

Long-Term Monitoring of Health Inequalities

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The Scottish Government
St Andrew's House
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EH1 3DG

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Introduction

This publication updates the headline indicators from the Long-Term Monitoring of Health Inequalities¹ report. This is the fourth annual update of these data.

In 2007, a Ministerial Task Force on Health Inequalities led by the Minister for Public Health was established to identify and prioritise practical actions to reduce the most significant and widening health inequalities in Scotland. The Task Force recognised the need to monitor progress in tackling health inequalities in the longer term as well as managing short- and medium-term progress.

A short life technical advisory group was set up in early 2008 to advise the Task Force on long-term monitoring of health inequalities (see Annex 1 for membership of this group). The remit of this group was to explore how best to measure health inequalities and which high level indicators should be monitored over time. The group's recommended indicators were:

Headline indicators of inequalities in health outcomes

- Healthy Life Expectancy at birth
- Premature Mortality from all causes aged under 75 years
- Mental Wellbeing of adults aged 16 years and over
- Low birthweight

Indicators of inequalities in morbidity and mortality from specific causes for specific age groups

- Coronary Heart Disease
 - first ever hospital admission for heart attack aged under 75 years
 - deaths aged 45-74 years
- Cancer
 - incidence rate aged under 75 years
 - deaths aged 45-74 years
- Alcohol
 - first ever hospital admission aged under 75 years
 - deaths aged 45-74 years
- All-cause mortality aged 15-44 years

Details of the definitions and sources for these indicators are provided in Annex 2. Note that the time periods for which data are available for these indicators vary.

Recommended measurement approaches to monitoring health inequalities

The expert group recognised that different types of measure give insight into different aspects of inequalities. The recommended approach therefore uses a combination of measures, with the aim of giving a fuller understanding of the inequalities concerned.

- Relative Index of Inequality (RII): *How steep is the inequalities gradient?* This measure describes the gradient of health observed across the deprivation scale, relative to the mean health of the whole population.

¹ The first Long-Term Monitoring of Health Inequalities report (published 2008) is available here: <http://scotland.gov.uk/Publications/2008/09/25154901/0>

- **Absolute gap:** *How big is the gap?* This measure describes the absolute difference between the extremes of deprivation – the rate in the most deprived minus the rate in the least deprived group.
- **Scale:** *How big is the problem?* This measure describes the underlying scale of the problem, puts it into context and presents past trends at Scotland level.

Detailed descriptions of these measures are provided in Annex 3. In the absence of individual level data on socio-economic circumstance, which the group identified as the ideal but acknowledged is not yet possible, an area based index based on income and employment has been used to define “deprivation”. Details about the reasons for this and the way that this index was calculated are provided in Annex 3.

The expert group also advised that these indicators and measures were recommended for long-term monitoring of health inequalities due to deprivation at Scotland level. Monitoring of health inequalities due to other factors (such as age, gender or ethnicity for example) would require different indicators and measures. Similarly, the group advised that these recommended indicators and measures would not necessarily be the most appropriate for long-term monitoring of health inequalities at a local level.

The report of the Ministerial Task Force, *Equally Well*² (published in June 2008), recommended that these indicators and measures should be adopted and a report published. The first report was published in September 2008 and updates were published in September 2009 and October 2010. This report represents the fourth of a series of annual publications.

Revisions from previous years’ reports

To assess the income and employment deprivation in each year the 6,505 datazones (small area regions of Scotland) are collected into ten deciles (or groups), of decreasing deprivation each with a population of around one tenth of the Scottish population. Errors were found in how the 2007 and 2008 datazones were grouped into deciles. As a result the deciles for 2007 and 2008 have been re-assigned and all 2007 and 2008 figures have been recalculated. The impact of this change on the data is very small.

² Equally well (2008), <http://scotland.gov.uk/Publications/2008/06/25104032/0>

Results

Healthy Life Expectancy (HLE) - at birth

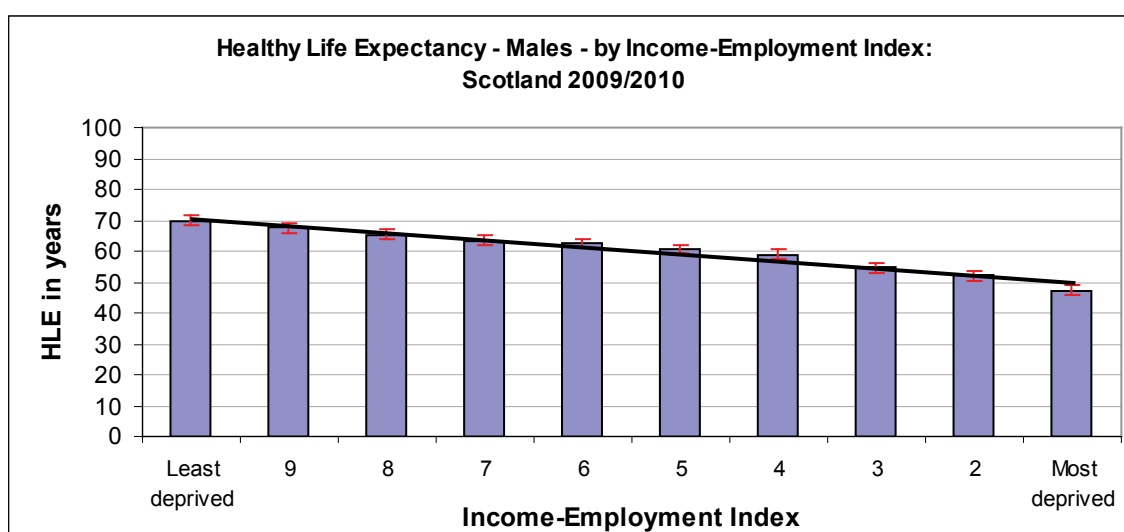
Summary

- *A new methodology means change over time cannot be measured, but there continues to be inequalities in both relative and absolute terms.*

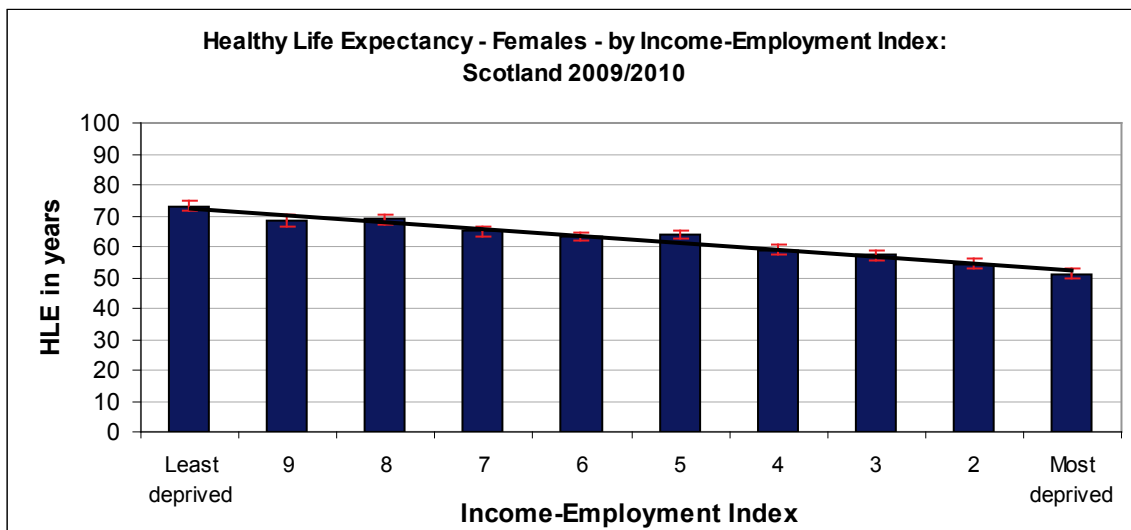
The Healthy Life Expectancy (HLE) indicator is based on two years of data to ensure large enough sample sizes. Between 1999/2000 and 2007/2008, HLE increased by 3 years (4.5%) for males and 2.3 years (3.4%) for females. In 2009 the format of the self-assessed health question (on which the healthy life expectancy data is based) was changed to align with the European Union. This has led to a major discontinuity in the series. For both men and women, the markedly lower estimate of HLE at birth for Scotland for 2009 (8 years below the 2008 estimates for men and women) cannot be considered as part of the same series as earlier years, but represents the first point in a new time trend for future years. A technical paper by the Scottish Public Health Observatory (ScotPHO) has more information on this change³

In 2009/2010, HLE at Scotland level for males was 59.9 years (16.3 years less than life expectancy) and HLE for females was 62.1 years (18.6 years less than life expectancy). HLE in deprived areas is lower for both males and females than HLE in areas of low deprivation. In 2009/2010, HLE of those living in the most deprived decile was 22.5 years lower for males and 22.1 years lower for females than HLE of those living in the least deprived decile. The difference between HLE and life expectancy (expected years spent in not good)health is also notably greater in more deprived areas: for males - 21.3 years in 'not good' health in the most deprived decile compared with 12.1 years in the least deprived decile; and for females – 24.9 years in 'not good' health in the most deprived decile compared with 11.6 years in the least deprived decile.

Inequalities gradient in the most recent year available

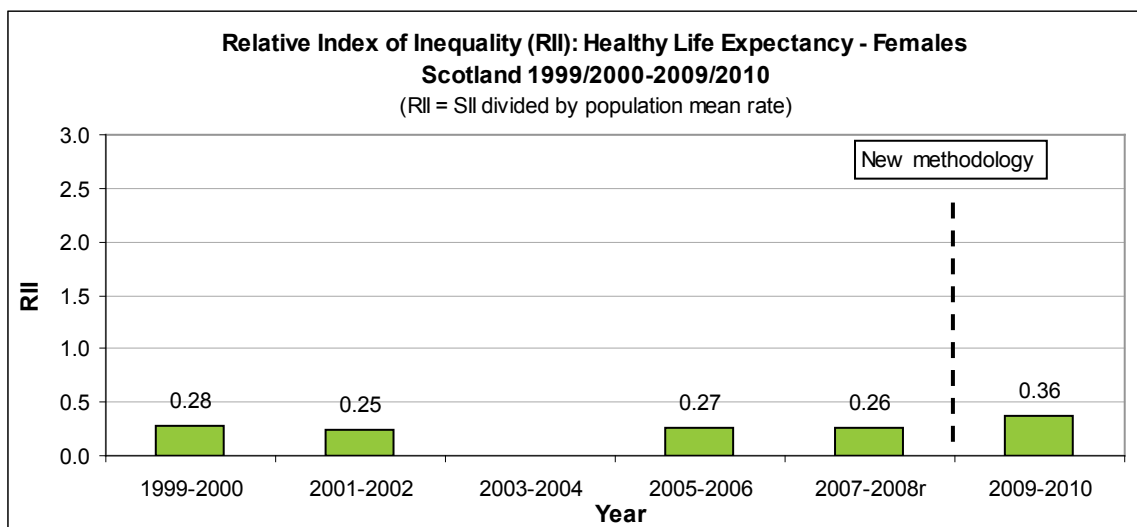
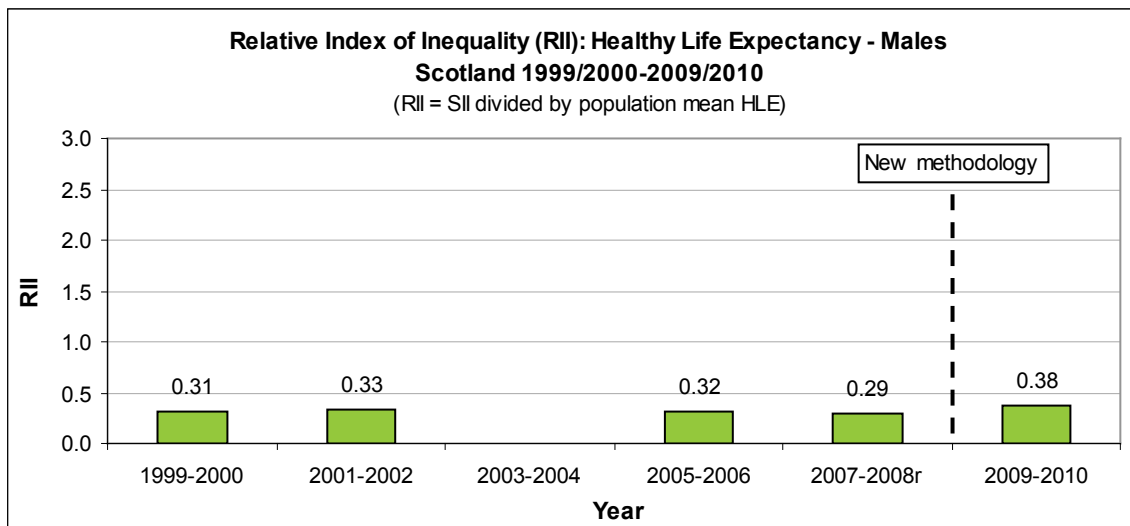


³Technical paper available at: <http://www.scotpho.org.uk/nmsruntime/saveasdialog.asp?IID=8064&slD=5808>



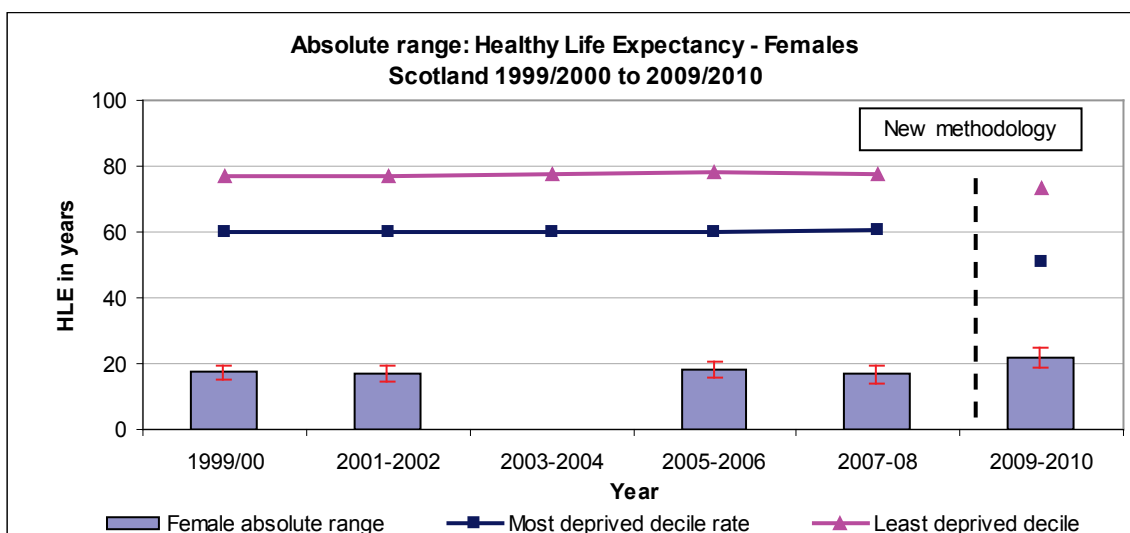
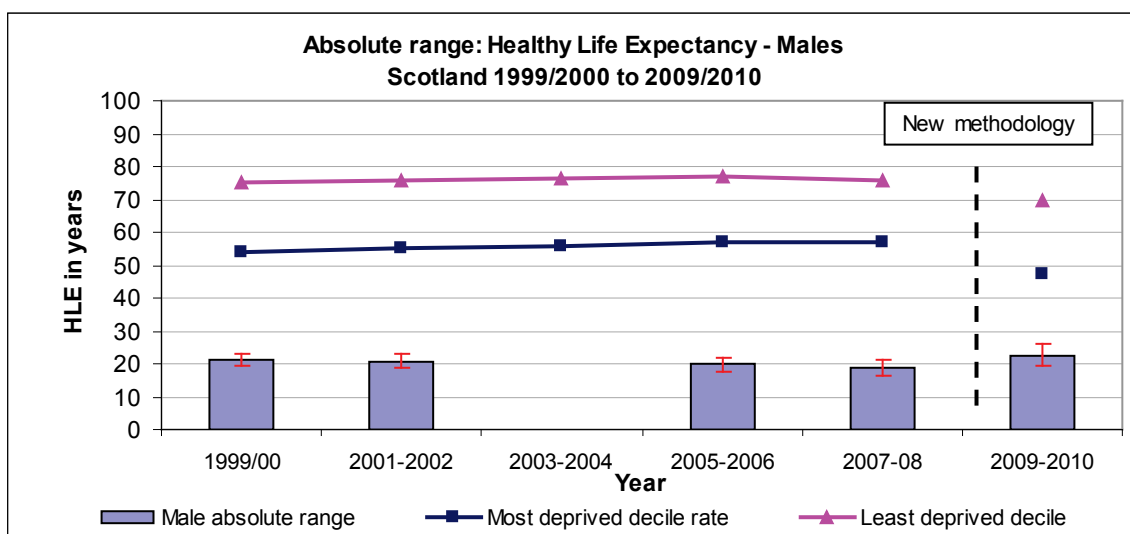
(Note: the red bars for each column indicate the uncertainties in each estimate of HLE).

Relative Index of Inequality (RII) over time



Data not available for 2003/2004

Absolute range over time



Data not available for 2003/2004.

The red bars for each column indicate the uncertainties in each estimate of absolute difference in HLE.

Scale / context

New Methodology (5 point scale of self-assessed health), 2009/2010

	Male HLE in years	95%LL	95%UL	Male LE in years	95%LL	95%UL	Estimated years spent in not good health ⁴
2009/2010							
Scotland	59.9	59.4	60.4	76.1	76.0	76.2	16.2
Most deprived decile	47.4	45.8	49.0	68.7	68.3	69.1	21.3
Least deprived decile	69.9	68.2	71.6	82.0	81.6	82.3	12.1

	Female HLE in years	95%LL	95%UL	Female LE in years	95%LL	95%UL	Estimated years spent in not good health ¹
2009/2010							
Scotland	62.1	61.6	62.6	80.6	80.5	80.8	18.6
Most deprived decile	51.1	49.6	52.6	76.1	75.7	76.5	24.9
Least deprived decile	73.2	71.7	74.7	84.8	84.5	85.1	11.6

1. From 2009 Self-assessed health was measured on a five-point scale (Very good, Good, Fair, Bad, Very bad). For summary purposes the final three categories (Fair, Bad, Very Bad) are collectively referred to as 'Not good health'. This is different to the category of 'Poor health' in the subsequent two tables.

Previous Methodology (3-point scale of self-assessed health), 1999/2000 to 2007/2008

	Male HLE in years	95%LL	95%UL	Male LE in years	95%LL	95%UL	Estimated years spent in poor health ¹
1999/2000							
Scotland	65.0	64.7	65.4	73.0	72.8	73.1	7.9
Most deprived decile	53.7	52.6	54.8	65.8	65.4	66.3	12.1
Least deprived decile	75.0	74.0	75.9	78.6	78.3	79.0	3.7
2001/2002							
Scotland	65.9	65.6	66.2	73.4	73.3	73.5	7.5
Most deprived decile	55.0	53.9	56.1	65.8	65.4	66.3	10.8
Least deprived decile	75.7	74.8	76.6	79.5	79.1	79.9	3.8
2003/2004							
Scotland				74.0	73.9	74.1	-
Most deprived decile				66.3	65.9	66.8	-
Least deprived decile				79.7	79.3	80.0	-
2005/2006							
Scotland	67.4	67.1	67.7	74.8	74.7	74.9	7.4
Most deprived decile	57.0	55.9	58.1	67.5	67.1	67.9	10.5
Least deprived decile	76.8	75.8	77.8	80.7	80.4	81.1	3.9
2007/2008 – revised²							
Scotland	68.0	67.6	68.3	75.1	75.0	75.2	7.1
Most deprived decile	56.9	55.7	58.1	67.6	67.2	68.0	10.6
Least deprived decile	75.8	74.7	76.9	80.9	80.6	81.3	5.1

	Female HLE in years	95%LL	95%UL	Female LE in years	95%LL	95%UL	Estimated years spent in poor health ¹
1999/2000							
Scotland	68.2	67.8	68.5	78.4	78.3	78.5	10.3
Most deprived decile	59.8	58.6	61.0	74.2	73.9	74.6	14.4
Least deprived decile	77.1	76.1	78.1	81.8	81.5	82.1	4.7
2001/2002							
Scotland	69.2	68.9	69.6	78.9	78.8	79.0	9.6
Most deprived decile	60.0	58.8	61.1	74.6	74.2	74.9	14.6
Least deprived decile	76.8	75.6	77.9	82.4	82.1	82.8	5.7
2003/2004							
Scotland				79.1	79.0	79.2	-
Most deprived decile				74.8	74.4	75.2	-
Least deprived decile				83.0	82.6	83.3	-
2005/2006							
Scotland	69.6	69.2	70.0	79.7	79.6	79.8	10.1
Most deprived decile	59.9	58.7	61.1	75.1	74.7	75.5	15.2
Least deprived decile	78.1	76.8	79.3	84.2	83.9	84.6	6.2
2007/2008 -revised²							
Scotland	70.5	70.1	70.9	80.0	79.8	80.1	9.5
Most deprived decile	60.9	59.5	62.2	75.5	75.2	75.9	14.7
Least deprived decile	77.6	76.3	78.8	84.3	84.0	84.6	6.7

1. Prior to 2009 Self-assessed health was measured on a three-point scale (Good, Fairly good, Not good). For summary purposes 'Not good' responses were counted as 'Poor health'. This is not comparable to the category of 'Not good health' used from 2009 onwards.

2. The 2007 and 2008 data has been revised since the publication of the report in October 2010.

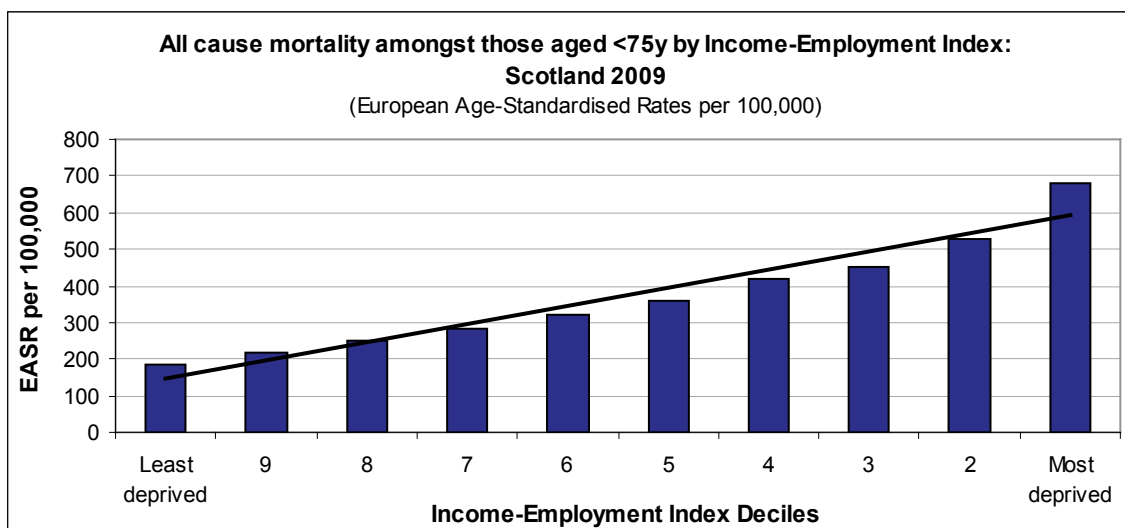
Premature Mortality - from all causes, aged under 75 years

Summary

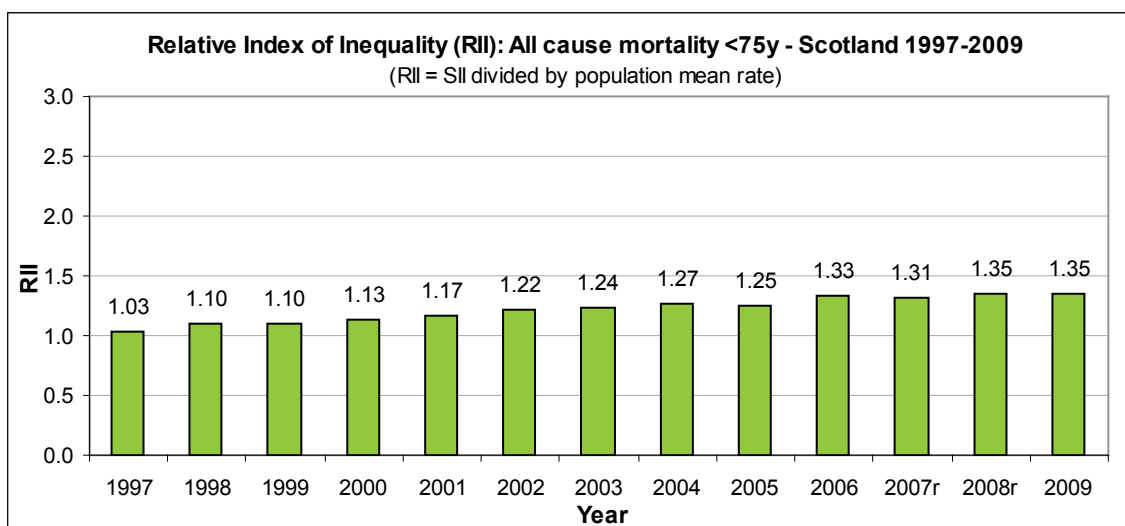
- *Inequalities are stable in absolute terms but are widening in relative terms*

Between 1997 and 2009, deaths amongst those aged under 75 years have decreased by 24.9%. Despite these decreases, around 21,200 people aged under 75 still die each year. Deaths in this age group are more common in deprived areas than in areas of low deprivation. In 2009, under 75 deaths amongst those living in the most deprived decile were 3.7 times more likely than those living in the least deprived decile. Recent reductions in premature mortality have been observed across the population. Whilst inequalities have been stable in absolute terms (as demonstrated by the absolute range), improvements observed in deprived areas have not been as great as those observed elsewhere in Scotland resulting in a widening of inequalities in relative terms (as demonstrated by the overall increase in RII).

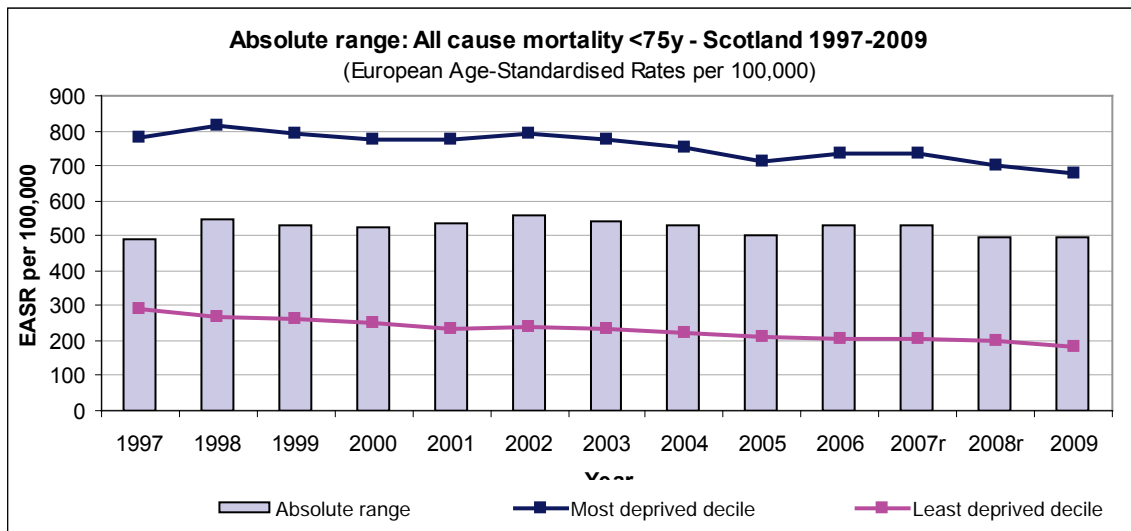
Inequalities gradient in the most recent year available



Relative Index of Inequality (RII) over time



Absolute range over time



Scale / context

	Number of deaths	Target population size	Rate per 100,000 (EASR)
1997	26,081	4,740,269	485.5
1998	25,857	4,729,975	479.8
1999	25,491	4,721,298	471.6
2000	24,593	4,708,667	454.1
2001	24,168	4,703,661	446.2
2002	24,219	4,690,508	443.8
2003	23,789	4,690,603	431.4
2004	22,896	4,706,922	411.6
2005	22,441	4,718,403	401.0
2006	22,237	4,734,676	395.8
2007¹	22,359	4,755,963	393.4
2008¹	22,005	4,775,321	382.8
2009	21,229	4,816,465	364.8

1. The 2007 and 2008 data has been revised since the publication of the October 2010 report.

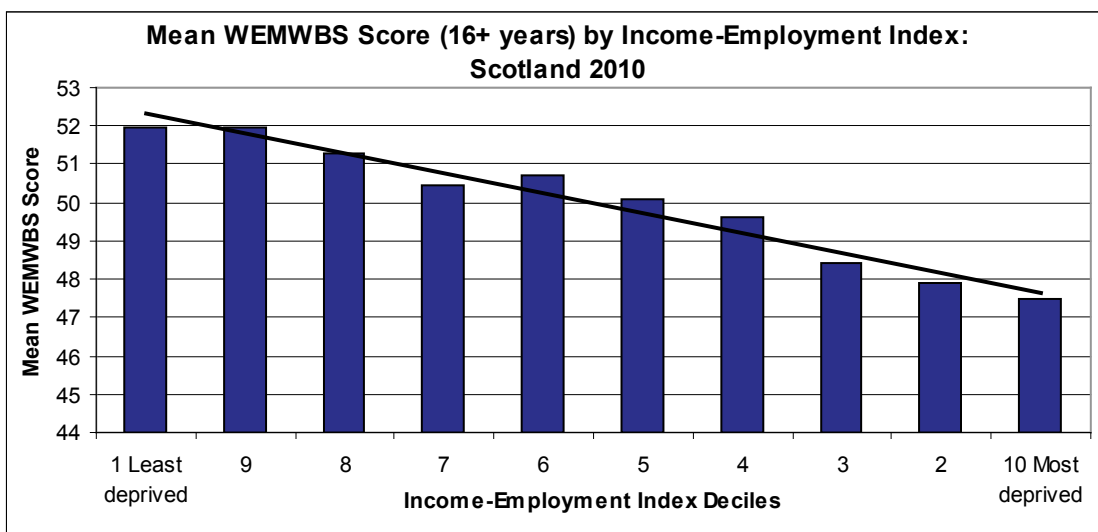
Mental Wellbeing (WEMWBS) - adults aged 16 years and over

Summary

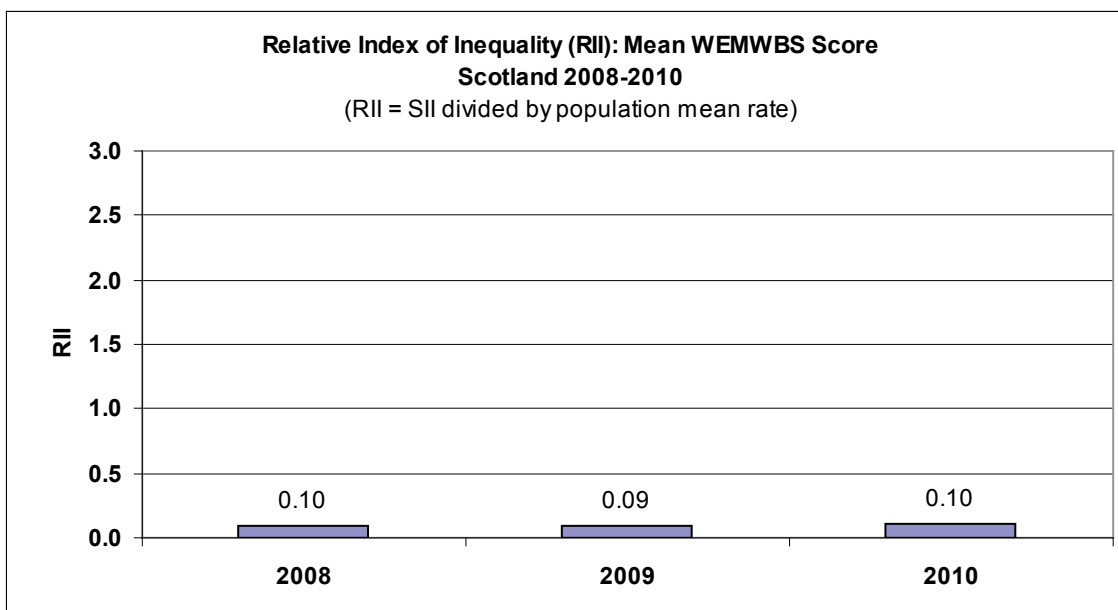
- *Inequalities are stable in absolute and relative terms.*

There is a clear difference in mean WEMWBS scores in terms of deprivation. Those in the most deprived decile reported a lower mean score (indicating lower mental wellbeing) than those in the highest decile (a difference of 4.5 between the lowest and highest deciles). The Relative Index of Inequality was 0.10, which has been consistent over the past three years

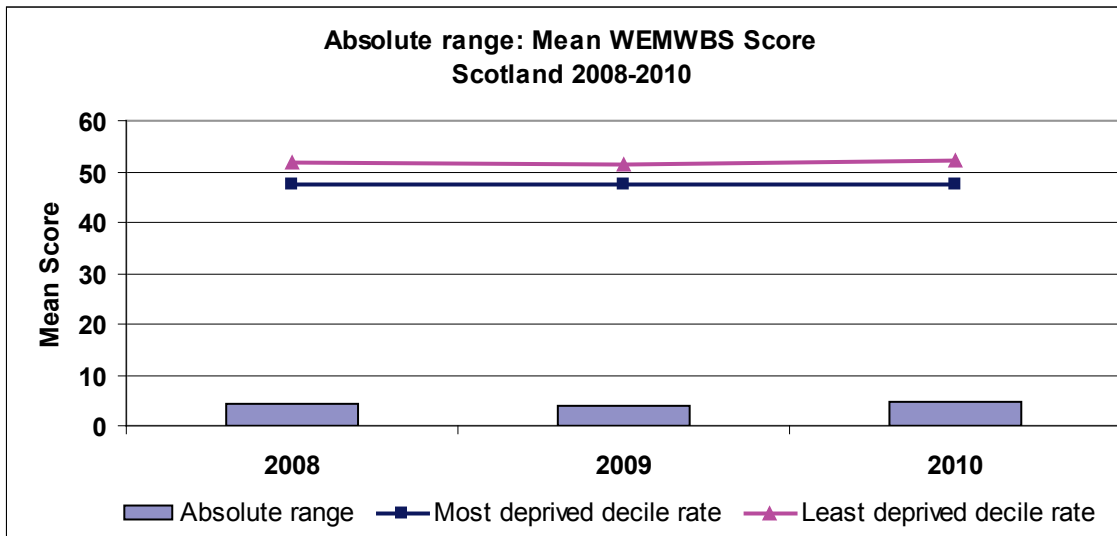
Inequalities Gradient in the most recent year available



Relative Index of Inequality (RII) over time



Absolute range over time



Scale / Context

SIMD decile	Mean WEMWBS Score ¹		
	2008 ²	2009	2010
most deprived	47.4	47.5	47.5
2	47.7	47.7	47.9
3	48.9	49.0	48.4
4	49.6	49.3	49.6
5	49.9	49.2	50.1
6	50.5	50.1	50.7
7	51.0	50.6	50.4
8	51.3	50.7	51.3
9	51.6	51.6	52.0
least deprived	51.7	51.3	52.0
Total	50.0	49.8	49.9

1. The methodology for calculating this indicator has been revised since the 2010 publication. Details of this change are in Annex 2.

2. The 2008 data has been revised since the publication of the report in October 2010.

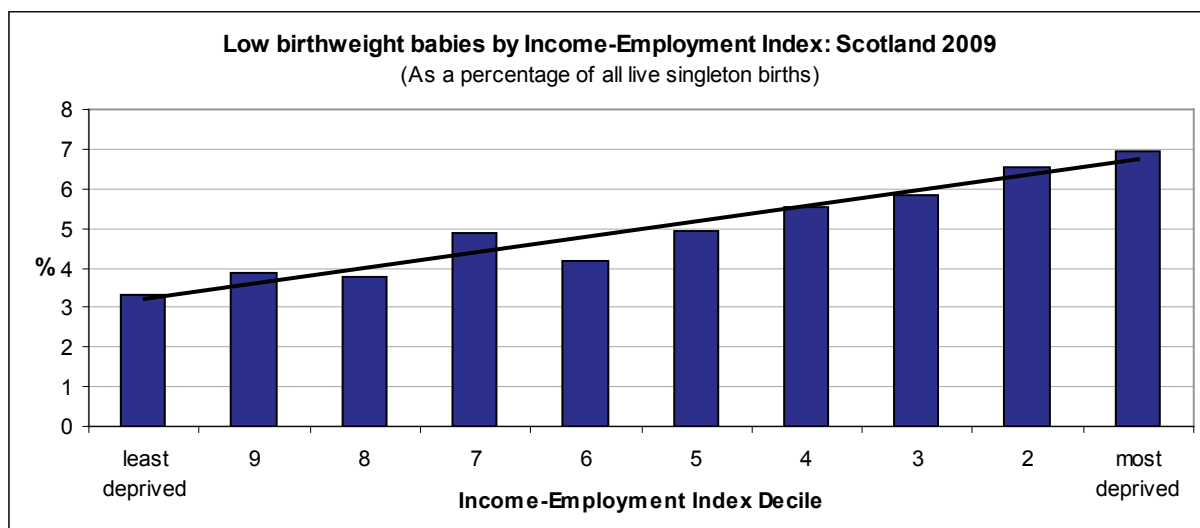
Low Birthweight

Summary

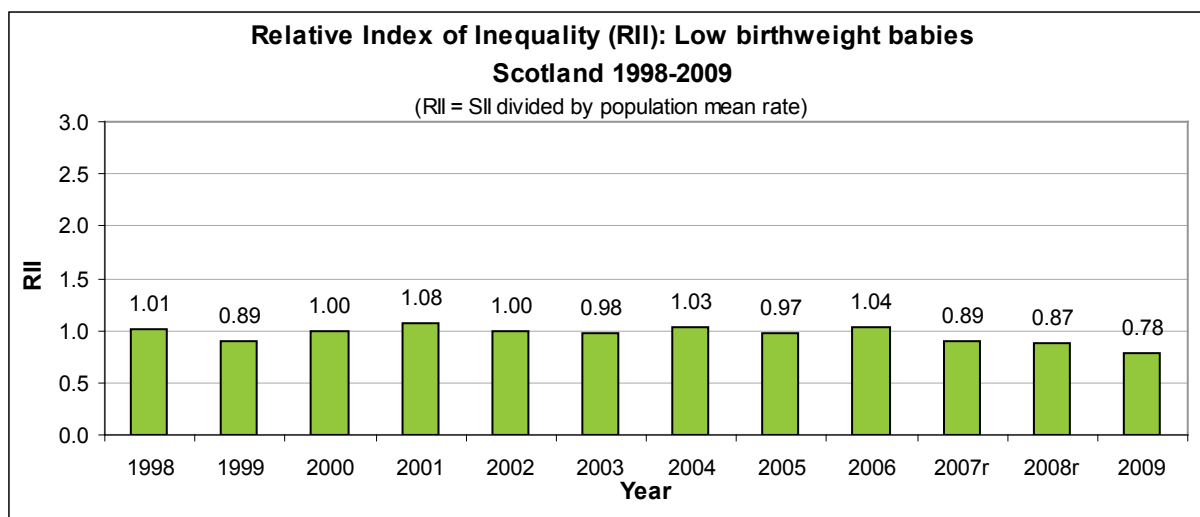
- *Inequalities are narrowing in both absolute and relative terms*

Between 1998 and 2009 the number and percentage of low birthweight babies has been relatively stable. Around 3,000 low birthweight babies are born each year (around 5% of total live, singleton births in Scotland). As found previously, low birthweight babies are more common in deprived areas than in areas of low deprivation. In 2009 the percentage in the most deprived decile was 6.9 compared to 3.3 in the least deprived decile - a difference of 3.6 percentage points. However, inequalities have narrowed in both absolute (as demonstrated by the absolute range) and relative terms (as demonstrated by the RII). This is mainly due to a reduction in the most deprived deciles as the percentage of low birthweight babies in the least deprived decile has remained fairly stable in recent years.

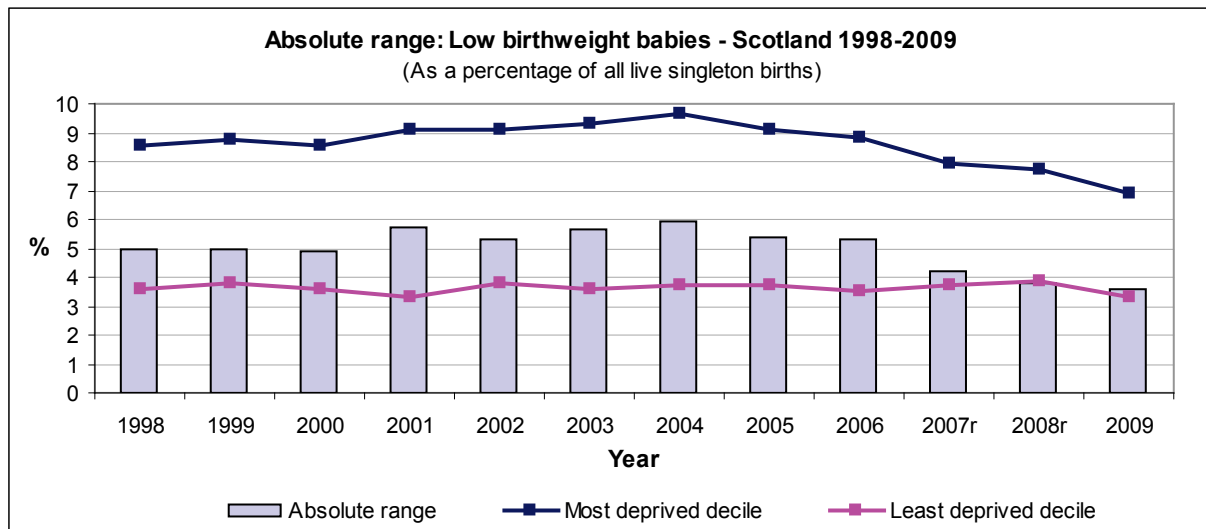
Inequalities gradient in the most recent year available



Relative Index of Inequality (RII) over time



Absolute range over time



Scale / context

	Number of low BW babies	Target population size (live singleton births)	Percentage
1998	3,108	55,152	5.6
1999	3,098	52,726	5.9
2000	2,906	51,082	5.7
2001	2,848	49,752	5.7
2002	2,910	48,952	5.9
2003	3,026	50,071	6.0
2004	3,030	51,852	5.8
2005	3,056	51,372	5.9
2006	2,928	52,286	5.6
2007¹	3,095	55,086	5.6
2008¹	3,134	56,738	5.5
2009	2,896	55,797	5.2

1. The 2007 and 2008 data has been revised since the publication of the October 2010 report.

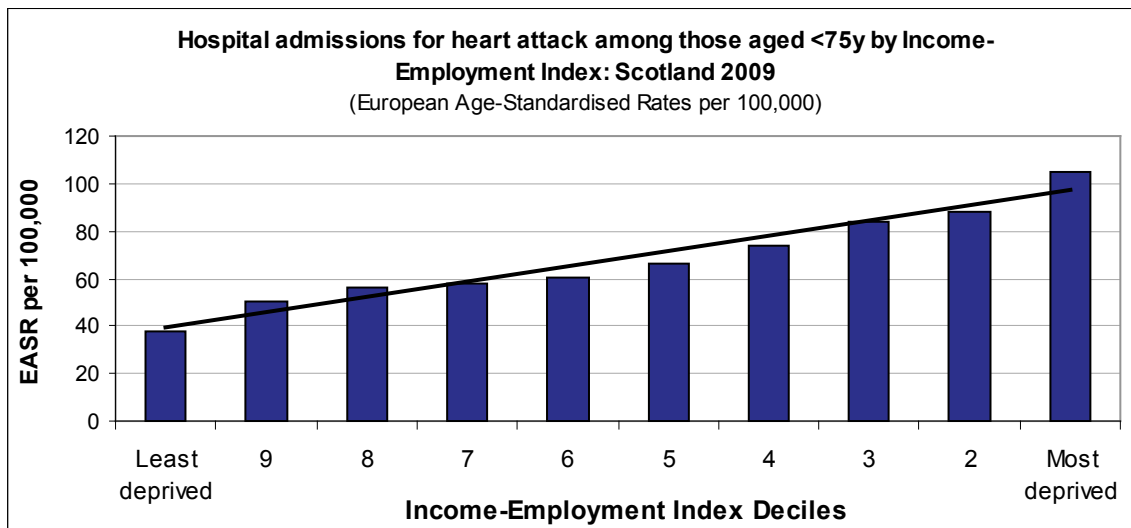
Coronary Heart Disease - first ever hospital admission for heart attack aged under 75 years

Summary

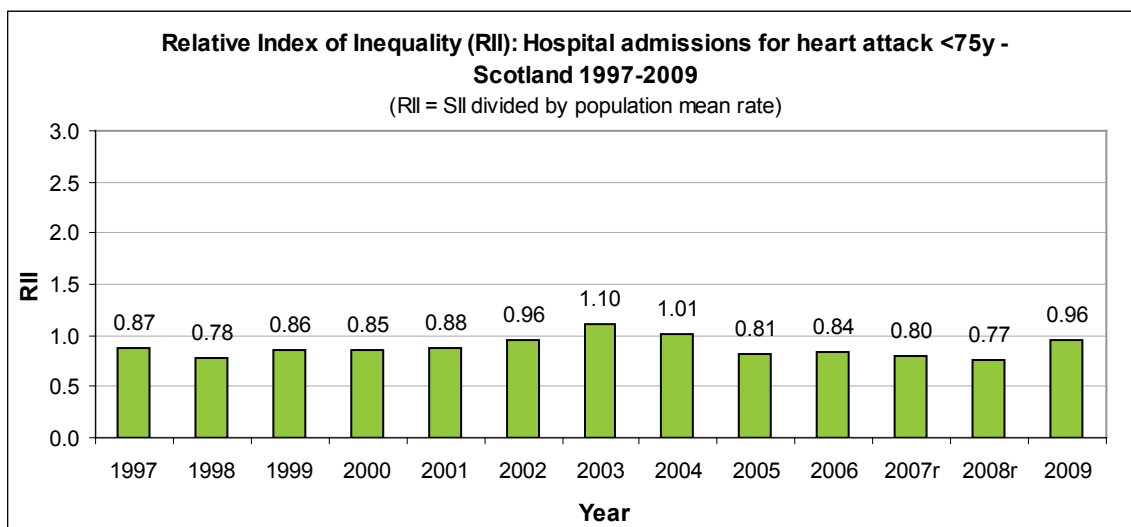
- Over time inequalities have decreased in both absolute and relative terms, with a slight increase in the most recent year

Around 3,900 new cases (aged under 75 years) were admitted to hospital for heart attack in 2009. Between 1997 and 2009, there was a considerable decrease (40%) in the annual rates. In 2009 the rate of admission for people living in the most deprived decile was 104.8 per 100,000 population, compared to a rate of 37.5 in the least deprived decile – a difference of 67.3. Although both absolute and relative measures reflect higher rate of hospital admissions in deprived areas, the extent of these inequalities decreased consistently from 2003 to 2008, but increased slightly in 2009.

Inequalities gradient in the most recent year available

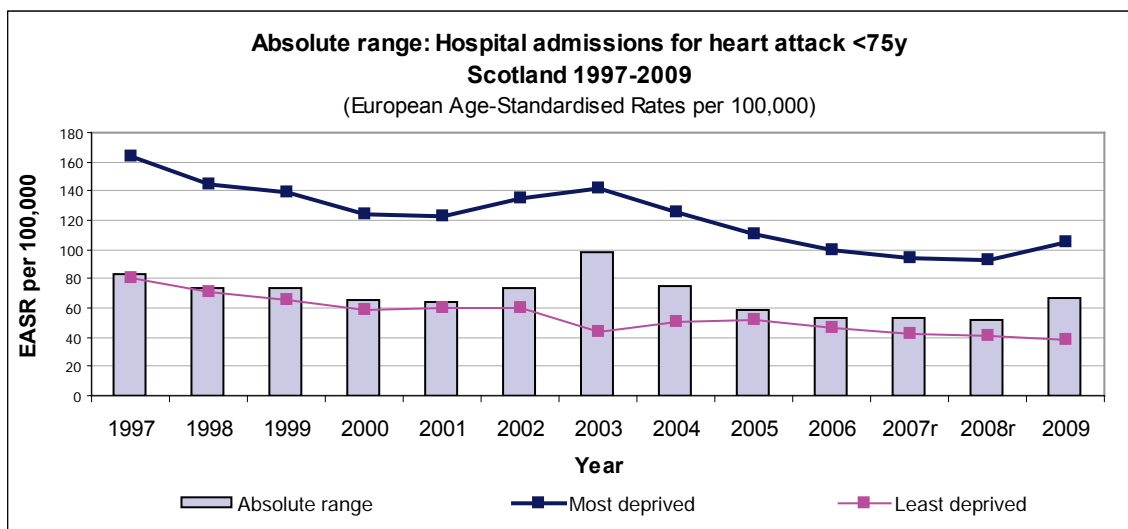


Relative Index of Inequality (RII) over time



Please note that all trend data for this indicator have been revised from last year's report.

Absolute range over time



Please note that all trend data for this indicator have been revised from last year's report.

Scale / context¹

	Number of new cases	Target population size	Rate per 100,000 (EASR)
1997	5,765	4,740,269	110.9
1998	5,676	4,729,975	108.3
1999	5,102	4,721,298	97.0
2000	4,812	4,708,667	90.7
2001	4,776	4,703,661	89.6
2002	4,833	4,690,508	89.6
2003	4,569	4,690,603	84.0
2004	4,413	4,706,922	80.5
2005	4,054	4,718,403	73.2
2006	3,817	4,734,676	68.6
2007	3,624	4,755,963	64.5
2008	3,733	4,775,321	65.8
2009	3,857	4,795,479	67.1

1. An amendment to the methodology resulted in all data from 1997 to 2009 being revised in the data published in October 2011. The methodology was refined to more accurately pick up first ever emergency admission for AMI, and this has resulted in a slight reduction in the overall numbers for each year.

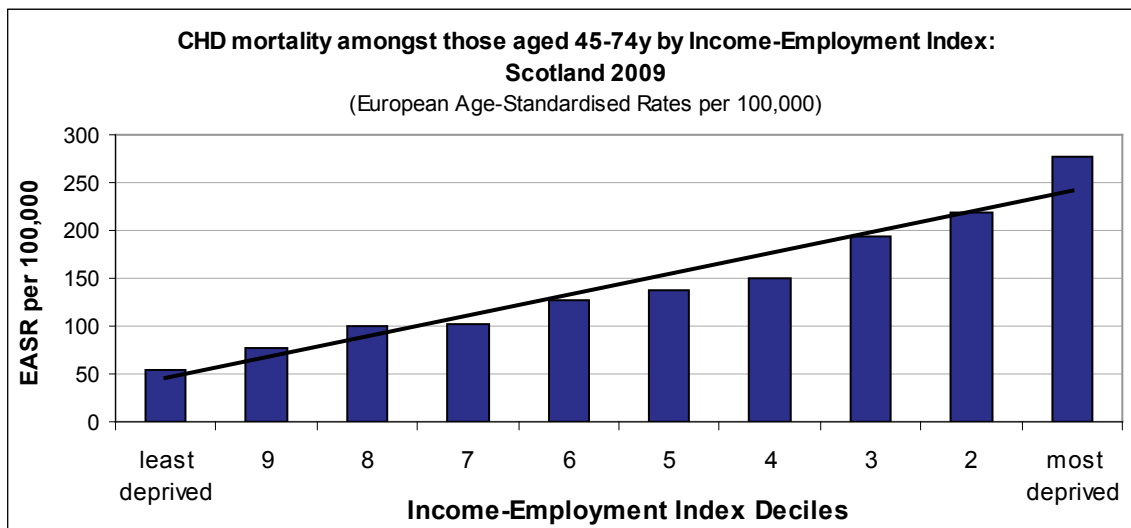
Coronary Heart Disease (CHD) - deaths aged 45-74 years

Summary

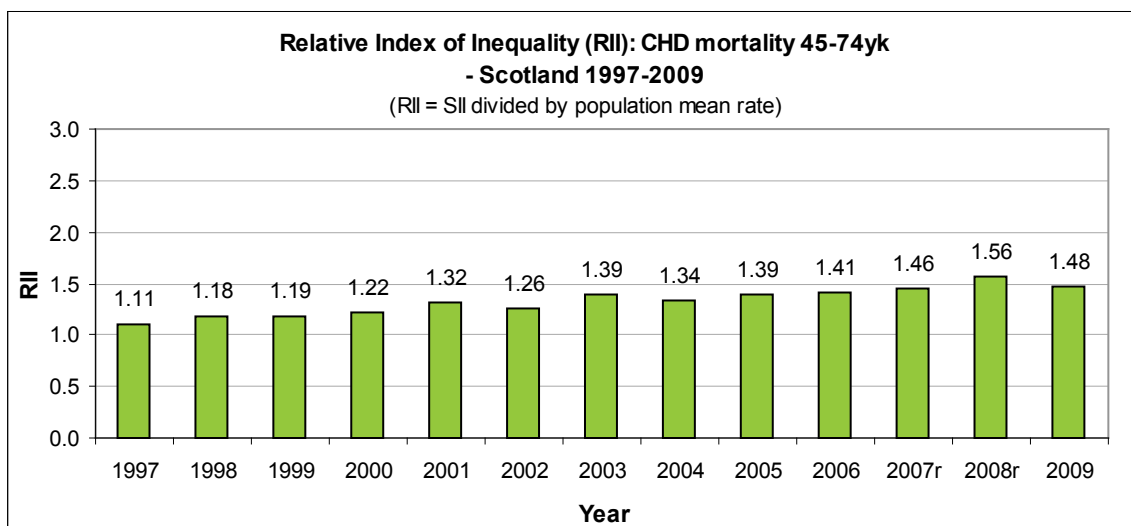
- *Inequalities have narrowed in absolute terms but are widening overall in relative terms*

Between 1997 and 2009, there has been a considerable decrease in CHD mortality amongst the population aged 45-74 years as a whole – rates fell by 56%. However, CHD remains one of Scotland's biggest causes of premature mortality, with around 2,900 deaths occurring in this age group each year. Premature mortality from CHD is more prevalent in deprived areas than in areas that are less deprived. In 2009 there were 276 deaths per 100,000 population in the most deprived decile compared to 55 deaths per 100,000 population in the least deprived decile. The absolute range indicates that inequalities have narrowed in absolute terms, however improvements observed in deprived areas have not been as great as those observed in Scotland overall resulting in an overall widening of inequalities in relative terms (as demonstrated by the RII).

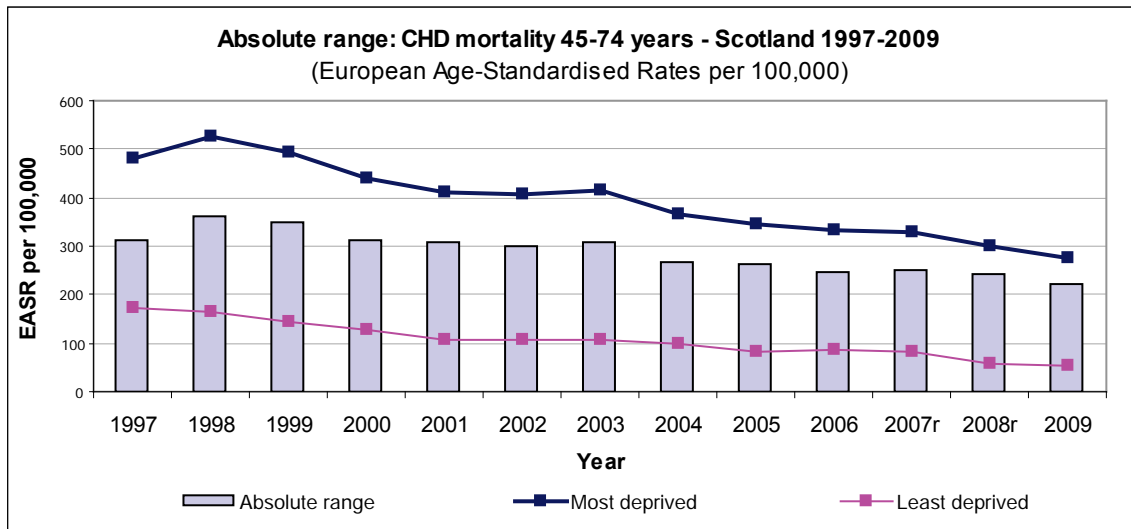
Inequalities gradient in the most recent year available



Relative Index of Inequality (RII) over time



Absolute range over time



Scale / context¹

	Number of deaths	Target population size	Rate per 100,000 (EASR)
1997	5,887	1,635,590	320.0
1998	5,675	1,646,711	306.1
1999	5,389	1,658,124	289.8
2000	4,858	1,670,660	261.1
2001	4,483	1,687,422	238.9
2002	4,310	1,703,819	227.9
2003	4,197	1,724,940	219.5
2004	3,840	1,750,293	198.8
2005	3,721	1,771,454	191.2
2006	3,393	1,793,423	174.4
2007¹	3,374	1,818,202	171.4
2008¹	3,155	1,843,609	157.9
2009	2,855	1,869,363	141.3

1. The 2007 and 2008 data has been revised since the publication of the October 2010 report.

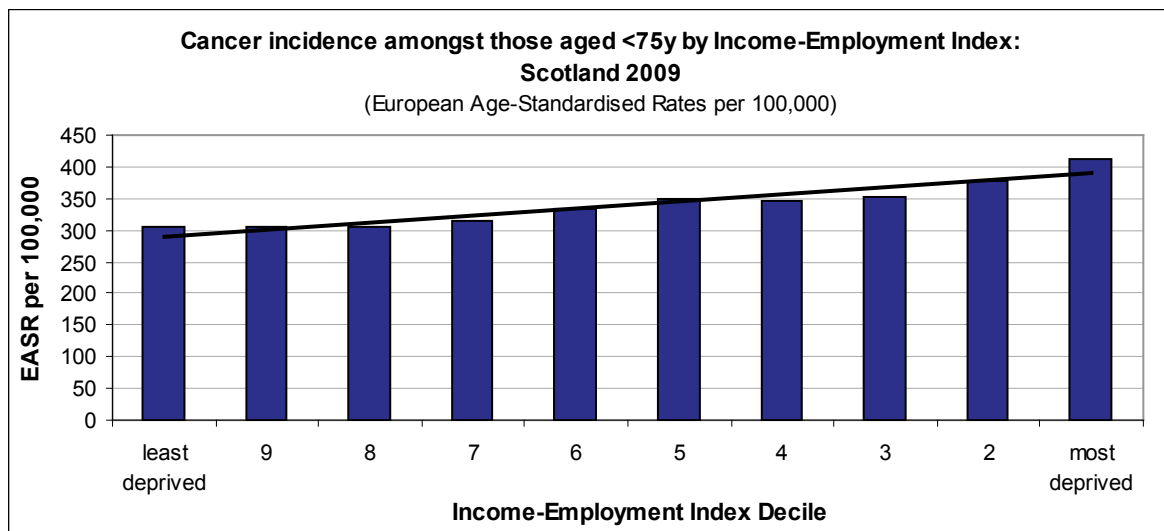
Cancer - incidence rate aged under 75 years

Summary

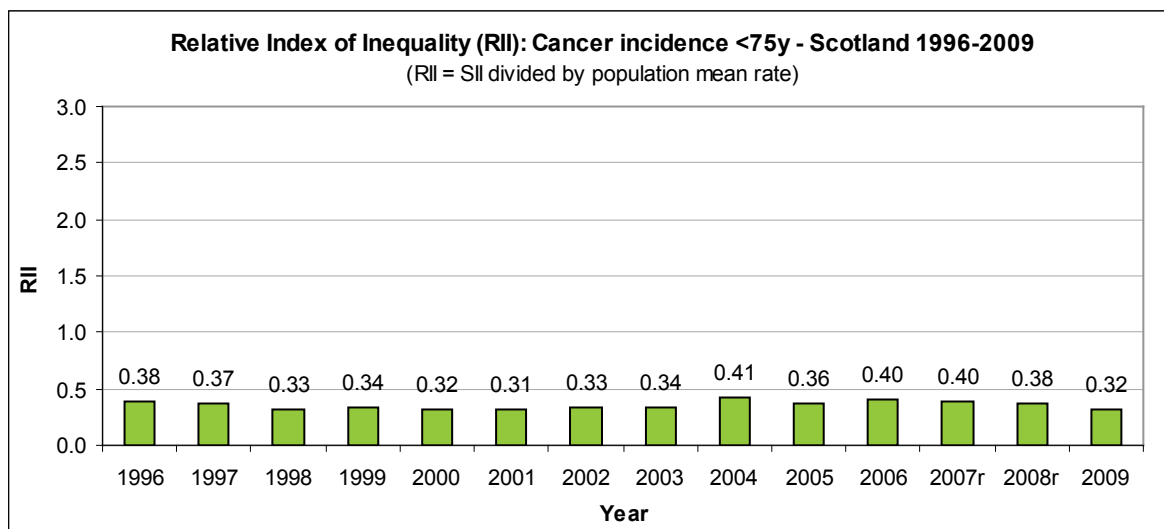
- *Inequalities are stable in both absolute and relative terms over the long term with some evidence of a slight decrease in the last few years*

There were around 19,700 new cases of cancer diagnosed in 2009. Rates have decreased by 2% since 1996 but fluctuated year on year with no clear trend since 1997. In 2009, the rate in the most deprived decile was 413 per 100,000 population compared to a rate of 305 in the least deprived decile – a difference of 108. Inequality measures (both absolute range and RII) have remained stable since 1996. There has been some decrease in both inequalities measures since 2006, which is a result of a worsening in the least deprived areas, while rates in the most deprived areas have remained steady.

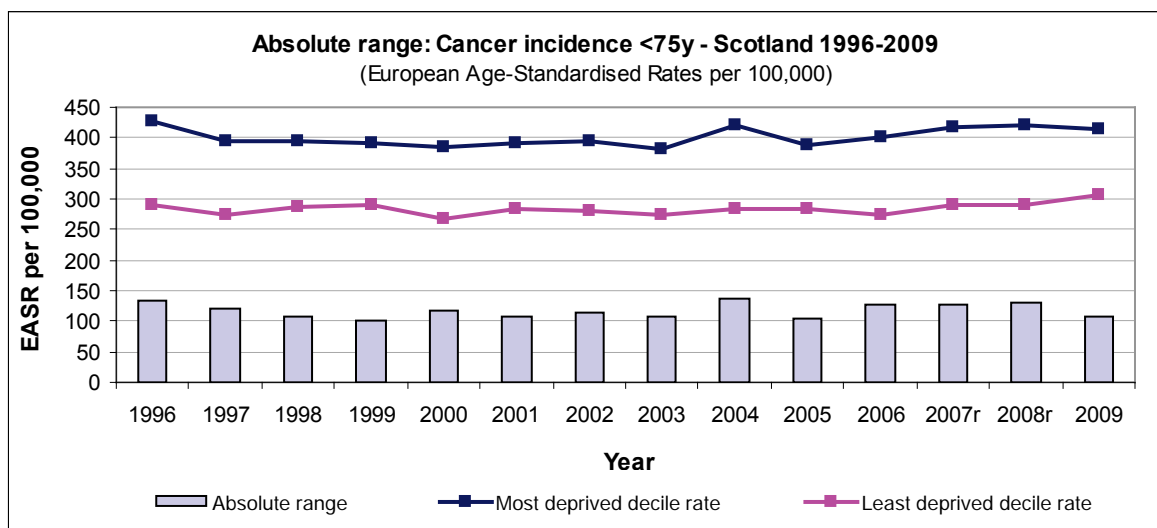
Inequalities gradient in the most recent year available



Relative Index of Inequality (RII) over time



Absolute range over time



Scale / context

	Number of new cases	Target population size	Rate per 100,000 (EASR)
1996	18,136	4,754,906	345.1
1997	17,160	4,740,269	326.7
1998	17,144	4,729,975	323.6
1999	16,915	4,721,298	318.4
2000	17,122	4,708,667	321.2
2001	17,097	4,703,661	318.8
2002	17,465	4,690,508	323.3
2003	17,453	4,690,603	319.2
2004	18,002	4,706,922	326.5
2005	17,800	4,718,403	319.3
2006	17,873	4,734,676	318.5
2007 ¹	18,683	4,755,963	329.9
2008 ¹	19,342	4,775,321	337.1
2009	19,708	4,795,479	339.2

1. The 2007 and 2008 data has been revised since the publication of the October 2010 report.

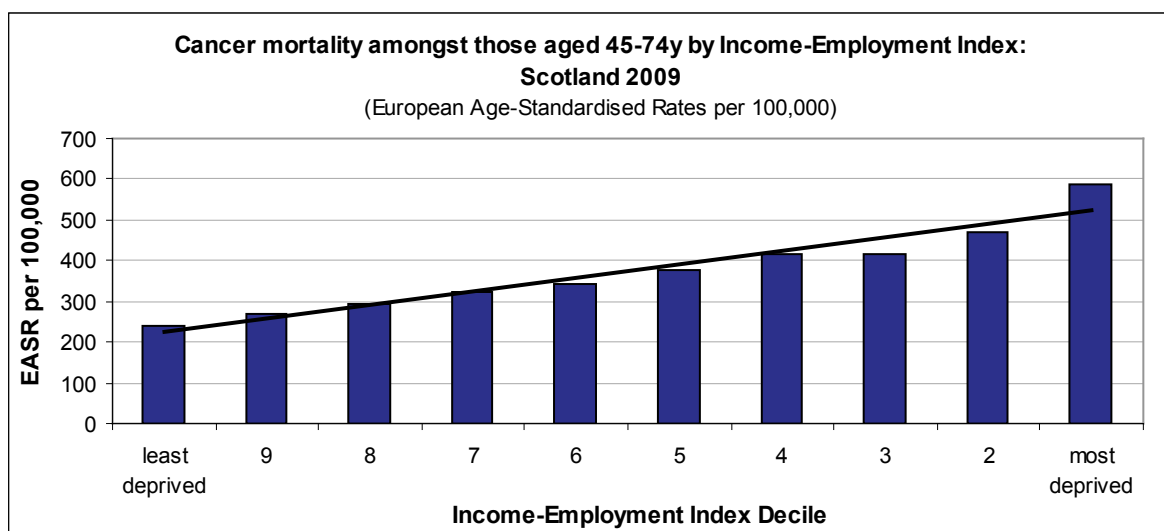
Cancer - deaths aged 45-74 years

Summary

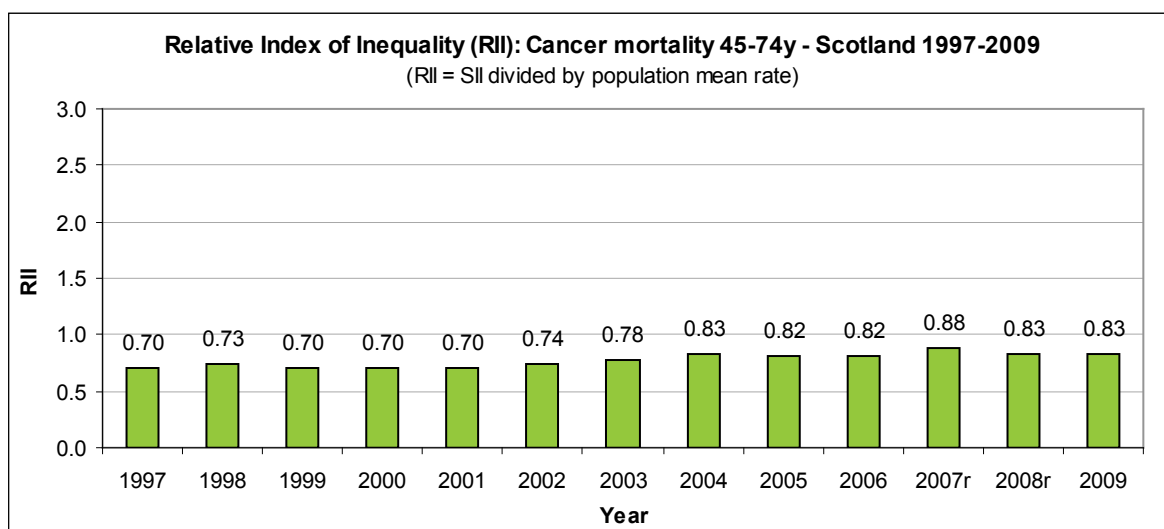
- *Inequalities are increasing both in absolute and relative terms over time.*

Between 1997 and 2009, there has been a 17.2% decrease in rates of death from cancer amongst those aged 45-74 years as a whole. In 2009 around 7,500 people aged 45-74 died from cancer. Cancer deaths in this age group are more common in deprived areas (586 per 100,000 population) than in areas of low deprivation (238 per 100,000 population) – a difference of 348. Although figures fluctuate from year to year there has been an overall increase in inequalities in both absolute and relative terms since 1997.

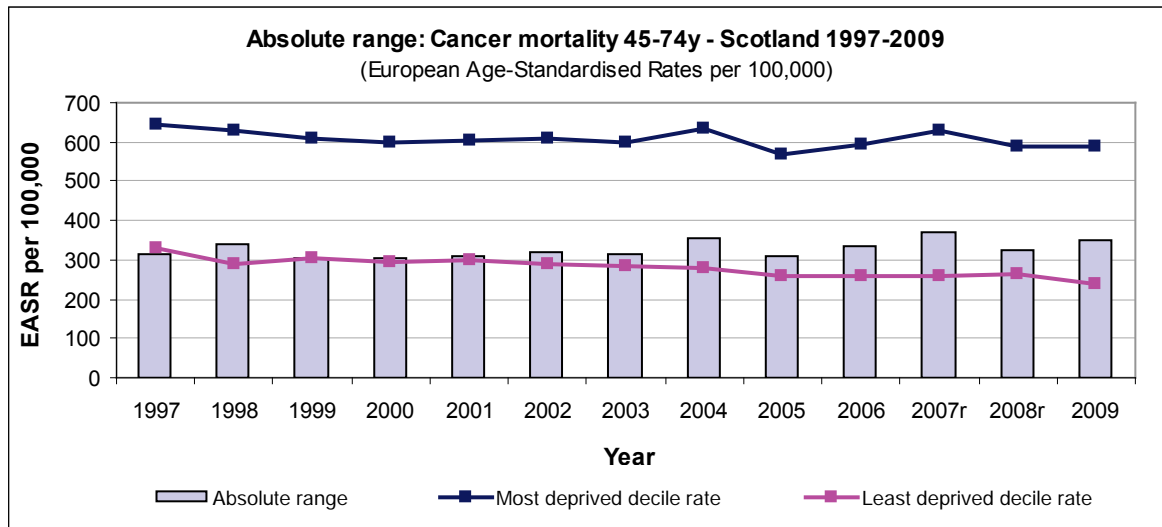
Inequalities gradient in the most recent year available



Relative Index of Inequality (RII) over time



Absolute range over time



Scale / context

	Number of deaths	Target population size	Rate per 100,000 (EASR)
1997	8,068	1,635,590	446.9
1998	7,995	1,646,711	440.0
1999	7,904	1,658,124	433.8
2000	7,776	1,670,660	422.8
2001	7,903	1,687,422	430.1
2002	7,850	1,703,819	422.4
2003	7,706	1,724,940	409.3
2004	7,678	1,750,293	402.0
2005	7,606	1,771,454	396.7
2006	7,486	1,793,423	386.6
2007 ¹	7,569	1,818,202	385.4
2008 ¹	7,536	1,843,609	378.0
2009	7,481	1,869,363	370.3

1. The 2007 and 2008 data has been revised since the publication of the October 2010 report.

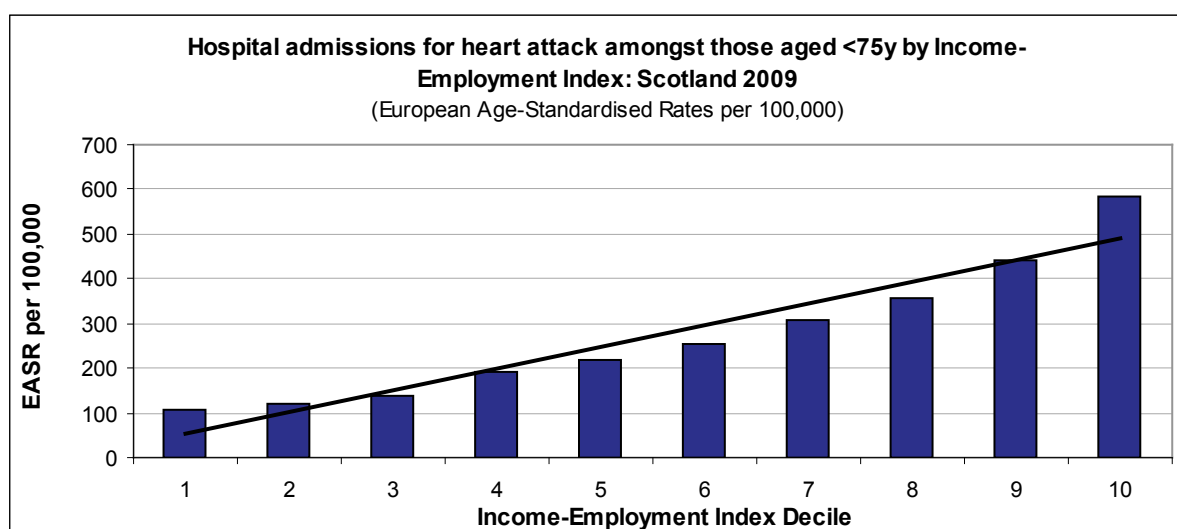
Alcohol - first ever hospital admission aged under 75 years⁵

Summary

- *Inequalities have fluctuated, with no clear long term trend in absolute and relative terms although there are signs of a slight decrease in the last few years.*

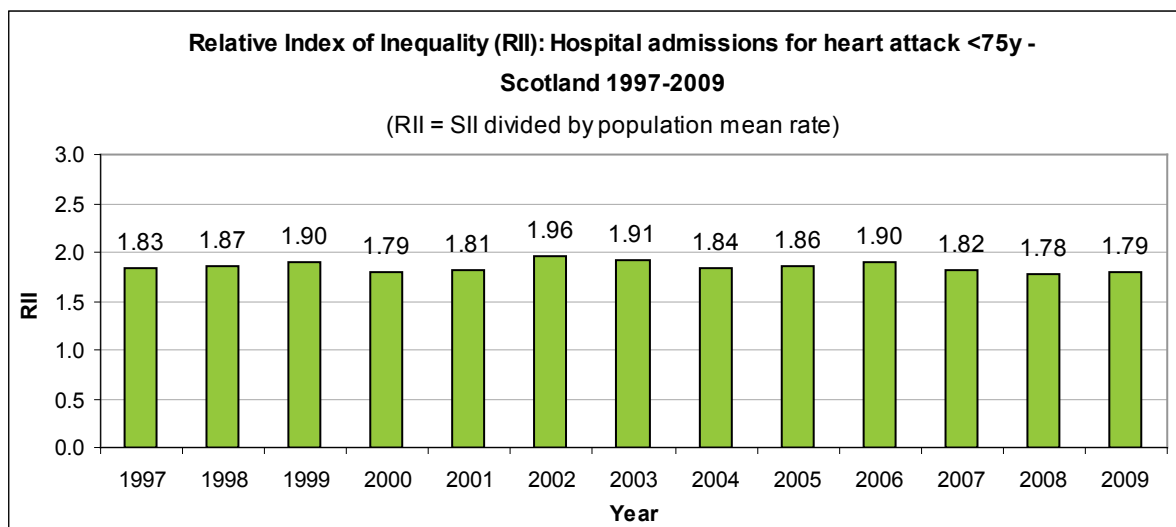
Between 1997 and 2007 rates of new hospital admissions for alcohol-related conditions among those aged under 75 years grew by 18%. Since 2007 rates have fallen back almost to 1997 levels. In 2009 there were around 13,700 new cases. These types of admissions are more common in deprived areas – 585 per 100,000 population compared to 109 per 100,000 population in areas of low deprivation, an absolute range of 475. Both absolute and relative inequalities have remained stable, albeit with some fluctuation from one year to the next. There has been a decrease in absolute inequality since 2007, mainly caused by a decrease in the admission rate in the most deprived decile from 676 per 100,000 population (in 2007) to 585 per 100,000 population (in 2009).

Inequalities gradient in the most recent year available

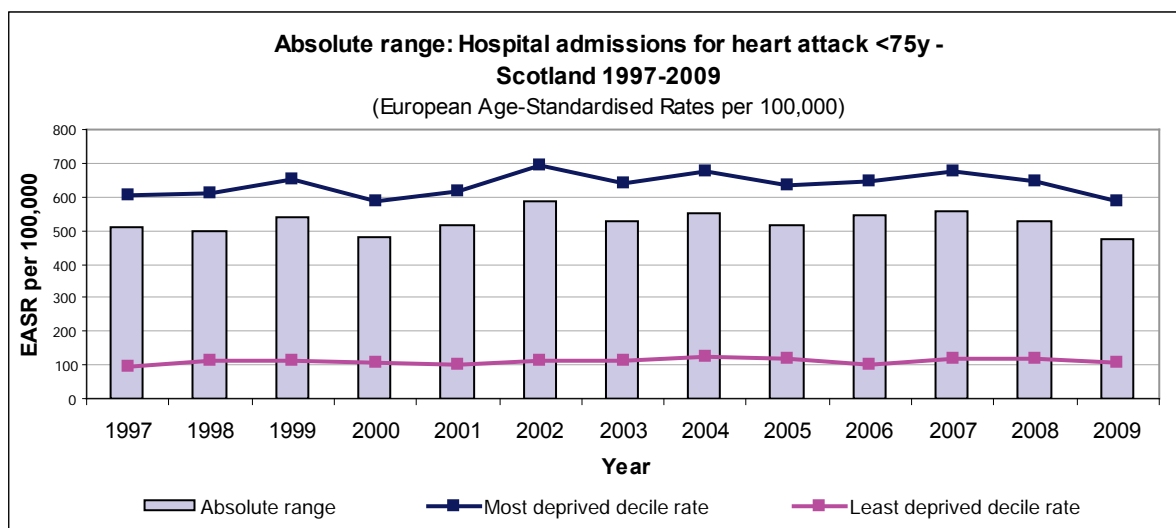


⁵ While the methodology for this report is consistent with previous years we are considering a change in methodology for the next annual report.

Relative Index of Inequality (RII) over time



Absolute range over time



Scale / context

	Number of admissions	Target pop	EASR
1997	12,310	4,740,269	254.1
1998	12,900	4,729,975	265.7
1999	12,871	4,721,298	265.8
2000	12,695	4,708,667	262.6
2001	13,474	4,703,661	276.9
2002	13,656	4,690,508	280.3
2003	13,249	4,690,603	269.6
2004	14,482	4,706,922	291.6
2005	13,911	4,718,403	278.8
2006	14,353	4,734,676	286.7
2007 ¹	15,110	4,755,963	300.9
2008 ¹	14,972	4,775,321	296.3
2009	13,696	4,795,479	269.5

1. The 2007 and 2008 data has been revised since the publication of the October 2010 report.

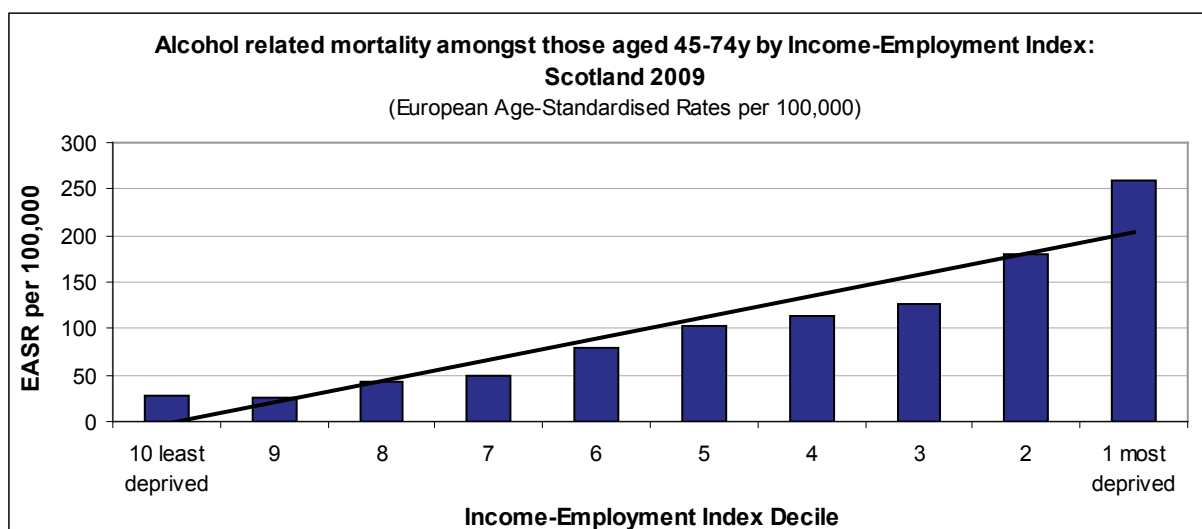
Alcohol - deaths aged 45-74 years

Summary

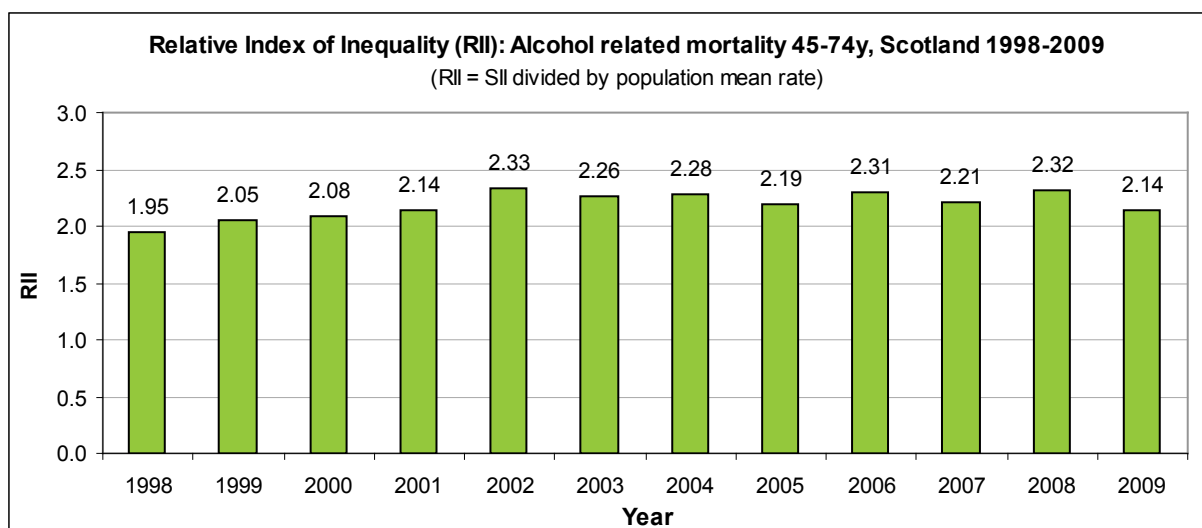
- *Inequalities have fluctuated both in absolute and relative terms over time but there has been a slight reduction in the latest year.*

Between 1998 and 2006, there was a 24% increase in rates of alcohol-related deaths among those aged under 45-74 years. Since 2006 rates of premature alcohol-related deaths have fallen again and, in 2009, was 0.5% lower than the rate in 1998. The 2009 alcohol-related death rate among those aged 45-74 years of 85.2 per 100,000 equates to around 1,600 deaths per year in this age group dying from alcohol related conditions. There are more alcohol related deaths amongst those aged 45-74 years in deprived areas than in areas of low deprivation. In 2009, the rate in the most deprived decile was almost ten times higher than the least deprived decile (232 per 100,000 population compared to a rate of 26 per 100,000 population in the least deprived decile). Both absolute and relative inequalities have shown some fluctuation from one year to the next.

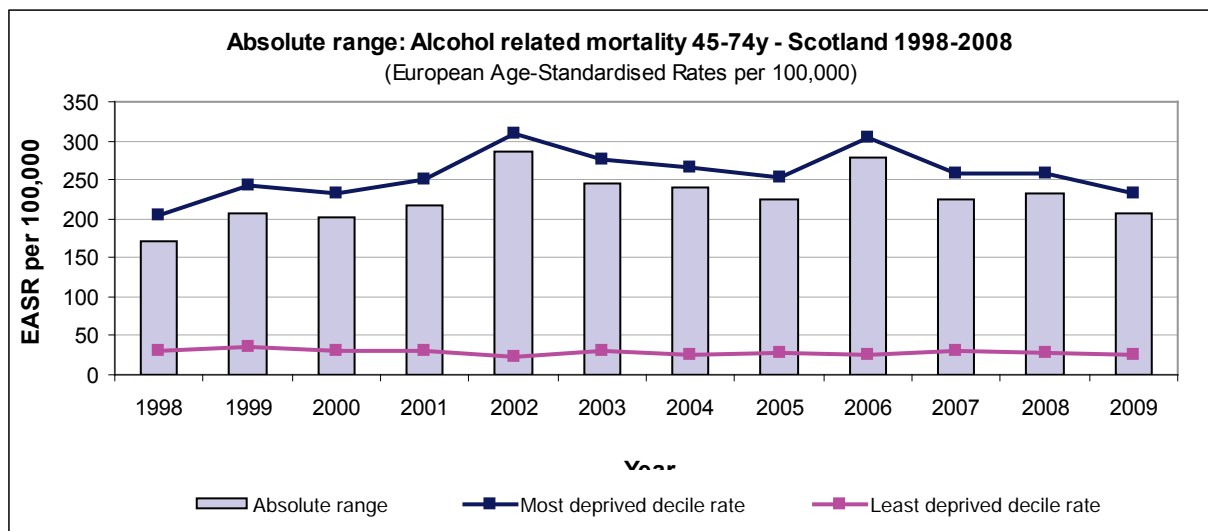
Inequalities gradient in the most recent year available



Relative Index of Inequality (RII) over time



Absolute range over time



Scale / context

	Number of deaths	Target population size	Rate per 100,000 (EASR)
1998	1,415	1,646,711	85.6
1999	1,508	1,658,124	90.9
2000	1,489	1,670,660	89.1
2001	1,565	1,687,422	92.7
2002	1,753	1,703,819	102.9
2003	1,749	1,724,940	101.4
2004	1,764	1,750,293	100.8
2005	1,790	1,771,454	101.0
2006	1,899	1,793,423	105.9
2007 ¹	1,801	1,818,202	98.7
2008 ¹	1,782	1,843,609	95.9
2009	1,611	1,869,363	85.2

1. The 2007 and 2008 data has been revised since the publication of the October 2010 report.

All-cause mortality aged 15-44 years

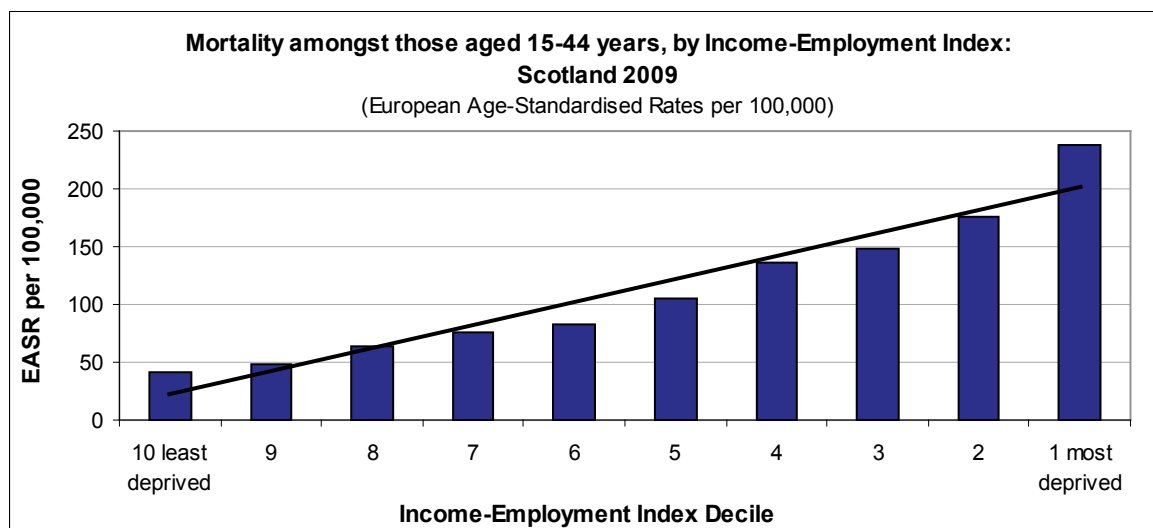
Summary

- *Inequalities have remained stable in absolute terms, but are widening in relative terms*

Between 1997 and 2009, rates of death have been stable amongst those aged 15-44 years as a whole. Within this age group, rates of drug related deaths have doubled by over the same period (to around 440 deaths per year), rates of death from assault have stayed the same (around 50 deaths per year) and rates of death from suicide have dropped by 14% (to around 430 deaths per year). However, note that the relatively small numbers involved mean that comparison of numbers for single years should be interpreted with caution as there will be natural fluctuation from one year to the next.

Deaths amongst those aged 15-44 years are more common in deprived areas than in areas of low deprivation. In 2009, the all-cause mortality rate for adults aged 15-44 years in the most deprived decile was 238 compared to a rate of 42 in the least deprived decile. While inequalities have remained fairly stable in absolute terms over this period, they have increased in relative terms (as demonstrated by the RII, albeit with some fluctuation from one year to the next).

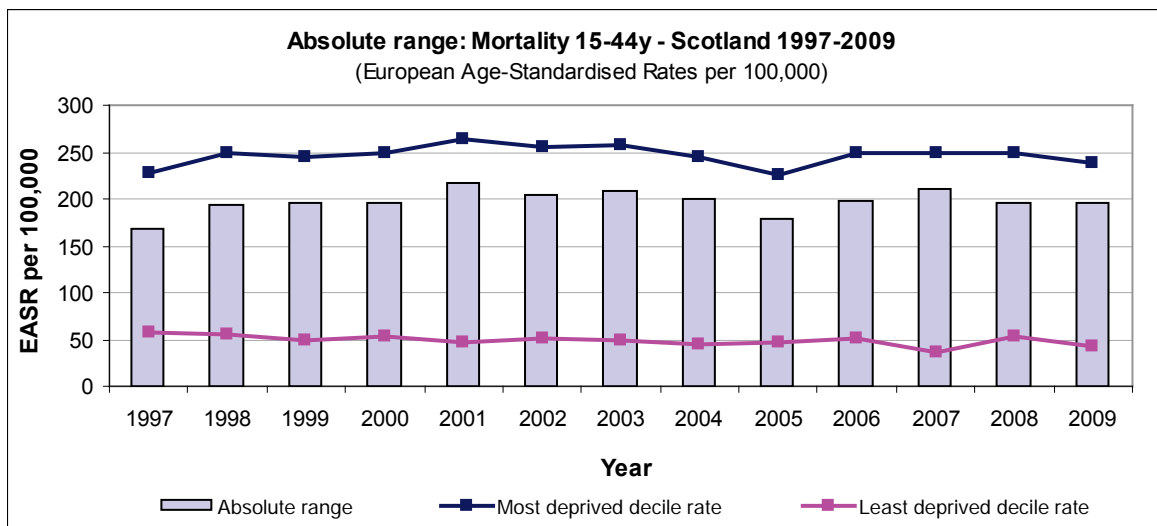
Inequalities gradient in the most recent year available



Relative Index of Inequality (RII) over time



Absolute range over time



Scale / context

	Number of deaths	Target population size	Rate per 100,000 (EASR)
1997	2,436	2,158,030	112.0
1998	2,498	2,142,787	115.1
1999	2,507	2,129,794	115.6
2000	2,501	2,118,568	114.8
2001	2,509	2,111,242	114.9
2002	2,566	2,096,447	118.5
2003	2,461	2,087,978	113.3
2004	2,409	2,084,722	110.9
2005	2,305	2,081,858	105.5
2006	2,482	2,085,170	114.5
2007 ¹	2,461	2,086,427	114.2
2008 ¹	2,443	2,081,506	114.5
2009	2,389	2,075,639	112.0

1. The 2007 and 2008 data has been revised since the publication of the October 2010 report.

	Deaths from assault		Drug related deaths		Suicides	
	Number	EASR per 100,000	Number	EASR per 100,000	Number	EASR per 100,000
1997	56	2.6	196	9.1	518	23.7
1998	65	3.1	227	10.8	526	24.2
1999	86	4.0	274	13.2	529	24.6
2000	60	2.9	268	12.8	541	25.5
2001	63	3.0	288	13.8	531	24.9
2002	76	3.6	345	17.0	539	25.6
2003	71	3.4	281	13.7	456	21.5
2004	78	3.8	311	15.4	475	22.1
2005	50	2.4	277	13.2	436	20.7
2006	83	4.0	351	17.0	435	20.6
2007 ¹	54	2.6	392	18.9	453	21.6
2008 ¹	53	2.6	477	23.1	480	23.1
2009	47	2.3	436	21.0	432	20.6
2010	54	2.6	384	18.6	423	20.3

1. The 2007 and 2008 data has been revised since the publication of the October 2010 report.

Annex 1: Expert Working Group Membership

Short Life Technical Advisory Group on Monitoring Health Inequalities

Chair

- Jill Vickerman
Scottish Government; Head of Health Analytical Services Division

Group Membership

- Marion Bain
NHS Information Services Division; Medical Director
- Kay Barton
Scottish Government; Deputy Director: Health Improvement Strategy
- Neil Craig
NHS Health Scotland; Senior Public Health Advisor
- David Gordon
NHS Health Scotland / ScotPHO; Head of Public Health Observatory
- Professor Alastair Leyland
Medical Research Council; Social & Public Health Sciences Unit
- Gordon McLaren
NHS Fife; Public Health Consultant
- Rosalia Munoz-Arroyo
NHS Information Services Division / ScotPHO; Senior Information Analyst
- Emma Stevens
Scottish Government; Statistician; Health Analytical Services Division
- Diane Stockton
NHS Information Services Division / ScotPHO; Programme Principal
- Professor Matt Sutton
Aberdeen University
- Bruce Whyte
Glasgow Centre for Population Health; Public Health Programme Manager

Annex 2: Indicator Definitions & Sources

▪ **Healthy Life Expectancy**

Source: ScotPHO (using raw deaths data from the National Register of Scotland); Scottish Household Survey data on self-assessed health for adults aged 16+ years [data for 2003/04 not available]; Census 2001 data for self-assessed health for those aged <16 years).

Definition: Healthy life expectancy (HLE) is defined as the number of years people can expect to live in good health. The discrepancy between healthy and total life expectancy (LE), therefore, indicates the length of time people can expect to spend in poor health. HLE is calculated through a combination of life expectancy and survey data on people's own assessments of their health. The method used to calculate the Life Expectancy estimates is based on Chiang (II) methodology; the HLE calculation is based on the Sullivan method. The uncertainty around estimates of HLE are larger than those around life expectancy because relatively small samples are involved in the age and sex specific breakdowns of survey data required to calculate HLE.

Change to methodology: In 2009 the format of the self-assessed health question (on which the life expectancy data is based) was changed to align with the European Union. The options for response changed from a three-point scale (Good, Fairly good, Not good) to a five point scale (Very good, Good, Fair, Bad, Very bad). Under the three-point scale 'Good' and 'Fairly good' were categorised as 'healthy'. Under the five point scale only 'Very good' and 'Good' are categorised as 'healthy'. This has led to a major discontinuity in the series. For both men and women, there is a markedly lower estimate of HLE at birth for 2009 than previous years. These 2009 figures cannot be considered as part of the same series as earlier years, but represents the first point in a new time trend for future years.

▪ **Premature Mortality (from all causes, aged under 75 years)**

Source: National Records of Scotland.

Definition: European age-standardised rates of deaths from any cause amongst those aged under 75 years.

▪ **Mental Wellbeing (adults aged 16 years and over)**

Source: Scottish Health Survey (2008-2010).

Definition: Warwick-Edinburgh Mental Wellbeing Scale (WEMWBS). This has been developed as a tool for measuring positive mental wellbeing at a population level. The scale comprises fourteen separate statements describing feelings related to mental wellbeing; respondents are asked to indicate how often they have felt such feelings over the last two weeks. Results are presented as average WEMWBS score for the population concerned.

In the previous publications the average WEMWBS figure was a year ahead of the population figures that were available. In this publication the 2010 data was available for both WEMWBS and population figures, so the current and historic data has been calculated to use data from matching years.

▪ **Low birthweight**

Source: NHS Information Services Division (ISD) ; SMR02 maternity dataset.

Definition: The figures are presented as a percentage of all live, full term, singleton births (not including home births or births in non-NHS hospitals). Figures are for financial year (i.e. '2005' is for '2004/05'). Low birth weight is defined as <2,500g - the standard World Health Organisation definition. Figures for the most recent year are provisional.

- **Coronary Heart Disease - first ever hospital admission for heart attack aged under 75 years**

Source: NHS Information Services Division (ISD); SMR1/01 records (all inpatient and daycase discharges) – all records were extracted from the SMR01 linked database as at 30th July 2011.

Definition: European age-standardised rates of first ever hospital admission for acute myocardial infarction (heart attack) amongst those aged under 75 years. The following World Health Organisation International Classification of Disease coding was used: ICD10 'I21-I22'; ICD9 '410'.

- **Coronary Heart Disease - deaths aged 45-74 years**

Source: NHS Information Services Division (ISD); using deaths data from National Records of Scotland.

Definition: European age-standardised rates death from coronary heart disease amongst those aged 45-74 years. The following World Health Organisation International Classification of Disease coding was used: ICD10 'I20-I25'; ICD9 '410-414'. Because of the dynamic nature of the linked database, previous years' data are sometimes updated in subsequent publications. An amendment to the methodology resulted in all data from 1997 to 2009 being revised in the data published in October 2011. The methodology was refined to more accurately pick up first ever emergency admission for AMI, and this resulted in a slight reduction in the overall numbers for each year.

- **Cancer - incidence rate aged under 75 years**

Source: NHS Information Services Division (ISD); Scottish Cancer Registry.

Definition: European age-standardised rates of new cases of cancer amongst those aged under 75 years. Cancer defined as all malignant neoplasms excluding non-melanoma skin cancer. The following World Health Organisation International Classification of Disease coding was used: ICD10 'C00-C96' excluding 'C44' (the Scottish Cancer Registry does not use code 'C97').

- **Cancer - deaths aged 45-74 years**

Source: NHS Information Services Division (ISD); Scottish Cancer Registry.

Definition: European age-standardised rates of deaths from cancer amongst those aged under 45-74 years. Cancer defined as all malignant neoplasms excluding non-melanoma skin cancer. The following World Health Organisation International Classification of Disease coding was used: ICD10 (2000 onwards) 'C00-C97' excluding 'C44'.

- **Alcohol - first ever hospital admission aged under 75 years**

Source: NHS Information Services Division (ISD).

Definition: European age-standardised rates of first ever hospital admission for alcohol related conditions amongst those aged under 75 years. These rates include hospital discharges where alcohol-related problems are recorded as either primary or secondary reasons for admission to hospital and will cover first ever admission since 1981 (a patient may have had admissions prior to 1981 which would not be recorded in this database). These figures exclude private hospitals, mental illness hospitals, psychiatric units and maternity hospitals and includes Scottish residents only. Caution is necessary when interpreting these figures. The recording of alcohol misuse may vary from hospital to hospital. Where alcohol misuse is suspected but unconfirmed it may not be recorded by the hospital. The following revised World Health Organisation International Classification of Disease coding was used: ICD10: F10, K70, X45, X65, Y15, Y90, Y91, E244, E512, G312, G621, G721, I426, K292, K860, O354, P043, Q860, T510, T511, T519, Y573,

R780, Z502, Z714, Z721. See:

http://www.alcoholinformation.isdscotland.org/alcohol_misuse/3986.html

▪ **Alcohol - deaths aged 45-74 years**

Source: National Records of Scotland.

Definition: European age-standardised rates of death from alcohol related conditions amongst those aged 45-74 years. The definition of alcohol related deaths includes deaths where there was any mention of alcohol related conditions on the death certificate, rather than just as the main cause of death. The following World Health Organisation International Classification of Disease coding was used: ICD10 F10, G31.2, G62.1, I42.6, K29.2, K70, K73, K74.0, K74.1, K74.2, K74.6, K86.0, X45, X65, Y15; ICD9 291, 303, 305.0, 425.5, 571.0, 571.1, 571.2, 571.3, 571.4, 571.5, 571.8, 571.9, E860.

▪ **All-cause mortality aged 15-44 years**

Source: National Records of Scotland.

Definition: European age-standardised rates of deaths from any cause amongst those aged 15-44 years. Specific breakdowns for deaths from assault, drug related deaths and suicide are also provided, as the major causes of death for which there are large inequalities amongst young people. There may be some double counting in these breakdowns. The following World Health Organisation International Classification of Disease coding was used: Assault ICD10 'X85-Y09', 'Y87.1' ICD9 'E960-969'; Drug related ICD10 'F11-16', 'F19', 'X40-44', 'X60-64', 'X85', 'Y10-Y14'; Suicide (intentional self harm + undetermined intent) ICD10 'X60-84', 'Y87.0' ICD9 'E950-959', 'E980-989'.

Annex 3 : Technical Notes

A2.1 Measurement of Inequalities

Different measures can give information about different aspects of inequalities. Some measures concentrate on the extremes of deprivation, whilst others include inequalities across the scale – taking into account the whole population. Absolute and relative measures can give quite different interpretations of inequalities. In addition to this, measures based on rates alone will not give insight into the scale of the problem.

Information about different measures of inequality and their calculation was based on work done by the Scottish Public Health Observatory, available at:

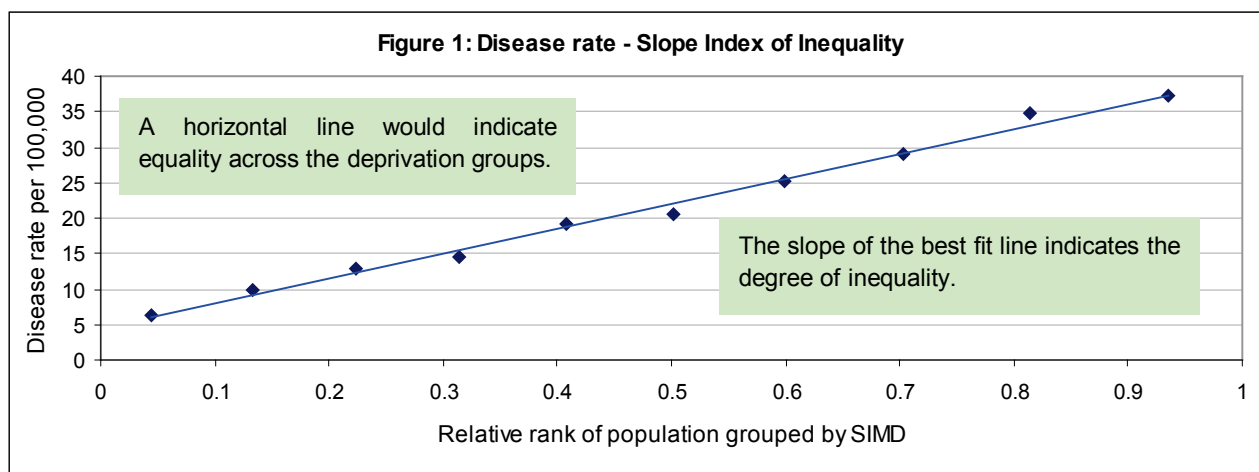
http://www.scotpho.org.uk/home/Publications/scotphoreports/pub_measuringinequalities.asp

The approach recommended by the expert group and adopted in this report uses a combination of measures, with the aim of giving a fuller understanding of the inequalities concerned.

▪ **Relative Index of Inequalities (RII):** *How steep is the inequalities gradient?*

The RII describes the gradient of health observed across the deprivation scale, relative to the mean health of the whole population.

The RII is the slope index of inequality (SII) divided by the population mean rate. The SII is defined as the slope of the “best fit” regression line showing the relationship between the health status of a particular group and that group's relative rank on the deprivation scale. An equal rate across the deprivation categories would give a horizontal line with a slope of zero (SII=0) and would indicate that there are no inequalities. The larger the absolute value of SII, the bigger the inequalities observed (see Figure 1).



The SII and RII have the advantage that they are based on data about the whole population, rather than just the extremes, and so take into account inequalities across the scale. They do however require that there is a reasonably linear relationship between the health indicator and deprivation. Another disadvantage is that the SII and RII are not intuitive and are relatively difficult to interpret and explain to a non-statistical audience.

▪ **Absolute range:** *How big is the gap?*

This measure describes the absolute difference between the extremes of deprivation – the rate in the most deprived minus the rate in the least deprived group.

This measure has the advantage that it is intuitive and straightforward to explain. It has the disadvantage that because it focuses only on the extremes of deprivation, it does not take account of patterns of inequalities observed across the intermediate groups.

- **Scale:** *How big is the problem?*

The aim of this measure is to give insight into the underlying scale of the problem and to put it in context, for example by presenting numbers involved and past trends at Scotland level.

A2.2 Income-Employment Index

The Short Life Technical Advisory Group also addressed the precise way in which deprivation should be defined for this work. The group agreed that the ideal would be to use individually linked records of health and socio-economic indicators, but acknowledged that these are not yet available. The preferred interim approach was to use the latest available versions of the Scottish Index of Multiple Deprivation (SIMD) income and employment domains. The reasoning behind this being that income / poverty / employment are felt to be the best indicators of deprivation for health inequalities analysis and because the possibility of being able to update these domains on a regular, perhaps annual basis, is being investigated.

In order to combine the SIMD income and employment domains, each domain was exponentially transformed to reduce averaging effects. Exponential transformation gives greater weighting to the most deprived ranking, so combining a datazone ranked most deprived with a datazone ranked least deprived would give a combined ranking skewed towards the deprived end of the scale. This is the method used to create the SIMD.

The income and employment domains have been given equal weighting when combined in the Income-Employment Index.

In line with the recommendations of the Short Life Technical Advisory Group, the Income-Employment Index deciles are population based. Datazone based deciles are produced by ranking the 6,505 datazones in Scotland according to their deprivation score and then dividing them into deciles based on number of datazones (so that those datazones ranked from 1 to 651 are in decile 1 and so on). Population basing the deciles uses the same approach but also takes into account the population sizes involved. The 6,505 datazones are ranked according to their deprivation score alongside a cumulative total of datazone populations. The cut-off for decile 1 is the point at which 10% of the population has been included, rounded to the nearest whole datazone. Population basing the deciles ensures that they contain equally sized populations, which is the best proxy to individual level indicators of deprivation available when using an area based measure. Equally sized populations in the deciles are also important for the types of inequalities analyses presented in this report.

A2.3 Notes to tables

P = Provisional

RII = Relative index of inequality

EASR = European age – standardised rate

WEMWBS = Warwick-Edinburgh mental wellbeing scale

ICD = International classification of disease

BW = Birth weight

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Correspondence and enquiries

Enquiries on this publication should be addressed to:

Carrie Graham
Health Analytical Services Division
Scottish Government
B-R St Andrew's House
Edinburgh EH1 3DG
Telephone: 0131 244 2368
Fax: 0131 244 2589
e-mail:
carrie.graham@scotland.gsi.gov.uk

General enquiries on Scottish Government statistics can be addressed to:

Office of the Chief Statistician
Scottish Government
4N.06, St Andrews House
EDINBURGH EH1 3DG
Telephone: (0131) 244 0442
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