Northern Ireland Statistics & Research Agency

Registrar General Northern Ireland Annual Report 2008

November 2009

An Agency within the Department of Finance and Personnel

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NATIONAL STATISTICS

The Northern Ireland Statistics and Research Agency

The Northern Ireland Statistics and Research Agency (NISRA) was established as an Executive Agency within the Northern Ireland Department of Finance and Personnel on 1 April 1996. NISRA is the principal source of official information of socio-economic conditions in Northern Ireland. The Agency provides statistics and social research services, undertakes the Northern Ireland census of population and administers the civil registration of births, deaths, marriages, civil partnerships and adoptions.

The overall corporate aims of NISRA are to:

- Provide a statistical and research service to support the decision making by Government in Northern Ireland and to inform the Assembly and the wider community through the dissemination of reliable official statistics; and
- Administer the marriage laws and to provide a system for the civil registration of births, marriages, civil partnerships, adoptions and deaths in Northern Ireland.

NISRA can be found on the internet at www.nisra.gov.uk

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This report has been prepared by the Demography and Methodology Branch of the Northern Ireland Statistics and Research Agency. All queries relating to its statistical or data content and requests for further information should be addressed to Customer Services. All of the data included in this report is available on the NISRA web site (www.nisra.gov.uk) or can be obtained in electronic format from Customer Services, NISRA.

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Foreword

I have pleasure in presenting my 2008 Annual Report to the Northern Ireland Assembly. The report outlines the work of the General Register Office and presents detailed information on the demography of Northern Ireland. Detailed statistical tables are presented as a supplement to the report on the attached compact disc and on the Northern Ireland Statistics and Research Agency website (www.nisra.gov.uk).

The number of births registered has risen in each of the last six years with the Northern Ireland birth rate now higher than many European countries. Last year whilst the number of deaths increased marginally, after allowing for the older population, the age-adjusted death rate fell. Vital statistics data have been added to this year with the publication of further information on healthcare associated infection and influenza related mortality. Migration has also become an increasingly important component of demographic change creating a more diverse society. Thus whilst last year over 90 per cent of births here were to British or Irish born mothers, the remaining birth registrations relate to mothers who were themselves born in over one hundred different countries from around the world. Chapter one of my report summarises the wide range of demographic statistics.

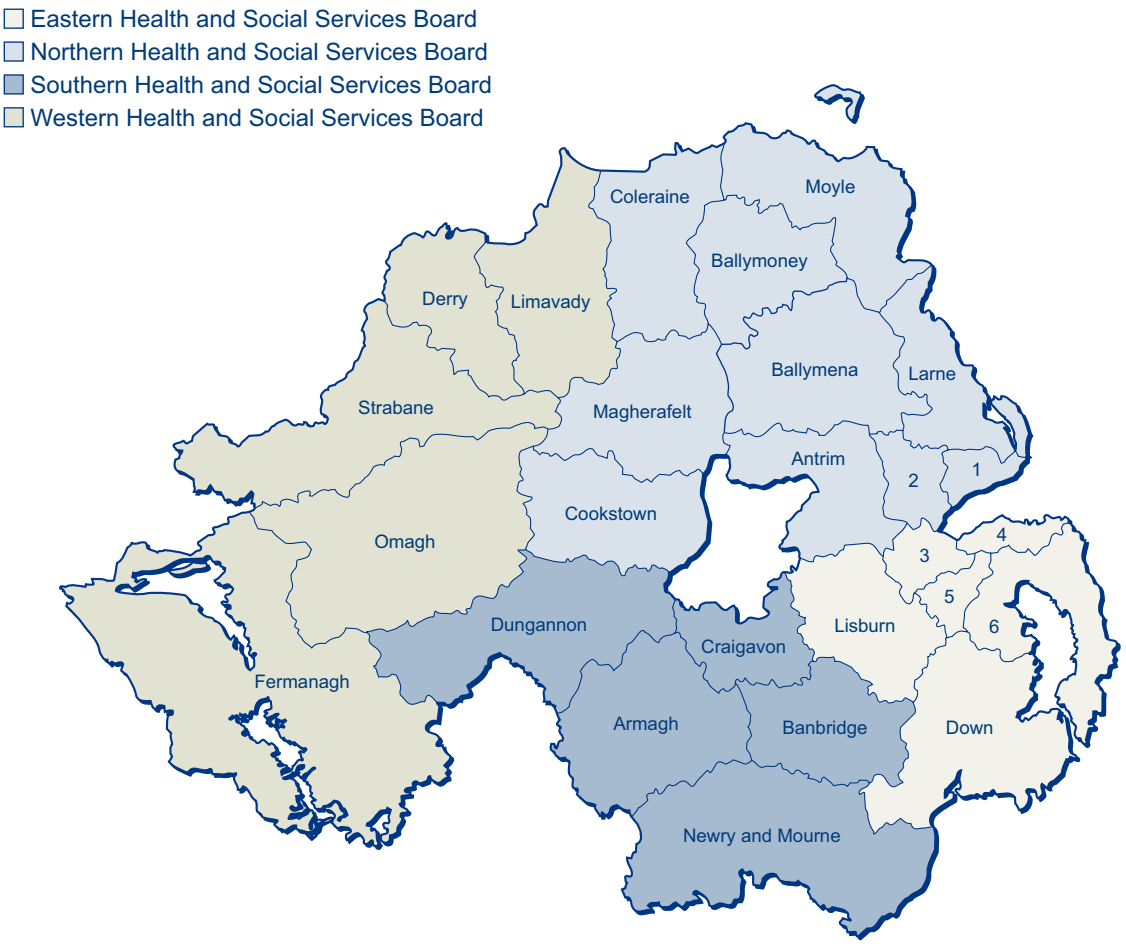
Last year we saw 3,971 deaths registered due to cancer, a disease which touches a large number of families across Northern Ireland. To combat cancer effectively it is vital that there is wide public knowledge and awareness of it. In this context, I invited Dr Anna Gavin and Dr David Donnelly from the Northern Ireland Cancer Registry to provide a detailed article on the incidence of cancer and its impact on the Northern Ireland population. This article is presented in chapter two of the report and I am most grateful to both authors for agreeing to undertake this important work.

This year has also been important for the work of the General Register Office and the Northern Ireland Statistics and Research Agency as a whole. Work has progressed on the digitisation of the civil registration records dating back to 1845 and there have also been significant steps taken in preparation for the next Census of Population which is being planned for 2011.

I welcome comments on the format and content of the Annual Report. I hope you find it informative and useful.

Norman Caven
Registrar General for Northern Ireland
November 2009

Northern Ireland's Health & Social Services Boards and Local Government Districts



1. Carrickfergus
2. Newtownabbey
3. Belfast
4. North Down
5. Castlereagh
6. Ards

Chapter 1
Demographic Overview of Northern Ireland

1.1 Introduction

1.1.1. The number of people living in Northern Ireland continues to rise. The estimate of the population resident in Northern Ireland at 30 June 2008 was 1,775,000.

1.1.2. The mid-2008 figure is an increase in population over the preceding twelve months of 15,900 people or 0.9 per cent of the population. This increase in population is due to two factors. Firstly, there were significantly more births than deaths giving a natural increase in population of 10,600 people. Secondly, it is estimated that the Northern Ireland population grew by 5,700 people as a result of net migration. There was also a reduction of 500 in Her Majesty's Forces stationed in Northern Ireland.

1.1.3. The rate of population growth in 2008 exceeds that seen, on average, over the last 30 years. The increase over the period mid-1978 to mid-2008 is estimated to be 251,800 people, or 16.5 per cent of the mid-1978 population of 1,523,200. This increase is equivalent to an average annual rate of growth over the last 30 years of 0.5 per cent, just over half the increase seen between 2007 and 2008.

1.1.4. In terms of civilian migration it is estimated that in the year to mid-2008, 27,500 people came to live here and 21,700 people left Northern Ireland to live elsewhere; thus giving a net migration gain of 5,700 people. Of the 27,500 people who came to live here; 8,300 came from the eight Eastern European countries that joined the European Union in May 2004.

1.1.5. In 2008, there were 25,631 births registered to Northern Ireland mothers, an increase of 4.8 per cent on the 2007 figure of 24,451 births. The increase in the number of births last year is the sixth consecutive year of increases in the number of births registered.

1.1.6. However the increase in the number of births over the last six years should be set against the decline in the number of births observed since the mid-1980s. As a comparison the number of births registered in Northern Ireland in 1978 was 26,239 births, which is still greater than the number registered last year. Moreover the peak during the baby boom was 34,345 births registered in 1964; 8,714 higher than the 2008 figure.

1.1.7. In 2008 there were 14,907 deaths registered in Northern Ireland, an increase of just over 250 deaths or 1.8 per cent on the 14,649 deaths registered in 2007. Over the last thirty years the death rate has fallen by around a fifth; from 10.6 deaths per 1,000 population in 1978, to 8.4 deaths per 1,000 population in 2008.

1.1.8. In 2008 there were 8,510 marriages celebrated, a decrease of 177 marriages or 2.0 per cent on the 2007 figure of 8,687 marriages. Marriage law was reformed in 2004 introducing, among other things, less strict residency requirements for marriage. This allowed couples to marry in the venue of their choice and making it easier for people from outside Northern Ireland to get married here. One result of the new law is that of civil marriages in 2008, 43 per cent took place in an approved venue, rather than the Registrar's Office.

1.1.9. There were 2,773 divorces granted in 2008, this is a decrease of 140 divorces or 4.8 per cent from the 2007 figure of 2,913 divorces. However the 2008 figure is the second highest on record after the 2007 figure which was the highest number of divorces ever recorded in Northern Ireland.

1.1.10. On 5 December 2005 the Civil Partnership Act came into force across the United Kingdom. The new legislation enabled same-sex couples to obtain legal recognition of their relationship. During 2008 there were 86 civil partnerships registered here, this compares to 111 civil partnerships registered in 2007 and 116 civil partnerships registered in 2006.

Key Points

Population and Migration

- The size of the Northern Ireland resident population rose in the year to 30 June 2008 by 15,900 people or 0.9 per cent to 1,775,000.
- There are more births than deaths in Northern Ireland leading to the population growing through natural change. In the year to 30 June 2008, births exceeded deaths by 10,600; this was the highest level of natural change seen since the year to mid-1992.
- In the year to mid-2008 there was population gain for Northern Ireland of 5,700 people due to civilian migration. This was partially counterbalanced with a net outward movement of 500 people from Her Majesty's Forces stationed in Northern Ireland.
- In terms of civilian migration it is estimated that in the year to mid-2008, 27,500 people came to live here and 21,700 people left Northern Ireland to live elsewhere; thus giving a net migration gain of 5,700 people. Of the 27,500 people who came to live here; 8,300 came from the eight Eastern European countries that joined the European Union in May 2004.

- Since 1998 the number of children in the population has fallen from 411,300 to 381,100 a fall of 7.3 per cent. In contrast, the number of pensioners has increased from 256,600 to 295,800 a rise of 15.3 per cent between 1998 and 2008. The working age population has increased by 8.7 per cent, from 1,009,900 in 1998 to 1,098,100 in 2008.
- Over the longer term since 1978, the number of children has fallen by 17.2 per cent, while the working age and pensioner populations have increased by 29.2 and 38.9 per cent respectively.

Projected Population (2008-Based)

- The Northern Ireland population is projected to exceed 1.8 million by 2010 and 1.9 million by 2019. Longer-term projections indicate the population will reach 2 million by the early 2030s.
- The number of children aged under 16 is projected to increase marginally over the next fifteen years from 381,000 children in 2008 to a projected 398,000 children in 2023 (4 per cent increase).
- The number of adults aged 16-64 is projected to increase from 1,145,000 in 2008 to 1,192,000 by 2023, an increase of 47,000 or 4.1 per cent.
- The number of people aged 65 and over is projected to increase from 249,000 in 2008 to 356,000 by 2023, an increase of 107,000 or 43.1 per cent.
- The number of older people is projected to increase markedly relative to the number of younger people; as a consequence the average (mean) age of the population is expected to rise from 37.6 years in 2008 to 40.4 years by 2023.

Births

- There were 25,631 births registered in 2008, an increase of almost 1,200 (or 4.8 per cent) on the 2007 figure but 600 fewer than the number of births registered in 1978.
- In 2008, the average age of women at childbirth was 30 years compared with 29 years in 1998, 28 years in 1988 and 27 years in 1978.
- For the first time since falling below replacement level (2.1) in 1992, the total period fertility rate for 2008 has again risen above replacement at 2.11 children, which is a recovery from the record low of 1.75 children in 2000.

Deaths/Stillbirths

- In 2008 there were 14,907 deaths registered in Northern Ireland, an increase of just over 250 deaths or 1.8 per cent on the 14,649 deaths registered in 2007.
- The expectation of life at birth for males and females based on mortality rates of recent years was 76.3 and 81.2 years respectively, with corresponding figures for men and women based on the mortality rates of 1922 of 53.8 and 54.4 years respectively.
- In 2008, the two most common causes of death were cancer (3,971 deaths – 26.6 per cent of deaths) and ischaemic heart disease (2,410 deaths – 16.2 per cent of deaths).
- There were 4.5 stillbirths per 1,000 births (live and still) in 2008, a substantial reduction from 20.5 stillbirths per 1,000 births in the early 1960s.
- There was a similar fall in infant deaths from 26.5 infant deaths per 1,000 live births in the early 1960s to 4.7 infant deaths per 1,000 live births in 2008.

Marriages/Divorces

- There were 8,510 marriages celebrated in 2008, a decrease of 177 marriages on the 2007 figure of 8,687 marriages. This is in contrast to the early 1970s when around 12,000 marriages were celebrated each year.
- On 1 January 2004, new marriage legislation came into effect in Northern Ireland. The new law allows civil marriage ceremonies to be conducted outside Registrar's Offices in a number of approved venues. In 2008, 1,056 civil marriage ceremonies (42.7 per cent of all civil marriage ceremonies) were held in approved venues; this compares with 1,042 (40.8 per cent of all civil marriage ceremonies) such ceremonies in 2007.
- There were 2,773 divorces granted in 2008, this is a decrease of 140 divorces or 4.8 per cent from the 2007 figure of 2,913 divorces. However the 2008 figure is the second highest on record after the 2007 figure which was the highest number of divorces ever recorded in Northern Ireland.

Civil Partnerships

- On 5 December 2005 the Civil Partnership Act came into force across the United Kingdom. The new legislation enabled same-sex couples to obtain legal recognition of their relationship. During 2008 there were 86 civil partnerships registered here, this compares to 111 registered in 2007 and 116 registered in 2006.

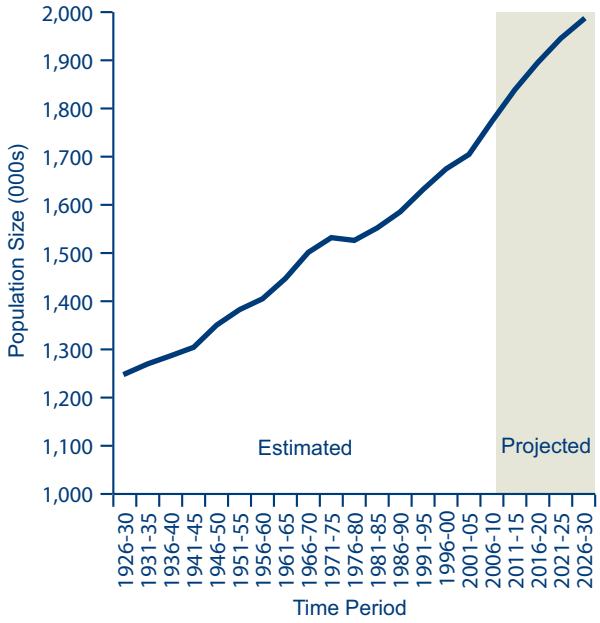
1.2 Population

1.2.1. The latest estimate of the size of the Northern Ireland population (30 June 2008) is 1,775,000 people. Twenty-one per cent of the population were aged under 16 years, 17 per cent were of pensionable age (60 years and over for women and 65 years and over for men), with the remaining 62 per cent of the population of working age.

1.2.2. In the 12 months to 30 June 2008, Northern Ireland's population is estimated to have risen by 15,900 persons. This is made up of an increase of 10,600 people attributable to natural growth (i.e. more births than deaths), and a net inward migration to Northern Ireland of 5,700 people. There was an addition loss of 500 due to other changes, primarily Her Majesty's Forces stationed in Northern Ireland.

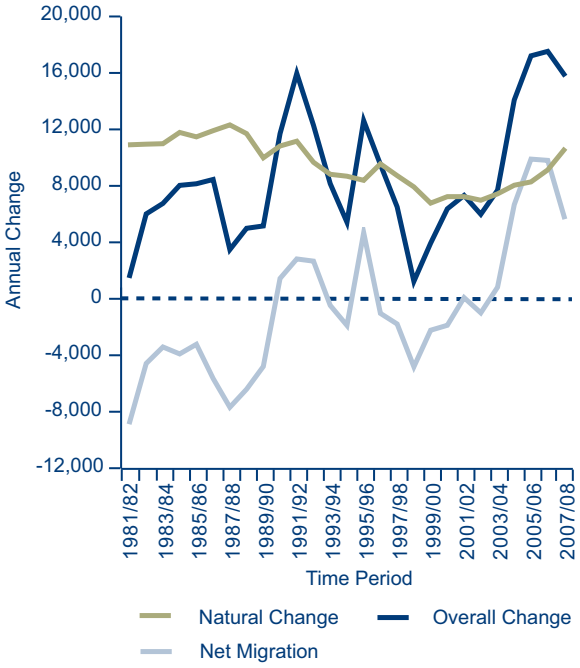
1.2.3. Figure 1.1 shows the trend of increasing population, although there was a slight decrease in population in the early 1970s as a result of high levels of net outward migration at that time. Latest 2008-based population projections for Northern Ireland show that the population is projected to continue to increase.

Figure 1.1: Population of Northern Ireland (1926 to 2008 estimated – 2009 to 2030 projected) – non-zero y-axis



1.2.4. It can be seen from the trends in natural change and net migration presented in Figure 1.2 that, prior to 2004, population increase was mostly due to natural change. However, in contrast, in 2004-5 the contributions to population increase from natural change and migration were of a similar magnitude and in 2005-6 and 2006-7 the contribution from migration was larger than the contribution from natural change. Again in 2007-8 the contribution from natural change was greater than the contribution from migration.

Figure 1.2: Components of population change (1981-2 to 2007-8)



Age and Sex Structure

1.2.5. The age structure of Northern Ireland's population continues to get older due to a long period of below replacement level fertility (in western countries a total period fertility rate of about 2.1 is required to maintain long-term population levels) and increasing life expectancy. In mid-2008, there were more females (51 per cent) than males in Northern Ireland. Twenty-two per cent of males were aged under 16 years old compared with 21 per cent of females, while 65 per cent of males and 58 per cent of females were of working age. Figure 1.3 shows the age structure of the population in 2008.

Figure 1.3: Northern Ireland population pyramid by sex and age (2008)

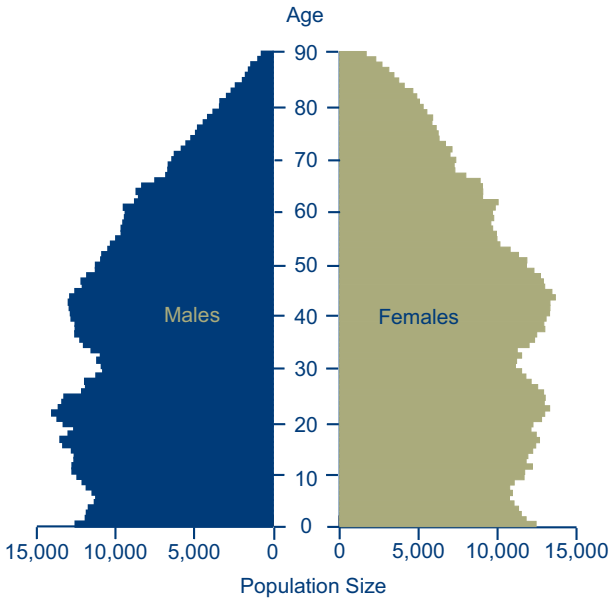
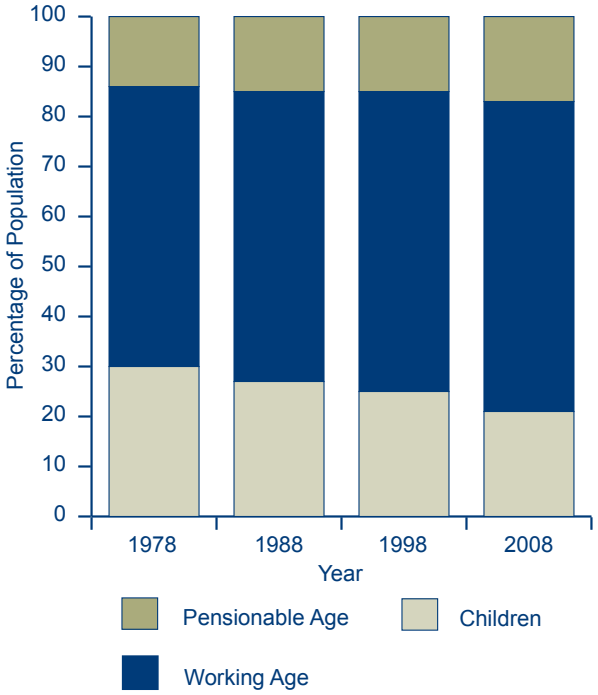


Figure 1.4: Changing age structure of Northern Ireland population (1978 to 2008)



1.2.6. During the twelve months to June 2008, the number of children aged 0-15 years remained essentially unchanged, the number of people of working age increased by 0.8 per cent while those of pensionable age increased by 2.1 per cent. In overall terms the Northern Ireland population increased by 0.9 per cent or 15,900 people. In the decade to 2004, the overall annual rate of population increase was around 6,700 persons (equivalent to 0.4 per cent each year). The 2005, 2006, 2007 and 2008 increases were significantly larger at 14,000 people (0.8 per cent), 17,000 (1.0 per cent), 17,500 (1.0 per cent) and 15,900 (0.9 per cent) respectively.

1.2.7. Over the past thirty years, low fertility levels have resulted in a decrease in the number of children aged 0-15 years (17.2 per cent decrease). In contrast, the number of people of working age has increased by 29.2 per cent; and those of pensionable age have increased by 38.9 per cent. The changing age structure of the population since 1978 is illustrated in Figure 1.4.

Area Comparisons Within Northern Ireland

1.2.8. The pattern of continuing population growth is evident within the majority of Northern Ireland's 26 Local Government Districts. Indeed, all Local Government Districts experienced a natural increase of population (more births than deaths) between mid-2007 and mid-2008. The largest natural increase of population was in Belfast and Lisburn Local Government Districts, each with natural increases of over 900 people.

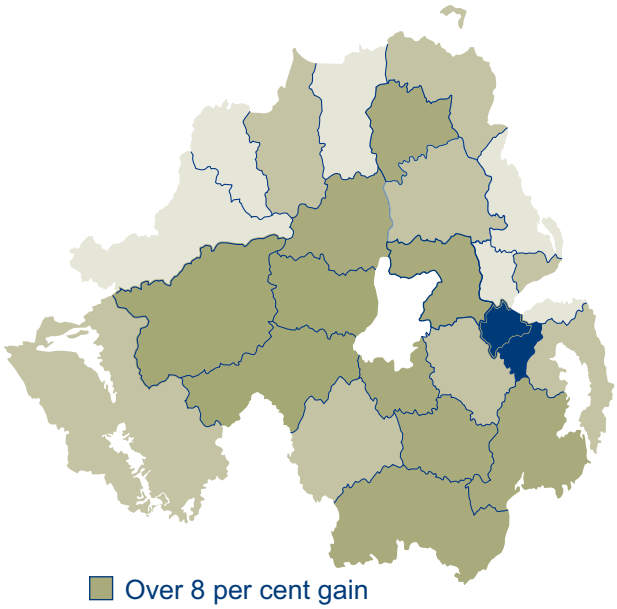
1.2.9. However, when one accounts for migration, including Armed Forces movement, the populations of Carrickfergus (0.0 per cent), Larne (-0.2 per cent) and Limavady (-0.9 per cent) Local Government Districts experienced either virtually no growth or a loss in population between 2007 and 2008.

1.2.10. In contrast Craigavon and Dungannon Local Government Districts had the greatest increases in population (+2.3 per cent and +2.0 per cent respectively). These rates of increase are more than twice the Northern Ireland percentage increase (+0.9 per cent). In addition, other districts that experienced population increases of over 1.5 per cent between mid-2007 and mid-2008 included, Magherafelt (+1.7 per cent) and Newry and Mourne (+1.9 per cent) Local Government Districts.

1.2.11. Newry and Mourne was the Local Government District with the highest proportion of children among its population (24.2 per cent), while North Down had the lowest proportion (18.4 per cent). In 2008, North Down Local Government District had the highest proportion of the population of pensionable age (20.9 per cent) and Derry Local Government District had the lowest proportion (13.4 per cent).

1.2.12. Figure 1.5 shows the percentage change in population between mid-2001 and mid-2008 for each Local Government District area. It is better to compare population change over a longer time frame, as population change tends to fluctuate from year to year, particularly for smaller areas. The areas with the fastest growing population (e.g. Banbridge, Dungannon and Craigavon Local Government Districts) tend to experience both net population in-migration and natural growth.

Figure 1.5: Percentage population change by Local Government District Area (2001 to 2008)



1.3 Migration

1.3.1. Measures of population movement or migration are based on the United Nations definition of a long-term international migrant[1]. This definition is in use in population statistics for countries across the European Union. Unlike some other European countries, there is no comprehensive system which registers population movement in the United Kingdom. Therefore, estimates of population movement into, and out of, Northern Ireland are derived from proxy indicators. In Northern Ireland the primary source for estimating this is family doctor registrations. At the Northern Ireland level, the overall effect of population movement is derived from the difference in two "population flows": the number of people coming to live in Northern Ireland and the number of people leaving Northern Ireland to live elsewhere.

1.3.2. Between July 2007 and June 2008, almost 27,500 people came to live here and just over 21,700 people left Northern Ireland. This resulted in an overall gain in population (or net-migration) of 5,700 people. In contrast, since the Second World War it is estimated that around 300,000 more people have left Northern Ireland to live elsewhere than came here to live.

1.3.3. Estimates of net migration for Northern Ireland since the mid-1970s are shown in Figure 1.6. The graph can be viewed in terms of three distinct phases of migration. The first phase during the 1970s and 1980s was when Northern Ireland experienced consistently large net population loss due to population movement (or out-migration) approaching 10,000 people in some years. Clearly, the impact of "The Troubles" is significant here.

1.3.4. The second phase from the early 1990s until 2004 shows population movement has been in balance, with broadly the same number of people coming to live in Northern Ireland as leaving. Over this period it is estimated that each year around 20,000 people have come to live in Northern Ireland and 20,000 left. However, in the last or third phase since 2004, the annual number of people estimated to have come here to live rose to 27,000 by mid-2005, to 31,000 by mid-2006 and to over 32,000 by mid-2007. By mid-2008, this number has fallen to 27,000. In contrast, the number leaving Northern Ireland increased marginally from 20,000 to 22,000 over the period.

1 "A person who moves to a country other than that of his or her usual residence for a period of at least a year, so that the country of destination effectively becomes his or her new country of usual residence." - Taken from "Recommendations on Statistics of International Migration. UN 1998" available at http://unstats.un.org/unsd/pubs/gesgrid.asp?ID=116

1.3.5. This indicates a marked increase in international inflows and is related to the enlargement of the European Union in May 2004, when people from countries in Eastern Europe were allowed to come to work in the United Kingdom and Ireland.

Place of Origin/Destination of People Coming to Northern Ireland (2007-8)

1.3.6. Table 1.1 shows where people coming to Northern Ireland last lived. Of the 27,500 people who came to live here during 2007-8; around 56 per cent (15,400) came from outside the United Kingdom. Of this just over half (8,300) came from the eight Eastern European Accession countries (A8)[2] that joined the European Union in May 2004.

2 The A8 countries are the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia. Malta and Cyprus also joined the EU on 1 May 2004 but are considered separately from the A8 countries as they have full free movement rights to work throughout the EU.

Figure 1.6: Estimated level of net migration (1977-8 to 2007-8)

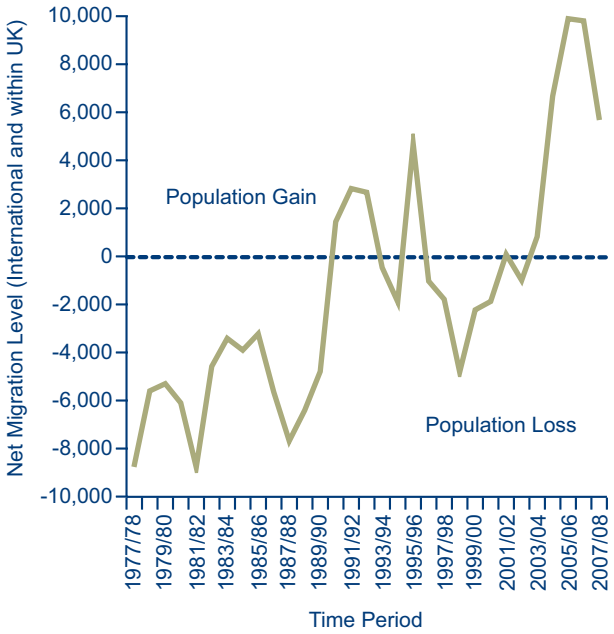


Table 1.1: Number of people coming to live in Northern Ireland by country of last residence (Mid 2005 to Mid 2008)

Country of Last Residence	Number of people coming to live in Northern Ireland (Mid-2005 to Mid-2006)		Number of people coming to live in Northern Ireland (Mid-2006 to Mid-2007)		Number of people coming to live in Northern Ireland (Mid-2007 to Mid-2008)	
	Number	Percentage	Number	Percentage	Number	Percentage
England and Wales	9,900	*33%*	10,200	*31%*	9,800	*36%*
Poland	5,400	*18%*	6,700	*21%*	5,300	*19%*
Scotland	2,300	*8%*	2,600	*8%*	2,300	*8%*
Republic of Ireland	1,500	*5%*	1,500	*5%*	1,400	*5%*
Lithuania	2,000	*7%*	1,600	*5%*	1,200	*4%*
Slovakia	1,000	*3%*	1,100	*4%*	800	*3%*
India	700	*2%*	800	*2%*	700	*3%*
Portugal	300	*1%*	300	*1%*	500	*2%*
China	500	*2%*	600	*2%*	400	*1%*
USA	400	*1%*	300	*1%*	400	*1%*
Philippines	500	*2%*	500	*1%*	300	*1%*
All other EU Accession Countries	1,000	*3%*	900	*3%*	900	*3%*
All other countries	4,900	*16%*	5,000	*15%*	3,300	*13%*
Total Inflow	**30,500**	***100%***	**32,300**	***100%***	**27,500**	***100%***

Source: HSC Business Services Organisation, May 2009, Health Card Registrations

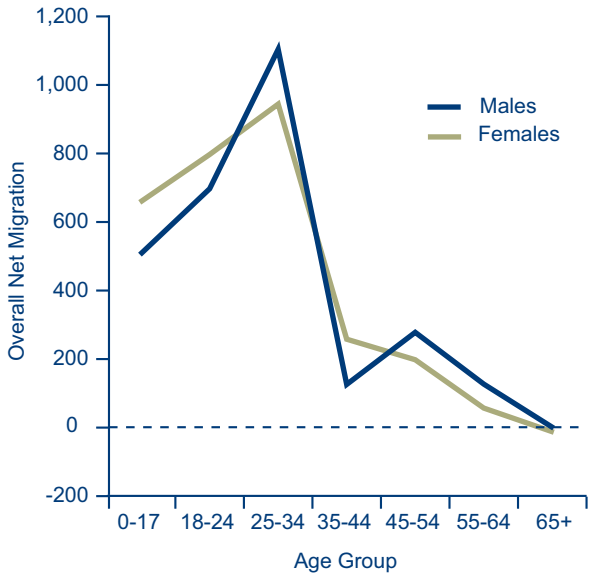
1.3.7. This table reflects where people coming to live here last lived *not* their nationality. Thus some people coming from Great Britain or Ireland will be non-British/ Irish nationals, and some people coming from outside the British Isles will be returning British/Irish nationals.

1.3.8. In contrast looking at the 21,700 people who left Northern Ireland to live elsewhere in 2007-8; just under half, 10,700 left for Great Britain while the remaining 11,000 left for outside the UK. Therefore, in total, it is estimated that just over 1,400 more people came to live here from Great Britain, than moved in the opposite direction, and 4,300 more people came to live here from outside the UK than moved in the opposite direction.

Age-Distribution of Migrants

1.3.9. Figure 1.7 shows the age distribution of net migration in Northern Ireland for 2007-8. The 25-34 age groups experienced the largest net-migration gain for both males and females.

Figure 1.7: Net total migration by age group and gender (2007-8)



Other Data Sources on Migration

1.3.10. As noted earlier measuring migration is challenging. There are a number of sources available to count people coming to or leaving Northern Ireland. However the sources use different definitions of how, when and where migrants are recorded. That said recent data from all administrative and statistical sources show increased migration over recent years although there has been a slowing down in 2007/08. The sources also give a consistent picture on which parts of Northern Ireland new migrants are working and living in.

1.3.11. Most people coming to Northern Ireland to work from one of the eight Eastern European countries that joined the EU in 2004 must register through the Worker Registration Scheme (WRS). In the year to June 2008, some 7,800 people registered with the WRS to work in Northern Ireland, this is a decrease on the 9,100 people who registered in the same period between mid-2006 and mid-2007.

1.3.12. Non-EEA nationals coming to work in Northern Ireland require work permits, and there is an average flow of about 2,000 persons per year, although numbers in the year to June 2008 are significantly down on previous years. Numerically Indian and Filipino are the largest nationalities applying for work permits for jobs in Northern Ireland.

1.3.13. In 2008, 2,300 births here (9 per cent of all births) were to mothers born outside the UK and Ireland, compared to 700 such births in 2001. Of these, 1,100 births in 2008 were to mothers from the eight Eastern European countries that joined the EU in 2004, compared to 10 such births in 2001.

1.3.14. The School Census (October 2008) shows that about 4,300 primary school children have a language other than English as their 'first' language. This is about three per cent of the primary school population, and a 22 per cent increase on the corresponding figure (3,500) for the previous year. For secondary school children, the increase has been from 1,700 to 2,100 (one per cent of the secondary school population) between 2007 and 2008.

1.3.15. In 2008 the total number of new registrations with family doctors from migrants coming from outside the UK was 15,400 registrations. Around 54 per cent of those registering with family doctors gave their reason for coming to the UK as work related, while 27 per cent came for family reasons, nine per cent for education reasons and 10 per cent gave another or no specific reason.

1.3.16. The overall migration trends described above vary across Northern Ireland. Flows around areas such as Botanic (Belfast), Rostulla (Newtownabbey) and Strand (Derry) wards are driven by students, but work is the main reason given by people for coming to Northern Ireland. Information from registrations with family doctors shows that in parts of Dungannon, Craigavon, Belfast and Newry and Mourne Local Government Districts, annual immigration flows in 2008 exceed 1 in 30 of the resident population.

1.3.17. There is also spatial variation in migration related statistics for children. In 2008 about three per cent of primary school children did not have English as their 'first' language; however this figure for schools in Dungannon Local Government District was 10 per cent. Similarly, while births to mothers born outside the United Kingdom and Ireland accounted for nine per cent of all 2008 births, in Dungannon Local Government District the figure was 20 per cent.

1.4 Projected Population – Northern Ireland

1.4.1. Population projections are produced every other year and the latest projections use 2008 as the base year. Based on this the Northern Ireland population, 1.775 million in 2008, is projected to increase to 1.839 million in 2013. This is equivalent to an average annual rate of growth of 0.7 per cent. Over the longer term the population is projected to reach 1.946 million by 2023 an increase of 171,000 people (10 per cent).

1.4.2. The projected increase in population is primarily due to natural growth. In the five years (2008 to 2013) it is projected that there will be 55,000 more births than deaths.

1.4.3. Projections indicate a marked increase in the size of the population at older ages. The number of people of current pensionable age is projected to increase by around 11 per cent in the next five years and by around 40 per cent over the fifteen year period 2008-2023.

1.4.4. In totality, the population will also gradually become older with the average age expected to rise from 37.6 years in 2008 to 40.4 years by 2023. In 2008 there were 127,000 more children aged under 16 than people aged 65 and over. The number of people aged 65 and over is projected to exceed the number of children from 2027 onwards. The number of children aged under 16 is projected to increase marginally over the next fifteen years from 381,000 children in 2008 to a projected 398,000 children in 2023 (4 per cent increase).

1.4.5. The number of males aged 16-64 and females aged 16-59 (the current definition of working age) is projected to increase from 1,098,000 in 2008 to 1,132,000 by 2023, an increase of about 34,000 (3 per cent).

1.4.6. Between 2010 and 2020, the pension age for females will be increased incrementally from 60 to 65. Taking this into account, the number of people of working age in Northern Ireland is projected to rise by nine per cent from 1,098,000 in 2008 to 1,192,000 in 2023. Table 1.2 shows the estimated and projected dependency ratios.

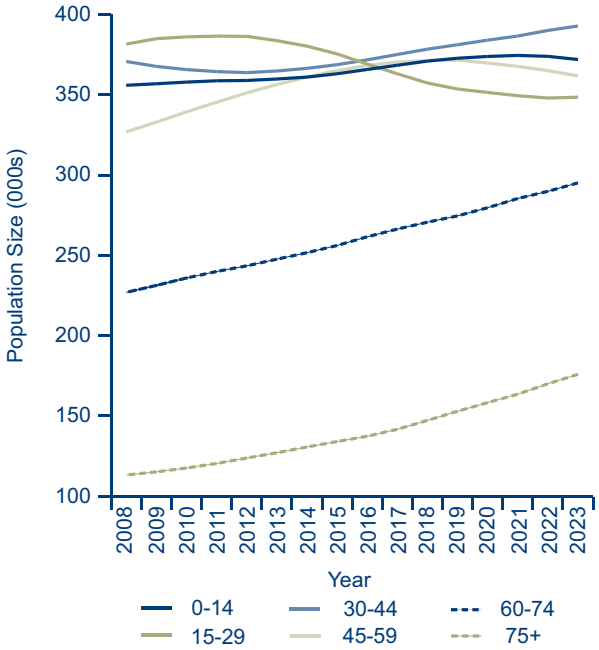
Table 1.2: Estimated and projected dependency ratios, 1978, 1988, 1998, 2008 and 2023

	Number of dependents per 100 persons of working age		
Mid-Year Population Estimates/Projections	Children (Under 16 years)	Persons of State Pension Age	All Dependants
Mid-1978	54	25	79
Mid-1988	45	26	71
Mid-1998	41	25	66
Mid-2008	35	27	62
Mid-2023 (State pension age as at 2021)	33	30	63
Mid-2023 (State pension age as at 2008)	35	37	72

1.4.7. The number of people of pensionable age (as currently defined, aged 60 and over for females and aged 65 and over for males) is projected to increase from 296,000 in 2008 to 416,000 by 2023, an increase of 41 per cent. In 2023, after allowing for the change in age at which females can claim retirement pension, the number of people of pensionable age is projected to be 356,000 (20 per cent higher than 2008).

1.4.8. The number of people aged 85 and over will also rise; it will almost double within the next 17 years. Figure 1.8 shows the changes different age groups are projected to experience over the next 15 years.

Figure 1.8: Projected population by age group (2008 to 2023) – non-zero y-axis

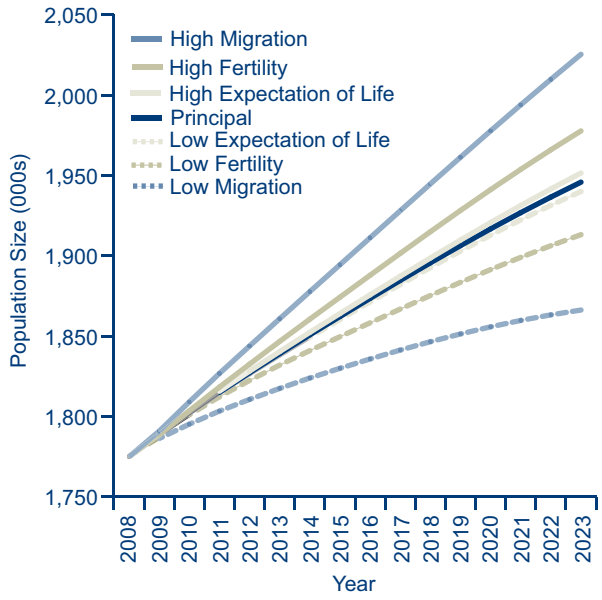


Assumptions and Variant Projections

1.4.9. Population projections provide a consistent starting point for all government planning. Projections are however based on assumptions and due to the inherent uncertainty of demographic behaviour, any set of projections will inevitably, to a greater or lesser extent, be proved wrong. Therefore, alternative variant assumptions of future fertility, mortality and migration are available for the population projections.

1.4.10. In these projection variants, different fertility, mortality and migration assumptions have been treated as separate and independent departures from the assumptions in the principal projection. Figure 1.9 shows that, for example, holding the fertility and mortality assumptions unchanged, an assumption of high migration (net in-migration of 5,000 per year) would lead to a population in 2023 of 2.03 million while an assumption of low migration (net out-migration of 4,000 per year) would lead to a population in 2023 of 1.87 million.

Figure 1.9: Population projections - principal and variant 2008-based projections (2008 to 2023) – non-zero y-axis



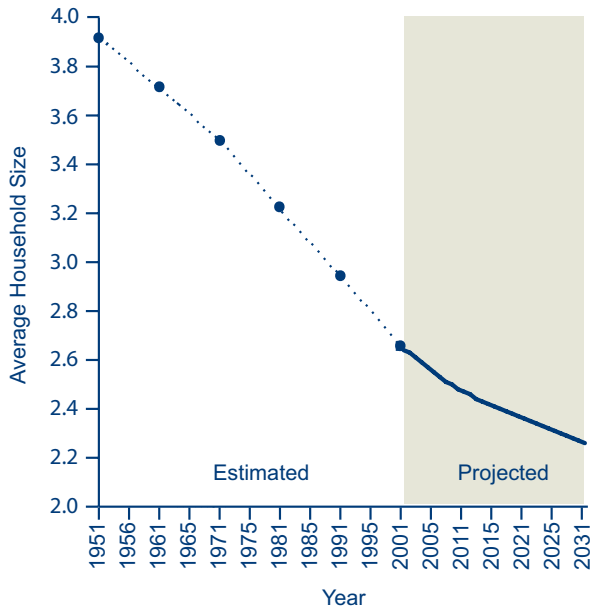
1.5 Household Projections

1.5.1. Clearly one impact of the projected increase in population is housing. Over the last five years NISRA has worked with Government Departments in Northern Ireland with responsibility for housing to create official household projections for Northern Ireland. These figures are based on both population projections and trends in household formation (for example, increasing trends in the number of people living in one person households).

1.5.2. The latest household projections for Northern Ireland are based on the 2006 population projections. New household projections based on the 2008 population projections will be published early in 2010. The number of households in Northern Ireland is projected to grow by 48,500 or seven per cent over the five year period 2006 to 2011, from 672,600 households in 2006 to 721,100 households in 2011. Over this period, the average household size will fall from 2.55 to 2.47 persons per household.

1.5.3. In the longer term, over the period 2006 to 2021, it is projected there will be around 125,700 (19 per cent) additional households in Northern Ireland. This increase is a combined result of population growth (65,300 households), changing age structure (34,400) and continuing trends towards smaller households (26,000). The average household size is projected to drop to 2.36 persons per household in 2021. The projected average household sizes demonstrate a slowdown in the downward trend observed since 1951 (see Figure 1.10).

Figure 1.10: Average household size, Northern Ireland, 1951-2031 (Census estimates between 1951 and 2001, projections 2002 onwards) – non-zero y axis



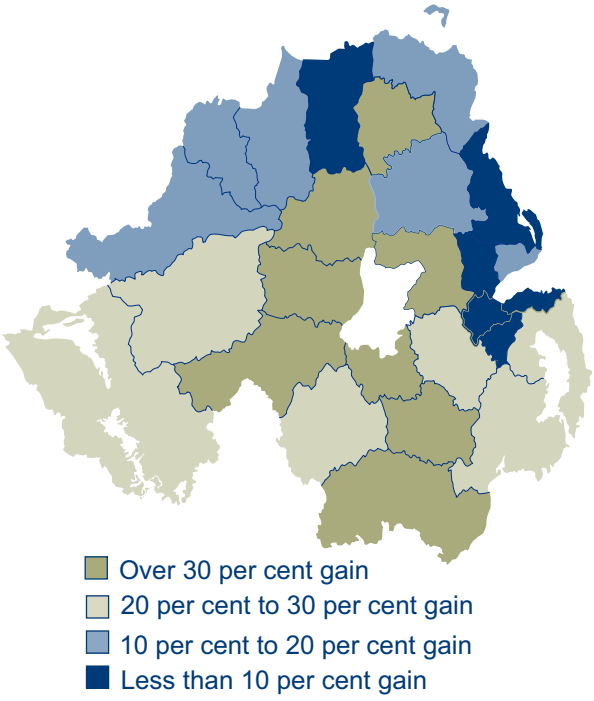
1.5.4. The fall in the average household size is primarily caused by a rise in the number of single and two adult households. The number of one-person households is projected to rise from 199,000 in 2006 to 225,100 in 2011 (13 per cent). At the same time, the number of two-adult households is projected to increase from 175,300 in 2006 to 196,400 in 2011 (12 per cent). The number of households with four or more persons is projected to fall slightly from 171,200 in 2006 to 169,200 in 2011 (one per cent).

1.5.5. The number of lone adult with dependent children households is projected to remain relatively stable at around 43,000 households. The number of other households with children is projected to remain stable as well at around 177,000 households. The number of households with three or more persons without dependent children is projected to rise in the short term, from 76,900 in 2006 to 80,400 in 2011 (five per cent).

1.5.6. In 2006, it is estimated that 98.4 per cent of the population resides in households. This percentage is set to fall slightly to 98.1 per cent in 2021. This is primarily due to the increase in the proportion of the population who are elderly and thus are more likely to reside in residential care.

1.5.7. Over the period 2006 to 2021, all of Northern Ireland's Local Government Districts are projected to experience a growth in the number of households. The largest percentage increases are projected in Dungannon (+54 per cent) and the smallest increases are projected in Belfast, Castlereagh and Coleraine (all +2 per cent). Figure 1.11 below shows the projected change in each Local Government District.

Figure 1.11: Overall percentage change in number of households by Local Government District between 2006 and 2021



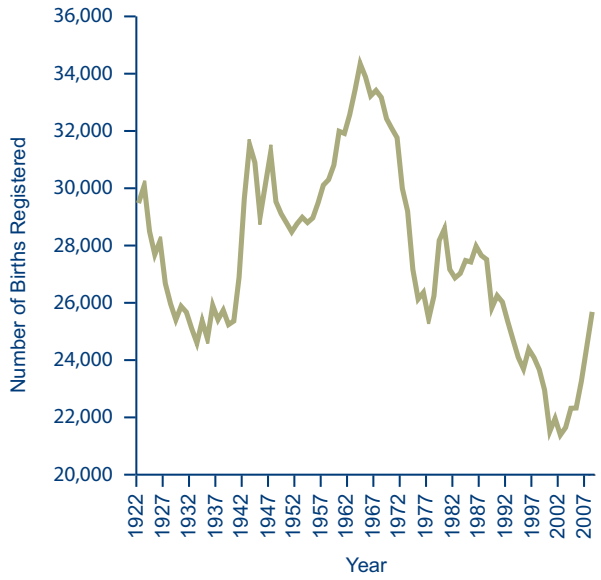
1.6 Births

Numbers

1.6.1. In 2008, there were 25,631 births registered to Northern Ireland mothers, a 4.8 per cent increase on the 2007 figure of 24,451 births. Indeed, the number of births has recovered from an all-time low of 21,385 births registered in 2002. However, the number of births in 2008 is still below corresponding levels of the late-1970s, when just over 26,200 births were registered in 1978.

1.6.2. The number of births registered each year since 1922 is shown in Figure 1.12. This graph shows a noticeable peak after the Second World War. Like many western countries, Northern Ireland experienced a "baby boom" during the second half of the 1950s and early 1960s. Specifically in Northern Ireland, births peaked in 1964 at just over 34,000 live births and then fell dramatically in the early 1970s. The drop in the number of births levelled off in the 1980s at 27,000 births per annum. However, this was mainly a result of the larger number of women, who were born in the baby boom passing through their childbearing years. The decline in births resumed in the 1990s as these women started to complete their families. The increase in the number of births since 2002 arrests the recent decline.

Figure 1.12: Number of births registered (1922 to 2008) – non-zero y-axis

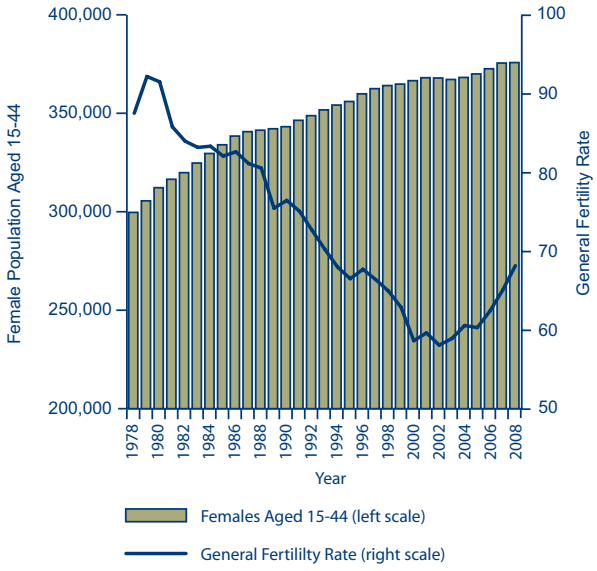


Fertility Rates

1.6.3. The crude birth rate in 2008 was 14.4 births per 1,000 population, which is an increase on the 2007 figure of 13.9 births per 1,000 population. However, over the longer term the birth rate has fallen from its peak in the early 1960s when it was 23.0 births per 1,000 population.

1.6.4. Figure 1.13 shows the general fertility rate (births per 1,000 females aged 15-44), along with the number of women aged 15-44. The population of females aged 15-44 has increased since 1978, however, the general fertility rate has fallen. In 2008, the general fertility rate was 68.2 births per 1,000 females aged 15-44. Whilst this is an increase from the record low in 2002 of 58.1 births per 1,000 females aged 15-44 it is still well below the general fertility rate in 1978 of 87.6 births per 1,000 females aged 15-44.

Figure 1.13: Estimated female population aged 15-44 and general fertility rate (1978-2008) - non-zero y-axes



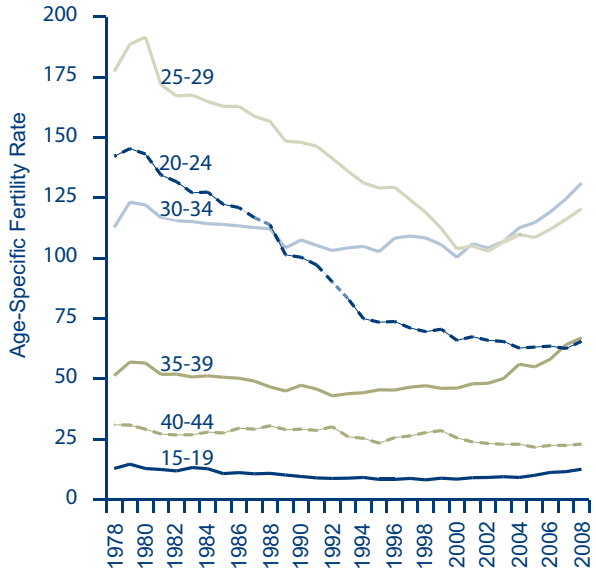
1.6.5. There has been a recent trend towards later childbearing by mothers. In 2008, for all live births, the average age of the mother was 30 years, compared with 29 in 1998, 28 in 1988 and 27 in 1978. Just under half of all births registered in 2008 were to mothers aged 30 and over; this is a significant increase from 1978 when around 30 per cent of births were to mothers aged 30 and over. This indicates that women are delaying child-bearing; indeed, the average age of first time mothers was 27 in 2008 compared with 24 in 1978.

1.6.6. In 2008, for all live births, the average age of the father was 33 years, compared with 32 in 1998 and 31 in 1988. However, around eight per cent of births in 2008, 10 per cent in 1998 and around nine per cent in 1988 were registered by the mother with no father's details recorded.

1.6.7. This trend to later childbearing is most apparent in the decline in fertility rates among 20-24 year old females. Over the past three decades fertility for this age group has more than halved, from 142 babies per 1,000 women in 1978 to 66 babies per 1,000 women in 2008.

1.6.8. In 2008, women aged 30-34 years experienced the highest age-specific fertility rate, with 131 babies per 1,000 women, while women aged 25-29 years experienced the second highest rate (121 babies per 1,000 women). Figure 1.14 shows the change in age-specific fertility rates by age group over the last thirty years.

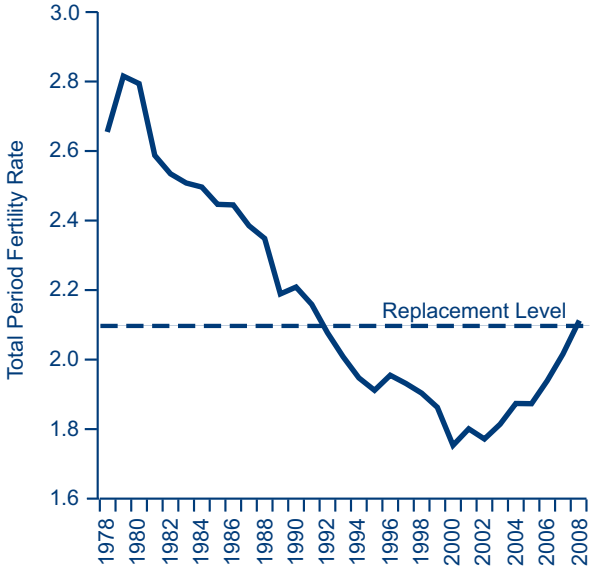
Figure 1.14: Live births per 1,000 women by age group of mother (1978 to 2008)



1.6.9. The total period fertility rate is derived from the sum of age-specific fertility rates. It gives the theoretical average number of children who would be born alive to a woman during her lifetime if she were to pass through her childbearing years conforming to the age-specific fertility rates of a given year. A value of 2.1 is generally taken to be the level at which the population would replace itself in the long run, ignoring migration.

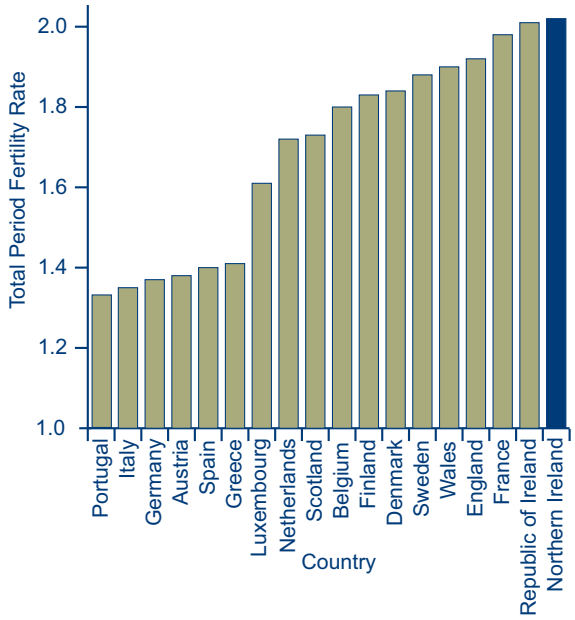
1.6.10. The total period fertility rate dropped below replacement level (2.1) in Northern Ireland for the first time in 1992. The total period fertility rate for 2008 was 2.11, which is a recovery from a record low of 1.75 in 2000, but still below the fertility rates in the 1980s. The total period fertility rate for Northern Ireland since 1978 is shown in Figure 1.15.

Figure 1.15: Total period fertility rate (1978 to 2008) – non-zero y-axis



1.6.11. Figure 1.16 shows the total period fertility rate for Northern Ireland compared to the European Union 15 (EU15) and the other constituent countries of the United Kingdom (UK). Northern Ireland has the highest total period fertility rate of the constituent countries of the UK and has a higher total period fertility rate than any of the other EU15 countries. The most recent data available for all countries is for 2007; with the exception of Belgium and Italy which is 2006 data.

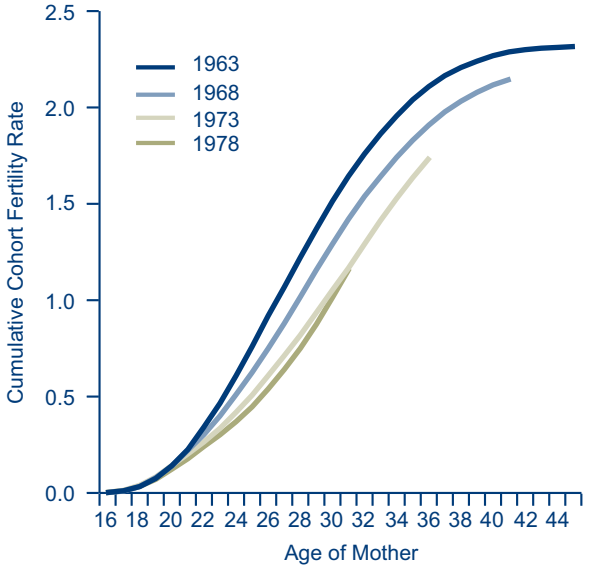
Figure 1.16: Total period fertility rate, EU15 and Constituent Countries of the UK, 2007 - non-zero y-axis



1.6.12. A further measure of fertility is completed family size which is a more accurate picture of fertility for a cohort of women born in a specific year. Figure 1.17 shows the achieved family size, sometimes called cumulative cohort fertility, at specific ages for women born in particular years (or cohorts). Family size at age 45 is taken to represent completed family size. This enables easy comparison between selected cohorts as women pass through the child-bearing ages.

1.6.13. In Northern Ireland those women born in 1963 had attained an average completed family size of 2.32 children by the time they reached 45. Figure 1.17 also permits the comparison of family size at selected ages for the various cohorts as they pass through the childbearing ages. For example, by age 30 the cumulative childbearing of the 1978 cohort is 0.5 children lower than that of the 1963 cohort.

Figure 1.17: Cumulative cohort fertility rate for selected birth cohorts



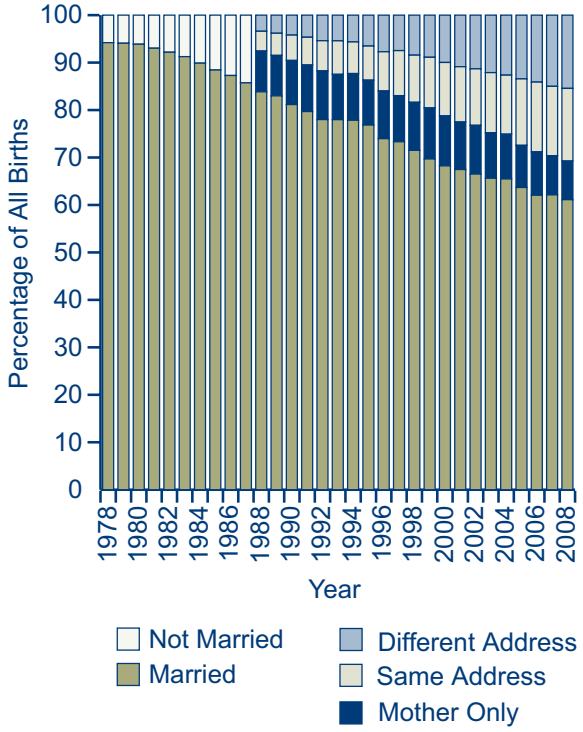
Birth Order

1.6.14. A total of 10,989 births (43 per cent) were to first-time mothers in 2008. Second-time mothers had 8,376 babies (33 per cent) and third-time mothers had 4,041 babies (16 per cent). Only nine per cent of mothers, in 2008, already had three or more live born children reflecting the trend towards smaller family sizes.

Births Outside Marriage

1.6.15. In 2008, 38.9 per cent of all live births occurred outside marriage. This proportion has been increasing steadily since the early 1960s when the proportion of children born outside marriage was about 2.5 per cent. Since 1988, information has been gathered that identifies births registered by married parents, unmarried parents (living at the same address or at different addresses) or by the mother only. In 2008, 79.1 per cent of births outside marriage were jointly registered by both parents. Figure 1.18 shows the change in births by registration status since 1978.

Figure 1.18: Live births by registration status (1978 to 2008)



1.6.16. In 2008, 97.5 per cent of births to mothers under the age of 20 were outside marriage, 79.6 per cent of births to mothers aged between 20 and 24 were outside marriage, while for those aged 25 and over 26.0 per cent of births were outside marriage.

Multiple Births

1.6.17. In 2008, the percentage of maternities resulting in a multiple birth was 1.4 per cent. There were 356 sets of twins and six sets of triplets registered in 2008.

1.6.18. The percentage of maternities resulting in multiple births has increased from 1.1 per cent in the 1970s to 1.4 per cent in 2008. The percentage of maternities that result in a multiple birth increases with the age of the mother. In 2008, less than one per cent of maternities to mothers aged under 25 resulted in multiple births, while 1.7 per cent of maternities to mothers aged between 40 and 44 resulted in multiple births.

Place of Birth

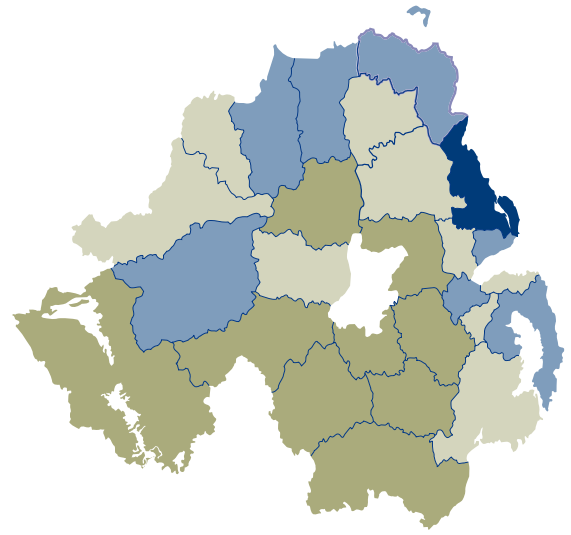
1.6.19. In 2008, around 100 babies were born in places other than a hospital, this is a similar figure to 2007.

Births by Area

1.6.20. Health Board level crude birth rates ranged from 13.9 births per 1,000 population in the Eastern Board area to 16.0 births per 1,000 population in the Southern Board area. The birth rate in the Northern and Western Board area were 14.0 and 14.4 births per 1,000 population.

1.6.21. Dungannon, Magherafelt and Newry and Mourne had the highest birth rates (16.4) of all the Local Government Districts in 2008 while the lowest birth rate (11.1) was in Larne. Figure 1.19 shows the 2008 birth rates per 1,000 women of child-bearing age by Local Government District.

Figure 1.19: Live births per 1,000 women aged 15-44, by Local Government District (2008)



Country of Birth of Parents

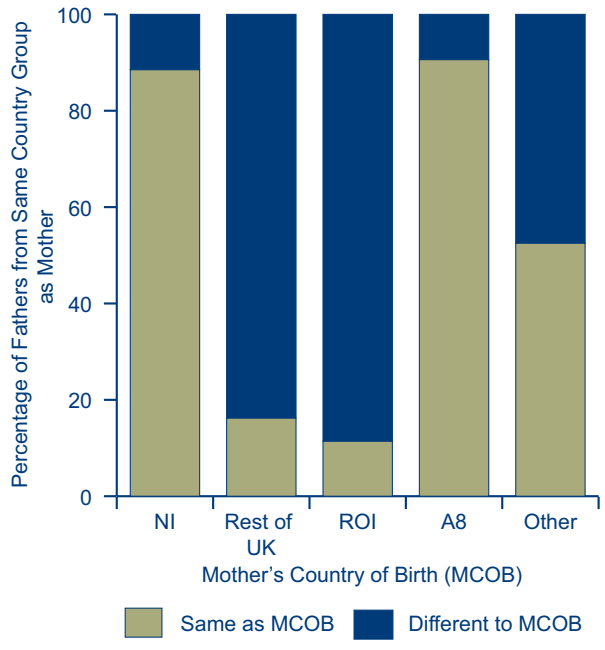
1.6.22. In 2008, the majority of women having babies were themselves born in Northern Ireland (82 per cent). Of the remaining new mothers (18 per cent), half were born elsewhere in the UK or the Republic of Ireland (nine per cent). However, over nine per cent of all births (2,347 births) were to mothers who themselves were born outside the UK and Ireland. This is a marked rise on

previous years, for example, there were fewer than 600 such births in 1998 or two per cent of all births.

1.6.23. Over recent years, the number of births to mothers born in the A8[2] countries has increased. The number of births in 2001 to mothers born in one of the A8 countries was 12. Between 2007 and 2008 the number of such births increased from 775 to 1,080.

1.6.24. Figure 1.20 shows father's country of birth in relation to the mother's country of birth, where both parents were registered on the birth certificate. (Two-thirds of all children born in Northern Ireland have both parents born in Northern Ireland in 2008). For births where the mother was born in the rest of the UK and the Republic of Ireland, the majority of fathers have been born in a different country to the mother, with 72 per cent from Northern Ireland. The trend is different for children whose mother was born in an A8 country, where 87 per cent of these children have an A8 father as well.

Figure 1.20: Live births in Northern Ireland by mother and father's country of birth (2008)



2 The A8 countries are the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia. Malta and Cyprus also joined the EU on 1 May 2004 but are considered separately from the A8 countries as they have full free movement rights to work throughout the EU.

1.7 Stillbirths and Infant Deaths

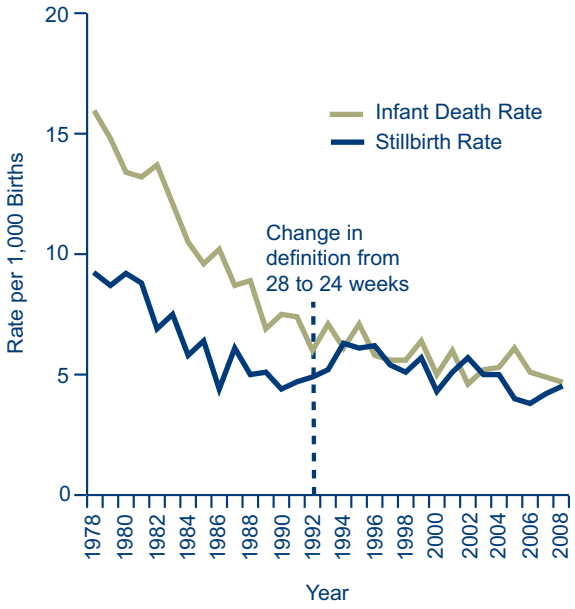
Numbers

1.7.1. The number of stillbirths in 2008 was 115, an increase of 13 from the 2007 figure of 102. The number of infant deaths in 2008 was 123 the same number registered in 2007. Deaths in the first week of life accounted for 63 per cent of all infant deaths. The number of infants dying on the first day of life accounted for 47 deaths in 2008 the same number registered in 2007.

1.7.2. Looking further back the recent infant death figures show a large decrease from the 1920s when over 2,000 infant deaths were registered each year. The number of infant deaths was highest in 1943, with 2,464 infant deaths and lowest in 2002 with 100 infant deaths registered.

1.7.3. As can be seen in Figure 1.21, there have been significant reductions in stillbirth and infant death rates in the period since 1978. The stillbirth rate has reduced from 9.2 stillbirths per 1,000 births (live and still) in 1978 to 4.5 in 2008. This fall has happened despite a change in the definition of stillbirths in 1992, which reduced the minimum period of gestation from 28 weeks to 24 weeks (thus increasing the number classified as stillbirths). The infant death rate (deaths of children aged under 1) has decreased by 70 per cent from 15.9 infant deaths per 1,000 live births in 1978 to 4.7 in 2008.

Figure 1.21: Stillbirth and infant death rates (1978 to 2008)



1.7.4. As with stillbirths and infant deaths, the numbers of perinatal, neonatal and postneonatal deaths (see Appendix 3 for definitions) have reduced greatly to around one tenth of their values several decades ago. In 2008, there was an increase in the number of perinatal deaths (174 to 194) and an increase in the number of neonatal deaths (81 to 95). However there was a decrease in postneonatal deaths (42 to 28) from the numbers seen in 2007. Males accounted for more stillbirths, perinatal, neonatal and infant deaths than females in 2008.

Causes of Infant Deaths and Stillbirths

1.7.5. Congenital malformations, deformations and chromosomal abnormalities (ICD10 codes Q00-Q99) were the cause of 33 per cent of all infant deaths. A further 22 per cent were caused by disorders related to length of gestation and fetal growth (ICD10 codes P05-P08), and another 15 per cent of infant deaths were caused by disorders related to respiratory and cardiovascular disorders specific to the perinatal period (ICD10 codes P20-P29). No infants died of external causes of injury (ICD10 code V01-Y98) in 2008.

1.7.6. Five infants died as a result of ill-defined and unknown causes of mortality (ICD10 code R95-R99). This is a decrease from the nine deaths registered in 2006 and 10 deaths registered in 2007. Between 2004 and 2008, 47 infants died of these causes, compared to 24 in the previous five years (1999-2003).

1.7.7. Thirty-nine per cent of all stillbirths in 2008 were caused by 'other conditions and disorders originating in the perinatal period' (ICD10 codes P75-P96) while placental and cord conditions (ICD10 code P02) accounted for a further 21 per cent.

Pregnancy, Childbirth and Puerperium

1.7.8. There were no maternal deaths (ICD10 codes O00-O99) in 2008, compared to none in 2007 and three deaths in 2006, and there were 10 maternal deaths in the period 1995-2005.

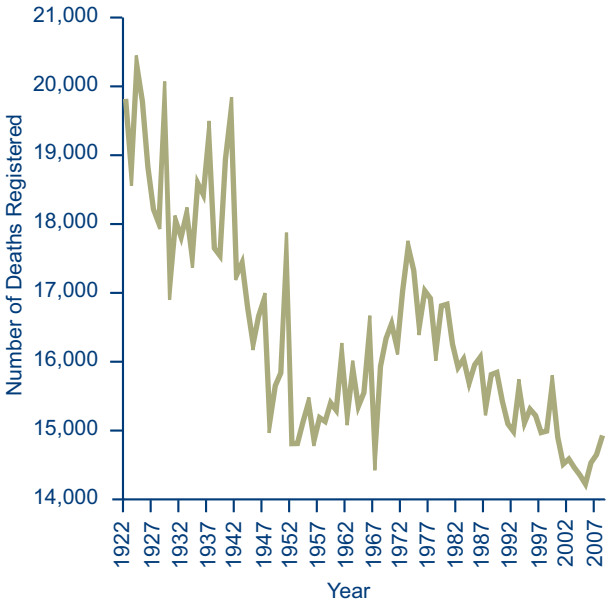
1.8 Deaths

Numbers

1.8.1. In 2008, there were 14,907 deaths registered in Northern Ireland, an increase of just over 250 deaths or 1.8 per cent on the 14,649 deaths registered in 2007. Figure 1.22 shows the number of deaths registered from 1922 to 2008.

1.8.2. Although the number of deaths increased last year, the long-term trend is one of falling death rates. The reduction in the number of deaths in recent years has occurred despite the population increasing in size and containing a higher proportion of elderly people. The current population is 17 per cent larger than it was in 1978 and those aged 75 and over represent six per cent of the population now compared to only four per cent in 1978. Indeed, if the age-specific death rates of 1978 still applied today, the number of deaths registered in 2008 would have been over 25,500; more than 10,500 higher than the actual number registered. This reduction in the number of deaths reflects the continuing reduction in mortality rates across all age groups and the corresponding increase in life expectancy.

Figure 1.22: Number of deaths registered (1922 to 2008) – non-zero y-axis



Mortality by Age

1.8.3. In 2008, 62 per cent of deaths were of people aged 75 and over, and a further 23 per cent were of people aged 60 to 74. Children aged under five accounted for one per cent of all deaths.

1.8.4. The average age at death in 2008 was 72 years for males and 78 years for females, an increase of six years on the average age at death for males in 1978 and six years for females. This reflects the increased survival of males and females over the period and the consequential ageing of the population.

1.8.5. From the relatively high rates of death in infancy, death rates sharply decline through childhood. The lowest age-specific death rates (ASDRs) were experienced by males and females aged 10–14 years, with an ASDR of 0.2 per 1,000 population for males and 0.1 for females. ASDRs begin to increase after age 15 years, for both males and females. Throughout the life span, ASDRs are higher for males. However, the difference between males and females becomes more prominent after the age of 60 years. Figures 1.23a and 1.23b show age-specific deaths rates for males and females by age group for 1978 and 2008.

Figure 1.23a: Age-specific death rates by age group and sex (1978 and 2008)

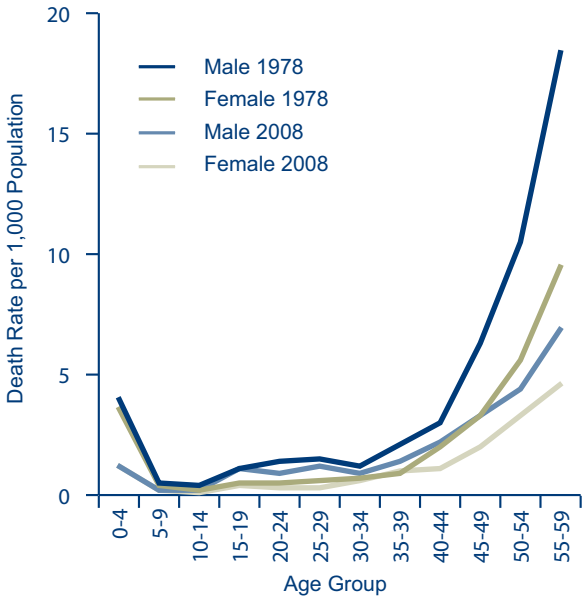
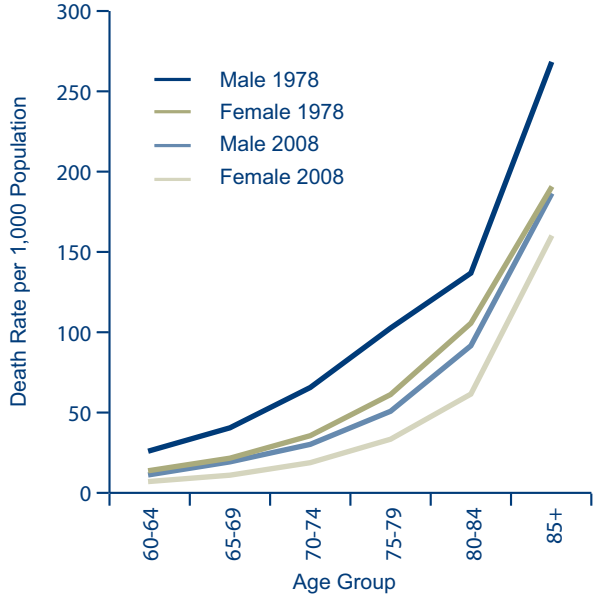


Figure 1.23b: Age-specific death rates by age group and sex (1978 and 2008)



1.8.6. In the past 30 years the annual risk of dying has declined for people of all ages. The largest declines in male age-specific death rates occurred in the 0-4 years age group (down 69 per cent), followed by those aged 55-59 years (down 63 per cent), and 50-54 years (down 58 per cent). Female age-specific death rates declined most substantially for 10-14 years (down 75 per cent), 0-4 years (down 67 per cent), followed by those aged 25-29 years (down 54 per cent).

Mortality by Sex

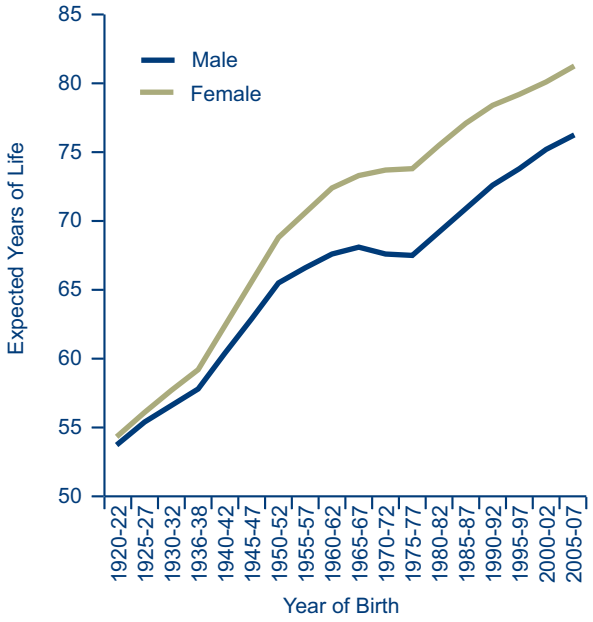
1.8.7. Female deaths (7,680) outnumbered male deaths (7,227) registered in 2008, giving a sex ratio of 106 female deaths for every 100 male deaths. The number of female deaths has outnumbered male deaths for each of the last 20 years.

1.8.8. In 1978, males had a death rate of 11.2 deaths per 1,000 population compared to females with a death rate of 10.0 deaths per 1,000 population. By 2008, the male death rate was 8.3 deaths per 1,000 population and the female rate was higher at 8.5 deaths per 1,000 population.

Life Expectancy

1.8.9. Children born today can expect to have longer lives than children born in the past. Based on current death rates, males born in recent years could expect to live until they are 76.3 years and females could expect to live until they are 81.2 years, with corresponding figures for men and women born around 1920-22 of 53.8 and 54.4 years respectively. While women aged 65 today could expect to live another 19.8 years, their male counterparts could expect to live another 16.8 years. Figure 1.24 shows the change in the expectation of life at birth for males and females since 1920.

Figure 1.24: Period expectation of life at birth, by sex (1920-22 to 2005-07) - non-zero y-axis



1.8.10. Expectation of life varies across the Local Government Districts within Northern Ireland. Males born in recent years in Ballymena, Banbridge, Castlereagh, Coleraine, Down, Moyle and North Down Local Government Districts can all expect to live until they are at least 78 years, while males born in Belfast have the lowest life expectancy of all Local Government Districts at 73.4 years. Females born in recent years in Banbridge have the highest life expectancy at 82.6 years, while females born in Belfast have the lowest life expectancy of just under 80 years.

1.8.11. Figure 1.25 and Figure 1.26 show that Northern Ireland has generally lower expectation of life at birth for both males and females compared to other European (EU15) countries. The figures also show that only Scotland amongst the other United Kingdom countries have lower life expectancy for both males and females while Wales has lower life expectancy for females. The most recent data available for all countries is for 2007, with the exception of Italy which is 2006 data.

Figure 1.25: Life expectancy at birth, EU15 and constituent countries of the UK, 2007, male - non-zero y-axis

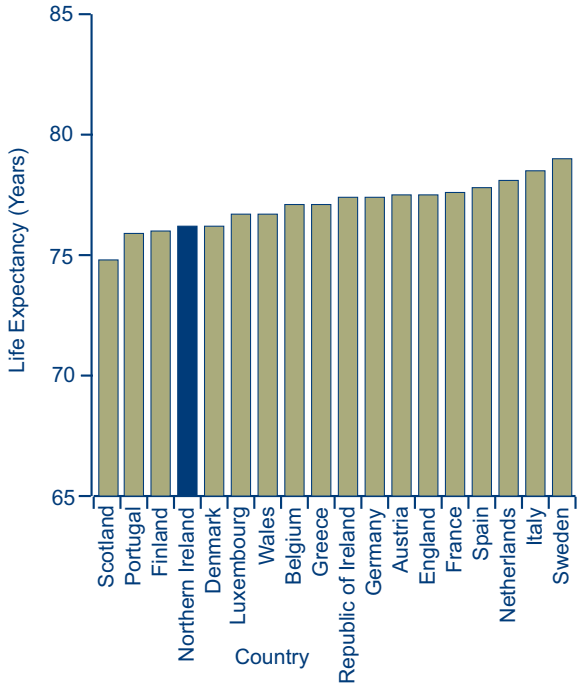
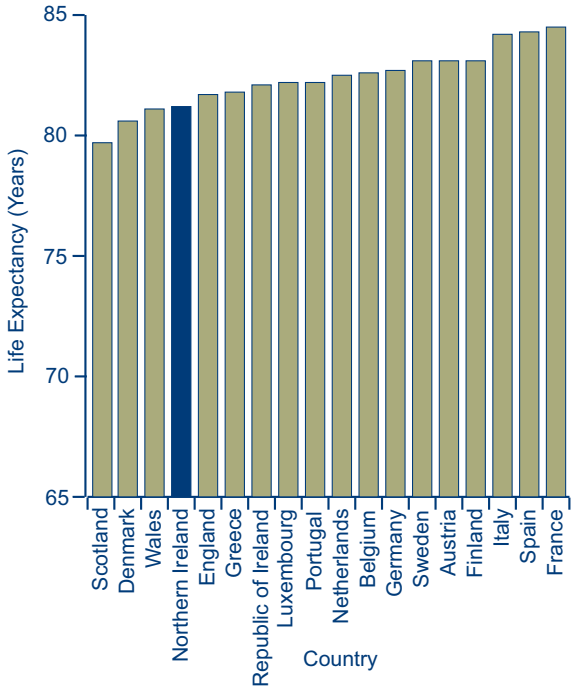


Figure 1.26: Life expectancy at birth, EU15 and constituent countries of the UK, 2007, female - non-zero y-axis



1.8.12. Expectation of life statistics are a standard way of comparing mortality rates over time. Typically, these statistics are calculated using today's age-specific mortality rates - this is known as the 'period life expectancy' calculation. This enables the comparison of mortality rates over time, or for different areas, and allows the expectancy of life statistics of today to be compared with those of the past. Expectation of life statistics given in Figures 1.24, 1.25 and 1.26 are an example of this. However, in practice period life expectancy is unlikely to be a true reflection of what is likely to happen. Throughout the twentieth century, mortality has improved significantly, with around a one per cent year on year improvement in mortality rates.

1.8.13. Expectation of life statistics can however be calculated another way. This alternative is known as a 'cohort life expectancy' calculation. Cohort expectation of life statistics are calculated using age-specific mortality rates over the lifetime of a group of people born in the same year (a cohort). The cohort method allows for projected improvements in mortality rates over time. As the cohort estimates incorporate population projections they inherently have more uncertainty than period estimates. Table 1.3 shows period (2006-08) and projected cohort (2008) expectations of life.

Table 1.3: Period (2006-08) and projected cohort (2008) expectations of life - males and females

Expectation of Life (years)	Males	Females
At birth - Period	76.3	81.2
At birth - Projected Cohort	87.7	91.9
Percentage difference	*15%*	*13%*
Age 65 - Period	16.8	19.8
Age 65 - Projected Cohort	20.6	23.4
Percentage difference	*23%*	*18%*

Mortality by Marital Status

1.8.14. Of all men whose deaths were registered during 2008, 51 per cent were married at the time of death, while 22 per cent were widowed and 22 per cent were single. In contrast, of all women whose deaths were registered during 2008, 55 per cent were widows at the time of death, with a further 25 per cent married and 16 per cent single. This difference is a consequence of the greater longevity of women.

Centenarians

1.8.15. There were 93 deaths of centenarians in 2008. Only 15 of these deaths were males, comprising five aged 100, eight aged 101 and two aged 102. There were 78 female deaths of centenarians, 36 aged 100, 15 aged 101, eight aged 102, 12 aged 103 and seven aged 105 or over. In contrast, there were 14 deaths of centenarians in 1978 of which three were male and 11 were female.

Place of Death and Type of Death Certificate Issued

1.8.16. Of the 14,907 deaths registered in 2008, 50 per cent of these occurred in hospitals. A further 16 per cent of deaths occurred in nursing homes. The remaining 33 per cent occurred in all other places.

1.8.17. For 77 per cent of deaths registered in 2008, a medical certificate was issued, while coroner's certificates were issued for the remaining 23 per cent of deaths. A death must be reported to a coroner if the person has not seen a doctor in the 28 days before they died or immediately afterwards, a doctor had not looked after, seen or treated the person during their last illness (in other words, death was sudden), the cause of death is unknown or uncertain, the death was violent or unnatural (for example, suicide, accident or drug or alcohol overdose), the death was in any way suspicious, the death took place during surgery or recovery from an anesthetic, the death took place in prison or police custody, or the death was caused by an industrial disease or accident.

Deaths by Date of Registration and Date of Occurrence

1.8.18. All figures recorded in this report are based on the year that the death was registered and not the year in which the death occurred. While the vast majority of deaths are registered shortly after death, some can take time to be registered. Over the registration period 1996 to 2005, 92.2 per cent of all deaths were registered in the year the death occurred. However in more recent years a larger percentage of deaths are being registered a significant period after death. In 2006, 91.0 per cent of deaths were registered in the year they occurred. This decreased slightly to 90.9 per cent for deaths occurring in the registration year 2007 and has again increased to 91.7 in 2008. Events such as infant death or suicide must be referred to a coroner and this legal process can take some time.

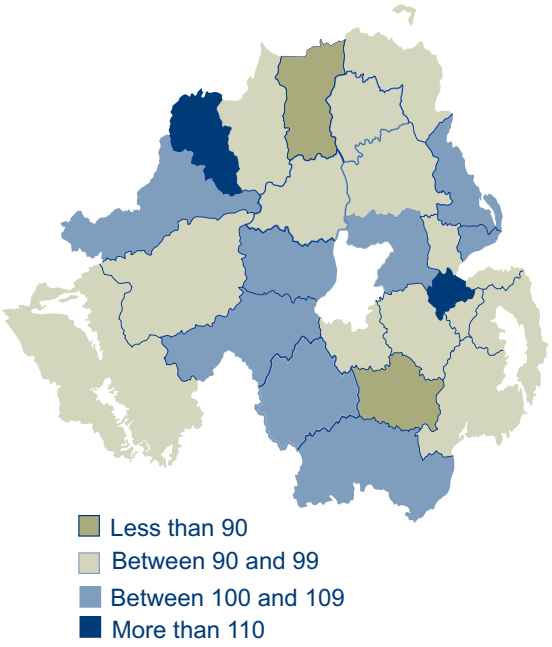
Deaths by Area

1.8.19. The standardised death rate, which allows for the age and sex structure of the population, was highest in the Eastern Health Board at 8.7 deaths per 1,000 population and lowest for the Northern Health Board at 8.0 deaths per 1,000 population. The standardised death rates in the Southern and Western Boards were both 8.4 deaths per 1,000 population.

1.8.20. Standardised mortality ratios (SMRs), based on three years data (2006-2008), compare local death rates with death rates in Northern Ireland as a whole, taking account of the different population structure of each area. SMRs by Local Government District are presented in Figure 1.27. Two Local Government Districts, Belfast and Derry have a standardised mortality ratio significantly above the Northern Ireland average of 100. The highest, Belfast, is 16 per cent higher than the Northern Ireland average.

1.8.21. At the other end of the scale, 10 Local Government Districts, Ballymena, Ballymoney, Banbridge, Castlereagh, Coleraine, Craigavon, Lisburn, Magherafelt, Newtownabbey and North Down have SMRs significantly below the Northern Ireland average of 100. The lowest Coleraine, is 13 per cent below the Northern Ireland average.

Figure 1.27: Standardised mortality ratios by Local Government District (2006 to 2008)



Deaths by Country of Birth

1.8.22. In 2008, 89 per cent of all deaths registered in Northern Ireland were to persons who had been born in Northern Ireland. A further 10 per cent of deaths were to persons who had been born in the rest of the United Kingdom or the Republic of Ireland. The remaining one per cent were to persons born in other countries of the world.

Seasonality of Deaths

1.8.23. Generally more deaths occur in the winter months of the year, with most deaths occurring in January and December in 2008. On average there are around 20 per cent more deaths in the winter months of December and January than the monthly average.

1.9 Cause of Death

Numbers

1.9.1. All deaths registered in 2008 have been coded using the tenth revision of the International Statistical Classification of Diseases, Injuries and Causes of Death (ICD10).

1.9.2. In total, circulatory diseases, malignant neoplasms (cancer) and respiratory diseases accounted for almost three-quarters of all deaths in 2008.

1.9.3. In 2008, 3,971 people died from cancer, a slight increase on recent years. Cancer deaths (ICD10 codes C00-C97) represent 27 per cent of all deaths registered in 2008 compared to 18 per cent of all deaths in 1978. By contrast, in 2008, 2,410 people died from ischaemic heart disease (ICD10 codes I20-I25), a decrease of 49 per cent from the 1978 figure of 4,753 deaths.

1.9.4. Some of the principal causes of death are considered in the following sections.

Diseases of the Circulatory System (ICD10 Codes I00-I99)

1.9.5. In 2008, these diseases accounted for 4,752 deaths; 32 per cent of all deaths in Northern Ireland. Between 1998 and 2008 the number of deaths due to diseases of the circulatory system, fell from 6,367 to 4,752 (25 per cent). Circulatory diseases account for the largest number of deaths attributable to a single group of causes.

1.9.6. Deaths due to the diseases of the circulatory system are mostly accounted for by ischaemic heart disease (ICD10 Codes I20-I25) and cerebrovascular disease or stroke (ICD10 Codes I60-I69), which accounted for, respectively, 16 per cent and nine per cent of all deaths in 2008. The number of male deaths from ischaemic heart disease exceeds the number of female deaths, whereas female deaths from cerebrovascular disease are more numerous than male deaths.

Malignant Neoplasms (ICD10 Codes C00-C97)

1.9.7. Cancer accounted for 3,971 deaths in 2008, 27 per cent of all deaths. Prior to 2007 the number of deaths due to cancer had remained broadly stable over recent years at about 3,700 per year. The most common cancer site for males and females was the trachea, bronchus or lung (ICD10 Codes C33-C34), which accounted for 27 per cent of male cancer deaths and 19 per cent of female cancer deaths in 2008. Deaths of females due to breast

cancer (ICD10 Code C50) accounted for 17 per cent of female cancer deaths in 2008. (See Chapter 2 for further commentary on cancer mortality).

Respiratory Diseases (ICD10 Codes J00-J99)

1.9.8. Deaths from respiratory diseases numbered 2,096 in 2008; 14 per cent of all deaths in Northern Ireland. These included 900 deaths from pneumonia (ICD10 Codes J12-J18), 760 from chronic lower respiratory diseases (ICD10 Codes J40-J47) and 436 due to all other respiratory diseases. Between 1998 and 2008, the number of deaths due to diseases of the respiratory diseases fell from 2,627 to 2,096 (20 per cent). Part of this drop in the numbers is associated with a change in the coding rules for pneumonia that were implemented when ICD10 was introduced in 2001.

External Causes of Death (ICD10 Codes V01-Y98)

1.9.9. The number of deaths from external causes registered in 2008 was 854, of which 577 were males and 277 were females with the corresponding figures for 2007 being 773 deaths - 534 male and 239 female. In the period 1997-2006, there were 640 deaths per year on average from external causes of death.

1.9.10. The number of deaths from transport accidents (ICD10 Codes V01-V99) in 2008 (154) has fallen by 10 per cent compared to 172 deaths in 2007. Within this figure, 73 per cent of transport accident deaths were males.

Deaths from Suicide and Events of Undetermined Intent (X60-X84, Y87.0, Y10-Y34, Y87.2)

1.9.11. In the United Kingdom, deaths classified as 'events of undetermined intent' along with 'intentional self-harm' are classified as suicide. In 2008, there were 282 such deaths registered in Northern Ireland, of which 218 were of males and 64 were of females. This is an increase from the 242 registrations in 2007 (175 males and 67 females).

1.9.12. All suicides are referred to the coroner. These deaths can take time to be fully investigated and there is often a period of time between when the suicide occurs and when it is registered. A significant number of suicides registered in 2008 occurred in earlier years. Of the 282 such deaths registered in 2008, 98 actually occurred in 2008, 132 occurred in 2007, 24 occurred in 2006, with the remaining 28 occurring in 2005 or earlier.

1.9.13. Prior to 2004, there were seven coroner's districts in Northern Ireland. Following a review of the coroner's service, the separate districts were amalgamated into one centralised coroner's service. This change may have affected the timing of the registration of deaths, with statistics from 2004 onwards being more timely and consistent.

1.9.14. Table 1.4 compares the number of suicide and undetermined deaths being registered each year with the number occurring in those years. Occurrence figures for 2006 to 2008 have been excluded as a significant number of deaths occurring in these years will, as yet, not have been registered. The occurrence figures show more accurately the upward trend in the number of suicide and undetermined deaths.

Table 1.4: Number of suicide and undetermined deaths registered and actual number occurring (1998-2008)

Year	Suicide and Undetermined Deaths (Year Registered)	Suicide and Undetermined Deaths (Year Occurred)
1998	150	180
1999	154	164
2000	185	186
2001	158	182
2002	183	198
2003	144	160
2004	146	228
2005	213	219
2006	291	…
2007	242	…
2008	282	…

Smoking Related Deaths

1.9.15. Information is not recorded on the death certificate on whether the deceased was a smoker. Estimates can however be made of the number of deaths attributable to smoking, by using information on the contribution of smoking to specific conditions which are recorded at death, for example lung cancer.

1.9.16. Research has been undertaken by the Health Development Agency to derive attributable proportions of smoking related deaths based on published relative risk factors for mortality of current and ex-smokers from various diseases, counts of death by cause, and estimates of current and ex-smoking behaviour.

1.9.17. The attributable proportions derived were then applied to Northern Ireland counts of cause-, sex- and age- specific mortality. Table 1.5 shows the estimated number of smoking related deaths between 2001 and 2008 using this method. On average there are around 2,300 deaths per annum attributable to smoking. Further information on the method used is given in Appendix 3.

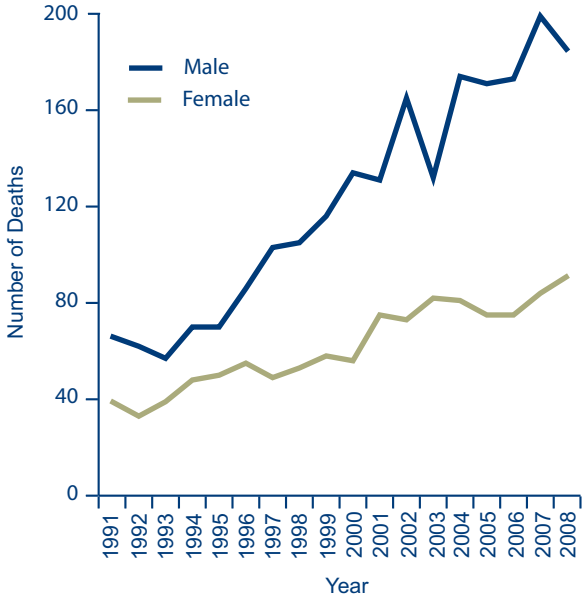
Table 1.5: Estimated number of smoking related deaths registered (2001-2008)

Year	Smoking Related Deaths
2001	2,350
2002	2,340
2003	2,390
2004	2,350
2005	2,290
2006	2,320
2007	2,310
2008	2,400

Alcohol Related Deaths

1.9.18. In 2005, the definition of alcohol related deaths was widened to include additional causes of death with a clear causal relationship to alcohol consumption. The main addition is 'mental and behavioural disorders due to use of alcohol' (see Appendix 3 for further details). In 2008, a total of 276 people died from alcohol related deaths using the new definition; 185 males and 91 females. The equivalent 2007 figure is 283 deaths (199 males and 84 females) and the number of alcohol related deaths in 2008 is over 74 per cent higher than the 158 deaths registered in 1998. Figure 1.28 shows the trend in the number of alcohol related deaths since 1991 using the new definition.

Figure 1.28: Deaths from alcohol related diseases by sex (1991-2008)

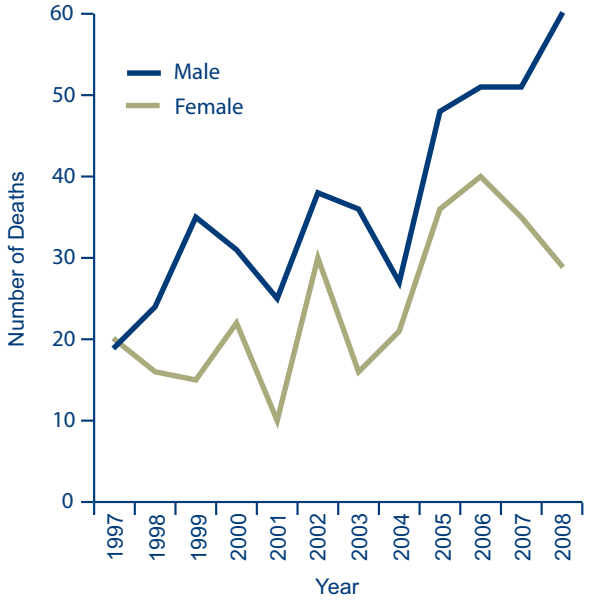


Drug Related Deaths

1.9.19. Drug related deaths include deaths where the underlying cause of death recorded on the death certificate is drug poisoning, drug abuse or drug dependence. Deaths from substances of abuse which are not traditionally regarded as drugs, such as alcohol and tobacco, are also excluded from the definition. Further information on the definition can be found in Appendix 3.

1.9.20. In 2008, there were 89 drug related deaths; 60 males and 29 females. This is a slight increase from the equivalent 2007 figure of 86 deaths (51 males and 35 females). The number of drug related deaths in 2008 is more than double the number of drug related deaths registered in 1998 when there were 40 deaths. Figure 1.29 shows the trend in the number of drug related deaths since 1997.

Figure 1.29: Drug related deaths by sex (1997-2008)



Asbestos Related Deaths

1.9.21. In 2008, 53 asbestos related deaths were registered in Northern Ireland while there were 65 such deaths in 2007. The 2004 figure of 92 deaths was the highest number recorded in the period from 2001 to 2008. See Appendix 3 for further information on asbestos related deaths.

Healthcare Associated Infections

1.9.22. In 2008, 84 deaths were registered where Methicillin resistant *Staphylococcus aureus* (MRSA) was mentioned on the death certificate. Of these, 32 deaths had MRSA recorded as the underlying cause of death. Corresponding figures for 2007 were 59 deaths where MRSA was mentioned on the death certificate and 20 cases where MRSA was the underlying cause of death.

1.9.23. The number of deaths where *Clostridium difficile* was mentioned on the death certificate in 2008 was 191. Of these, 64 deaths had *Clostridium difficile* as the underlying cause of death. This compares to equivalent figures for 2007 of 77 deaths with *Clostridium difficile* mentioned on the death certificate and 34 where *Clostridium difficile* was the underlying cause of death.

1.9.24. In 2008 there was an outbreak of *Clostridium difficile* infection in Northern Ireland. A public inquiry is ongoing regarding this. The purposes of the inquiry are to (i) establish how many deaths occurred for which *Clostridium difficile* was the underlying cause of death, or was a condition contributing to death and (ii) to examine and report on the experiences of patients and others who were affected directly by the outbreak[3]. However the impact of this outbreak is reflected in the increase in *Clostridium difficile* deaths registered in 2008.

Main Causes of Death by Age and Sex

1.9.25. Mortality rates by cause of death vary with age and sex. A total of 123 deaths of children aged less than one year were registered in 2008, 77 per cent of whom died within the first four weeks of life. The majority of infant deaths were attributed to certain conditions originating in the perinatal period (ICD10 Codes P00-P96, 65 deaths) and congenital anomalies (ICD10 Codes Q00-Q99, 40 deaths).

1.9.26. A total of 59 children aged 1-14 died in 2008. External causes of death accounted for 11 of these deaths, while cancer (ICD10 Codes C00-C97) accounted for 13 deaths and congenital anomalies (ICD10 Codes Q00-Q99) accounted for a further eight deaths.

1.9.27. A total of 347 people aged 15-34 died in 2008. As with children, external causes of death accounted for more deaths than any other cause (240 deaths, 69 per cent of deaths of persons aged 15 to 34). Thirty-seven per cent of all suicide and self-inflicted injury and events of undetermined intent (105 out of 282 suicides) and 50 per cent of deaths due to transport accidents (77 out of 154 transport accident deaths) involved people aged 15-34.

1.9.28. Of the 2,502 people who died between the ages of 35-64 (of which 60 per cent were male), cancer accounted for 38 per cent of deaths in 2008, while diseases of the circulatory system accounted for a further 23 per cent of deaths in this age group.

1.9.29. Deaths of people aged 65 and over accounted for 80 per cent of all deaths in 2008. Although the death rate from cancer continues to increase with age and accounted for 25 per cent of deaths in this age group, the death rates from diseases of the circulatory system increase more quickly with age and this accounted for 35 per cent of deaths to those aged 65 and over. For the most elderly (aged 85 or more), diseases of the circulatory system accounted for 38 per cent of deaths, cancer 13 per cent and diseases of the respiratory system 19 per cent. Figures 1.30 and 1.31 show the main causes of death by age group for male and female deaths respectively.

3 Further details can be found on the Inquiry website at: **http://www.cdiffinquiry.org/**

Figure 1.30: Percentage of male deaths by cause and age group (2008)

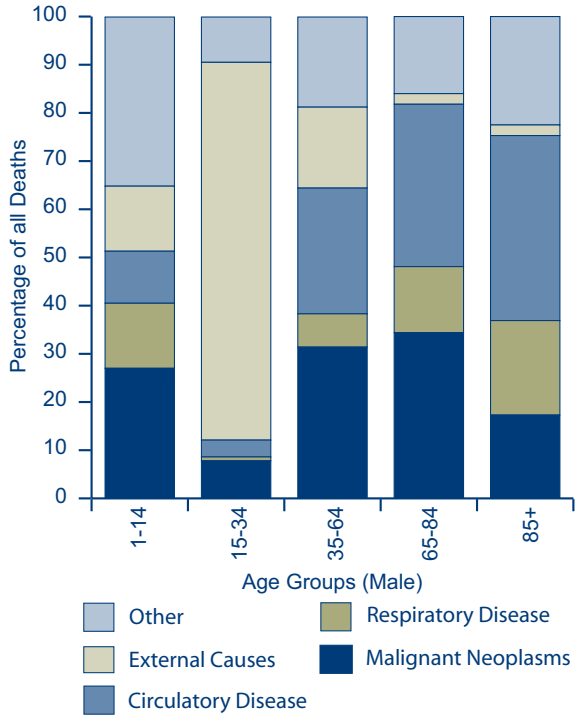
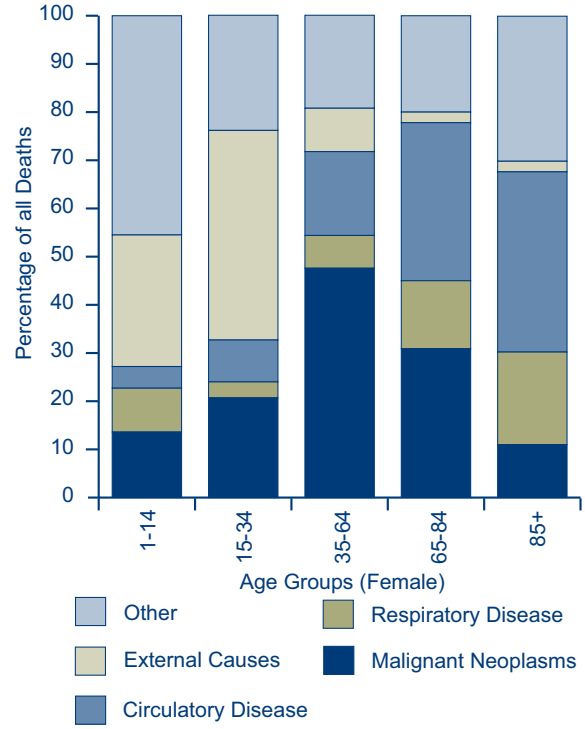


Figure 1.31: Percentage of female deaths by cause and age group (2008)

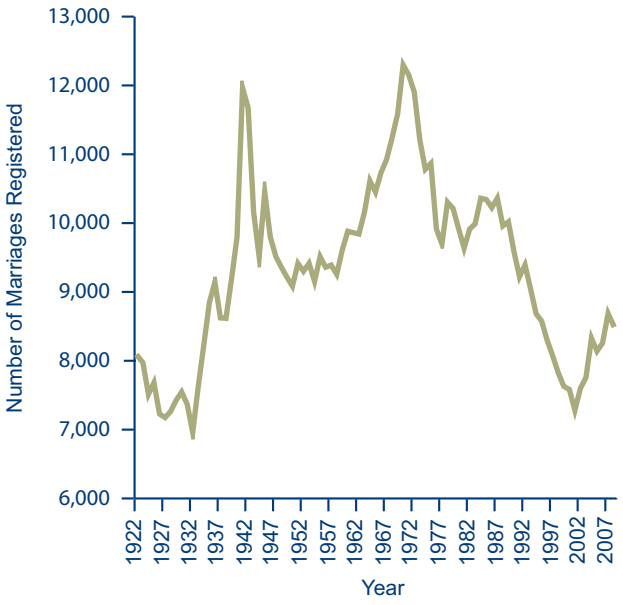


1.10 Marriages

Numbers

1.10.1. There were 8,510 marriages registered in 2008, a decrease of 177 marriages or 2.0 per cent on the 2007 figure of 8,687 marriages. Figure 1.32 shows the number of marriages from 1922. The number of marriages registered in 2008 is significantly higher than the low of 7,281 marriages in 2001, but still below the levels seen 30 years ago of around 10,000 marriages a year.

Figure 1.32: Number of marriages registered (1922 to 2008) – non-zero y-axis



Age at Marriage

1.10.2. The average age at marriage has increased markedly in the last two decades. The average age at marriage for all brides in 2008 was 31 years of age. This compares to 29 years in 1998, 26 years in 1988 and 24 years in 1978. The average age for the groom was 33 years of age, an increase of two years from 1998 (31 years), five years from 1988 (28 years) and seven years from 1978 (26 years).

1.10.3. The average age for first marriages has also increased and is now 29 for single females and 31 for single males, both around six years older than their counterparts 30 years ago.

1.10.4. The age difference at first marriage is around two years. This has remained fairly constant over the last 30

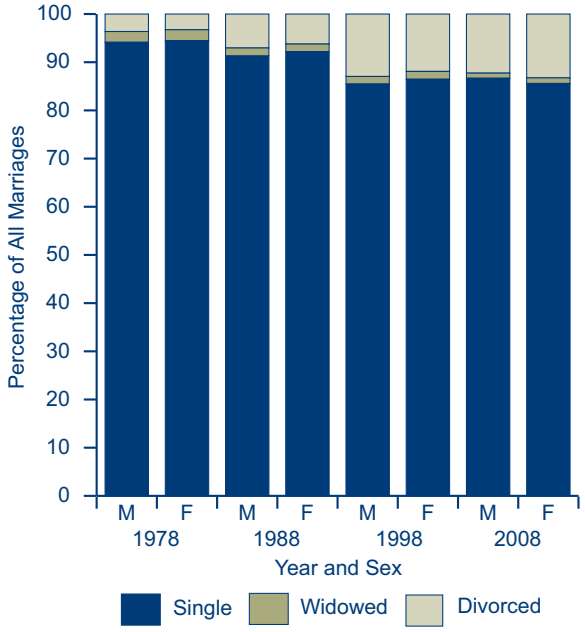
years, while the age difference for those who have been married previously is greater at around six years; again this has been a constant value since 1978.

Marital Status at Marriage

1.10.5. Figure 1.33 gives the percentage of marriages by marital status at the time of marriage between 1978 and 2008. The percentage of people marrying who are divorcees rose from three per cent in 1978 to around 12 per cent during 1998 and has remained at about this level since. The majority of this shift reflects a reduction in the proportion of marriages where one of the partners was single before marriage. The proportion of those marrying who were widowed has remained stable over the past 30 years at around two per cent for both brides and grooms.

1.10.6. Just over half (53 per cent) of couples who married in 2008 lived at the same address before marriage.

Figure 1.33: Percentage of marriages by sex and marital status (1978 to 2008)



Bride and Groom Usual Residence

1.10.7. Of the 8,510 marriages in 2008, 7,664 (90 per cent) were to couples where one or both partners lived in Northern Ireland. In the remaining 846 marriages (10 per cent) neither partner lived in Northern Ireland. Of these 846 marriages just over three-quarters (76 per cent) were marriages where one or both partners were born in Northern Ireland; clearly relating to people returning home to get married.

Bride and Groom Country of Birth

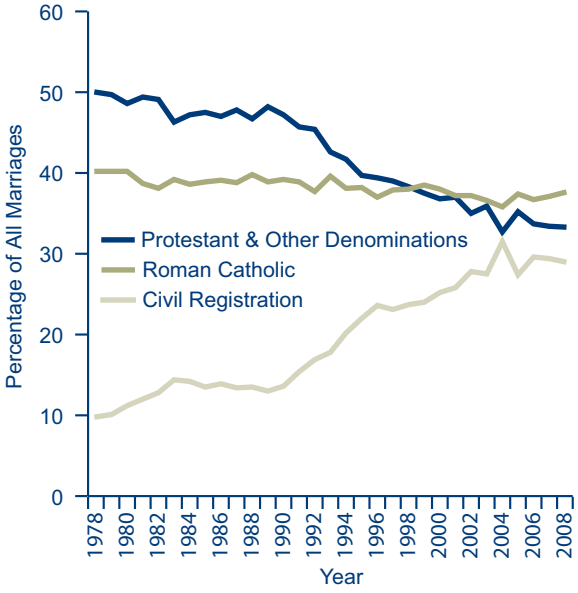
1.10.8. Overall in 71 per cent (6,068 marriages) of marriages registered in 2008 both partners were born in Northern Ireland, in 24 per cent (2,006 marriages) one partner was born in Northern Ireland and in five per cent (436 marriages) neither partner was born in Northern Ireland.

Religious and Civil Marriages

1.10.9. Twenty-nine per cent of all marriages (2,471) in 2008 were civil ceremonies compared to 10 per cent in 1978.

1.10.10. Of the 6,039 religious marriages in 2008, 53 per cent were Roman Catholic ceremonies, 18 per cent Presbyterian, 15 per cent Church of Ireland, four per cent Methodist and nine per cent other denominations. Figure 1.34 shows the change in type of ceremony from 1978 to 2008.

Figure 1.34: Percentage of marriages by method of celebration (1978 to 2008)



Place of Ceremony

1.10.11. The Marriage (Northern Ireland) Order 2003 now allows civil marriage ceremonies to be conducted in a number of approved venues outside of Registrar's Offices. In 2008, 1,056 civil marriage ceremonies (43 per cent of all civil marriage ceremonies) were held in approved venues other than a Registrar's Office compared to 1,042 in 2007. The most popular location was Belfast Castle (73 civil weddings) followed by Galgorm Manor Hotel, Ballymena (57 civil marriages).

1.10.12. The ability to conduct religious marriage ceremonies other than in religious buildings varies by religion and denomination. In 2008, 426 religious marriage ceremonies (seven per cent of all religious marriage ceremonies) were held outside of religious buildings.

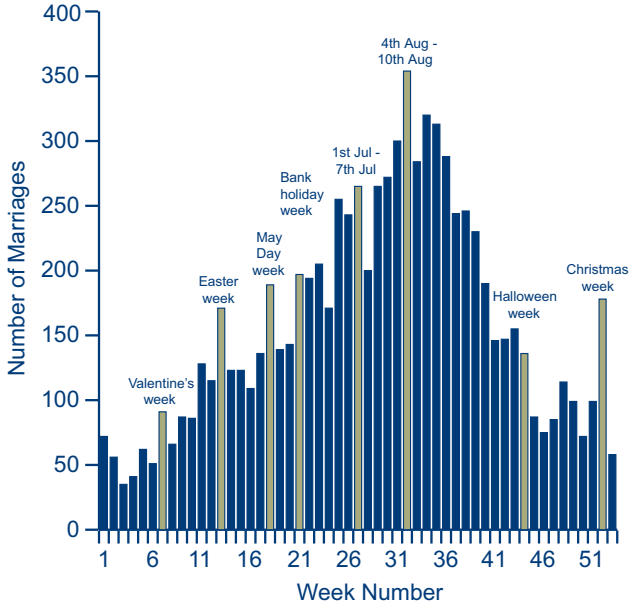
1.10.13. Belfast Registrar Office had the most weddings of all Registrar Offices in 2008 and St. Eugene's Cathedral in Derry Local Government District had the most weddings of all religious buildings.

Marriage Day

1.10.14. The most common day of the week for all marriages was a Saturday (38 per cent). Friday was the most common day for civil marriages (35 per cent); and the most common month to get married was August (1,486 couples) followed by July (1,072 couples). Friday 8th August 2008 was the most popular day in 2008 to get married, with 139 couples marrying on that date. Only 55 marriages took place on a Sunday in 2008, nine of which were civil marriages – the latter only becoming possible under the 2003 legislation.

1.10.15. Figure 1.35 shows the number of marriages by week, with dates of selected weeks highlighted. The most popular week to get married was from Monday 4th August to Sunday 10th August (364 couples).

Figure 1.35: Number of marriages per week (2008)



Marriages by Area

1.10.16. Almost 16 per cent of all marriages in 2008 occurred in Belfast, followed by six per cent in Newry and Mourne and just under six per cent in Derry and North Down Local Government Districts.

1.10.17. The average age of males and females at the time of marriage varies across Local Government Districts. Carrickfergus had the highest average ages at 33 for females and 35 for males respectively, compared to Magherafelt with the lowest average ages at 29 for females and 31 for males.

1.10.18. Almost 83 per cent of religious ceremonies in Newry and Mourne Local Government Districts were Roman Catholic compared to five per cent of religious ceremonies in Carrickfergus Local Government District, reflecting the community background of the populations in these Local Government Districts.

1.11 Divorces

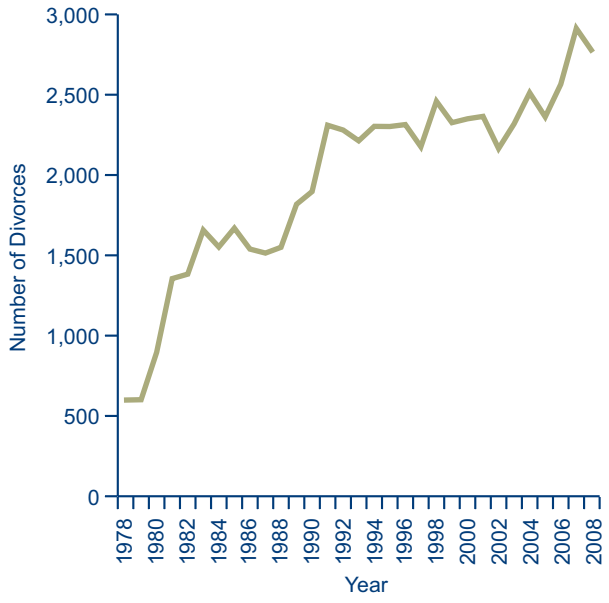
Numbers

1.11.1. The divorce figures reported here are based on Decree Absolutes. Decree Nisi information can be obtained from the Northern Ireland Court Service. A Decree Nisi does not terminate the marriage; a couple remain married until the Decree Absolute has been granted.

1.11.2. The number of marriages dissolved in Northern Ireland in 2008 was 2,773. This is a decrease of 5 per cent from last year's figure of 2,913. However the 2008 figure is the second highest on record after the 2007 figure which was the highest number of divorces ever recorded in Northern Ireland.

1.11.3. During the 1970s the number of divorces was around 500 per year, by the 1980s the figure had tripled to around 1,500 per year, and in the 1990s and early part of this decade there has been another increase in the number of divorces to around 2,300 per year. Figure 1.36 shows the number of divorces from 1978 to 2008.

Figure 1.36: Number of divorces registered (1978 to 2008)



Grounds for Divorce

1.11.4. Non-cohabitation remains the most frequently recorded reason for divorce (77 per cent), followed by behaviour (12 per cent) and combined grounds (eight per cent).

1.11.5. As in previous years, more women (63 per cent) than men (36 per cent) lodged applications for divorce in 2008. Just nine divorces granted in 2008 were the result of joint applications.

Duration of Marriage

1.11.6. The average duration of marriage ending in divorce is increasing over time. The average duration of marriage ending in divorce was 18 years in 2008; the comparable duration for 1988 was 14 years.

1.11.7. Of the divorcing couples in 2008, five per cent were married less than five years, 20 per cent between five and nine years and 75 per cent were married for 10 years or more. Around 22 per cent of divorces occurred to couples that had been married for 25 years or more.

Marital Status at Time of Marriage

1.11.8. While the majority of people getting divorced in 2008 had been single at the time of marriage (90 per cent for both males and females), the proportion of people getting divorced who had been divorced previously has been rising since the early 1980s and this group now accounts for nine per cent of all divorcees in 2008. Less than one per cent of all divorcees were widows or widowers when they married.

Age at Marriage of Divorcees

1.11.9. The average ages at marriage of men and women who got divorced in 2008 were 27 years and 25 years respectively. In 2008, 46 per cent of men and 62 per cent of women who divorced were under 25 years when they married.

Age at Divorce

1.11.10. The average ages at divorce for men and women who got divorced in 2008 were 45 and 43 years respectively. More women get divorced at younger ages than men reflecting the difference in their ages at marriage with husbands generally being older than their wives.

Method of Celebration of Marriage

1.11.11. In 2008, 31 per cent of divorces were of marriages that had been celebrated in a Roman Catholic Church. Corresponding figures for Presbyterian, Church of Ireland, Methodist and marriages in a Registrar's Office were 16 per cent, 14 per cent, four per cent and 26 per cent respectively. The remaining 10 per cent were either unknown or other denominations. The average duration of marriage before divorce for marriages celebrated in a religious ceremony was 19 years compared to 14 years for those who celebrated marriage in a civil ceremony.

1.11.12. Over the last three years 14 per cent of divorces here were following a marriage which took place outside Northern Ireland. Of these divorces, a significant proportion leads to one partner living outside Northern Ireland at the time of their divorce.

Divorcees by Area of Residence

1.11.13. Just over 14 per cent of all divorcees in 2008 were residing in Belfast followed by around seven per cent in Lisburn and six per cent in North Down Local Government Districts. Seven per cent of divorcees were residing outside Northern Ireland at the time of divorce, but this figure differed by gender – four per cent of female divorcees were living outside Northern Ireland compared to 10 per cent of male divorcees.

Children Affected by Divorce

1.11.14 In 2008, just over 4,700 children/stepchildren were affected by divorce; 2,768 children aged under 18 at the time of divorce and 1,953 children aged 18 and over at the time of divorce.

1.12 Civil Partnerships

1.12.1. The Civil Partnership Act 2004 came into force in late 2005, enabling same-sex couples to obtain legal recognition of their relationship. During 2008, 86 civil partnerships were registered in Northern Ireland. Of these 43 partnerships were male partnerships and 43 were female partnerships. This compares to 111 civil partnerships registered in 2007 (60 male partnerships and 51 females partnerships).

Marital Status and Age of Civil Partners

1.12.2. For 71 civil partnerships both partners were single, while in 15 civil partnerships at least one partner had previously been married. For 36 of the 43 male civil partnerships both partners were single, while for seven civil partnerships at least one partner had previously been married. For 35 of the 43 female civil partnerships both partners were single; in the remaining eight female civil partnerships at least one partner had previously been married.

1.12.3. For male civil partnerships the average age of partners was just under 41 years and was just under 38 years for female civil partnerships.

Place of Ceremony

1.12.4. In 2008, 65 civil partnership ceremonies were held in Registrar's Offices. The remaining 21 ceremonies were held in an approved venue.

Civil Partnerships by District

1.12.5. Civil partnerships celebrated in a particular district are not necessarily between residents of that district. In 2008, Belfast Local Government District was the most popular district for civil partnerships (48 civil partnerships), with Derry Local Government District the second most popular (nine civil partnerships).

1.13 Adoptions

1.13.1. Registers of children adopted under the provisions of the Adoption (NI) Order 1987 and Adoption (Hague Convention) Act (NI) 1969 and of previous adoption Acts of 1929, 1950 and 1967 are kept in the General Register Office, to which adoption orders made to the courts are transmitted.

1.13.2. A certified copy of an entry in the Adopted Children Register is evidence of adoption, and is also evidence of the date of birth of the adopted child.

1.13.3. The number of children recorded in the Adopted Children Register during 2008 was 97, a decrease of 50 from the 2007 figure of 147. The number of adoptions had been falling steadily since 1970 when over 500 children were adopted; the 2008 figure is the lowest recorded figure since the early 1930s.

1.14 Re-Registrations of Births

1.14.1. In 2008, 827 births were re-registrations, 49 more than in 2007. The most common reason for a re-registration is to add the father's name to the birth entry.

1.15 Gender Recognition Registration

1.15.1. The Gender Recognition Act 2004 was passed on 1 July 2004 and established a Gender Recognition Panel that will issue Gender Recognition Certificates to those who have satisfactorily proved that they have been living in their new gender.

1.15.2. The Gender Recognition Regulations (Northern Ireland) 2005 that came into operation from 1 April 2005 will allow the Registrar General, on receipt of a Gender Recognition Certificate, to re-register a birth, showing the new gender, in the Gender Recognition Register. In 2008 there were four births re-registered in this way.

Chapter 2
A Review of Cancer Mortality in Northern Ireland

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2.1 Introduction

2.1.1 Cancer is a major public health issue in Northern Ireland with one in three of the population developing some form of cancer by the time they reach 75 years of age [1]. In addition cancer is responsible for approximately one quarter of all deaths occurring in Northern Ireland causing more deaths than any of ischaemic heart disease, stroke or other diseases of the circulatory or respiratory systems. Indeed since 2000 cancer has accounted for the largest proportion of deaths in Northern Ireland from any of these causes (see Chapter 1).

2.1.2 The disease is a considerable burden on the individuals who develop it, the families and friends of cancer patients and on the health services that treat and care for such patients. However in many ways cancer is a misunderstood disease with the common perception that it is unavoidable and almost always fatal; both misconceptions adding to the stress those with a connection to the disease must feel.

2.1.3 Cancer is a disease diagnosed mainly in elderly people and consequently the number of cancer cases diagnosed globally each year continues to rise with a global increase of 30-50 per cent expected between 2000 and 2020 [2]. While a high proportion of this increase is a result of the ageing of the population, lifestyle choices are also a major contributory factor. Many cancers are preventable and a large reduction in the number of cancers diagnosed could be attained if the population adopted healthier lifestyles, for example by reducing smoking and eating a healthier diet. Despite the best efforts of prevention initiatives, including the use of screening programmes, the message with regard to healthy lifestyles and its protective effect against cancer is not sufficiently penetrating the public consciousness and cancers related to risk factors such as tobacco, diet and alcohol are on the rise. Since other hereditary and environmental factors play a part, it is clear that the task of reducing the number of diagnoses of cancer as a result of prevention through education and environmental and social change is extremely challenging.

2.1.4 Fortunately continuous developments in available screening, diagnostic methods and treatments are improving the prospects of those who develop cancer. Recent studies have shown that at the beginning of the twenty-first century approximately half of the people diagnosed with cancer in Europe survive at least five-years from diagnosis and that in the previous decade alone there were considerable improvements in survival for many forms of cancer [3]. While these conclusions are undoubtedly positive, comparisons of survival estimates between countries indicate that further improvements are achievable.

2.1.5 Reducing the burden of cancer involves the public and also medical researchers, charities, health service professionals and health policy makers. Monitoring the outcomes of such an integrated cancer control programme within a population wide context is possible with data provided by the Northern Ireland Cancer Registry (NICR). The Registry collects comprehensive information on all new cases of cancer occurring within the resident population. Its goal is the provision of information for research, education and the planning and monitoring of services. Having better local information helps in the development of prevention programmes which enable the general public to make informed decisions about lifestyles, symptoms, screening benefits and the issues of treatment. The information is also used by policy makers to evaluate and plan cancer services.

2.2 Cancer Registration and the Role of Data from the General Register Office (GRO)

2.2.1 The Northern Ireland Cancer Registry (NICR) was established in 1994. The Registry is one of the most modern in Europe and uses an automated computer system with multiple information sources to collate information on new diagnoses of cancer, with information collected for new cases from 1993 onwards. The three main sources for registration are Hospital Discharge records from the Patient Administration System (PAS), histopathology reports, and death certificate notifications supplied by the General Register Office (GRO).

2.2.2 From PAS the registry obtains demographic information such as age and area of residence on individual patients along with basic information on their cancer. This information is further supplemented by, and cross referenced with, electronic downloads from histopathology and cytopathology laboratories, the Health and Social Care Business Services Organisation (BSO) (formally the Central Services Agency) and radiology systems. Data agreements exist between the Registry and the organisations providing data which have patient confidentiality as a paramount concern.

Data confidentiality

Confidentiality of data is a major factor in all of the Cancer Registry's work. The Registry ensures data security and protection of patient data through its physical environment and work practices which include a high level of data encryption and anonymisation once data verification for analysis is complete.

For further information a leaflet about cancer registration is available at: **www.qub.ac.uk/nicr**.

2.2.3 To ensure each case is accurate the Registry focuses on data quality. Checking and verification of the information from a single hospital admission, a single histopathology report or a single death certificate is completed by a small team of trained Tumour Verification Officers (TVOs) who confidentially examine patient records.

2.2.4 With regard to information received from the GRO, in the event that there is no further information on a case notified by death only the record is included in the registry but flagged as a death certificate only (DCO) case. A measure of data quality in a registry is the proportion of records that are DCOs. The target is 2.0 per cent. A very low level, close to 0 per cent, indicates that the registry is missing some deaths. During 2003-2007 1.5 per cent of cases registered by the NICR (excluding the rarely fatal non-melanoma skin cancer) were DCO cases. Naturally, cancers with a poor survival such as lung, pancreas and liver had a higher proportion of DCO cases.

2.2.5 In addition to identification of some cases GRO data also performs an important function in cancer registration work by providing follow up of cancer patients. This is conducted passively by linking cancer incidence data to death certificate information, thereby providing the patient's vital status, i.e. whether they are alive or dead at a given point in time. This provides a crucial end point for survival analysis. Unlike cancer incidence data, which is based upon the primary cancer a patient is diagnosed with, GRO mortality data is based upon the actual cause of death. In most cases, if the death is from cancer, this is the same as the cancer identified at diagnosis. In some cases however the cause of death can sometimes be from the spread of the cancer to another organ from its original site as would be the case if lung cancer was the diagnosed disease but death was caused because the cancer had spread to the brain or liver.

2.2.6 Despite this difference NICR publications that include information on cancer mortality use the GRO assignment of cause of death in order to retain consistency with official Government statistics. The NICR does however use the date on which the death occurred rather than the date of death registration as the basis of any analysis, as this is more relevant in the context of cancer registration and patient survival. The different base does therefore result in small discrepancies with official GRO statistics.

2.3 Deaths from Cancer

2.3.1 On average 1.74 million people were resident in Northern Ireland each year during 2004-2008. Within that population there was an average of 1,985 male and 1,829 female cancer deaths per year, or 232.6 deaths per 100,000 males and 205.9 deaths per 100,000 females. This may appear to be a small fraction of the population however, considering life expectancy is approximately 76 years for males and 81 for females [4], the exposure to cancer over a lifetime is quite high with 1 in 5 males and 1 in 7 females dying from cancer before the age of 75, although most cancers occur over the age of 65.

2.3.2 Some forms of cancer are more common than others, while some are more easily and successfully treated resulting in survival varying considerably by cancer site. Consequently the number of cancer deaths also varies quite considerably by type, with the number of deaths not correlating well with incidence figures with the exception of cancers with poor survival (e.g. lung and pancreas). Lung cancer was the biggest cause of cancer death during 2004-2008, making up 22.4 per cent of all cancer deaths (853 deaths per year). The next most common cancers causing fatality were colorectal cancer (11.4 per cent), breast cancer (8.1 per cent), prostate cancer (5.9 per cent) and pancreatic cancer (5.0 per cent) (see Table 2.1).

Table 2.1: Cases and deaths from cancer by sex and cancer site, 2004-2008 (Average number of cases/deaths per year and European age-standardised mortality rates (EASMR))

Cancer Site	Males			Females			All Persons		
	Cases per year*	Deaths per year	EASMR ± 95%CI	Cases per year*	Deaths per year	EASMR ± 95%CI	Cases per year*	Deaths per year	EASMR ± 95%CI
Head and Neck (C00-C14, C30-C32)	169	56	*6.4 ± 0.7*	76	23	*2.0 ± 0.4*	245	79	*4.0 ± 0.4*
Oral (C00-C14)	105	36	*4.2 ± 0.6*	55	17	*1.5 ± 0.3*	160	53	*2.7 ± 0.3*
Nose and Sinuses (C30,C31)	8	2	*0.2 ± 0.1*	7	1	*0.1 ± 0.1*	14	3	*0.1 ± 0.1*
Larynx (C32)	57	18	*2.0 ± 0.4*	14	5	*0.4 ± 0.2*	71	23	*1.1 ± 0.2*
Oesophagus (C15)	112	105	*11.8 ± 1.0*	56	54	*4.1 ± 0.5*	168	159	*7.6 ± 0.5*
Stomach (C16)	137	91	*9.9 ± 0.9*	91	67	*5.0 ± 0.6*	228	158	*7.1 ± 0.5*
Small intestine (C17)	13	5	*0.6 ± 0.2*	8	3	*0.3 ± 0.2*	21	8	*0.4 ± 0.1*
Colorectal (C18-C21)	574	236	*26.0 ± 1.5*	465	197	*15.3 ± 1.0*	1,039	433	*20.1 ± 0.9*
Colon (C18)	347	150	*16.5 ± 1.2*	321	143	*11.0 ± 0.9*	668	292	*13.4 ± 0.7*
Rectum (C19-C21)	227	86	*9.5 ± 0.9*	144	54	*4.4 ± 0.6*	371	141	*6.7 ± 0.5*
Liver (C22)	43	45	*5.1 ± 0.7*	23	36	*2.9 ± 0.5*	66	81	*3.9 ± 0.4*
Gallbladder (C23-C24)	22	6	*0.6 ± 0.2*	34	13	*1.0 ± 0.3*	56	19	*0.8 ± 0.2*
Pancreas (C25)	88	96	*10.8 ± 1.0*	89	94	*7.4 ± 0.7*	178	190	*9.0 ± 0.6*
Lung (C33,C34)	567	518	*56.8 ± 2.2*	378	335	*28.8 ± 1.4*	945	853	*40.8 ± 1.3*
Bone (C40,C41)	9	6	*0.7 ± 0.2*	7	3	*0.3 ± 0.2*	16	9	*0.5 ± 0.1*
Malignant melanoma (C43)	99	25	*2.9 ± 0.5*	137	22	*1.9 ± 0.4*	236	48	*2.4 ± 0.3*
Non-melanoma skin cancer (C44)	1,338	9	*1.0 ± 0.3*	1,175	8	*0.5 ± 0.1*	2,513	17	*0.7 ± 0.2*
Mesothelioma (C45)	41	33	*3.7 ± 0.6*	5	5	*0.4 ± 0.2*	46	38	*1.8 ± 0.3*
Connective and soft tissue (C47,C49)	24	7	*0.8 ± 0.3*	18	8	*0.7 ± 0.2*	42	15	*0.7 ± 0.2*
Breast (C50)	3	1	*0.1 ± 0.1*	1,079	308	*27.6 ± 1.4*	1,082	309	*15.2 ± 0.8*
Cervix (C53)	-	-	-	85	26	*2.4 ± 0.4*	85	26	*1.3 ± 0.2*
Uterus (C54-C55)	-	-	-	184	39	*3.2 ± 0.5*	184	39	*1.8 ± 0.3*
Corpus uteri (C54)	-	-	-	181	18	*1.5 ± 0.3*	181	18	*0.8 ± 0.2*
Uterus - Not otherwise specified (C55)	-	-	-	3	21	*1.7 ± 0.4*	3	21	*1.0 ± 0.2*
Ovary (C56)	-	-	-	182	123	*11.3 ± 0.9*	182	123	*6.2 ± 0.5*
Prostate (C61)	829	226	*24.3 ± 1.4*	-	-	-	829	226	*9.4 ± 0.6*
Testis (C62)	59	1	*0.2 ± 0.1*	-	-	-	59	1	*0.1 ± 0.1*
Kidney (C64-C66,C68)	126	56	*6.3 ± 0.7*	80	40	*3.4 ± 0.5*	206	96	*4.7 ± 0.4*
Bladder (C67)	151	61	*6.5 ± 0.7*	58	30	*2.1 ± 0.4*	210	91	*3.9 ± 0.4*
Brain and other CNS (C70-C72)	71	53	*6.2 ± 0.7*	51	34	*3.5 ± 0.5*	122	88	*4.8 ± 0.5*
Thyroid (C73)	10	3	*0.3 ± 0.2*	34	6	*0.6 ± 0.2*	44	9	*0.4 ± 0.1*
Lymphoma (C81-C85,C96)	158	55	*6.1 ± 0.7*	157	57	*4.5 ± 0.6*	315	112	*5.2 ± 0.4*
Hodgkin's lymphoma (C81)	25	4	*0.5 ± 0.2*	22	5	*0.4 ± 0.2*	47	9	*0.4 ± 0.1*
Non-Hodgkin's lymphoma (C82-C85,C96)	133	51	*5.6 ± 0.7*	135	53	*4.1 ± 0.5*	268	104	*4.8 ± 0.4*
Multiple myeloma (C90)	74	41	*4.5 ± 0.6*	51	32	*2.4 ± 0.4*	124	73	*3.3 ± 0.3*
Leukaemia (C91-C95)	87	50	*5.5 ± 0.7*	72	44	*3.5 ± 0.5*	159	94	*4.3 ± 0.4*
Other	187	198	*21.7 ± 1.4*	243	222	*16.7 ± 1.0*	430	420	*18.9 ± 0.8*
All cancers (C00-C97)	**4,991**	**1,985**	***218.8 ± 4.3***	**4,838**	**1,829**	***152.0 ± 3.3***	**9,829**	**3,814**	***179.2 ± 2.6***

*Cases are for the 2003-2007 period
EASMR: European age-standardised mortality rate per 100,000 persons
CI: Confidence interval
CNS: Central Nervous System

2.3.3 Given that some cancers are gender specific and that males and females have different lifestyles (e.g. historically more men smoked than women), the distribution of cancer type differs by sex. Among males the most common causes of cancer death during 2004-2008 were lung, colorectal, prostate, oesophageal and pancreatic cancer, while among females they were lung, breast, colorectal, ovarian and pancreatic cancer. Among males the number of lung cancer deaths was more than double that of colorectal cancer while the number of lung cancer deaths among females exceeded those for breast cancer by an average of 27 deaths per year. Among the cancers present in both males and females the number of male deaths exceeded female deaths for the majority of the 20 most frequent causes of cancer death, the exceptions being breast cancer, lymphoma and cancer of the gallbladder. However the most common female specific cancer (breast cancer) had more deaths each year than the most common male specific cancer (prostate cancer) (Table. 2.1, Figures 2.1a and 2.1b).

Figure 2.1a: Top ten male causes of death from cancer in Northern Ireland, 2004-2008 (Percentage of all deaths from cancer)

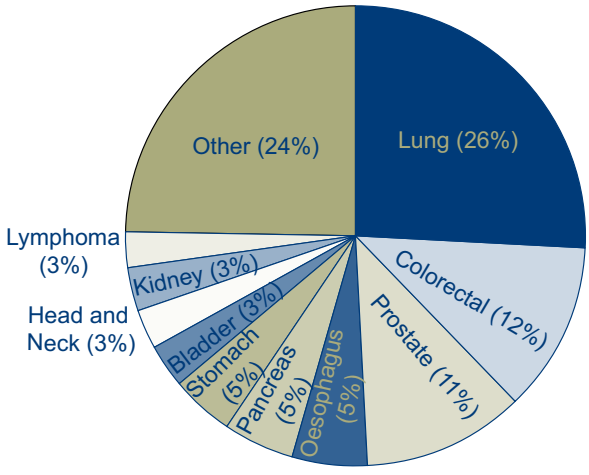
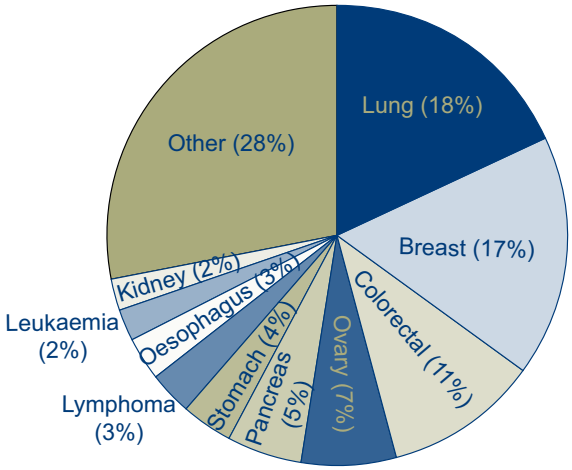


Figure 2.1b: Top ten female causes of death from cancer in Northern Ireland, 2004-2008 (Percentage of all deaths from cancer)



2.3.4 The breakdown of cancers by site varies over time. Whilst among males lung cancer has been the most common cause of cancer death since the 1984-1988 period, with colorectal cancer and prostate cancer the second and third most common respectively, the proportion of cancer deaths which were attributable to lung cancer fell from 32.1 per cent in 1984-1988 to 26.1 per cent in 2004-2008. This reflects reductions in tobacco use among males in the preceding 10-30 years. Among females, breast cancer was the most common cause of cancer death in 1984-1988 followed by colorectal cancer then lung cancer. The change in order by 2004-2008 among females to one with lung cancer as the leading cause of death, followed by breast cancer, was caused by the number of breast cancer deaths remaining virtually static between 1984-1988 and 2004-2008, the number of colorectal cancer deaths falling and the number of lung cancer deaths increasing. The changes in lung cancer again reflect the increased number of women taking up smoking.

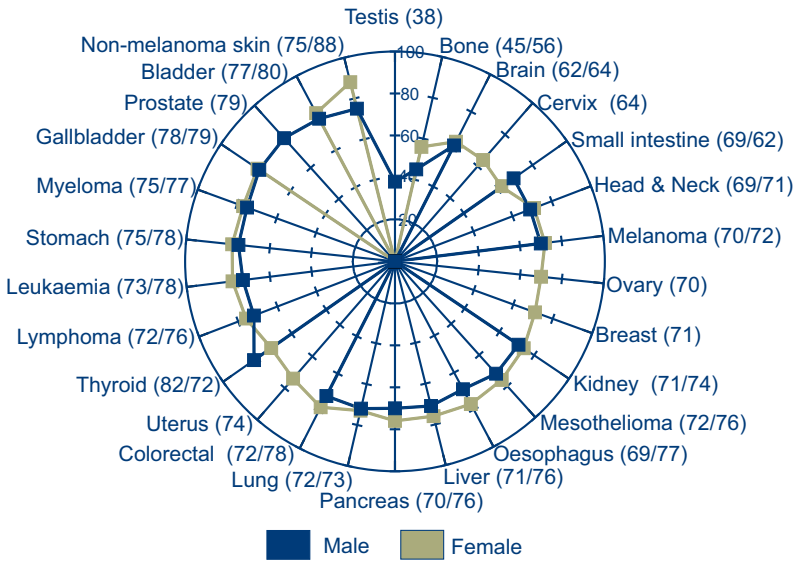
2.4 Cancer and Age

2.4.1 The single most important factor relating to the development of cancer is age with half of the patients dying from cancer in Northern Ireland during 2004-2008 aged over 74 years. The actual number of deaths was greatest among 75-79 year olds for males, contributing 17.9 per cent of all male cancer deaths, and among females aged 85 and over, contributing 18.0 per cent of all female cancer deaths.

2.4.2 Age at death varied considerably by cancer site during 2004-2008. The median age ranged from 38 years for testicular cancer to 82 years for non-melanoma skin cancer. Both of these cancers only had a small number of deaths each year. Variation existed even for the main cancers with median age at death being 71 years for breast cancer, 73 for lung cancer, 74 for colorectal cancer and 79 for prostate cancer. Only testicular cancer and bone cancer had a median age of death less than 60 years of age (Table 2.2).

2.4.3 There was only a small difference between males and females in the median age of death during 2004-2008 (males: 73, females: 74). For certain cancers however the difference was more marked. While for some cancers like non-melanoma skin and thyroid cancer this may be due to the small number of deaths annually, other differences are more significant. In particular there was a difference of 8 years in the median age of death from oesophageal cancer between males and females, 6 years for colorectal and pancreatic cancers and 5 years for liver cancer and leukaemia. Whilst for each of these cancers males died earlier than females, the median age of death from breast cancer was 8 years younger than for prostate cancer (Figure. 2.2 and Table 2.2).

Figure 2.2: Median age at death by sex and cancer site, 2004-2008



Note: Figures in brackets represent median age at death for males and females respectively

Table 2.2: Median age at diagnosis (2003-2007) and death (2004-2008) by sex and cancer site

	Median Age at Diagnosis (2003-2007)			Median Age at Death (2004-2008)		
Cancer Site	**Males**	**Females**	**All persons**	**Males**	**Females**	**All persons**
Testis (C62)	35	-	**35**	38	-	**38**
Bone (C40,C41)	29	42	**36**	45	56	**51**
Brain and other CNS* (C70-C72)	57	58	**58**	62	64	**62**
Cervix (C53)	-	40	**40**	-	64	**64**
Small intestine (C17)	62	67	**65**	69	62	**65**
Head and Neck (C00-C14, C30-C32)	64	65	**64**	69	71	**69**
Malignant melanoma (C43)	60	57	**59**	70	72	**70**
Ovary (C56)	-	64	**64**	-	70	**70**
Breast (C50)	-	61	**61**	-	71	**71**
Kidney (C64-C66,C68)	68	68	**68**	71	74	**71**
Mesothelioma (C45)	71	72	**72**	72	76	**72**
Oesophagus (C15)	68	75	**70**	69	77	**73**
Liver (C22)	71	74	**72**	71	76	**73**
Pancreas (C25)	69	75	**72**	70	76	**73**
Lung (C33,C34)	71	71	**71**	72	73	**73**
Colorectal (C18-C21)	70	72	**71**	72	78	**74**
Uterus (C54-C55)	-	64	**64**	-	74	**74**
Thyroid (C73)	57	52	**53**	82	72	**74**
Lymphoma (C81-C85,C96)	64	67	**65**	72	76	**74**
Leukaemia (C91-C95)	66	67	**66**	73	78	**74**
Stomach (C16)	72	75	**73**	75	78	**76**
Multiple myeloma (C90)	71	72	**71**	75	77	**76**
Gallbladder (C23-C24)	72	76	**74**	78	79	**78**
Prostate (C61)	70	-	**70**	79	-	**79**
Bladder (C67)	73	75	**74**	77	80	**78**
Non-melanoma skin cancer (C44)	71	74	**72**	75	88	**82**
All Cancers	**70**	**69**	**69**	**73**	**74**	**74**

* CNS: Central Nervous System

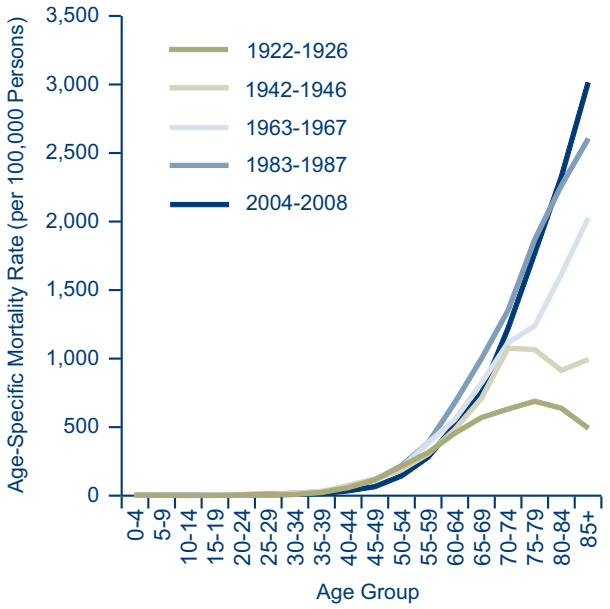
2.4.4 For all cancers combined the median age at death increased between 1984-1988 and 2004-2008 from 70 to 74 years old. The biggest changes occurred for lymphoma (9 year increase), breast cancer (7 year increase), cancer of the gallbladder (7 year increase), melanoma (5 year increase) and leukaemia (5 year increase). There was very little change (1 year or less) in median age at death for colorectal cancer, uterine cancer, pancreatic cancer and cancer of the head and neck. Those few cancers which experienced a decrease in the median age at death had a small number of deaths each year (i.e. bone cancer, testicular cancer and cancer of the small intestine).

2.4.5 Median age at death is naturally later than median age at diagnosis; with the difference larger for cancers with good survival (e.g. breast cancer). However the changes in median age at death over time are much greater than for median age at diagnosis, which for most cancers has changed very little over the last 15 years. Two exceptions are cervical and prostate cancer where the median age at diagnosis has fallen from 49 to 40 and 75 to 70 years respectively between 1993-1998 and 2002-2007 during which the median age at death for these cancers increased by 2 years.

2.5 Age-Specific and Age-Standardised Mortality Rates

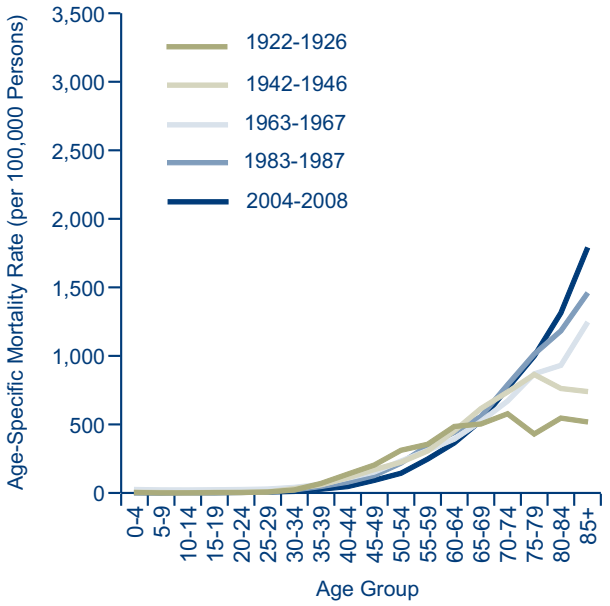
2.5.1 Given the strong relationship between cancer and age, a younger population is more likely to have a lower number of cancer deaths than an older population of the same size. To compensate for differences in the age-structures of two populations, age-specific mortality rates can be used to make detailed comparisons. In agreement with the high median age at death (74 years) and the high proportion of cancer deaths that occurred among the elderly, age-specific mortality rates in Northern Ireland during 2004-2008 climbed exponentially with increasing age. For both males and females, rates peaked in the 85 and over age group with 3,012 deaths per 100,000 males and 1,788 deaths per 100,000 females aged 85 and over. This distribution is however seen to vary considerably over time (Figures 2.3a and 2.3b).

Figure 2.3a: Age distribution of male cancer deaths by period of death, 1922-2008
(Age-specific mortality rates per 100,000 persons)



Note: Year of registration is used as an approximation for year of death prior to 1983 as historical data is only available by registration year. Intercensal populations prior to 1971 are interpolated by sex and five-year age group.

Figure 2.3b: Age distribution of female cancer deaths by period of death, 1922-2008
(Age-specific mortality rates per 100,000 persons)



Note: Year of registration is used as an approximation for year of death prior to 1983 as historical data is only available by registration year. Intercensal populations prior to 1971 are interpolated by sex and five-year age group.

2.5.2 Compared with 1983-1987 age-specific mortality rates in 2004-2008 have decreased for those aged 45-69 perhaps as a result of improved survival, while they have increased for those aged 80 and over. Compared with more historical data the changes are more marked, with age-specific mortality rates for males aged 25-59 and females aged 25-64 the lowest during 2004-2008 compared with any time period back as far as 1922. Among children and young people (i.e. less than 25 years) changes are more difficult to detect due to the small number of deaths, however there have been significant improvements in survival from cancers in these age groups, particularly lymphoma and leukaemia. Age-specific incidence rates among the elderly were much higher in 2004-2008 than in the past (Figures 2.3a and 2.3b). This is likely to be due to a combination of reasons:

- deaths due to other causes such as heart disease are falling, allowing people to live longer and increasing the chances of the development of cancer;
- improvements in treatment improve survival time after diagnosis while some cancers which occur primarily

among younger people (e.g. cervical cancer) are diagnosed and cured before they become malignant;

- more exposure to poor lifestyle factors has resulted in an increase in the number of cancers diagnosed and thus the number of deaths in the population. Most of the cancers caused by lifestyle choices (e.g. lung cancer as a result of a smoking habit) do not develop until later ages, and
- cause of death is more accurately assigned amongst the elderly than in the past due to improvements in diagnostic techniques (e.g. needle biopsies, scanning etc).

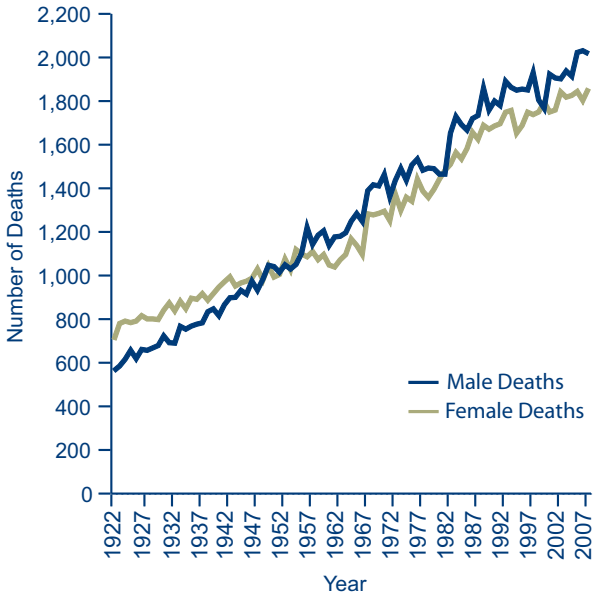
2.5.3 An age-standardised rate is a summary measure based upon age-specific rates which utilises a standard population (in this article the European standard population) to produce a rate per 100,000 persons which removes the effect of different population sizes and age structures. This is useful when making comparisons over time or between geographic areas as the age structure is likely to be different. European age-standardised mortality rates (EASMR) are presented in Table 2.1 for the main causes of cancer death. EASMRs were 43.9 per cent higher among males than females for all cancers combined during 2004-2008. For most cancers male EASMRs were greater than female EASMRs, particularly for mesothelioma, laryngeal cancer, head and neck cancer and bladder cancer. Only thyroid cancer and cancer of the gallbladder had higher female than male EASMRs, although these differences were not statistically significant (Table 2.1).

2.6 Trends

2.6.1 Mortality data has the advantage over incidence data in that detailed electronic data is available going back to 1974 while hard copy tables are available back to 1922. This allows examination of trends over a long period of time although coding changes at certain points may affect the trends.

2.6.2 Between 1922 and 2008 the number of cancer deaths in Northern Ireland increased by an average of 17.5 male and 13.7 female deaths per year (Figure 2.4a). The increase in deaths was largely a result of the ageing and growth of the population over the last 87 years, however, the increase in rates during the same period has not been constant. To investigate trends excluding the effects of age and population growth we analyse age-standardised rates which are broken into separate sections where mathematical techniques suggest that a change in the direction of the trend has occurred[1].

Figure 2.4a: Long-term trends in deaths from all cancers combined, 1922-2008



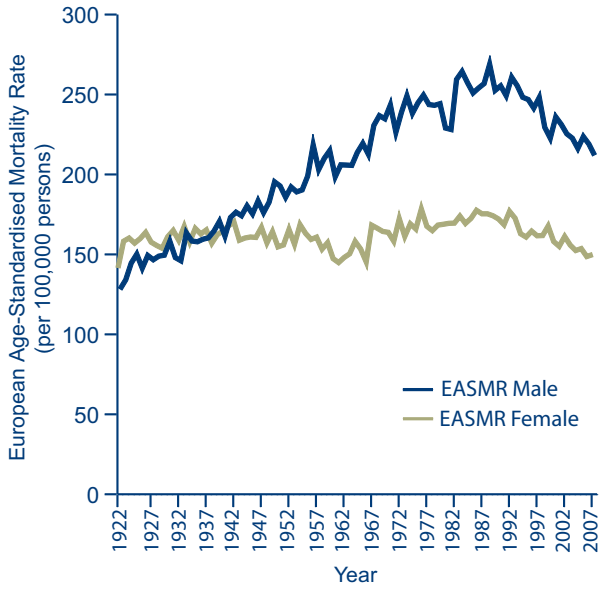
Note: Year of registration is used as an approximation for year of death prior to 1983 as historical data is only available by registration year.

2.6.3 For males the long-term trend in cancer mortality can be broken into three separate sections. Firstly between 1922 and 1974 there was an annual percentage

1 JoinPoint regression program [5,6]

increase in rates of 1.1 per cent, which corresponded to an increase of 17 male deaths per year. For the next 17 years up to 1991 rates continued to increase but at a slower rate of 0.5 per cent per year. This reflects a greater average annual increase of 22.9 male deaths per year as the rate of population growth and ageing was greater than in the preceding period of time. During the most recent period (1991-2008) mortality rates among males have seen a decrease of 1.1 per cent per year, however this still translates to an annual average increase of 11.4 male deaths per year once the effects of demographic change are included (Figure.2.4b).

Figure 2.4b: Long-term trends in death rates from all cancers combined, 1922-2008 (European age-standardised mortality rates per 100,000 persons



Note: Year of registration is used as an approximation for year of death prior to 1983 as historical data is only available by registration year. Intercensal populations prior to 1971 are interpolated by sex and five-year age group.

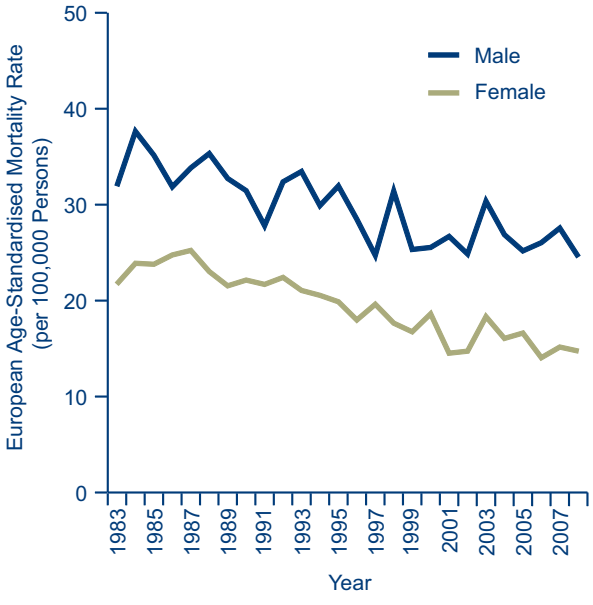
2.6.4 For females the trend in age-standardised rates was more constant over time. In 1922-1926 the average age-standardised rate was 155.9 deaths per 100,000 females compared to 152.0 deaths per 100,000 females in 2004-2008. Despite this small change there have been some fluctuations within the 87-year period. Between 1922 and 1961 rates exhibited no significant change although the actual number of deaths continued to increase due to population change. Between 1961 and 1988 age-standardised rates increased by 0.6 per cent per year. Since that point EASMRs among females have declined by 0.8 per cent per year although, as with males, the actual number of deaths continued to increase, by an average of 9.6 deaths per year (Figure 2.4b).

2.6.5 In summary, although the number of deaths from all cancers combined has increased over the last 20 years among both males and females, when the effect of ageing and population growth is taken into account mortality rates have fallen. This indicates that the increase in the absolute number of deaths from cancer is a result of the ageing of the population as cancer is more common among the elderly. However this general trend is not representative of all types of cancer with different cancer sites demonstrating very different trends.

Colorectal Cancer

2.6.6 As a result of better and earlier diagnosis, as well as improvements in care, mortality rates from colorectal cancer have decreased for males and females since 1983. The rate of decline is slightly greater for females than males with an average annual decrease of 2.2 per cent in rates for females compared to 1.3 per cent for males. The difference in males and females is likely due to decreases in female incidence rates of colorectal cancer which have not occurred for males (Figure 2.5a).

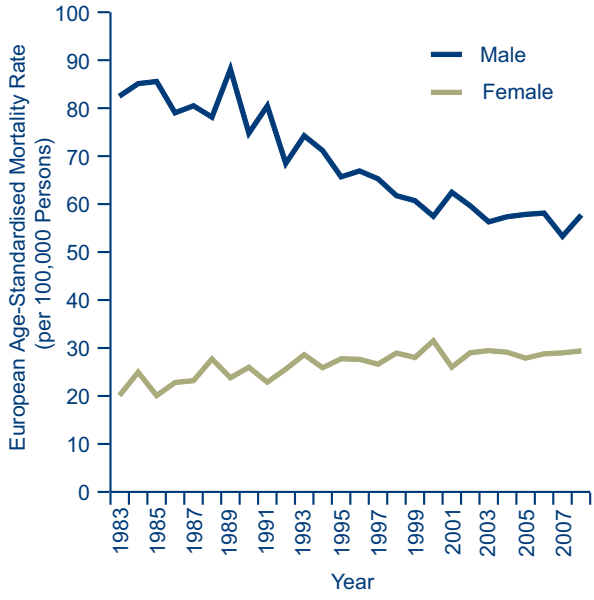
Figure 2.5a: Trend in cancer mortality for colorectal cancer deaths, 1983-2008 (European age-standardised mortality rates per 100,000 persons)



Lung Cancer

2.6.7 The decrease in mortality rates among males for all cancers combined is in part due to decreases in smoking rates among the male population. This is reflected in the mortality rate trends for lung cancer which saw an average annual decrease of 1.9 per cent between 1983 and 2008. Among females the news is not as positive. Due to increases in smoking prevalence female lung cancer mortality rates increased between 1983 and 2008 by an average of 1.1 per cent per year (Figure 2.5b).

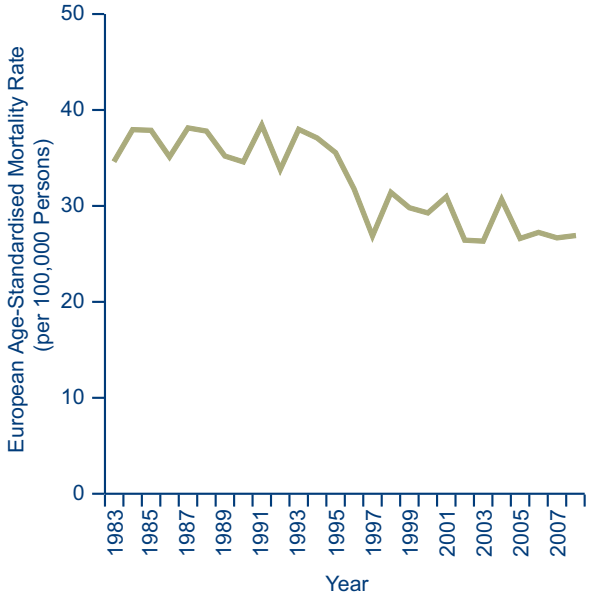
Figure 2.5b: Trend in cancer mortality for lung cancer deaths, 1983-2008 (European age-standardised mortality rates per 100,000 persons)



Breast Cancer

2.6.8 Breast cancer mortality rates among females were virtually static between 1983 and 1991 in Northern Ireland. Since that time mortality rates for this disease have shown a fall of 2.1 per cent per year which is in keeping with trends in other countries (e.g. England and the Republic of Ireland). The start of this fall coincides with the start of the breast screening programme in Northern Ireland (during 1989-1993) which kick-started a range of improvements for breast cancer patients. However the reduction in death rates is likely a result of improvements in treatment (e.g. availability of tamoxifen). Studies have shown that screening leads to survival improvements after approximately seven years and the impact of screening on breast cancer mortality in Northern Ireland would thus not have been expected until at least 2000. It is reassuring that the reduction in mortality has continued over time despite increases in breast cancer incidence over the last 15 years (Figure 2.5c).

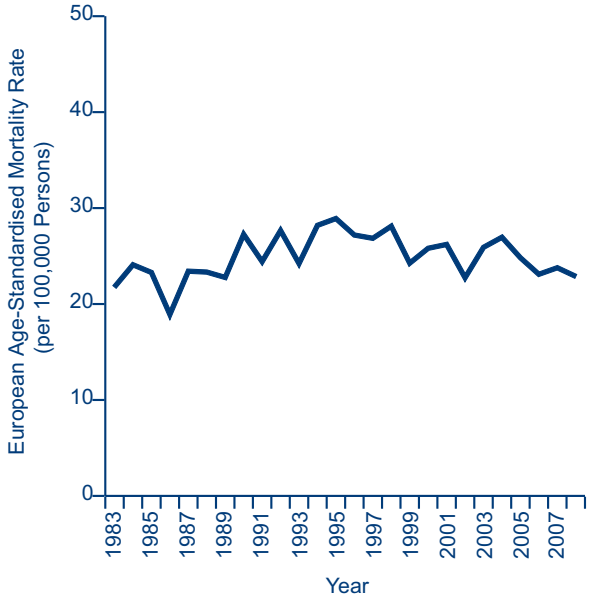
Figure 2.5c: Trend in cancer mortality for female breast cancer deaths, 1983-2008 (European age-standardised mortality rates per 100,000 persons)



Prostate Cancer

2.6.9 Mortality rates from prostate cancer increased between 1983 and 1995 by an average of 2.2 per cent per year with the actual number of deaths increasing by 6.3 per year. Fortunately this has seen a reversal with more recent trends from 1995 to 2008 illustrating a decrease in mortality rates of 1.4 per cent per year although this still represents an increase of 1.7 deaths per year as a result of population growth and ageing. The reduction in mortality rates is likely a result of improvements in care including the introduction of new drugs such as anti androgen therapy (Figure 2.5d).

Figure 2.5d: Trend in cancer mortality for prostate cancer deaths, 1983-2008 (European age-standardised mortality rates per 100,000 persons)



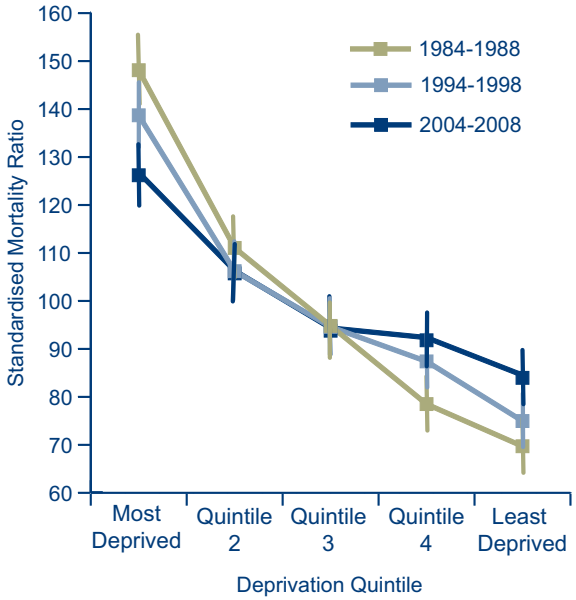
Other Cancers

2.6.10 For other cancer sites the small number of deaths per year makes detection of positive or negative trends difficult. There was no significant trend detected for deaths from head and neck cancer, oesophageal cancer, female liver cancer, pancreatic cancer, bone cancer, female melanoma, ovarian cancer, uterine cancer, female kidney cancer, female bladder cancer, brain cancer, multiple myeloma and lymphoma. However declines were noted in death rates of stomach cancer, cancer of the gallbladder, cervical cancer, male bladder cancer and leukaemia. On the other hand increases in male liver cancer, male melanoma and male kidney cancer between 1983 and 2008 were identified.

2.7 Deprivation and Socio-Economic Status

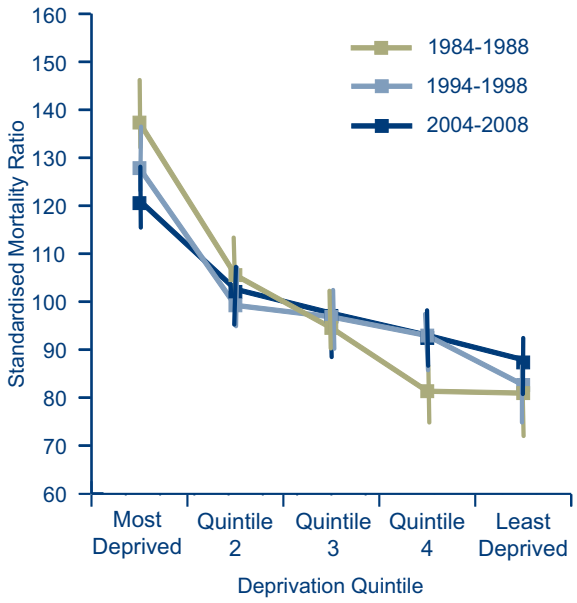
2.7.1 It is a fairly well established result that cancer mortality rates are higher in more deprived areas than in the less deprived areas, which in turn is most likely a result of variations in lifestyle factors. Quantifying this inequality, mortality rates in the most deprived areas[2] during 2004-2008 were 26 per cent higher than the Northern Ireland average for males and 21 per cent higher for females. In contrast mortality rates in the least deprived areas were 16 per cent lower relative to the Northern Ireland average for males and 13 per cent lower for females. For the 2004-2008 period 781 fewer deaths per year would have been recorded if mortality rates in the least deprived areas were applied to the most deprived areas (Figures 2.6a and 2.6b).

Figure 2.6a: Male cancer mortality rates and deprivation over time, 1984-2008 (Standardised mortality ratios for all cancers combined by area based deprivation quintile relative to all of Northern Ireland) – non-zero y-axis



2 Defined using the economic deprivation measure (NIMDM2005) [7]

Figure 2.6b: Female cancer mortality rates and deprivation over time, 1984-2008 (Standardised mortality ratios for all cancers combined by area based deprivation quintile relative to all of Northern Ireland) – non-zero y-axis



2.7.2 Fortunately these inequalities have decreased over time. In 1984-1988 mortality rates in the most deprived areas were 48 per cent higher than the Northern Ireland average for males and 37 per cent higher for females while mortality rates in the least deprived areas were 30 per cent lower relative to the Northern Ireland average for males and 19 per cent lower for females. The inequality between the most deprived and least deprived areas has thus almost halved during the 20-year period (Figures 2.6a and 2.6b).

2.7.3 The inequality between most deprived and least deprived areas is only present for certain cancer sites and varies in magnitude for those cancers where the inequality exists. For colorectal cancer mortality rates were 18 per cent higher in deprived areas than the Northern Ireland average in 2004-2008 while they were 10 per cent lower than expected in the least deprived areas. For lung cancer the gradient in mortality rates by deprivation quintile was very high with rates 57 per cent higher in the 20 per cent most deprived areas than the country-wide average. For breast cancer, although it is more commonly diagnosed among the least deprived, mortality rates were historically higher in deprived areas (22 per cent higher than the NI average in 1984-1988). More recently however (i.e. 2004-2008) there was no significant difference in breast cancer mortality between the most deprived and least deprived areas. This may reflect standardisation of cancer services with the introduction of breast cancer screening and the reforms brought about in 1996 (i.e. the Campbell report [8]). There was also no significant relationship between area-based deprivation and prostate cancer mortality despite this cancer also having higher incidence levels in the least deprived areas (Figures 2.7a to 2.7d).

Figure 2.7a: Cancer mortality rates and deprivation for colorectal cancer, 2004-2008 (Standardised mortality ratios by area based deprivation quintile relative to all Northern Ireland) – non-zero y-axis

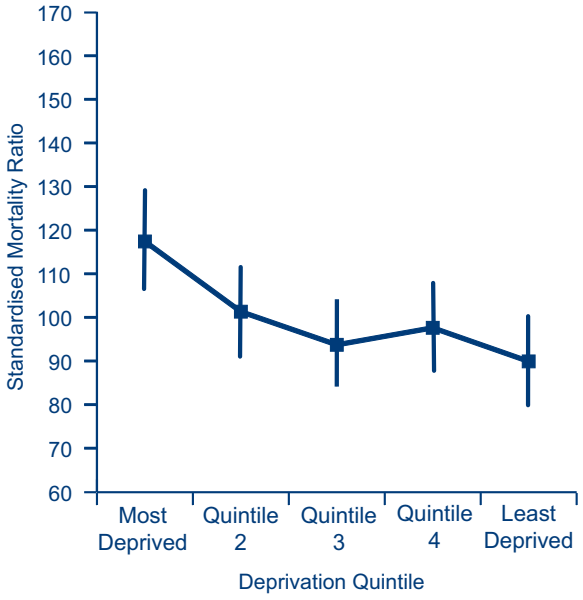


Figure 2.7b: Cancer mortality rates and deprivation for lung cancer, 2004-2008 (Standardised mortality ratios by area based deprivation quintile relative to all Northern Ireland) – non-zero y-axis

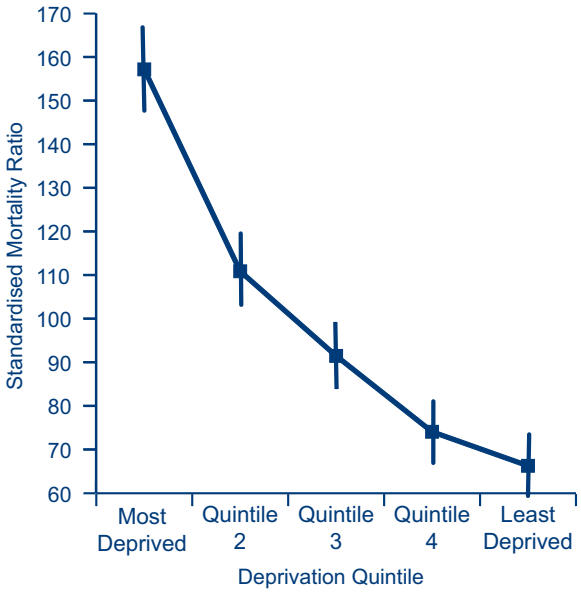


Figure 2.7c: Cancer mortality rates and deprivation for female breast cancer, 2004-2008 (Standardised mortality ratios by area based deprivation quintile relative to all Northern Ireland) – non-zero y-axis

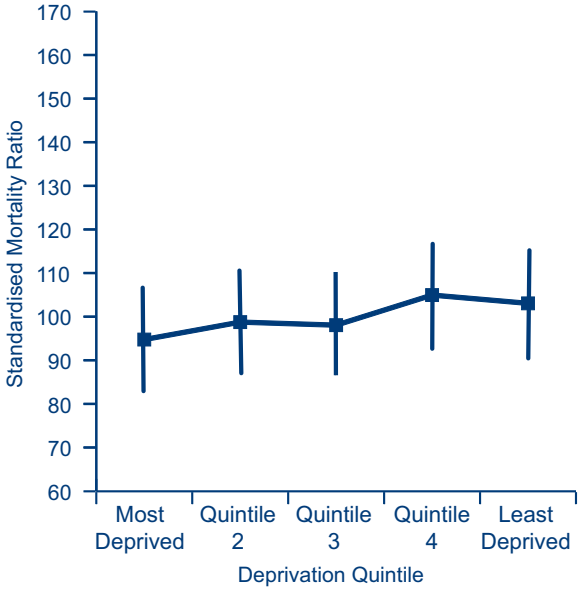
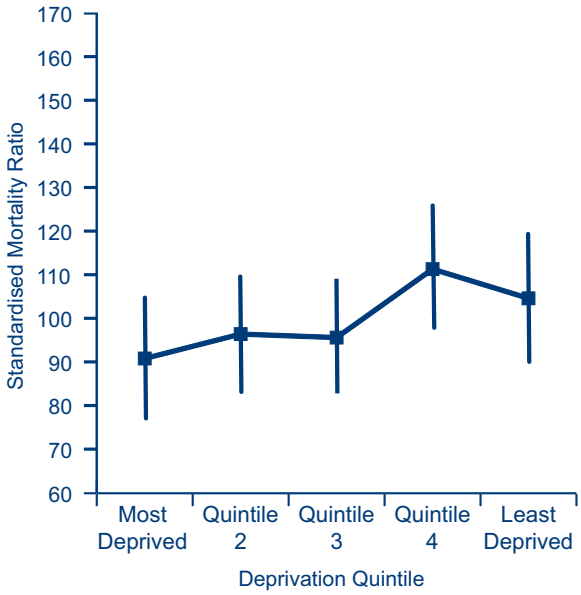


Figure 2.7d: Cancer mortality rates and deprivation for prostate cancer, 2004-2008 (Standardised mortality ratios by area based deprivation quintile relative to all Northern Ireland) – non-zero y-axis



2.7.4 Considering socio-economic factors at an individual level[3] illustrates that the distribution of cancer deaths among socio-economic groups for those aged 16-74 differs considerably from the general population. This is mostly a factor of age as the elderly are less likely to be employed or have higher level qualifications. In Tables 2.3 to 2.5 odds ratios, which have been adjusted for age and sex, are thus used to illustrate the risk of death compared to the base group, which has an odds ratio set to 1.00. If the odds ratio in a compared group is over one and the 95 per cent confidence limits in the brackets do not contain one then there is a higher risk of death in that group compared with the baseline. The reverse is true for odds ratios less than one which represent a lower risk of death.

2.7.5 Those in employment have a reduced chance of cancer death compared with those who are unemployed or economically inactive. This is the case for the four main cancer sites, although the difference between the employed and unemployed was greatest for lung cancer. The difference may in part be a result of people who may

3 Using the NI Mortality Study (NIMS) which links GRO deaths information to the 2001 Census of population [9] (see Appendix 4 for further information)

Table 2.3: Deaths from cancer by employment status, July 2001 – June 2006, persons aged 16-74 (Odds ratios for logistic regression adjusted by sex and age)

	All cancers		Colorectal cancer		Lung cancer		Female breast cancer		Prostate cancer		
Employment Status	% deaths	Odds ratio (95% CI)	% deaths	Odds ratio (95% CI)	% deaths	Odds ratio (95% CI)	% deaths	Odds ratio (95% CI)	% deaths	Odds ratio (95% CI)	2001 Census Pop
Employed	*21.8%*	0.55* (0.52, 0.58)	*25.5%*	0.72* (0.62, 0.84)	*16.9%*	0.43* (0.38, 0.48)	*24.6%*	0.61* (0.52, 0.72)	*16.6%*	0.61* (0.46, 0.80)	*55.8%*
Unemployed & economically inactive	*78.2%*	1.00	*74.5%*	1.00	*83.1%*	1.00	*75.4%*	1.00	*83.4%*	1.00	*44.2%*

* Significant at 95 per cent confidence level
Source: NI Mortality Study (NISRA)

have had to give up work due to illness including cancer (see Table 2.3).

2.7.6 Those without qualifications were more likely to die from lung cancer than those with some form of qualification, which has likely influenced the same difference for all cancers combined and is related to higher levels of smoking in that group. No differences in mortality rates were detected by education qualifications for colorectal, female breast or prostate cancer (see Table 2.4).

Table 2.4: Deaths from cancer by educational qualifications, July 2001 – June 2006, persons aged 16-74 (Odds ratios for logistic regression adjusted by sex and age)

	All cancers		Colorectal cancer		Lung cancer		Female breast cancer		Prostate cancer		
Highest level of Educational Attainment	% deaths	Odds ratio (95% CI)	% deaths	Odds ratio (95% CI)	% deaths	Odds ratio (95% CI)	% deaths	Odds ratio (95% CI)	% deaths	Odds ratio (95% CI)	2001 Census Pop
Tertiary Level (Level 4-5)	*8.3%*	0.89* (0.87, 0.91)	*10.4%*	0.99 (0.93, 1.06)	*5.2%*	0.75* (0.70, 0.79)	*11.2%*	1.03 (0.96, 1.10)	*9.8%*	0.95 (0.85, 1.06)	*15.8%*
Primary & Secondary level (Level 1-3)	*16.4%*	0.78* (0.74, 0.82)	*19.6%*	1.12 (0.96, 1.30)	*10.9%*	0.55* (0.49, 0.63)	*26.6%*	0.99 (0.84, 1.16)	*10.0%*	0.81 (0.59, 1.11)	*42.6%*
No qualifications	*75.3%*	1.00	*70.0%*	1.00	*83.9%*	1.00	*62.2%*	1.00	*80.2%*	1.00	*41.6%*

* Significant at 95 per cent confidence level
Source: NI Mortality Study (NISRA)

2.7.7 Using the data matched at an individual level there was no difference between socio-economic groups in the death rates for prostate cancer. Colorectal and breast cancer mortality was more common in some of the more affluent groups, particularly higher managerial occupations, while lung cancer death was in general more common among the least affluent. (Table 2.5)

Table 2.5: Deaths from cancer by socio-economic classification, July 2001 – June 2006, persons aged 16-74 (Odds ratios for logistic regression adjusted by sex and age)

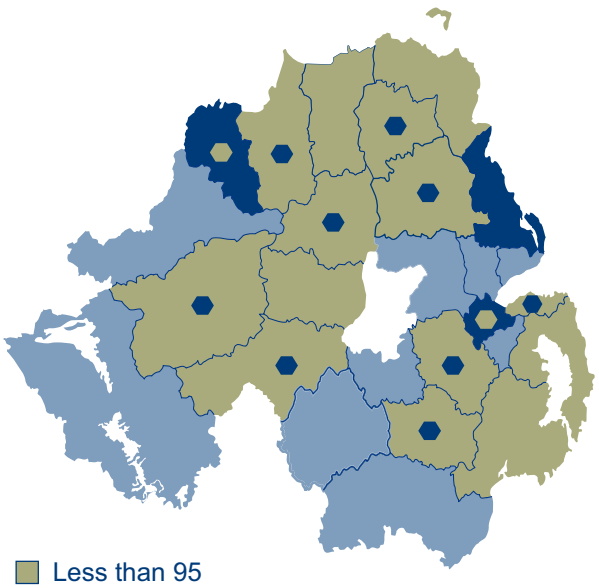
	All cancers		Colorectal cancer		Lung cancer		Female breast cancer		Prostate cancer		
Socio-Economic Qualification	% deaths	Odds ratio (95% CI)	% deaths	Odds ratio (95% CI)	% deaths	Odds ratio (95% CI)	% deaths	Odds ratio (95% CI)	% deaths	Odds ratio (95% CI)	2001 Census Pop
L1-L2 Employers in large organisations and higher managerial	*2.0%*	0.85* (0.73, 0.98)	*3.3%*	1.60* (1.10, 2.35)	*1.5%*	0.52* (0.37, 0.73)	*1.6%*	1.97* (1.14, 3.40)	*3.4%*	1.14 (0.58, 2.25)	*2.1%*
L3-L4 Professional	*11.9%*	0.76* (0.70, 0.82)	*15.2%*	1.18 (0.91, 1.52)	*8.8%*	0.52* (0.43, 0.62)	*15.5%*	1.17 (0.90, 1.51)	*11.6%*	0.86 (0.51, 1.46)	*15.3%*
L5-L6 Lower managerial & higher supervisory	*7.1%*	0.89* (0.81, 0.98)	*8.2%*	1.21 (0.90, 1.63)	*5.9%*	0.67* (0.54, 0.82)	*8.2%*	1.50* (1.12, 2.02)	*10.9%*	1.34 (0.78, 2.28)	*7.8%*
L7 Intermediate	*9.5%*	0.93 (0.85, 1.02)	*10.5%*	1.32 (1.00, 1.74)	*7.6%*	0.76* (0.63, 0.92)	*15.3%*	1.20 (0.93, 1.54)	*6.1%*	1.24 (0.69, 2.24)	*11.1%*
L8-L10 Employers in small organisations, own account workers & lower supervisory	*16.7%*	0.88* (0.81, 0.95)	*17.6%*	1.06 (0.82, 1.38)	*17.2%*	0.77* (0.66, 0.91)	*8.5%*	1.11 (0.83, 1.50)	*27.0%*	1.15 (0.70, 1.86)	*14.1%*
L11-L12 Lower technical & semi-routine	*20.5%*	1.01 (0.93, 1.09)	*18.8%*	1.13 (0.88, 1.46)	*22.7%*	1.06 (0.91, 1.24)	*20.9%*	1.08 (0.85, 1.37)	*19.1%*	1.21 (0.73, 2.00)	*18.8%*
L13 Routine	*23.0%*	1.08 (1.00, 1.17)	*19.3%*	1.10 (0.85, 1.41)	*27.6%*	1.20 (1.04, 1.40)	*19.6%*	1.15 (0.90, 1.47)	*17.5%*	0.98 (0.59, 1.62)	*16.3%*
L14-L15 Never worked & long-term unemployed & full-time student	*9.2%*	1.00	*7.1%*	1.00	*8.7%*	1.00	*10.6%*	1.00	*4.3%*	1.00	*14.5%*

* Significant at 95 per cent confidence level;
Source: NI Mortality Study (NISRA)

2.8 Geographic Patterns

2.8.1 Recent geographic patterns (1999-2008) of cancer deaths are examined using standardised mortality ratios which take account of differences in the number of people living in a geographic area and any differences in their age structure. During 1999-2008 Belfast and Derry Local Government Districts had higher male mortality rates of all cancers combined than the average rate for all of Northern Ireland. Significantly lower than average male mortality rates occurred in nine Local Government Districts. Among females mortality rates were also higher than expected in Belfast and Derry but also in Newry & Mourne Local Government District, while significantly lower than average female mortality rates occurred in eight Local Government Districts. These differences likely reflect higher levels of deprivation and associated higher cancer mortality in these areas than Northern Ireland as a whole. (Figure 2.8a and Figure 2.8b).

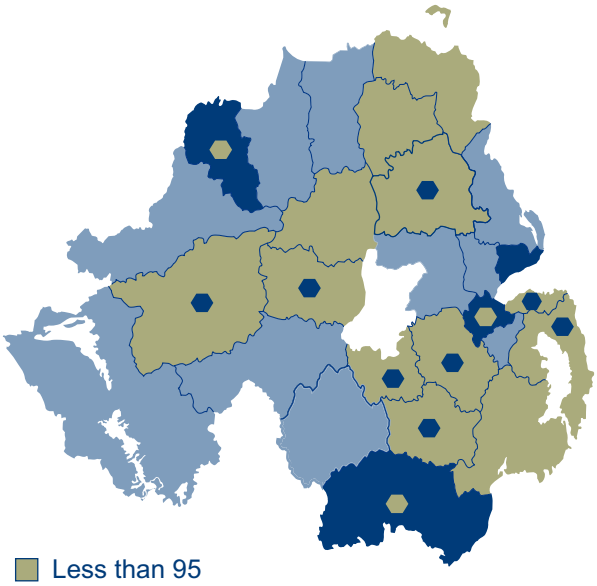
Figure 2.8a: Geographical variations in male cancer mortality, 1999-2008 (standardised mortality ratios for Local Government Districts relative to all of Northern Ireland for all cancers combined)



Less than 95
Between 95 and 105
More than 105

Significantly lower than expected
Significantly higher than expected

Figure 2.8b: Geographical variations in female cancer mortality, 1999-2008 (standardised mortality ratios for Local Government Districts relative to all of Northern Ireland for all cancers combined)



Less than 95
Between 95 and 105
More than 105

Significantly lower than expected
Significantly higher than expected

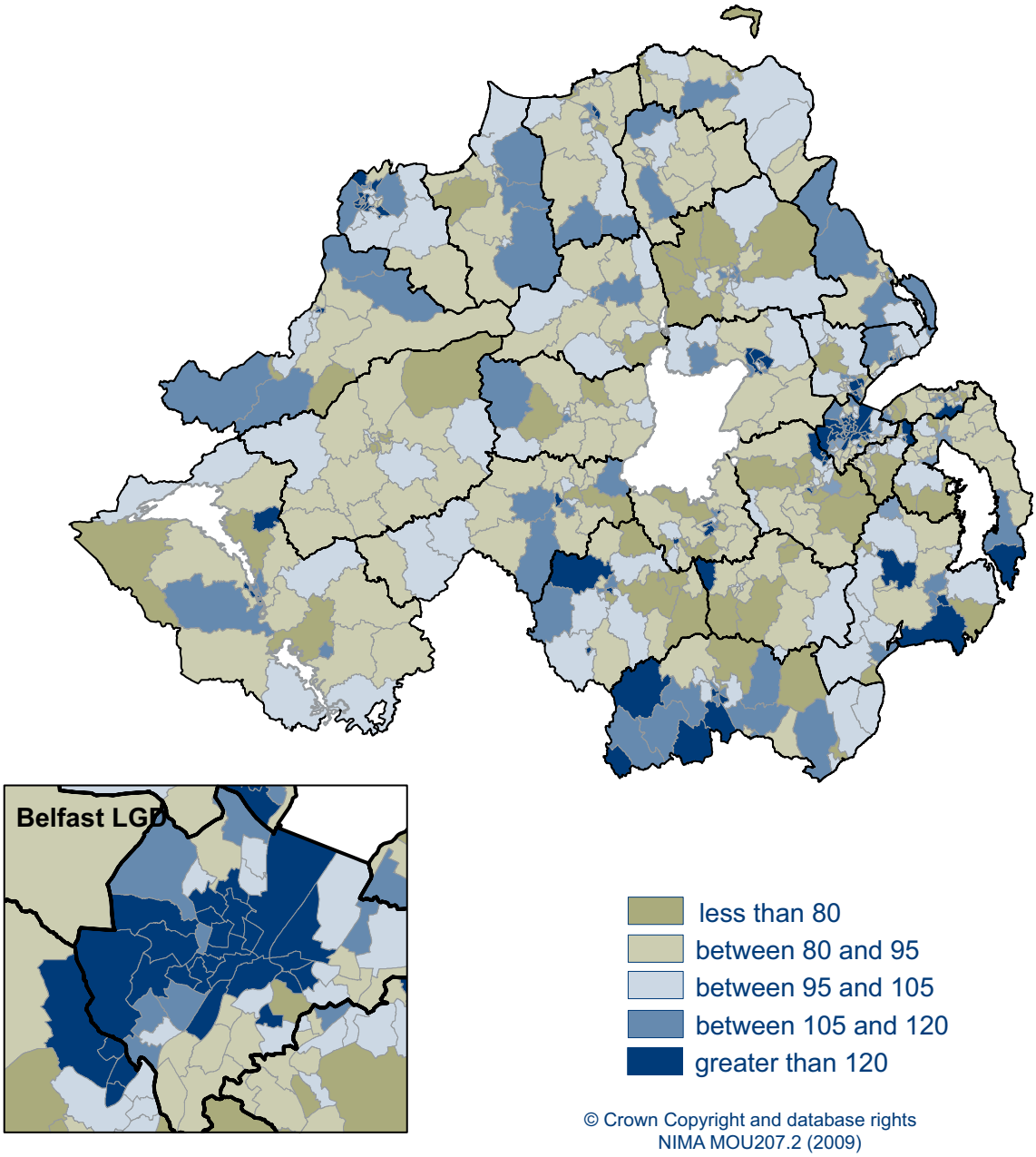
2.8.2 When looking at rates for lower geographic levels such as electoral ward, differences in mortality rates can be difficult to detect due to the small number of deaths. As a result large periods of time must be considered in small geographical area analysis even though changes will undoubtedly have occurred throughout the time period examined.

2.8.3 Over the 15 year period from 1994 to 2008 only 66 of the 582 electoral wards in Northern Ireland had higher than expected mortality rates (at a 95 per cent confidence level). The distribution of mortality rates is however highly correlated to the deprivation level of each electoral ward (correlation coefficient: 0.66). Some of the wards with the highest levels of deprivation also have the highest cancer mortality rates, for example, Falls (Belfast), Upper Springfield (Belfast), Whiterock (Belfast), Shankill (Belfast), New Lodge (Belfast), Creggan Central (Derry) and Brandywell (Derry). Of the 10 wards with the highest

mortality rates six were located in North & West Belfast. In addition, many other electoral wards in North & West Belfast and various parts of Derry had high mortality rates relative to Northern Ireland. This is in agreement with the pattern found at Local Government District level but illustrates that not all areas of Belfast and Derry Local Government Districts experience higher cancer mortality. Out of the 98 electoral wards that had lower than expected mortality rates only five of these were located in Belfast and none were located in Derry (Figure 2.9).

2.8.4 It is likely that the variation in cancer mortality is strongly related to smoking patterns although no small geographic area data on smoking levels is available to verify this hypothesis. However other lifestyle, environmental and genetic factors will also be relevant.

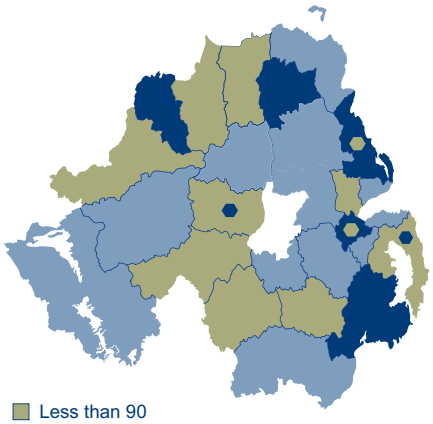
Figure 2.9: Geographic variations in cancer mortality rates, 1994-2008
(standardised mortality ratios for Electoral Wards relative to all of Northern Ireland for all cancers combined)



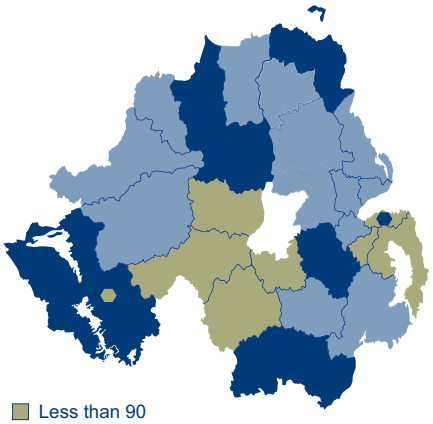
2.8.5 The relationship between mortality rates and geographic area differed depending upon cancer site as a result of different lifestyle factors; smoking levels in particular causing higher rates of many cancers in certain Local Government Districts. For lung cancer Belfast and Derry dominated the distribution of lung cancer deaths across Northern Ireland in 1999-2008. Colorectal cancer had a much more even distribution, although Larne and Belfast had higher than expected mortality rates for males while female colorectal cancer mortality was higher than expected in Fermanagh. Both female breast cancer and male prostate cancer also had a fairly even distribution of deaths across Northern Ireland, however significantly higher than expected mortality rates were present in Newry & Mourne for breast cancer and in Fermanagh for prostate cancer (Figures 2.10a to 2.10f).

Figure 2.10: Geographical variations in cancer mortality rates for selected cancers, 1999-2008 (standardised mortality ratios for Local Government Districts relative to all of Northern Ireland)

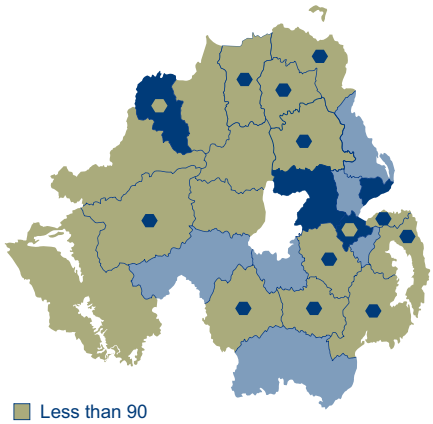
(a) Male colorectal (236 deaths per year)



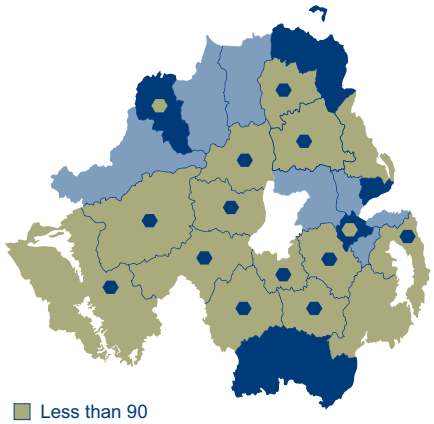
(b) Female colorectal (197 deaths per year)



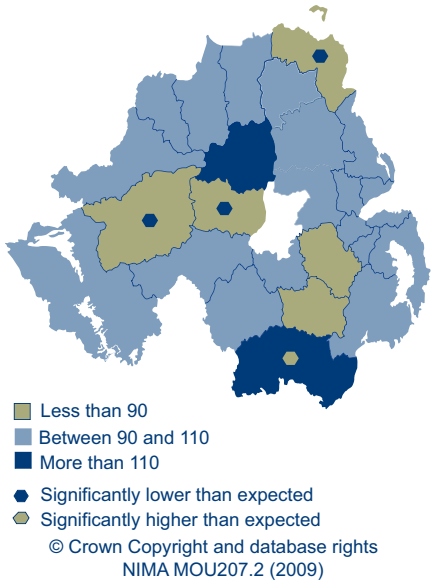
(c) Male lung (518 deaths per year)



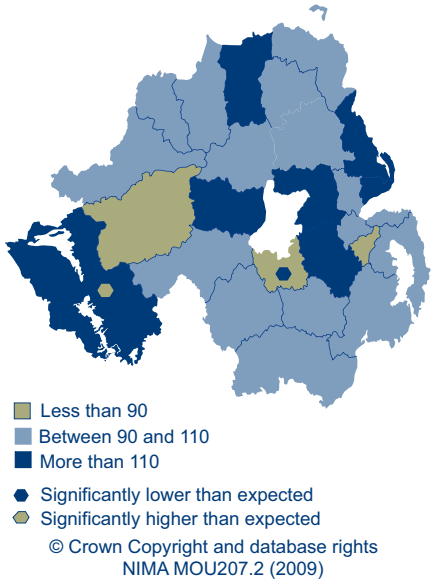
(d) Female lung (335 deaths per year)



(e) Female breast (308 deaths per year)



(f) Prostate (226 deaths per year)



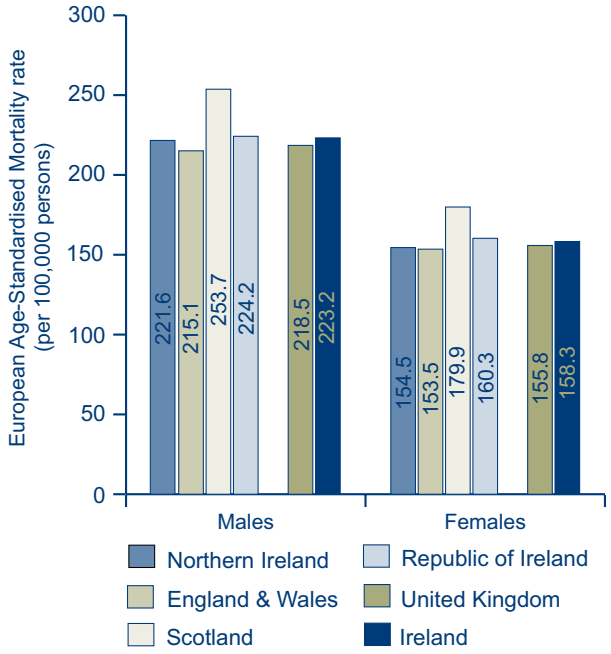
2.9 UK and Ireland

2.9.1 The prevention and treatment of cancer is an extremely large and complex area of healthcare. Thus even with a successful, high quality health service there may be some areas where there is room for improvement. Identifying these areas can be assisted through international comparisons. These help identify countries/ other health services that can help the health service in Northern Ireland to identify and, if appropriate, adopt good practices present in other countries, or at least provide reassurance that the best possible approach is currently being adopted.

2.9.2 Even within the UK and Ireland significant variation in rates of cancer death exist between some of the constituent countries. For males, age-standardised cancer mortality rates in Northern Ireland during 2003-2007 were 3.0 per cent higher than in England and Wales, but were 12.6 per cent lower than those in Scotland. During the same time period female cancer mortality rates in Northern Ireland were similar to those in England and Wales but were 14.1 per cent below those in Scotland.

2.9.3 Comparisons with the Republic of Ireland are slightly more complex and difficult to interpret due to different cancer mortality trends in each country. During 2000-2004 cancer mortality rates were 3.9 per cent lower for males and 3.6 per cent lower for females in Northern Ireland than in the Republic of Ireland. Since then however age-standardised cancer mortality rates have decreased in the Republic of Ireland within three years by 5.3 per cent for males and 3.9 per cent for females compared to 2.2 per cent for males and 2.8 per cent for females in Northern Ireland. Consequently in 2003-2007 there was no statistically significant difference between the two countries. Whether this is a “blip” in the general trend in one or both countries, causing a temporary reduction in the difference in mortality rates, or something more permanent remains to be seen (Figure 2.11a).

Figure 2.11a: Mortality rates across UK and Ireland, 2003-2007, all cancers combined (European age-standardised mortality rates per 100,000 persons)



Source: ONS, ISD, CSO, NISRA

The United Kingdom (UK) refers to the political entity which includes England, Wales, Scotland and Northern Ireland.

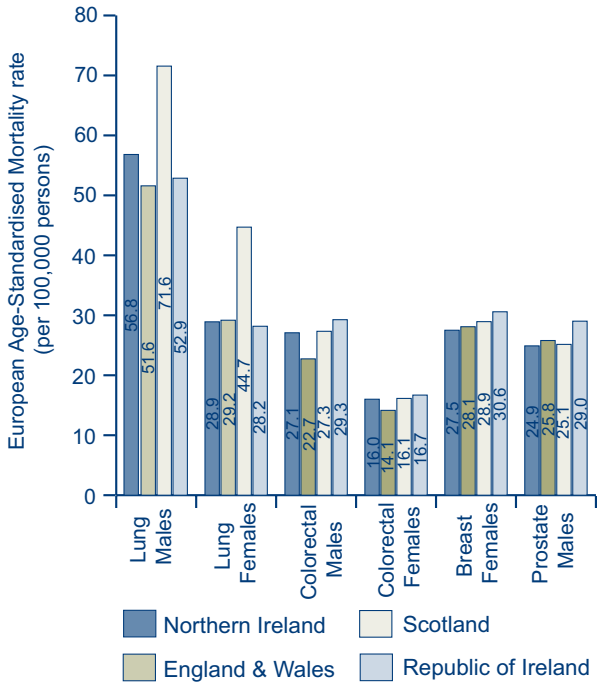
Ireland refers to the island of Ireland which includes the Republic of Ireland and Northern Ireland

2.9.4 While a useful overall comparison, mortality from all cancers combined is limited as a comparative measure as variations in this statistic often reflect the different mix of cancers diagnosed within different populations. It is thus more informative to investigate differences in death rates from particular types of cancer. If we focus on the four main causes of cancer death during 2003-2007, we see that lung cancer mortality in Northern Ireland was higher than in England and Wales and the Republic of Ireland, but was much lower than in Scotland. Among females, while Scotland also had much higher mortality rates from lung cancer than in the rest of the UK and Ireland, levels of death from this disease were similar in the other countries. These patterns are likely related to smoking patterns throughout the UK and Ireland, although historical asbestos exposure which was concentrated in areas of heavy industry, especially ship building, also plays a part.

2.9.5 For colorectal cancer, Northern Ireland, the Republic of Ireland and Scotland all had similar death rates, despite some variation that is not statistically significant. England and Wales had lower levels of colorectal cancer mortality for both sexes. This may suggest better diagnosis or treatment, however recent international comparisons of incidence indicated that the rates of new cases of colorectal cancer were also lower in England and Wales than in the other three countries [10], suggesting that lifestyle and genetic factors are the likely cause of the mortality variations.

2.9.6 Breast cancer mortality variations within the UK are not statistically significant although mortality from the disease was higher in the Republic of Ireland. Similarly prostate cancer mortality was equivalent across the UK, but was higher in the Republic of Ireland. The exact reasons for the elevated levels in the Republic of Ireland are unknown but are under investigation (Figure 2.11b).

Figure 2.11b: Mortality rates across the UK and Ireland, 2003-2007, four main causes of cancer death (European age-standardised mortality rates per 100,000 persons)



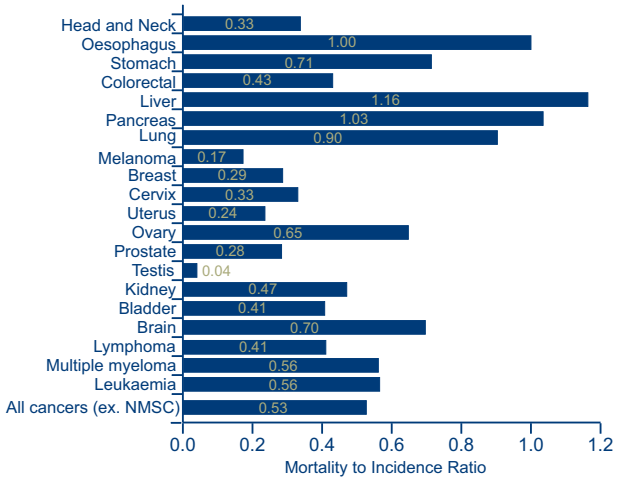
Source: ONS, ISD, CSO, NISRA

2.10 Survival

2.10.1 Mortality is a good measure of the outcomes of having cancer however it is not an accurate depiction of the burden of cancer within the population. This is because some cancers have very good survival and thus have a low number of deaths compared to the number of cancers diagnosed. For example, in 2002-2006 breast cancer, prostate cancer, cancer of the uterus, melanoma and testicular cancer all had mortality to incidence ratios of less than 0.3 (i.e. for every 100 cases diagnosed there were less than 30 deaths). Other cancers had a large number of deaths compared to cases diagnosed. In particular lung cancer, pancreatic cancer, oesophageal cancer and liver cancer had high mortality to incidence ratios indicating that most patients diagnosed with these cancers die. In fact, it can happen that in a given period of time there are more deaths from these cancers than cases diagnosed. This is mostly due to the delay between diagnosis and death and random effects which can cause peaks or troughs in the number of cases or deaths in a given year compared to surrounding years. It can also occur if incidence of the disease is falling.

2.10.2 However, for particular cancers more deaths can be registered than diagnosed in a given year as the death is the result of a cancer of one site metastasising and spreading to a second site which is then assigned as the cause of death. This is particularly common with liver cancer, and to a lesser extent pancreatic cancer, hence a mortality to incidence ratio greater than one existed for both these cancers in 2002-2006 (Figure 2.12).

Figure 2.12: Comparison of cancer incidence and mortality, 2002-2006
(Mortality: Incidence ratios for all cancers excluding NMSC)



2.10.3 This highlights an important point that cancer patients can have several outcomes. They can be successfully treated and live long lives, they can die from their cancer or they can die from a completely unrelated cause. Table 2.6 illustrates this range of possibilities. During 2002-2006, 55.7 per cent of patients diagnosed with a cancer other than non-melanoma skin cancer (NMSC) (which is excluded as it is rarely fatal) were still alive at the end of 2006. When considered by cancer site the pattern is naturally similar to the mortality to incidence ratio, with cancers with a high ratio having a low percentage of patients alive at the end of 2006. Thus at the end of 2006 only 18.3 per cent of lung cancer patients, 20.4 per cent of liver cancer patients and 11.3 per cent of pancreatic cancer patients diagnosed in 2002-2006 were still alive.

2.10.4 In the majority of cases where patients died, they died as a result of their cancer with only a small percentage dying of a different cancer or another cause of death. Overall, 4.0 per cent of patients died from a cancer other than the one they were diagnosed with. This can happen for several reasons in addition to metastasis. Firstly a patient may have more than one cancer in their lifetime (in fact excluding NMSC 3.5 per cent of patients have more than one tumour). While the analysis conducted here has matched the cause of death to diagnosis of cancer site in the event that a patient has more than one tumour, the cancer that killed the patient may have been diagnosed before the 2002-2006 period. Secondly, and probably more commonly, are inaccuracies

Table 2.6: Outcomes after a diagnosis of cancer, 2002-2006
(Number of patients diagnosed in 2002-06 with vital status at the end of 2006 along with cause of death as coded on death certificate)

Cancer	Patients diagnosed in 2002-06 but deceased at end of 2006				Patient alive at end of 2006	Total number of patients (2002-06)
	Death from same cancer as diagnosis	Death from different cancer than diagnosis	Death from diseases of circulatory system	Death from other cause		
Head and Neck (C00-C14, C30-C32)	*21.9%*	*5.8%*	*1.8%*	*3.0%*	*67.4%*	1,118
Oesophagus (C15)	*68.9%*	*2.1%*	*1.8%*	*1.6%*	*25.7%*	774
Stomach (C16)	*59.5%*	*10.2%*	*2.1%*	*2.3%*	*25.9%*	1,142
Colorectal (C18-C21)	*31.8%*	*5.9%*	*2.3%*	*1.6%*	*58.5%*	4,741
Liver (C22)	*68.2%*	*6.4%*	*1.0%*	*4.1%*	*20.4%*	314
Pancreas (C25)	*82.6%*	*3.1%*	*1.1%*	*2.0%*	*11.3%*	852
Lung (C33,C34)	*74.7%*	*2.7%*	*2.1%*	*2.1%*	*18.3%*	4,496
Malignant melanoma (C43)	*7.8%*	*1.0%*	*1.2%*	*1.1%*	*88.9%*	1,157
Breast (C50)	*12.1%*	*0.5%*	*1.2%*	*1.2%*	*85.0%*	5,110
Cervix (C53)	*18.5%*	*1.4%*	*0.2%*	*0.0%*	*79.9%*	417
Uterus (C54-C55)	*16.6%*	*2.6%*	*1.2%*	*0.9%*	*78.6%*	847
Ovary (C56)	*42.5%*	*2.7%*	*1.4%*	*1.3%*	*52.0%*	912
Prostate (C61)	*15.6%*	*1.0%*	*2.2%*	*1.2%*	*80.0%*	3,739
Testis (C62)	*2.4%*	*0.3%*	*0.0%*	*0.0%*	*97.3%*	295
Kidney (C64-C66,C68)	*36.8%*	*3.9%*	*2.2%*	*2.8%*	*54.2%*	915
Bladder (C67)	*28.6%*	*2.7%*	*3.2%*	*2.4%*	*63.1%*	963
Brain and other central nervous system (C70-C72)	*52.9%*	*1.5%*	*1.0%*	*6.7%*	*37.9%*	597
Lymphoma (C81-C85,C96)	*28.1%*	*2.0%*	*1.3%*	*1.6%*	*67.0%*	1,470
Multiple myeloma (C90)	*37.3%*	*1.0%*	*4.1%*	*3.3%*	*54.2%*	579
Leukaemia (C91-C95)	*39.0%*	*1.8%*	*2.9%*	*4.1%*	*52.2%*	785
Other	*49.1%*	*14.5%*	*2.0%*	*2.9%*	*31.4%*	3,227
All cancers (excluding NMSC) (C00-C97, ex. C44)	***36.6%***	***4.0%***	***1.9%***	***1.9%***	***55.7%***	**34,450**

Notes: "Same cancer as diagnosis" refers to the range of ICD10 codes dictated and not individual ICD10 codes.
Table refers to the number of patients.
Some patients can have more than one tumour. In this event if the patient has died then the cancer diagnosis is taken to be the same as the cause of death. If the patient is alive at the end of 2006 then the cancer diagnosis is that of the first cancer diagnosed within 2002-2006.

in the death certificates which may affect some cancers more than others.

2.10.5 In addition to death from cancer 3.8 per cent of cancer patients diagnosed during 2002-2006 died from a cause other than cancer. While some of these may be the result of side effects and general worsening of general health as a result of any cancer, it highlights the need to take care when analysing patient survival and to only include deaths as a result of cancer.

2.10.6 Patient survival can however only be calculated if there is an accurate register of cancer cases such as exists in Northern Ireland and if a mechanism exists to

accurately link that register with deaths from all causes. While this is routinely carried out in Northern Ireland, due to possible differences between the cancer diagnosed and the cause of death recorded the latter cannot be used to identify relevant patients in any cause specific analysis of survival. The preferred measure, which is used in international studies, is relative survival which is the ratio of the survival of a given group of patients regardless of cause of death (known as observed survival) to the expected survival for a group of persons in the general population with the same characteristics (usually sex and age).

2.10.7 In Northern Ireland five-year relative survival for patients with cancer (excluding NMSC) diagnosed during 1998-2002 was 40.9 per cent for males and 51.6 per cent for females. While this seems like a considerable inequality between sexes this is due in the most part to a different range of cancers being diagnosed among males and females and different survival from gender specific cancers (Figures 2.13a and 2.13b).

Figure 2.13a: Survival of male patients with cancer (excluding NMSC) by year, 1993-2002 (Relative survival with follow up of patients to end 2007)

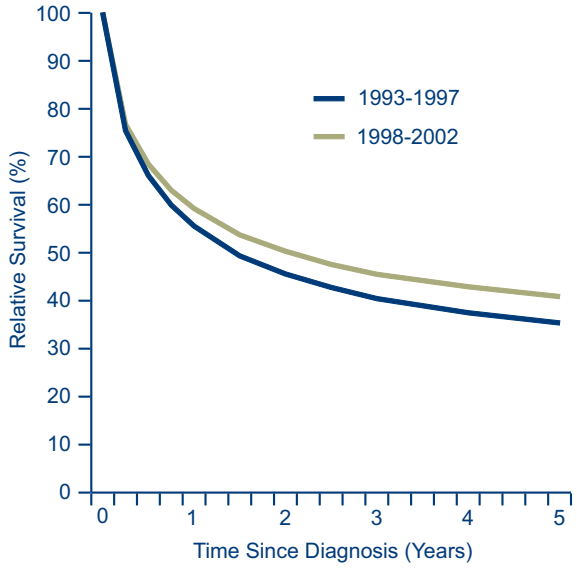
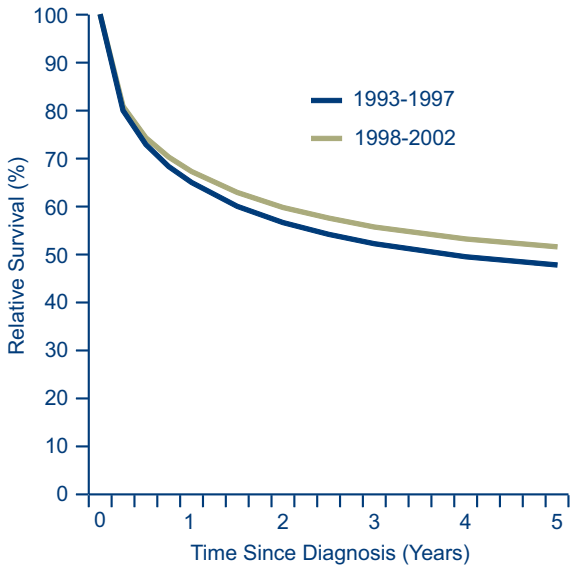


Figure 2.13b: Survival of female patients with cancer (excluding NMSC) by year, 1993-2002 (Relative survival with follow up of patients to end 2007)



2.10.8 Fortunately survival in Northern Ireland is improving. Five-year relative survival for patients with cancer (ex. NMSC) improved by 5.5 per cent for males and 3.8 per cent for females between 1993-1997 and 1998-2002. This is in line with the reductions in mortality seen over recent years and is a result of increased detection at an earlier stage, better treatment and a reduction among men in the number of serious tobacco related cancers which have poor survival (Figures 2.13a and 2.13b).

2.10.9 Survival varies considerably by cancer site with five-year relative survival for male patients diagnosed in 1998-2002 ranging from 1.5 per cent for pancreatic cancer to 97.0 per cent for testicular cancer. Among females five-year relative survival ranged from 1.4 per cent for pancreatic cancer to 93.6 per cent for malignant melanoma. Lung, liver, oesophageal, stomach and brain cancer also had very poor survival for both males and females, while five-year relative survival from male prostate cancer was over 70 per cent compared to above 80 per cent for female breast cancer (Figures 2.14a and 2.14b).

Figure 2.14a: Changes in survival for male patients with cancer by cancer site, 1993-2002 (Five-year relative survival by sex, cancer site and period of diagnosis)

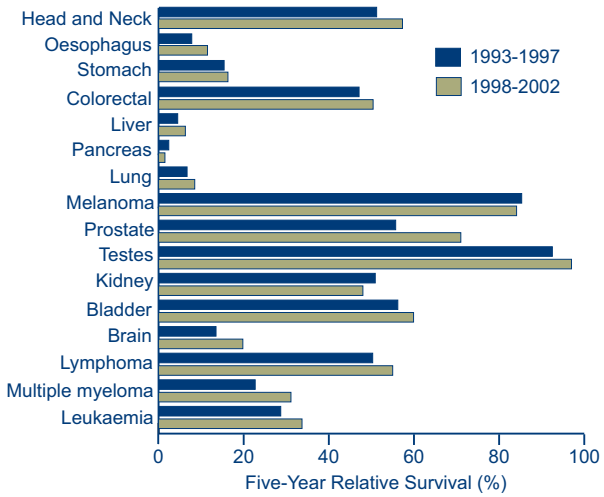
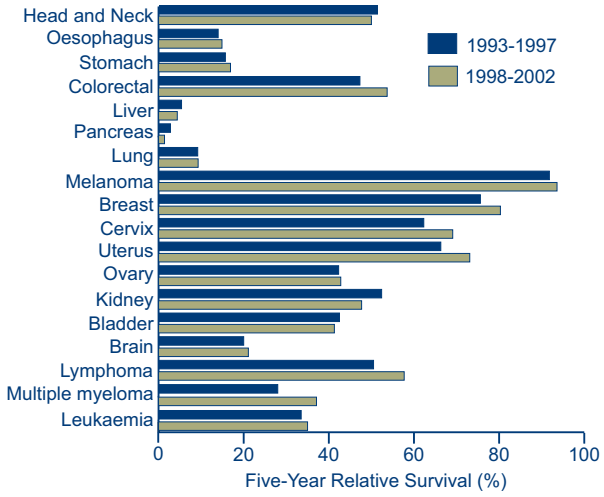


Figure 2.14b: Changes in survival for female patients with cancer by cancer site, 1993-2002 (Five-year relative survival by sex, cancer site and period of diagnosis)



2.10.10 For most cancers five-year relative survival appeared higher among females than males, although few of these differences were statistically significant. The only cancer where survival was conclusively higher among females was malignant melanoma, while male survival from bladder cancer was higher than that for females. Survival from prostate cancer (the most common male cancer) was lower than that from breast cancer (the most common female cancer) for patients diagnosed in 1998-2002 (Figures 2.14a and 2.14b).

2.10.11 Examination of the improvement in survival by cancer site illustrates improvement in almost all forms of cancer. Although most apparent improvements were not statistically significant (e.g. for cervical cancer and lymphoma) three of the four most common cancers showed significant improvement. Five-year relative survival for patients diagnosed in 1998-2002 was higher than for those diagnosed in 1993-1997 by 6.4 per cent for female colorectal cancer, 4.7 per cent for female breast cancer and 15.3 per cent for male prostate cancer. The latter was at least in part due to detection of an increased number of prostate cancers at an earlier stage and in younger men as a result of Prostate Specific Antigen (PSA) testing. Survival did not worsen for any cancer site (Figures 2.14a and 2.14b).

2.11 Discussion

2.11.1 The task of reducing levels of cancer mortality in Northern Ireland faces many challenges in the years ahead. The most rapidly changing factor affecting cancer incidence and mortality is the changing population size and age distribution. In 2008 the population was 1,775,003, a 14.5 per cent increase since 1983. In addition the average age of the population in Northern Ireland is increasing with a rise in the percentage of the population aged 60 and over from 16.8 per cent to 19.2 per cent and a decrease in the percentage of the population aged under 15 from 26.0 per cent to 20.0 per cent between 1983 and 2008 [11]. With the recent increase in the number of countries in the European Union also expected to result in a further increase in the population due to migration [12], the annual number of cancer cases is set to rise.

2.11.2 As a result of this change in the population, the number of deaths from cancer in Northern Ireland is increasing. However, excluding age and population growth as a factor, cancer mortality rates have shown a slight decline, yet cancer incidence levels have steadily increased. Improvements in treatment, early and increased detection and successes and failures in cancer prevention all play a fundamental role in dictating these trends.

2.11.3 Further reduction in cancer mortality would be best achieved through prevention. Eradication of smoking, adoption of healthier diets along with regular exercise, maintenance of a health body weight and a reduction in the level of alcohol consumption would result in a considerable reduction in the number of deaths from cancer [13]. Considerable resources are invested into prevention programmes in Northern Ireland with the aim of educating people as to the connection between lifestyle factors and cancer (as well as other diseases). Some successes are apparent, in particular reductions in the levels of smoking [14] among men has resulted in a reduction in the number of cases and deaths from lung cancer. However many women, particularly young women, continue to smoke and risk serious disease. In addition, despite many attempts to alert the public to the benefits of a healthy diet and body weight, incidence of cancer of the uterus, a cancer strongly linked with obesity [15] is climbing very quickly.

2.11.4 More proactive approaches to combat exposure to lifestyle factors that increase the risk of developing cancer, such as smoking bans in work places and vaccinations against the HPV virus, also exist. These have the potential to reduce incidence and mortality of many cancers, particularly lung cancer by reducing exposure to second-hand cigarette smoke, and cervical cancer, the majority of which is caused by the HPV virus [16].

2.11.5 Environmental factors such as ultraviolet (UV) and ionising radiation can also play a role in the development of cancer [17, 18]. With regard to UV exposure the Northern Ireland Care in the Sun programme focuses on educating the public on the dangers of UV radiation from the sun or sunbeds. While these have proven moderately successful many sections of the community retain misconceptions about safety in the sun and fail to take adequate precautions and thus the incidence of melanoma, particularly among men, is increasing rapidly. Further effort in this area is thus required, with parents of young children and adolescents particularly in need of education as the skin damage which leads to melanoma in later life can result from sunburn in the first 20 years of life [19].

2.11.6 The method by which many other cancers develop is still not clearly understood. In particular the lack of understanding of the causes of brain cancer, lymphoma, myeloma and leukaemia is a major hindrance to the development of prevention strategies for these diseases.

2.11.7 Eradication of cancer caused by lifestyle and environmental factors would still leave many cancers developing as a result of other causes (e.g. genetic factors). Early detection remains the best chance for mortality reduction among these cancers as the stage at which cancer is diagnosed is a major factor in survival [20]. Diagnosis of cancer at an early stage however can sometimes be difficult due to the lack of symptoms, or presence of vague symptoms; with many patients presenting at a late stage.

2.11.8 Screening programmes increase the possibility of early diagnosis and thereby reduce mortality. This is evidenced by the cervical cancer screening programme which exists in Northern Ireland for women aged 20-65 and is organised on a population basis. Three yearly population based screening for breast cancer among women aged 50-65 has been in place throughout Northern Ireland since 1993, and is due to be extended to women aged up to 69. A colorectal screening programme for people aged 60-69 is also being planned for introduction in 2009/10. There is no evidence yet about the effectiveness of screening for stomach cancer [2] while for prostate cancer the introduction of PSA testing has resulted in cancers being diagnosed at a point much

closer to when the cancer first developed. However its effectiveness in reducing mortality rates is contested and an over diagnosis of less significant cancers is an unavoidable side effect [21, 22]. No effective population based screening processes exist for many other forms of cancer, including lung cancer [2]. Without the existence of an early diagnostic test for these cancers the onus is thus on the general population to ensure that they check any possible symptoms with a doctor.

2.11.9 Treatment of cancer is dictated by several factors including cancer site, tumour stage, general health, morphology, depth of tumour invasion and presence of metastasis. For most cancers surgery is the most effective form of treatment with chemotherapy, radiotherapy and hormone therapy applied to treat any residual disease or prevent recurrence. Not all cancer sites respond to these treatments. Hormone therapy is primarily used for prostate and breast cancers, while chemotherapy is rarely used for prostate cancer and surgery is not applicable for haematological cancer. For some cancers (e.g. lung cancer) these treatments are rarely curative and are applied mainly for palliative purposes with overall survival from the disease very poor. For other cancers (e.g. breast cancer) treatment can result in the patients being disease free with excellent survival particularly when the cancer is identified at an early stage.

2.11.10 The Northern Ireland Cancer Registry provides a cancer intelligence service for Northern Ireland making available data for research, education, planning and monitoring of services. This work is supported by data from the GRO and NISRA. In addition to its core functions of providing deaths and population data, NISRA also makes available postcode directories and deprivation measures, both outputs that are very valuable to the NICR and have been used extensively in this article. Additionally a new, potentially valuable resource developed by NISRA and supported by Queen's University (QUB) is the Northern Ireland Longitudinal Study. The longitudinal study links a 28 per cent sample of the population, provided by the Health and Social Care Business Services Organisation (BSO), to the 2001 Census and various vital events datasets from GRO (e.g. births and deaths). Subject to legal and ethical approval NICR data could be linked to this dataset, thereby providing further anonymised research data to study cancer causes, treatment differences and survival to help patients in Northern Ireland.

2.11.11 An increased emphasis on prevention strategies is essential if the health service is to cope with the expected increase in cancers as a result of population growth and ageing. To assist this process additional population based information on smoking, obesity and alcohol consumption would be very valuable in assessing and tracking the populations' level of risk. Currently this data is only available from surveys which, while useful, do not allow monitoring at a small area level. This is a major hindrance to targeting areas needing particular attention as illustrated in our restricted ability to interpret the cancer mortality distributions evident in Figure 2.9. Educating the public in taking an approach of prevention of cancer is the ideal approach, unfortunately unless key data collection projects include questions on prevention, symptom awareness and lifestyle, the lack of information will prevent policy makers focusing attention to these important areas.

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2.12.4 The authors alone are responsible for the interpretation of all data presented in this article.

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Appendices

Appendix 1: Population and vital events, 1926-2008

	Estimated population			Resident live births							Multiple births		
								Males per	Outside marriage				
Year	Persons	Males	Females	All resident births[1]	Rate[2]	Males	Females	1,000 females	Number	%[3]	Twins	Triplets etc	% of maternities
1926-30	**1,249,000**	604,000	645,000	**26,418**	***21.2***	13,587	12,831	*1,059*	1,249	*4.7*	308	4	*1.2*
1931-35	**1,270,000**	617,000	653,000	**25,098**	***19.8***	12,926	12,172	*1,062*	1,259	*5.0*	286	2	*1.2*
1936-40	**1,286,800**	626,100	660,700	**25,533**	***19.8***	13,110	12,423	*1,055*	1,178	*4.6*	300	4	*1.2*
1941-45	**1,304,400**	674,000	630,400	**29,592**	***22.7***	15,287	14,305	*1,069*	1,560	*5.3*	332	4	*1.2*
1946-50	**1,350,400**	695,800	654,600	**29,764**	***22.0***	15,336	14,428	*1,063*	1,124	*3.8*	367	5	*1.3*
1951-55	**1,382,500**	673,700	708,800	**28,798**	***20.8***	14,885	13,913	*1,070*	838	*2.9*	391	4	*1.4*
1956-60	**1,405,000**	684,700	720,300	**30,539**	***21.7***	15,755	14,784	*1,066*	758	*2.5*	414	3	*1.4*
1961-65	**1,447,200**	705,500	741,700	**33,226**	***23.0***	17,171	16,055	*1,069*	890	*2.7*	407	3	*1.3*
1966-70	**1,501,500**	732,500	769,000	**32,866**	***21.9***	16,958	15,908	*1,066*	1,180	*3.6*	355	3	*1.1*
1971-75	**1,532,000**	755,200	776,700	**28,850**	***18.8***	14,935	13,914	*1,073*	1,260	*4.4*	308	2	*1.1*
1976-80	**1,526,200**	754,300	771,900	**26,959**	***17.7***	13,807	13,152	*1,050*	1,531	*5.7*	271	4	*1.0*
1981-85	**1,552,100**	759,700	792,400	**27,194**	***17.5***	13,965	13,229	*1,056*	2,469	*9.1*	289	3	*1.1*
1986-90	**1,585,400**	773,800	811,600	**27,045**	***17.1***	13,914	13,130	*1,060*	4,266	*15.8*	286	4	*1.1*
1991-95	**1,631,800**	795,900	835,900	**24,779**	***15.2***	12,704	12,075	*1,052*	5,427	*21.9*	292	8	*1.2*
1996-2000	**1,674,500**	816,700	857,800	**23,321**	***13.9***	11,966	11,356	*1,054*	6,661	*28.6*	319	8	*1.4*
2001-2005	**1,704,700**	833,400	871,300	**21,928**	***12.9***	11,245	10,683	*1,053*	7,511	*34.3*	314	8	*1.5*
1971	**1,540,400**	754,600	785,800	**31,765**	***20.6***	16,504	15,261	*1,081*	1,207	*3.8*	342	4	*1.1*
1972	**1,539,000**	757,500	781,500	**29,994**	***19.5***	15,559	14,435	*1,078*	1,263	*4.2*	325	3	*1.1*
1973	**1,530,000**	755,700	774,200	**29,200**	***19.1***	15,152	14,048	*1,079*	1,195	*4.1*	290	1	*1.0*
1974	**1,526,900**	755,000	771,900	**27,160**	***17.8***	13,987	13,173	*1,062*	1,296	*4.8*	291	3	*1.1*
1975	**1,523,500**	753,300	770,200	**26,130**	***17.2***	13,475	12,655	*1,065*	1,338	*5.1*	294	-	-
1976	**1,523,500**	754,000	769,500	**26,361**	***17.3***	13,542	12,819	*1,056*	1,330	*5.0*	264	5	*1.0*
1977	**1,523,300**	753,900	769,400	**25,437**	***16.7***	13,154	12,283	*1,071*	1,383	*5.4*	266	3	*1.1*
1978	**1,523,200**	753,600	769,700	**26,239**	***17.2***	13,168	13,071	*1,007*	1,523	*5.8*	249	2	*1.0*
1979	**1,528,300**	755,200	773,100	**28,178**	***18.4***	14,485	13,693	*1,058*	1,668	*5.9*	276	5	*1.0*
1980	**1,532,800**	754,800	778,000	**28,582**	***18.6***	14,686	13,896	*1,057*	1,751	*6.1*	298	4	*1.1*
1981	**1,543,000**	756,600	786,300	**27,166**	***17.6***	13,847	13,319	*1,040*	1,894	*7.0*	304	4	*1.1*
1982	**1,544,500**	756,700	787,800	**26,872**	***17.4***	13,732	13,140	*1,045*	2,106	*7.8*	305	2	*1.2*
1983	**1,550,600**	759,000	791,500	**27,026**	***17.4***	13,972	13,054	*1,070*	2,370	*8.8*	263	4	*1.0*
1984	**1,557,300**	761,300	796,000	**27,477**	***17.6***	14,196	13,281	*1,069*	2,790	*10.2*	303	3	*1.1*
1985	**1,565,400**	764,900	800,400	**27,427**	***17.5***	14,076	13,351	*1,054*	3,185	*11.6*	269	3	*1.0*
1986	**1,573,500**	768,400	805,100	**27,975**	***17.8***	14,501	13,474	*1,076*	3,575	*12.8*	280	3	*1.0*
1987	**1,582,000**	772,900	809,100	**27,653**	***17.5***	14,196	13,457	*1,055*	3,967	*14.3*	320	7	*1.2*
1988	**1,585,400**	773,800	811,700	**27,514**	***17.4***	14,131	13,383	*1,056*	4,446	*16.2*	283	2	*1.0*
1989	**1,590,400**	775,900	814,500	**25,831**	***16.2***	13,307	12,524	*1,063*	4,394	*17.0*	281	2	*1.1*
1990	**1,595,600**	777,900	817,700	**26,251**	***16.5***	13,437	12,814	*1,049*	4,946	*18.8*	267	5	*1.0*
1991	**1,607,300**	783,200	824,100	**26,028**	***16.2***	13,427	12,601	*1,066*	5,288	*20.3*	311	7	*1.2*
1992	**1,623,300**	792,100	831,100	**25,354**	***15.6***	12,924	12,430	*1,040*	5,579	*22.0*	256	8	*1.1*
1993	**1,635,600**	798,200	837,300	**24,722**	***15.1***	12,515	12,207	*1,025*	5,445	*22.0*	283	9	*1.2*
1994	**1,643,700**	801,900	841,800	**24,098**	***14.7***	12,361	11,737	*1,053*	5,337	*22.1*	288	6	*1.2*
1995	**1,649,100**	804,000	845,100	**23,693**	***14.4***	12,293	11,400	*1,078*	5,487	*23.2*	324	9	*1.4*
1996	**1,661,800**	810,300	851,400	**24,382**	***14.7***	12,382	12,000	*1,032*	6,346	*26.0*	310	13	*1.3*
1997	**1,671,300**	815,500	855,700	**24,087**	***14.4***	12,325	11,762	*1,048*	6,427	*26.7*	330	7	*1.4*
1998	**1,677,800**	818,700	859,100	**23,668**	***14.1***	12,058	11,610	*1,039*	6,743	*28.5*	305	7	*1.3*
1999	**1,679,000**	818,500	860,500	**22,957**	***13.7***	11,943	11,014	*1,084*	6,957	*30.3*	334	6	*1.5*
2000	**1,682,900**	820,500	862,500	**21,512**	***12.8***	11,120	10,392	*1,070*	6,833	*31.8*	314	5	*1.5*
2001	**1,689,300**	824,400	864,900	**21,962**	***13.0***	11,288	10,674	*1,058*	7,144	*32.5*	330	10	*1.6*
2002	**1,696,600**	828,900	867,800	**21,385**	***12.6***	10,874	10,511	*1,035*	7,161	*33.5*	313	13	*1.5*
2003	**1,702,600**	832,800	869,800	**21,648**	***12.7***	11,244	10,404	*1,081*	7,439	*34.4*	304	5	*1.4*
2004	**1,710,300**	836,500	873,800	**22,318**	***13.0***	11,477	10,841	*1,059*	7,703	*34.5*	330	7	*1.5*
2005	**1,724,400**	844,300	880,100	**22,328**	***12.9***	11,341	10,987	*1,032*	8,108	*36.3*	294	6	*1.4*
2006	**1,741,600**	853,400	888,200	**23,272**	***13.4***	12,010	11,262	*1,066*	8,832	*38.0*	315	1	*1.4*
2007	**1,759,100**	862,000	897,100	**24,451**	***13.9***	12,516	11,935	*1,049*	9,261	*37.9*	357	5	*1.5*
2008	**1,775,000**	870,300	904,100	**25,631**	***14.4***	13,204	12,427	*1,063*	9,966	*38.9*	356	6	*1.4*

Note: See Appendix 3 - for notes on change in definition of stillbirths that took place in 1992

[1] All births prior to 1981

[2] Rate per 1,000 population

[3] Percentage of all live births

[4] Rate per 1,000 resident live and still births

[5] Rate per 1,000 live births (resident and non-resident)

Appendix 1: Population and vital events, 1926-2008

Stillbirths		Infant deaths		Deaths						Marriages		Divorces	Civil Partnerships	
				Persons		Males		Females						
Number	Rate[4]	Number	Rate[5]	Number	Rate[2]	Number	Rate[2]	Number	Rate[2]	Number	Rate[2]	Number	Number	Year
..	..	2,083	78.8	**18,403**	***14.7***	8,888	*14.7*	9,515	*14.8*	7,328	*5.9*	..	..	1926-30
..	..	1,966	78.4	**18,026**	***14.2***	8,869	*14.4*	9,157	*14.0*	7,806	*6.1*	..	..	1931-35
..	..	1,970	77.2	**18,369**	***14.3***	9,097	*14.5*	9,271	*14.0*	9,073	*7.1*	..	..	1936-40
..	..	2,169	73.3	**17,478**	***13.4***	8,778	*13.0*	8,700	*13.8*	10,751	*8.2*	..	..	1941-45
..	..	1,423	47.8	**16,039**	***11.9***	8,134	*11.7*	7,905	*12.1*	9,396	*7.0*	..	..	1946-50
..	..	1,054	36.6	**15,557**	***11.3***	7,966	*11.8*	7,590	*10.7*	9,359	*6.8*	..	..	1951-55
..	..	863	28.3	**15,175**	***10.8***	7,872	*11.5*	7,303	*10.1*	9,500	*6.8*	..	..	1956-60
695	*20.5*	879	26.5	**15,628**	***10.8***	8,185	*11.6*	7,443	*10.0*	10,185	*7.0*	124	..	1961-65
530	*15.9*	791	24.1	**15,987**	***10.6***	8,399	*11.5*	7,588	*9.9*	11,357	*7.6*	225	..	1966-70
407	*13.9*	610	21.1	**16,948**	***11.1***	8,954	*11.9*	7,994	*10.3*	11,384	*7.4*	381	..	1971-75
269	*9.9*	427	15.9	**16,750**	***11.0***	8,770	*11.6*	7,980	*10.3*	10,010	*6.6*	648	..	1976-80
194	*7.1*	323	11.8	**15,972**	***10.3***	8,146	*10.7*	7,826	*9.9*	10,049	*6.5*	1,523	..	1981-85
136	*5.0*	231	8.5	**15,696**	***9.9***	7,879	*10.2*	7,818	*9.6*	10,031	*6.3*	1,664	..	1986-90
135	*5.4*	168	6.7	**15,228**	***9.3***	7,515	*9.4*	7,713	*9.2*	8,983	*5.5*	2,282	..	1991-95
126	*5.4*	134	5.7	**15,150**	***9.0***	7,315	*9.0*	7,835	*9.1*	7,881	*4.7*	2,325	..	1996-2000
109	*4.9*	122	5.5	**14,428**	***8.5***	6,953	*8.3*	7,474	*8.6*	7,821	*4.6*	2,345	..	2001-2005
462	*14.3*	722	22.7	**16,202**	***10.5***	8,593	*11.4*	7,609	*9.7*	12,152	*7.9*	339	..	1971
434	*14.3*	616	20.5	**17,032**	***11.1***	9,001	*11.9*	8,031	*10.3*	11,905	*7.7*	355	..	1972
389	*13.1*	610	20.9	**17,669**	***11.5***	9,288	*12.3*	8,381	*10.8*	11,212	*7.3*	393	..	1973
374	*13.6*	567	20.9	**17,327**	***11.3***	9,226	*12.2*	8,101	*10.5*	10,783	*7.1*	382	..	1974
375	*14.1*	534	20.4	**16,511**	***10.8***	8,664	*11.5*	7,847	*10.2*	10,867	*7.1*	437	..	1975
278	*10.4*	483	18.3	**17,030**	***11.2***	8,869	*11.8*	8,161	*10.6*	9,914	*6.5*	574	..	1976
310	*12.0*	438	17.2	**16,921**	***11.1***	8,871	*11.8*	8,050	*10.5*	9,696	*6.4*	569	..	1977
243	*9.2*	417	15.9	**16,153**	***10.6***	8,458	*11.2*	7,695	*10.0*	10,304	*6.8*	599	..	1978
246	*8.7*	417	14.8	**16,811**	***11.0***	8,822	*11.7*	7,989	*10.3*	10,214	*6.7*	601	..	1979
266	*9.2*	382	13.4	**16,835**	***11.0***	8,832	*11.7*	8,003	*10.3*	9,923	*6.5*	896	..	1980
240	*8.8*	360	13.2	**16,256**	***10.5***	8,423	*11.1*	7,833	*10.0*	9,636	*6.2*	1,355	..	1981
187	*6.9*	369	13.7	**15,918**	***10.3***	8,004	*10.6*	7,914	*10.0*	9,913	*6.4*	1,383	..	1982
204	*7.5*	329	12.1	**16,039**	***10.3***	8,209	*10.8*	7,830	*9.9*	9,990	*6.4*	1,657	..	1983
161	*5.8*	291	10.5	**15,692**	***10.1***	8,007	*10.5*	7,685	*9.7*	10,361	*6.7*	1,552	..	1984
178	*6.4*	265	9.6	**15,955**	***10.2***	8,088	*10.6*	7,867	*9.8*	10,343	*6.6*	1,669	..	1985
125	*4.4*	286	10.2	**16,065**	***10.2***	8,154	*10.6*	7,911	*9.8*	10,225	*6.5*	1,539	..	1986
170	*6.1*	242	8.7	**15,334**	***9.7***	7,721	*10.0*	7,613	*9.4*	10,363	*6.6*	1,514	..	1987
137	*5.0*	248	8.9	**15,813**	***10.0***	7,993	*10.3*	7,820	*9.6*	9,960	*6.3*	1,550	..	1988
133	*5.1*	180	6.9	**15,844**	***10.0***	7,878	*10.2*	7,966	*9.8*	10,019	*6.3*	1,818	..	1989
115	*4.4*	198	7.5	**15,426**	***9.7***	7,648	*9.8*	7,778	*9.5*	9,588	*6.0*	1,897	..	1990
123	*4.7*	194	7.4	**15,096**	***9.4***	7,533	*9.6*	7,563	*9.2*	9,221	*5.7*	2,310	..	1991
124	*4.9*	153	6.0	**14,988**	***9.2***	7,469	*9.4*	7,519	*9.0*	9,392	*5.8*	2,280	..	1992
128	*5.2*	176	7.1	**15,633**	***9.6***	7,731	*9.7*	7,902	*9.4*	9,045	*5.5*	2,213	..	1993
153	*6.3*	147	6.1	**15,114**	***9.2***	7,362	*9.2*	7,752	*9.2*	8,683	*5.3*	2,303	..	1994
145	*6.1*	169	7.1	**15,310**	***9.3***	7,482	*9.3*	7,828	*9.3*	8,576	*5.2*	2,302	..	1995
153	*6.2*	142	5.8	**15,218**	***9.2***	7,418	*9.2*	7,800	*9.2*	8,297	*5.0*	2,314	..	1996
131	*5.4*	137	5.6	**14,971**	***9.0***	7,244	*8.9*	7,727	*9.0*	8,071	*4.8*	2,176	..	1997
122	*5.1*	134	5.6	**14,993**	***8.9***	7,321	*8.9*	7,672	*8.9*	7,826	*4.7*	2,459	..	1998
132	*5.7*	148	6.4	**15,663**	***9.3***	7,464	*9.1*	8,199	*9.5*	7,628	*4.5*	2,326	..	1999
93	*4.3*	109	5.0	**14,903**	***8.9***	7,128	*8.7*	7,775	*9.0*	7,584	*4.5*	2,350	..	2000
112	*5.1*	134	6.0	**14,513**	***8.6***	7,007	*8.5*	7,506	*8.7*	7,281	*4.3*	2,365	..	2001
122	*5.7*	100	4.6	**14,586**	***8.6***	6,948	*8.4*	7,638	*8.8*	7,599	*4.5*	2,165	..	2002
108	*5.0*	115	5.2	**14,462**	***8.5***	6,920	*8.3*	7,542	*8.7*	7,757	*4.6*	2,319	..	2003
113	*5.0*	122	5.3	**14,354**	***8.4***	6,935	*8.3*	7,419	*8.5*	8,328	*4.9*	2,512	..	2004
89	*4.0*	140	6.1	**14,224**	***8.2***	6,957	*8.2*	7,267	*8.3*	8,140	*4.7*	2,362	12	2005
89	*3.8*	121	5.1	**14,532**	***8.3***	7,062	*8.3*	7,470	*8.4*	8,259	*4.7*	2,565	116	2006
102	*4.2*	123	4.9	**14,649**	***8.3***	7,208	*8.4*	7,441	*8.3*	8,687	*4.9*	2,913	111	2007
115	*4.5*	123	4.7	**14,907**	***8.4***	7,227	*8.3*	7,680	*8.5*	8,510	*4.8*	2,773	86	2008

Appendix 2: Population and Vital Events by Administrative Area, 2008

Area	Estimated population at 30 June 2008	Resident live births		Stillbirths		Infant deaths		Deaths		Marriages	
		Number	Rate[1]	Number	Rate[2]	Number	Rate[3]	Number	Rate[1]	Number	Rate[1]
NORTHERN IRELAND	**1,775,000**	**25,631**	***14.4***	**115**	***4.5***	**123**	**4.7**	**14,907**	***8.4***	**8,510**	***4.8***
Eastern Board	**675,600**	**9,421**	***13.9***	**39**	***4.1***	**44**	***4.7***	**6,416**	***9.5***	**3,117**	**4.6**
Ards	**77,600**	971	*12.5*	1	*1.0*	2	*2.1*	656	*8.5*	295	*3.8*
Belfast	**268,300**	3,883	*14.5*	18	*4.6*	27	*6.9*	2,889	*10.8*	1,336	*5.0*
Castlereagh	**66,200**	862	*13.0*	-	-	3	*3.5*	628	*9.5*	186	*2.8*
Down	**69,800**	979	*14.0*	4	*4.1*	4	*4.1*	564	*8.1*	357	*5.1*
Lisburn	**114,800**	1,751	*15.3*	11	*6.2*	6	*3.4*	858	*7.5*	463	*4.0*
North Down	**78,900**	975	*12.4*	5	*5.1*	2	*2.1*	821	*10.4*	480	*6.1*
Northern Board	**453,800**	**6,347**	***14.0***	**29**	***4.5***	**29**	***4.6***	**3,684**	***8.1***	**2,126**	***4.7***
Antrim	**53,200**	857	*16.1*	2	*2.3*	4	*4.7*	376	*7.1*	262	*4.9*
Ballymena	**62,700**	852	*13.6*	4	*4.7*	5	*5.9*	531	*8.5*	375	*6.0*
Ballymoney	**30,100**	412	*13.7*	2	*4.8*	-	-	225	*7.5*	166	*5.5*
Carrickfergus	**40,000**	498	*12.4*	2	*4.0*	2	*4.0*	341	*8.5*	158	*3.9*
Coleraine	**57,000**	725	*12.7*	4	*5.5*	4	*5.5*	483	*8.5*	291	*5.1*
Cookstown	**35,900**	533	*14.8*	3	*5.6*	1	*1.9*	284	*7.9*	209	*5.8*
Larne	**31,300**	347	*11.1*	1	*2.9*	2	*5.8*	292	*9.3*	138	*4.4*
Magherafelt	**43,800**	720	*16.4*	6	*8.3*	1	*1.4*	289	*6.6*	196	*4.5*
Moyle	**16,900**	203	*12.0*	1	*4.9*	1	*4.9*	149	*8.8*	103	*6.1*
Newtownabbey	**82,700**	1,200	*14.5*	4	*3.3*	9	*7.5*	714	*8.6*	228	*2.8*
Southern Board	**348,700**	**5,591**	***16.0***	**29**	***5.2***	**30**	***5.0***	**2,630**	***7.5***	**1,729**	***5.0***
Armagh	**58,200**	884	*15.2*	3	*3.4*	5	*5.7*	463	*8.0*	350	*6.0*
Banbridge	**47,000**	733	*15.6*	5	*6.8*	3	*4.1*	354	*7.5*	188	*4.0*
Craigavon	**90,800**	1,470	*16.2*	9	*6.1*	10	*6.6*	671	*7.4*	356	*3.9*
Dungannon	**55,400**	911	*16.4*	6	*6.5*	2	*2.2*	435	*7.9*	297	*5.4*
Newry & Mourne	**97,300**	1,593	*16.4*	6	*3.8*	10	*5.1*	707	*7.3*	538	*5.5*
Western Board	**296,900**	**4,272**	***14.4***	**18**	***4.2***	**20**	***4.5***	**2,177**	***7.3***	**1,538**	***5.2***
Fermanagh	**62,000**	876	*14.1*	2	*2.3*	4	*4.4*	514	*8.3*	424	*6.8*
Limavady	**34,100**	458	*13.4*	1	*2.2*	3	*6.6*	222	*6.5*	167	*4.9*
Derry	**109,100**	1,648	*15.1*	7	*4.2*	7	*3.9*	767	*7.0*	485	*4.4*
Omagh	**52,100**	719	*13.8*	4	*5.5*	1	*1.4*	345	*6.6*	275	*5.3*
Strabane	**39,600**	571	*14.4*	4	*7.0*	5	*8.8*	329	*8.3*	187	*4.7*

See Appendix 3 - for notes on change in definition of stillbirths that took place in 1992

[1] Rate per 1,000 population
[2] Rate per 1,000 resident live and still births
[3] Rate per 1,000 live births (resident and non-resident)

Appendix 3: Notes and Definitions

Population Data

All population figures refer to estimates or projections as at the 30 of June of the year in question. Ages relate to age last birthday at the date shown.

Natural Increase

Natural increase is equal to total births minus total deaths.

Marriages

Marriage rates relate to the number of marriages solemnised and not to the number of persons married. The number of marriages relates to those registered in Northern Ireland, thus it does not include Northern Ireland residents who get married outside Northern Ireland, but does include non Northern Ireland residents getting married in Northern Ireland.

Divorces

Divorce statistics have been compiled from returns of 'Decrees made Absolute' supplied by the Northern Ireland Court Service and include nullities of marriage.

Information on the number of ‘Decree Nisis’ is published by the Northern Ireland Court Service. A Decree Nisi does not terminate the marriage; a couple are still married until the Decree Absolute has been granted.

Date of Registration and Date of Occurrence

All the data presented on births, stillbirths, marriages, civil partnerships and deaths relate to the date of registration of the event and not to the date of occurrence. For events such as infant death or suicide, which are likely to be referred to the coroner, it can take some time for the event to be registered.

Place of Occurrence

Births, stillbirths and deaths have been allocated to the area of usual residence if it is in Northern Ireland, otherwise they have been allocated to the area of occurrence. Marriage and civil partnership figures relate to the area of occurrence.

Marital Status of Parents

The following terms are used throughout the report:

Married parents: refers to parents who are married to each other at time of registration of birth.

Unmarried parents: refers to parents who are unmarried or married but not to each other at time of registration of birth.

Births

The births presented in this report (since 1981) do not include births to non Northern Ireland resident mothers unless otherwise stated.

Stillbirths

The **Stillbirth (Definition) Act 1992** redefined a stillbirth, from 1 October 1992, as a child which had issued forth from its mother after the 24th week of pregnancy and which did not breath or show any other sign of life. Prior to 1 October 1992 the statistics related to events occurring after the 28th week of pregnancy.

A stillbirth rate refers to the number of stillbirths per 1,000 live and still births.

The stillbirths presented in this report (since 1981) do not include stillbirths to non Northern Ireland resident mothers.

Perinatal Deaths

Perinatal deaths refer to stillbirths and deaths in the first week of life.

A **perinatal death rate** refers to the number of perinatal deaths per 1,000 live and still births (including non Northern Ireland residents).

Perinatal deaths presented in this report include stillbirths and infant deaths to non Northern Ireland residents.

Neonatal Deaths

Neonatal deaths refer to deaths in the first four weeks of life.

A **neonatal death rate** refers to the number of neonatal deaths per 1,000 live births (including non Northern Ireland residents).

Postneonatal Deaths

Postneonatal deaths refer to deaths after the first four weeks but before the end of the first year.

A **postneonatal death rate** refers to the number of postneonatal deaths per 1,000 live births (including non Northern Ireland residents).

Infant Deaths

Infant deaths refer to all deaths in the first year of life.

An **infant death rate** refers to the number of infant deaths per 1,000 live births (including non Northern Ireland residents).

Deaths

The deaths represented in this report refer to all deaths which occurred in Northern Ireland. They include those which occurred in Northern Ireland to non Northern Ireland residents, but exclude those occurring to Northern Ireland residents outside Northern Ireland.

Suicide, Self-Inflicted Injury and Events of Undetermined Intent

In the UK, in considering suicide events it is conventional to include cases where the cause of death is classified as either 'Suicide and self-inflicted injury' or 'Undetermined injury'. The ICD10 codes used for 'Suicide and self-inflicted injury' are X60-X84 and Y87.0, and the ICD10 codes used for 'Undetermined injury' are Y10-Y34 and Y87.2. (Also see note on registration and occurrence).

Prior to 2004 there were seven coroner's districts in Northern Ireland, following a review of the coroner's service the separate districts were amalgamated into one centralised coroner's service. This change may affect the timing of registration of deaths with statistics from 2004 onwards being more timely and consistent.

Smoking Related Deaths

Information is not recorded on the death certificate on whether the deceased was a smoker. Estimates can however be made of the number of deaths attributable to smoking, by using information on the contribution of smoking to specific conditions for example lung cancer which are recorded at death.

Research has been undertaken by the Health Development Agency to derive attributable proportions of smoking related deaths based on published relative risk factors for mortality of current and ex-smokers from various diseases, counts of death by cause, and estimates of current and ex-smoking behaviour.

For further information on the causes of death and attributable proportions used to define smoking related deaths see:

http://www.nice.org.uk/niceMedia/documents/smoking_epidemic.pdf

Alcohol Related Deaths

The figures in this report are based on the UK-wide harmonised definition of alcohol related deaths. The definition of alcohol related deaths includes those causes of death regarded as most directly due to alcohol consumption. It does not include other diseases where alcohol has been shown to have some causal relationship, such as cancers of the mouth, oesophagus and liver. The definition includes all deaths from chronic liver disease and cirrhosis (excluding biliary cirrhosis), even when alcohol is not specifically mentioned on the death certificate.

Apart from deaths due to poisoning with alcohol (accidental, intentional or undetermined), this definition excludes any other external causes of death, such as road traffic deaths and other accidents.

Further details on the UK definition and a list of the ICD9 and ICD10 codes used to code alcohol related deaths can be found at:

http://www.statistics.gov.uk/statbase/Product.asp?vlnk=14496

Drug Related Deaths

A death is considered to be a drug related death if the underlying cause of death recorded on the death certificate is drug poisoning, drug abuse or drug dependence. These deaths can be identified solely through the International Classification of Diseases (ICD). The ICD9 and ICD10 codes used to define these deaths are listed in the table below.

ICD10 Underlying Cause Code	ICD9 Underlying Cause Code	Description
F11–F16, F18–F19	292, 304, 305.2–305.9	Mental and behavioural disorders due to drug use (excluding alcohol and tobacco)
X40–X44	E850–E858	Accidental poisoning by drugs, medicaments and biological substances
X60–X64	E950.0–E950.5	Intentional self-poisoning by drugs, medicaments and biological substances
X85	E962.0	Assault by drugs, medicaments and biological substances
Y10–Y14	E980.0–E980.5	Poisoning by drugs, medicaments and biological substances, undetermined intent

Asbestos Related Deaths

Asbestos exposure can result in a number of life threatening illnesses including asbestosis, a lung disease which restricts breathing, and also mesothelioma which is a cancer of the lung.

In this report, asbestos related deaths have been defined as those deaths where asbestosis and/or mesothelioma have been mentioned on the death certificate either as a primary or secondary cause.

Further details on the definition used for asbestos related deaths can be found on the Health and Safety Executive website at:

http://www.hseni.gov.uk/index/information_and_guidance/general_hseniinfo/statistics.htm

Healthcare Associated Infections

In this report deaths related to healthcare associated infection solely relate to Methicillin resistant *Staphylococcus aureus* (MRSA) and *Clostridium difficile*. It is not possible to identify directly from the ICD codes all deaths where MRSA or *Clostridium difficile* contributed to a death. Data within this report has been collated by looking for all mentions of either MRSA or *Clostridium difficile* on the death certificate.

Crude Birth and Death Rates

A **crude rate** refers to the number of occurrences of the event per 1,000 population.

Age Standardisation

A straight comparison of crude death rates between areas may present a misleading picture because of differences in the sex and age structure of the respective populations. The technique of standardisation is used to remedy this. In general, standardisation involves a comparison of the actual number of events occurring in an area with the aggregate number expected if the age/sex specific rates in the standard population were applied to the age/sex groups of the observed population. The results are expressed either as standardised rates or as standardised mortality ratios (SMRs) where the standard ratio (for Northern Ireland) equals 100.

In some areas the presentation of standardised rates for only one year's deaths may not provide a full picture of the underlying standardised death rates. It is therefore advisable to use the 3 years rates provided (**Figure 1.27**).

Significance of SMRs

The estimation of SMRs by LGD and Health Board invites the question of whether such SMRs are different from the Northern Ireland average (100). The statistical significance of the SMRs has been examined by estimating the probability that the difference between an observed SMR and 100 might have resulted from chance variation; where this probability is less than 0.05 (one in 20) the particular SMR has been classified as statistically significantly ($p<0.05$) different from 100. More details on the method can be obtained from Demography and Methodology Branch.

Total Period Fertility Rate (TPFR)

The TPFR is the average number of children that would be born to a cohort of women who experienced, throughout their childbearing years, the fertility rates of the calendar year in question.

TPFR Replacement Level

In western countries a TPFR of about 2.1 is required to maintain long-term population levels, assuming no migration.

General Fertility Rate

The general fertility rate is the number of live births per 1,000 women aged 15-44.

The Gross Reproduction Rate

The gross reproduction rate is the average number of live daughters that would be born to a cohort of women who experienced, throughout their childbearing years, the fertility rates of the calendar year in question.

The Net Reproduction Rate

With reference to the gross reproduction rate, the net reproduction rate is the average number of these live daughters that, subject to the mortality rates of the calendar year in question, would survive to their mother's age at the time of birth.

Completed Family Size

Average completed family size is calculated by summing over time the succeeding age specific fertility rates of women born in a particular year. (Such an approximation assumes that the effects of mortality and migration are negligible). However this measure can only calculate a value for women who have reached the end of the main childbearing ages conventional 45 years of age, but there is some value in considering the historical data for cohorts that have reached this age and the partial series for those not yet 45.

Maternities

Maternities refer to the number of pregnancies ending in stillbirths or live births with multiple births counting only once. The number of maternities presented in this report (since 1981) does not include births or stillbirths to non Northern Ireland residents.

National Statistics Socio-economic Classification (NS-SeC)

This new social classification has replaced the previously published Registrar General's Social Class. It is principally based on the individual's occupation and employment status and has been introduced in order to reflect a modern view of social classification. It was introduced from 2001 onwards. Further information can be obtained from the Office for National Statistics at:

http://www.statistics.gov.uk/methods_quality/ns_sec/default.asp.

NS-SeC is determined according to a person's occupation; for children of parents who are married to each other, according to the occupation of the father as stated at birth registration; for children of parents who are not married to each other but who jointly registered the birth, according to the occupation of the father; and for sole registrations, according to the occupation of the mother. The occupations are grouped into the following classes:

NS-SeC I	Higher managerial & professional occupations
NS-SeC II	Lower managerial & professional occupations
NS-SeC III	Intermediate occupations
NS-SeC IV	Small employers & own account workers
NS-SeC V	Lower supervisory & technical occupations
NS-SeC VI	Semi-routine occupations
NS-SeC VII	Routine occupations
NS-SeC VIII	Never worked & long-term unemployed

Cause of Death Coding – ICD10

All deaths and stillbirths registered from the 1 January 2001 have been coded in accordance with the International Statistical Classification of Diseases, Injuries and Causes of Death, (ICD) (Tenth Revision), which has been in operation by international agreement from 1 January 1999.

Classification of the underlying cause of death is done by reference to the death certificate and additional information from the certifying doctor.

Expectation of Life

Expectation of life statistics, previously produced by the Government Actuary's Department (GAD), are now produced by the Office for National Statistics (ONS). Expectations of life can be calculated in two ways: period life expectancy or cohort life expectancy.

Period life expectancies are worked out using the age-specific mortality rates for a given period (either a single year, or a run of years), with no allowance for any later actual or projected changes in mortality.

Cohort life expectancies are worked out using age-specific mortality rates which allow for known or projected changes in mortality in later years.

All statistics for expectation of life in Chapter 1 are based on the period methodology and are produced for single year of age based on three year's deaths and population data with the exception of the cohort figures given in Table 1.3.

Northern Ireland Population Projections

Northern Ireland population projections based on the 2008 mid-year estimates were published in October 2009.

Figure 1.1, 1.8 and **1.9** summarise the results of the latest population projections for Northern Ireland. The assumptions used in this projection are summarised below.

Base population: The projection was based on the Northern Ireland mid-2008 population estimate.

Fertility: The numbers of births for the projections are obtained by applying the appropriate fertility rate to the average number of women at each age during each year of the projection period. For Northern Ireland, long-term average completed family size is assumed to be 1.95 children per woman.

Mortality: The mortality rates for the first year of the projection, 2008-09, are based on the best estimates that could be made in September 2009 of the numbers of deaths at each age. Future improvements in mortality rates are based on the trend in mortality rates in the years up to 2008. In the long term rates of improvement in mortality rates are projected to be one per cent per annum.

Migration: It has been assumed that for each year of the projection period in the long-term there was a net inward migration of 500 from Northern Ireland.

The Northern Ireland population projections are produced by the Office for National Statistics (ONS) at the request of the Registrar General for Northern Ireland. Further information on population projections can be obtained from:

National Population Projections and Life Tables Branch
ONS Centre for Demography
Office for National Statistics
Room D3/05
1 Drummond Gate
LONDON
SW1V 2QQ

Tel: 020 7533 5222
Email: **natpopproj@ons.gsi.gov.uk**
lifetables@ons.gsi.gov.uk
Website: **www.statistics.gov.uk**

Population Projections for Areas within Northern Ireland

NISRA has produced 2006-based population projections for areas within Northern Ireland – Local Government Districts, Health and Social Services Boards, Education and Library Boards and NUTS III areas. These figures are constrained to the 2006-based ONS Northern Ireland totals. The population projections for local areas within Northern Ireland were published in February 2008. Updated population projections for local areas within Northern Ireland based on the 2008-based Northern Ireland projections will be produced in February 2010.

Further information on the population projections for areas within Northern Ireland can be obtained from:

Customer Services
Northern Ireland Statistics and Research Agency
McAuley House
2-14 Castle Street
BELFAST
BT1 1SA

Tel: 028 9034 8160
Fax: 028 9034 8161
Email: census.nisra@dfpni.gov.uk
Website: **http://www.nisra.gov.uk/demography/default.asp3.htm**

Northern Ireland Household Projections

Northern Ireland 2006-based household projections were published in March 2008.

The latest household projections, covering the period 2006 to 2031, incorporate the results of the 2006-based population projections. They also incorporate information from the last two Censuses, to project trends in household formation by type of household and the age of the head of household.

The projections provide an indication of what would happen if past trends continue. They do not take account of policy initiatives, or other factors that may affect future populations.

Further information about the methodology used can be found at the following link:

http://www.nisra.gov.uk/archive/demography/population/household/HProjs_methodology.pdf

Geography used for Data

Since the 2007 Registrar General Annual Report vital statistics by geography are defined using the Pointer address database. In Annual Reports prior to 2007 the geography for vital statistics was defined using the postcode from the address in conjunction with the Central Postcode Directory (CPD).

Pointer is an address database that has been developed by the Land and Property Services, Royal Mail and Local Councils. Pointer gives each address a unique property reference number and geo-spatial coordinates.

In the 2008 report, the address for each registration is linked using the grid-reference of the Pointer unique property reference number to higher geographies. Under the previous CPD method only the postcode of the address was used to define the higher geography. Thus the new method is a more accurate method for allocating births and deaths by geography.

Where it has not been possible to assign a unique property reference number to an address using the Pointer database, the previous CPD method has been used to assign the geography.

UK Data

The Office for National Statistics (ONS) is responsible for producing a wide range of economic and social statistics. It also, for England and Wales, registers life events and holds the Census of Population. Contact details are as follows:

Customer Contact Centre
Room 1.015
Office for National Statistics
Cardiff Road,
NEWPORT
NP10 8XG

Tel: 0845 601 3034
Fax: 0163 365 2747
Email: info@statistics.gsi.gov.uk
Website: **www.statistics.gov.uk**

The General Register Office for Scotland (GROS) is responsible for the registration of births, marriages, deaths, divorces and adoptions in Scotland. They are also responsible for the Census of Population in Scotland which, with other sources of information, is used to produce population statistics. Contact details are as follows:

Customer Services
Dissemination and Census Analysis Branch
General Register Office for Scotland
Ladywell House
Ladywell Road
EDINBURGH
EH12 7TF

Tel: 0131 314 4243
Fax: 0131 314 4696
Email: customer@gro-scotland.gsi.gov.uk
Website: **www.gro-scotland.gov.uk**

Appendix 4: Further Information

Vital Statistics

A wide range of additional information at differing levels of geography (including postcode sector) and for years not included in this edition of the Registrar General's Annual Report is available on request from Customer Services.

Population Statistics

Estimates of the resident population are available by sex and single year of age for each of the Local Government Districts, Health and Social Services Boards, Education and Library Boards, Parliamentary Constituencies and NUTS III areas of Northern Ireland. Population projections are available for the Local Government Districts, Health and Social Services Boards, Education and Library Boards and NUTS III areas by age and sex for a 15 year period after the base year. This information can be obtained from:

Customer Services
Northern Ireland Statistics and Research Agency
McAuley House
2-14 Castle Street
BELFAST
BT1 1SA

Tel: 028 9034 8160
Fax: 028 9034 8161
Email: census.nisra@dfpni.gov.uk
Website: **http://www.nisra.gov.uk/demography/default.asp3.htm**

Migration Statistics

In July 2006, 2007 and 2008 NISRA published three papers outlining analysis undertaken to develop measures of long-term international migration. The papers look at a number of administrative/statistical sources including the Worker Registration Scheme, the Work Permit Scheme and National Insurance Number registrations, to help estimate long-term international migration.

A fourth paper was published in August 2009 which updates these papers providing more up to date statistics. All publications can be found on the NISRA website at the following link:

http://www.nisra.gov.uk/demography/default.asp18.htm

Historical Registrar General Annual Reports

Electronic copies of all Registrar General Annual Reports from 1887 to the present day are now available from the NISRA website. They can be accessed at the following link:

http://www.nisra.gov.uk/demography/default.asp57.htm

Census Office for Northern Ireland

2001 Census Data

Detailed results from the 2001 Census include a wide range of demographic information available for different levels of geography. The headline outputs include:

- Northern Ireland Census 2001 Population Report and Mid-Year Estimates
- Northern Ireland Census 2001 Key Statistics
- Northern Ireland Census 2001 Standard Tables
- Northern Ireland Census 2001 Census Area Statistics
- Northern Ireland Census 2001 Theme Tables
- Northern Ireland Census 2001 Migration, Travel to Work and Workplace Population
- Northern Ireland Census 2001 Univariate Tables

More information on the 2001 Census and statistics available from it can be obtained from:

Census Customer Services
Northern Ireland Statistics and Research Agency
McAuley House
2-14 Castle Street
BELFAST
BT1 1SA

Tel: 028 9034 8160
Fax: 028 9034 8161
Email: census.nisra@dfpni.gov.uk
Website: **http://www.nisranew.nisra.gov.uk/census/start.html**

2011 Census

Preparations are underway for the next Census which is planned for 2011.

Three major phases of testing are planned as part of the 2011 Census development cycle, namely a Census test which took place on 13 May 2007, systems integration test in Autumn 2008 and a dress rehearsal in 2009. Similar arrangements are in place across the rest of the UK.

More information on the 2011 Census, including details of the 2007 Census Test, can be obtained from:

http://www.nisranew.nisra.gov.uk/census/2011_census.html

Northern Ireland Neighbourhood Information Service (NINIS)

The Northern Ireland Neighbourhood Information Service (NINIS) is a dedicated website providing statistics for small areas across Northern Ireland and is available at **www.ninis.nisra.gov.uk**. The NINIS website contains datasets on a range of socio-economic themes at small-area statistical geographies. This includes data from the 2001 Census and detailed aggregate statistical information from various administrative data systems held within Central Government and Non-Departmental Public Bodies. Further information can be obtained from:

Neighbourhood Statistics
Northern Ireland Statistics and Research Agency
McAuley House
2-14 Castle Street
BELFAST
BT1 1SA

Tel: 028 9034 8111
Fax: 028 9034 8134
Email: ninis.nisra@dfpni.gov.uk
Website: **http://www.ninis.nisra.gov.uk**

Northern Ireland Longitudinal Study (NILS)

The Northern Ireland Longitudinal Study (NILS) is a large-scale data linkage study which has been created by linking administrative and statistical data. The Study is designed for statistical and research uses only and is managed under Census legislation. Information is linked over time on people from Census, vital events and health registration datasets. Data sources include 2001 Census data, birth and death registrations and demographic data derived from health registrations.

Northern Ireland Mortality Study (NIMS)

The Northern Ireland Mortality Study (NIMS) is a large-scale data linkage study developed in 2006 that links mortality data from the General Register Office (GRO) to 2001 Census returns. Thus a companion dataset to the full NILS has been developed in which 100 per cent of the population as recorded in the 2001 Census is included. As with the NILS dataset, these anonymised data are held in a safe setting by the Northern Ireland Statistics and Research Agency (NISRA). Like the NILS dataset, the NIMS is designed and maintained for statistical and research uses only and is managed under various legislation including Census legislation.

Further information can be obtained from:

NILS Research Support Unit
Northern Ireland Statistics and Research Agency
McAuley House
2-14 Castle Street
BELFAST
BT1 1SA

Tel: 028 90828210
Fax: 028 90348134
Email: nils-rsu@qub.ac.uk
Website: **http://www.qub.ac.uk/nils**

Divorces – Decree Nisi Information

The information on divorces in this report refers to Decree Absolutes. Information on Decree Nisi's can be obtained from:

The Northern Ireland Court Service
Resource Management Branch
18th Floor
Windsor House
Bedford Street
BELFAST
BT2 7LT

Tel: 028 9032 8594
Fax: 028 9023 8506

Appendix 5: Report on the work of the General Register Office for Northern Ireland (2008)

Introduction

The General Register Office for Northern Ireland (GRONI) is the part of the Northern Ireland Statistics and Research Agency (NISRA) that administers civil registration. The Registrar General for Northern Ireland, who is also Chief Executive of NISRA, heads GRONI. The registration functions of GRONI stem mainly from the statutory responsibilities placed on the Registrar General and include:

- administration of the registration of births, deaths, marriages and civil partnerships through District Registration Offices;
- formalities relating to marriage and conduct of civil marriages;
- formalities relating to civil partnership registration;
- maintenance of historic records of births, deaths, marriages, civil partnerships and adoptions and production of certified copies to applicants on request; and
- registration of adoptions.

The Registrar General has additional related statutory duties relating to the production and publication of vital statistics. Demography and Methodology Branch within NISRA manage these duties in partnership with GRONI.

Aims

The work of GRONI is wide ranging including policy development, oversight and regulation of registration work undertaken by the District Registration Offices, advice on marriage procedures, casework relating to change of name, procedures relating to legal adoptions, production of certified copies of vital events and maintenance and storage of archive records. This is reflected in the fundamental aims of GRONI, which are:

- to register all births, deaths, marriages, civil partnerships and adoptions;
- to ensure that all information collected is relevant, accurate, complete and updated in such a way as to maintain public confidence in the records;
- to support NISRA in the production of accurate vital statistics to assist policy development and research;
- to preserve birth, death, marriage, civil partnership and adoption records permanently and to store them securely; and
- to produce certified copies of records efficiently and promptly on demand.

The aims of GRONI staff are to carry out these statutory obligations, to give accurate and unbiased advice to the public, to act with integrity at all times and to respect the confidentiality of all information contained in registration records or given by the public in confidence. In carrying out these functions, GRONI seeks to act in a manner consistent with the National Statistics Code of Practice and the Citizen's Charter.

Main Activities / Performance Against Key Targets during 2008

Almost 50,800 vital events (births, reregistered births, deaths, marriages, civil partnerships and adoptions) were registered in District Registration Offices and a corresponding number of certificates were issued. In addition, during 2008, GRONI:

- produced 79,756 certificates and of those, 10,453 priority certificates;
- verified 9,041 births, deaths and marriages for government departments;
- provided all death notifications to the Central Services Agency, Electoral Office for Northern Ireland and Department for Work and Pensions; and
- dealt with 4,072 registration related cases.

Each year the Registrar General sets a number of key targets for GRONI. During 2008 these included:

(i) Process 98 per cent of priority personal certificate applications within 1 hour and 98 per cent of telephone, post and online applications on day of receipt if received before 2.30pm.

Achieved. 98 per cent of priority applications were processed within target.

(ii) Process 97 per cent of birth, death, marriage, civil partnership and adoption registration casework within 15 working days.

Achieved. 97 per cent within 15 days.

Reform Developments in 2008

Each year a number of further measures are taken to improve customer services and value for money. In 2008 the main developments included:

- further work on the review of the civil registration service;
- preparation for the digitisation of eight million paper-based records;
- the development and operation of the Disclosure of Death Registration Information Scheme for the prevention of fraud;
- the review of Death Certification processes in Northern Ireland;
- work on Influenza Planning in relation to the registration of excess deaths; and
- the review of fees charged by GRONI.

Each of these is described in turn below.

(i) Review of Registration Service

The Civil Registration Bill (Northern Ireland) was introduced to the Northern Ireland Assembly on 24 June 2008 and received its second reading on 1 July 2008. The Bill completed the Committee Stage in early March with the Department of Finance and Personnel Committee report being published on the Assembly website. The Bill is due to complete the legislative process in late 2009.

(ii) Digitisation of Civil Registration Records

In November 2008 GRONI signed a contract for the digitisation of civil registration records dating back to 1845. This includes births, deaths, marriages, stillbirths and adoptions and will result in all Northern Ireland life event records from the beginning of civil registration being available from the GRO Registration System.

The project will facilitate the electronic production of certificates, leading to significant efficiency savings and the preservation of the historical registration records and will pave the way for future data sharing initiatives.

The existing GRO Registration System has been enhanced by the Supplier, Accenture, who are also carrying out the staged migrations over the duration of the project.

The first successful migration of the digitised records and enhancement of the Registration system took place on 3 August 2009, enabling GRO staff to produce certificates directly from the system for all birth and death registrations from 1973 to date; equalling almost 50 per cent of the business demand for certificate production. By adopting this phased approach, efficiencies and benefits have been delivered early in the project.

The next and most challenging phase of the project is the digitisation of birth records from 1845-1973. These records are hand-written and may prove more complex to scan and transcribe and it is expected that this phase of the project will be completed by 2011.

(iii) Disclosure of Death Registration Information

As part of the ongoing exercise to combat fraud, the Disclosure of Death Registration Information scheme has been established. This scheme is operated through a joint working arrangement between the General Register Offices in England and Wales, Scotland and Northern Ireland and is aimed at stopping the fraudulent use of the identities of the deceased. The scheme enables death registration information to be shared with police, crime investigation agencies and public and private sector organisations, such as other government departments, financial institutions, pension companies and credit reference agencies for the prevention, detection, investigation and prosecution of offences. The first release of information occurred in September 2008. Six organisations have completed the security and licensing processes and now receive death registration information on a monthly basis.

(iv) Review of Death Certification

An Inter-Departmental Steering Group has been established in Northern Ireland to examine and review the existing process of death certification in Northern Ireland in light of the Shipman Inquiry and the Luce Review. The Group consists of representatives from stakeholder organisations involved in the current death certification process and is co-chaired by DHSSPS and GRONI. The remit of the Group is to examine and review the existing process of death certification in Northern Ireland and determine proposals for an improved system which would provide a unified system for death certification and provide assurance and independence in the process. An agreed option for the future of death certification in Northern Ireland will be put forward with a formal public

consultation document being issued for widespread public consultation in Northern Ireland.

(v) Influenza Planning

GRONI have been involved in ongoing work in relation to influenza planning to ensure that the registration service, which by law the Registrar General is responsible for, is equipped to deal with an increased number of deaths in a pandemic situation. GRONI are represented on the Pandemic Fatalities Management Sub Group led by DHSSPS and NIO. This is a sub group of the Civil Contingencies Group, Northern Ireland (CCGNI). Membership of the Group consists of organisations involved in the death processes and the aim of the group is to identify different ways of working in a pandemic situation, what the implications of the changes would be for other parts of the system and how different ways of working would be coordinated and managed to ensure that all organisations work together to achieve the best possible outcome. The group has been preparing a planning document in relation to influenza planning which it is anticipated will be issued for consultation later this year.

(vi) Annual review of civil registration fees

Each year GRONI review the statutory fees charged for registration services against costs. The review indicated that an increase in fees in relation to birth, death, marriage and civil partnership certificates was not necessary at present.

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