	4,223	7.2%	2,448	4.5%	6,671	5.9%	266	0.5%	2,092	6.0%	2,029	16.5%	2,284	23.1%
Clare	2,995	5.6%	1,737	3.5%	4,732	4.6%	192	0.4%	1,501	4.6%	1,466	13.0%	1,574	18.2%
Donegal	7,150	10.2%	4,289	6.3%	11,439	8.2%	471	0.7%	3,750	8.6%	3,581	22.5%	3,638	30.5%
Dublin North	5,275	4.7%	3,179	2.8%	8,454	3.7%	505	0.4%	3,027	4.6%	2,702	12.9%	2,220	18.2%
Dublin North Central	3,502	5.3%	2,367	3.5%	5,870	4.4%	273	0.4%	1,618	4.9%	1,780	13.7%	2,199	19.3%
Dublin North West	4,042	4.3%	2,617	2.8%	6,659	3.5%	456	0.4%	2,196	4.7%	1,895	13.8%	2,112	19.3%
Dublin South City	2,450	3.5%	1,567	2.2%	4,017	2.9%	258	0.3%	1,293	3.6%	1,092	10.7%	1,373	14.9%
Dublin South East	2,411	4.2%	1,650	2.7%	4,061	3.4%	211	0.3%	1,222	3.7%	1,162	10.6%	1,466	14.9%
Dublin South West	4,612	6.2%	2,943	3.8%	7,555	5.0%	382	0.5%	2,761	5.9%	2,273	16.2%	2,140	22.8%
Dublin West	3,214	4.9%	2,039	3.1%	5,253	4.0%	404	0.5%	2,014	5.6%	1,439	16.3%	1,397	22.3%
Dun Laoghaire South Dublin	3,256	5.0%	2,159	3.0%	5,415	4.0%	224	0.3%	1,578	3.7%	1,670	10.6%	1,943	15.2%
Galway	6,259	5.6%	3,714	3.2%	9,973	4.4%	484	0.4%	3,201	5.0%	3,120	14.1%	3,168	19.8%
Kerry	4,667	6.9%	2,704	4.1%	7,371	5.5%	252	0.4%	2,284	5.1%	2,240	14.1%	2,594	19.8%
Kildare / West Wicklow	4,906	4.5%	2,845	2.7%	7,751	3.6%	451	0.4%	2,964	4.3%	2,276	12.9%	2,060	18.1%
Laois / Offaly	4,095	5.9%	2,293	3.7%	6,389	4.9%	281	0.4%	2,113	5.0%	1,967	14.1%	2,028	20.0%
Limerick	4,310	5.8%	2,653	3.8%	6,963	4.9%	269	0.4%	2,172	5.0%	2,268	14.0%	2,254	19.5%
Longford / Westmeath	3,411	6.0%	2,014	3.8%	5,425	5.0%	227	0.4%	1,794	5.0%	1,679	14.1%	1,725	19.5%
Louth	3,307	6.3%	2,138	4.1%	5,445	5.2%	267	0.5%	1,829	5.9%	1,720	16.4%	1,630	22.4%
Mayo	4,926	8.0%	2,981	4.8%	7,906	6.4%	298	0.5%	2,449	6.1%	2,477	16.5%	2,682	22.8%
Meath	4,241	4.8%	2,463	2.9%	6,704	3.8%	366	0.4%	2,377	4.4%	2,045	12.9%	1,916	18.2%
North Cork	2,582	6.5%	1,551	4.1%	4,132	5.3%	152	0.4%	1,265	5.0%	1,249	14.1%	1,467	19.5%
North Lee – Cork	4,332	5.6%	2,628	3.4%	6,959	4.5%	334	0.4%	2,401	5.1%	2,138	13.9%	2,086	19.6%
North Tipperary / East Limerick	2,619	5.4%	1,527	3.5%	4,146	4.5%	161	0.3%	1,277	4.6%	1,312	12.9%	1,396	18.2%
Roscommon	2,072	6.8%	1,208	4.1%	3,280	5.5%	122	0.4%	960	5.0%	1,030	14.1%	1,168	19.8%
Sligo / Leitrim / West Cavan	3,032	6.7%	1,765	4.0%	4,797	5.4%	161	0.4%	1,459	5.0%	1,496	14.1%	1,681	19.8%
South Lee – Cork	3,625	4.4%	2,317	2.7%	5,942	3.5%	282	0.3%	1,840	3.6%	1,898	10.7%	1,922	15.1%
South Tipperary	2,940	6.5%	1,715	4.1%	4,655	5.4%	164	0.4%	1,438	5.0%	1,387	14.1%	1,666	19.8%
Waterford	3,591	6.1%	2,186	3.9%	5,777	5.0%	228	0.4%	1,833	5.1%	1,805	14.0%	1,911	19.6%
West Cork	1,991	7.5%	1,127	4.5%	3,118	6.0%	98	0.5%	895	5.1%	980	14.2%	1,145	19.8%
Wexford	4,665	7.2%	2,802	4.6%	7,467	5.9%	311	0.5%	2,440	6.0%	2,394	16.5%	2,321	22.9%
Wicklow	3,253	5.4%	2,006	3.3%	5,259	4.3%	229	0.4%	1,799	4.4%	1,704	12.8%	1,528	17.9%
Republic of Ireland	**121,520**	**5.7%**	**73,723**	**3.5%**	**195,243**	**4.6%**	**9,011**	**0.4%**	**63,677**	**5.0%**	**59,946**	**14.1%**	**62,610**	**19.7%**

Table 4.4: Demographic and geographic variation in the percentage of adults in Northern Ireland who have ever had a heart attack or angina (2007).

	Males (16+ years)		Females (16+ years)		Persons (16+ years)		16-44 years		45-64 years		65-74 years		75+ years	
Local Government District	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence
Antrim	1,048	5.2%	699	3.4%	1,746	4.3%	87	0.4%	637	5.4%	517	14.4%	504	19.9%
Ards	1,759	5.9%	1,206	3.8%	2,966	4.8%	108	0.4%	1,043	5.0%	854	13.3%	961	18.3%
Armagh	1,241	5.8%	850	3.7%	2,092	4.7%	83	0.4%	719	5.3%	622	14.5%	668	19.7%
Ballymena	1,495	6.2%	1,054	4.2%	2,548	5.2%	96	0.4%	820	5.4%	755	14.4%	877	19.8%
Ballymoney	663	5.8%	456	3.9%	1,119	4.8%	47	0.4%	368	5.3%	326	14.4%	378	19.9%
Banbridge	896	5.0%	611	3.3%	1,507	4.2%	71	0.4%	512	4.7%	432	13.1%	492	18.4%
Belfast	8,766	8.8%	7,433	6.4%	16,198	7.5%	647	0.6%	5,021	8.7%	4,619	22.5%	5,911	29.6%
Carrickfergus	842	5.5%	588	3.6%	1,430	4.5%	59	0.4%	475	4.8%	424	13.3%	473	18.2%
Castlereagh	1,500	6.1%	1,115	4.0%	2,615	5.0%	95	0.4%	753	4.6%	747	13.1%	1,021	18.3%
Coleraine	1,387	6.4%	989	4.2%	2,376	5.3%	83	0.4%	754	5.3%	733	14.4%	806	19.7%
Cookstown	829	6.1%	568	4.1%	1,396	5.1%	63	0.4%	489	6.3%	394	17.0%	450	23.1%
Craigavon	2,133	6.3%	1,532	4.3%	3,665	5.3%	169	0.5%	1,262	6.3%	1,078	16.8%	1,155	22.9%
Derry	3,131	7.8%	2,286	5.3%	5,417	6.5%	295	0.6%	2,093	8.7%	1,564	23.0%	1,465	30.1%
Down	1,510	5.7%	1,033	3.8%	2,543	4.7%	105	0.4%	869	5.3%	730	14.5%	839	19.8%
Dungannon	1,074	5.1%	738	3.5%	1,812	4.3%	81	0.3%	611	5.2%	526	14.4%	594	19.7%
Fermanagh	1,436	5.9%	942	3.9%	2,378	4.9%	91	0.4%	808	5.4%	671	14.6%	807	19.9%
Larne	784	6.4%	535	4.1%	1,319	5.2%	48	0.4%	451	5.4%	399	14.3%	421	19.9%
Limavady	784	5.8%	511	4.0%	1,295	4.9%	69	0.5%	485	6.3%	368	17.2%	373	23.1%
Lisburn	2,342	5.6%	1,665	3.6%	4,007	4.6%	173	0.4%	1,395	5.2%	1,166	14.4%	1,272	19.7%
Magherafelt	846	5.1%	553	3.4%	1,399	4.2%	68	0.4%	480	5.2%	400	14.5%	452	20.1%
Moyle	496	7.7%	336	4.9%	831	6.3%	29	0.5%	279	6.6%	251	17.0%	272	23.0%
Newry & Mourne	2,173	6.1%	1,498	4.1%	3,671	5.1%	173	0.4%	1,295	6.2%	1,087	17.0%	1,116	22.9%
Newtownabbey	1,911	6.2%	1,370	4.0%	3,281	5.0%	125	0.4%	1,058	5.3%	959	14.3%	1,139	19.8%
North Down	1,868	6.1%	1,393	4.2%	3,261	5.1%	104	0.4%	1,069	5.0%	888	13.3%	1,200	18.0%
Omagh	1,213	6.2%	825	4.1%	2,038	5.1%	94	0.4%	731	6.2%	575	16.9%	638	23.0%
Strabane	1,336	8.9%	913	6.0%	2,248	7.4%	111	0.7%	794	9.1%	673	23.0%	669	30.6%
Northern Ireland	**43,462**	**6.5%**	**31,696**	**4.5%**	**75,158**	**5.4%**	**3,173**	**0.4%**	**25,273**	**6.1%**	**21,759**	**16.5%**	**24,954**	**22.4%**

Table 4.5: Demographic and geographic variation in the percentage of adults in Northern Ireland who have ever had a heart attack or angina (2015).

	Males (16+ years)		Females (16+ years)		Persons (16+ years)		16-44 years		45-64 years		65-74 years		75+ years	
Local Government District	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence
Antrim	1,316	5.8%	853	3.6%	2,169	4.7%	84	0.3%	687	5.1%	696	14.5%	702	20.2%
Ards	2,224	6.9%	1,445	4.2%	3,669	5.5%	97	0.3%	1,090	4.8%	1,272	13.3%	1,210	18.7%
Armagh	1,547	6.4%	1,008	4.0%	2,555	5.2%	84	0.3%	796	5.3%	801	14.5%	874	20.1%
Ballymena	1,786	6.9%	1,244	4.6%	3,030	5.7%	86	0.4%	882	5.2%	914	14.4%	1,149	20.0%
Ballymoney	867	6.6%	554	4.2%	1,422	5.4%	48	0.4%	439	5.2%	436	14.5%	498	20.4%
Banbridge	1,152	5.6%	768	3.7%	1,920	4.6%	68	0.3%	642	4.8%	583	13.3%	626	18.4%
Belfast	9,238	9.3%	7,335	6.6%	16,573	7.9%	610	0.6%	5,151	8.8%	4,634	22.8%	6,178	30.2%
Carrickfergus	1,122	6.8%	714	4.0%	1,836	5.4%	48	0.3%	583	4.8%	552	13.4%	652	18.8%
Castlereagh	1,643	6.6%	1,192	4.4%	2,835	5.4%	68	0.3%	845	4.7%	794	13.0%	1,128	18.4%
Coleraine	1,673	7.7%	1,107	4.8%	2,780	6.2%	65	0.3%	802	5.4%	861	14.5%	1,053	20.2%
Cookstown	1,043	6.8%	671	4.4%	1,714	5.6%	68	0.4%	555	6.4%	518	17.0%	573	23.6%
Craigavon	2,623	6.8%	1,808	4.5%	4,431	5.6%	174	0.4%	1,434	6.1%	1,340	16.9%	1,483	23.3%
Derry	3,925	9.2%	2,752	6.1%	6,677	7.6%	272	0.6%	2,424	8.6%	2,009	23.0%	1,971	30.8%
Down	1,870	6.4%	1,227	4.1%	3,097	5.2%	98	0.3%	988	5.2%	958	14.6%	1,054	20.1%
Dungannon	1,359	5.1%	865	3.5%	2,224	4.3%	102	0.3%	733	5.2%	652	14.5%	737	20.2%
Fermanagh	1,777	6.7%	1,094	4.2%	2,871	5.4%	95	0.4%	914	5.4%	864	14.6%	999	20.4%
Larne	951	7.5%	601	4.5%	1,552	6.0%	37	0.3%	478	5.3%	505	14.5%	533	20.4%
Limavady	996	6.8%	641	4.7%	1,636	5.8%	66	0.5%	562	6.3%	507	17.1%	501	23.2%
Lisburn	2,930	6.4%	2,000	4.0%	4,930	5.1%	155	0.3%	1,575	5.2%	1,523	14.5%	1,677	20.0%
Magherafelt	1,034	5.4%	659	3.6%	1,693	4.6%	74	0.4%	576	5.2%	491	14.5%	552	20.2%
Moyle	587	8.4%	371	5.1%	958	6.8%	27	0.4%	300	6.5%	291	17.1%	340	23.8%
Newry & Mourne	2,739	6.7%	1,789	4.3%	4,528	5.4%	178	0.4%	1,546	6.2%	1,316	17.1%	1,489	23.4%
Newtownabbey	2,184	6.9%	1,559	4.5%	3,743	5.7%	99	0.3%	1,117	5.2%	1,137	14.4%	1,390	19.9%
North Down	2,205	7.0%	1,558	4.6%	3,763	5.8%	90	0.3%	1,042	4.9%	1,204	13.2%	1,426	18.5%
Omagh	1,536	6.9%	992	4.5%	2,528	5.7%	95	0.4%	875	6.4%	745	17.0%	812	23.4%
Strabane	1,627	10.4%	1,083	6.7%	2,710	8.5%	100	0.6%	886	8.8%	833	23.1%	891	30.9%
Northern Ireland	**51,958**	**7.2%**	**35,890**	**4.7%**	**87,848**	**5.9%**	**2,990**	**0.4%**	**27,921**	**6.1%**	**26,436**	**16.4%**	**30,501**	**22.6%**

Table 4.6: Demographic and geographic variation in the percentage of adults in Northern Ireland who have ever had a heart attack or angina (2020)

	Males (16+ years)		Females (16+ years)		Persons (16+ years)		16-44 years		45-64 years		65-74 years		75+ years	
Local Government District	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence
Antrim	1,507	6.2%	975	3.8%	2,482	5.0%	90	0.3%	755	5.3%	723	14.6%	913	20.3%
Ards	2,542	7.7%	1,627	4.5%	4,169	6.0%	96	0.3%	1,171	5.0%	1,320	13.3%	1,582	19.1%
Armagh	1,758	6.9%	1,127	4.2%	2,884	5.5%	87	0.3%	855	5.4%	863	14.6%	1,080	20.4%
Ballymena	1,984	7.4%	1,375	4.9%	3,359	6.1%	89	0.4%	938	5.3%	971	14.4%	1,362	20.1%
Ballymoney	1,012	7.2%	629	4.4%	1,641	5.8%	48	0.4%	508	5.4%	463	14.5%	622	20.6%
Banbridge	1,353	6.1%	887	4.0%	2,240	5.0%	71	0.3%	724	4.9%	655	13.3%	789	18.6%
Belfast	9,627	9.9%	7,409	6.9%	17,036	8.4%	636	0.6%	5,259	9.1%	4,620	22.9%	6,522	30.5%
Carrickfergus	1,328	7.9%	809	4.4%	2,137	6.1%	45	0.3%	648	5.1%	624	13.5%	820	19.1%
Castlereagh	1,743	7.2%	1,247	4.8%	2,990	5.9%	62	0.3%	891	5.2%	818	13.2%	1,219	18.5%
Coleraine	1,846	8.6%	1,187	5.3%	3,032	6.9%	58	0.3%	821	5.6%	894	14.6%	1,259	20.4%
Cookstown	1,197	7.4%	750	4.7%	1,947	6.1%	75	0.5%	608	6.5%	555	17.0%	709	23.8%
Craigavon	2,992	7.2%	2,019	4.6%	5,011	5.9%	195	0.4%	1,599	6.4%	1,421	16.9%	1,796	23.5%
Derry	4,477	10.3%	3,125	6.8%	7,602	8.5%	280	0.7%	2,668	9.1%	2,254	23.0%	2,400	30.9%
Down	2,131	7.0%	1,380	4.4%	3,511	5.7%	105	0.4%	1,070	5.5%	1,062	14.6%	1,274	20.3%
Dungannon	1,591	5.3%	973	3.6%	2,564	4.5%	123	0.4%	846	5.3%	724	14.5%	871	20.4%
Fermanagh	2,018	7.3%	1,220	4.5%	3,237	5.9%	99	0.4%	974	5.4%	990	14.7%	1,174	20.6%
Larne	1,062	8.5%	651	4.9%	1,713	6.6%	35	0.4%	514	5.7%	519	14.6%	645	20.6%
Limavady	1,151	7.7%	739	5.3%	1,890	6.6%	62	0.5%	612	6.4%	578	17.2%	638	23.4%
Lisburn	3,330	7.1%	2,248	4.3%	5,578	5.6%	166	0.4%	1,713	5.4%	1,629	14.5%	2,069	20.2%
Magherafelt	1,192	5.9%	740	3.9%	1,932	4.9%	74	0.4%	649	5.3%	562	14.6%	647	20.2%
Moyle	654	9.2%	406	5.5%	1,059	7.3%	28	0.4%	304	6.5%	327	17.3%	400	24.0%
Newry & Mourne	3,152	7.1%	2,010	4.5%	5,163	5.8%	201	0.4%	1,714	6.5%	1,490	17.1%	1,757	23.6%
Newtownabbey	2,354	7.4%	1,684	4.9%	4,038	6.1%	89	0.3%	1,165	5.4%	1,169	14.4%	1,615	20.1%
North Down	2,426	7.7%	1,689	5.0%	4,115	6.3%	89	0.3%	1,053	5.1%	1,222	13.2%	1,751	18.7%
Omagh	1,768	7.6%	1,123	4.9%	2,891	6.2%	102	0.4%	934	6.6%	871	17.2%	984	23.6%
Strabane	1,838	11.5%	1,195	7.2%	3,033	9.3%	92	0.6%	974	9.1%	891	23.3%	1,076	31.0%
Northern Ireland	**58,032**	**7.8%**	**39,223**	**5.1%**	**97,255**	**6.4%**	**3,100**	**0.4%**	**29,964**	**6.3%**	**28,215**	**16.4%**	**35,975**	**22.7%**

5 Stroke

CHAPTER 5. STROKE

This chapter relates to adults (aged 16 years and over) who have ever been told by a doctor that they have had a stroke.

Detailed estimates and forecasts of stroke prevalence, broken down by age and sex within each area, are given at the end of the chapter.

KEY POINTS: STROKE

In 2007, almost 59,000 adults in the Republic of Ireland (1.7%) have ever had a stroke. By 2020 this is expected to rise to almost 87,000 (2.1%). This represents a 48% increase – an additional 28,000 adults – in less than 15 years.

In 2007, almost 33,000 adults in Northern Ireland (2.4%) have ever had a stroke. By 2020 this is expected to rise to over 42,000 (2.8%). This represents a 29% increase – an additional 10,000 adults – in less than 15 years.

Stroke prevalence is similar amongst males and females.

Stroke prevalence increases with age. More than one in ten adults aged 75 years and over have ever had a stroke. In 2020 relatively more of the adults living with a stroke will belong in the older age groups.

Strokes tend to be most common in northern parts of the island and least common around Dublin.

Local socio-economic circumstances affect stroke prevalence. Amongst males and females, and across all age groups, strokes tend to be more common in more deprived areas.

The stroke prevalence rate is higher in Northern Ireland than in the Republic of Ireland. North-South differences in the current and future stroke prevalence are chiefly due to differences in current and (projected) future demographic and socio-economic profiles and smoking rates.

National Estimates in 2007

In 2007, 1.7% of adults in the Republic of Ireland (58,778 people) and 2.4% of adults in Northern Ireland (32,941 people) have ever had a stroke.

The estimated stroke prevalence rate (1.7%) in the Republic of Ireland is higher than estimates from other survey studies. Direct comparisons with these studies, however, are confounded by important differences in methodology.

- In the SLÁN 2007 survey (Morgan et al, 2008) less than 1% of adults aged 18 years and over report having had a doctor-diagnosis of stroke in the previous 12 months.
- In the CSO's Quarterly National Household Survey 2007 (CSO, 2008) 1% of adults aged 18 years and over report ever having had a doctor-diagnosis of stroke.

The estimated stroke prevalence rate (2.4%) in Northern Ireland is higher than estimates from other studies:

- It is higher (2.4% compared to 1.6%) than the Quality and Outcomes Framework (QOF) estimate that is based on primary care data (DHSSPS, 2007). However, this is not unexpected because the QOF covers all ages while this report covers adults aged 16 years and over.
- The Health and Social Wellbeing Survey 2005-2006 found that 2% of adults aged 16 years and over have ever been told by a doctor that they have had a stroke (DHSSPS, 2007).

Again, direct comparisons are confounded by important differences in methodology.

The stroke prevalence rate in England in 2006 is estimated to be 2.3% (HSfE, 2006). The percentage of adults who are living with a stroke is lower in the Republic of Ireland than it is in either Northern Ireland or England. This is chiefly due to differences in the three countries' demographic and socio-economic profiles, and smoking rates. In particular, both Northern Ireland and England have an older population than the Republic of Ireland.

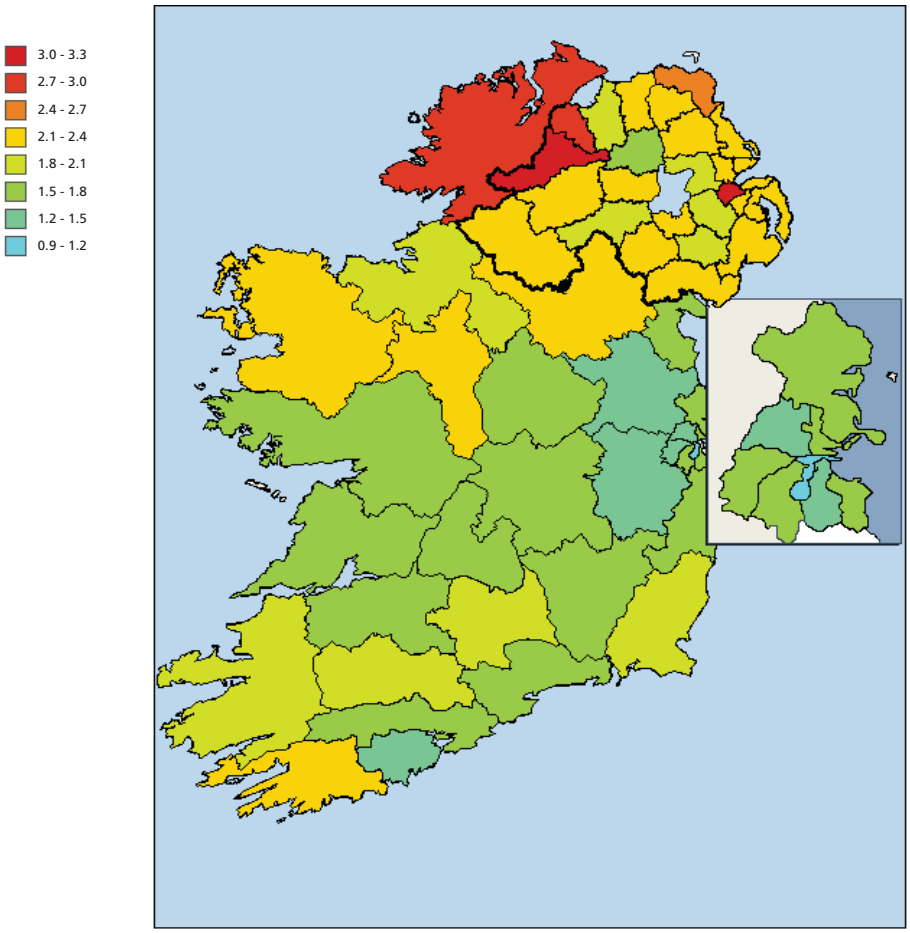
Demographic Variation in 2007

Similar percentages of males and females have ever had a stroke. This is true in both the Republic of Ireland (male 1.8%, female 1.7%) and Northern Ireland (male 2.4%, female 2.4%).

Strokes are more common in older age groups. One in ten adults aged 75 years and over in Northern Ireland (11.8%) and the Republic of Ireland (10.3%) have ever had a stroke.

Geographic Variation in 2007

Figure 5.1: Percentage of adults who have ever had a stroke; across Local Health Offices (LHOs) in the Republic of Ireland and Local Government Districts (LGDs) in Northern Ireland (2007).



From INISPHO eData http://www.inispho.org/eData

In addition to the higher stroke prevalence rate in Northern Ireland, many of the areas with higher stroke prevalence rates are in northern parts of the island. The exceptions are Mayo LHO and West Cork LHO. Stroke prevalence tends to be lower in parts of Dublin and its surrounds.

Socio-economic Variation in 2007

Local socio-economic circumstances in an area affect stroke prevalence.

Figure 5.2: Percentage of adults who have ever had a stroke; across the deprivation bands[18] in the Republic of Ireland within each sex and each age group (2007).

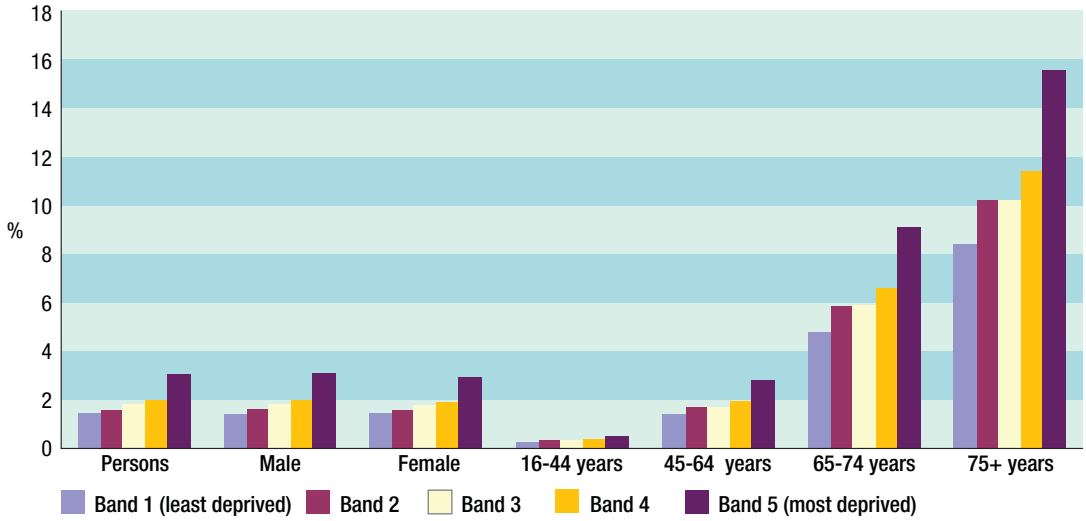
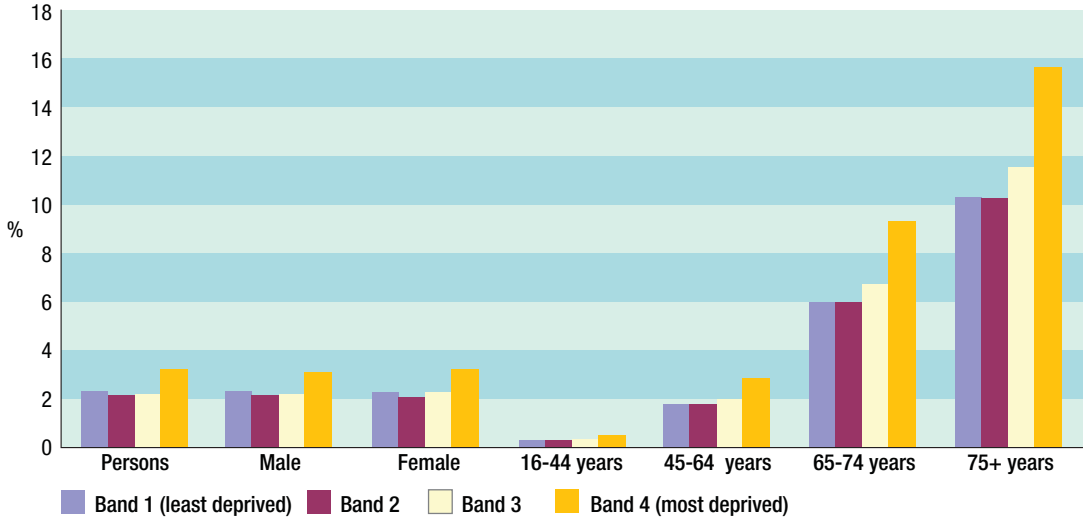


Figure 5.3: Percentage of adults who have ever had a stroke; across the deprivation bands[18] in Northern Ireland within each sex and each age group (2007).



18 See this report's technical supplement for definitions of the deprivation bands.

Within each age group, and amongst males and females (at least in the Republic of Ireland), stroke prevalence rates increase as you move from the least deprived areas to the most deprived areas[19]. In the Republic of Ireland stroke prevalence in the most deprived LHOs is 2.2 times what it is in the least deprived LHOs. In Northern Ireland stroke prevalence in the most deprived LGDs is 1.4 times what it is in the least deprived LGDs. The effect of local socio-economic circumstances on stroke prevalence rates appears to be the same amongst males and females, and does not seem to depend on age.

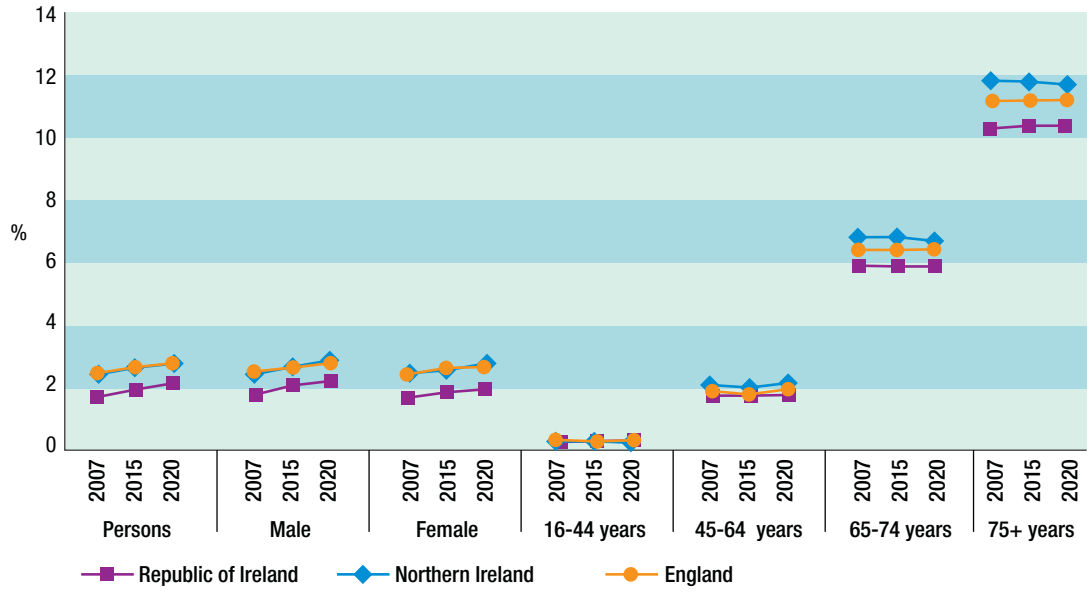
How Stroke Prevalence Will Change Between 2007 and 2020

The percentage of adults who have ever had a stroke is expected to increase over time:

- In Northern Ireland, it is expected to increase from 2.4% in 2007 to 2.6% in 2015 to 2.8% in 2020.
- In the Republic of Ireland, it is expected to increase from 1.7% in 2007 to 1.9% in 2015 to 2.1% in 2020.

With a growing and ageing population, more adults will be living with a stroke in 2020 than in 2007. The number of adults in Northern Ireland living with a stroke is expected to rise from 32,941 in 2007 to 42,457 in 2020; an increase of 9,516 adults (or 28.9%). The number of adults in the Republic of Ireland living with a stroke is expected to rise from 58,778 in 2007 to 86,845 in 2020; an increase of 28,067 adults (or 47.8%). A proportionally larger increase is expected in the Republic of Ireland because its population is projected to increase more than Northern Ireland's.

Figure 5.4: Expected changes in the percentage of adults in the Republic of Ireland, Northern Ireland and England who have ever had a stroke; within each sex group and age group (2007, 2015, 2020).



19 Direct North-South comparison is confounded by the fact there are five deprivation bands in the Republic of Ireland but only four deprivation bands in Northern Ireland. See this report's technical supplement for details.

Amongst males and females, and in each age group, similar changes in stroke prevalence rates are expected in each country (the Republic of Ireland, Northern Ireland and England).

Like CHD, differences between stroke prevalence rates in the three countries appear to be greater in the older age groups.

An ageing population profile and higher stroke prevalence rates in older age groups mean that a growing percentage of adults living with a stroke will belong to the older age groups. Between 2007 and 2020, the percentage of adults living with stroke who are aged 65 years and over will rise in the Republic of Ireland from 62.8% to 67.1%. In Northern Ireland the percentage will rise from 67.2% to 71.2%.

Table 5.1: Demographic and geographic variation in the percentage of adults in the Republic of Ireland who have ever had a stroke (2007).

	Males (16+ years)		Females (16+ years)		Persons (16+ years)		16-44 years		45-64 years		65-74 years		75+ years	
Local Health Office	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence
Carlow / Kilkenny	866	1.8%	819	1.7%	1,685	1.8%	157	0.3%	463	1.7%	441	5.8%	625	10.2%
Cavan / Monaghan	1,020	2.1%	946	2.1%	1,965	2.1%	169	0.3%	513	1.9%	499	6.5%	785	11.3%
Clare	803	1.9%	753	1.8%	1,556	1.8%	138	0.3%	438	1.7%	404	5.8%	575	10.1%
Donegal	1,769	3.1%	1,644	2.9%	3,413	3.0%	291	0.5%	924	2.7%	904	9.1%	1,295	15.5%
Dublin North	1,372	1.6%	1,363	1.5%	2,736	1.5%	317	0.3%	826	1.7%	793	5.8%	799	10.2%
Dublin North Central	857	1.6%	962	1.8%	1,819	1.7%	180	0.3%	404	1.7%	487	5.8%	748	10.1%
Dublin North West	1,004	1.3%	1,071	1.4%	2,075	1.4%	287	0.3%	554	1.6%	517	5.8%	717	10.2%
Dublin South City	635	1.1%	696	1.2%	1,331	1.2%	166	0.2%	349	1.3%	315	4.8%	500	8.3%
Dublin South East	612	1.4%	717	1.5%	1,329	1.4%	128	0.2%	330	1.4%	338	4.7%	533	8.3%
Dublin South West	1,057	1.8%	1,096	1.8%	2,153	1.8%	224	0.3%	651	1.9%	592	6.5%	686	11.4%
Dublin West	754	1.4%	780	1.5%	1,534	1.5%	225	0.3%	479	1.8%	373	6.5%	458	11.3%
Dun Laoghaire South Dublin	815	1.7%	921	1.7%	1,736	1.7%	128	0.2%	428	1.4%	486	4.7%	694	8.4%
Galway	1,598	1.7%	1,516	1.6%	3,113	1.7%	304	0.3%	821	1.6%	813	5.8%	1,175	10.1%
Kerry	1,118	2.0%	1,074	2.0%	2,192	2.0%	166	0.3%	580	1.7%	581	5.8%	865	10.1%
Kildare / West Wicklow	1,088	1.4%	1,025	1.3%	2,113	1.3%	293	0.3%	703	1.6%	498	5.8%	619	10.1%
Laois / Offaly	976	1.8%	893	1.7%	1,870	1.7%	182	0.3%	511	1.6%	488	5.8%	689	10.2%
Limerick	1,070	1.8%	1,053	1.7%	2,123	1.7%	192	0.3%	582	1.7%	580	5.8%	768	10.1%
Longford / Westmeath	807	1.8%	789	1.7%	1,596	1.8%	147	0.3%	433	1.7%	415	5.8%	601	10.1%
Louth	801	1.8%	824	1.8%	1,624	1.8%	169	0.3%	453	1.9%	425	6.5%	577	11.2%
Mayo	1,183	2.4%	1,142	2.3%	2,325	2.4%	161	0.3%	587	1.9%	617	6.5%	961	11.3%
Meath	934	1.5%	885	1.4%	1,819	1.4%	234	0.3%	562	1.6%	447	5.8%	576	10.1%
North Cork	623	1.9%	620	1.9%	1,243	1.9%	101	0.3%	323	1.7%	325	5.8%	495	10.1%
North Lee - Cork	1,056	1.6%	1,047	1.6%	2,103	1.6%	227	0.3%	614	1.7%	559	5.8%	704	10.1%
North Tipperary / East Limerick	706	1.8%	663	1.7%	1,369	1.8%	124	0.3%	374	1.7%	363	5.8%	508	10.1%
Roscommon	523	2.2%	490	2.1%	1,013	2.1%	69	0.3%	245	1.7%	268	5.8%	431	10.2%
Sligo / Leitrim / West Cavan	758	2.1%	720	2.0%	1,478	2.0%	109	0.3%	380	1.7%	384	5.8%	605	10.2%
South Lee - Cork	933	1.3%	1,000	1.3%	1,933	1.3%	195	0.2%	515	1.3%	530	4.7%	693	8.3%
South Tipperary	709	2.0%	668	1.9%	1,376	1.9%	109	0.3%	361	1.7%	366	5.8%	541	10.2%
Waterford	869	1.8%	852	1.8%	1,720	1.8%	155	0.3%	461	1.7%	477	5.8%	627	10.2%
West Cork	474	2.2%	447	2.1%	922	2.2%	61	0.3%	227	1.7%	252	5.8%	381	10.1%
Wexford	1,076	2.1%	1,025	2.0%	2,102	2.0%	191	0.3%	579	1.9%	603	6.5%	728	11.3%
Wicklow	702	1.6%	709	1.6%	1,411	1.6%	147	0.3%	425	1.6%	374	5.8%	465	10.1%
Republic of Ireland	**29,568**	**1.8%**	**29,211**	**1.7%**	**58,778**	**1.7%**	**5,744**	**0.3%**	**16,096**	**1.7%**	**15,513**	**5.9%**	**21,426**	**10.3%**

Table 5.2: Demographic and geographic variation in the percentage of adults in the Republic of Ireland who have ever had a stroke (2015).

	Males (16+ years)		Females (16+ years)		Persons (16+ years)		16-44 years		45-64 years		65-74 years		75+ years	
Local Health Office	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence
Carlow / Kilkenny	1,127	2.0%	1,008	1.9%	2,136	2.0%	174	0.3%	553	1.7%	595	5.8%	814	10.2%
Cavan / Monaghan	1,292	2.3%	1,130	2.2%	2,422	2.3%	188	0.3%	601	1.9%	684	6.5%	948	11.4%
Clare	1,029	2.1%	917	2.0%	1,945	2.0%	152	0.3%	506	1.7%	557	5.8%	730	10.2%
Donegal	2,242	3.4%	1,968	3.0%	4,210	3.2%	323	0.5%	1,083	2.7%	1,240	9.1%	1,564	15.6%
Dublin North	1,791	1.8%	1,669	1.6%	3,460	1.7%	381	0.3%	989	1.7%	1,042	5.8%	1,048	10.3%
Dublin North Central	1,131	1.9%	1,178	1.9%	2,309	1.9%	210	0.3%	484	1.7%	640	5.8%	976	10.2%
Dublin North West	1,309	1.5%	1,307	1.5%	2,616	1.5%	340	0.3%	663	1.6%	679	5.8%	935	10.2%
Dublin South City	828	1.3%	848	1.3%	1,676	1.3%	194	0.2%	418	1.3%	414	4.8%	650	8.4%
Dublin South East	806	1.6%	877	1.6%	1,683	1.6%	152	0.2%	395	1.4%	443	4.7%	693	8.4%
Dublin South West	1,380	2.0%	1,340	1.9%	2,720	2.0%	265	0.3%	779	1.9%	777	6.5%	899	11.5%
Dublin West	976	1.6%	951	1.6%	1,926	1.6%	268	0.3%	572	1.8%	490	6.5%	597	11.4%
Dun Laoghaire South Dublin	1,080	1.9%	1,131	1.8%	2,210	1.8%	154	0.3%	512	1.4%	638	4.7%	906	8.5%
Galway	2,010	1.9%	1,803	1.7%	3,813	1.8%	359	0.3%	982	1.7%	1,081	5.8%	1,391	10.2%
Kerry	1,465	2.3%	1,304	2.1%	2,769	2.2%	182	0.3%	685	1.7%	788	5.8%	1,114	10.2%
Kildare / West Wicklow	1,566	1.6%	1,394	1.4%	2,961	1.5%	354	0.3%	921	1.6%	823	5.8%	863	10.2%
Laois / Offaly	1,283	2.0%	1,096	1.8%	2,378	1.9%	207	0.3%	632	1.7%	673	5.8%	866	10.3%
Limerick	1,371	2.0%	1,285	1.9%	2,655	1.9%	210	0.3%	672	1.7%	800	5.8%	973	10.2%
Longford / Westmeath	1,061	2.0%	966	1.9%	2,027	2.0%	167	0.3%	536	1.7%	573	5.8%	751	10.2%
Louth	1,010	2.0%	985	2.0%	1,995	2.0%	189	0.3%	531	1.9%	583	6.5%	692	11.3%
Mayo	1,494	2.6%	1,355	2.4%	2,849	2.5%	191	0.3%	702	1.9%	820	6.5%	1,136	11.4%
Meath	1,355	1.7%	1,206	1.5%	2,561	1.6%	284	0.3%	737	1.6%	739	5.8%	802	10.2%
North Cork	815	2.2%	753	2.1%	1,567	2.1%	110	0.3%	381	1.7%	440	5.8%	635	10.2%
North Lee - Cork	1,365	1.8%	1,269	1.7%	2,634	1.8%	249	0.3%	724	1.7%	757	5.8%	904	10.2%
North Tipperary / East Limerick	905	2.0%	808	1.9%	1,713	2.0%	135	0.3%	432	1.7%	500	5.8%	645	10.2%
Roscommon	661	2.3%	581	2.2%	1,243	2.3%	82	0.3%	293	1.7%	357	5.8%	511	10.2%
Sligo / Leitrim / West Cavan	963	2.3%	860	2.1%	1,823	2.2%	121	0.3%	446	1.7%	527	5.8%	730	10.2%
South Lee - Cork	1,211	1.5%	1,214	1.5%	2,425	1.5%	212	0.2%	608	1.3%	717	4.7%	887	8.4%
South Tipperary	927	2.2%	824	2.1%	1,750	2.2%	121	0.3%	432	1.7%	492	5.8%	705	10.3%
Waterford	1,131	2.0%	1,050	1.9%	2,182	2.0%	172	0.3%	551	1.7%	643	5.8%	816	10.2%
West Cork	625	2.5%	544	2.3%	1,169	2.4%	68	0.3%	268	1.7%	342	5.8%	491	10.2%
Wexford	1,400	2.3%	1,265	2.2%	2,666	2.2%	213	0.3%	692	1.9%	812	6.5%	948	11.4%
Wicklow	1,026	1.9%	972	1.8%	1,998	1.8%	178	0.3%	557	1.6%	618	5.8%	646	10.1%
Republic of Ireland	**38,634**	**2.0%**	**35,859**	**1.8%**	**74,493**	**1.9%**	**6,606**	**0.3%**	**19,339**	**1.7%**	**21,284**	**5.9%**	**27,264**	**10.4%**

Table 5.3: Demographic and geographic variation in the percentage of adults in the Republic of Ireland who have ever had a stroke (2020).

	Males (16+ years)		Females (16+ years)		Persons (16+ years)		16-44 years		45-64 years		65-74 years		75+ years	
Local Health Office	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence
Carlow / Kilkenny	1329	2.2%	1,154	2.1%	2,484	2.1%	177	0.3%	616	1.7%	692	5.8%	999	10.3%
Cavan / Monaghan	1,507	2.6%	1,277	2.3%	2,784	2.5%	192	0.3%	657	1.9%	799	6.5%	1,135	11.5%
Clare	1,201	2.3%	1,041	2.1%	2,242	2.2%	157	0.3%	545	1.7%	654	5.8%	885	10.2%
Donegal	2,613	3.7%	2,224	3.2%	4,837	3.5%	332	0.5%	1,183	2.7%	1,448	9.1%	1,873	15.7%
Dublin North	2,119	1.9%	1,908	1.7%	4,028	1.8%	417	0.3%	1,127	1.7%	1,224	5.8%	1,260	10.3%
Dublin North Central	1,348	2.1%	1,350	2.0%	2,698	2.0%	226	0.3%	551	1.7%	751	5.8%	1,170	10.3%
Dublin North West	1,548	1.7%	1,492	1.6%	3,040	1.6%	366	0.3%	756	1.6%	797	5.8%	1,122	10.3%
Dublin South City	979	1.4%	969	1.4%	1,948	1.4%	207	0.2%	477	1.3%	486	4.8%	778	8.4%
Dublin South East	960	1.7%	1,004	1.6%	1,964	1.7%	164	0.3%	450	1.4%	521	4.8%	829	8.4%
Dublin South West	1,635	2.2%	1,532	2.0%	3,167	2.1%	287	0.3%	887	1.9%	912	6.5%	1,081	11.5%
Dublin West	1,149	1.7%	1,085	1.6%	2,234	1.7%	291	0.4%	653	1.8%	575	6.5%	715	11.4%
Dun Laoghaire South Dublin	1,292	2.0%	1,298	1.8%	2,590	1.9%	170	0.3%	584	1.4%	749	4.7%	1,087	8.5%
Galway	2,329	2.1%	2,053	1.8%	4,382	1.9%	378	0.3%	1,074	1.7%	1,286	5.8%	1,645	10.3%
Kerry	1,724	2.6%	1,485	2.3%	3,208	2.4%	186	0.3%	756	1.7%	921	5.8%	1,346	10.2%
Kildare / West Wicklow	1,946	1.8%	1,698	1.6%	3,644	1.7%	370	0.3%	1,095	1.6%	1,019	5.8%	1,159	10.2%
Laois / Offaly	1,521	2.2%	1,256	2.0%	2,777	2.1%	208	0.3%	708	1.7%	813	5.8%	1,048	10.3%
Limerick	1,599	2.2%	1,459	2.1%	3,058	2.1%	215	0.3%	724	1.7%	939	5.8%	1,180	10.2%
Longford / Westmeath	1,258	2.2%	1,109	2.1%	2,366	2.2%	168	0.3%	600	1.7%	692	5.8%	906	10.2%
Louth	1,168	2.2%	1,111	2.1%	2,279	2.2%	193	0.3%	581	1.9%	681	6.5%	825	11.4%
Mayo	1,741	2.8%	1,548	2.5%	3,289	2.7%	204	0.4%	768	1.9%	976	6.5%	1,342	11.4%
Meath	1,691	1.9%	1,474	1.7%	3,166	1.8%	297	0.3%	876	1.6%	915	5.8%	1,077	10.2%
North Cork	957	2.4%	856	2.3%	1,813	2.3%	112	0.3%	420	1.7%	515	5.8%	766	10.2%
North Lee - Cork	1,588	2.0%	1,437	1.9%	3,026	1.9%	252	0.3%	799	1.7%	885	5.8%	1,090	10.2%
North Tipperary / East Limerick	1,058	2.2%	917	2.1%	1,975	2.1%	139	0.3%	466	1.7%	587	5.8%	783	10.2%
Roscommon	772	2.5%	665	2.3%	1,437	2.4%	88	0.3%	320	1.7%	424	5.8%	605	10.3%
Sligo / Leitrim / West Cavan	1,126	2.5%	973	2.2%	2,099	2.4%	124	0.3%	487	1.7%	615	5.8%	873	10.3%
South Lee - Cork	1,414	1.7%	1,377	1.6%	2,791	1.6%	215	0.2%	670	1.3%	839	4.7%	1,067	8.4%
South Tipperary	1,098	2.4%	946	2.3%	2,044	2.4%	124	0.3%	481	1.7%	573	5.8%	866	10.3%
Waterford	1,333	2.3%	1,204	2.1%	2,537	2.2%	175	0.3%	614	1.7%	748	5.8%	1,000	10.3%
West Cork	739	2.8%	621	2.5%	1,359	2.6%	70	0.3%	296	1.7%	400	5.8%	593	10.3%
Wexford	1,648	2.6%	1,449	2.4%	3,097	2.5%	218	0.4%	771	1.9%	945	6.5%	1,164	11.5%
Wicklow	1,287	2.1%	1,194	1.9%	2,480	2.0%	187	0.3%	662	1.6%	766	5.8%	866	10.2%
Republic of Ireland	**45,678**	**2.2%**	**41,168**	**2.0%**	**86,845**	**2.1%**	**6,907**	**0.3%**	**21,655**	**1.7%**	**25,148**	**5.9%**	**33,135**	**10.4%**

Table 5.4: Demographic and geographic variation in the percentage of adults in Northern Ireland who have ever had a stroke (2007).

	Males (16+ years)		Females (16+ years)		Persons (16+ years)		16-44 years		45-64 years		65-74 years		75+ years	
Local Government District	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence
Antrim	376	1.9%	376	1.8%	752	1.9%	68	0.3%	209	1.8%	213	5.9%	262	10.3%
Ards	678	2.3%	704	2.2%	1,382	2.2%	90	0.3%	372	1.8%	380	5.9%	540	10.3%
Armagh	446	2.1%	463	2.0%	909	2.1%	67	0.3%	237	1.8%	256	6.0%	349	10.3%
Ballymena	541	2.3%	572	2.3%	1,113	2.3%	74	0.3%	270	1.8%	311	5.9%	458	10.3%
Ballymoney	241	2.1%	248	2.1%	489	2.1%	37	0.3%	121	1.7%	135	5.9%	196	10.3%
Banbridge	353	2.0%	363	2.0%	716	2.0%	59	0.3%	186	1.7%	195	5.9%	276	10.3%
Belfast	3,211	3.2%	3,933	3.4%	7,144	3.3%	525	0.5%	1,600	2.8%	1,900	9.3%	3,118	15.6%
Carrickfergus	329	2.2%	349	2.1%	677	2.1%	49	0.3%	172	1.7%	189	5.9%	267	10.3%
Castlereagh	600	2.4%	670	2.4%	1,269	2.4%	78	0.3%	277	1.7%	338	5.9%	576	10.3%
Coleraine	501	2.3%	537	2.3%	1,037	2.3%	65	0.3%	249	1.8%	303	5.9%	421	10.3%
Cookstown	290	2.1%	292	2.1%	581	2.1%	49	0.3%	153	2.0%	155	6.7%	224	11.5%
Craigavon	741	2.2%	787	2.2%	1,528	2.2%	126	0.3%	396	2.0%	426	6.7%	580	11.5%
Derry	1,116	2.8%	1,179	2.8%	2,295	2.8%	224	0.5%	668	2.8%	637	9.4%	766	15.7%
Down	544	2.0%	560	2.1%	1,104	2.1%	83	0.3%	285	1.7%	299	5.9%	437	10.3%
Dungannon	392	1.9%	405	1.9%	798	1.9%	68	0.3%	202	1.7%	217	5.9%	311	10.3%
Fermanagh	522	2.2%	515	2.1%	1,036	2.1%	73	0.3%	267	1.8%	276	6.0%	421	10.4%
Larne	280	2.3%	287	2.2%	568	2.3%	37	0.3%	148	1.8%	165	5.9%	218	10.3%
Limavady	272	2.0%	263	2.0%	535	2.0%	52	0.3%	152	2.0%	144	6.7%	187	11.6%
Lisburn	841	2.0%	901	2.0%	1,743	2.0%	137	0.3%	461	1.7%	480	5.9%	665	10.3%
Magherafelt	310	1.9%	301	1.8%	611	1.8%	55	0.3%	159	1.7%	164	5.9%	233	10.4%
Moyle	170	2.6%	172	2.5%	342	2.6%	21	0.3%	86	2.0%	98	6.7%	136	11.5%
Newry & Mourne	753	2.1%	772	2.1%	1,525	2.1%	132	0.3%	406	1.9%	426	6.7%	561	11.5%
Newtownabbey	693	2.2%	745	2.2%	1,438	2.2%	98	0.3%	350	1.7%	396	5.9%	594	10.3%
North Down	726	2.4%	823	2.5%	1,549	2.4%	88	0.3%	382	1.8%	396	5.9%	683	10.2%
Omagh	422	2.2%	427	2.1%	850	2.1%	72	0.3%	230	2.0%	227	6.7%	320	11.5%
Strabane	480	3.2%	471	3.1%	950	3.1%	81	0.5%	250	2.9%	274	9.4%	346	15.8%
Northern Ireland	**15,827**	**2.4%**	**17,114**	**2.4%**	**32,941**	**2.4%**	**2,508**	**0.3%**	**8,284**	**2.0%**	**9,001**	**6.8%**	**13,148**	**11.8%**

Table 5.5: Demographic and geographic variation in the percentage of adults in Northern Ireland who have ever had a stroke (2015).

	Males (16+ years)		Females (16+ years)		Persons (16+ years)		16-44 years		45-64 years		65-74 years		75+ years	
Local Government District	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence
Antrim	481	2.1%	465	2.0%	947	2.0%	71	0.3%	228	1.7%	286	5.9%	361	10.4%
Ards	868	2.7%	844	2.4%	1,711	2.6%	85	0.3%	392	1.7%	564	5.9%	670	10.4%
Armagh	563	2.3%	550	2.2%	1,113	2.2%	71	0.3%	262	1.8%	329	6.0%	451	10.4%
Ballymena	656	2.5%	680	2.5%	1,336	2.5%	70	0.3%	293	1.7%	378	5.9%	595	10.4%
Ballymoney	318	2.4%	300	2.3%	617	2.3%	38	0.3%	145	1.7%	179	5.9%	255	10.4%
Banbridge	451	2.2%	455	2.2%	906	2.2%	61	0.3%	232	1.7%	261	5.9%	352	10.3%
Belfast	3,405	3.4%	3,855	3.5%	7,260	3.5%	500	0.5%	1,643	2.8%	1,894	9.3%	3,224	15.7%
Carrickfergus	439	2.7%	420	2.4%	860	2.5%	43	0.3%	210	1.7%	245	5.9%	361	10.4%
Castlereagh	653	2.6%	712	2.6%	1,365	2.6%	64	0.3%	309	1.7%	360	5.9%	633	10.3%
Coleraine	611	2.8%	601	2.6%	1,212	2.7%	54	0.3%	263	1.8%	353	6.0%	542	10.4%
Cookstown	366	2.4%	345	2.3%	711	2.3%	53	0.3%	172	2.0%	203	6.7%	283	11.6%
Craigavon	922	2.4%	933	2.3%	1,855	2.3%	137	0.3%	451	1.9%	529	6.7%	737	11.6%
Derry	1,412	3.3%	1,410	3.1%	2,822	3.2%	213	0.5%	776	2.8%	817	9.4%	1,016	15.9%
Down	678	2.3%	663	2.2%	1,341	2.3%	82	0.3%	326	1.7%	390	5.9%	543	10.4%
Dungannon	502	1.9%	474	1.9%	976	1.9%	86	0.3%	242	1.7%	268	6.0%	380	10.4%
Fermanagh	649	2.4%	594	2.3%	1,244	2.4%	76	0.3%	302	1.8%	354	6.0%	511	10.5%
Larne	344	2.7%	324	2.5%	668	2.6%	31	0.3%	157	1.7%	207	6.0%	273	10.4%
Limavady	345	2.4%	328	2.4%	674	2.4%	49	0.3%	176	2.0%	199	6.7%	250	11.6%
Lisburn	1,061	2.3%	1,085	2.2%	2,146	2.2%	133	0.3%	521	1.7%	624	5.9%	868	10.3%
Magherafelt	377	2.0%	358	2.0%	735	2.0%	60	0.3%	190	1.7%	202	5.9%	284	10.4%
Moyle	205	2.9%	189	2.6%	394	2.8%	21	0.3%	93	2.0%	114	6.7%	167	11.7%
Newry & Mourne	958	2.3%	923	2.2%	1,881	2.3%	144	0.3%	483	1.9%	516	6.7%	738	11.6%
Newtownabbey	799	2.5%	848	2.5%	1,646	2.5%	85	0.3%	372	1.7%	468	5.9%	722	10.3%
North Down	870	2.8%	920	2.7%	1,790	2.7%	80	0.3%	374	1.8%	539	5.9%	797	10.3%
Omagh	535	2.4%	510	2.3%	1,045	2.4%	75	0.3%	273	2.0%	293	6.7%	403	11.6%
Strabane	589	3.7%	562	3.5%	1,151	3.6%	75	0.5%	280	2.8%	338	9.4%	458	15.9%
Northern Ireland	**19,057**	**2.6%**	**19,348**	**2.6%**	**38,405**	**2.6%**	**2,456**	**0.3%**	**9,165**	**2.0%**	**10,911**	**6.8%**	**15,873**	**11.8%**

Table 5.6: Demographic and geographic variation in the percentage of adults in Northern Ireland who have ever had a stroke (2020).

	Males (16+ years)		Females (16+ years)		Persons (16+ years)		16-44 years		45-64 years		65-74 years		75+ years	
Local Government District	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence
Antrim	556	2.3%	534	2.1%	1,090	2.2%	76	0.3%	250	1.7%	296	6.0%	468	10.4%
Ards	1,004	3.0%	951	2.6%	1,955	2.8%	83	0.3%	418	1.8%	588	5.9%	866	10.4%
Armagh	647	2.5%	614	2.3%	1,261	2.4%	74	0.3%	281	1.8%	353	6.0%	552	10.4%
Ballymena	731	2.7%	753	2.7%	1,485	2.7%	71	0.3%	309	1.8%	401	5.9%	703	10.4%
Ballymoney	371	2.6%	340	2.4%	711	2.5%	38	0.3%	167	1.8%	190	5.9%	316	10.5%
Banbridge	531	2.4%	524	2.3%	1,055	2.4%	63	0.3%	260	1.8%	292	5.9%	440	10.4%
Belfast	3,558	3.7%	3,863	3.6%	7,421	3.6%	492	0.5%	1,666	2.9%	1,883	9.3%	3,379	15.8%
Carrickfergus	522	3.1%	474	2.6%	996	2.8%	40	0.3%	231	1.8%	276	6.0%	449	10.4%
Castlereagh	690	2.8%	740	2.8%	1,430	2.8%	59	0.3%	319	1.8%	368	5.9%	683	10.3%
Coleraine	680	3.2%	644	2.9%	1,324	3.0%	48	0.3%	268	1.8%	365	6.0%	643	10.4%
Cookstown	422	2.6%	387	2.4%	809	2.5%	56	0.3%	187	2.0%	218	6.7%	347	11.7%
Craigavon	1,056	2.5%	1,039	2.4%	2,095	2.5%	149	0.3%	500	2.0%	559	6.7%	887	11.6%
Derry	1,611	3.7%	1,593	3.4%	3,204	3.6%	209	0.5%	845	2.9%	916	9.4%	1,233	15.9%
Down	776	2.6%	744	2.4%	1,520	2.5%	85	0.3%	350	1.8%	433	5.9%	652	10.4%
Dungannon	587	2.0%	532	2.0%	1,118	2.0%	97	0.3%	279	1.7%	297	6.0%	446	10.4%
Fermanagh	741	2.7%	660	2.4%	1,401	2.5%	77	0.3%	322	1.8%	405	6.0%	598	10.5%
Larne	386	3.1%	350	2.6%	735	2.8%	30	0.3%	167	1.8%	212	6.0%	327	10.5%
Limavady	401	2.7%	379	2.7%	780	2.7%	45	0.3%	191	2.0%	226	6.7%	317	11.6%
Lisburn	1,212	2.6%	1,215	2.3%	2,427	2.4%	137	0.3%	562	1.8%	665	5.9%	1,063	10.4%
Magherafelt	434	2.1%	401	2.1%	834	2.1%	60	0.3%	213	1.7%	229	6.0%	333	10.4%
Moyle	231	3.3%	207	2.8%	438	3.0%	21	0.3%	95	2.0%	127	6.7%	195	11.7%
Newry & Mourne	1,104	2.5%	1,032	2.3%	2,136	2.4%	156	0.3%	531	2.0%	583	6.7%	866	11.6%
Newtownabbey	867	2.7%	913	2.7%	1,780	2.7%	79	0.3%	385	1.8%	482	5.9%	834	10.4%
North Down	970	3.1%	1,001	3.0%	1,971	3.0%	77	0.3%	376	1.8%	547	5.9%	971	10.4%
Omagh	619	2.6%	577	2.5%	1,196	2.6%	78	0.3%	290	2.0%	341	6.7%	487	11.6%
Strabane	666	4.2%	621	3.7%	1,287	4.0%	70	0.5%	305	2.8%	360	9.4%	552	15.9%
Northern Ireland	**21,372**	**2.9%**	**21,086**	**2.7%**	**42,457**	**2.8%**	**2,469**	**0.3%**	**9,767**	**2.1%**	**11,613**	**6.7%**	**18,609**	**11.7%**

6 Diabetes

CHAPTER 6. DIABETES

This chapter relates to adults (aged 20 years and over) with diabetes (Type 1 and Type 2 combined).

Detailed estimates and forecasts of diabetes prevalence, broken down by sex and age within each area, are given at the end of the chapter.

KEY POINTS: DIABETES (TYPE 1 AND TYPE 2 COMBINED)

In 2007, nearly 144,000 adults in the Republic of Ireland (4.5%) have diabetes. By 2020 this is expected to rise to over 233,000 (5.9%). This represents a 62% increase – an additional 89,000 adults – in less than 15 years.

In 2007, over 67,000 adults in Northern Ireland (5.3%) have diabetes. By 2020 this is expected to rise to over 94,000 (6.6%). This represents a 40% increase – an additional 27,000 adults – in less than 15 years.

Diabetes is more common amongst females than males. This reflects the findings of the underlying population-based reference studies.

Diabetes prevalence increases with age. About one in eight people aged 60 years and over have diabetes. In 2020 relatively more of the adults with diabetes will belong in the older age groups.

High diabetes prevalence rates occur across the island. Quite noticeably, prevalence rates are, once again, lowest around Dublin.

Local socio-economic circumstances affect diabetes prevalence. Amongst males and females, and across all age groups, diabetes tends to be more common in more deprived areas.

Diabetes prevalence is higher in Northern Ireland than in the Republic of Ireland. North-South differences in the current and future diabetes prevalence are chiefly due to differences in current and projected future demographic and socio-economic profiles and obesity rates.

National Estimates in 2007

In 2007, 4.5% of adults in the Republic of Ireland (143,618 people) and 5.3% of adults in Northern Ireland (67,262 people) have diabetes (Type 1 and Type 2 combined)[20].
The comparison of the estimated diabetes prevalence rate (4.5%) in the Republic of Ireland with estimates from other survey studies is mixed:

- In the SLÁN 2007 survey (Morgan et al, 2008) 3% of adults aged 18 years and over report having had a doctor-diagnosis of diabetes in the previous 12 months.

20 In an earlier report, IPH estimated that the diabetes prevalence (Type 1 and Type 2 combined) in 2005 was 5.4% in Northern Ireland and 4.7% in the Republic of Ireland (IPH, 2006).

- In the CSO's Quarterly National Household Survey 2007 (CSO, 2008) 2% of adults aged 18 years and over report ever having had a doctor-diagnosis of diabetes.
- The International Diabetes Federation estimate that 5.7% of adults aged 20-79 years will have diabetes in 2010 (International Diabetes Federation, 2009).

Direct comparisons with these studies, however, are confounded by important differences in methodology.

The estimated diabetes prevalence rate (5.3%) in Northern Ireland is higher than estimates from other studies:

- It is higher (5.3% compared to 3.5%) than the Quality and Outcomes Framework (QOF) estimate that is based on primary care data (DHSSPS, 2007). However, this is not unexpected because QOF data for diabetes covers persons aged 17 years and over while this report covers adults aged 20 years and over.
- The Health and Social Wellbeing Survey 2005-2006 found that 4% of adults aged 16 years and over have ever been told by a doctor that they have diabetes (DHSSPS, 2007).

Again, direct comparisons are confounded by important differences in methodology.

The diabetes prevalence rate amongst adults aged 16 years and over in England in 2006 is estimated to be 4.9% (HSfE, 2006). The percentage of adults with diabetes is lower in the Republic of Ireland than it is in either Northern Ireland or England. This is chiefly due to differences in these countries' demographic and socio-economic profiles, and obesity rates. In particular, both Northern Ireland and England have an older population than the Republic of Ireland.

Demographic Variation in 2007

The study found that more females than males have diabetes. This is true in both the Republic of Ireland (male 3.9%, female 5.1%) and Northern Ireland (male 4.5%, female 6.0%) in terms of numbers and prevalence rates. This reflects the findings of the underlying population-based reference studies (Simmons et al, 1991; Chaturvidi et al, 1993; Harvey et al, 2002). Caution is required when interpreting this finding; some studies have found higher prevalence amongst males. A recent study summarising data from 191 WHO member states found that while more females than males have diabetes, prevalence rates are higher amongst males aged less than 60 years but are higher amongst women in older age groups (Wild et al, 2004)[21].

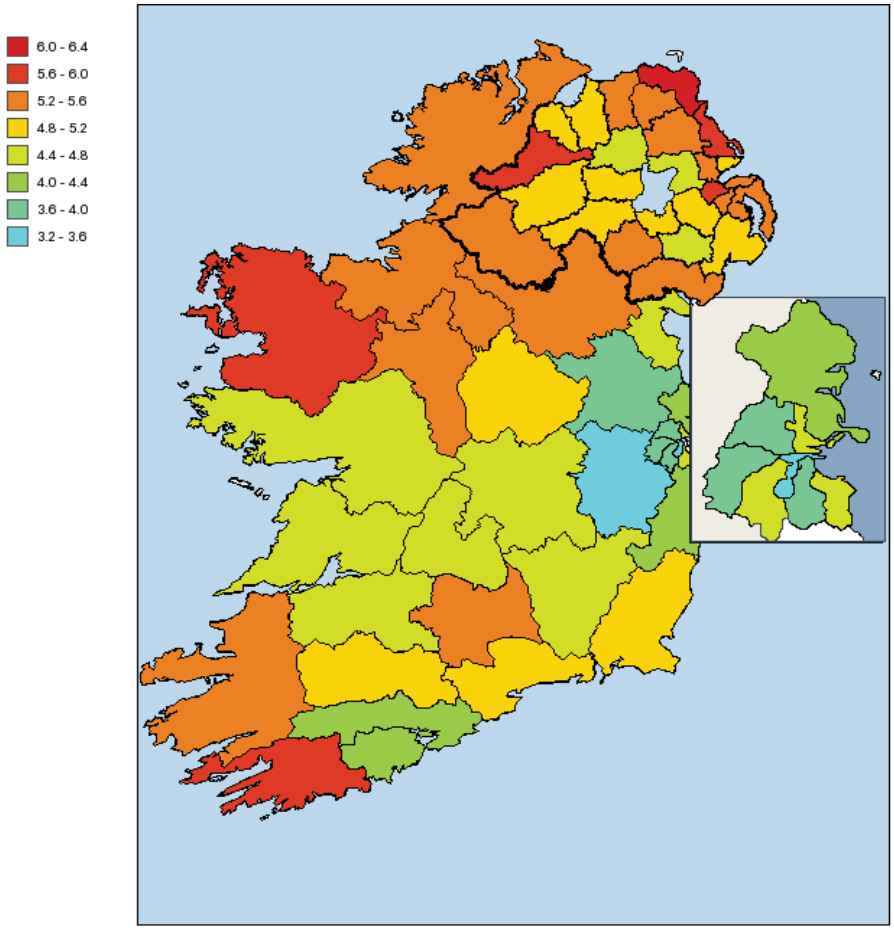
Diabetes is more common in older age groups. Over one out of every eight adults aged 60 years and over in Northern Ireland (13.4%) and the Republic of Ireland (13.2%) have diabetes.

Ethnicity does not contribute greatly to North-South differences because neither jurisdiction has a large 'non-white' ethnic population.

21 Wild et al suggested that this might be the combined effect of:
- Greater numbers of older women than older men in most countries
- Prevalence rates that are higher amongst males aged under 60 years but higher amongst women in older ages
- Prevalence rates that increase with age.

Geographic Variation in 2007

Figure 6.1: Percentage of adults who have diabetes; across Local Health Offices (LHOs) in the Republic of Ireland and Local Government Districts (LGDs) in Northern Ireland (2007).



From INIsPHO eData http://www.inispho.org/eData

In addition to the higher diabetes prevalence rate in Northern Ireland, many of the areas with higher diabetes prevalence rates are in northern, north-western and south-western parts of the island. Diabetes prevalence rates are lowest in parts of Dublin and its surrounds.

Socio-economic Variation in 2007

Local socio-economic circumstances in an area affect diabetes prevalence although, like hypertension, the effect does not seem to be as strong as it is for CHD and stroke.

Figure 6.2: Percentage of adults who have diabetes; across deprivation bands[22] in the Republic of Ireland within each sex and each age group (2007).

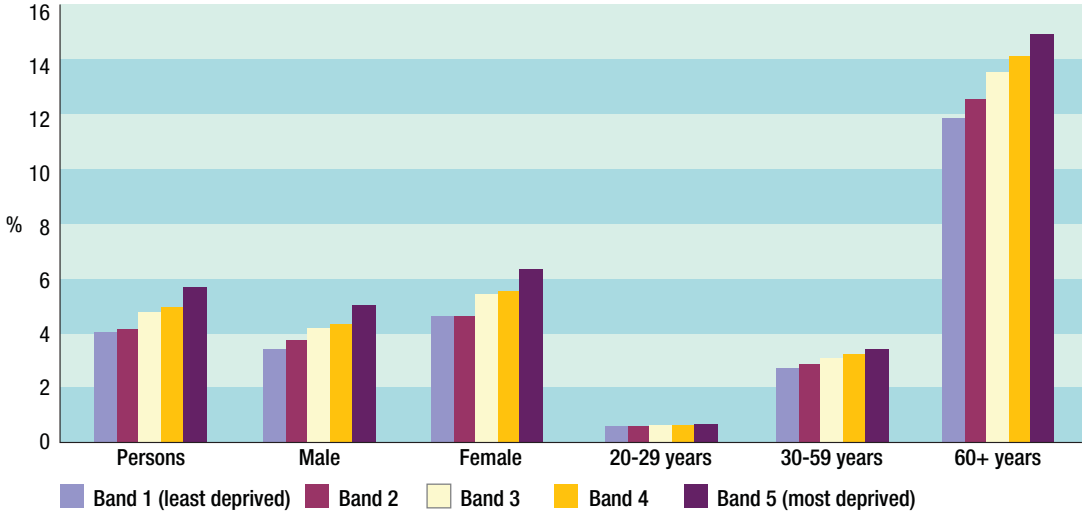
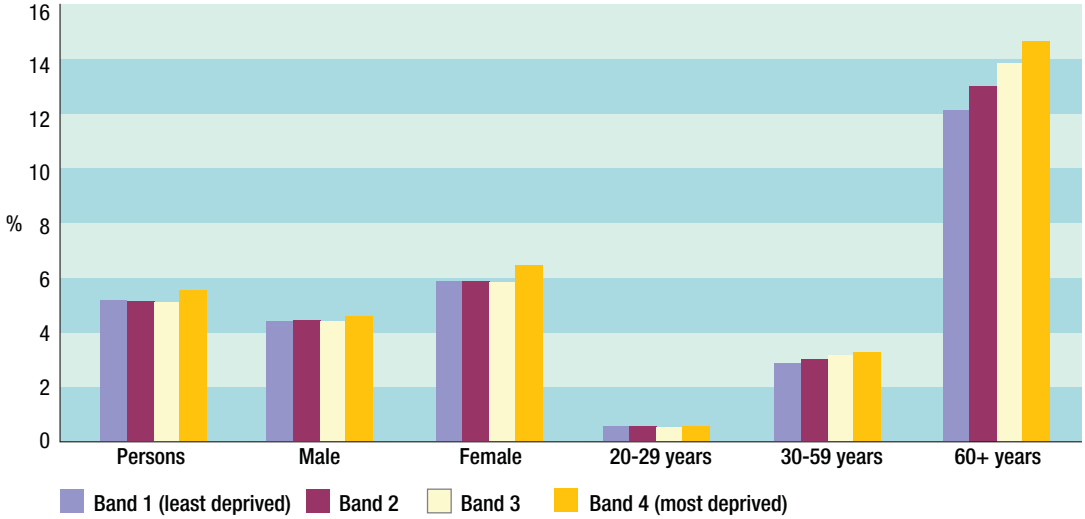


Figure 6.3: Percentage of adults who have diabetes; across deprivation bands[22] in Northern Ireland within each sex and each age group (2007).



22 See this report's technical supplement for definitions of the deprivation bands.

The effects of local socio-economic circumstances are observed in both jurisdictions but are more apparent in the Republic of Ireland[23]. In the Republic of Ireland diabetes prevalence in the most deprived LHOs is 1.4 times what it is in the least deprived LHOs. In Northern Ireland diabetes prevalence in the most deprived LGDs is almost 1.1 times what it is in the least deprived LGDs.

Within each age group, diabetes prevalence rates increase as you move from the least deprived areas to the most deprived areas. Like hypertension, local socio-economic circumstances do not appear to have an effect amongst either males or females in Northern Ireland.

How Diabetes Prevalence Will Change Between 2007 and 2020

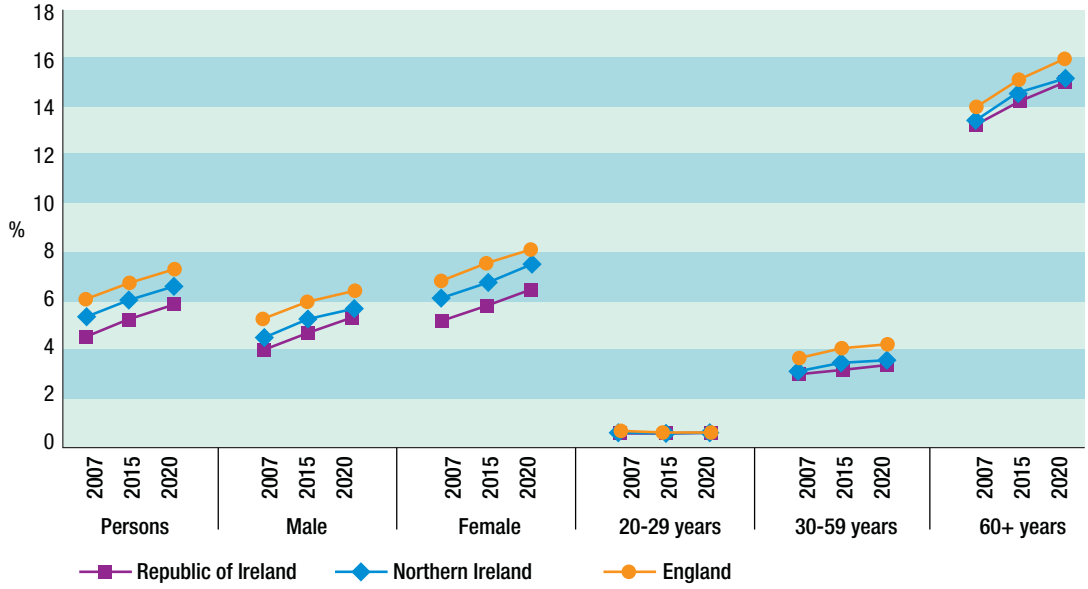
The percentage of adults with diabetes is expected to increase over time:

- In Northern Ireland, it is expected to increase from 5.3% in 2007 to 6.0% in 2015 to 6.6% in 2020.
- In the Republic of Ireland, it is expected to increase from 4.5% in 2007 to 5.2% in 2015 to 5.9% in 2020.

With a growing and ageing population, far more adults will have diabetes in 2020 than in 2007. The number of adults in Northern Ireland with diabetes is expected to rise from 67,262 in 2007 to 94,219 in 2020; an increase of an additional 26,957 adults (or 40.1%). The number of adults in the Republic of Ireland with diabetes is expected to rise from 143,618 in 2007 to 232,644 in 2020; an increase of 89,026 adults (or 62.0%). A proportionally larger increase is expected in the Republic of Ireland because its population is projected to increase more than Northern Ireland's.

23 Direct North-South comparison is confounded by the fact there are five deprivation bands in the Republic of Ireland but only four deprivation bands in Northern Ireland. See this report's technical supplement for details.

Figure 6.4: Expected changes in the percentage of adults in the Republic of Ireland, Northern Ireland and England with diabetes; within each sex group and age group (2007, 2015, 2020).



Amongst males and females, and in each age group, similar changes in diabetes prevalence rates are expected in each country (the Republic of Ireland, Northern Ireland and England).

An ageing population profile along with higher diabetes prevalence rates amongst older age groups, mean that a growing percentage of adults with diabetes will belong to the older age groups. Between 2007 and 2020, the percentage of people living with diabetes who are aged 60 years and over will rise in the Republic of Ireland from 60.8% to 64.8%. In Northern Ireland the percentage will rise from 66.3% to 70.6%.

Table 6.1: Demographic and geographic variation in the percentage of adults in the Republic of Ireland living with Type 1 and Type 2 diabetes (2007).

	Males (20+ years)		Females (20+ years)		Persons (20+ years)		20-29 years		30-59 years		60+ years	
Local Health Office	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence
Carlow / Kilkenny	1,881	4.2%	2,390	5.4%	4,270	4.8%	108	0.6%	1,558	3.1%	2,605	13.5%
Cavan / Monaghan	2,017	4.5%	2,537	6.0%	4,555	5.2%	103	0.6%	1,582	3.3%	2,869	14.3%
Clare	1,700	4.2%	2,114	5.3%	3,814	4.8%	85	0.6%	1,403	3.0%	2,326	12.9%
Donegal	2,610	5.0%	3,311	6.2%	5,921	5.6%	121	0.6%	2,002	3.4%	3,797	14.8%
Dublin North	2,980	3.7%	3,878	4.6%	6,857	4.1%	222	0.6%	2,612	2.8%	4,023	12.5%
Dublin North Central	1,762	3.6%	2,672	5.3%	4,435	4.5%	177	0.6%	1,365	2.9%	2,893	14.0%
Dublin North West	2,201	3.1%	3,066	4.2%	5,266	3.7%	249	0.6%	2,030	2.7%	2,987	13.5%
Dublin South City	1,585	3.0%	2,235	4.1%	3,819	3.5%	207	0.6%	1,420	2.7%	2,192	12.7%
Dublin South East	1,332	3.2%	2,031	4.4%	3,362	3.8%	131	0.5%	1,129	2.5%	2,102	11.3%
Dublin South West	2,157	4.0%	3,008	5.2%	5,165	4.6%	174	0.6%	1,937	3.2%	3,054	14.1%
Dublin West	1,576	3.3%	2,075	4.2%	3,651	3.7%	153	0.6%	1,589	2.8%	1,909	13.5%
Dun Laoghaire South Dublin	1,764	3.9%	2,687	5.2%	4,450	4.6%	110	0.5%	1,455	2.8%	2,886	11.5%
Galway	3,357	3.9%	4,291	5.0%	7,648	4.4%	243	0.6%	2,742	2.9%	4,663	13.2%
Kerry	2,415	4.6%	3,127	6.1%	5,542	5.4%	113	0.6%	1,864	3.3%	3,565	13.7%
Kildare / West Wicklow	2,409	3.2%	2,872	3.9%	5,281	3.5%	199	0.5%	2,380	2.7%	2,703	12.0%
Laois / Offaly	2,156	4.2%	2,675	5.4%	4,831	4.8%	125	0.6%	1,780	3.1%	2,927	13.8%
Limerick	2,310	4.1%	3,028	5.3%	5,338	4.7%	150	0.6%	1,877	3.1%	3,312	13.3%
Longford / Westmeath	1,768	4.2%	2,296	5.5%	4,064	4.9%	102	0.6%	1,462	3.1%	2,500	13.7%
Louth	1,680	4.2%	2,240	5.4%	3,920	4.8%	105	0.6%	1,437	3.1%	2,377	14.2%
Mayo	2,271	5.0%	2,978	6.5%	5,249	5.7%	92	0.6%	1,714	3.4%	3,443	14.2%
Meath	2,054	3.4%	2,488	4.2%	4,542	3.8%	151	0.6%	1,921	2.7%	2,469	12.3%
North Cork	1,333	4.3%	1,762	5.9%	3,095	5.1%	69	0.6%	1,060	3.1%	1,966	13.7%
North Lee - Cork	2,326	3.8%	3,005	4.8%	5,331	4.3%	167	0.6%	2,017	2.9%	3,147	13.0%
North Tipperary / East Limerick	1,477	4.1%	1,866	5.2%	3,343	4.6%	90	0.5%	1,192	3.0%	2,061	12.9%
Roscommon	1,085	4.8%	1,389	6.4%	2,474	5.6%	44	0.6%	794	3.3%	1,636	13.7%
Sligo / Leitrim / West Cavan	1,590	4.7%	2,056	6.0%	3,647	5.3%	74	0.6%	1,233	3.3%	2,340	13.6%
South Lee - Cork	2,268	3.5%	3,164	4.5%	5,432	4.0%	189	0.5%	1,971	2.7%	3,273	11.9%
South Tipperary	1,516	4.6%	1,934	5.9%	3,450	5.3%	72	0.6%	1,194	3.2%	2,185	13.7%
Waterford	1,864	4.2%	2,454	5.5%	4,318	4.9%	109	0.6%	1,506	3.1%	2,703	13.4%
West Cork	976	4.9%	1,264	6.5%	2,240	5.7%	35	0.6%	715	3.3%	1,489	13.5%
Wexford	2,172	4.5%	2,782	5.7%	4,954	5.1%	112	0.6%	1,750	3.2%	3,093	13.9%
Wicklow	1,540	3.9%	2,007	4.8%	3,546	4.3%	99	0.6%	1,385	2.9%	2,062	12.6%
Republic of Ireland	**61,987**	**3.9%**	**81,631**	**5.1%**	**143,618**	**4.5%**	**4,186**	**0.6%**	**52,054**	**3.0%**	**87,378**	**13.2%**

Table 6.2: Demographic and geographic variation in the percentage of adults in the Republic of Ireland living with Type 1 and Type 2 diabetes (2015).

	Males (20+ years)		Females (20+ years)		Persons (20+ years)		20-29 years		30-59 years		60+ years	
Local Health Office	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence
Carlow / Kilkenny	2,599	4.9%	3,116	6.2%	5,715	5.6%	100	0.6%	1,984	3.3%	3,631	14.5%
Cavan / Monaghan	2,736	5.3%	3,243	6.7%	5,979	6.0%	105	0.6%	1,976	3.5%	3,897	15.3%
Clare	2,309	4.9%	2,729	6.1%	5,038	5.5%	79	0.6%	1,715	3.2%	3,244	13.9%
Donegal	3,553	5.8%	4,247	7.0%	7,800	6.4%	124	0.6%	2,501	3.6%	5,175	15.9%
Dublin North	4,171	4.3%	5,035	5.1%	9,206	4.7%	197	0.6%	3,441	2.9%	5,568	13.4%
Dublin North Central	2,475	4.4%	3,463	6.0%	5,938	5.2%	157	0.6%	1,800	3.0%	3,981	15.0%
Dublin North West	3,066	3.7%	3,956	4.8%	7,022	4.3%	221	0.6%	2,680	2.7%	4,120	14.5%
Dublin South City	2,200	3.6%	2,879	4.7%	5,078	4.1%	184	0.6%	1,872	2.7%	3,022	13.6%
Dublin South East	1,865	3.8%	2,636	4.9%	4,501	4.4%	116	0.6%	1,485	2.6%	2,900	12.1%
Dublin South West	3,019	4.7%	3,894	5.8%	6,912	5.3%	155	0.6%	2,543	3.3%	4,214	15.1%
Dublin West	2,191	3.9%	2,679	4.7%	4,871	4.3%	136	0.6%	2,097	2.9%	2,638	14.6%
Dun Laoghaire South Dublin	2,486	4.5%	3,498	5.7%	5,984	5.2%	97	0.6%	1,910	2.9%	3,978	12.3%
Galway	4,541	4.6%	5,481	5.4%	10,022	5.0%	238	0.6%	3,485	3.0%	6,299	14.1%
Kerry	3,348	5.6%	4,040	6.9%	7,388	6.3%	98	0.6%	2,353	3.5%	4,937	14.7%
Kildare / West Wicklow	3,681	4.0%	4,157	4.6%	7,839	4.3%	184	0.6%	3,364	2.9%	4,291	12.9%
Laois / Offaly	3,047	5.0%	3,499	6.2%	6,546	5.6%	112	0.6%	2,332	3.3%	4,102	14.8%
Limerick	3,134	4.9%	3,913	6.3%	7,047	5.5%	139	0.6%	2,295	3.3%	4,613	14.3%
Longford / Westmeath	2,503	5.0%	3,001	6.3%	5,504	5.6%	92	0.6%	1,916	3.3%	3,496	14.7%
Louth	2,267	4.9%	2,868	6.1%	5,135	5.5%	108	0.6%	1,794	3.3%	3,234	15.2%
Mayo	3,091	5.7%	3,807	7.0%	6,898	6.4%	90	0.6%	2,174	3.5%	4,633	15.1%
Meath	3,157	4.2%	3,619	4.9%	6,777	4.6%	141	0.6%	2,717	2.9%	3,919	13.3%
North Cork	1,841	5.2%	2,272	6.7%	4,114	5.9%	60	0.6%	1,338	3.3%	2,715	14.7%
North Lee - Cork	3,180	4.6%	3,861	5.5%	7,041	5.0%	145	0.6%	2,541	3.1%	4,355	14.0%
North Tipperary / East Limerick	2,004	4.8%	2,409	6.1%	4,413	5.4%	83	0.6%	1,458	3.2%	2,872	13.9%
Roscommon	1,477	5.5%	1,774	6.9%	3,251	6.2%	43	0.6%	1,008	3.4%	2,200	14.6%
Sligo / Leitrim / West Cavan	2,162	5.4%	2,631	6.7%	4,792	6.1%	75	0.6%	1,540	3.5%	3,177	14.6%
South Lee - Cork	3,096	4.2%	4,057	5.3%	7,153	4.8%	163	0.6%	2,479	2.9%	4,512	12.8%
South Tipperary	2,105	5.4%	2,530	6.8%	4,635	6.1%	66	0.6%	1,521	3.5%	3,047	14.7%
Waterford	2,578	5.0%	3,205	6.3%	5,783	5.7%	102	0.6%	1,917	3.3%	3,764	14.4%
West Cork	1,359	5.9%	1,635	7.3%	2,994	6.6%	31	0.6%	903	3.5%	2,061	14.5%
Wexford	3,007	5.3%	3,637	6.6%	6,643	5.9%	104	0.6%	2,228	3.4%	4,311	15.0%
Wicklow	2,386	4.7%	2,936	5.6%	5,322	5.2%	92	0.6%	1,960	3.1%	3,270	13.6%
Republic of Ireland	**86,511**	**4.7%**	**106,729**	**5.8%**	**193,240**	**5.2%**	**3,841**	**0.6%**	**67,361**	**3.1%**	**122,038**	**14.2%**

Table 6.3: Demographic and geographic variation in the percentage of adults in the Republic of Ireland living with Type 1 and Type 2 diabetes (2020).

	Males (20+ years)		Females (20+ years)		Persons (20+ years)		20-29 years		30-59 years		60+ years	
Local Health Office	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence
Carlow / Kilkenny	3,132	5.6%	3,694	7.1%	6,825	6.3%	88	0.6%	2,257	3.6%	4,481	15.4%
Cavan / Monaghan	3,273	6.0%	3,819	7.4%	7,093	6.7%	95	0.6%	2,235	3.7%	4,762	16.2%
Clare	2,754	5.5%	3,200	6.9%	5,954	6.2%	75	0.6%	1,913	3.4%	3,966	14.7%
Donegal	4,251	6.5%	4,993	7.8%	9,244	7.1%	112	0.6%	2,830	3.9%	6,302	16.8%
Dublin North	5,133	4.8%	5,987	5.5%	11,120	5.2%	203	0.6%	4,114	3.1%	6,803	14.2%
Dublin North Central	3,072	5.0%	4,151	6.6%	7,223	5.8%	162	0.6%	2,153	3.2%	4,908	15.7%
Dublin North West	3,775	4.3%	4,712	5.2%	8,486	4.7%	227	0.6%	3,198	3.0%	5,062	15.3%
Dublin South City	2,706	4.1%	3,433	5.1%	6,139	4.6%	189	0.6%	2,234	3.0%	3,716	14.3%
Dublin South East	2,300	4.2%	3,147	5.4%	5,448	4.8%	119	0.6%	1,767	2.8%	3,561	12.7%
Dublin South West	3,725	5.3%	4,637	6.3%	8,363	5.8%	159	0.6%	3,034	3.6%	5,170	15.9%
Dublin West	2,692	4.3%	3,185	5.1%	5,876	4.7%	139	0.6%	2,507	3.2%	3,229	15.3%
Dun Laoghaire South Dublin	3,090	5.0%	4,189	6.2%	7,278	5.7%	100	0.6%	2,286	3.1%	4,892	13.0%
Galway	5,442	5.2%	6,489	6.0%	11,931	5.6%	213	0.6%	4,003	3.2%	7,715	14.8%
Kerry	4,042	6.3%	4,770	7.7%	8,812	7.0%	90	0.6%	2,674	3.8%	6,048	15.5%
Kildare / West Wicklow	4,652	4.6%	5,206	5.2%	9,858	4.9%	172	0.6%	4,076	3.1%	5,610	13.6%
Laois / Offaly	3,716	5.7%	4,169	7.1%	7,885	6.4%	89	0.6%	2,678	3.6%	5,118	15.6%
Limerick	3,738	5.4%	4,598	7.1%	8,336	6.2%	131	0.6%	2,561	3.5%	5,644	15.2%
Longford / Westmeath	3,050	5.8%	3,581	7.3%	6,632	6.5%	73	0.6%	2,201	3.6%	4,357	15.5%
Louth	2,688	5.5%	3,360	6.8%	6,048	6.1%	97	0.6%	2,025	3.5%	3,926	16.1%
Mayo	3,732	6.4%	4,532	7.7%	8,263	7.1%	81	0.6%	2,502	3.7%	5,681	15.9%
Meath	4,009	4.8%	4,557	5.7%	8,567	5.2%	131	0.6%	3,291	3.2%	5,144	14.0%
North Cork	2,220	5.9%	2,687	7.5%	4,906	6.7%	55	0.6%	1,520	3.6%	3,332	15.4%
North Lee - Cork	3,794	5.2%	4,527	6.2%	8,322	5.7%	133	0.6%	2,879	3.3%	5,310	14.7%
North Tipperary / East Limerick	2,395	5.3%	2,832	6.9%	5,227	6.1%	79	0.5%	1,627	3.4%	3,521	14.7%
Roscommon	1,786	6.2%	2,116	7.6%	3,902	6.9%	38	0.6%	1,160	3.6%	2,703	15.4%
Sligo / Leitrim / West Cavan	2,590	6.1%	3,098	7.5%	5,689	6.8%	68	0.6%	1,743	3.7%	3,878	15.4%
South Lee - Cork	3,702	4.8%	4,771	5.9%	8,473	5.4%	149	0.6%	2,809	3.1%	5,515	13.5%
South Tipperary	2,548	6.1%	3,008	7.7%	5,556	6.9%	58	0.6%	1,733	3.7%	3,764	15.6%
Waterford	3,108	5.6%	3,802	7.2%	6,909	6.4%	89	0.6%	2,181	3.5%	4,639	15.2%
West Cork	1,649	6.6%	1,937	8.1%	3,586	7.3%	28	0.6%	1,027	3.8%	2,530	15.3%
Wexford	3,623	6.0%	4,309	7.4%	7,932	6.7%	91	0.6%	2,536	3.7%	5,305	15.9%
Wicklow	3,050	5.4%	3,712	6.4%	6,762	5.9%	86	0.6%	2,384	3.5%	4,292	14.4%
Republic of Ireland	**105,353**	**5.3%**	**127,291**	**6.5%**	**232,644**	**5.9%**	**3,626**	**0.6%**	**78,244**	**3.4%**	**150,774**	**15.0%**

Table 6.4: Demographic and geographic variation in the percentage of adults in Northern Ireland living with Type 1 and Type 2 diabetes (2007).

	Males (20+ years)		Females (20+ years)		Persons (20+ years)		20-29 years		30-59 years		60+ years	
Local Government District	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence
Antrim	769	4.1%	1,024	5.4%	1,792	4.8%	40	0.5%	625	2.9%	1,127	12.8%
Ards	1,279	4.6%	1,794	6.0%	3,072	5.3%	49	0.5%	967	3.0%	2,056	12.3%
Armagh	898	4.6%	1,256	5.9%	2,154	5.3%	42	0.5%	691	3.1%	1,421	13.4%
Ballymena	999	4.5%	1,453	6.1%	2,452	5.3%	43	0.5%	733	3.0%	1,677	12.6%
Ballymoney	478	4.5%	672	6.1%	1,150	5.3%	21	0.5%	363	3.0%	767	13.4%
Banbridge	678	4.1%	929	5.4%	1,607	4.8%	33	0.5%	548	2.8%	1,027	12.5%
Belfast	4,146	4.6%	6,995	6.6%	11,141	5.7%	252	0.6%	3,147	3.2%	7,742	14.6%
Carrickfergus	605	4.3%	865	5.6%	1,470	5.0%	26	0.5%	476	2.9%	968	12.1%
Castlereagh	1,019	4.4%	1,593	6.1%	2,612	5.3%	37	0.5%	785	2.9%	1,790	12.2%
Coleraine	949	4.7%	1,386	6.4%	2,335	5.6%	36	0.5%	698	3.1%	1,601	12.9%
Cookstown	541	4.4%	742	5.8%	1,283	5.1%	31	0.5%	420	3.1%	831	13.9%
Craigavon	1,349	4.4%	1,945	5.9%	3,294	5.1%	71	0.5%	1,074	3.1%	2,150	13.5%
Derry	1,598	4.4%	2,258	5.8%	3,856	5.1%	89	0.6%	1,386	3.2%	2,382	14.4%
Down	1,066	4.3%	1,493	5.9%	2,560	5.1%	51	0.5%	838	3.1%	1,671	13.1%
Dungannon	806	4.2%	1,122	5.8%	1,929	5.0%	47	0.5%	632	3.0%	1,250	13.8%
Fermanagh	1,040	4.7%	1,402	6.3%	2,442	5.5%	44	0.5%	784	3.2%	1,614	13.6%
Larne	553	4.9%	770	6.4%	1,323	5.6%	20	0.5%	412	3.2%	891	13.1%
Limavady	519	4.1%	663	5.5%	1,182	4.8%	27	0.5%	423	3.0%	731	13.6%
Lisburn	1,631	4.3%	2,344	5.5%	3,975	4.9%	82	0.5%	1,338	2.9%	2,555	12.6%
Magherafelt	608	4.0%	807	5.3%	1,415	4.6%	35	0.5%	484	2.9%	896	12.9%
Moyle	311	5.3%	438	6.9%	749	6.1%	11	0.6%	225	3.4%	513	14.2%
Newry and Mourne	1,451	4.5%	2,008	5.9%	3,459	5.2%	79	0.6%	1,169	3.2%	2,211	14.2%
Newtownabbey	1,271	4.4%	1,868	5.9%	3,139	5.2%	53	0.5%	972	2.9%	2,114	12.5%
North Down	1,248	4.3%	1,906	6.0%	3,154	5.2%	49	0.5%	922	2.9%	2,183	11.7%
Omagh	788	4.4%	1,069	5.8%	1,857	5.1%	42	0.5%	642	3.1%	1,173	13.8%
Strabane	682	4.9%	911	6.5%	1,593	5.7%	30	0.6%	514	3.3%	1,048	14.9%
Northern Ireland	**27,391**	**4.5%**	**39,871**	**6.0%**	**67,262**	**5.3%**	**1,337**	**0.5%**	**21,324**	**3.1%**	**44,601**	**13.4%**

Table 6.5: Demographic and geographic variation in the percentage of adults in Northern Ireland living with Type 1 and Type 2 diabetes (2015).

	Males (20+ years)		Females (20+ years)		Persons (20+ years)		20-29 years		30-59 years		60+ years	
Local Government District	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence
Antrim	1,004	4.7%	1,336	6.1%	2,341	5.4%	49	0.6%	745	3.2%	1,547	14.1%
Ards	1,674	5.6%	2,274	6.9%	3,948	6.3%	49	0.6%	1,111	3.3%	2,788	13.3%
Armagh	1,174	5.2%	1,583	6.7%	2,757	6.0%	52	0.6%	819	3.4%	1,886	14.5%
Ballymena	1,261	5.2%	1,813	7.0%	3,074	6.1%	46	0.6%	859	3.3%	2,169	13.8%
Ballymoney	659	5.3%	870	7.0%	1,529	6.2%	23	0.6%	472	3.5%	1,035	14.5%
Banbridge	922	4.8%	1,234	6.3%	2,156	5.5%	37	0.5%	698	3.2%	1,421	13.6%
Belfast	4,665	5.1%	7,285	7.1%	11,950	6.2%	241	0.6%	3,439	3.5%	8,271	15.7%
Carrickfergus	832	5.4%	1,102	6.5%	1,934	6.0%	26	0.6%	583	3.4%	1,324	13.1%
Castlereagh	1,170	5.0%	1,788	7.0%	2,958	6.0%	43	0.5%	853	3.4%	2,062	13.2%
Coleraine	1,174	5.9%	1,631	7.6%	2,805	6.8%	33	0.5%	752	3.6%	2,020	14.0%
Cookstown	712	5.0%	932	6.5%	1,645	5.8%	34	0.6%	510	3.4%	1,101	15.1%
Craigavon	1,763	4.9%	2,422	6.3%	4,186	5.6%	87	0.6%	1,329	3.3%	2,770	14.7%
Derry	2,100	5.4%	2,865	6.8%	4,965	6.1%	89	0.6%	1,661	3.7%	3,215	15.6%
Down	1,394	5.2%	1,879	6.6%	3,273	5.9%	55	0.6%	991	3.4%	2,227	14.1%
Dungannon	1,108	4.4%	1,414	6.1%	2,521	5.2%	63	0.6%	841	3.2%	1,618	14.9%
Fermanagh	1,363	5.5%	1,730	7.0%	3,093	6.3%	45	0.6%	934	3.5%	2,114	14.6%
Larne	695	5.9%	912	7.3%	1,607	6.6%	21	0.6%	464	3.7%	1,122	14.2%
Limavady	694	5.1%	880	6.9%	1,573	6.0%	25	0.5%	508	3.5%	1,041	14.8%
Lisburn	2,107	5.0%	2,974	6.3%	5,080	5.7%	90	0.6%	1,574	3.3%	3,417	13.7%
Magherafelt	809	4.5%	1,021	6.0%	1,831	5.3%	41	0.6%	618	3.3%	1,172	14.0%
Moyle	396	6.1%	518	7.6%	914	6.9%	14	0.6%	253	3.8%	647	15.3%
Newry and Mourne	1,926	5.1%	2,539	6.4%	4,465	5.8%	94	0.6%	1,449	3.5%	2,922	15.3%
Newtownabbey	1,514	5.2%	2,238	7.0%	3,752	6.1%	58	0.5%	1,069	3.4%	2,625	13.6%
North Down	1,525	5.2%	2,254	7.0%	3,779	6.1%	47	0.5%	976	3.1%	2,756	12.7%
Omagh	1,052	5.1%	1,364	6.6%	2,416	5.8%	48	0.6%	768	3.5%	1,601	14.9%
Strabane	882	6.1%	1,151	7.7%	2,033	6.9%	30	0.6%	613	3.9%	1,390	16.3%
Northern Ireland	**34,720**	**5.2%**	**48,251**	**6.8%**	**82,970**	**6.0%**	**1,437**	**0.6%**	**24,939**	**3.4%**	**56,595**	**14.5%**

Table 6.6: Demographic and geographic variation in the percentage of adults in Northern Ireland living with Type 1 and Type 2 diabetes (2020).

	Males (20+ years)		Females (20+ years)		Persons (20+ years)		20-29 years		30-59 years		60+ years	
Local Government District	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence	Number	Prevalence
Antrim	1,157	5.1%	1,554	6.5%	2,710	5.8%	51	0.6%	821	3.3%	1,839	14.9%
Ards	1,934	6.2%	2,651	7.7%	4,585	7.0%	48	0.6%	1,164	3.5%	3,373	14.2%
Armagh	1,361	5.7%	1,824	7.2%	3,185	6.5%	50	0.6%	883	3.5%	2,252	15.3%
Ballymena	1,428	5.7%	2,063	7.7%	3,491	6.7%	44	0.6%	922	3.4%	2,525	14.6%
Ballymoney	787	5.9%	1,020	7.6%	1,806	6.8%	23	0.6%	523	3.7%	1,260	15.2%
Banbridge	1,101	5.3%	1,470	7.0%	2,571	6.1%	37	0.6%	764	3.4%	1,770	14.3%
Belfast	5,020	5.6%	7,615	7.7%	12,635	6.7%	217	0.6%	3,447	3.6%	8,971	16.3%
Carrickfergus	977	6.2%	1,275	7.3%	2,251	6.8%	25	0.6%	600	3.6%	1,626	13.7%
Castlereagh	1,270	5.5%	1,910	7.7%	3,180	6.6%	42	0.5%	811	3.5%	2,327	13.7%
Coleraine	1,306	6.5%	1,797	8.5%	3,103	7.6%	30	0.5%	730	3.8%	2,342	14.7%
Cookstown	840	5.5%	1,074	7.1%	1,914	6.3%	32	0.6%	557	3.4%	1,325	15.9%
Craigavon	2,059	5.3%	2,809	6.8%	4,868	6.1%	86	0.6%	1,477	3.4%	3,304	15.4%
Derry	2,435	6.0%	3,308	7.6%	5,743	6.8%	80	0.6%	1,765	3.8%	3,898	16.4%
Down	1,619	5.7%	2,170	7.3%	3,789	6.5%	52	0.6%	1,064	3.5%	2,673	14.9%
Dungannon	1,347	4.8%	1,656	6.5%	3,003	5.6%	59	0.6%	991	3.2%	1,953	15.6%
Fermanagh	1,583	6.1%	1,996	7.7%	3,579	6.9%	41	0.6%	1,007	3.6%	2,531	15.3%
Larne	780	6.5%	1,020	8.1%	1,800	7.3%	20	0.6%	460	3.8%	1,320	14.9%
Limavady	810	5.8%	1,031	7.8%	1,841	6.8%	23	0.5%	551	3.7%	1,267	15.6%
Lisburn	2,425	5.5%	3,420	6.9%	5,845	6.2%	86	0.6%	1,649	3.3%	4,110	14.4%
Magherafelt	959	5.0%	1,179	6.6%	2,138	5.8%	38	0.6%	696	3.4%	1,405	14.7%
Moyle	443	6.6%	578	8.2%	1,020	7.4%	12	0.6%	264	3.8%	744	16.0%
Newry and Mourne	2,276	5.5%	2,938	7.0%	5,214	6.2%	90	0.6%	1,608	3.5%	3,516	16.1%
Newtownabbey	1,657	5.6%	2,480	7.7%	4,137	6.7%	58	0.5%	1,057	3.6%	3,022	14.3%
North Down	1,689	5.7%	2,522	7.8%	4,211	6.8%	43	0.5%	978	3.2%	3,190	13.5%
Omagh	1,245	5.6%	1,582	7.3%	2,827	6.4%	45	0.6%	823	3.5%	1,959	15.6%
Strabane	1,005	6.7%	1,314	8.4%	2,319	7.6%	28	0.6%	657	4.1%	1,634	17.2%
Northern Ireland	**39,673**	**5.7%**	**54,546**	**7.4%**	**94,219**	**6.6%**	**1,359**	**0.6%**	**26,306**	**3.5%**	**66,554**	**15.2%**

7 Recommendations

CHAPTER 7. RECOMMENDATIONS

The Republic of Ireland's *Policy Framework for the Management of Chronic Diseases* and Northern Ireland's *Service Framework for Cardiovascular Health and Wellbeing*, highlight the importance of primary prevention and the need to reduce health inequalities. In both jurisdictions, the implementation of these policies is supported by a range of further policy and strategy documents addressing specific issues.

A review of key government policies across the island would identify opportunities to incorporate the three Principles of Action identified by the WHO Commission on the Social Determinants of Health. These are:

- Improving daily living conditions.
- Tackling the inequitable distribution of power, money and resources.
- Measuring and understanding the problem and assessing the impact of action.

The following recommendations emphasise the importance of a stronger focus on prevention, tackling inequalities using a social determinants of health and life course perspective, and the crucial importance of building appropriate information systems to support these efforts.

Chronic Disease Prevention

A stronger focus on prevention is urgently needed. Key government policies and supporting policies and strategies need to promote healthier lifestyles and strengthen the early assessment and diagnosis of chronic conditions.

Chronic disease prevention programmes need to take a life course perspective with a strong focus on early childhood, and develop interventions based on the needs of vulnerable and disadvantaged groups.

Lifestyle behavioural interventions need to address the needs of vulnerable and disadvantaged groups.

- Coordination with social inclusion and regional regeneration/development initiatives is crucial.
- An understanding of the variation of chronic disease prevalence with factors such as age, sex, geography and local socio-economic circumstances will support local health needs assessments and service planning.

Chronic Disease Management

Equity should be incorporated more strongly in the implementation of key government policies and should be extended beyond access and quality of care to reflect the definition used in the WHO Commission on the Social Determinants of Health.

Chronic disease management programmes must be based on need and not ability to pay. An understanding of current and future prevalence and how it varies with factors such as age, sex, geography and local socio-economic circumstances is an essential prerequisite for good planning and monitoring of chronic disease management.

Appropriate models of integrated care that involve a greater role for primary care and community care sectors should be developed.

Research and Data Gaps

Further research into the impact of chronic diseases on the population, the health and social care system, and the economy is required. This research should consider the magnitude of the burden of these conditions (including financial costs); how it is distributed across the population; how that burden might change in the future; and the implications for the health and social care workforce and its training requirements.

Alongside patient registers, a system of standardised population prevalence estimates and forecasts (available at national and sub-national level) should be developed and maintained.

Prevalence estimates and forecasts should be incorporated into routine local data collections such as the core data set for the Republic of Ireland's Primary Care Teams and the community profiles that will support local government in Northern Ireland.

A comprehensive and standardised system for monitoring risk factors (overweight/obesity, nutrition, physical activity and smoking) at the national and sub-national level should be established and maintained.

Relevant data on social determinants of health should be incorporated into clinical, service and public health information systems - including chronic disease patient registers and local data collections - and used to help plan, deliver and evaluate chronic disease prevention and management programmes.

Performance indicators which can be used to measure differences in disease prevention and management between population subgroups should be developed and used to plan and monitor efforts to reduce health inequalities.

Government commitments to develop chronic disease patient registers across the island are applauded[24].

In the first instance, the development of an all-Ireland system of standardised population prevalence estimates and forecasts could be based on further development of the APHO models (greater use of Irish data and research) and exploration of other statistical and probabilistic methods. Definitions and methods should match, as far as possible, those used in clinical information systems.

Current data on lifestyle factors such as obesity and smoking are not available at LHO and LGD level and do not allow trends to be forecast. Filling this small-area data gap would allow the prevalence models to more reliably account for current and future levels of these lifestyle factors.

24 DoHC's *Tackling Chronic Disease: A Policy Framework for the Management of Chronic Diseases* supports the development of patient registration systems for the major chronic conditions, starting with diabetes and cardiovascular disease.

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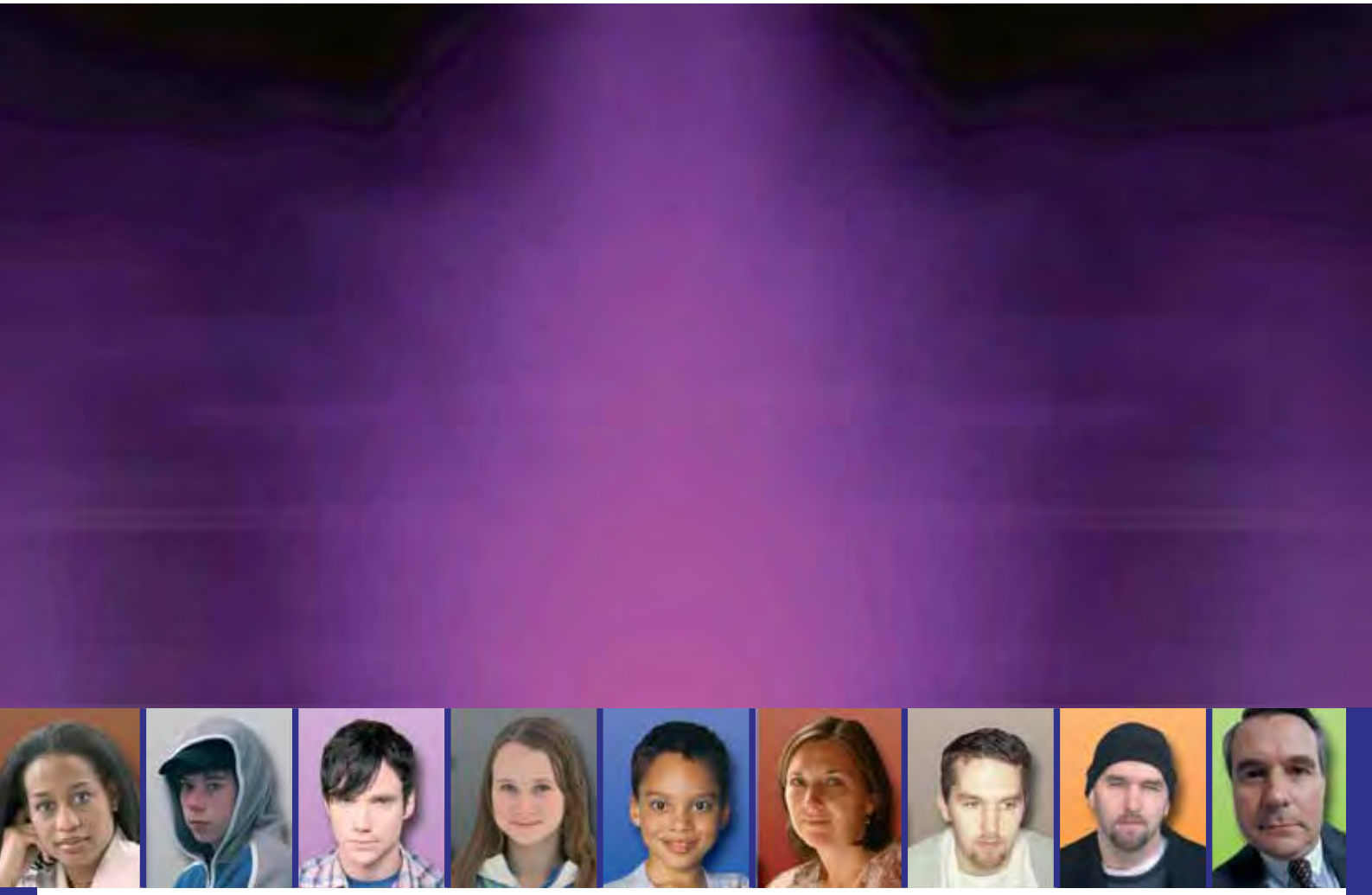

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