Cardiovascular health and wellbeing profile for Northern Ireland

Health impact assessment
Northern Ireland cardiovascular service framework

HSC **Public Health Agency**

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Introduction

This community profile has been compiled to inform the health impact assessment (HIA) of the cardiovascular health and wellbeing service framework (CVSFW), which will be referred to as circulatory health and wellbeing in the document to avoid confusion with cerebrovascular disease (CVD), ie stroke.

The statistics paint a picture that demonstrates how the factors impacting on circulatory health and wellbeing are distributed across local geography and distinct population groups.

This approach has been chosen to improve understanding of the health needs of people in Northern Ireland. Meeting these will not only improve cardiovascular health and wellbeing, but also address existing inequities in the effective use of Health and Social Care (HSC) services.

Ultimately, this will increase the ability of health and social services to reverse the trend of widening and unjust gaps between wealthy and deprived people in Northern Ireland.

1. Demography

1.1 Population projections

It is well known that the population of Northern Ireland is growing older. This has obvious implications not only for demands on services, but also for the way we organise those services. The following tables show how numbers of older people are going to increase in relation to younger people.

Table 1: Population projections for 2010, 2015 and 2020

Age	2010			2015			2020		
	Males	Females	All	Males	Females	All	Males	Females	All
0–19	245,603	232,478	478,081	244,150	231,220	475,370	245,715	233,972	479,687
20–34	190,160	186,397	376,557	199,741	191,252	390,993	196,734	183,324	380,058
35–49	185,262	193,612	378,874	177,485	185,873	363,358	178,558	186,371	364,929
50–64	149,332	154,507	303,839	161,672	169,148	330,820	172,070	183,926	355,996
65–74	67,689	75,748	143,437	76,828	84,751	161,579	82,981	89,137	172,118
75+	45,792	72,903	118,695	54,981	79,951	134,932	67,586	91,108	158,694
Total	883,838	915,645	1,799,483	914,857	942,195	1,857,052	943,644	967,838	1,911,482

Source: NISRA and compiled by Performance management and service improvement, HSCB 2010

Table 2: Population projections (percentage change) for 2010, 2015 and 2020

Age	2010–2015			2015–2020			2010–2020		
	Males	Females	All	Males	Females	All	Males	Females	All
0–19	-0.6%	-0.5%	-0.6%	0.6%	1.2%	0.9%	0.0%	0.6%	0.3%
20–34	5.0%	2.6%	3.8%	-1.5%	-4.1%	-2.8%	3.5%	-1.6%	0.9%
35–49	-4.2%	-4.0%	-4.1%	0.6%	0.3%	0.4%	-3.6%	-3.7%	-3.7%
50–64	8.3%	9.5%	8.9%	6.4%	8.7%	7.6%	15.2%	19.0%	17.2%
65–74	13.5%	11.9%	12.6%	8.0%	5.2%	6.5%	22.6%	17.7%	20.0%
75+	20.1%	9.7%	13.7%	22.9%	14.0%	17.6%	47.6%	25.0%	33.7%
Total	3.5%	2.9%	3.2%	3.1%	2.7%	2.9%	6.8%	5.7%	6.2%

Source: NISRA and compiled by Performance management and service improvement, HSCB 2010

Table 2 shows a reduction of people aged 0–19 in the years 2010–15. Over the longer period, these figures appear to stabilise. There is, however, a predicted decrease in the percentage of 35–49 year olds over the period 2010–20. The greatest increase is in the 75+ age group.

As older people are most likely to use HSC services, there is a need to ensure that services are in place to meet the needs of our ageing population.

1.2 Migration

Over the past few years, Northern Ireland has become home to significant numbers of migrant workers. Health card registration appears to be the best way of calculating the numbers of people choosing Northern Ireland as a place to live and to work. Table 3 shows registrations by local government district (LGD), while Figure 1 presents registration data by country of origin.

Table 3: Health card registrations from outside UK by LGD, 2005–08

Area	No. of health card registrations 2005 (% of Northern Ireland registrations)	No. of health card registrations 2006 (% of Northern Ireland registrations)	No. of health card registrations 2007 (% of Northern Ireland registrations)	No. of health card registrations 2008 (% of Northern Ireland registrations)
Antrim	411 (3%)	626 (3%)	663 (3%)	471 (3%)
Ards	191 (1%)	239 (1%)	237 (1%)	263 (2%)
Armagh	505 (4%)	629 (3%)	693 (4%)	514 (3%)
Ballymena	488 (4%)	736 (4%)	854 (4%)	688 (4%)
Ballymoney	79 (1%)	126 (1%)	142 (1%)	125 (1%)
Banbridge	180 (1%)	211 (1%)	248 (1%)	167 (1%)
Belfast	2,937 (22%)	3,935 (22%)	4,465 (23%)	4,082 (27%)
Carrickfergus	102 (1%)	125 (1%)	169 (1%)	151 (1%)
Castlereagh	227 (2%)	242 (1%)	257 (1%)	292 (2%)
Coleraine	605 (4%)	677 (4%)	647 (3%)	491 (3%)
Cookstown	334 (2%)	445 (2%)	500 (3%)	348 (2%)
Craigavon	1,288 (9%)	1,557 (9%)	1,463 (8%)	1,109 (7%)
Derry	641 (5%)	775 (4%)	707 (4%)	598 (4%)
Down	186 (1%)	347 (2%)	441 (2%)	288 (2%)
Dungannon	1,413 (10%)	1,703 (9%)	1,839 (10%)	1,226 (8%)
Fermanagh	538 (4%)	757 (4%)	782 (4%)	589 (4%)
Larne	44 (0.3%)	95 (1%)	89 (1%)	89 (1%)
Limavady	199 (1%)	235 (1%)	217 (1%)	95 (1%)
Lisburn	497 (4%)	822 (5%)	707 (4%)	550 (4%)
Magherafelt	285 (2%)	462 (3%)	468 (2%)	362 (2%)
Moyle	48 (0.3%)	70 (0.4%)	77 (0.4%)	69 (0.4%)
Newry and Mourne	995 (7%)	1,557 (9%)	1,667 (9%)	1,221 (8%)
Newtownabbey	467 (3%)	550 (3%)	650 (3%)	511 (3%)
North Down	303 (2%)	392 (2%)	439 (2%)	339 (2%)
Omagh	491 (4%)	583 (3%)	709 (4%)	486 (3%)
Strabane	153 (1%)	222 (1%)	239 (1%)	204 (1%)
LGD unknown	-	-	-	22 (0.1%)
Northern Ireland	13,607	18,118	19,369	15,350

Source: Southern IfH Partnership, PHA

Figure 1: Health card registrations from outside UK by country of last residence, 2005–08
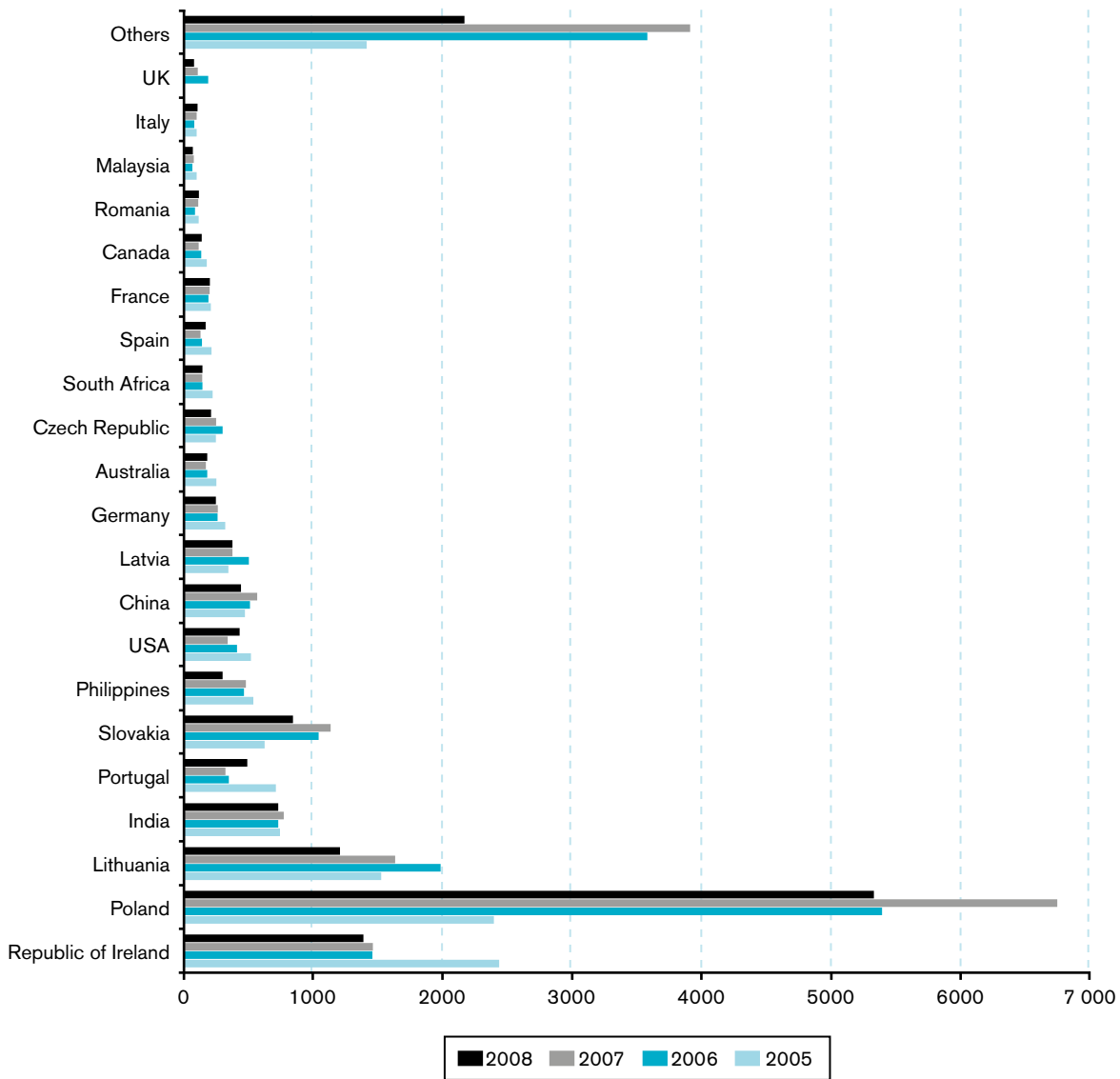
Source: Southern IfH Partnership, PHA (estimates based on some incomplete datasets)

In this section, national insurance (NI) registrations are also included to give another perspective on changes in the Northern Ireland population.

Table 4: Number of non-UK nationals allocated a NI number by LGD, 2004–05 and 2005–06

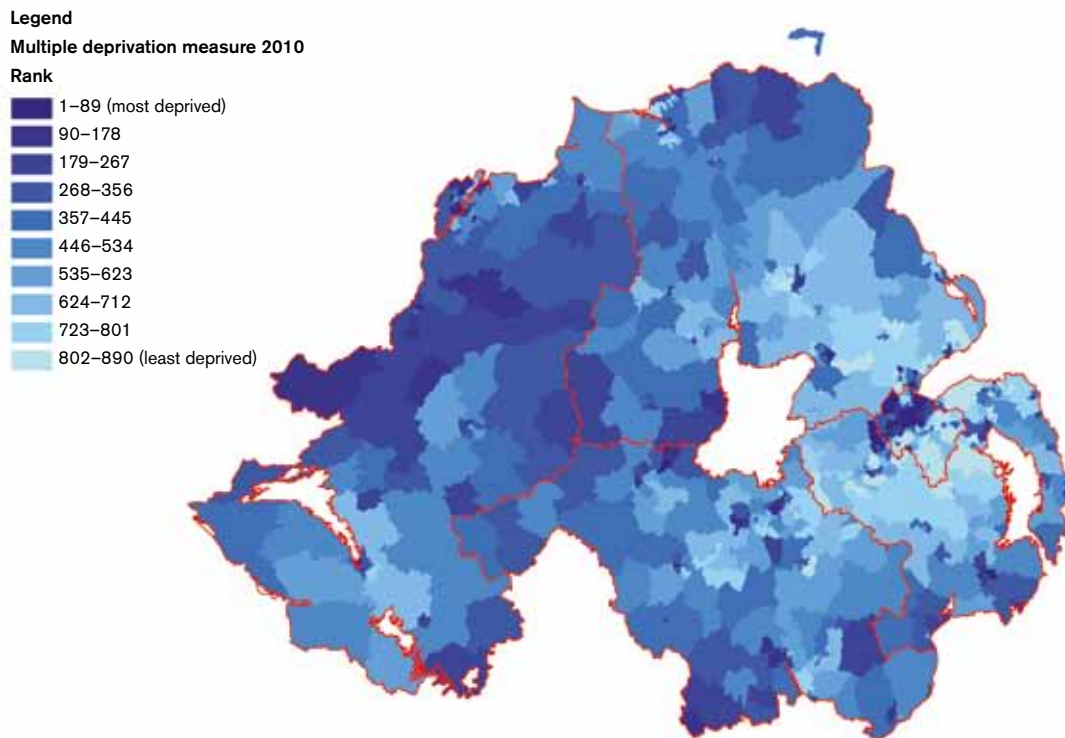| Area	NI numbers allocated 2004–05 (% of Northern Ireland allocation)	NI numbers allocated 2005–06 (% of Northern Ireland allocation)
Antrim	165 (2.8%)	430 (3%)
Ards	84 (1.4%)	227 (1%)
Armagh	180 (3.1%)	559 (4%)
Ballymena	174 (3.0%)	611 (4%)
Ballymoney	20 (0.3%)	110 (1%)
Banbridge	58 (1.0%)	168 (1%)
Belfast	1,851 (31.8%)	4,705 (30%)
Carrickfergus	43 (0.7%)	109 (1%)
Castlereagh	139 (2.4%)	263 (2%)
Coleraine	113 (1.9%)	445 (3%)
Cookstown	125 (2.1%)	434 (3%)
Craigavon	368 (6.3%)	1,424 (9%)
Derry	213 (3.7%)	452 (3%)
Down	109 (1.9%)	195 (1%)
Dungannon	606 (10.4%)	1,098 (7%)
Fermanagh	128 (2.2%)	396 (3%)
Larne	34 (0.6%)	71 (0.5%)
Limavady	41 (0.7%)	165 (1%)
Lisburn	252 (4.3%)	671 (4%)
Magherafelt	82 (1.4%)	392 (3%)
Moyle	24 (0.4%)	21 (0.1%)
Newry and Mourne	326 (5.6%)	1,027 (7%)
Newtownabbey	178 (3.0%)	326 (2%)
North Down	121 (2.1%)	273 (2%)
Omagh	131 (2.2%)	339 (2%)
Strabane	41 (0.7%)	92 (1%)
LGD unknown	220 (3.8%)	611 (4%)
Northern Ireland	5,826	15,614

Source: Southern IfH Partnership, PHA

2. Deprivation

The latest figures provided at super output area (SOA) level show that very deprived areas are concentrated in a number of areas around Belfast and Derry/Londonderry. Of the 890 SOAs in Northern Ireland, Belfast has 51 SOAs in the top 10% of most deprived areas while Derry/Londonderry has 27 SOAs in the top 10%.

Measuring deprivation is particularly relevant to health as there is a proven link for health outcomes between levels of deprivation and factors such as life expectancy and mortality rates. People living in deprived areas are much more likely to die at a younger age than those living in the least deprived areas.

Figure 2: Levels of deprivation by SOA across Northern Ireland

Legend
Multiple deprivation measure 2010
Rank

- 1–89 (most deprived)
- 90–178
- 179–267
- 268–356
- 357–445
- 446–534
- 535–623
- 624–712
- 723–801
- 802–890 (least deprived)

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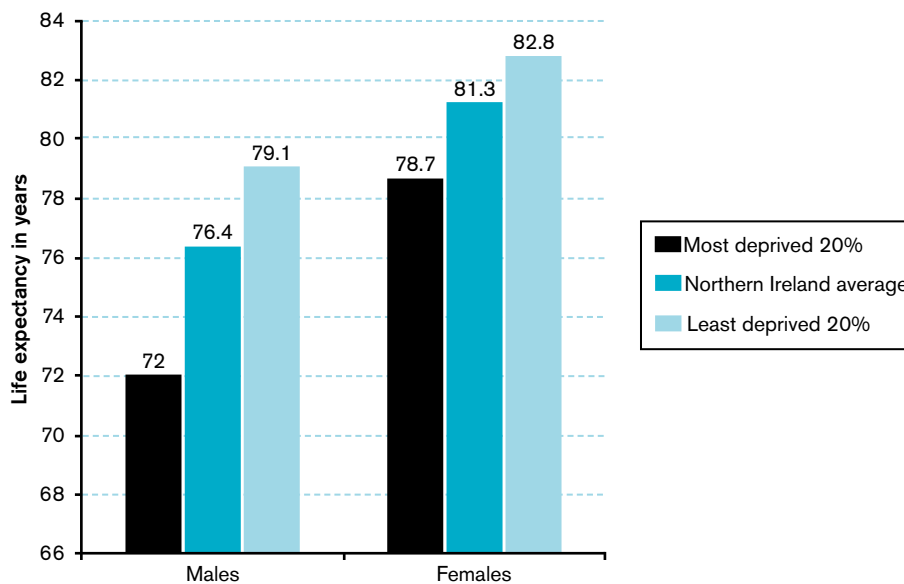
3. Health

3.1 Life expectancy

People who live in the 20% most deprived areas are 40% more likely to die from all causes before age 75 than the Northern Ireland average. In the years 2006–08, males living in the 20% least deprived areas could expect to live seven years longer than their counterparts in the 20% most deprived areas. For females, this gap was five years.

In 2001–08, the gap in life expectancy increased slightly for males, but decreased for females. Figure 3 compares the differences in life expectancy between those most deprived and those least deprived against the Northern Ireland average.

Figure 3: Life expectancy in Northern Ireland, 2006–08

Source: Northern Ireland Health Inequalities Monitoring System via Health Intelligence Unit, PHA 2010

3.2 Mortality

Ischaemic heart disease (IHD) and CVD accounted for 19% of deaths of people aged 15–74 years from 2001–08. In the same period, IHD and CVD accounted for the deaths of 30% of those aged 75 and over.

The mortality rate for CVD and IHD for those living in the most deprived socioeconomic group is significantly higher than for those in the highest socioeconomic group.

Figure 4: Standardised death rate from circulatory disease before age 75
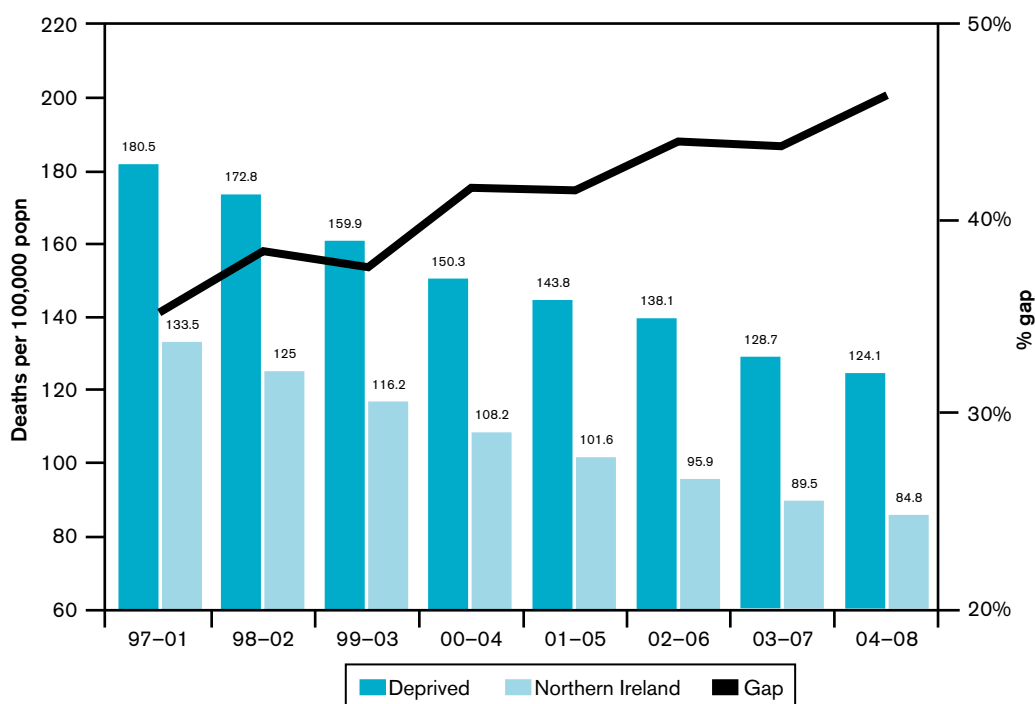

Source: Northern Ireland Inequalities Monitoring System from General Register Office/Project Support Analysis Branch

The standardised death rate due to circulatory disease has fallen by 36% since 2001 – from 133.5 deaths per 100,000 population to 84.8 by 2008. But this improvement has not been evenly distributed: in the most deprived areas, the rate fell by only 31% to reach 124.1 deaths per 100,000 population.

Therefore, the inequality gap actually increased from 35% in 2001 to 46% in 2008. The male gap increased from 38% to 47% over the same period, while the female gap increased from 40% to 48%.

People in the most deprived socioeconomic quintile are 40% more likely to die before age 75 from circulatory diseases than the Northern Ireland average, and are 80% more likely to die before age 75 than those in the least deprived areas (see Figure 5).

Figure 5: Mortality rates from CVD across socioeconomic quintiles (under 75 years, Northern Ireland 2001–08)
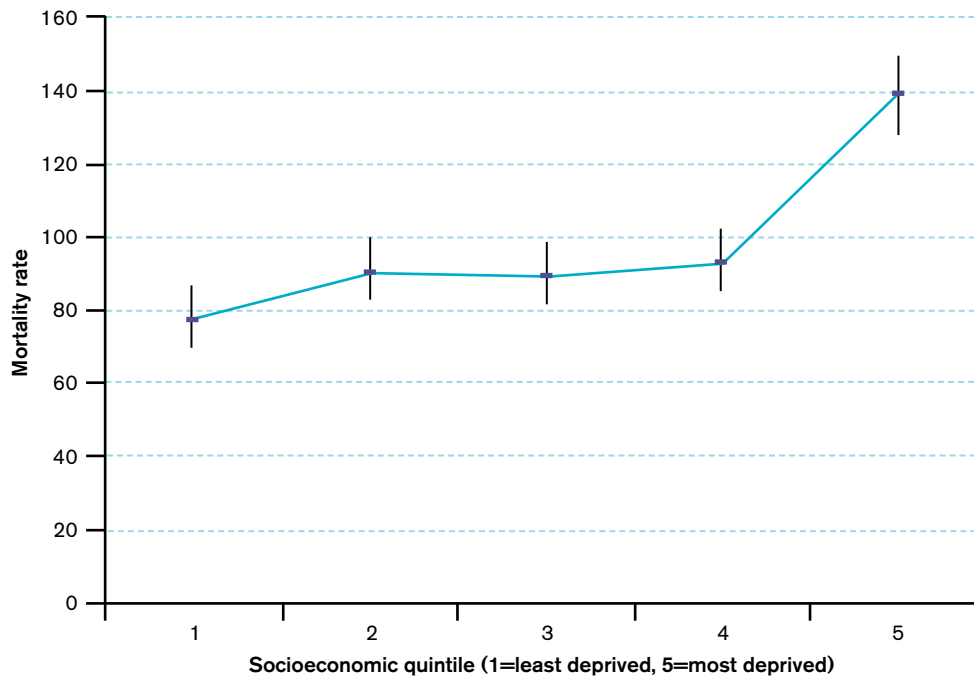
Mortality from IHD shows a similar pattern – those in the most deprived quintile are 40% more likely to die before 75 than the Northern Ireland average, and more than twice as likely as the least deprived (see Figure 6).

Figure 6: Mortality rates from IHD across socioeconomic quintiles (under 75 years, Northern Ireland 2001–08)
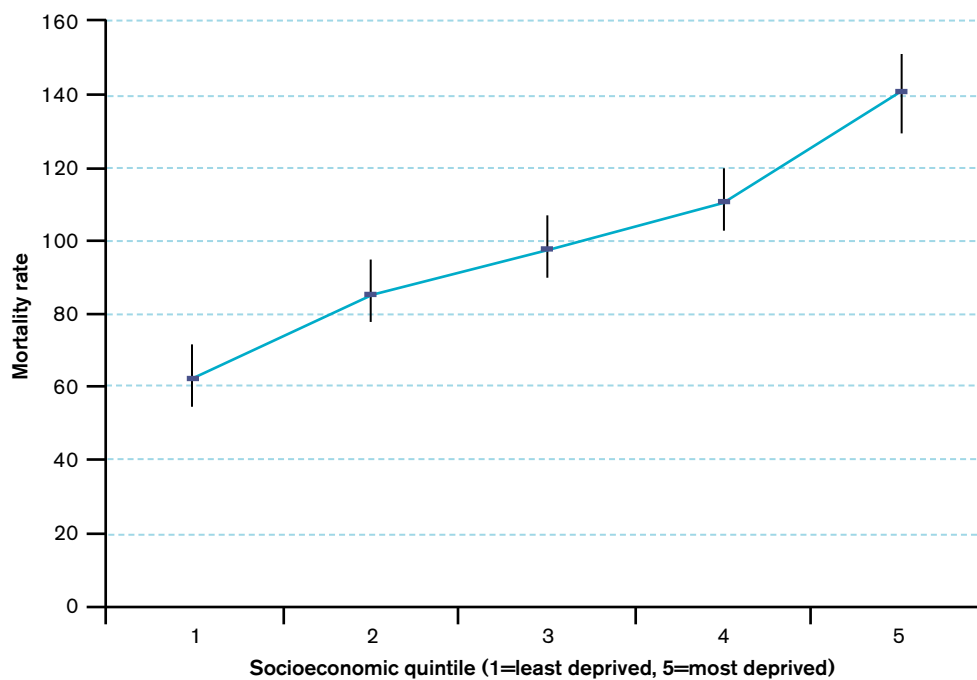
Between 2001–02 and 2008–09, the number of hospital admissions increased in Northern Ireland as a whole by 9%, but decreased in deprived areas by 2%.

In the period 2001–02 and 2006–07, there was a steady decline in the standardised admission rate (SAR) for all inpatients in the most deprived areas from 28%, to 10% higher than the Northern Ireland rate. Since then, the deprived SAR has risen to and remained around 15% higher than the regional average rate.

Figure 7: SAR to hospital (all admissions)
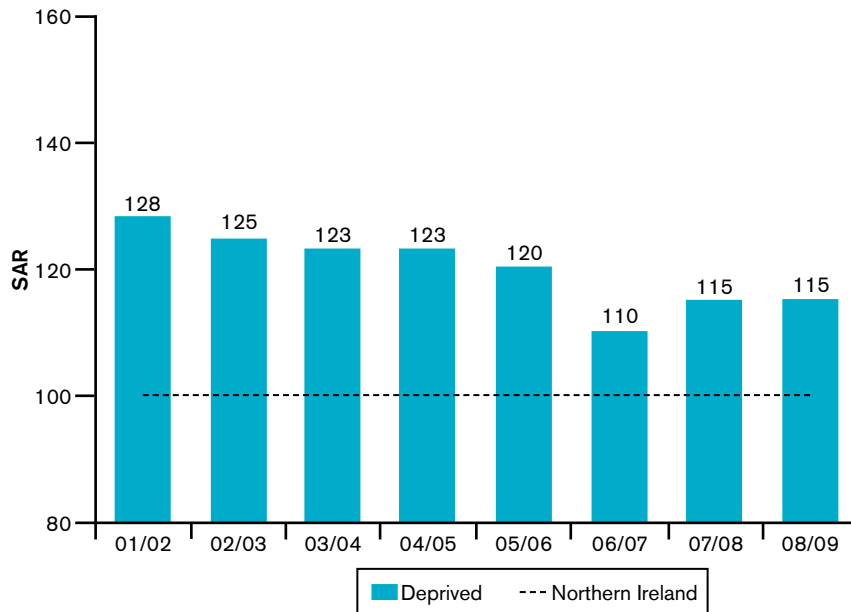
Source: Northern Ireland Health Inequalities Monitoring System from Hospital Inpatients System/Project Support Analysis Branch

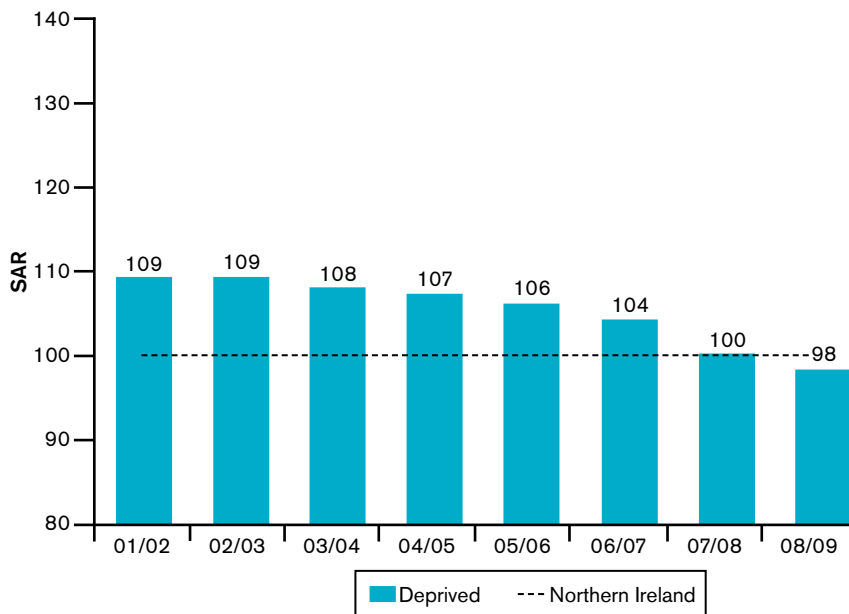**Figure 8: SAR to hospital (emergency admissions)**
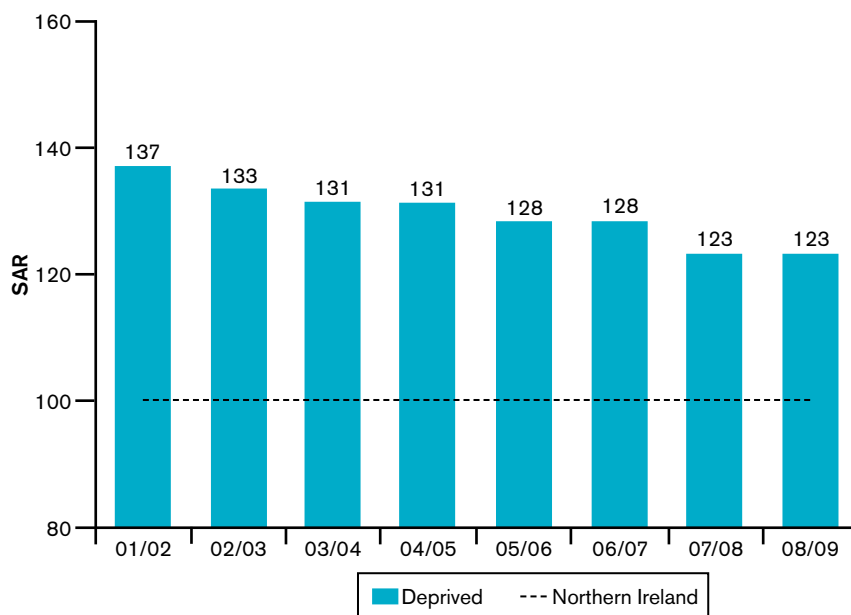
Source: Northern Ireland Health Inequalities Monitoring System from Hospital Inpatients System/Project Support Analysis Branch

Between 2001–02 and 2008–09, the number of emergency admissions in deprived areas fell by 5%. In contrast, emergency admissions increased by 7% in Northern Ireland generally over the same period.

This caused a relative decline in the emergency admission rate in deprived areas from 37% higher than the Northern Ireland average in 2001–02, to 23% higher in 2008–09 (provisional figures). The admission rates for males and females were 29% and 18% higher in deprived areas respectively.

Figure 9: SAR to hospital (elective admissions)

Source: Northern Ireland Health Inequalities Monitoring System from Hospital Inpatients System/Project Support Analysis Branch

Over the period, the elective SAR to hospital declined gradually in deprived areas, from 9% higher in 2001–02 to 2% lower in 2008–09 (provisional) than the overall Northern Ireland rate.

Given that people living in socially disadvantaged areas generally experience poorer health, it is likely that this apparent improvement actually reflects decreasing access to elective care within these more deprived areas.

3.3 Potential years of life lost

In 2001, the average number of potential years of life lost (PYLL) per 100 persons in Northern Ireland as a whole was 6.0 years, compared with 8.7 years per 100 persons in the most deprived areas (a gap of 45%). Similarly in 2008, 5.8 years were lost per 100 persons in Northern Ireland and 8.6 years in deprived areas.

Figure 10: PYLL
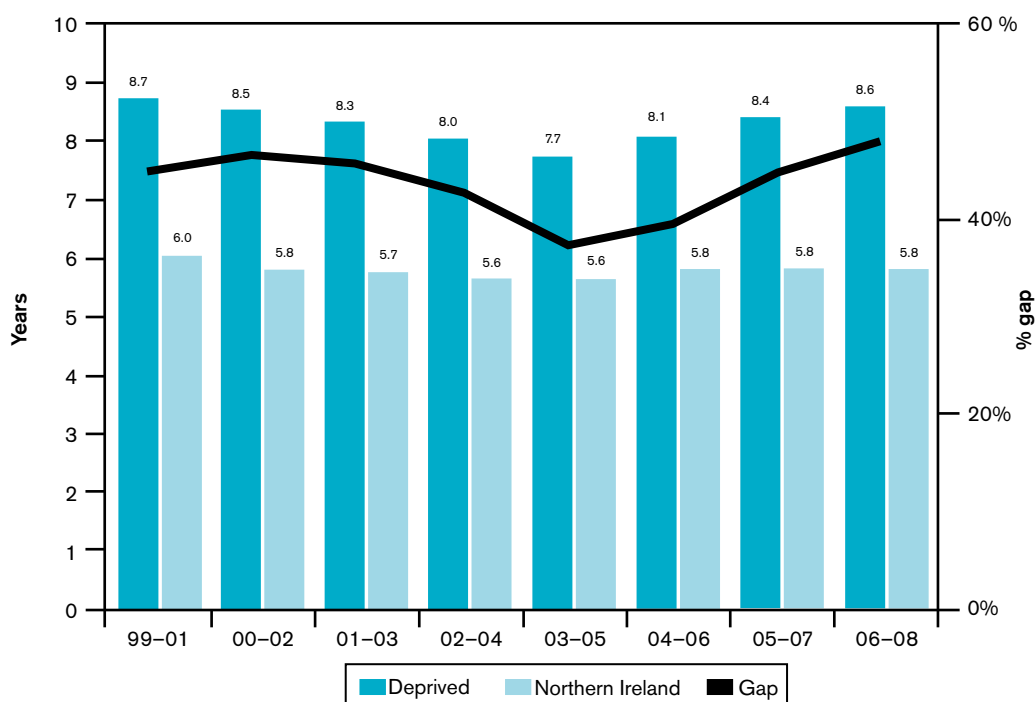
There was a decline in the gap between 2002 and 2005; however, since then the gap has increased and now is slightly larger than that experienced in 2001 (PYLL around 48% higher in deprived areas). Over the period, PYLL fell for females but increased for males in deprived areas.

The following tables taken from the 2008 core tables in the *Director of public health annual report 2009* indicate PYLL due to IHD and CVD by LCG (local commissioning group).

Table 5: PYLL through IHD and CVD in Northern Ireland

Condition	Males	Females	Persons
Ischaemic heart disease	6,935	2,185	9,120
Cerebrovascular disease	1,615	1,525	3,140

Table 6: PYLL through IHD by LCG area

LCG	Ishaemic heart disease		
	Males	Females	Persons
Belfast	1,585	510	2,095
Northern	1,805	490	2,295
South Eastern	1,045	535	1,580
Southern	1,265	460	1,725
Western	1,255	190	1,445

Table 7: PYLL through CVD by LCG area

LCG	Cerebrovascular disease		
	Males	Females	Persons
Belfast	395	465	860
Northern	485	290	775
South Eastern	345	265	610
Southern	185	295	480
Western	205	210	415

3.4 Disability and limiting long-term illness

According to the NISRA (2007) report on disability, *The prevalence of disability and activity limitations amongst adults and children living in private households in Northern Ireland*, 18% of the population of Northern Ireland are limited in their daily activities for reasons of a disability or other long-term condition.

At a household level, almost two out of every five (37%) Northern Ireland households include at least one person with a disability. Around one-fifth of these households contain more than one person with a disability.

Over one-fifth (21%) of adults in Northern Ireland have at least one disability. Among children, 6% are affected by a disability.

For both males and females, the prevalence of disability increases with age. The prevalence of disability is particularly high for females aged 75 and above (at 62%). It is only among the youngest adults, aged 16 to 25, that male prevalence rates (at 6%) are higher than the equivalent for females (4%). In children, around 8% of boys aged 15 and under have a disability, compared with 4% of girls of the same age.

The prevalence of disability varies by geographical area among the adult household population, from just under 18% in outer Belfast to 23% in the north of Northern Ireland. The area of outer Belfast incorporates the LGDs of Carrickfergus, Castlereagh, Lisburn, Newtownabbey and North Down. The north of Northern Ireland refers to Ballymoney, Coleraine, Derry, Limavady, Moyle and Strabane LGDs collectively.

These raw differences should be interpreted with care as the comparisons across these geographies might, in part, result from differing age profiles within each area. The following figures show the level of disability for adults and children.

Figure 11: Proportion of all adults in each area who have a disability
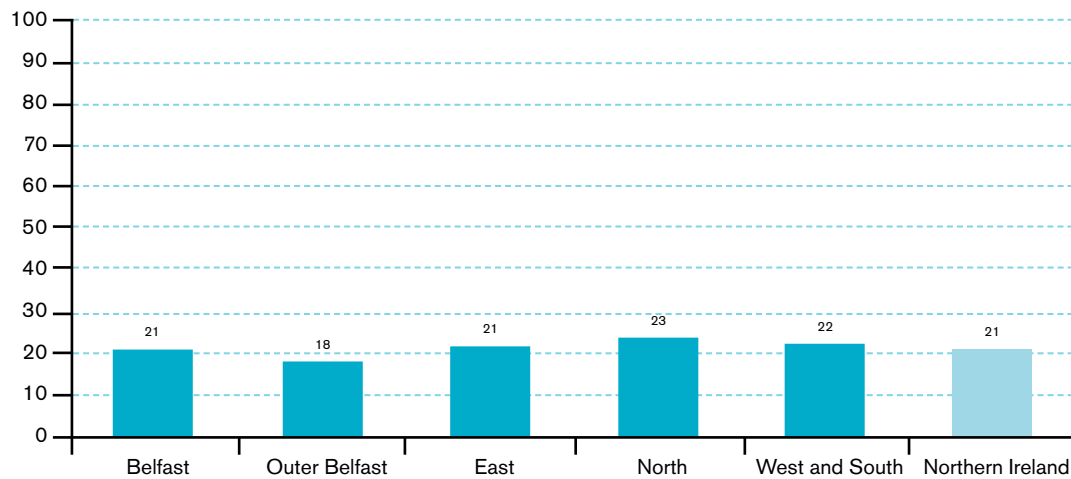
Source: NISRA, 2007

Figure 12: Proportion of all children in each area who have a disability
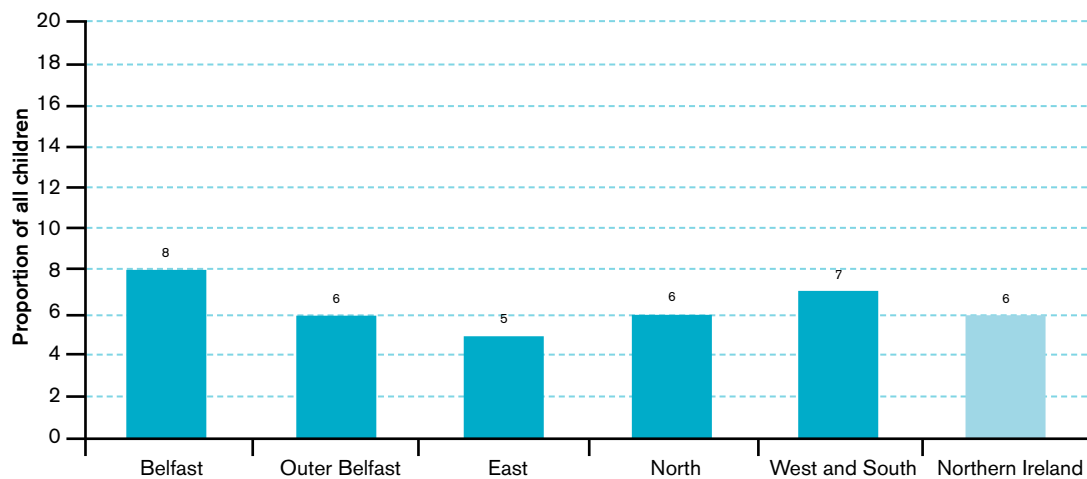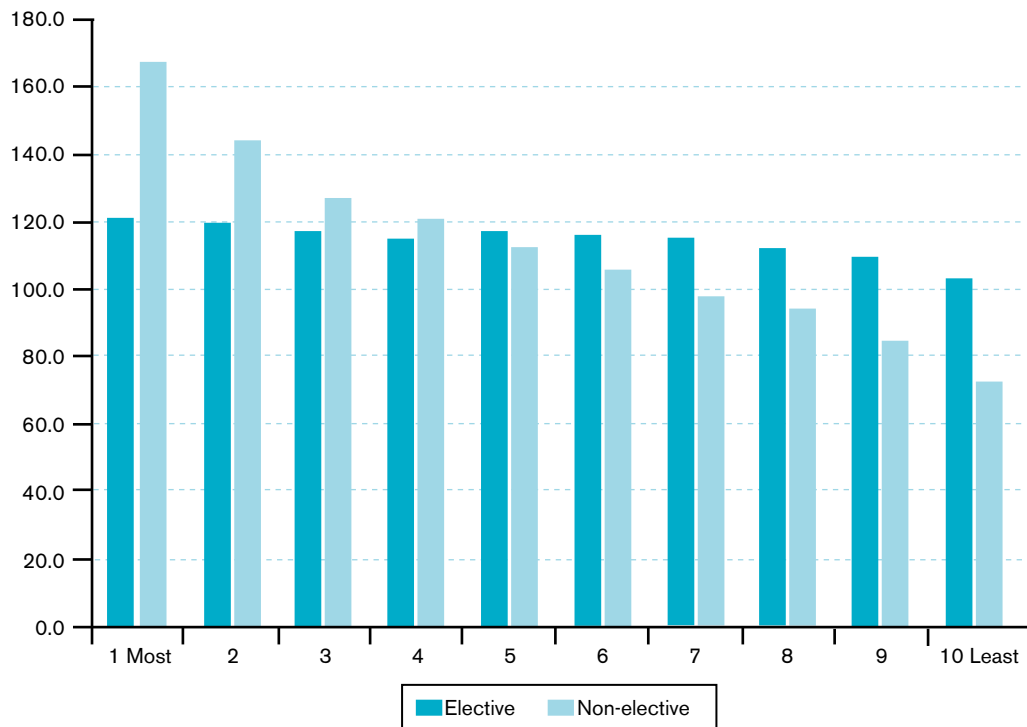

Source: NISRA, 2007

3.5 Admissions to hospital

The following information is taken from a report compiled by Belfast Health and Social Care Trust (BHSCT) on the pattern of hospital admissions.

Figure 13: Elective and non-elective treatment rates, by economic deprivation decile, 2001–02 (per 1,000 population)

Source: Belfast HSCT, 2008

The economic deprivation decile pattern is very noticeable. It is clear that elective use of services declines very slightly with decreasing deprivation, as might be expected in light of better health among those who are more wealthy. Use of emergency services is more than double for those from deprived areas, compared to wealthiest.

As the report states: "This is a highly significant finding because reactive use of health services triggered by emergency situations suggests inadequate use of timely elective services and also carries with it the risks of unplanned interventions likely to result in poorer outcomes than can be achieved by planned health care interventions."

The report goes on to find that, in the nine year period from 1998–99 to 2006–07, someone in the most deprived decile was 61% more likely to have been treated as a patient than someone in the least deprived decile.

The increase in safer elective service activity has been seen mainly in members of the least deprived deciles. For example, in the most deprived two deciles, the number of elective patients increased by only 14% between 1998–99 and 2006–07, compared to a 29% increase in the least deprived two deciles.

Cardiology is the specialty that provides diagnosis and treatment for patients with all forms of heart disease. Some patients who require major surgery may be referred to cardiac surgery.

Cardiological services are located at district and regional level, ie patients are referred to larger hospitals in Northern Ireland. Interventional cardiology (revascularisation procedures) is mainly performed at the Royal Hospitals and Belfast City Hospital.

The total number of patients treated increased by 21% between 1998–99 and 2006–07. This was due mainly to a 42% increase in the number of elective patients.

The annual number of interventional cardiology procedures increased by 165% during this nine year period. This does not necessarily imply that the need for such services has become greater, but denotes a shift in the treatment of patients from cardiac surgery (ie open heart surgery) to less invasive interventional cardiological treatment in catheter laboratories.

During the nine year period covered by this report, 61% of patients treated for IHD were men. In the same period, 75% of patients receiving interventional cardiology were men, indicating that women are more likely to be treated by open heart surgery. The following figure shows the differences between elective and non-elective treatment rates and how these relate to deprivation.

Figure 14: Standardised ratios for elective and non-elective cardiology patients, and patients receiving interventional cardiology, by economic deprivation decile, 1998/99–2006/07
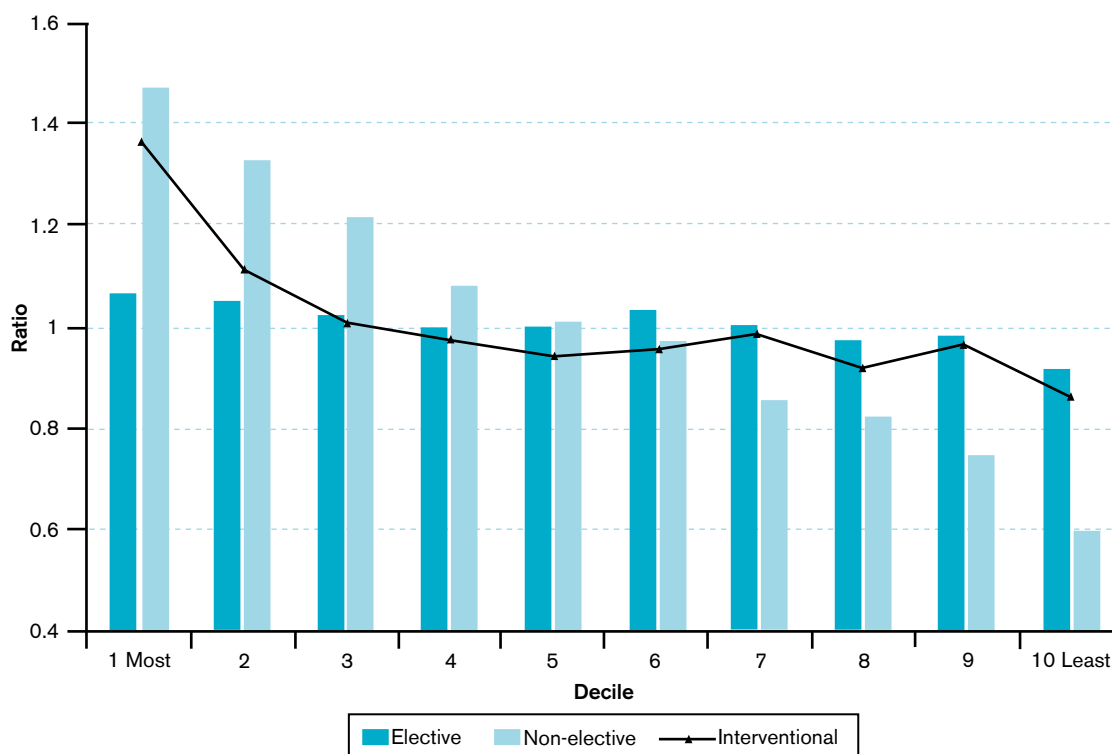
Source: Belfast HSCT, 2008

The report concludes that, "the substantially higher incidence of coronary heart disease in more deprived areas implies greater need for cardiology in these areas; the steep gradient apparent for non-elective patients across deciles is consistent with this pattern, but the gradients for interventional cardiology and elective patients are flatter than would be expected on this basis".

Figure 15: SAR to hospital – circulatory disease
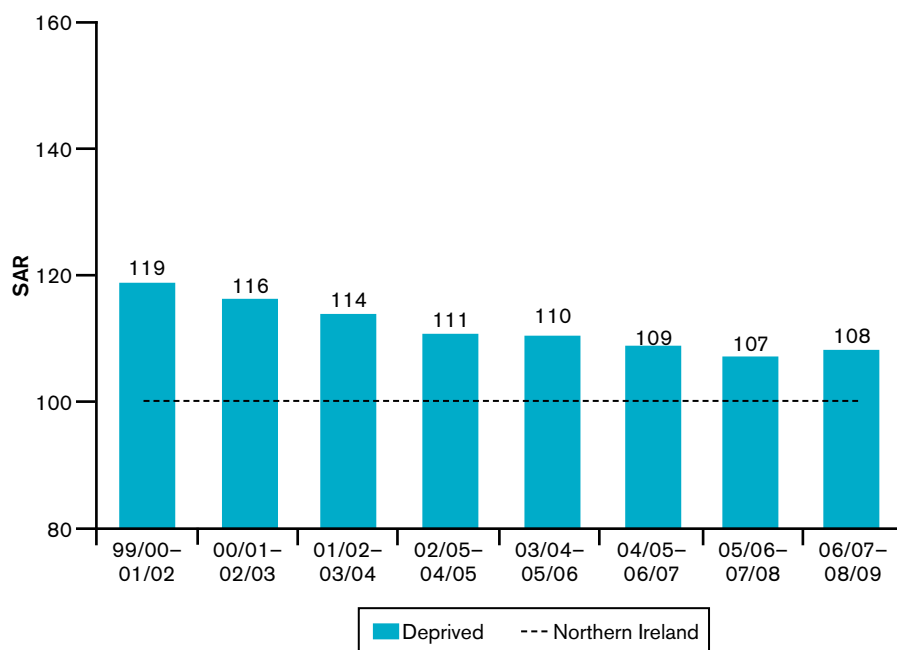
Source: Northern Ireland Health Inequalities Monitoring System from Hospital Inpatients system/Project Support Analysis Branch

The information in Figure 15 shows how the admissions for circulatory disease to hospital of people living in deprived areas remain higher than the Northern Ireland average, despite a reduction in the inequalities gap in recent years. This is in contrast with a still increasing inequalities gap for mortality from circulatory diseases, which again demonstrates the long lasting links between poverty and ill health.

3.6 Lifestyle and behavioural factors

3.6.1 Smoking

Smoking has been identified as the primary reason for the gap in life expectancy between rich and poor. Among men, it is responsible for more than half the difference in the risk of premature death between the social classes (Jarvis and Wardle, 2006).

Table 8: Estimated number of smoking-related deaths registered in Northern Ireland, 2001–08

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

Source: NISRA, Registrar General Annual Report, 2008

Figure 16: Smoking-related deaths per 100,000 male population Northern Ireland, 2004–08
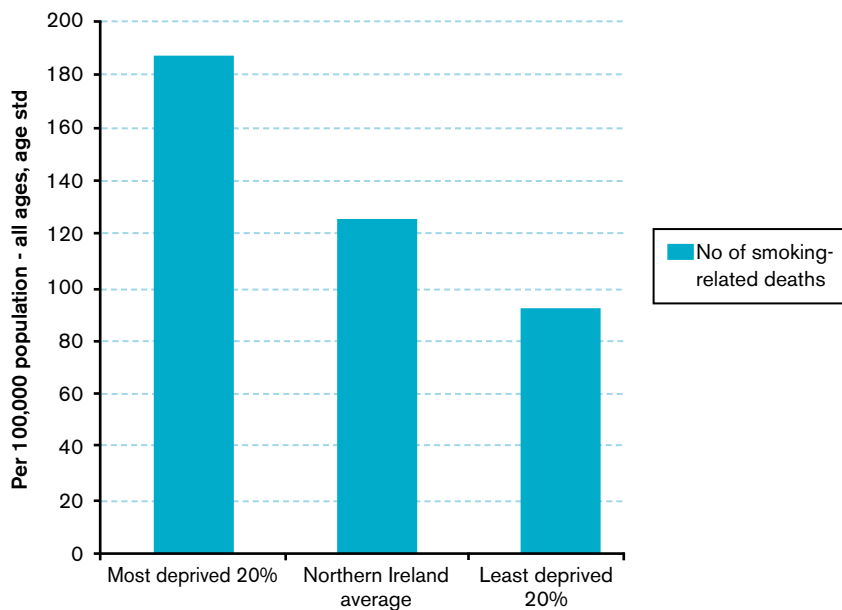
Source: Northern Ireland Health Inequalities Monitoring System via Health Intelligence Unit, PHA 2010

Table 9: Prevalence of cigarette smoking by sex and socioeconomic group, 2008–09 (persons aged 16+)

| All		Males		Females	
Non-manual	19	Non-manual	19	Non-manual	18
Manual	30	Manual	32	Manual	29
Other, eg armed forces	24	Other, eg armed forces	25	Other, eg armed forces	24
All	24	All males	26	All females	23

Source: NISRA, Continuous Household Survey

3.6.2 Obesity

Around 60% of the adult population and approximately 22% of primary school children in Northern Ireland are either overweight or obese (Health Intelligence Unit, PHA; Child Health System, 2004–05).

Over the period 1997/98–2006/07, the percentage of those who are obese has increased significantly in the younger age groups 16–44 years, with obesity levels remaining stable in older age groups over the same period as illustrated in Figure 17.

**Figure 17: Overweight and obese adults in Northern Ireland by age group**
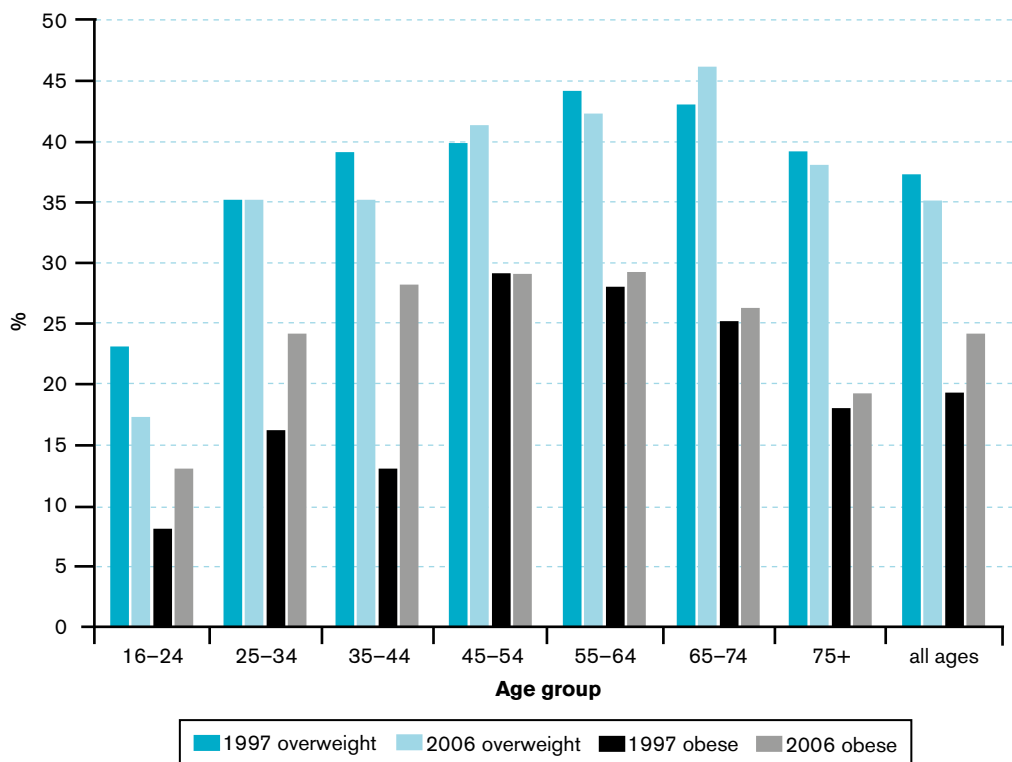
Source: Health Intelligence Unit PHA, 2010

3.6.3 Alcohol

Alcohol-related deaths show a distinct pattern whereby those living in the most deprived 20% of areas are over four times more likely to die due to misuse of alcohol than those who are from more affluent socioeconomic groups, as shown in Figure 18.

Figure 18: Alcohol-related deaths per 100,000 male population Northern Ireland
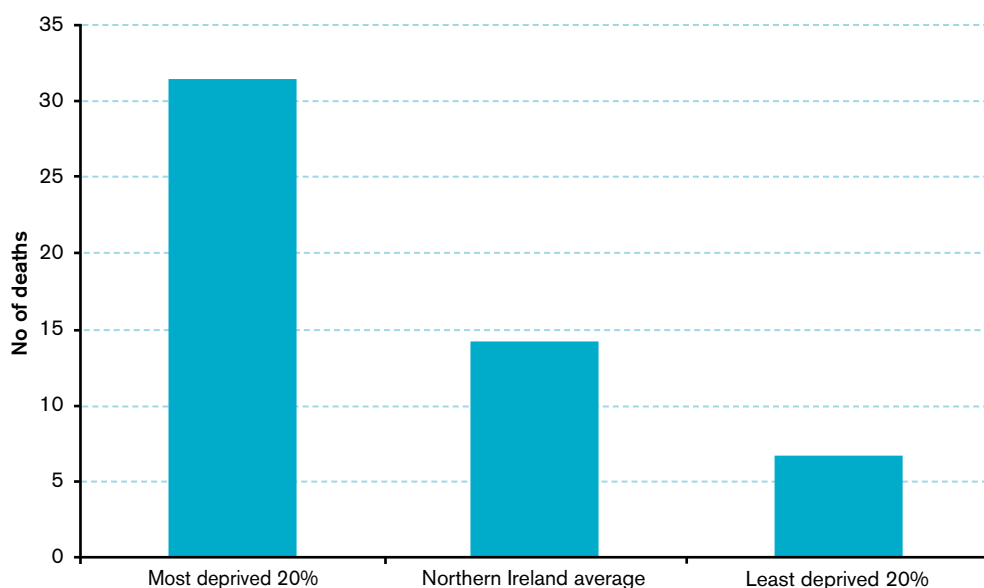
Source: Northern Ireland Health Inequalities Monitoring System via Health Intelligence Unit, PHA 2010

The following table provides information about patterns of binge-drinking by profession and income, but only based on a small sample of the population. The results suggest that people in routine and manual jobs and on the lowest income are more likely to binge drink than those in professional and managerial roles.

Table 10: Who binge drinks?

|	Proportion of respondents binge drinking
Socioeconomic group (N=912)	
Managerial and professional	21%
Intermediate occupations	29%
Routine and manual	43%
Not classified[1]	31%
Household income (N=759)	
£52,00 or over	21%
£36,400–51,999	25%
£26,000–36,399	41%
£15,600–25,999	35%
£10,400–15,599	34 out of 90 (38%)
Under £10,400	42 out of 91 (46%)
Education status (N=906)	
A Level/higher education	28%
O Level/commercial	34%
No qualifications	40%

1. Includes those in retirement, the long term sick or disabled, those looking after the family home, people that have never worked and students.

Source: NISRA, Continuous Household Survey

3.6.4 Physical activity

The *Continuous household survey* asks respondents about their participation in sport over the past year. As can be seen in Figure 19, 45% of people had taken part in at least one sport.

Figure 19: Sports participation – overall and most popular sports
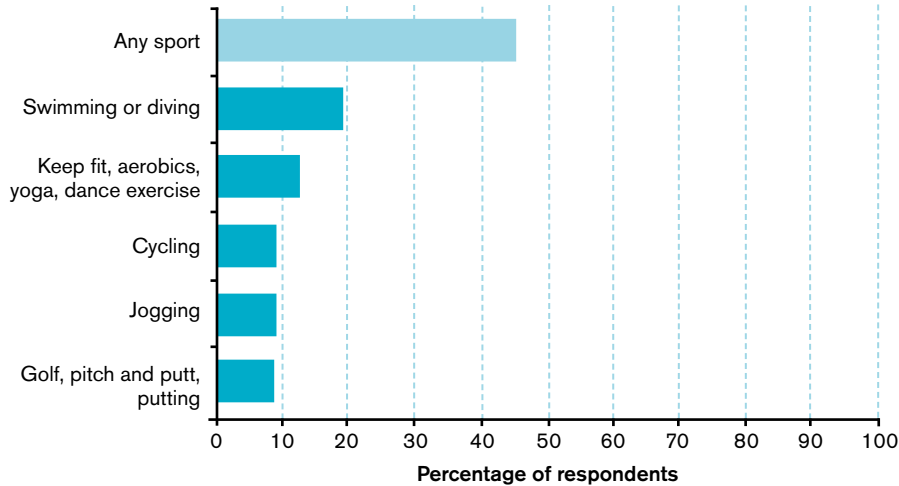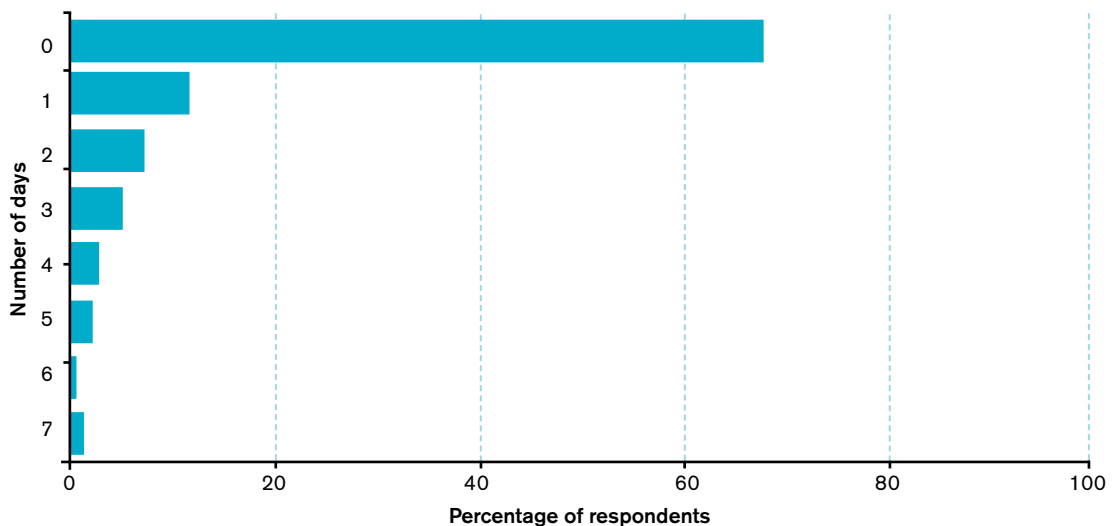

Source: DCAL, 2010 (compiled from Continuous Household Survey)

The following charts take a more detailed look at sport and physical activity. Thirty one per cent of respondents reported that they took part in sport or physical activity at least once a week, which indicated that the remainder reported that they did not take part in any sport or physical activity at all.

When asked about moderate physical activity, about 55% of respondents indicated that they never took any physical activity which could be classed as having moderate intensity. Most people, however, reported to walking continuously for at least 10 minutes on one or more days per week.

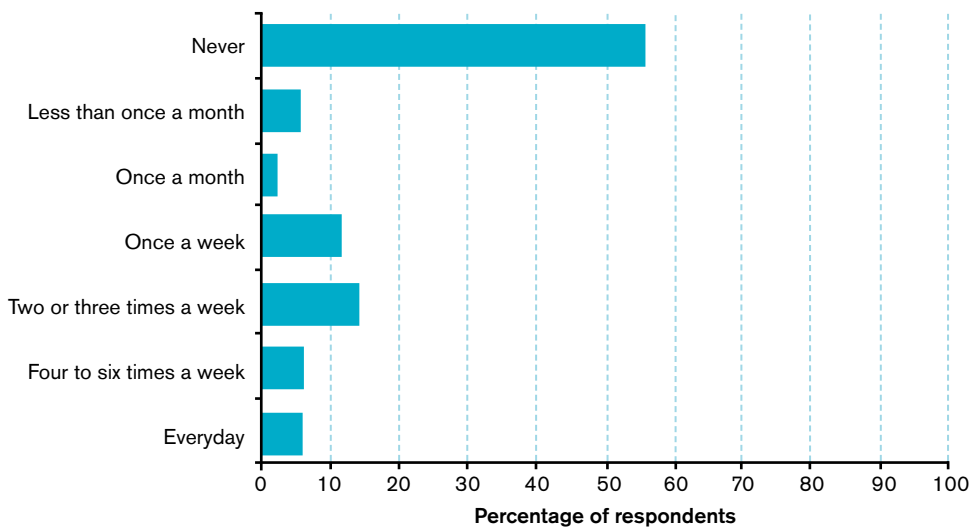**Figure 20: Number of days normally took part in sport and physical activity per week**

Source: DCAL, 2010 (compiled from Continuous Household Survey)

Figure 21: Number of days walked continuously for at least 10 minutes in past week
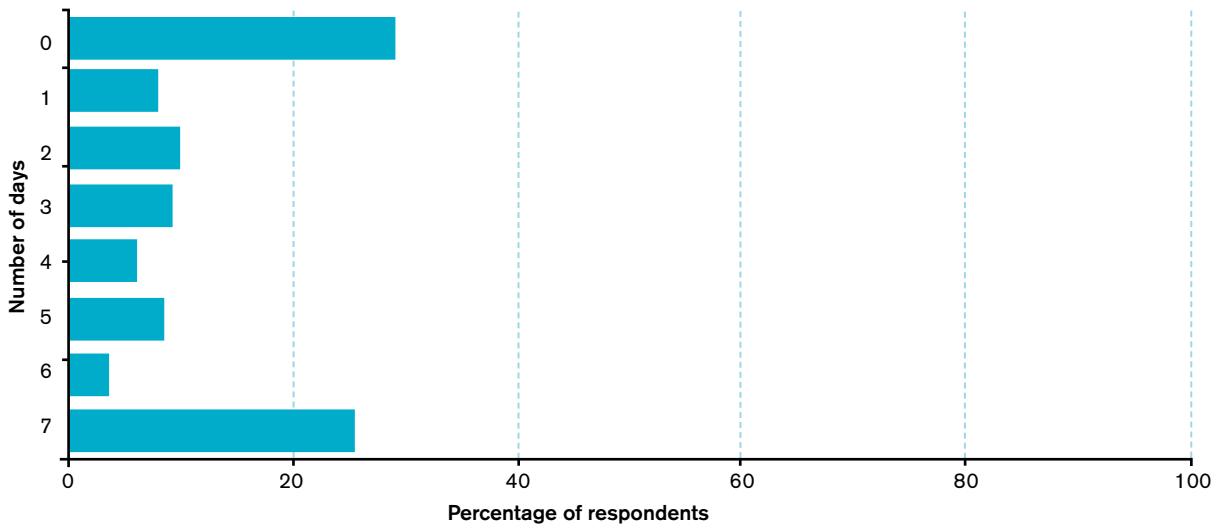
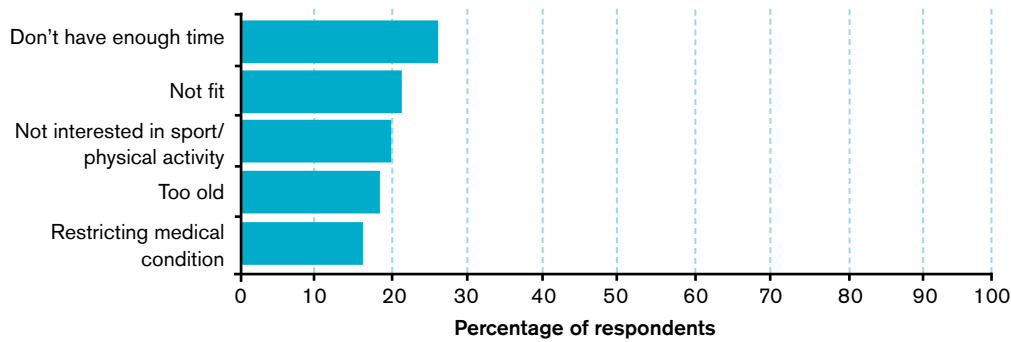Source: DCAL, 2010 (compiled from Continuous Household Survey)

Figure 22: Frequency of at least moderate intensity physical activity

Source: DCAL, 2010 (compiled from Continuous Household Survey)

When respondents were asked why they did not take part in sport or physical activity, the three most common reasons were not enough time, not fit enough or not interested. About 15% of people stated that they had a restricting medical condition, which meant they could not participate in any sport or physical activity (see Figure 23).

Figure 23: Most common factors putting people off doing sport and physical activity

*Source: DCAL, 2010 (compiled from Continuous Household Survey)*

3.6.5 Consumption of fruit and vegetables

This section considers consumption of fruit and vegetables by younger and older people. The research suggests that older people are much more likely to eat five portions of fruit and vegetables a day than younger people.

In their study of consumption of fruit and vegetables by older people undertaken in 2008, Appleton and Woodside surveyed 426 people and found that a total of 148 (35%) individuals were consuming five portions per day or more on a week day. A total of 161 (38%) individuals were consuming five portions per day or more at the weekends. Consumption was significantly greater at weekends than on weekdays. The greatest consumption involved apples (one portion per day consumed by 60% of the sample), fruit juice (consumed by 49% and 50% of the sample on week days and weekend days respectively), bananas (consumed by 45%/46%), carrots (consumed by 43%/44%), and broccoli (consumed by 35%/36%).

The *Young persons' behaviour and attitudes survey* (YPBAS) *Bulletin 200*7 found that just over half (55%) of pupils aged 11 to 16 years eat fruit, and 42% eat vegetables and salads at least once a day. Only 15% of pupils usually eat five or more portions of fruit or vegetables each day, but the majority of children (86%) had been taught about healthy eating at school (not primary school).

**Figure 24: Consumption of fruit and vegetables by children and young people**
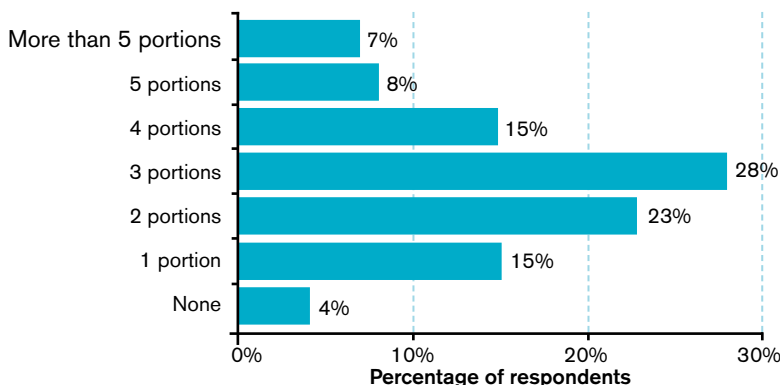
Source: YPBAS

3.7 Mood and anxiety disorders

The proportion of persons in Northern Ireland who suffered from a mood or anxiety disorder increased from 9.2% in 2004 to 11.5% in 2008. In the most deprived areas, the proportion increased from the higher baseline of 10.7% to 13.2%. Overall, the inequality gap has remained fairly consistent, with prevalence in deprived areas being just under a fifth higher (Figure 25).

Figure 25: Proportion of people suffering from mood or anxiety disorder 2004–08
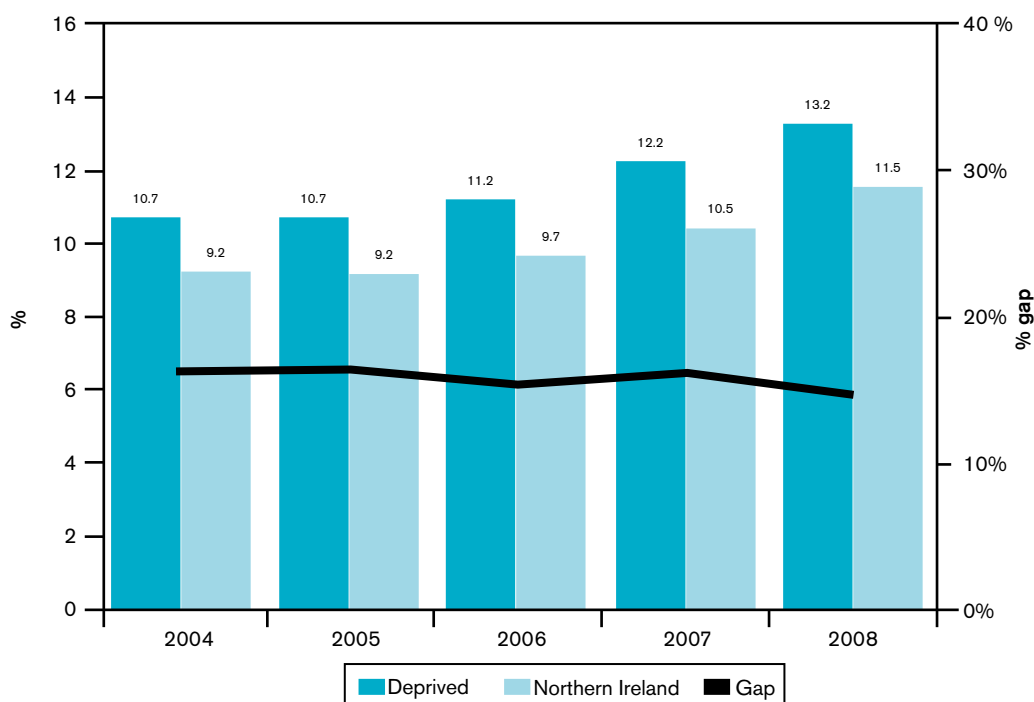
Source: Northern Ireland Health Inequalities Monitoring System from Business Services Organisation/Project Support Analysis Branch

The level and use of prescription drugs in Northern Ireland to treat mental health difficulties has always been a concern, given the history of conflict. Table 11 gives a snapshot of the level of use of prescription drugs to treat anxiety and depression.

Table 11: Patients who have received a prescription with at least one anxiolytic or antidepressant item, Nov 2008–Oct 2009

| Trust	No. of patients with antidepressant/anxiolytic prescription	Total no. of registered patients	Percentage of registered patients with antidepressant/ anxiolytic prescription
NULL	3,913	29,590	13.2%
Belfast	55,606	359,398	15.5%
Northern	61,614	462,536	13.3%
South Eastern	44,730	346,396	12.9%
Southern	43,173	368,960	11.7%
Western	38,552	304,980	12.6%
Northern Ireland	247,588	1,871,860	13.2%

It is evident that Belfast has the highest percentage for the prescription of these drugs. The number of prescriptions not assigned to geographic area must be noted as this could potentially impact on the figures given for geographically defined areas.

It could also indicate potential misuse of prescriptions by people not identifying themselves clearly to prescribers and dispensers of anxiolytics and antidepressants.

3.8 Child health

Infant mortality describes children dying before reaching their first birthday and is an internationally recognised indicator of population health and wellbeing. In affluent societies like the UK, the death of children has become a relatively uncommon and therefore exceptional event, but infant mortality rates nevertheless remain a useful, albeit crude, indicator of child and population health.

Figure 26: Infant mortality, 1997–2008
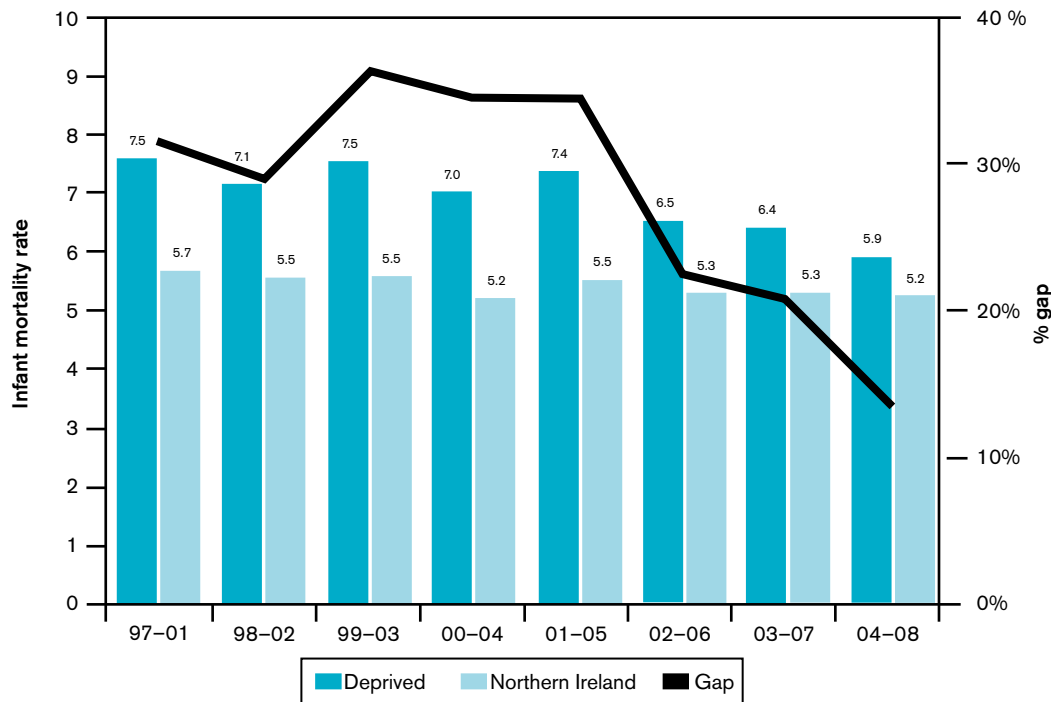
Source: Northern Ireland Health Inequalities Monitoring System from General Register Office/Project Support Analysis Branch

Because of small numbers of infant deaths, observed infant mortality has fluctuated in both Northern Ireland and its most deprived areas. The infant mortality rate in deprived areas has fallen by 21% – from 7.5 infant deaths per 1,000 live births in 2001 to 5.9 in 2008.

In Northern Ireland overall, the relative decline in the infant mortality rate has been more modest (a fall of 9%) to reach 5.2 deaths per 1,000 live births. The gap between the most affluent and deprived has dropped from being nearly a third higher in deprived areas in 2001, to just over 13% higher in 2008.

Child health has traditionally been gauged in a number of ways. These include breastfeeding, percentage of mothers who smoke during pregnancy, and low birth weight (LBW) of babies – all of which can be indicative of a child's ability to thrive and remain healthy. In recent years, the significant increase of levels of obesity among our children and their parents has also become an issue of concern.

Table 12: Percentage of pregnant mothers smoking by HSCT, 2005–08

Trust	2005	2006	2007	2008
Belfast	29.1	28.0	26.4	24.90
Northern	18.8	17.7	16.2	17.81
Southern	19.4	19.7	18.3	12.62
South Eastern	16.2	14.7	12.7	18.15
Western	20.1	19.1	19.3	16.39

Source: Child Health System

The previous table indicates a downward trend in the number of mothers smoking in all HSCTs despite an increase in two HSCTs from 2007 to 2008. As these are only figures for one year, it is not appropriate to discuss underlying trends, but the increase from 12.7% in 2007 in the South Eastern HSCT to 18.15% in 2008 may be of concern.

Table 13: Percentage breastfeeding and mixed breast- and complementary (B&C) feeding by HSCT, 2005–08

Trust	2005		2006		2007		2008	
	% of breastfed	% total B & C	% of breastfed	% total B & C	% of breastfed	% total B & C	% of breastfed	% total B & C
Belfast	36.5	39.9	35.5	39.6	36.0	40.7	35.88	40.92
Northern	37.8	40.3	35.9	38.8	38.2	41.8	37.89	42.05
Southern	42.8	45.9	42.8	46.2	41.5	46.3	38.38	46.01
South Eastern	36.0	39.2	37.5	40.4	38.5	43.4	41.76	46.70
Western	35.7	36.8	37.3	38.6	37.2	40.5	37.73	41.93

Source: Child Health System

Breastfeeding has always shown a variation across HSCTs. The figures from 2008 show modest changes across areas and levels of breastfeeding which remain significantly below desirable levels achieved in other parts of Europe.

Table 14: Percentage LBW by HSCT area, 2003–07

Trust	Total births	LBW	% LBW
Belfast	21,593	1,554	7.20
Northern	29,410	1,854	6.30
Southern	25,714	1,491	5.80
South Eastern	21,513	1,325	6.16
Western	20,312	1,232	6.07

Source: Child Health System

For LBW, the percentage for all HSCT areas has remained around the 6% mark. Belfast shows a higher percentage of LBW babies. Again, this figure should be treated with caution as Belfast deals with difficult pregnancies and births at a regional level. Therefore, the rate shown cannot necessarily be construed as being linked to deprivation.

Table 15: Percentage of obese year 1 children by Health and Social Services Board (HSSB) area

|		2004–05	2005–06	2006–07	2007–08
Boys	EHSSB	4.9	3.8	4.0	4.2
	NHSSB	4.2	4.1	5.2	4.5
	SHSSB	4.9	5.8	5.4	4.0
	WHSSB	5.0	5.2	4.5	5.2
	All	4.7	4.5	4.7	4.4
Girls	EHSSB	5.4	5.8	4.2	4.9
	NHSSB	5.4	5.6	5.1	6.2
	SHSSB	7.0	6.0	6.9	5.7
	WHSSB	7.3	5.9	6.4	6.6
	All	6.2	5.8	5.3	5.7
All	EHSSB	5.1	4.9	4.1	4.6
	NHSSB	4.8	4.8	5.2	5.3
	SHSSB	5.9	5.9	6.1	4.9
	WHSSB	6.1	5.5	5.4	5.9
	All	5.4	5.1	5.0	5.1

Source: Child Health System

The numbers of children who are obese has remained fairly steady over the four years set out in the table.

4. Employment and economic activity

The *Labour force survey 2008* local area database provides information on a number of areas. These include labour force structure and economic activity. According to this report, the overall working age employment rate fell in Northern Ireland from 70.3% to 69.7% in 2008.

Figure 27: Working age employment rate by district council, 2008
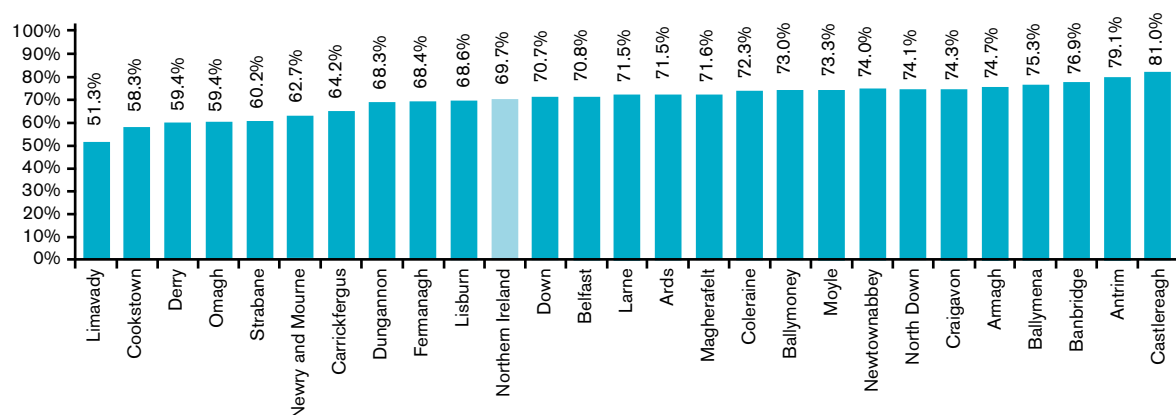
Source: DETI and NISRA (2009) Labour Force Survey: 2008 local area database

As Figure 27 demonstrates, there was significant variation in working age employment rates in district council areas. The highest employment rate was in Castlereagh with 81%, while the lowest was in Limavady at 51.3%.

The same report estimates that 77% of those in employment in Northern Ireland were working full time. This figure varies from 89% in Fermanagh to 71% in Coleraine.

4.1 Level of qualifications in the working age population

District councils also showed a variation in qualification levels. The highest proportion of working age persons qualified to NVQ Level 4 or above were in Antrim (36.5%) and Castlereagh (35.5%), compared to a Northern Ireland average of 26.1%. Cookstown (49.3%) and Limavady (47.8%) had the highest proportion of working age persons with "no qualifications".

4.2 Economic activity

Economic activity is based on people's employment status and refers to both employed and unemployed. Economically active people are those who supply or want to supply their labour to produce goods and services.

The unemployment rate in Northern Ireland is currently 7.9%. Against this, the economic inactivity rate in Northern Ireland is 29.3% which is the highest in the UK and indicates that more people here have withdrawn from the labour market. This is of concern because employment offers benefits to health which are unlikely to come to those who are economically inactive.

The following table shows the economic activity rate by district council. Overall, Northern Ireland economic activity has decreased from 73.4% in 2007 to 72.7% in 2008. The lowest economic activity rates were in Cookstown (59.7%) and Limavady (60.1%). Castlereagh and Antrim had the highest rates at 81%.

Table 16: District council labour market structure – working age

District Council	Total working age (16–59/64)	Working age economic activity rate (%)	Working age employment rate (%)
Antrim	34	81.0%	79.1%
Ards	50	72.8%	71.5%
Armagh	31	76.0%	74.7%
Ballymena	40	76.7%	75.3%
Ballymoney	18	77.2%	73.0%
Banbridge	31	77.5%	76.9%
Belfast	166	73.1%	70.8%
Carrickfergus	23	68.4%	64.2%
Castlereagh	41	81.0%	81.0%
Coleraine	32	76.7%	72.3%
Cookstown	23	59.7%	58.3%
Craigavon	55	77.8%	74.3%
Derry	69	64.5%	59.4%
Down	43	77.6%	70.7%
Dungannon	35	69.2%	68.3%
Fermanagh	35	70.0%	68.4%
Larne	20	75.4%	71.5%
Limavady	19	60.1%	51.3%
Lisburn	78	73.0%	68.6%
Magherafelt	26	73.8%	71.6%
Moyle	11	75.0%	73.3%
Newry and Mourne	58	66.7%	62.7%
Newtownabbey	47	74.8%	74.0%
North Down	49	74.9%	74.1%
Omagh	30	63.4%	59.4%
Strabane	25	67.8%	60.2%
Northern Ireland	1,089	72.7%	69.7%

Source: DETI

5. Education and training

The percentage of those achieving no GCSEs varied from area to area, as might be expected. In 2008, the LGDs with the highest percentages of those achieving no GCSEs were Cookstown (7.4%), Derry (5.3%) and Larne (5.2%). Belfast and Down were the only other LGDs which had a percentage of unqualified school leavers of over 4%. The LGDs with the fewest school leavers with no qualifications was Castlereagh.

Table 17: Qualifications of school leavers, 2008

LGD	Total number school leavers	Highest qualification: 2+ A levels (or equiv)	Achieved at least 5 GCSEs grades A*-C (or equiv)	Percentage achieved at least 5 GCSEs grades A*-C (or equiv)	Achieved no GCSEs	Percentage achieved no GCSEs
Antrim	663	278	475	71.6	19	2.87
Ards	945	373	590	62.4	29	3.07
Armagh	860	333	604	70.2	23	2.67
Ballymena	748	365	489	65.4	19	2.54
Ballymoney	400	163	265	66.3	12	3.00
Banbridge	603	253	393	65.2	17	2.82
Belfast	3,306	1,509	2,011	60.8	140	4.23
Carrickfergus	577	271	386	66.9	21	3.64
Castlereagh	854	478	608	71.2	12	1.41
Coleraine	710	302	479	67.5	23	3.24
Cookstown	527	246	359	68.1	39	7.40
Craigavon	1262	509	847	67.1	44	3.49
Derry	1,727	876	1,111	64.3	91	5.27
Down	994	477	708	71.2	44	4.43
Dungannon	767	365	541	70.5	29	3.78
Fermanagh	793	431	561	70.7	22	2.77
Larne	387	165	262	67.7	20	5.17
Limavady	457	188	277	60.6	10	2.19
Lisburn	1,588	771	1,074	67.6	44	2.77
Magherafelt	631	337	453	71.8	14	2.22
Moyle	250	120	172	68.8	9	3.60
Newry and Mourne	1,400	669	943	67.4	47	3.36
Newtownabbey	1,025	470	698	68.1	33	3.22
North Down	931	492	693	74.4	36	3.87
Omagh	718	389	527	73.4	24	3.34
Strabane	575	275	361	62.8	20	3.48
Missing/Invalid Postcode	393	143	220		36	9.16
Northern Ireland	24,091	11,248	16,107	66.9	877	3.64

Source: NINIS, School Leavers Survey

Table 18: Destination of school leavers by LGD, 2008

LGD	Total number school leavers	Destination further/ higher education	Percentage further/ higher education	Destination employment/ training	Percentage employment/ training	Destination unemployed/ unknown	Percentage unemployed/ unknown
Antrim	663	521	78.6	113	17.0	29	4.4
Ards	945	687	72.7	221	23.4	37	3.9
Armagh	860	620	72.1	217	25.2	23	2.7
Ballymena	748	516	69.0	197	26.3	35	4.7
Ballymoney	400	299	74.8	83	20.8	18	4.5
Banbridge	603	422	70.0	143	23.7	38	6.3
Belfast	3,306	1,961	59.3	1,085	32.8	260	7.9
Carrickfergus	577	374	64.8	179	31.0	24	4.2
Castlereagh	854	670	78.5	150	17.6	34	4.0
Coleraine	710	485	68.3	185	26.1	40	5.6
Cookstown	527	385	73.1	115	21.8	27	5.1
Craigavon	1,262	998	79.1	221	17.5	43	3.4
Derry	1,727	1,230	71.2	384	22.2	113	6.5
Down	994	641	64.5	259	26.1	94	9.5
Dungannon	767	563	73.4	174	22.7	30	3.9
Fermanagh	793	572	72.1	179	22.6	42	5.3
Larne	387	211	54.5	153	39.5	23	5.9
Limavady	457	349	76.4	87	19.0	21	4.6
Lisburn	1,588	1,041	65.6	449	28.3	98	6.2
Magherafelt	631	468	74.2	136	21.6	27	4.3
Moyle	250	175	70.0	65	26.0	10	4.0
Newry and Mourne	1,400	999	71.4	324	23.1	77	5.5
Newtownabbey	1,025	697	68.0	271	26.4	57	5.6
North Down	931	708	76.0	180	19.3	43	4.6
Omagh	718	559	77.9	129	18.0	30	4.2
Strabane	575	334	58.1	219	38.1	22	3.8
Missing/Invalid Postcode	393	230	58.5	124	31.6	39	9.9
Northern Ireland	24,091	16,715	69.4	6,042	25.1	1,334	5.5

Source: NINIS, School Leavers Survey

The above figures suggest that Down (9.5%), Belfast (7.9%), Derry (6.5%) and
Lisburn (6.2%) have the greatest percentages of young people becoming unemployed
after leaving school. Given that this column also includes data about young people's
destination after education, these figures need to be treated with caution.

6. Housing

The *House condition survey* is published by the Housing Executive (2006 being the year in which the last full results of the last survey were published). Interim results were published in 2004. The main measure of housing quality is now the housing fitness standard.

This brings together several characteristics of housing such as state of repair of appliances, equipment and sanitary facilities including water supply, heating, ventilation, lighting, dampness and structural soundness. In this profile the focus is on unfitness data, because unfit housing is likely to have an impact on occupants' health.

According to the survey, the general pattern of unfitness in 2006 is the same as in 2001. The survey uses "arc" for measuring unfitness in areas, each arc comprising a number of district councils that radiate from a core arc, Belfast city.

The survey found an unfitness rate of 5.3% in Belfast city. The first arc comprising 10 adjacent district councils – stretching from Ballymena and Larne in the north, to Craigavon, Lisburn and Ards in the south – maintained unfitness rates of less than 4%.

Most district council areas had only a slight fall in terms of unfitness rates, but in Lisburn it fell by 3.3 percentage points. This suggests that the large number of newly-constructed houses in the Lisburn area is having a positive impact on overall unfitness levels there.

As the *House condition survey* states: "The relatively short distance to Belfast, combined with housing affordability and land availability issues in some parts of Belfast, continues to form the background to the general improvement in housing conditions in the majority of these areas."

The second arc comprises nine district councils which include district towns and large rural hinterlands. The unfitness rates, of between 2.7% and 5.5%, have fallen in all of these council areas. The rate of unfitness in Strabane fell by 3.5 percentage points between 2001 and 2006 reflecting new construction, demolitions and improvements.

Derry and Coleraine have also experienced a slight reduction in unfitness rates between the 2001 and 2006 surveys, achieving unfitness rates of 2.6% and 1% respectively. The fall in unfitness rates reflects greater investment both in private and public housing stock in these areas.

6.1 Age of household reference person

Unfitness and the age of the household reference person (HRP) are closely linked. A much higher than average proportion of HRPs aged 75 years or more lived in unfit dwellings (5% in 2006; 6% in 2001). The percentage was also higher for HRPs aged 60–74 (1.7% in 2006; 3.5% in 2001). Indeed, in 2006, HRPs from these two age groups resided in two-thirds (68%) of all occupied unfit dwellings (compared to 57% in 2001).

**Figure 28: Unfitness and age of HRP, 2006**
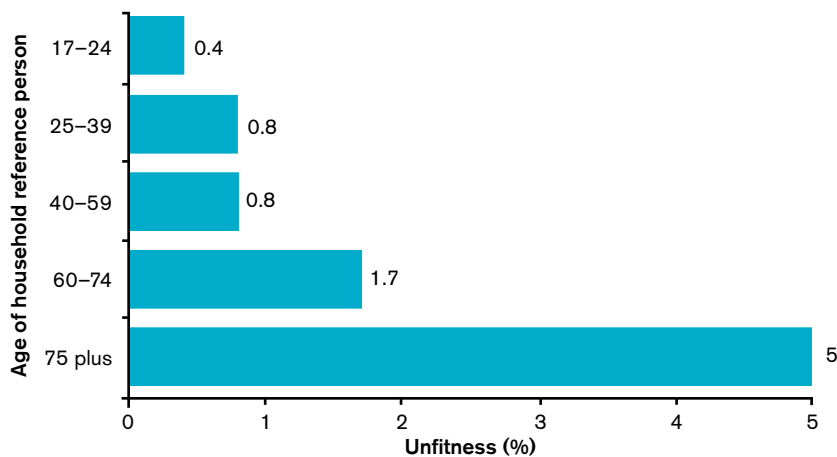
Source: NIHE

It is worth noting the levels of unfitness experienced by people over 60 and those over 75, in particular. The report states that this is due to several factors including reluctance to commit to the costs and disturbance associated with improvements and major repairs, to seek grant aid or to choose to move. Combined with a lack of income, this may result in older people tolerating a higher level of housing unfitness.

The rate of unfitness was particularly high for lone older households (4.1% in 2006 but down from 6.2% in 2001), which the report states reflects "to a large extent the influence of age". It is worth bearing in mind that lone pensioners tend to be among the poorest in our society and may be unable to afford improvements to their home. In contrast, the rate for lone parent households was the second lowest (0.6%) reflecting the fact that a relatively high proportion of this group live in social housing.

6.2 Household income

The report comments on the relationship between household income and unfitness (see Figure 29). In the case of households with an income of less than £7,000 per annum, 4.4% lived in unfit dwellings. The figure for households with an income greater than this was just over 1%. Housing can therefore be seen as another factor adding to the problems faced by low income families and the impact that this could have on their health.

Figure 29: Unfitness and annual income, 2006
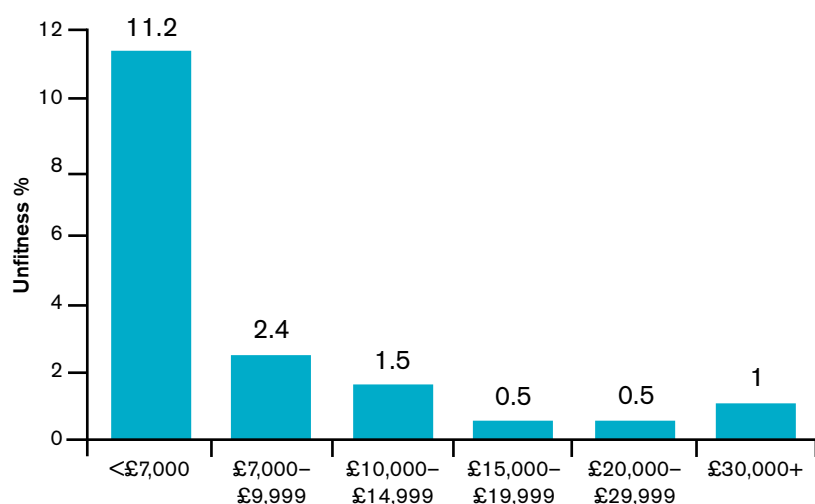
Source: NIHE

6.3 Migrant workers and housing

The following table provides a picture of housing trends in relation to migrant workers and shows increasing numbers of tenancies being held by them. Applications for social housing from migrant workers have continued to increase year on year, reflecting inward migration to Northern Ireland from socioeconomically deprived countries.

Table 19: Housing activity trends, 2007–09

	31 July 2007	31 July 2008	31 July 2009
Migrant worker households applying for social housing in the one year period	998	1,055	1,225
Migrant worker households allocated social housing in one year	202	143	205
Migrant worker tenant households on each date	353	353	503
Applications received from migrant worker households applying as homeless in the one year period	469	342	455
Migrant worker households awarded building applicant (FDA) status in one year	Not recorded	172	189
Between 1 May 2009 and 31 August 2009 there were 325 recorded applications for housing benefit from migrant worker households.			

Source: NIHE

6.4 Homelessness

The levels of homelessness in Northern Ireland are given in the following table.

Table 20: Breakdown of number and type of households presenting as homeless by HSCT

Health and Social Care Trust	Number of households presenting as homeless	All singles	Couples	Small family groups	Large family groups	Adult families	Elderly
Northern	4,058	1,991	222	1,014	287	69	475
Belfast	5,553	2,913	192	1,464	321	50	613
South Eastern	3,560	1,715	177	988	208	34	438
Southern	2,573	1,330	128	681	197	18	219
Western	2,332	1,246	75	675	148	13	175
Total	18,076	9,195	794	4,822	1,161	184	1,920

Source: NIHE

7. Transport

Access to transport is essential to access services and overcome social isolation, especially for those living in rural areas. Public transport infrastructure especially in rural areas is not well developed in Northern Ireland and, as a result, many of its residents are reliant on private cars or taxis.

A report from the Department for Regional Development provides the following information: "One quarter of households in Northern Ireland did not have access to a car over the three year reporting period (2006–08). There has been little change in this proportion over the years.

"In the same period, 57% of households in Belfast had access to one or more cars, compared to 79% and 77% in the east and west of Northern Ireland respectively in 2006–08.

"Thirty three per cent of households in Northern Ireland had access to two or more cars. However, only 15% of households in Belfast had access to two or more cars, compared to 36% of households in the east and 34% in the west."

Table 21: Patterns of car ownership in Northern Ireland, 2003–08

		No car	One car	Two cars	Three or more cars	All households	Cars per household	Cars per adult 17+
Belfast	(2003)	...	...	...	...	...	...	...
East		20%	49%	27%	4%	100%	1.17	0.65
West		24%	46%	25%	6%	100%	1.14	0.60
All areas		26%	47%	23%	5%	100%	1.09	0.61
Belfast	(2004)	...	...	...	...	...	...	...
East		23%	41%	32%	4%	100%	1.18	0.65
West		22%	46%	25%	6%	100%	1.18	0.60
All areas		27%	42%	26%	4%	100%	1.08	0.60
Belfast	(2005)	...	...	...	...	...	...	...
East		21%	47%	29%	4%	100%	1.16	0.65
West		23%	48%	24%	5%	100%	1.12	0.61
All areas		26%	46%	25%	4%	100%	1.07	0.61
Belfast	(2006)	...	...	...	...	...	...	...
East		18%	46%	31%	5%	100%	1.24	0.71
West		25%	45%	24%	6%	100%	1.12	0.62
All areas		24%	45%	27%	5%	100%	1.13	0.65
Belfast	(2007)	...	...	...	...	...	...	...
East		24%	41%	29%	7%	100%	1.20	0.69
West		25%	43%	26%	6%	100%	1.16	0.63
All areas		27%	42%	25%	6%	100%	1.11	0.64
Belfast	(2008)	...	...	...	...	...	...	...
East		22%	39%	31%	7%	100%	1.25	0.75
West		18%	43%	31%	8%	100%	1.31	0.73
All areas		23%	41%	29%	6%	100%	1.20	0.70
Belfast	(2003–05)	47%	39%	12%	2%	100%	0.68	0.44
East		21%	46%	29%	4%	100%	1.17	0.65
West		23%	47%	25%	6%	100%	1.14	0.61
All areas		26%	45%	25%	4%	100%	1.08	0.60
Belfast	(2004–06)	51%	36%	12%	1%	100%	0.64	0.42
East		21%	45%	30%	4%	100%	1.19	0.67
West		23%	47%	24%	6%	100%	1.14	0.61
All areas		26%	44%	26%	4%	100%	1.09	0.62
Belfast	(2005–07)	48%	37%	12%	2%	100%	0.68	0.44
East		21%	45%	29%	5%	100%	1.20	0.68
West		24%	45%	25%	6%	100%	1.13	0.62
All areas		26%	44%	25%	5%	100%	1.10	0.63
Belfast	(2006–08)	43%	41%	13%	2%	100%	0.74	0.46
East		21%	42%	30%	6%	100%	1.23	0.72
West		23%	44%	27%	7%	100%	1.20	0.66
All areas		25%	42%	27%	6%	100%	1.15	0.66

Source: DRD

Almost two thirds of households (65%) lived within a six minute walk of a bus stop or place where they could get on a bus. Relatively few people lived close to a train station.

One member of each household was asked how long it would take them to walk to their nearest NIR station. Sixty-five per cent said it would take them 44 or more minutes, or that it was not feasible to walk. Overall, 24% of households lived within 26 minutes walk of an NIR station, 6% within 13 minutes walk.

Just fewer than 35% of households in Northern Ireland own one or more bicycles. While a breakdown of the purposes for which they are used is not available, it is interesting to note that in the *Continuous household survey*, 9% of respondents stated that they had participated in cycling as a sport in the past year.

Figure 30: Household bicycle ownership, 2006–08
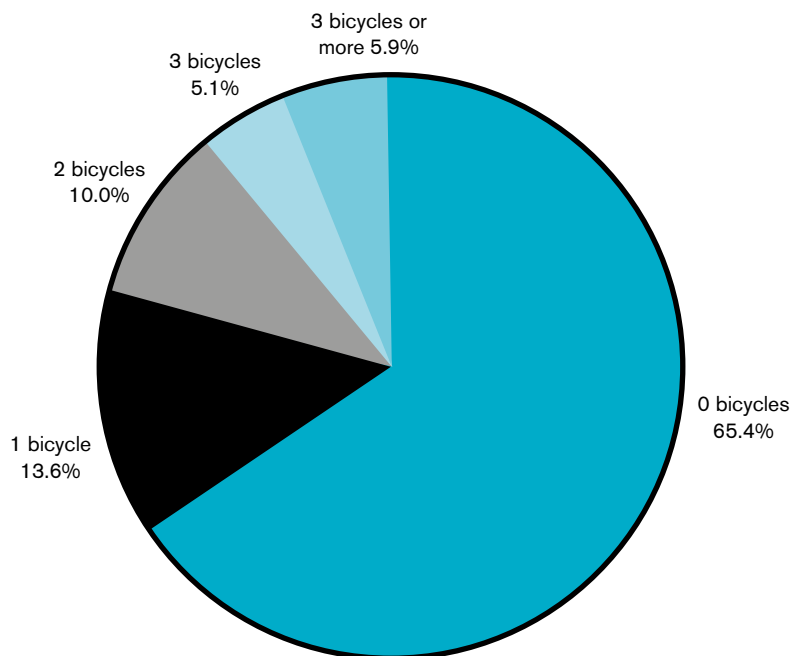
Source: DRD and NISRA, 2009

8. Environment

8.1 Air quality

Air pollutants are risk factors for, and contribute to, circulatory disease. They also cause respiratory illness and cancer and reduce the quality of life of people who are exposed to air pollution.

Air quality in Northern Ireland has improved substantially in recent years and continues to do so. This reflects trends in the rest of the UK. In particular, levels of air pollutants associated with coal and oil combustion have decreased significantly over the past 10 years.

Results from Northern Ireland's network of air quality monitoring stations show that the air quality strategy (AQS) objectives for the following pollutants have been met.

- Carbon monoxide
- PM10
- Benzene
- 1,3-Butadiene
- Sulphur dioxide

The main emission sources of PM10 are road transport and domestic burning of solid fuels. The main source of sulphur dioxide (SO_2) emissions is also domestic burning of solid fuels.

Monitoring in previous years has established that "ambient concentrations of lead were well within the AQS objective". However, "there remain a small number of sites close to busy roads in the Belfast conurbation and in Newry that do not meet AQS objectives for nitrogen dioxide (NO_2). Occasional ozone exceedences (such as that which occurred at Derry in 2008) also remain a possibility" (AEA, 2008).

Figure 31 demonstrates that there has been a reduction in urban background PM10 concentrations since 1987. For roadsides, this can only be calculated from 2001 onwards, due to the lack of roadside PM10 monitoring sites before then. This indicator appears to show an overall decreasing trend from 2001 to 2008.

By contrast, mean ozone concentrations in Northern Ireland do not show any clear overall trend over the same period and there is distinct year-to-year fluctuation. This is consistent with UK-wide observations and our understanding that the level of ozone is dependent on temperatures and weather conditions.

Figure 31: Urban background PM10 concentrations
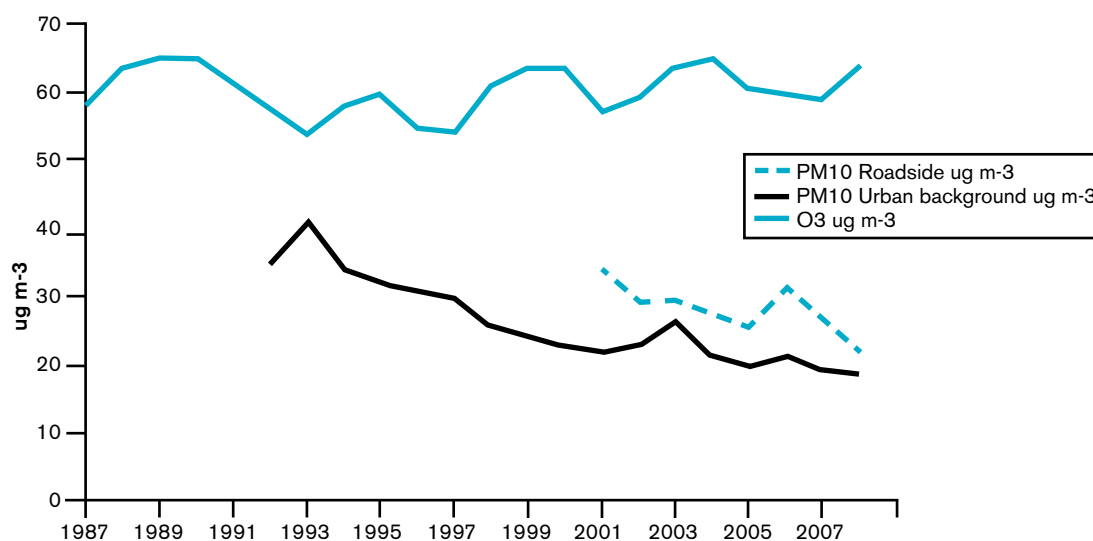
Source: DoE

Northern Ireland's air quality monitoring also covers polycyclic aromatic hydrocarbons (PAH). These are organic compounds, one – benzo[a]pyrene (B[a]P) – of which is often used as a marker for the carcinogenic risk of PAH in ambient air.

Major sources of PAH include vehicle emissions, industrial combustion processes and domestic solid fuel combustion. The latter is of particular significance in parts of Northern Ireland where domestic solid fuel heating is still common.

The three Northern Ireland sites measuring B[a]P (Ballymena Ballykeel, Derry Brandywell and Lisburn Dunmurry), although located in primarily residential areas, measured annual mean B[a]P concentrations comparable to those at sites in industrial areas in England. B[a]P concentrations were higher than those in urban centres such as Birmingham and Newcastle.

The relatively high B[a]P concentrations at Northern Ireland sites are thought to be due to ongoing domestic combustion of coal, other solid fuels and oil in their immediate vicinity at levels that are higher than other comparable areas in the rest of the UK.

All three sites in Northern Ireland exceeded the AQS objective of 0.25 ng m-3; Ballymena Ballykeel and Derry Brandywell also exceeded the less stringent EC target value of 1 ng m-3. Figure 32 compares annual mean B[a]P concentrations for these three sites, and compares them to cities in the UK.

Figure 32: Annual mean B[a]P concentrations at sites in Northern Ireland and selected sites elsewhere (dotted red line shows AQS objective of 0.25 ng m-3; the darker bars show Northern Ireland sites)
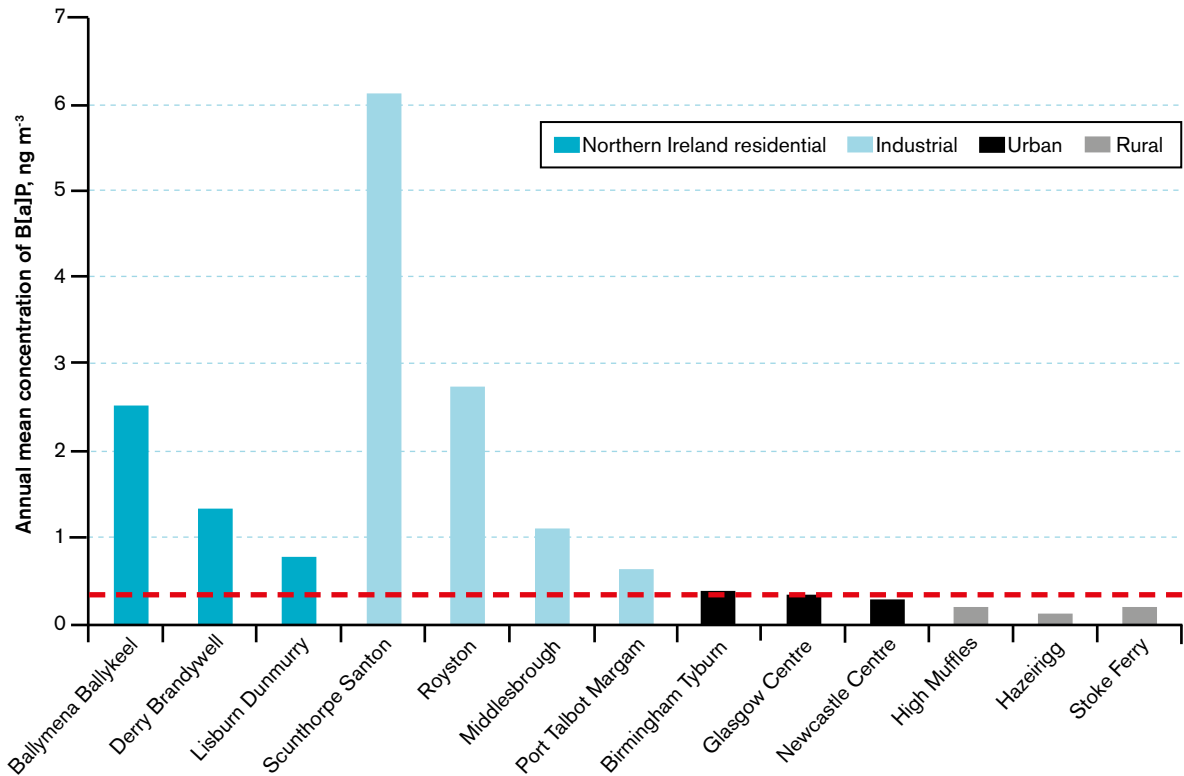
Source: AEA Technology, 2008

Figure 33 shows monthly mean B[a]P concentrations measured at the three sites in Northern Ireland over 2008. This clearly illustrates the strong seasonal pattern in PAH concentrations, with high winter concentrations likely a result of the increased use of domestic solid fuels during winter.

Figure 33: Monthly mean B[a]P concentrations at Ballymena Ballykeel, Derry Brandywell and Lisburn Dunmurry, 2008
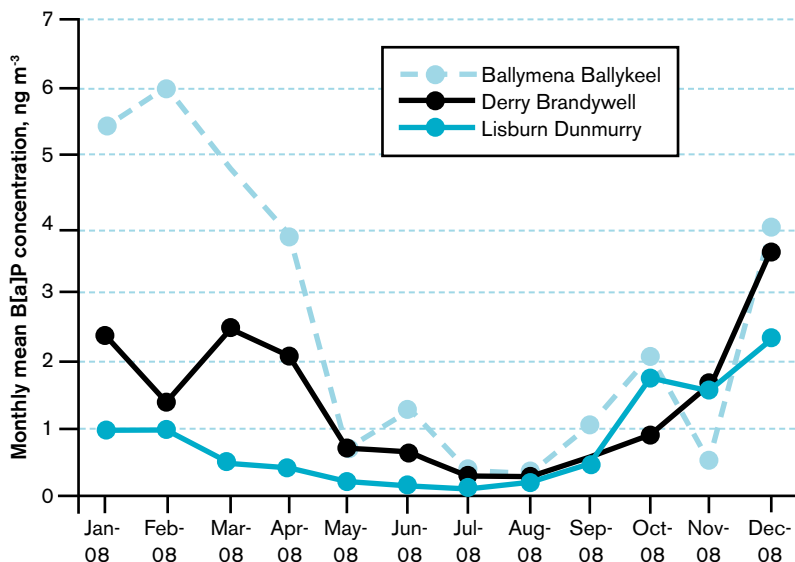
Source: AEA Technology, 2008

It should be noted that high B[a]P concentrations do not occur throughout all of Northern Ireland. PAH was measured at Belfast Clara Street from 2001 to 2006: this site was located in a smoke control area where there was less solid fuel burning. By 2006, Belfast Clara Street was recording similar B[a]P concentrations to sites in other large cities.

The most deprived areas of Northern Ireland are concentrated in greater Belfast (Belfast and Lisburn) and Londonderry. These are also the areas where concentrations of NO_2, PM10 and SO_2 are highest.

With the introduction of a domestic distribution gas network in greater Belfast, and renovation of the social housing stock, domestic solid fuel burning was projected to decrease significantly in future years (Pye and Vincent 2003 cited in Pye, King and Sturman); see Figure 34.

Figure 34: Northern Ireland decile population in areas with average PM10 concentrations >20µg/m³ in 2003 and 2010
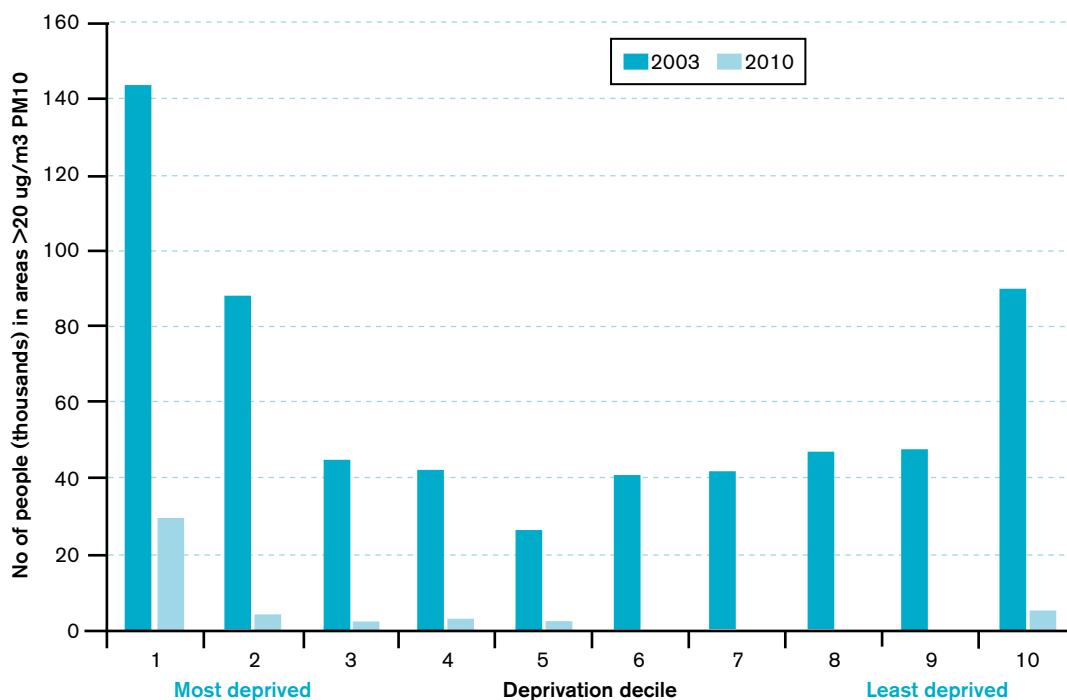
Source: AEA Technology and DEFRA

Despite these significant improvements, existing trends for Northern Ireland indicate that by 2010 some of these areas, especially those inhabited by socioeconomically deprived people, would still have PM10 concentrations greater than 20µg/m³ (Pye, King and Sturman, 2006).

As a result, the inequalities gap will have increased, with decile 1 accounting for over 60% of the population experiencing such high levels of air pollutant concentrations (Figure 35). This poses a higher risk for residents to develop and suffer ill health due to circulatory and respiratory disease, as well as cancer.

Figure 35: Distribution by decile of population in Northern Ireland in areas where PM10 >20µg/m³, 2003 and 2010

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