Long-term monitoring of health inequalities

Headline indicators - October 2010

CONTENTS

Introduction

This publication is an annual update of headline indicators from the long term monitoring of health inequalities report, first published in September 2008.

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 advice was as follows:

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Recommended headline indicators of inequalities in health outcomes

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

Recommended 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 (to capture large inequalities in mortality observed in this age group)

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.

Some of these indicators (healthy life expectancy, mental wellbeing, alcohol related hospital admissions and premature mortality from coronary heart disease in deprived areas) are also included in the National Performance Framework. Further information about these national indicators is available on the Scotland Performs website: http://www.scotland.gov.uk/About/scotPerforms

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.
- 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, 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.

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The report of the Ministerial Task Force, *Equally Well* (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 an update was published in September 2009. This report represents the third of a series of annual publications.

Revisions from previous years' reports

Since the publication of last year's report, the Scottish Index of Multiple Deprivation has been updated to SIMD09. All measures in this report relating to 2007 onwards are now based on SIMD09. Measures prior to 2007 are still based on SIMD06. In addition, the following changes have been implemented:

- Low Birthweight – The definition has been corrected to note that the figures include all babies rather than just those that reach full term. This correction does not affect the data for this indicator. The low birthweight data was always based on all births, but the definition stated in previous reports was incorrect.
- Coronary Heart Disease (first ever hospital admission for heart attack aged under 75 years; deaths aged 45-74 years) – The trend data has been revised after an error was spotted in the way rates were previously calculated.
- All-cause mortality aged 15-44 years – The trend data has been revised after an error was spotted in the way rates were previously standardised. Whilst this has a substantial impact on the level of the rates, the overall trend is relatively similar.
- Alcohol deaths aged 45-74 years – The trend data has been revised after an error was spotted in the way rates were previously standardised. Whilst this has a substantial impact on the level of the rates, the overall trend is relatively similar.

Results

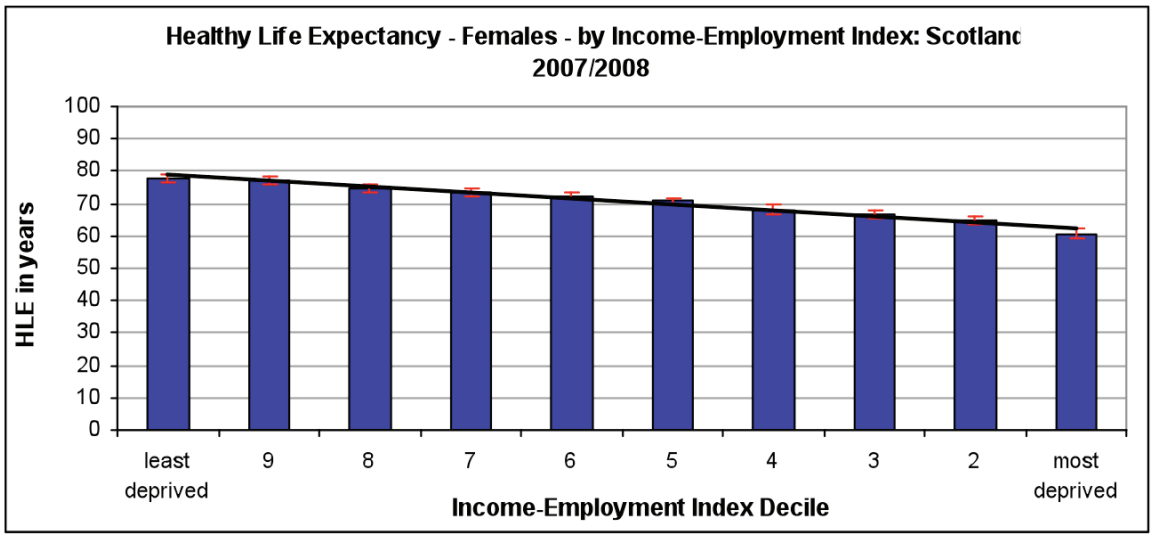
Healthy Life Expectancy (HLE) - at birth

Summary

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

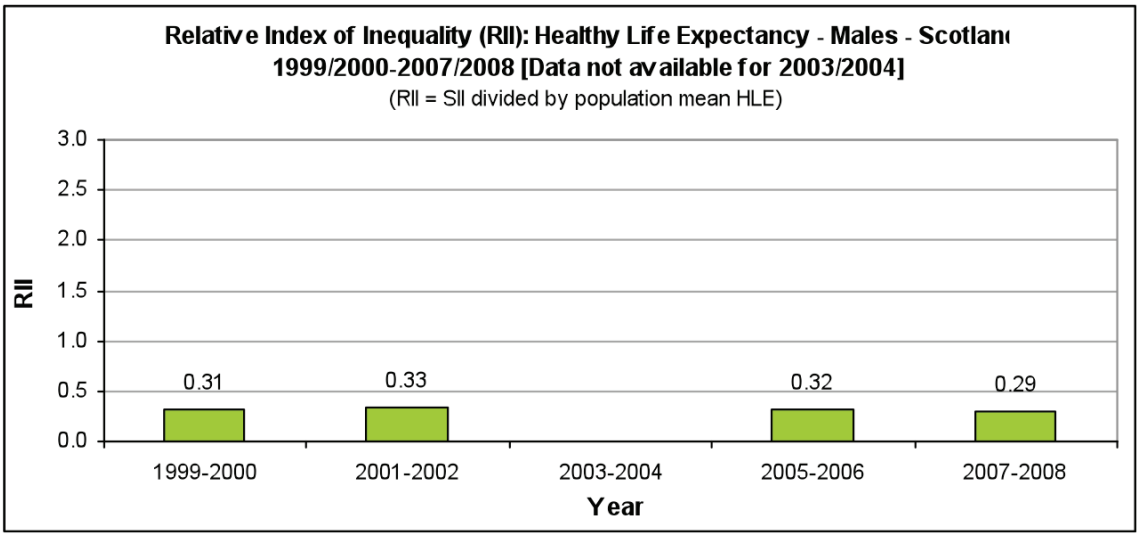
The HLE indicator is based on two years of data to ensure large enough sample sizes. Between 1999/2000 and 2007/2008, HLE has increased by 3 years (4.5%) for males and 2.3 years (3.5%) for females. Over the same period, the difference between HLE and total life expectancy (that is, the number of years that could be expected to be spent in poor health) has fallen by 0.6 years (7%) for males and 0.8 years (8%) for females. In 2007/2008, HLE at Scotland level for males was 68.0 years (7.2 years less than total life expectancy) and HLE for females was 70.5 years (9.4 years less than total life expectancy). HLE in deprived areas is lower for both males and females than HLE in areas of low deprivation. In 2007/2008, HLE of those living in the most deprived decile was 18.8 years lower for males and 17.1 years lower for females than HLE of those living in the least deprived decile. The difference between HLE and total life expectancy (expected years spent in poor health) is also notably greater in more deprived areas: for males - 10.3 years in poor health in the most deprived decile compared with 5.5 years in the least deprived decile; and for females - 14.4 years in poor health in the most deprived decile compared with 6.0 years in the least deprived decile. Between 1999/2000 and 2007/2008, increases in HLE have been observed across the population, with no discernible difference between deprivation groups. Inequalities have been stable in both absolute and relative terms (as demonstrated by the absolute range and RII respectively).

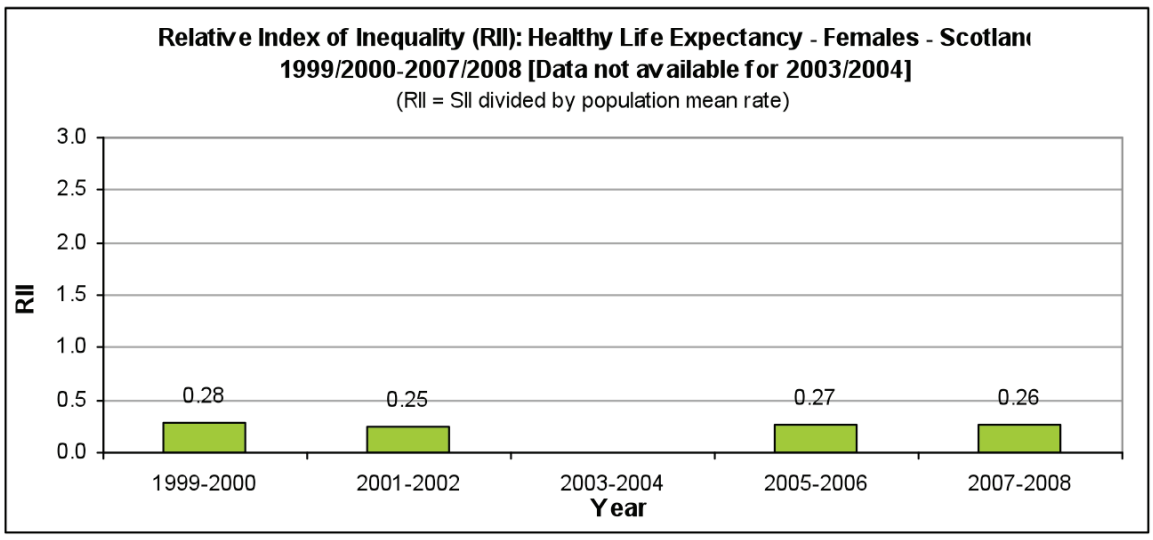
Inequalities gradient in the most recent year available



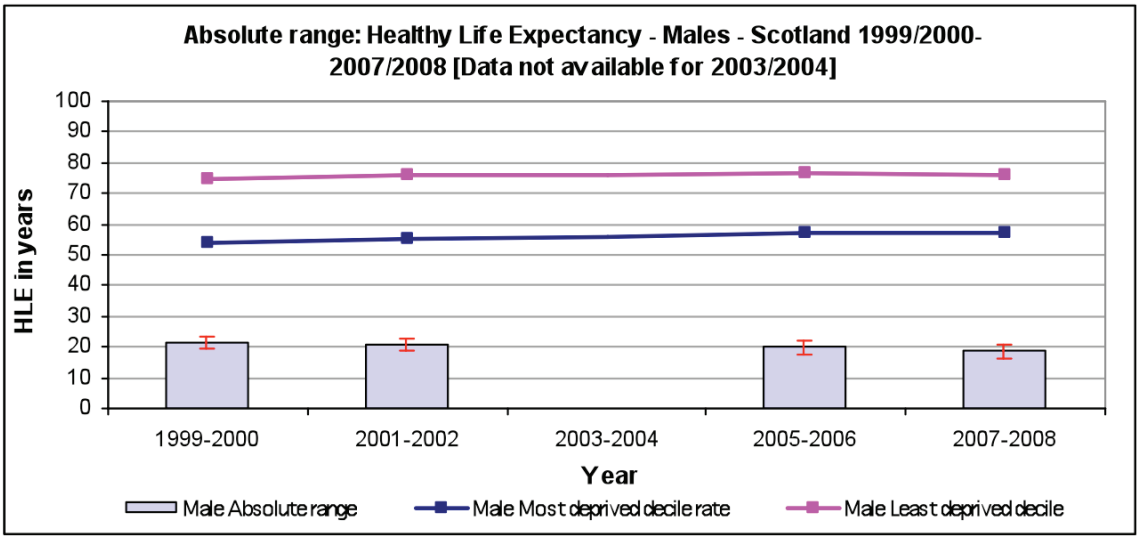
(Note: the red bars for each column indicate the uncertainties in each estimate of HLE).

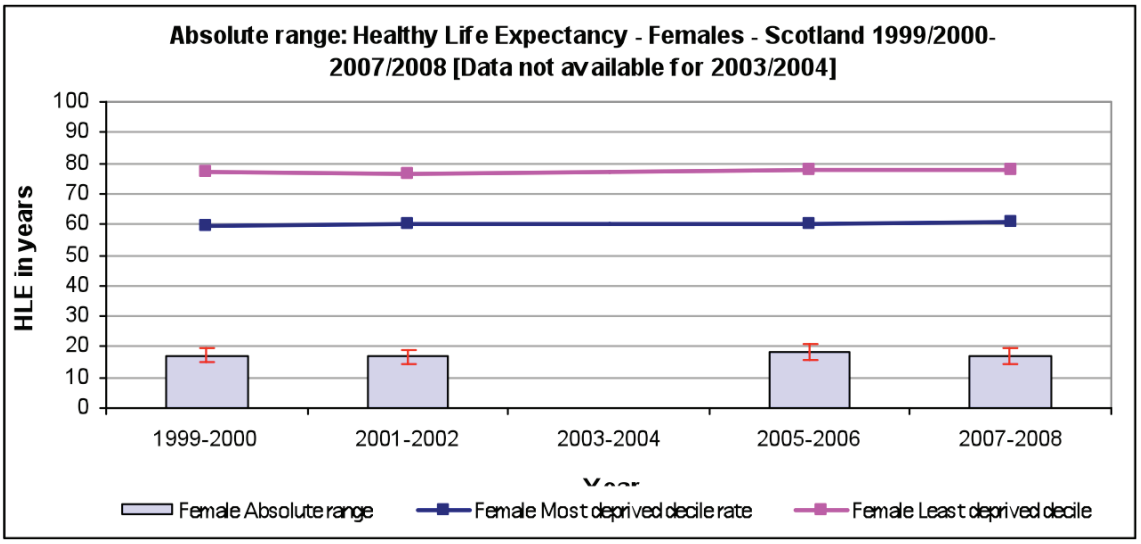
Relative Index of Inequality (RII) over time





Absolute range over time





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

Scale / context

	Male HLE in years	*95%LL*	*95%UL*	Male LE in years	*95%LL*	*95%UL*	Estimated years spent in poor health
1999/2000							
Scotland	65.0	*64.7*	*65.4*	73.0	*72.8*	*73.1*	7.8
Most deprived decile	53.7	*52.5*	*54.9*	65.8	*65.4*	*66.3*	11.7
Least deprived decile	75.0	*73.9*	*76.0*	78.6	*78.3*	*79.0*	3.3
2001/2002							
Scotland	65.9	*65.6*	*66.2*	73.4	*73.3*	*73.5*	7.4
Most deprived decile	55.0	*53.8*	*56.2*	65.8	*65.4*	*66.3*	10.4
Least deprived decile	75.7	*74.7*	*76.6*	79.5	*79.1*	*79.9*	3.4
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*	7.3
Most deprived decile	57.0	*55.9*	*58.1*	67.5	*67.1*	*67.9*	10.1
Least deprived decile	76.8	*75.8*	*77.8*	80.7	*80.4*	*81.1*	3.6
2007/2008							
Scotland	68.0	*67.6*	*68.3*	75.1	*75.2*	*75.0*	7.2
Most deprived decile	56.9	*55.7*	*58.1*	67.6	*67.2*	*68.0*	10.3
Least deprived decile	75.7	*74.6*	*76.8*	80.9	*81.2*	*80.5*	5.5

	Female HLE in years	*95%LL*	*95%UL*	Female LE in years	*95%LL*	*95%UL*	Estimated years spent in poor health
1999/2000							
Scotland	68.2	*67.8*	*68.5*	78.4	*78.3*	*78.5*	10.2
Most deprived decile	59.8	*58.6*	*61.0*	74.2	*73.9*	*74.6*	14.1
Least deprived decile	77.1	*76.2*	*78.0*	81.8	*81.5*	*82.1*	4.4
2001/2002							
Scotland	69.2	*68.9*	*69.6*	78.9	*78.8*	*79.0*	9.5
Most deprived decile	60.0	*58.8*	*61.2*	74.6	*74.2*	*74.9*	14.2
Least deprived decile	76.8	*75.7*	*77.9*	82.4	*82.1*	*82.8*	5.3
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	*69.3*	*70.0*	79.7	*79.6*	*79.8*	10.0
Most deprived decile	59.9	*58.7*	*61.1*	75.1	*74.7*	*75.5*	14.9
Least deprived decile	78.1	*76.9*	*79.2*	84.2	*83.9*	*84.6*	5.8
2007/2008							
Scotland	70.5	*70.1*	*70.9*	80.0	*79.8*	*80.1*	9.4
Most deprived decile	60.8	*59.5*	*62.1*	75.6	*75.2*	*75.9*	14.4
Least deprived decile	77.9	*76.7*	*79.1*	84.2	*83.9*	*84.5*	6.0

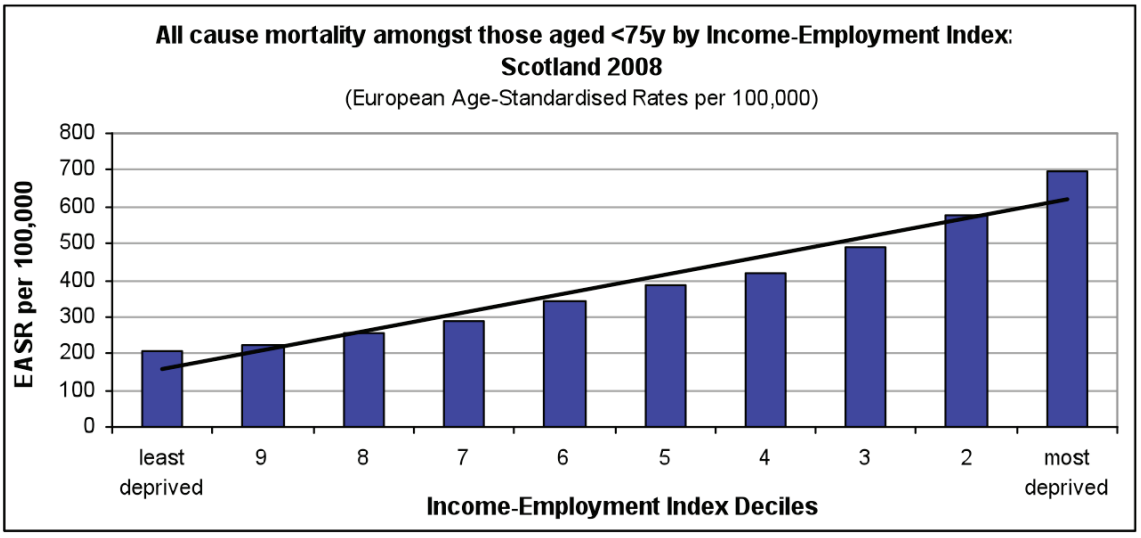
Premature Mortality - from all causes, aged under 75 years

Summary

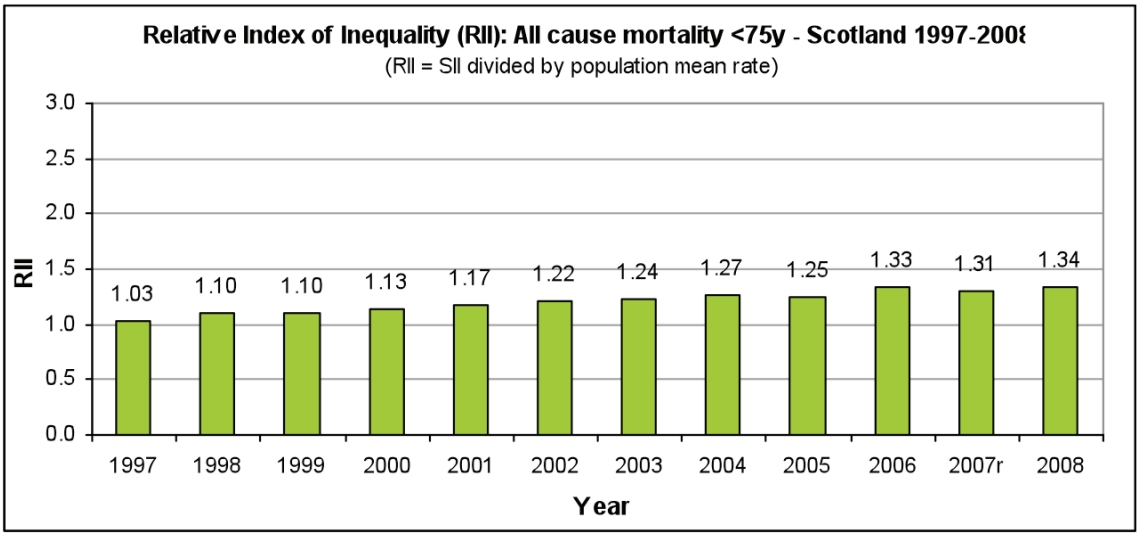
- *Inequalities are stable in absolute terms but are widening in relative terms*

Between 1997 and 2008, deaths amongst those aged under 75 years have decreased by 21.2%. Despite these decreases, around 22,000 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 2008, the rate in the most deprived decile was 698 compared to a rate of 205 in the least deprived decile – a difference of 493 premature deaths per 100,000 population. 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 RII).

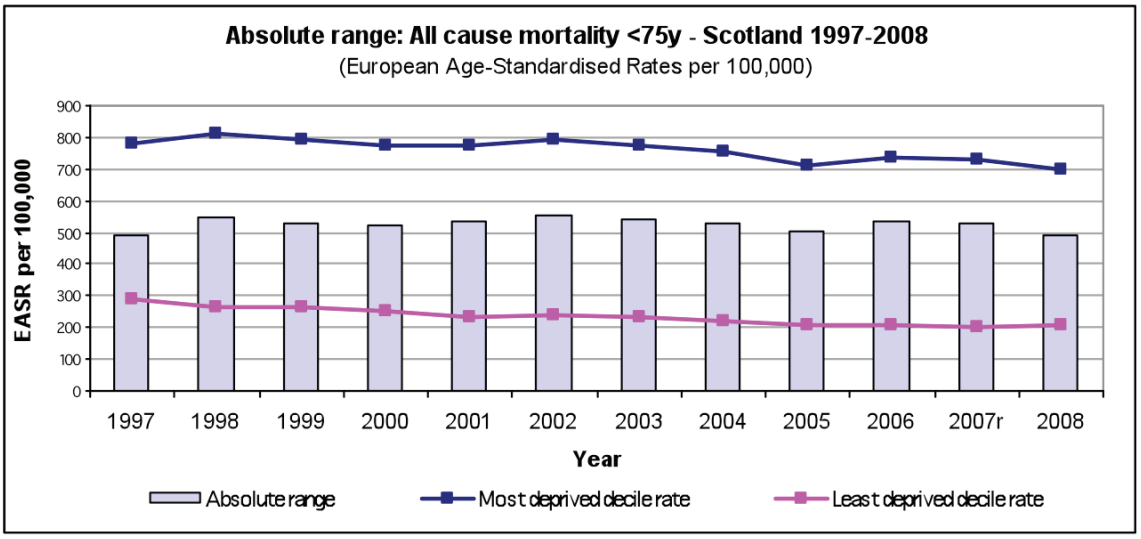
Inequalities gradient in the most recent year available



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
2007r	22,359	4,755,963	393.4
2008	22,005	4,775,321	382.8

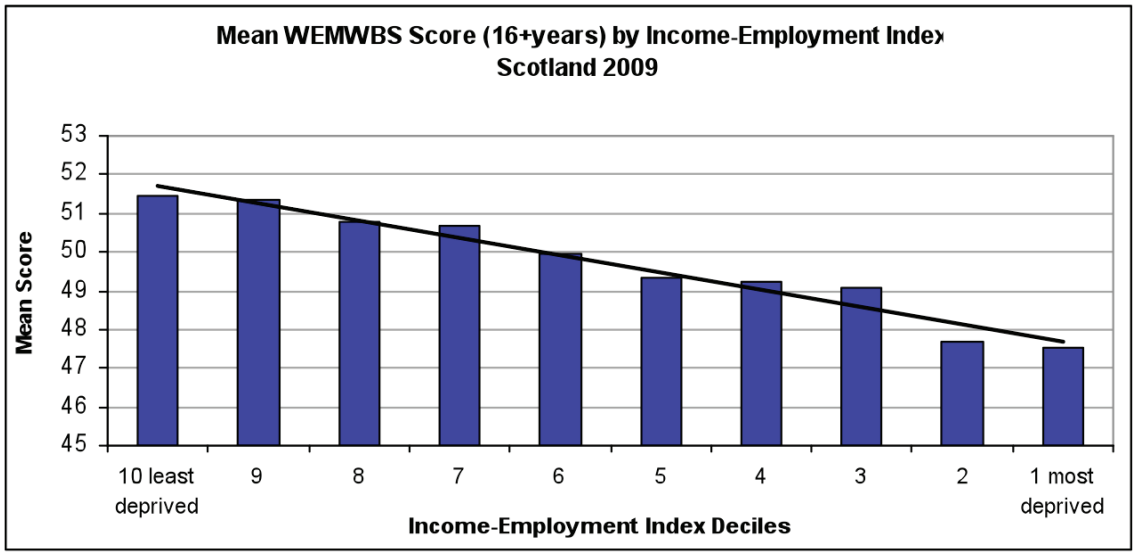
Mental Wellbeing (WEMWBS) - adults aged 16 years and over

Summary

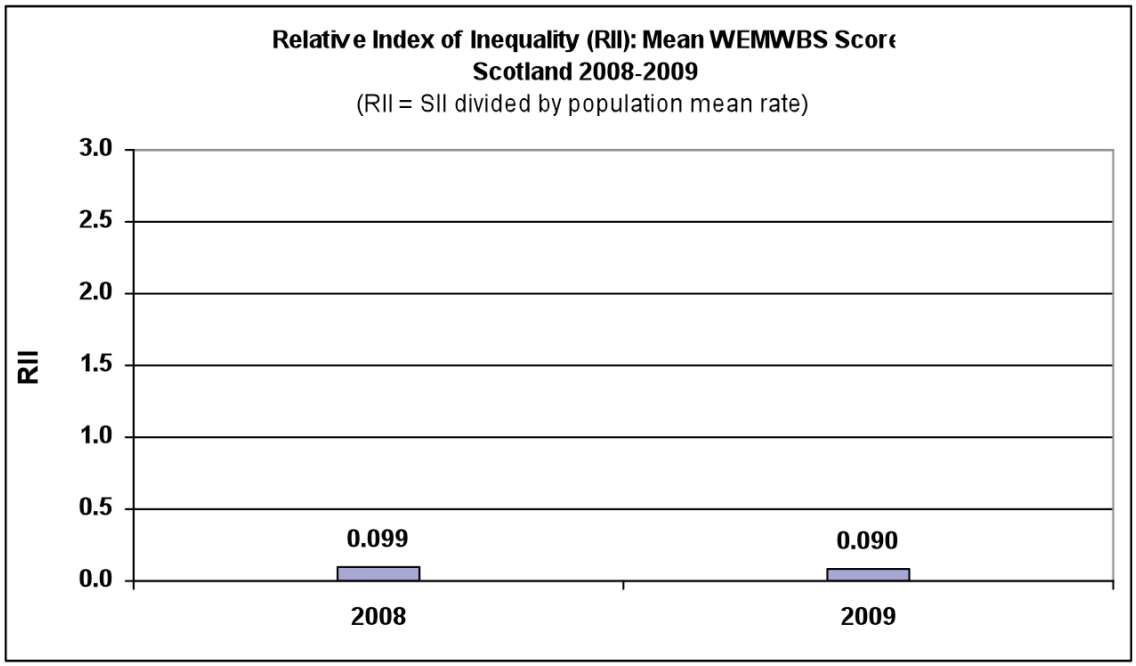
- *Inequalities are stable in both absolute and relative terms but more data required to identify a trend*

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 3.9 between the lowest and highest deciles). Both absolute and relative inequalities have remained stable although with only two data points available more information is required over time to identify a trend.

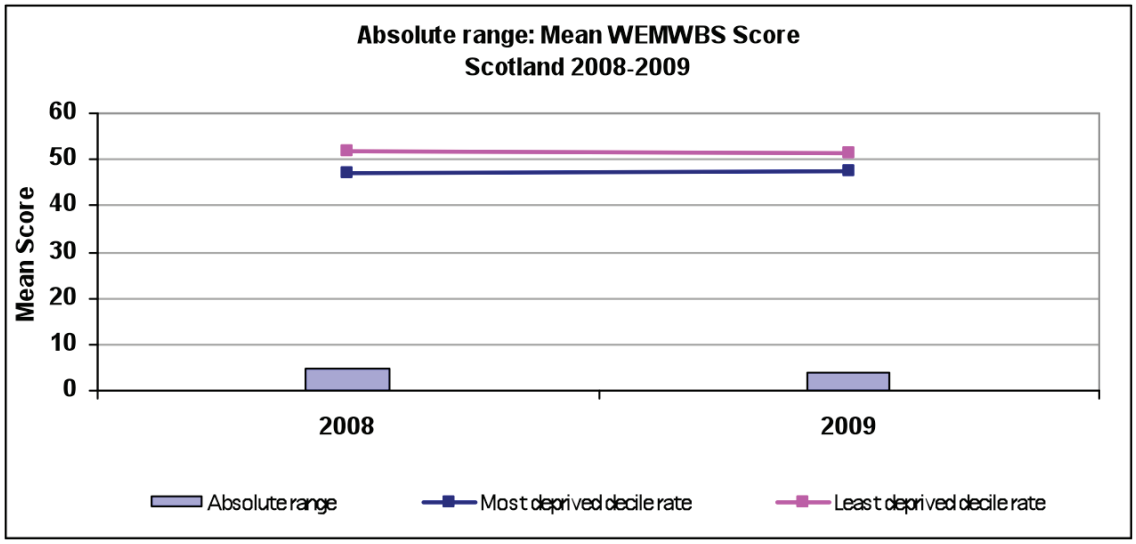
Inequalities Gradient in the most recent year available



Relative Index of Inequality (RII) over time



Absolute range over time



Scale / context

SIMD decile	Mean WEMWBS score 2008	Mean WEMWBS score 2009
most deprived	47.4	47.5
2	47.8	47.7
3	48.9	49.1
4	49.6	49.2
5	49.8	49.4
6	50.5	49.9
7	50.7	50.7
8	51.3	50.8
9	51.6	51.3
least deprived	51.7	51.4
Total	50.0	49.8

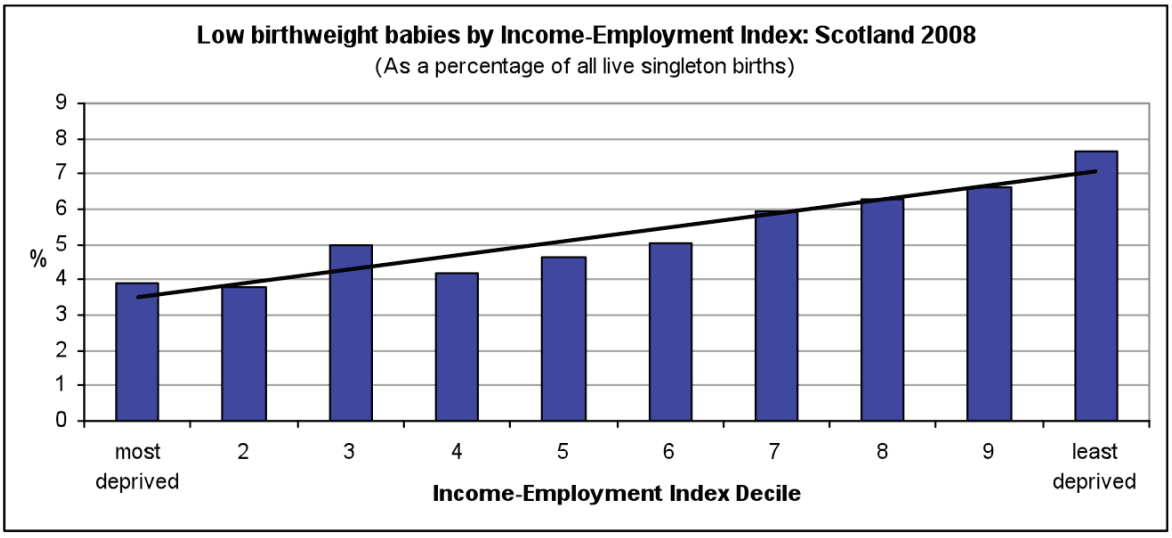
Low Birthweight

Summary

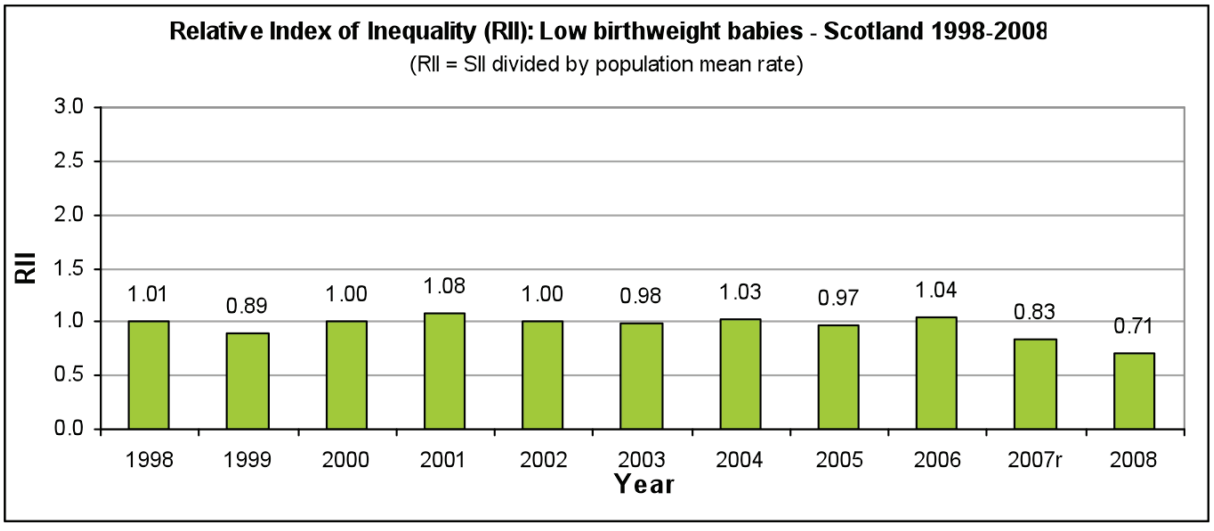
- *Inequalities are narrowing in both absolute and relative terms*

Between 1998 and 2008, the number and percentage of low birthweight babies has been relatively stable. Around 3,000 low birthweight babies are born each year (around 6% 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 2008, the percentage in the most deprived decile was 7.6 compared to 3.9 in the least deprived decile – a difference of 3.7 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.

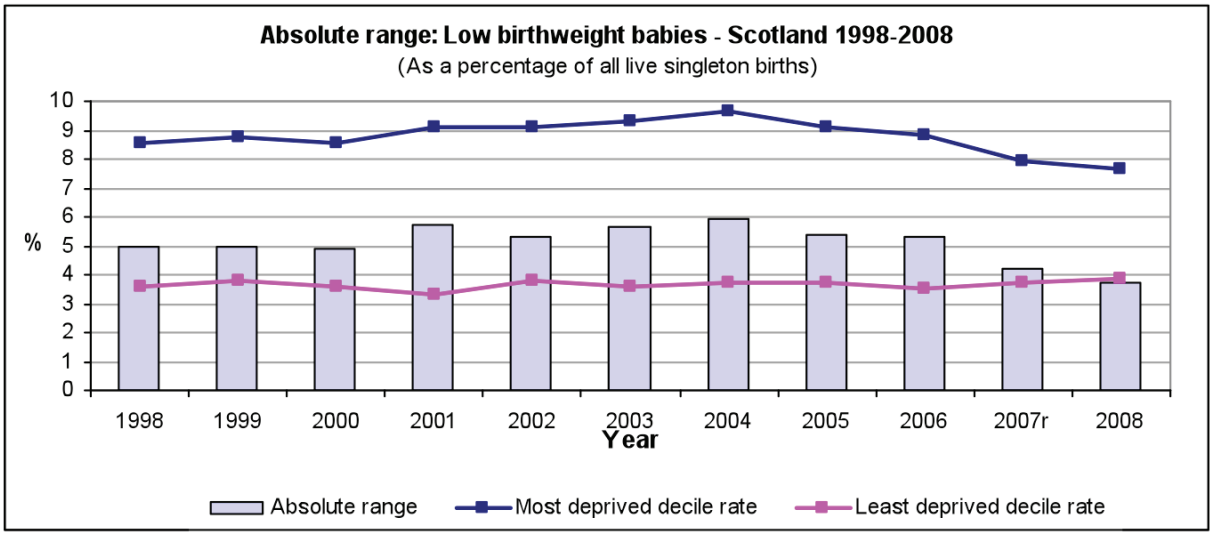
Inequalities gradient in the most recent year available



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	3108	55,152	5.6
1999	3098	52,726	5.9
2000	2906	51,082	5.7
2001	2848	49,752	5.7
2002	2910	48,952	5.9
2003	3026	50,071	6.0
2004	3030	51,852	5.8
2005	3056	51,372	5.9
2006	2928	52,286	5.6
2007r	3083	54,863	5.6
2008	3104	56,305	5.5

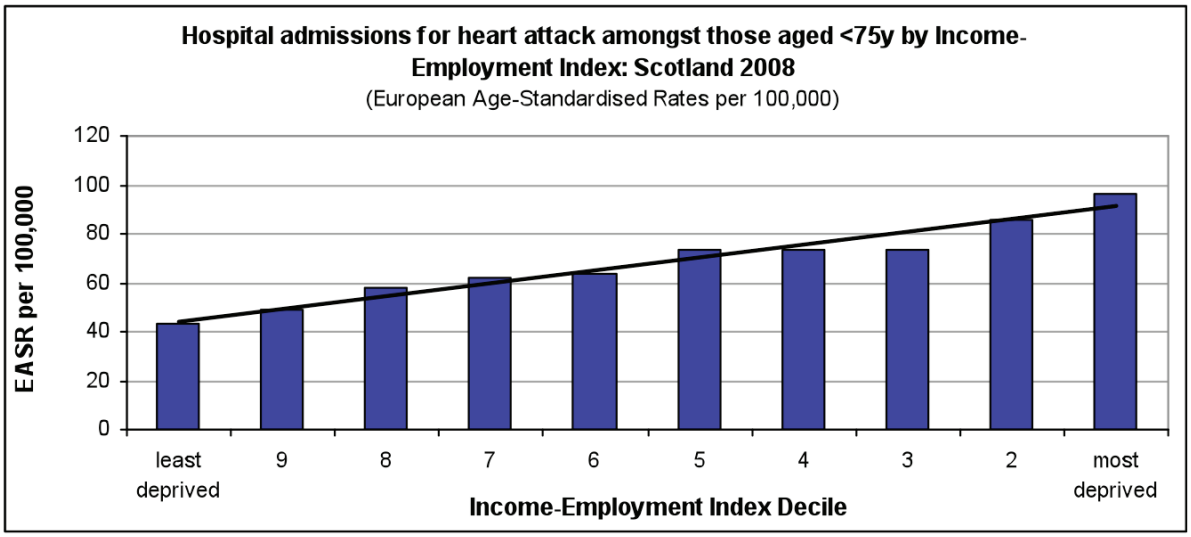
Coronary Heart Disease - first ever hospital admission for heart attack aged under 75 years

Summary

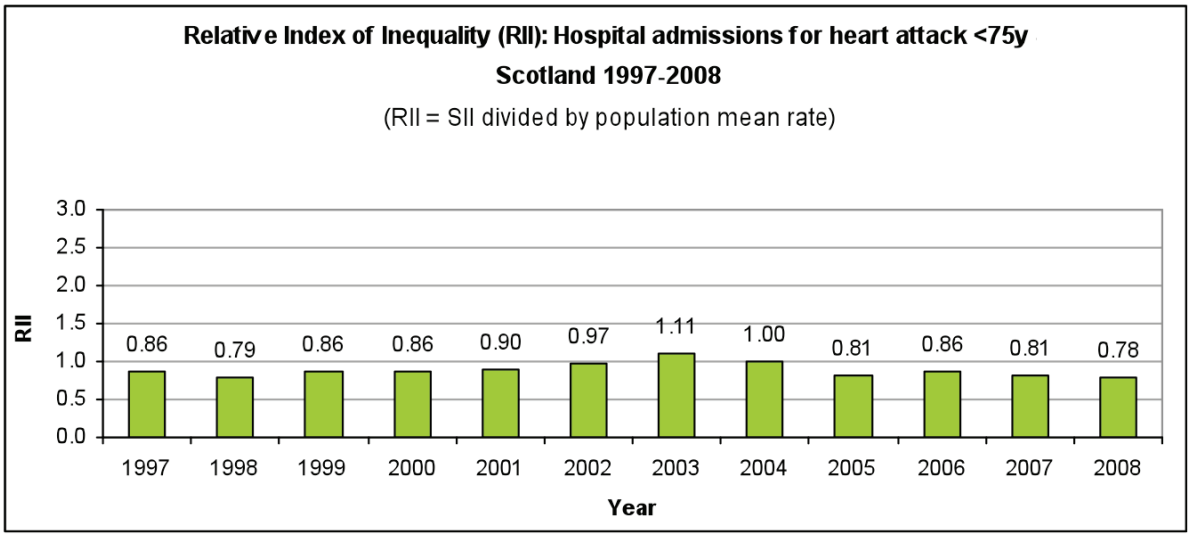
- *Inequalities have decreased in both absolute and relative terms in recent years*

Around 3,800 new cases (aged under 75 years) were admitted to hospital for heart attack in 2008. However between 1997 and 2008, there has been a considerable decrease (40%) in the annual rates. Despite this downward trend, in 2008 the rate of admission for people living in the most deprived decile was 96.1 per 100,000 population compared to a rate of 43.1 in the least deprived decile – a difference of 53.0. Although both absolute and relative measures reflect higher rate of hospital admissions in deprived areas, the extent of these inequalities has been decreasing since 2003, mainly due to a reduction in the most deprived areas.

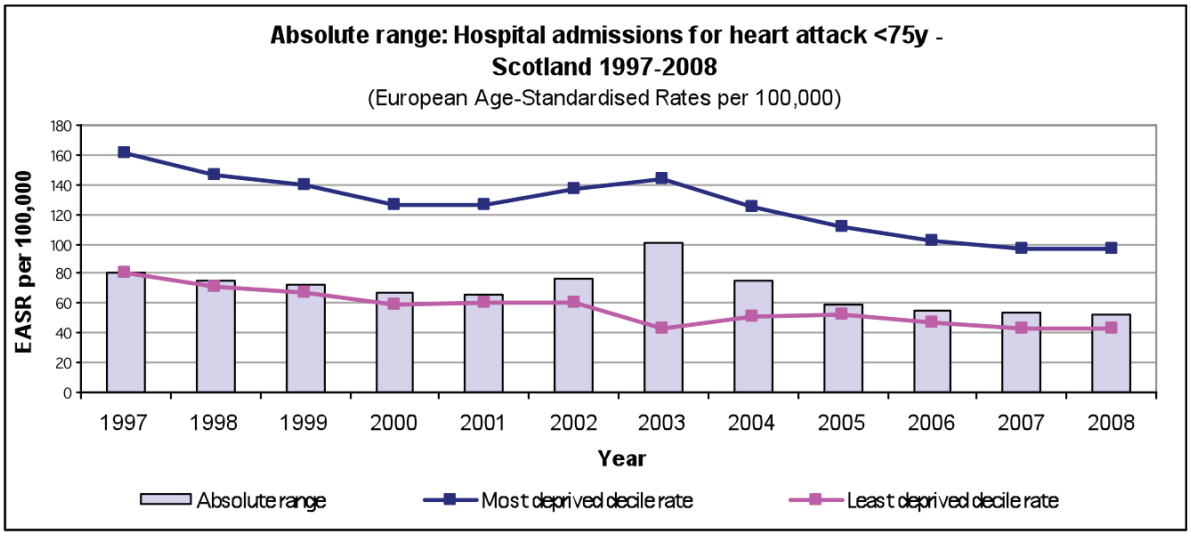
Inequalities gradient in the most recent year available



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)*
1997	5,814	4,740,269	111.8
1998	5,735	4,729,975	109.3
1999	5,155	4,721,298	97.9
2000	4,886	4,708,667	92.0
2001	4,852	4,703,661	90.9
2002	4,877	4,690,508	90.4
2003	4,634	4,690,603	85.1
2004	4,468	4,706,922	81.4
2005	4,117	4,718,403	74.3
2006	3,883	4,734,676	69.8
2007	3,681	4,755,963	65.5
2008	3,802	4,775,321	66.9

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

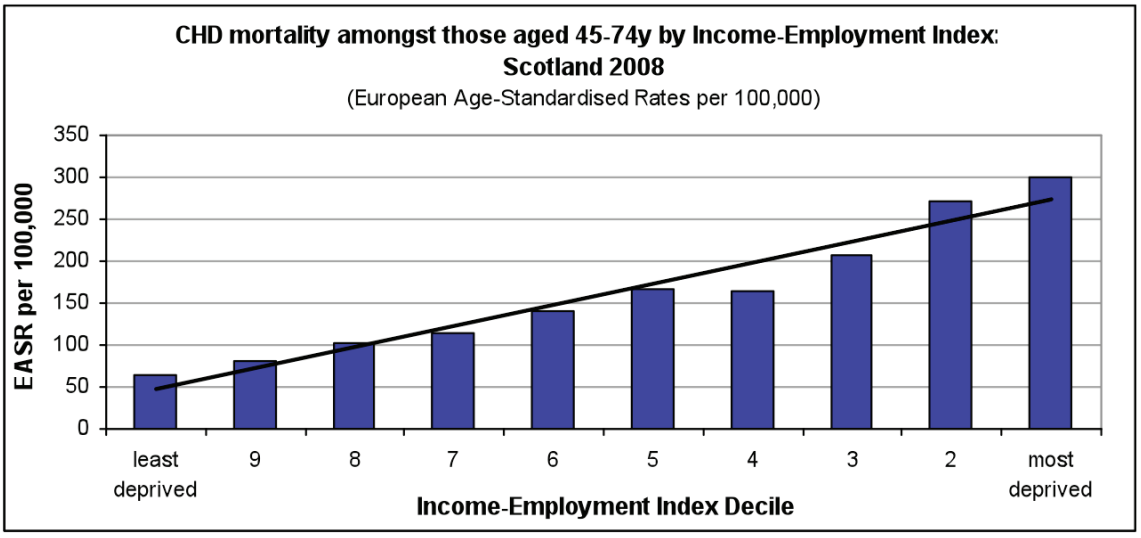
Coronary Heart Disease (CHD) - deaths aged 45-74 years

Summary

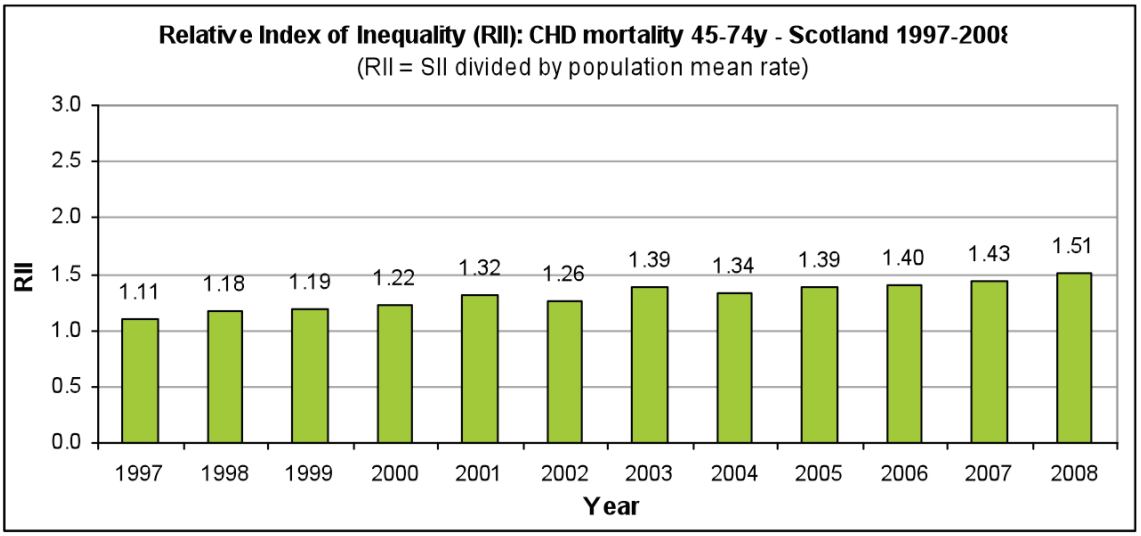
- *Inequalities have narrowed in absolute terms but are widening in relative terms*

Between 1997 and 2008, there has been a considerable decrease in CHD mortality amongst the population aged 45-74 years as a whole – rates fell by 51%. However, CHD remains one of Scotland's biggest causes of premature mortality, with around 3,100 deaths occurring in the latest year. Premature mortality from CHD is more prevalent in deprived areas than in areas of low deprivation. In 2008, there were 299 deaths per 100,000 population in the most deprived decile compared to 63 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 a widening of inequalities in relative terms (as demonstrated by the RII).

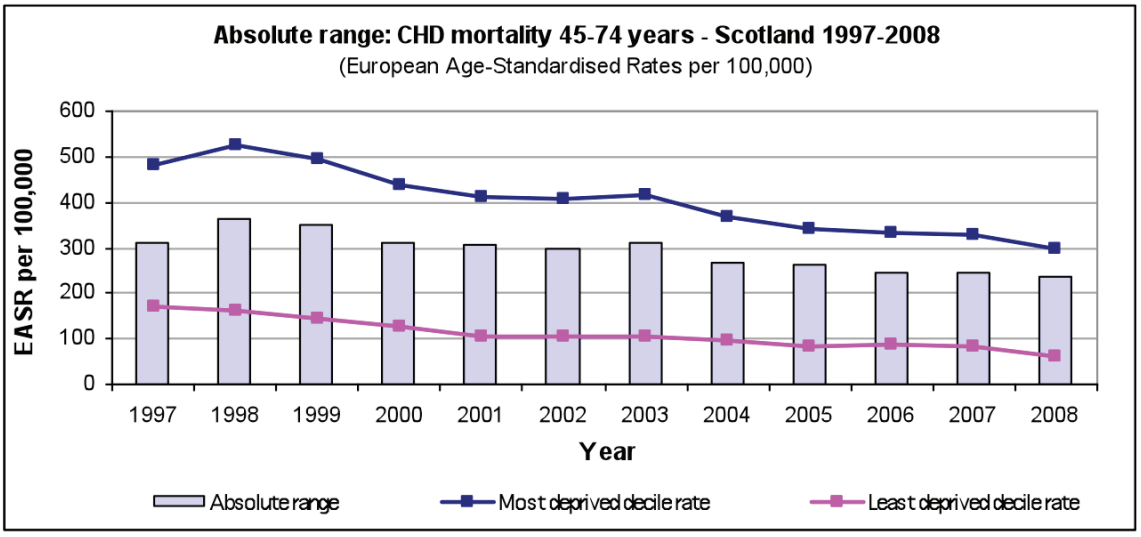
Inequalities gradient in the most recent year available



Relative Index of Inequality (RII) over time



Absolute range over time



Scale / context

	Number of deaths	Target population size	Rate per 100,000 (EASR)
1997	5,887	1,635,590	320.0
1998	5,676	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	4,309	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	3,394	1,793,423	174.5
2007	3,374	1,818,202	171.4
2008	3,153	1,843,609	157.8

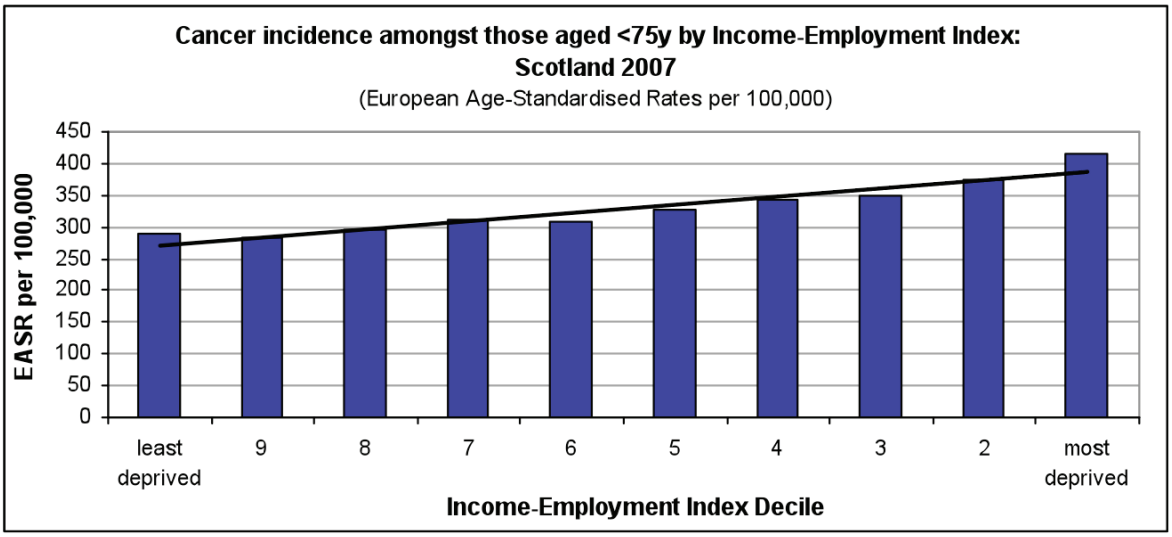
Cancer - incidence rate aged under 75 years

Summary

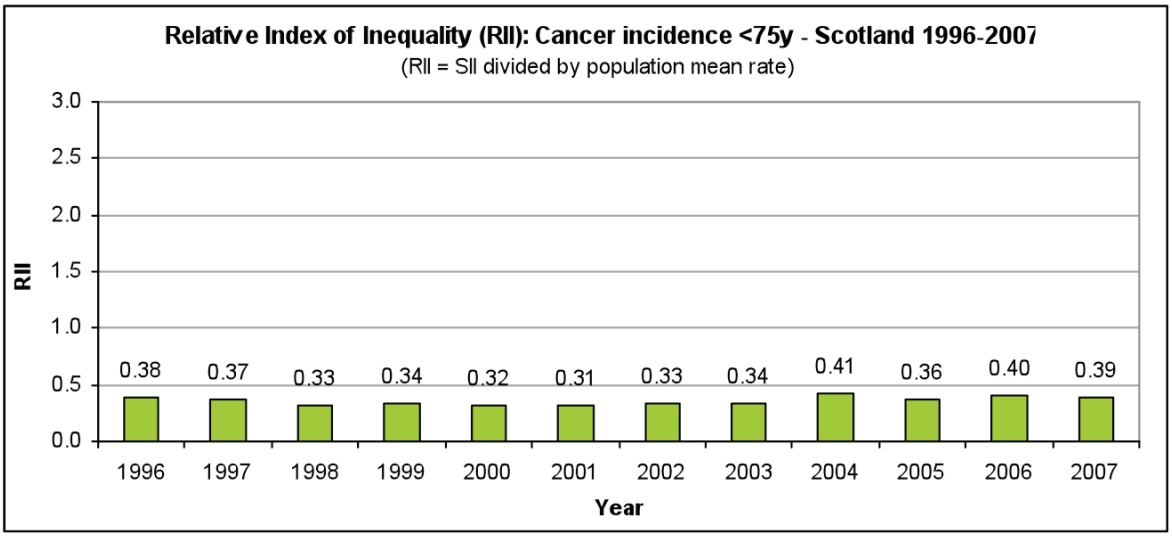
- *Inequalities are stable in both absolute and relative terms*

There were around 18,500 new cases of cancer diagnosed in 2007. Rates have decreased by 5% since 1996 but fluctuated year on year with not clear trend since 1997. In 2007, the rate in the most deprived decile was 414 per 100,000 population compared to a rate of 288 in the least deprived decile – a difference of 126. Inequality measures (both absolute range and RII) have remained stable, albeit with some fluctuations from one year to the next.

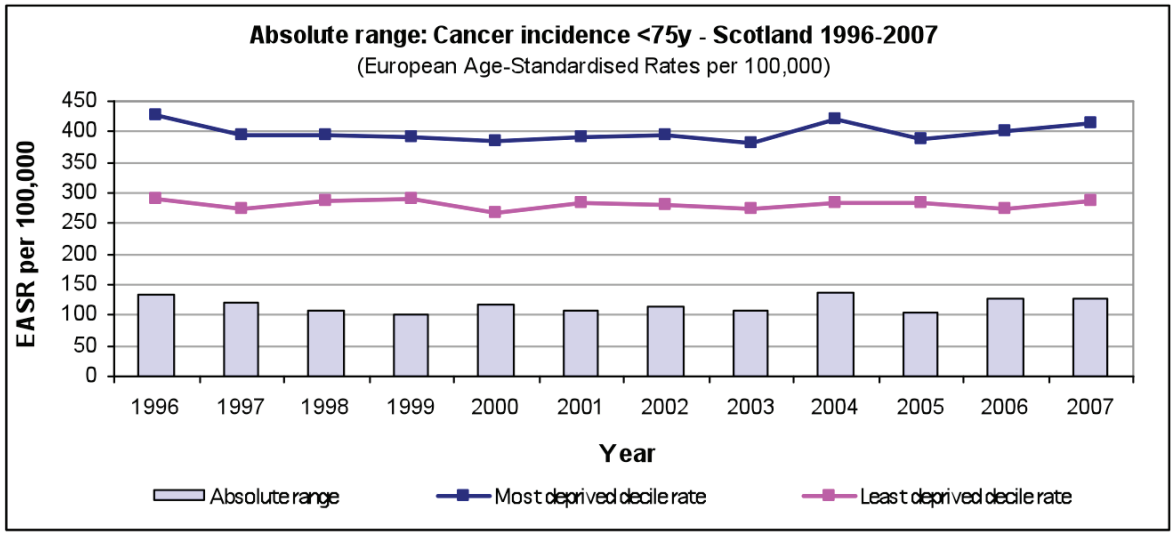
Inequalities gradient in the most recent year available



Relative Index of Inequality (RII) over time



Absolute range over time



Scale / context

	Number of 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	18,577	4,755,963	328.1

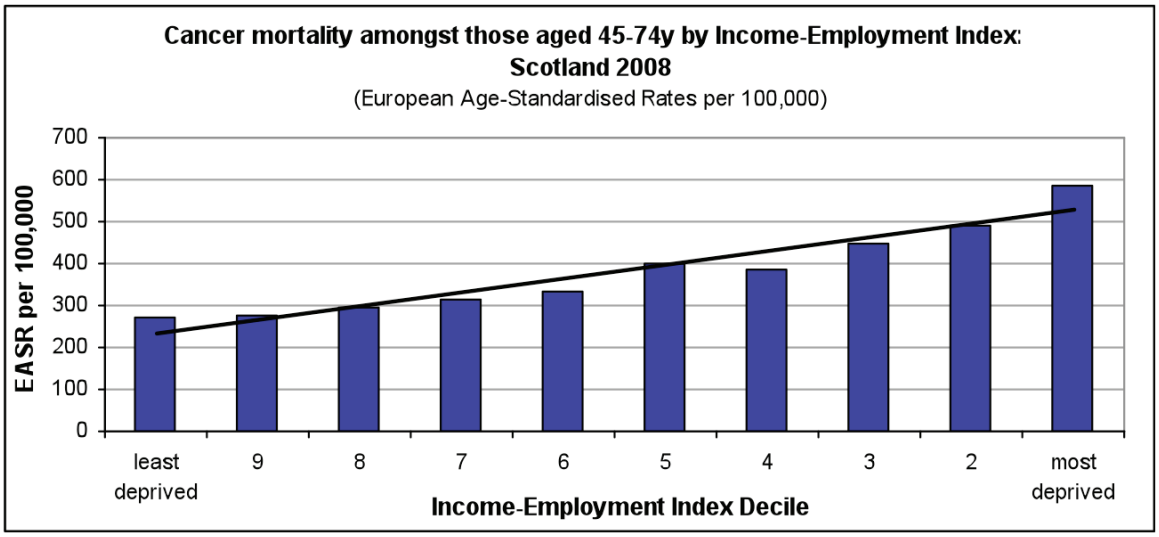
Cancer - deaths aged 45-74 years

Summary

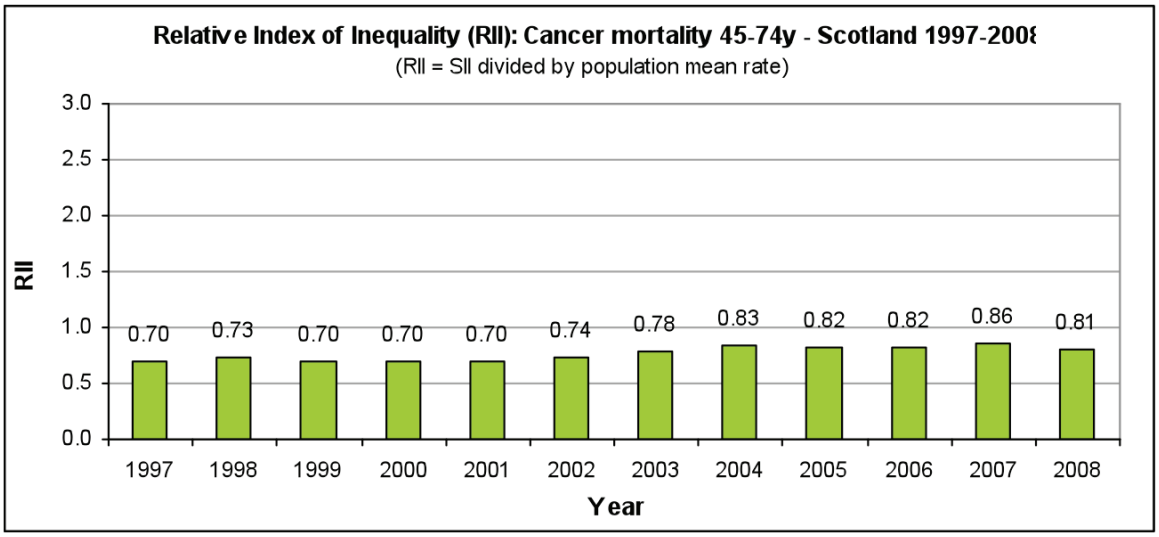
- *Inequalities have generally increased in absolute and relative terms over time but there has been a slight reduction in the latest year.*

Between 1997 and 2008, there has been a 15.4% decrease in rates of death from cancer amongst those aged 45-74 years as a whole. In 2008, around 7,500 people aged 45-74 died from cancer. Cancer deaths in this age group are more common in deprived areas (588 per 100,000 population) than in areas of low deprivation (273 per 100,000 population) – a difference of 315. Previous data up to 2007 suggested an increase in inequalities in both absolute and relative terms. However, data for 2008 shows a slight decrease in both measures.

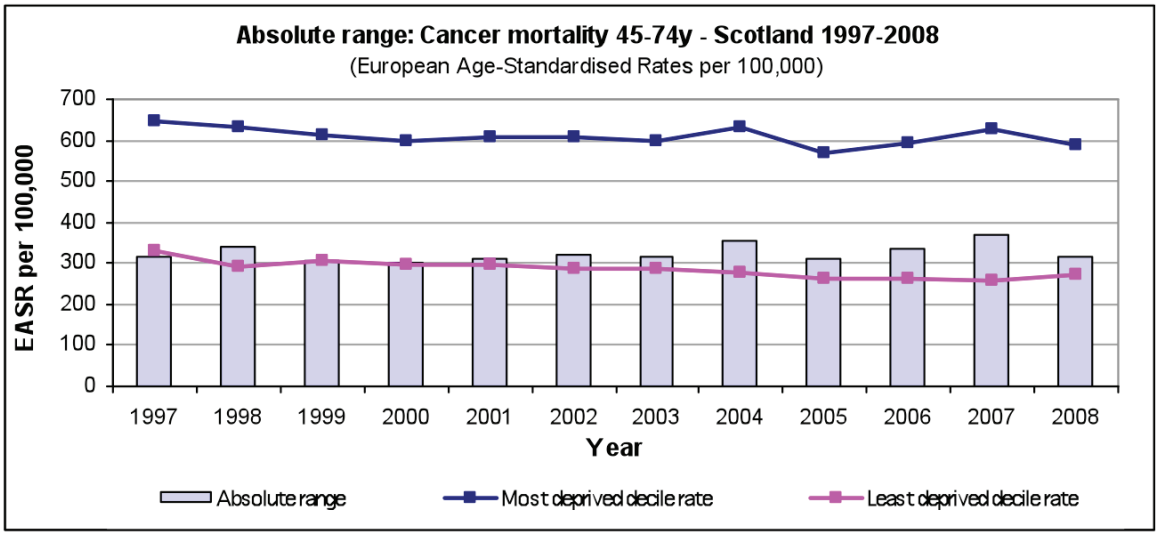
Inequalities gradient in the most recent year available



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	7,569	1,818,202	385.4
2008	7,503	1,843,609	377.9

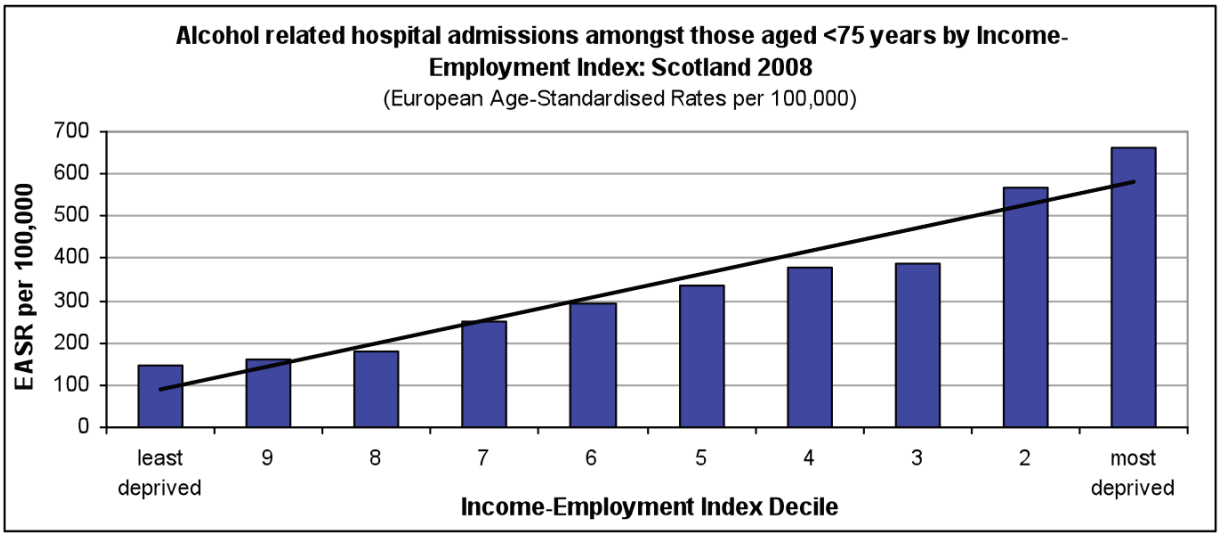
Alcohol - first ever hospital admission aged under 75 years

Summary

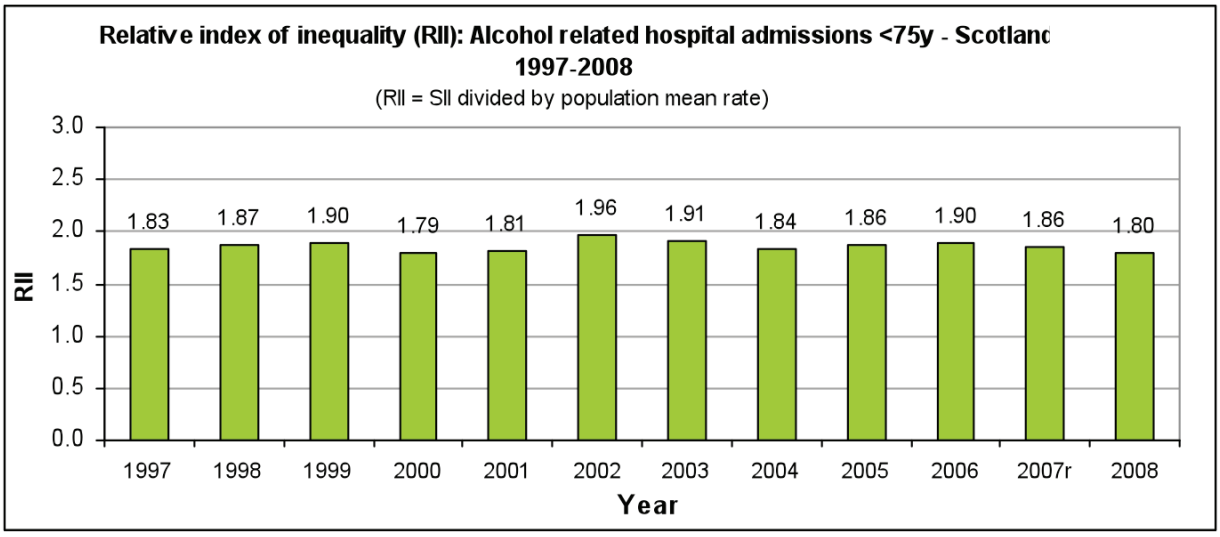
- *Inequalities have fluctuated with no clear trend in absolute and relative terms*

There has been a 19% increase in rates of new hospital admissions for alcohol related conditions amongst those aged under 75 years between 1997 and 2008. In 2008 there were around 15,000 new cases. These types of admissions are more common in deprived areas - 661 per 100,000 population compared to 145 per 100,000 population in areas of low deprivation, absolute range is 516. Both absolute and relative inequalities have remained stable, albeit with some fluctuation from one year to the next. There was a slight decrease in inequality in the latest year, mainly cause by an increase in the admission rate in the least deprived decile from 134 to 145 per 100,000 population.

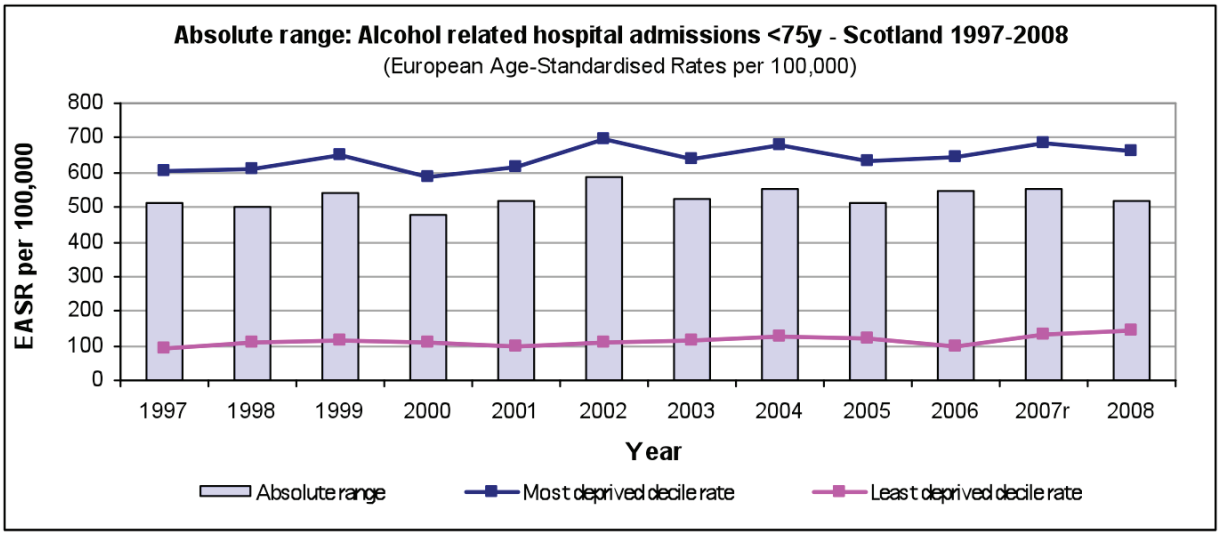
Inequalities gradient in the most recent year available



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
2007r	15,344	4,755,963	307.0
2008	15,185	4,775,321	302.0

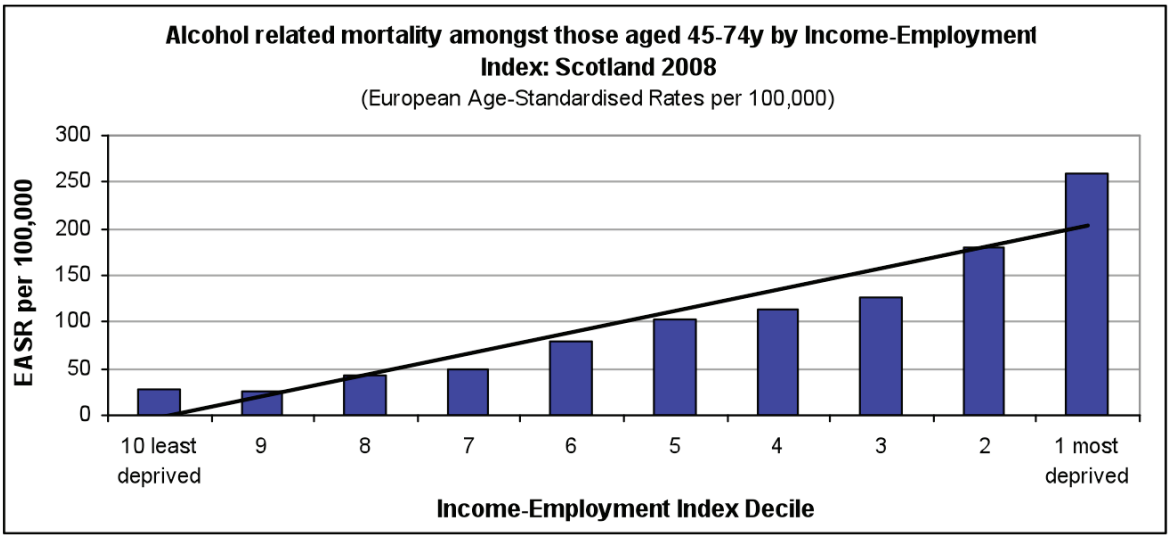
Alcohol - deaths aged 45-74 years

Summary

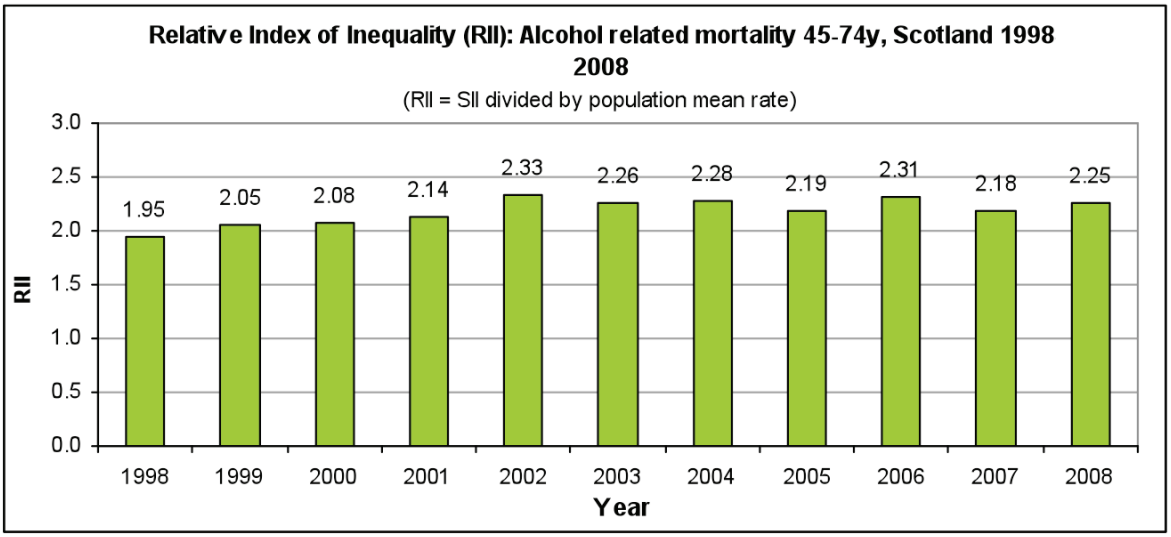
- *Inequalities have fluctuated in absolute and relative terms over time but there has been a slight reduction in the latest year.*

Between 1998 and 2008, there has been a 13% increase in the rates of alcohol related deaths amongst those aged under 45-74 years as a whole. Numbers have risen to around 1,800 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 2008, the rate in the most deprived decile was 259 per 100,000 population compared to a rate of 28 per 100,000 population in the least deprived decile - a difference of 231 deaths. Increases in alcohol related deaths amongst those aged 45-74 years have been particularly observed in deprived areas. Both absolute and relative inequalities have shown some fluctuation from one year to the next. There was a slight decrease in inequality in the latest year, mainly cause by a decrease in the alcohol related death rate for the most deprived decile from 303 to 258 per 100,000 population.

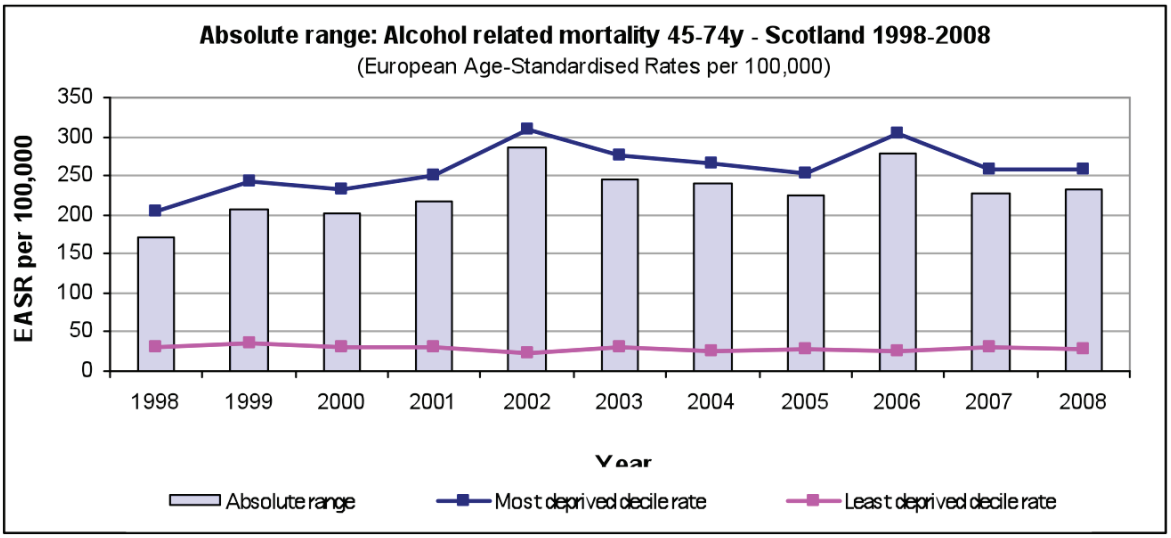
Inequalities gradient in the most recent year available



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	91.0
2000	1,489	1,670,660	89.1
2001	1,565	1,687,422	92.8
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	101.1
2006	1,899	1,793,423	105.9
2007	1,801	1,818,202	99.1
2008	1,782	1,843,609	96.7

*Please note that all data have been revised due to an error in the standardisation calculations.

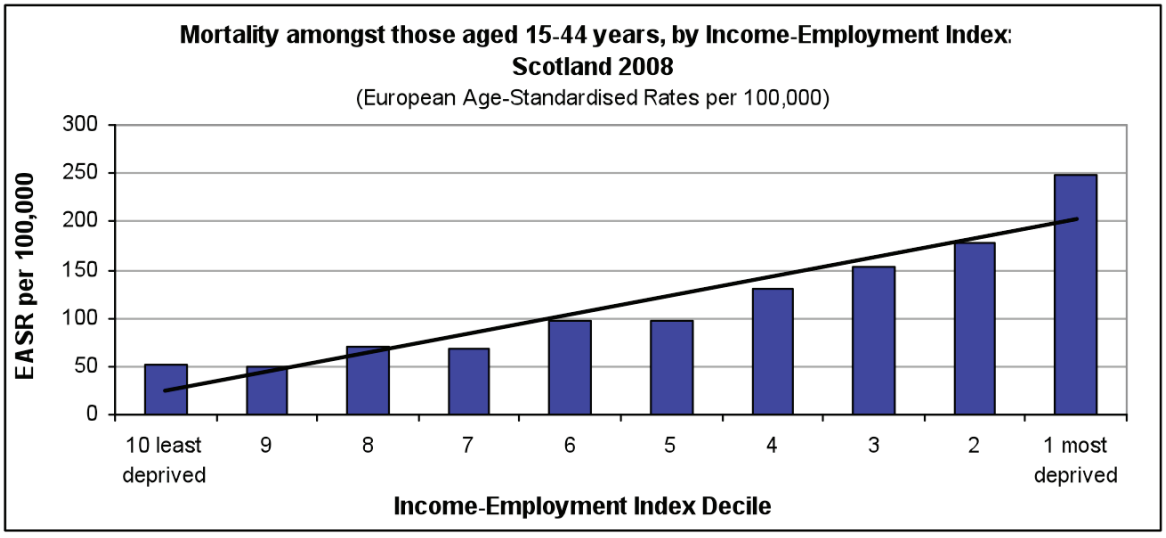
All-cause mortality aged 15-44 years

Summary

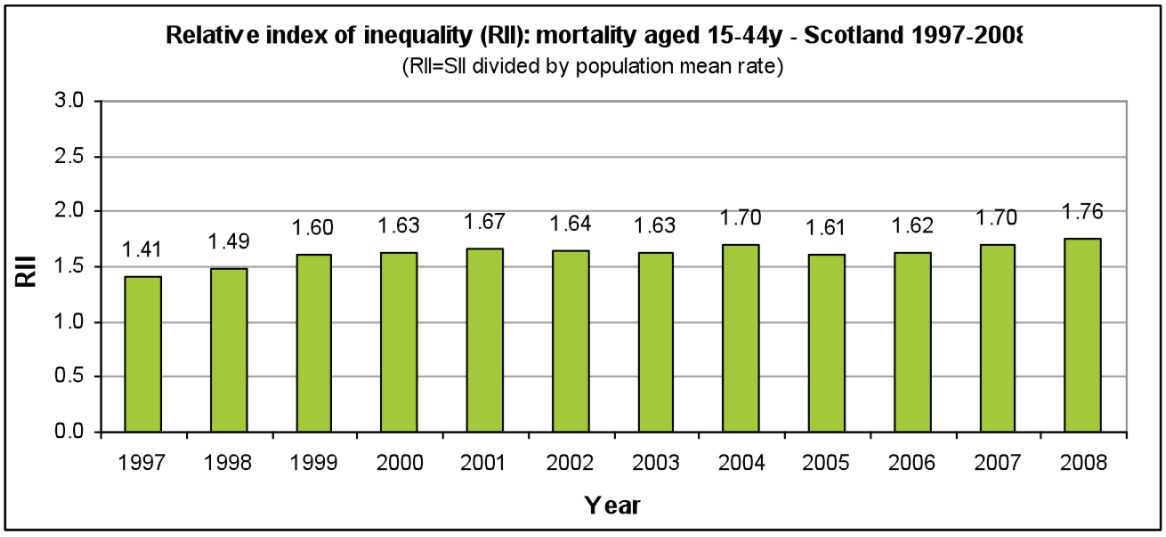
- *Inequalities have remained stable in absolute terms but are widening in relative terms*

Between 1997 and 2008, 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 more than doubled over the same period (to around 470 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 3% (to around 480 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 2008, the all-cause mortality rate for adults aged 15-44 years in the most deprived decile was 248 compared to a rate of 52 in the least deprived decile – a difference of 196 deaths. Whilst inequalities has remained fairly stable in absolute term over this period, it has increased in relative terms (as demonstrated by the RII, albeit with some fluctuation from one year to the next).

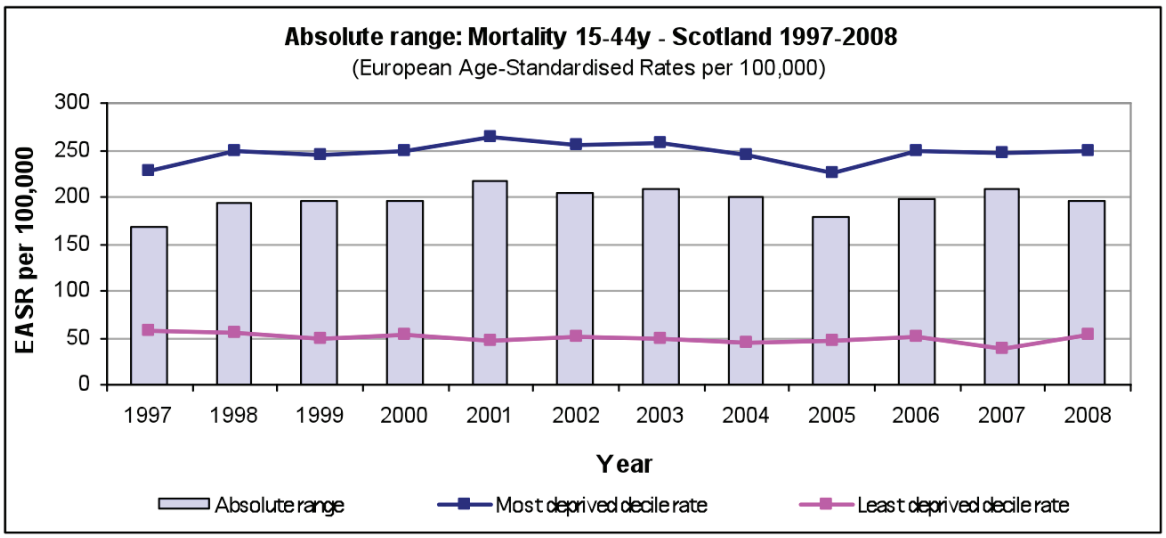
Inequalities gradient in the most recent year available



Relative Index of Inequality (RII) over time



Absolute range over time



Scale / context

	Number of all-causes 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	2,461	2,086,427	114.2
2008	2,443	2,081,506	114.5

*Please note that all data have been revised due to an error in the standardisation calculations.

	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	54	2.6	392	18.9	453	21.6
2008	53	2.6	477	23.1	480	23.1

Annex 1: 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 General Register Office for 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 calculated 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 (for example: In the calculations to produce these estimates of HLE, there were 900 age/sex/decile breakdowns for self-assessed health data from the Scottish Household Survey; 53% of which had fewer than 100 respondents and 13% of which had fewer than 50 respondents).

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

Source: General Register Office for 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.
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. The minimum possible score is 14 and the maximum 70.

- **Low birthweight**

Source: NHS Information Services Division (ISD) ; SMR02 maternity dataset.
Definition: The figures are presented as a percentage of all live, 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 birthweight is defined as < 2,500g - the standard World Health Organisation definition.

- **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.
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 General Register Office for 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'.

- **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 hospitals 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). 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. ICD9: V57, 2550, 2651, 2910, 2911, 2912, 2913, 2915, 2918, 2919, 3039, 3050, 3483, 3575, 3594, 4255, 5353, 5709, 5710, 5711, 5712, 5713, 5771, 6554, E8600, E8601, E8609, E9473, E9509, D3039 & A3317, D3039 & A3344. See: http://www.alcoholinformation.isdscotland.org/alcohol_misuse/3986.html

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

Source: General Register Office for 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: General Register Office for 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:

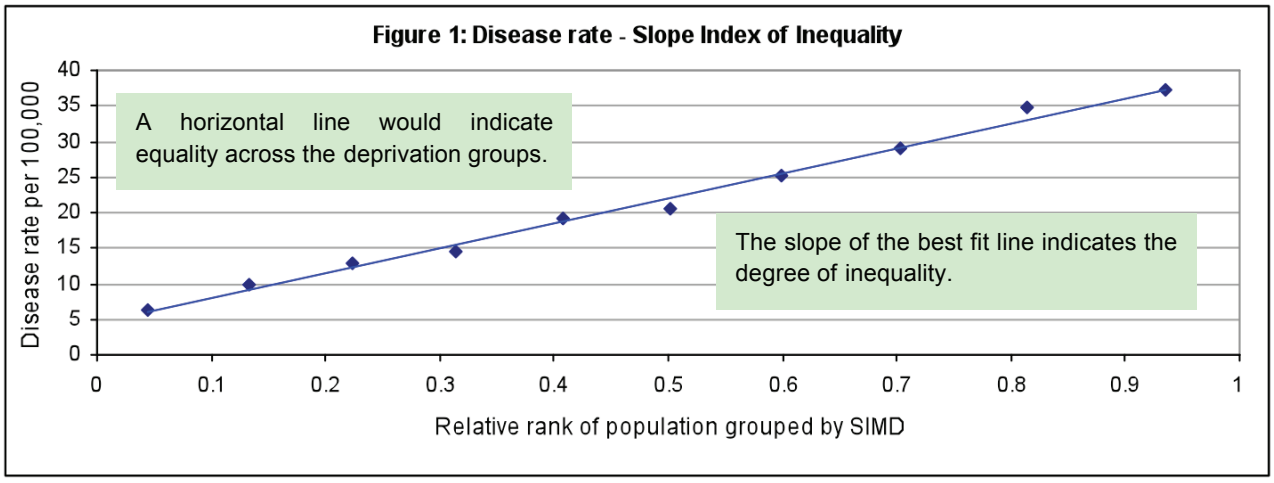
http://www.scotpho.org.uk/home/Publications/scotphoreports/pub_measuringinequalities.asp

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 basis.

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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