

Statistical Bulletin

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Long-term Monitoring of Health Inequalities

October 2013 Report

Date: 29 October 2013

Main Findings

- **Healthy life expectancy at birth:** There continue to be inequalities in relative and absolute terms. Between 2009-2010 and 2011-2012, although inequalities appear to have widened slightly, the changes were not statistically significant. Changes to the methodology from 2009 mean comparisons with earlier years cannot be made.
- **Premature Mortality (under 75 years):** Following a long-term increase, relative inequalities have stabilised since 2006. Inequalities have declined in absolute terms over the last decade.
- **Mental Wellbeing:** Inequalities are increasing in absolute terms but remain stable in relative terms.
- **Low Birthweight:** Having narrowed between 2006 and 2008, inequalities are now stabilising in both absolute and relative terms.
- **Healthy Birthweight:** Inequalities, in both relative and absolute terms, have been low and stable since 1998.
- **Hospital admissions for heart attack (under 75 years):** Over time, inequalities have fluctuated in both absolute and relative terms, with a general upward trend since 2008.
- **Coronary Heart Disease – deaths (45-74 years):** Following a long-term increase, inequalities have stabilised in relative terms. In absolute terms, despite a slight increase in the latest year reported, inequalities have been narrowing.
- **Cancer Incidence (under 75 years):** Over the long term, inequalities are stable in both absolute and relative terms. Patterns of inequality vary by cancer type.

- **Cancer deaths (45-74 years):** Over the long term there has been a slight increase in relative inequality, although this has been more stable since 2004. Absolute inequalities have fluctuated over time with no clear trend (note that patterns of inequality vary depending on the cancer type).
- **Alcohol – first hospital admission (under 75 years):** The level of absolute inequality has fallen since 1997, while relative inequality has remained stable over the same period.
- **Alcohol – deaths (45-74 years):** The level of relative inequality has fallen to its lowest level in the reporting period (1998 to 2011). The level of absolute inequality is slightly higher than in 1998, but is lower than in all other years over the reporting period.
- **All-cause mortality aged 15-44 years:** The level of relative inequality has increased since 1997 but in recent years has been more stable. Absolute inequality shows no clear trend over time.

Introduction

This publication updates the headline indicators from the Long-Term Monitoring of Health Inequalities¹ report. This is the sixth 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 group¹ was set up in early 2008 to advise the Task Force on long-term monitoring of health inequalities. 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 1. Note that the time periods for which data are available for these indicators vary.

Recommended 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. In this report, the

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

magnitude of RII is quoted. Unless explicitly explained, the RII indicates the extent to which health outcomes are better in the least deprived areas, or worse in the most deprived areas, compared to the mean.

- Absolute range: How big is the gap? This measure describes the absolute difference between the extremes of deprivation.
- 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 2. 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 2.

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 Well² (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, October 2010, October 2011 and October 2012.

Recommendations from the Technical Advisory Group, June 2012

In June 2012, there was a further meeting of the technical advisory group to review methodology and the range of published indicators. The meeting focussed on two main areas. The first of these was a proposal that the assumption of a linear relationship between deprivation and each indicator be tested, and possibly replaced by a non-linear model if appropriate³. The second issue was whether the existing range of indicators was appropriate⁴.

On the issue of applying a non-linear spline model to the measurement of relative deprivation, it was agreed that no changes would be made to the methodology. While the alternative had some technical merits, it was felt to be too complex for this report; and its lack of consistency over time had drawbacks for long-term monitoring.

On the range of reported indicators, it was agreed that the low birthweight indicator should be supplemented by an additional indicator of appropriate weight for gestational age. This is included in the 2013 report for the first time. It was also agreed that mortality rates from the most common types of cancer would be

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

³ What is the shape of the dose-response relationship between markers of socioeconomic status and health status indicators: <https://www.scphrp.ac.uk/node/193>

⁴ Best Practice Guidelines for Monitoring Socioeconomic Inequalities in Health Status: Lessons from Scotland: <https://www.scphrp.ac.uk/node/244>

investigated separately to total cancer mortality. The 2013 report presents inequalities information on mortality and incidence of the following cancer types: cancer of the prostate, cancer of the breast, cancer of the trachea, bronchus and lung, and colorectal cancer.

Healthy Life Expectancy at birth

Summary

- There continue to be inequalities in both relative and absolute terms. Between 2009-2010 and 2011-2012, although inequalities appear to have widened slightly, the changes were not statistically significant. Changes to the methodology from 2009 mean comparisons with earlier years cannot be made.

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 by 2.3 years (3.4%) for females. In 2009, the format of the self-assessed health question, on which healthy life expectancy data is based, was changed to align with the European Union, leading to a major discontinuity in the series. The markedly lower estimates of HLE at birth from 2009 onwards cannot be considered as part of the same series as earlier years. A technical paper by the Scottish Public Health Observatory (ScotPHO) has more information on this change.⁵

In 2011-2012, HLE at Scotland level was 59.8 years for males and 62.3 years for females, broadly in line with the 2009-2010 figures. HLE is lower in deprived areas than in areas of low deprivation. In 2011-2012, HLE of those living in the 10% most deprived areas was 23.8 years lower for males and 22.6 years lower for females than HLE of those living in the 10% least deprived areas.

The difference between HLE and life expectancy, i.e. expected years spent in 'not good' health, is greater in more deprived areas. In the most deprived areas, males spend 22.7 years in 'not good' health, compared to 11.9 years in the least deprived areas and 16.7 years for males in Scotland as a whole. Females in the most deprived areas spend 26.1 years in 'not good' health in the most deprived areas, compared with 12.0 years in the least deprived areas and 18.5 years for females in Scotland as a whole.

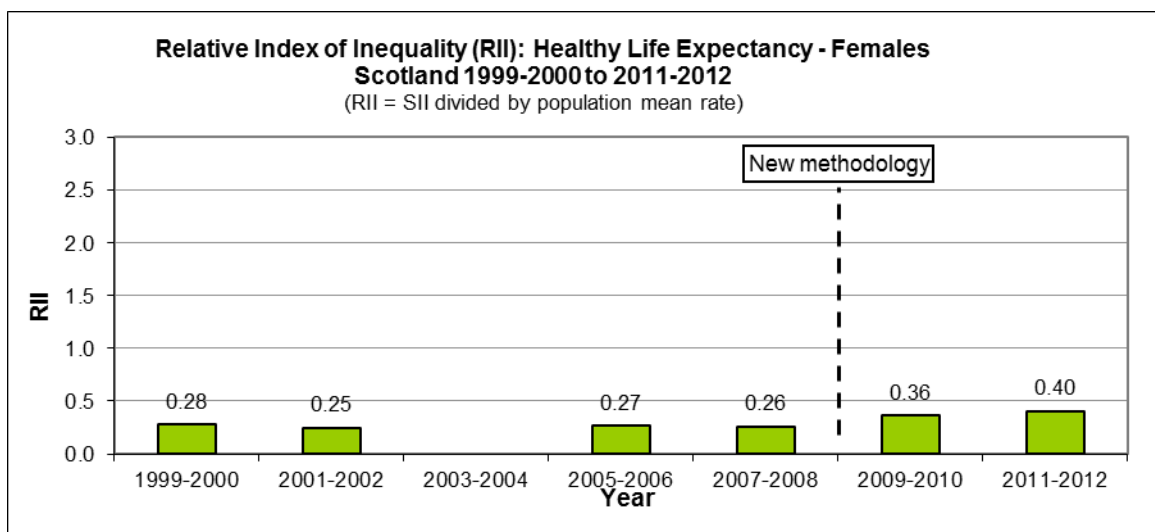
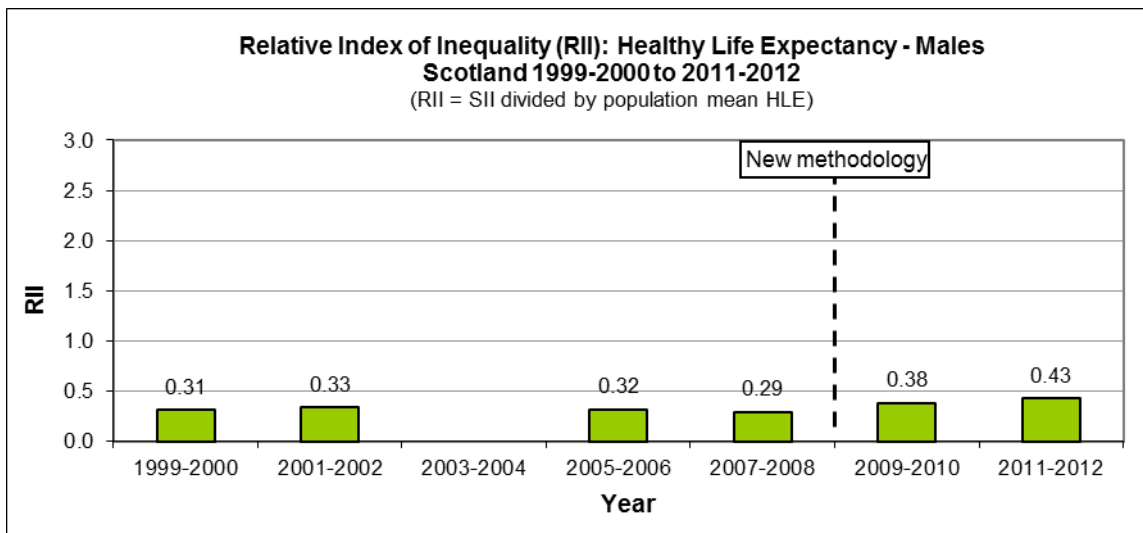
⁵Technical paper available at: <http://www.scotpho.org.uk/population-dynamics/healthy-life-expectancy/references>

Inequalities gradient in the most recent year available



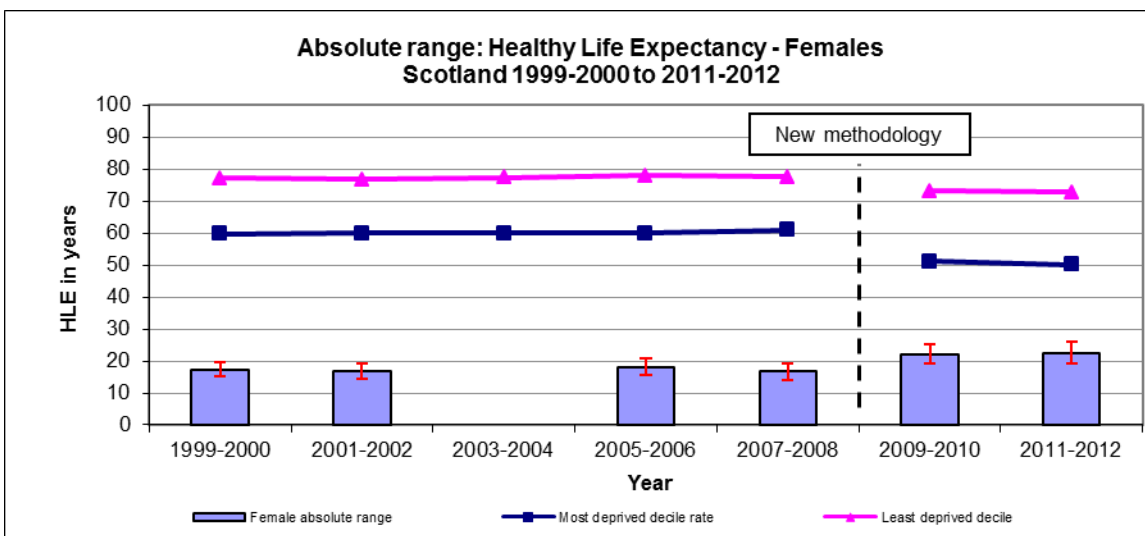
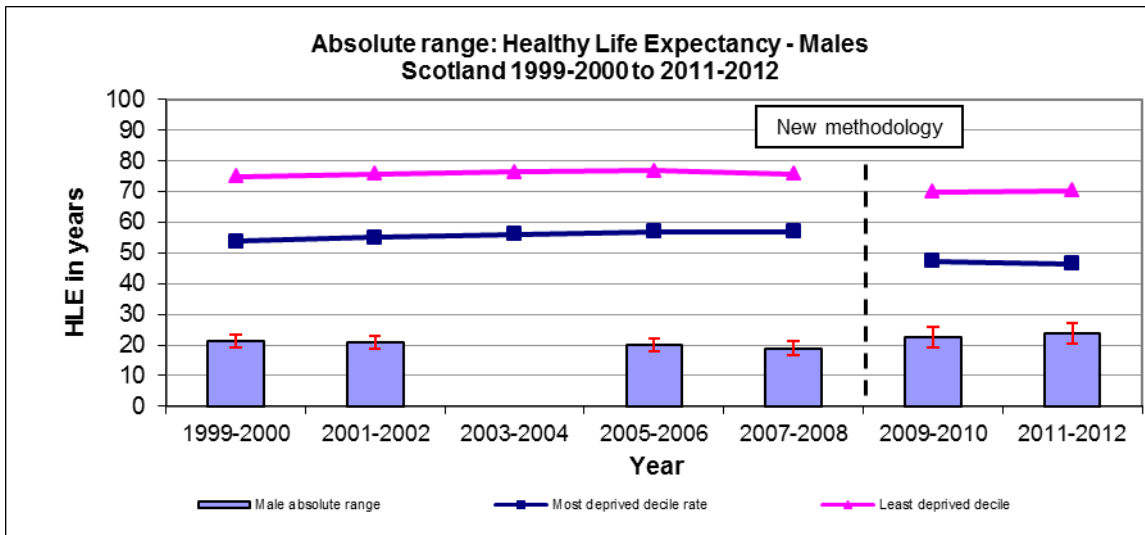
Note: the red bars indicate 95% confidence limits of each HLE estimate.

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 based on 95% confidence intervals around each HLE estimate.

Scale / context

Current Methodology (5 point scale of self-assessed health), 2009-2010 and 2011-2012

Men

	Male HLE in years	95%LL	95%UL	Male LE in years	95%LL	95%UL	Estimated years spent in 'not good' health
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
2011-2012							
Scotland	59.8	59.3	59.3	76.6	76.4	76.7	16.7
Most deprived decile	46.4	44.7	44.7	69.2	68.8	69.6	22.7
Least deprived decile	70.2	68.5	68.5	82.1	81.8	82.4	11.9

Women

	Female HLE in years	95%LL	95%UL	Female LE in years	95%LL	95%UL	Estimated years spent in 'not good' health
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
2011-2012							
Scotland	62.3	61.8	62.9	80.9	80.8	81.0	18.5
Most deprived decile	50.2	48.6	51.8	76.4	76.0	76.7	26.1
Least deprived decile	72.8	71.2	74.5	84.8	84.5	85.2	12.0

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

Men

	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 - revised							
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

Women

	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							
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.

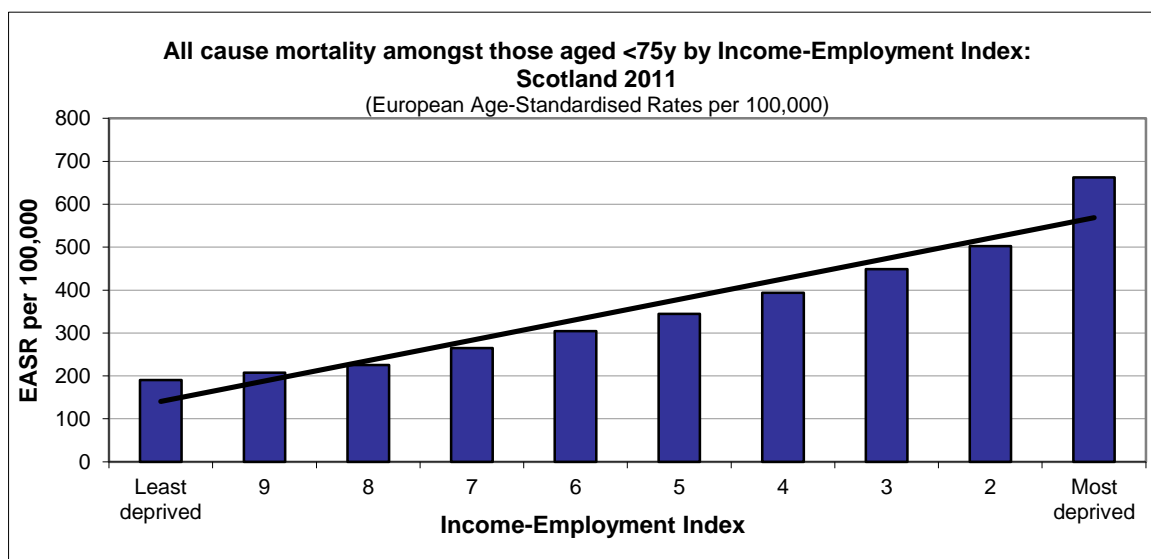
Premature Mortality - from all causes, aged under 75 years

Summary

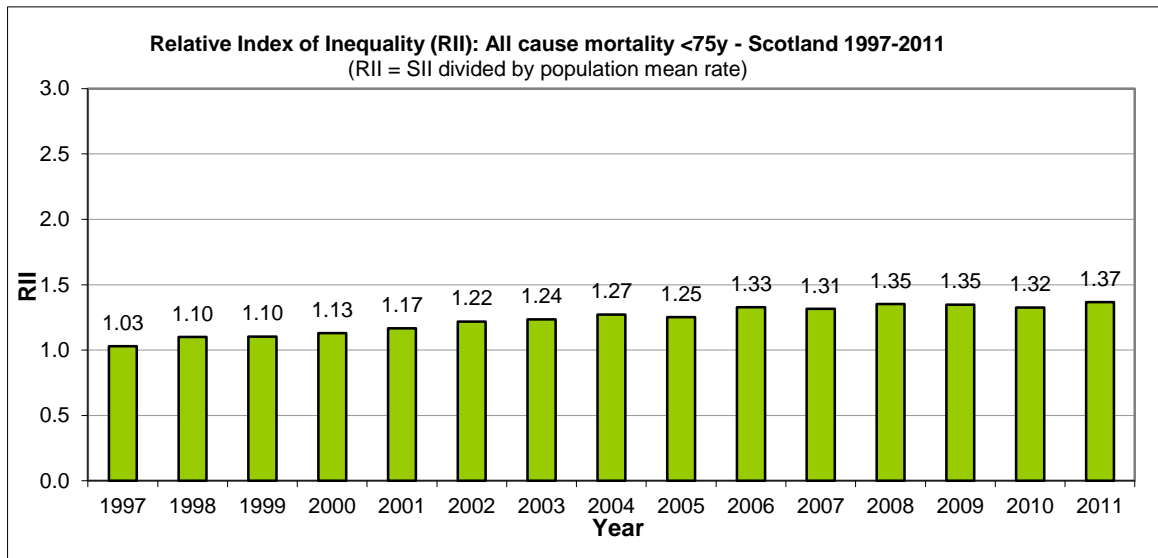
- Following a long-term increase, relative inequalities have stabilised since 2006. Inequalities have declined in absolute terms over the last decade.

Between 1997 and 2011, the European age-standardised death rate amongst those aged under 75 years has decreased by 28.1%. Despite this decrease, more than 20,000 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 2011, premature deaths amongst those living in the 10% most deprived areas were 3.5 times more likely than those living in the 10% least deprived areas. Overall reductions in premature mortality have been observed across the population each year since 1997. Between 1997 and 2006, these improvements occurred at a slower rate in the most deprived areas than elsewhere in Scotland, which resulted in a widening of inequalities in relative terms. However, since 2006, the level of relative inequality has stabilised. Over the long-term, the level of absolute equality has remained broadly stable, although there have been some reductions since 2006.

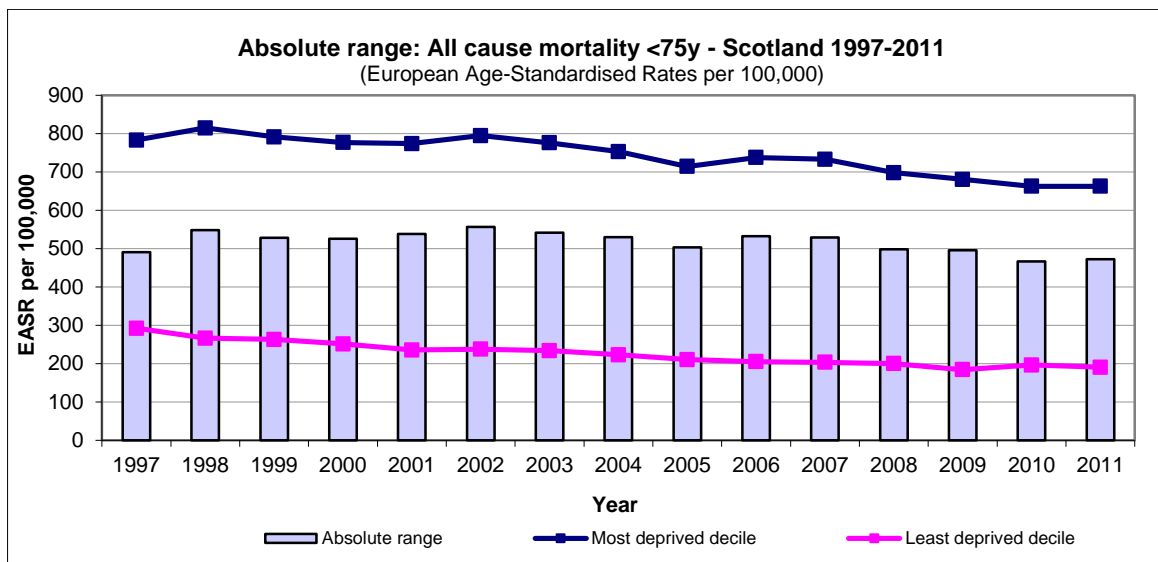
Inequalities gradient in the most recent year available



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
2007	22,359	4,755,963	393.4
2008	22,005	4,775,321	382.8
2009	21,229	4,795,479	364.8
2010	20,997	4,816,465	357.2
2011	20,685	4,841,726	349.1

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

- Inequalities are increasing in absolute terms but remain stable in relative terms.

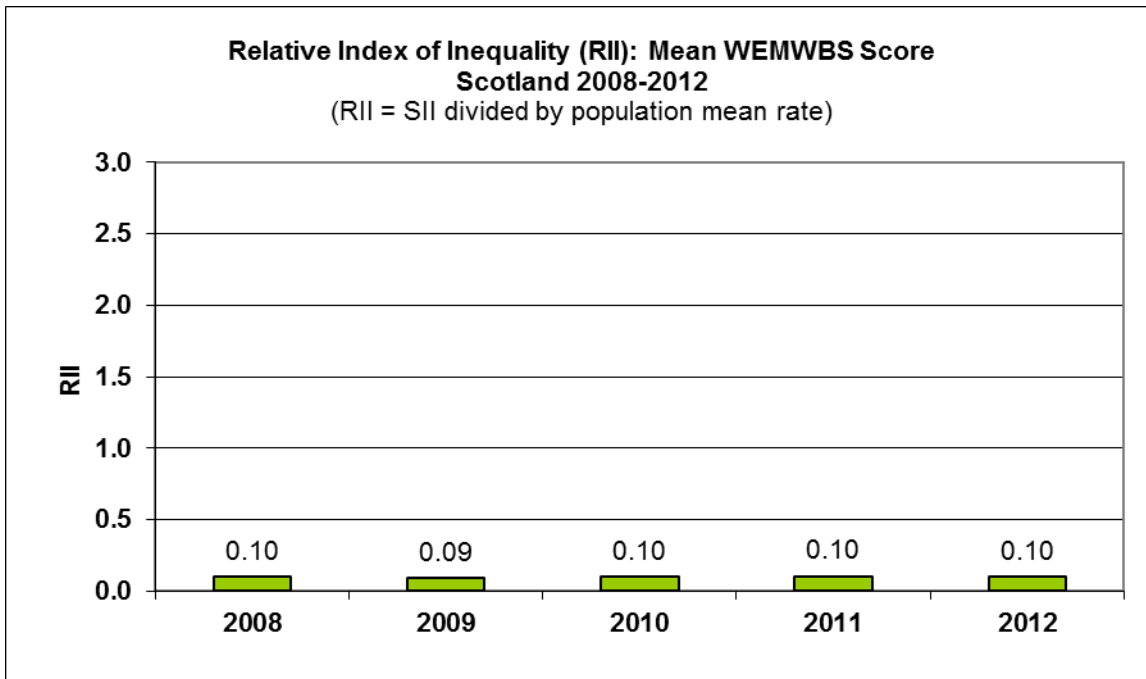
There is a clear difference in mean WEMWBS scores in terms of deprivation. Those in the most deprived decile reported a lower mean score (indicating lower mental wellbeing) than those in the highest decile. The absolute level of inequality has increased slightly since 2009, from a difference of 3.9 in mean WEMWBS scores in 2009 to 5.5 in 2012. Relative inequality has remained stable.

As age may have an important influence on mental wellbeing, mean WEMWBS scores have been age-standardised in the 2013 report for the first time. This ensures that variations in the age-sex population distribution by income-employment decile do not directly affect the mean WEMWBS scores reported. Data for previous years is revised, but there has been no effect on relative inequality which is reported to two decimal places.

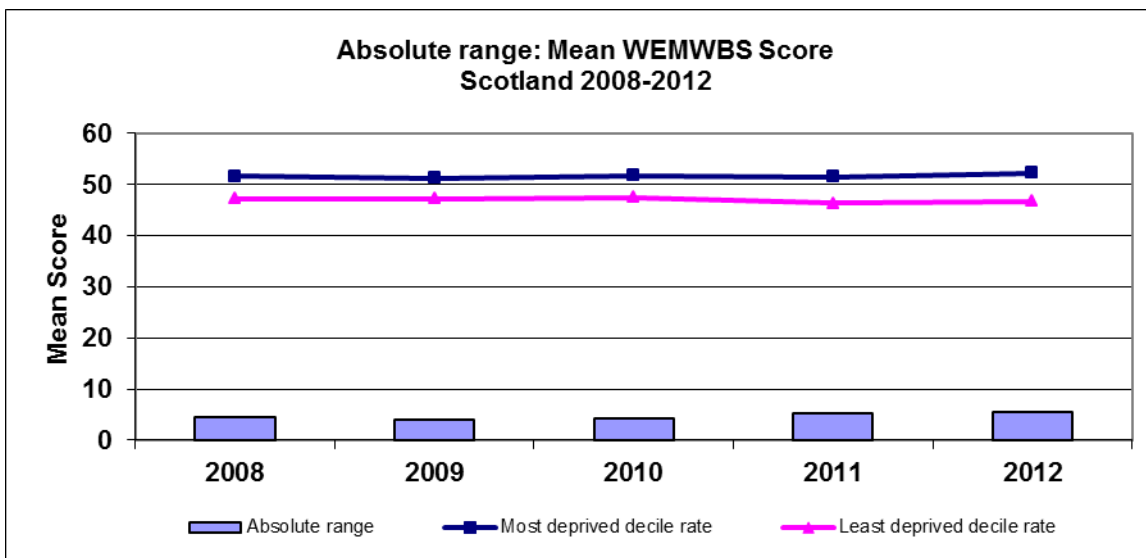
Inequalities gradient in the most recent year available



Relative Index of Inequality (RII) over time



Absolute range over time



Scale / context

Income- Employment Index Decile	Mean WEMWBS Score 2008r	Mean WEMWBS Score 2009r	Mean WEMWBS Score 2010r	Mean WEMWBS Score 2011r	Mean WEMWBS Score 2012
most deprived	47.4	47.5	47.5	46.7	46.8
2	47.7	47.7	47.9	48.2	47.5
3	48.9	49.0	48.4	48.8	49.5
4	49.6	49.3	49.6	50.4	49.7
5	49.9	49.2	50.1	49.9	49.5
6	50.5	50.1	50.7	50.1	50.5
7	51.0	50.6	50.4	51.1	51.2
8	51.3	50.7	51.3	51.0	49.8
9	51.6	51.6	52.0	51.3	51.5
least deprived	51.7	51.3	52.0	51.7	52.3
Total	50.0	49.8	49.9	49.9	49.9

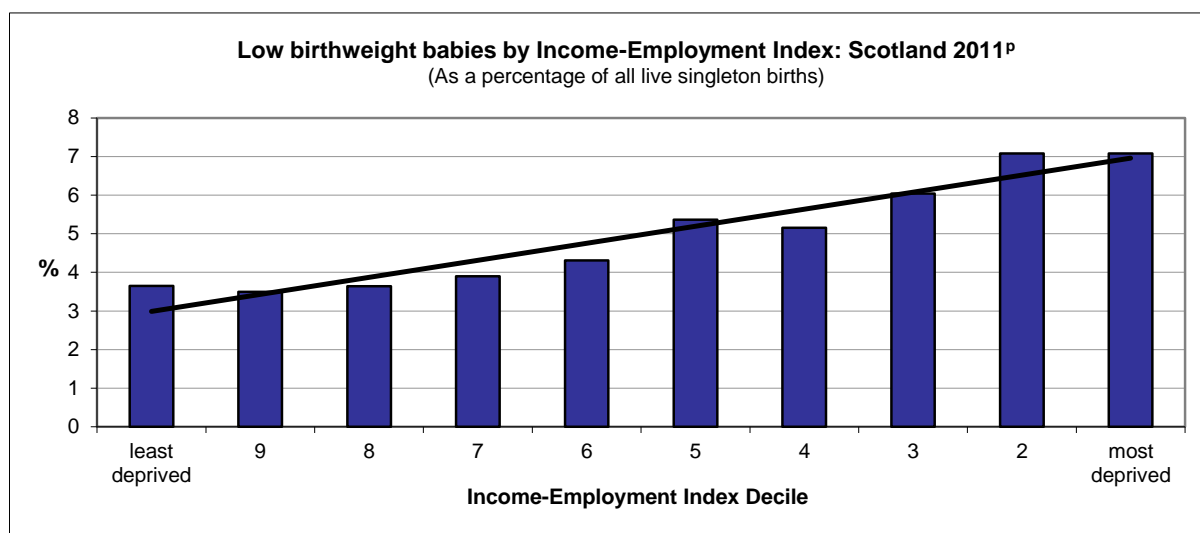
Low Birthweight

Summary

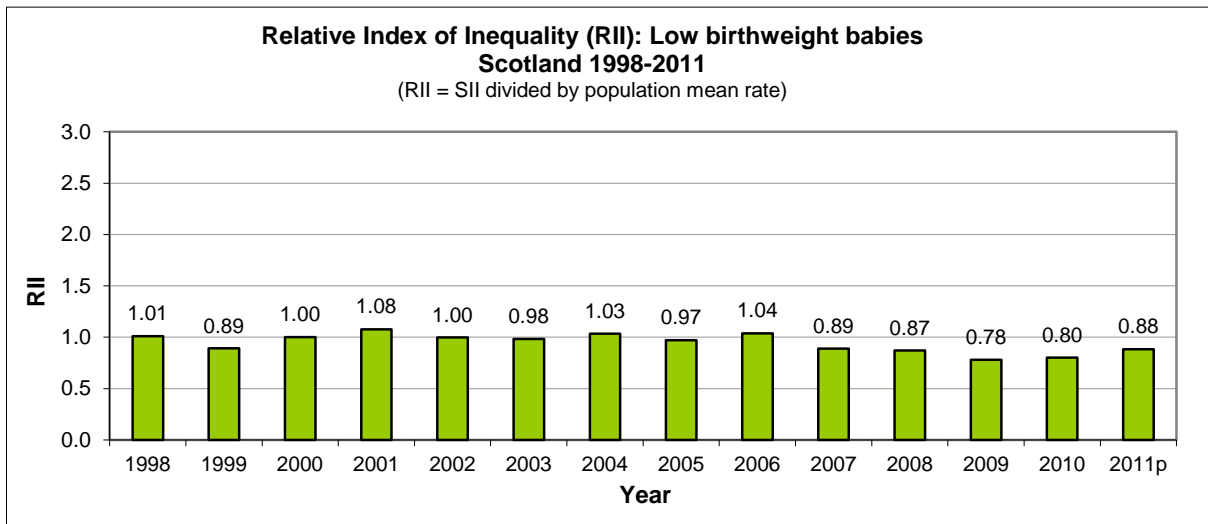
- Having decreased between 2006 and 2008, inequalities are now stabilising in both absolute and relative terms.

Around 3,000 low birthweight babies (less than 2.5 kg) are born each year, accounting for 5-6% of total live, full-term, singleton births in Scotland. Low birthweight babies are more common in deprived areas than in areas of low deprivation (7.1% in the most deprived areas, compared to 3.6% in the least deprived, in 2011). Inequalities were broadly stable between 1998 and 2006, and appear to be stabilising again having narrowed in both relative and absolute terms between 2006 and 2008. The narrowing of inequalities was due to a falling percentage of low birthweight babies in the most deprived areas, while the proportion in the least deprived areas remained fairly stable. Note that data for 2011 are provisional.

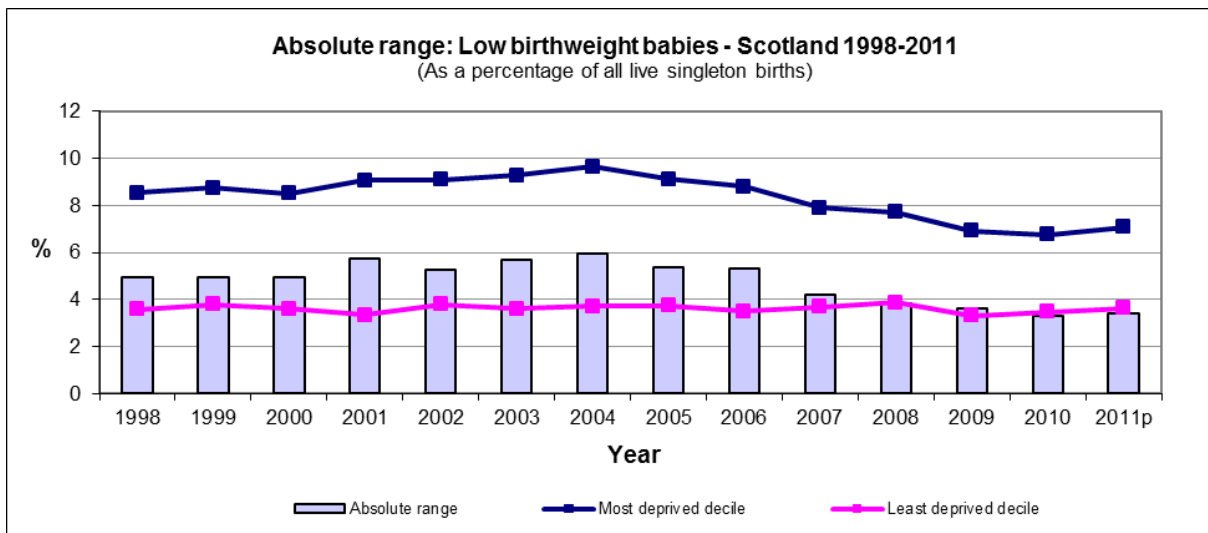
Inequalities gradient in the most recent year available



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
2007	3,095	55,086	5.6
2008	3,134	56,738	5.5
2009	2,896	55,797	5.2
2010	2,756	55,153	5.0
2011^P	2,942	56,158	5.2

Healthy birthweight

Summary

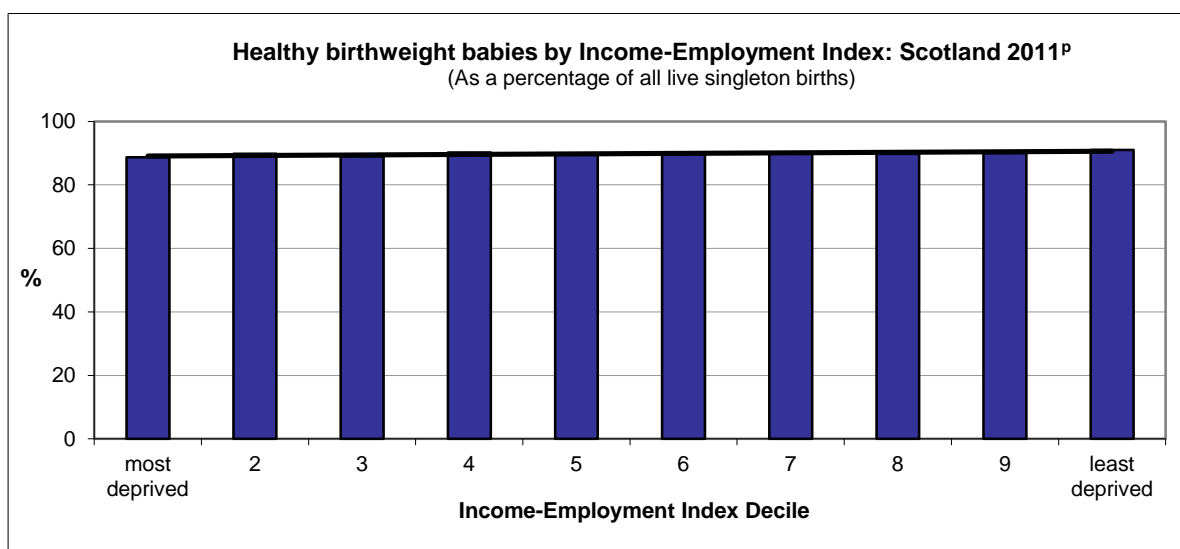
- Inequalities, in both relative and absolute terms, have been low and stable since 1998.

The healthy birthweight indicator is included in this report for the first time in 2013.

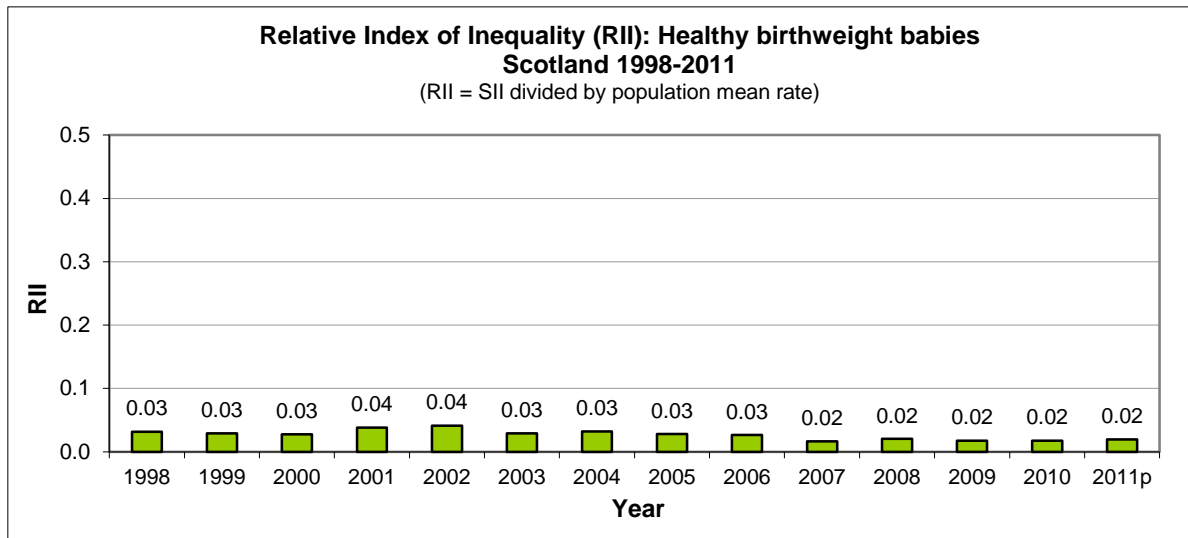
A baby is considered to be of healthy birthweight (a weight appropriate for its gestational age) when it lies between the 5th and 95th centile for weight at its gestational age. Centiles are derived from Scottish data on births between the years 1998 and 2003.

There are slightly more cases of healthy birthweight in the least deprived areas than in the most deprived (91% and 89% respectively, in 2011). However, since 1998, the levels of both relative and absolute inequality have been low and stable. Note that data for 2011 are provisional.

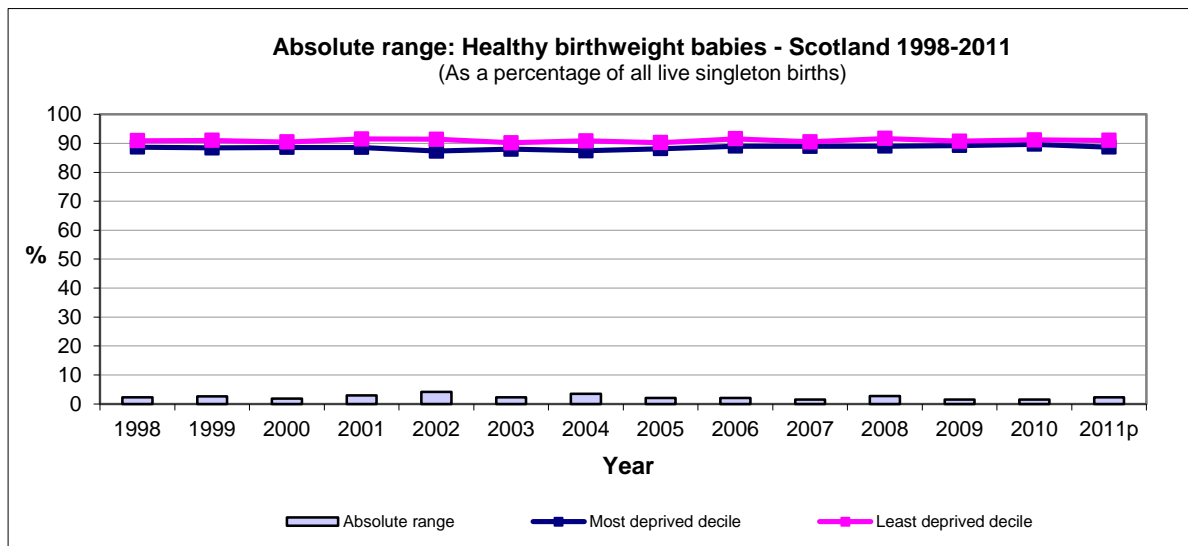
Inequalities gradient in the most recent year available



Relative Index of Inequality (RII) over time



Absolute range over time



Scale / context

	Number of healthy BW babies	Target population size (live singleton births)	Percentage
1998	49,401	54,982	89.8
1999	47,240	52,607	89.8
2000	45,516	50,927	89.4
2001	44,526	49,632	89.7
2002	43,323	48,375	89.6
2003	43,856	48,945	89.6
2004	45,462	50,879	89.4
2005	45,194	50,538	89.4
2006	46,481	51,815	89.7
2007	49,176	54,836	89.7
2008	50,943	56,732	89.8
2009	50,115	55,868	89.7
2010	50,310	55,767	90.2
2011^P	49,589	55,256	89.7

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

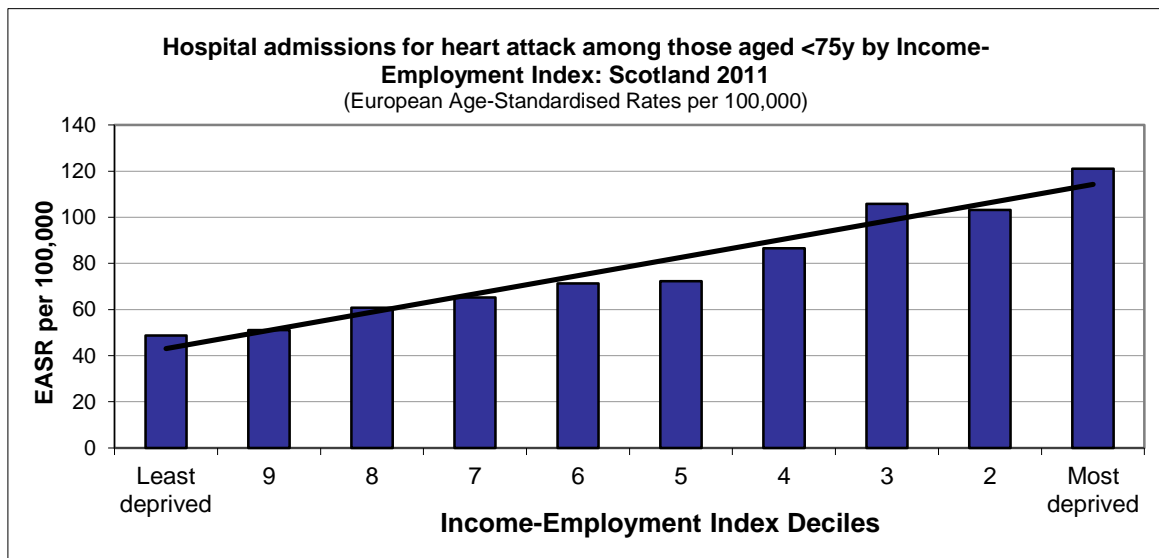
Summary

- Over time, inequalities have fluctuated in both absolute and relative terms, with a general upward trend since 2008.

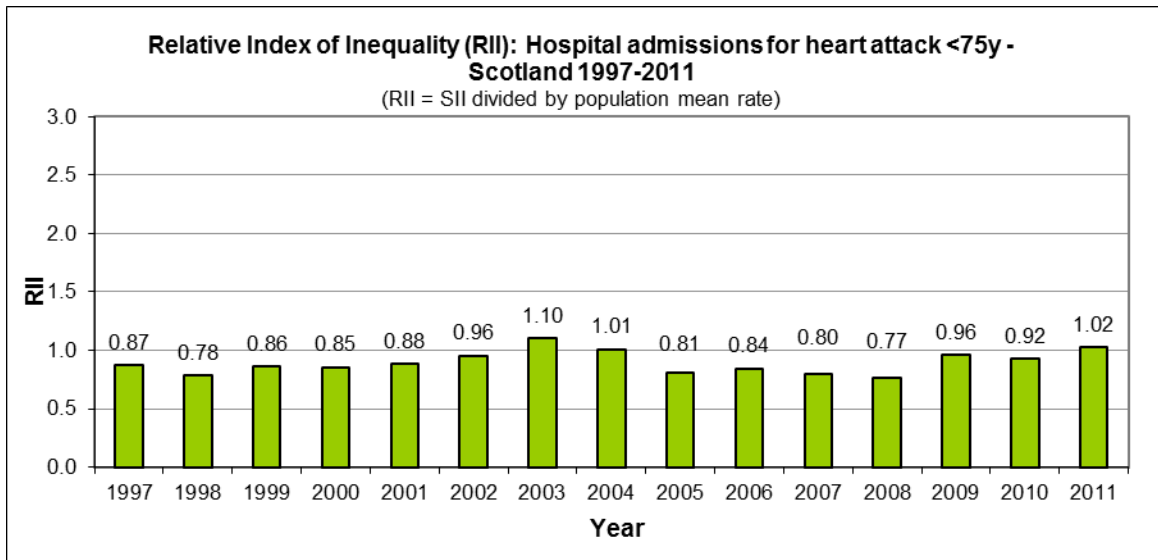
More than 4,500 new cases of heart attack (aged under 75 years) were admitted to hospital in 2011. Since 1997, the rate of admissions has fallen by 30%. However, the recent trend has been increasing again after admissions reached their lowest level in 2007.

The admissions rate is approximately two and a half times higher in the most deprived areas compared to the least deprived areas (121.1 compared to 48.8 cases per 100,000 population, in 2011). Both relative and absolute inequalities fell between 2003 and 2008. Since then, as the admissions rate in the most deprived areas has increased at a faster rate than in the least deprived areas, relative and absolute inequalities have increased.

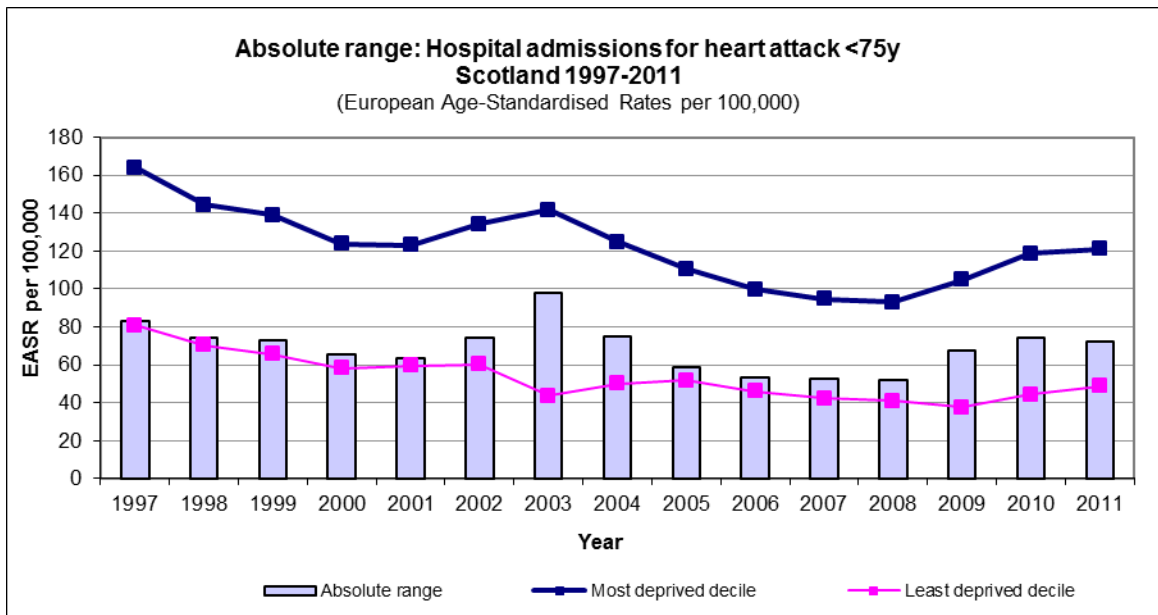
Inequalities gradient in the most recent year available



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	5,765	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
2010	4,368	4,816,465	75.3
2011	4,535	4,841,726	77.5

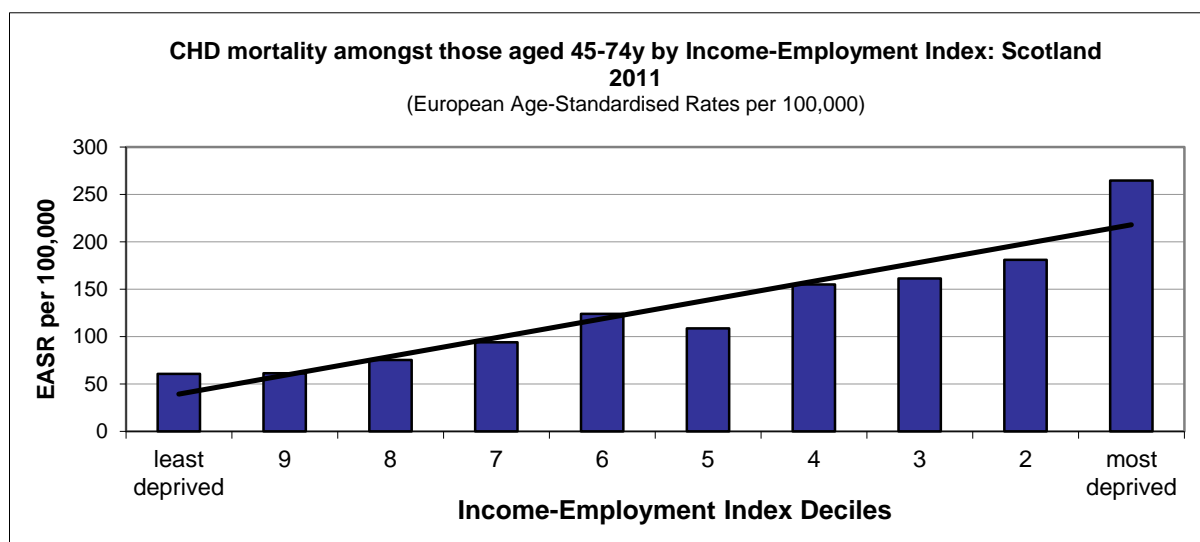
Coronary Heart Disease (CHD) - deaths aged 45-74 years

Summary

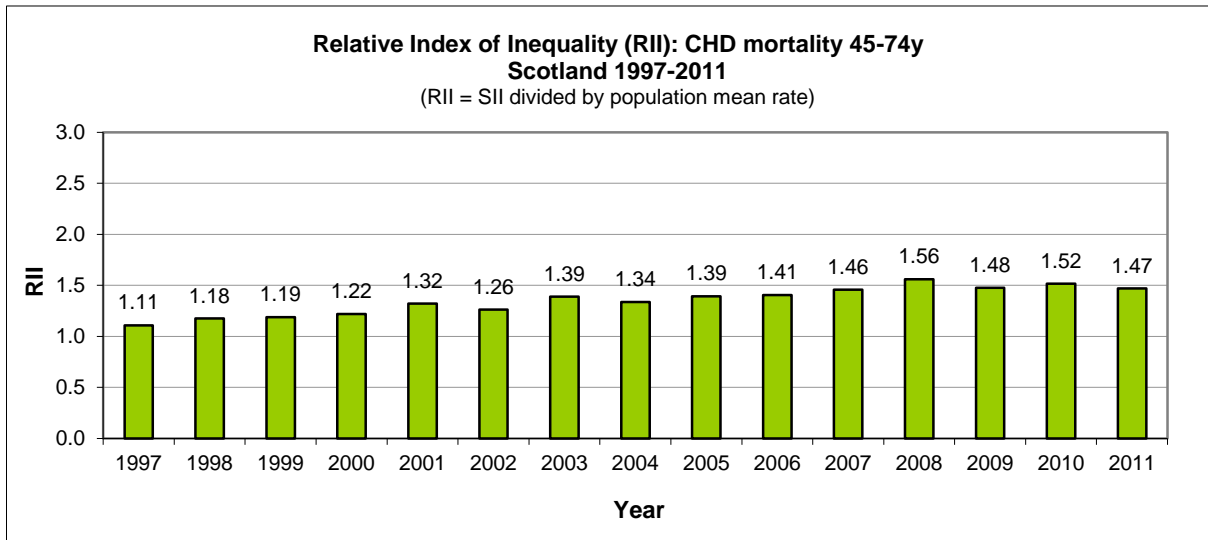
- Following a long-term increase, inequalities have stabilised in relative terms. In absolute terms, despite a slight increase in the latest year reported, inequalities have been narrowing.

Between 1997 and 2011, there has been a considerable decrease in CHD mortality amongst the population aged 45-74 years as a whole. Rates fell by 61% over this period to 125.6 per 100,000 population - the lowest rate in the reporting period (1997 to 2011). However, CHD remains one of Scotland's biggest causes of premature mortality, with around 2,600 deaths occurring in this age group. Premature mortality from CHD is around four times more common in the most deprived areas than the least deprived areas (265 deaths per 100,000 population compared to 61 per 100,000, in 2011). The level of inequality in absolute terms has fallen consistently over time, with only a slight increase in the latest year reported. Between 1997 and 2007, the death rate fell more quickly in the least deprived areas than in the most deprived, resulting in a widening of relative inequality. However, this trend has stabilised since 2007 as greater improvements have been seen in the most deprived areas.

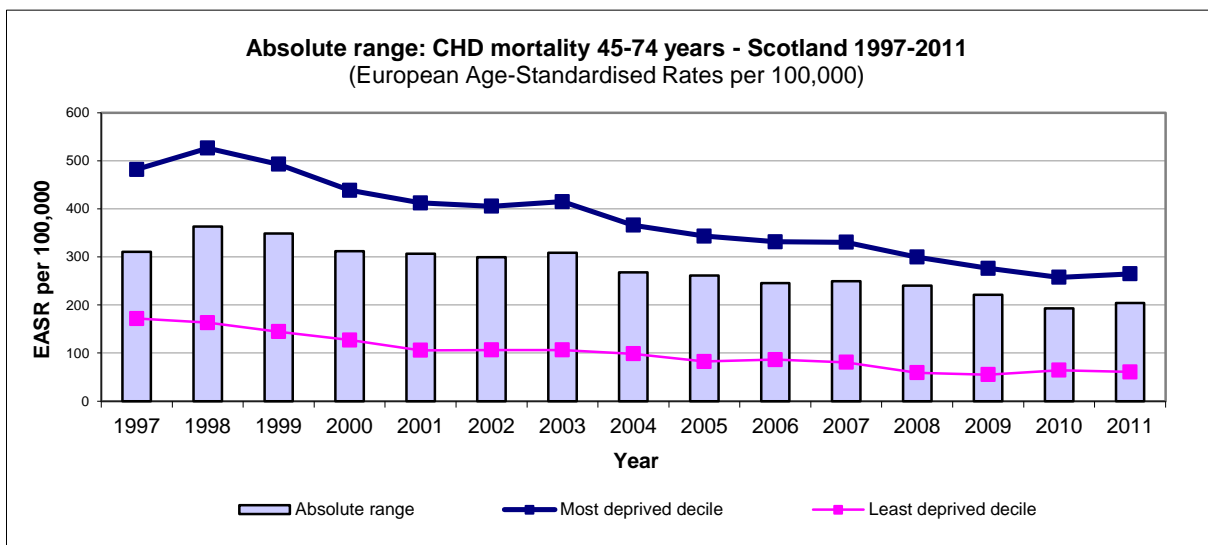
Inequalities gradient in the most recent year available



Relative Index of Inequality (RII) over time



Absolute range over time



Scale / context

	Number of 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
2007	3,374	1,818,202	171.4
2008	3,155	1,843,609	157.9
2009	2,855	1,869,363	141.3
2010	2,811	1,893,493	137.5
2011	2,593	1,915,930	125.6

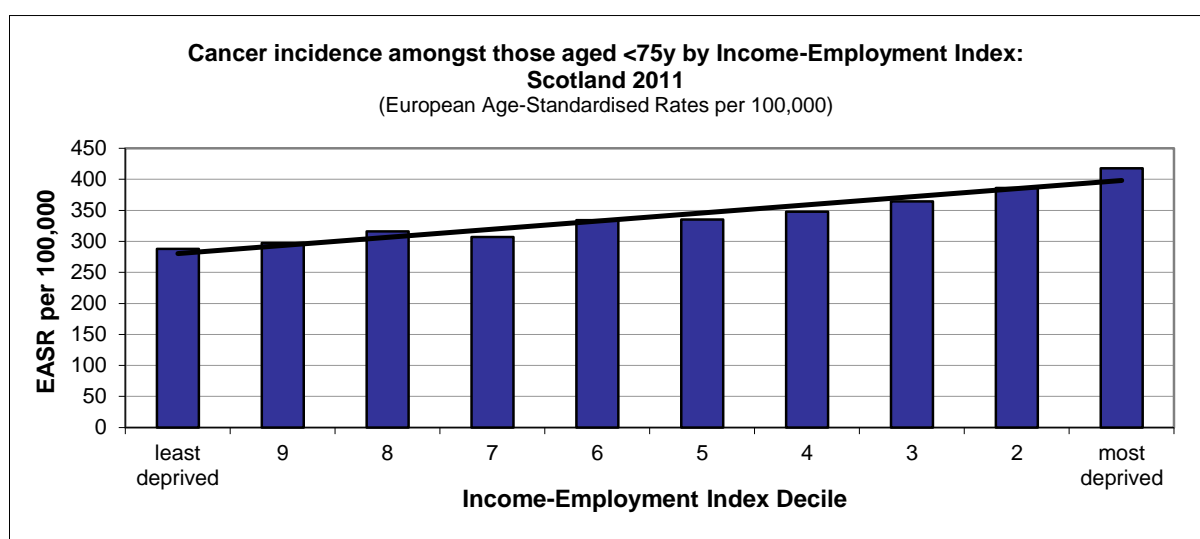
Cancer - incidence rate aged under 75 years

Summary

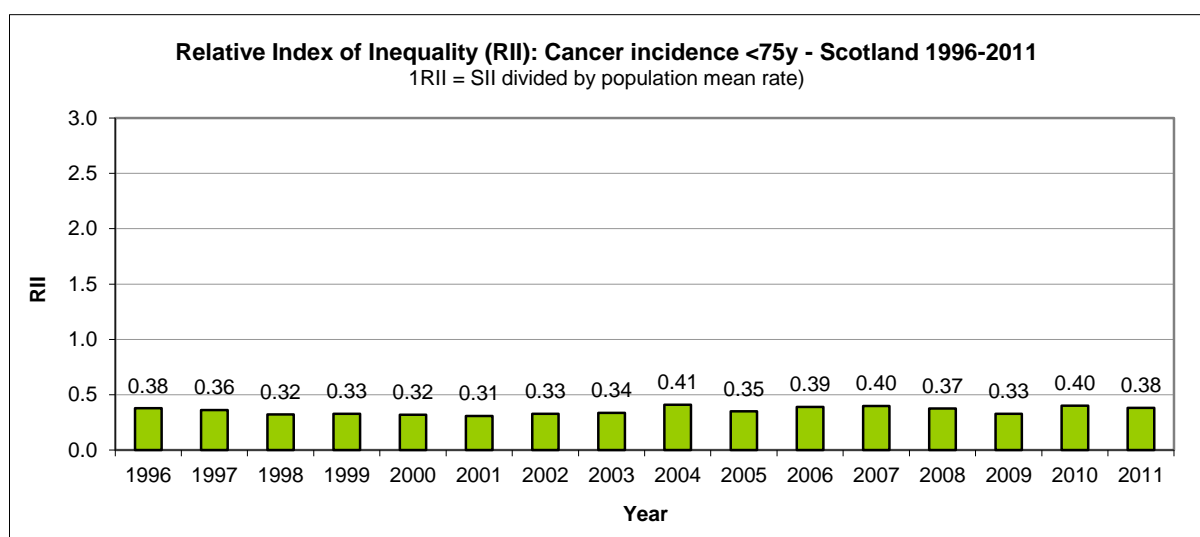
- Over the long term, inequalities are stable in both absolute and relative terms.

There were more than 20,000 new cases of cancer diagnosed in 2011. The incidence rate remained broadly stable between 1997 and 2007, but has increased slightly in recent years. The incidence of cancer is more common in deprived areas than in less deprived areas of Scotland (418 cases per 100,000 population, compared to 288 per 100,000, in 2011). While there have been short-term fluctuations in both the relative and absolute levels of inequality, there is no clear long-term trend.

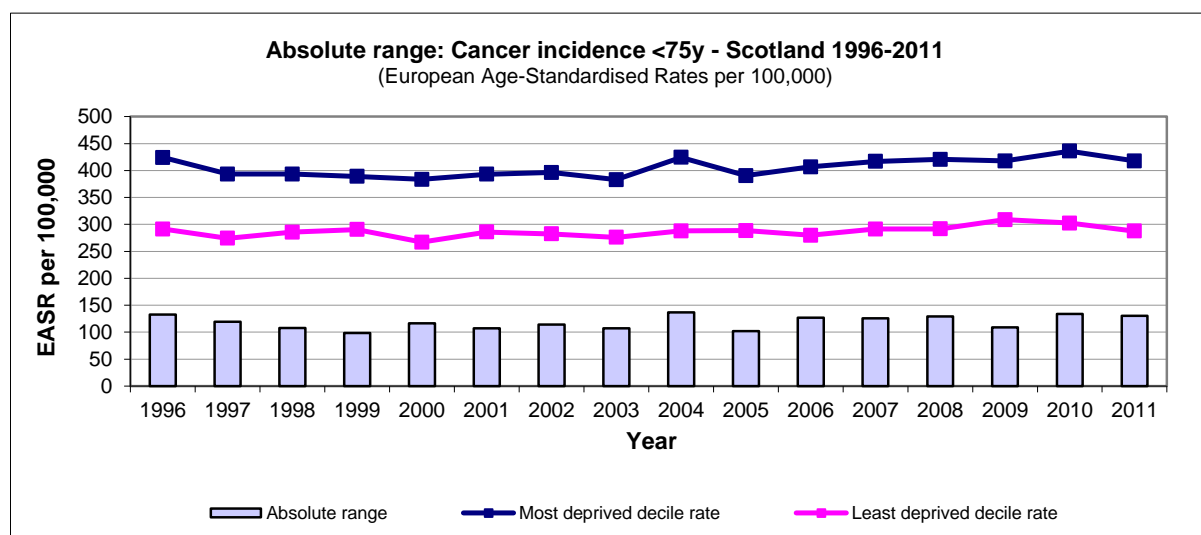
Inequalities gradient in the most recent year available



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	18,129	4,754,906	345.0
1997	17,163	4,740,269	326.7
1998	17,106	4,729,975	322.9
1999	16,917	4,721,298	318.5
2000	17,131	4,708,667	321.3
2001	17,143	4,703,661	319.6
2002	17,525	4,690,508	324.3
2003	17,563	4,690,603	321.1
2004	18,146	4,706,922	329.1
2005	17,971	4,718,403	322.4
2006	18,150	4,734,676	323.3
2007	18,749	4,755,963	331.1
2008	19,431	4,775,321	338.6
2009	19,971	4,795,479	343.6
2010	19,971	4,816,465	340.4
2011	20,002	4,841,726	337.1

Cancer incidence by type

Incidence rates by income employment index decile are also available for cancer of the prostate (males only), cancer of the breast (females only), cancer of the trachea, bronchus and lung, and colorectal cancer.

Prostate cancer incidence rate (males only) aged under 75 years

Prostate cancer incidence has increased steadily over time, with 68 new cases per 100,000 population in 2011 compared to 47 per 100,000 in 1996. Higher rates are observed in the least deprived areas, though this may be in part due to higher rates of testing in more affluent areas⁶. In 2011, the incidence rate was 89 per 100,000 in the least deprived areas, compared to 62 in the most deprived areas. Relative inequality has remained low and stable throughout the period 1996 to 2011.

Prostate cancer incidence trend tables

Scale/context

	Number of new cases	Target population size	Rate per 100,000 (EASR)
1996	1,214	2,334,645	47.4
1997	1,035	2,326,799	40.0
1998	1,113	2,321,135	42.8
1999	1,168	2,316,272	45.2
2000	1,176	2,309,161	45.1
2001	1,306	2,307,518	49.9
2002	1,508	2,302,861	57.2
2003	1,555	2,303,500	57.8
2004	1,735	2,312,162	64.2
2005	1,628	2,318,998	59.6
2006	1,719	2,328,834	62.3
2007	1,776	2,341,374	63.4
2008	1,901	2,352,729	66.5
2009	2,025	2,364,326	69.7
2010	1,912	2,375,256	65.2
2011	2,013	2,388,856	67.7

Inequalities

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
RII	<i>0.49</i>	<i>0.38</i>	<i>0.32</i>	<i>0.35</i>	<i>0.58</i>	<i>0.49</i>	<i>0.49</i>	<i>0.49</i>	<i>0.25</i>	<i>0.32</i>	<i>0.41</i>	<i>0.46</i>	<i>0.37</i>	<i>0.41</i>	<i>0.27</i>	<i>0.35</i>
Most deprived decile rate	39.4	29.1	38.8	42.4	36.4	38.6	49.5	44.4	57.4	58.4	56.3	51.0	59.3	56.4	57.8	62.1
Least deprived decile rate	55.8	48.0	49.4	59.7	59.1	64.4	73.5	77.7	71.2	82.5	80.7	77.1	82.7	90.3	81.8	89.1
Absolute range	16.4	18.9	10.6	17.3	22.7	25.8	24.1	33.3	13.9	24.1	24.4	26.1	23.4	34.0	24.0	27.0

The RII value has been italicised to indicate years in which higher incidence rates were observed in less deprived areas.

⁶ See <http://www.cancerresearchuk.org/cancer-info/cancerstats/types/prostate/incidence/uk-prostate-cancer-incidence-statistics> for more information.

Breast cancer incidence rate (females only) aged under 75 years

Breast cancer incidence has increased throughout the period 1996 to 2011 (99 new cases per 100,000 population in 1996, compared to 119 per 100,000 in 2011). Incidence is more common in the least deprived areas, which ties in with evidence regarding the higher prevalence of certain breast cancer risk factors, such as lower parity, in more affluent populations⁷. However, the difference between rates in the most deprived and least deprived areas has consistently been low, narrowing to 10 new cases per 100,000 in 2011. Despite consistently low levels, there has been fluctuation in both relative and absolute inequalities with no clear pattern.

Breast cancer incidence trend tables

Scale/context

	Number of new cases	Target population size	Rate per 100,000 (EASR)
1996	2,560	2,420,261	99.3
1997	2,654	2,413,470	102.7
1998	2,749	2,408,840	104.6
1999	2,848	2,405,026	108.4
2000	2,899	2,399,506	109.9
2001	2,736	2,396,143	102.3
2002	2,828	2,387,647	105.4
2003	2,976	2,387,103	108.8
2004	3,071	2,394,760	110.8
2005	3,089	2,399,405	109.8
2006	3,189	2,405,842	112.3
2007	3,189	2,414,589	111.8
2008	3,306	2,422,592	114.0
2009	3,386	2,431,153	116.2
2010	3,496	2,441,209	118.4
2011	3,558	2,452,870	119.0

Inequalities

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
RII	<i>0.29</i>	<i>0.06</i>	<i>0.23</i>	<i>0.22</i>	<i>0.17</i>	<i>0.12</i>	<i>0.17</i>	<i>0.23</i>	<i>0.02</i>	<i>0.26</i>	<i>0.01</i>	<i>0.16</i>	<i>0.15</i>	<i>0.25</i>	<i>0.15</i>	<i>0.08</i>
Most deprived decile rate	80.7	101.3	104.9	102.7	97.6	98.4	100.4	89.1	111.6	91.1	100.3	106.2	98.5	105.1	122.9	109.5
Least deprived decile rate	108.7	107.9	124.6	124.7	109.1	111.4	109.2	115.9	116.8	119.8	111.1	136.0	113.6	124.6	131.4	119.2
Absolute range	28.1	6.6	19.7	22.0	11.5	13.0	8.8	26.8	5.1	28.7	10.7	29.8	15.1	19.6	8.5	9.7

The RII value has been italicised to indicate years in which higher incidence rates were observed in less deprived areas.

⁷See <http://www.cancerresearchuk.org/cancer-info/cancerstats/types/breast/incidence/uk-breast-cancer-incidence-statistics> for more information.

Cancer of the trachea, bronchus and lung incidence rate aged under 75 years

Having fallen between 1996 and 2001, cancer of the trachea, bronchus and lung incidence rates have been stable (the 2011 rate, 47 new cases per 100,000 population, is the lowest recorded throughout this period). Levels of both absolute and relative inequality have also remained stable, with higher incidence rates observed in the most deprived areas. In 2011, the incidence rate in the most deprived areas was more than four times higher than in the least deprived areas (93 new cases per 100,000 population, compared to 21 per 100,000).

Cancer of the trachea, bronchus and lung incidence trend tables

Scale/context

	Number of new cases	Target population size	Rate per 100,000 (EASR)
1996	3,295	4,754,906	60.7
1997	3,063	4,740,269	56.1
1998	3,090	4,729,975	56.3
1999	2,869	4,721,298	52.0
2000	2,877	4,708,667	52.1
2001	2,797	4,703,661	50.4
2002	2,920	4,690,508	51.9
2003	2,810	4,690,603	49.4
2004	2,890	4,706,922	50.6
2005	2,850	4,718,403	49.3
2006	2,890	4,734,676	49.7
2007	2,935	4,755,963	49.9
2008	2,935	4,775,321	49.1
2009	3,020	4,795,479	49.7
2010	2,947	4,816,465	48.0
2011	2,938	4,841,726	47.2

Inequalities

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
RII	1.39	1.30	1.36	1.41	1.31	1.29	1.42	1.59	1.44	1.53	1.57	1.56	1.63	1.57	1.64	1.52
Most deprived decile rate	112.7	99.7	99.9	95.5	91.4	91.4	96.7	96.7	99.9	89.5	105.6	101.2	100.4	102.1	99.4	93.3
Least deprived decile rate	27.3	25.2	23.6	22.1	25.8	21.6	24.2	18.3	24.4	21.8	25.2	22.2	22.2	23.0	22.6	20.8
Absolute range	85.4	74.5	76.3	73.4	65.6	69.8	72.6	78.4	75.5	67.7	80.4	79.0	78.2	79.1	76.8	72.5

Colorectal cancer incidence rate aged under 75 years

Incidence of colorectal cancer, at between 35 to 40 new cases per 100,000 population since 1996, has been stable over time. However, despite consistently low levels of both relative and absolute inequality, there has been variation in which areas are seeing the highest rates. In 2011, there was more incidence in the most deprived areas (48 new cases per 100,000 population, compared to 32 per 100,000 in the least deprived areas). In some years (e.g. 2005), slightly higher incidence has been observed in the least deprived areas, while in others (e.g. 1998) the difference between rates in the most and least deprived areas has been negligible.

Colorectal cancer incidence trend tables

Scale/context

	Number of new cases	Target population size	Rate per 100,000 (EASR)
1996	2,154	4,754,906	40.0
1997	1,968	4,740,269	36.6
1998	2,026	4,729,975	37.5
1999	1,996	4,721,298	36.7
2000	2,127	4,708,667	38.8
2001	2,125	4,703,661	38.8
2002	2,027	4,690,508	36.7
2003	2,003	4,690,603	35.8
2004	2,006	4,706,922	35.5
2005	1,994	4,718,403	34.8
2006	2,043	4,734,676	35.5
2007	2,096	4,755,963	36.1
2008	2,333	4,775,321	39.5
2009	2,349	4,795,479	39.3
2010	2,398	4,816,465	39.6
2011	2,448	4,841,726	40.2

Inequalities

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
RII	0.11	0.12	<i>0.01</i>	<i>0.02</i>	<i>0.11</i>	<i>0.08</i>	<i>0.01</i>	0.01	0.22	<i>0.08</i>	0.12	0.31	0.06	0.19	0.13	0.38
Most deprived decile rate	45.6	37.3	34.6	36.1	36.7	42.1	37.8	32.7	41.2	33.0	38.4	41.4	40.1	41.5	40.7	47.7
Least deprived decile rate	35.6	34.4	34.0	38.1	37.0	45.4	35.2	33.1	33.0	38.6	34.6	28.4	39.6	35.5	35.7	31.9
Absolute range	10.0	2.9	0.6	2.1	0.3	3.3	2.6	0.3	8.1	5.6	3.9	12.9	0.5	6.0	5.1	15.8

The RII value has been italicised to indicate years in which higher incidence rates were observed in less deprived areas.

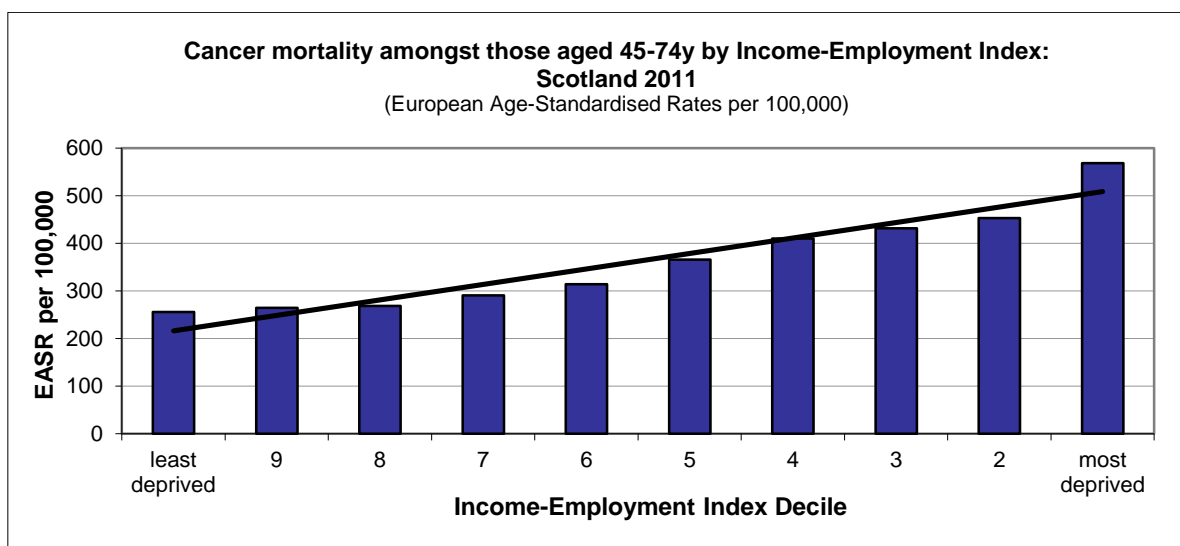
Cancer- deaths aged 45-74 years

Summary

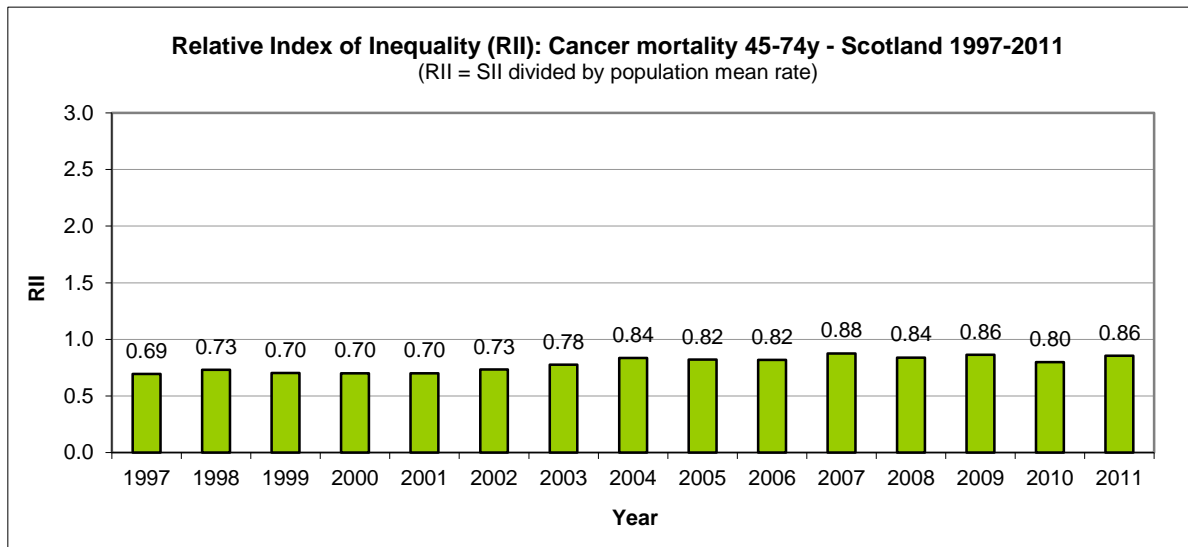
- Over the long term there has been a slight increase in relative inequality, although this has been more stable since 2004. Absolute inequalities have fluctuated over time with no clear trend.

Between 1997 and 2011, there was a 19.7% decrease in the death rate from cancer amongst those aged 45-74 years (around 7,400 deaths in 2011). People aged 45-74 living in the most deprived areas are more than twice as likely to die of cancer than those in the least deprived areas (567 per 100,000 population compared to 256 per 100,000, in 2011). Over the long-term, the death rate in the most deprived areas has reduced by a similar amount as in the least deprived areas, though there has been fluctuation through the period (in particular since 2004) with no clear trend. Relative inequality has increased slightly over the long-term (as indicated by the overall increase in RII) but has been more stable since 2004.

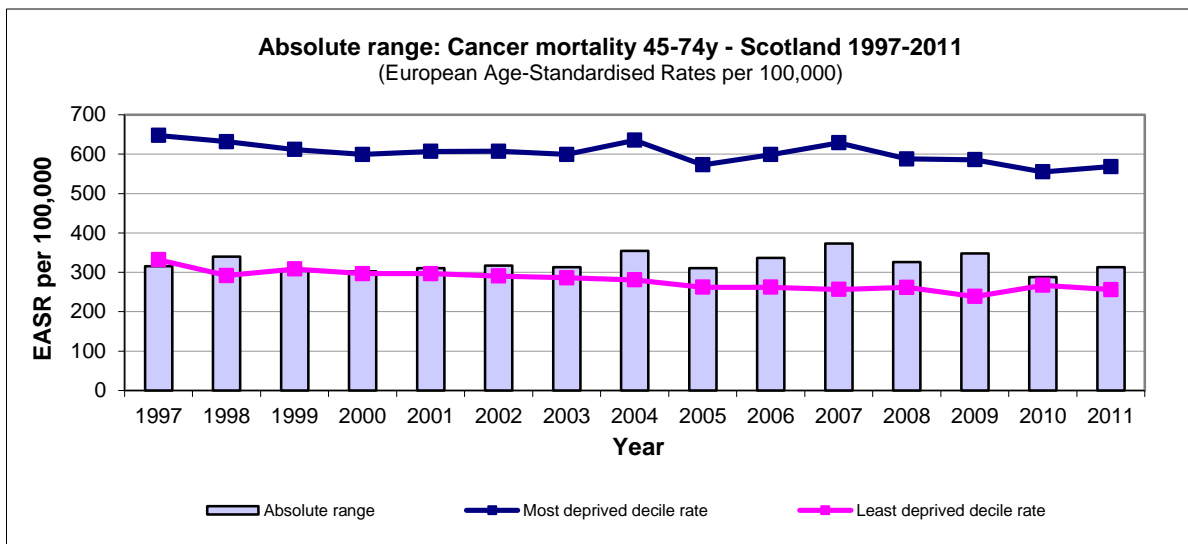
Inequalities gradient in the most recent year available



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	7,536	1,843,609	378.0
2009	7,481	1,869,363	370.3
2010	7,394	1,893,493	361.8
2011	7,428	1,915,930	358.8

Cancer deaths by type

Mortality rates by income employment index decile are also available for cancer of the prostate (males only), cancer of the breast (females only), cancer of the trachea, bronchus and lung, and colorectal cancer.

Prostate cancer deaths (males only) aged 45-74 years

Prostate cancer mortality rates have reduced slightly over time, from 31 deaths per 100,000 population in 1997 to 25 per 100,000 in 2011. Levels of both relative and absolute inequality have been low throughout this period, with variation in which areas have seen the highest rates. In some years (e.g. 1997, 1999) mortality rates have been higher in the least deprived areas, though generally rates are lower in these than in the most deprived areas. Differences between mortality rates in the most and least deprived areas continue to be low (stable since 2008 at between 12 and 15 deaths per 100,000 population).

Prostate cancer mortality trend tables

Scale/ context

	Number of deaths	Target population size	Rate per 100,000 (EASR)
1997	272	777,554	31.1
1998	260	784,561	29.4
1999	289	791,405	33.1
2000	276	798,634	31.1
2001	270	808,259	30.4
2002	285	816,390	31.8
2003	274	826,663	30.1
2004	292	839,315	31.4
2005	246	850,070	26.4
2006	254	860,799	27.3
2007	265	873,332	27.6
2008	259	885,030	26.8
2009	258	896,871	26.0
2010	253	908,007	25.3
2011	252	918,208	24.7

Inequalities

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
RII	<i>0.32</i>	0.53	<i>0.25</i>	<i>0.25</i>	<i>0.10</i>	0.32	0.43	0.02	0.15	0.47	0.08	0.19	0.34	0.32	0.20
Most deprived decile rate	31.7	34.2	30.1	26.9	30.2	42.3	38.4	37.6	23.6	25.0	31.0	36.3	29.5	41.1	37.5
Least deprived decile rate	38.5	19.7	34.4	28.7	31.5	23.3	26.7	38.9	24.1	19.0	30.5	21.1	18.1	29.4	25.4
Absolute range	6.8	14.5	4.3	1.8	1.4	19.0	11.7	1.4	0.4	6.0	0.6	15.2	11.4	11.7	12.1

The RII value has been italicised to indicate years in which higher mortality rates were observed in less deprived areas.

Breast cancer deaths (females only) aged 45-74 years

Deaths from breast cancer have also fallen since 1997, from 72 per 100,000 population to 54 per 100,000 (in 2011). There have been very low levels of both relative and absolute inequality throughout this period, with only five more deaths per 100,000 population reported in the least deprived areas compared to the most deprived in 2011 (57 per 100,000, compared to 52 per 100,000). In some years, mortality rates are higher in the most deprived areas, while in others differences between rates in the least and most deprived areas are negligible.

Breast cancer mortality trend tables

Scale/ context

	Number of deaths	Target population size	Rate per 100,000 (EASR)
1997	653	858,036	72.4
1998	642	862,150	70.8
1999	634	866,719	69.5
2000	612	872,026	65.9
2001	612	879,163	67.4
2002	583	887,429	62.4
2003	615	898,277	64.7
2004	578	910,978	59.3
2005	591	921,384	62.0
2006	571	932,624	58.2
2007	563	944,870	56.9
2008	506	958,579	50.5
2009	505	972,492	49.8
2010	503	985,486	48.9
2011	551	997,722	53.5

Inequalities

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
RII	<i>0.02</i>	0.12	0.16	<i>0.00</i>	0.06	0.01	<i>0.04</i>	0.32	0.29	<i>0.02</i>	0.36	0.07	0.30	0.16	0.20
Most deprived decile rate	78.9	80.9	69.8	54.7	62.8	65.3	71.8	77.8	59.6	68.5	72.8	46.8	58.9	53.3	52.1
Least deprived decile rate	75.1	64.7	65.8	65.4	62.2	63.7	80.1	51.2	44.2	69.3	45.4	52.7	42.8	44.5	57.4
Absolute range	3.7	16.2	4.0	10.7	0.6	1.6	8.3	26.6	15.4	0.8	27.3	5.8	16.1	8.7	5.3

The RII value has been italicised to indicate years in which higher mortality rates were observed in less deprived areas.

Cancer of the trachea, bronchus and lung deaths aged 45-74 years

Deaths from cancer of the trachea, bronchus and lung have steadily decreased over time, from a rate of 138 per 100,000 population in 1997 to 108 per 100,000 in 2011. Throughout this period, there has been a stable pattern of both relative and absolute inequality, with mortality between four and five times higher in the most deprived areas compared the least deprived. In 2011, there were 217 deaths per 100,000 population in the most deprived areas, compared to 54 per 100,000 in the least deprived.

Cancer of the trachea, bronchus and lung mortality trend tables

Scale/ context

	Number of deaths	Target population size	Rate per 100,000 (EASR)
1997	2,530	1,635,590	137.8
1998	2,430	1,646,711	131.9
1999	2,402	1,658,124	129.6
2000	2,309	1,670,660	124.3
2001	2,334	1,687,422	125.1
2002	2,421	1,703,819	128.6
2003	2,206	1,724,940	115.9
2004	2,244	1,750,293	117.1
2005	2,240	1,771,454	116.0
2006	2,262	1,793,423	115.6
2007	2,258	1,818,202	114.3
2008	2,254	1,843,609	112.4
2009	2,275	1,869,363	111.4
2010	2,205	1,893,493	107.0
2011	2,257	1,915,930	107.8

Inequalities

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
RII	1.28	1.45	1.35	1.30	1.38	1.33	1.50	1.41	1.49	1.51	1.56	1.57	1.57	1.53	1.47
Most deprived decile rate	250.9	246.3	234.0	213.8	226.7	227.5	224.7	213.6	221.1	241.3	233.5	232.1	243.0	219.2	217.4
Least deprived decile rate	65.6	51.8	58.0	60.8	53.5	55.5	43.0	56.5	56.0	52.5	46.6	50.3	51.4	48.3	53.6
Absolute range	185.4	194.5	176.0	153.0	173.1	172.0	181.7	157.1	165.1	188.8	186.9	181.8	191.5	170.8	163.8

Colorectal cancer deaths aged 45-74 years

Between 1997 and 2011, colorectal cancer mortality rates fell by 29% to 32 deaths per 100,000 population. In 2011, there were around twice as many deaths in the most deprived areas than in the least deprived (45 per 100,000 population, compared to 23 per 100,000 population). However, despite consistently higher rates in the most deprived areas, inequalities since 1997 have fluctuated considerably in both relative and absolute terms.

Colorectal cancer mortality trend tables

Scale/ context

	Number of deaths	Target population size	Rate per 100,000 (EASR)
1997	825	1,635,590	45.2
1998	813	1,646,711	44.5
1999	792	1,658,124	43.3
2000	743	1,670,660	39.9
2001	753	1,687,422	40.8
2002	752	1,703,819	40.2
2003	735	1,724,940	39.1
2004	712	1,750,293	36.9
2005	738	1,771,454	38.4
2006	702	1,793,423	36.3
2007	709	1,818,202	36.0
2008	762	1,843,609	37.9
2009	726	1,869,363	35.9
2010	647	1,893,493	31.6
2011	666	1,915,930	32.2

Inequalities

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
RII	0.30	0.11	0.11	0.42	0.28	0.24	0.21	0.73	0.16	0.35	0.30	0.80	0.26	0.60	0.51
Most deprived decile rate	50.0	45.7	43.5	49.6	51.5	51.9	42.5	54.4	34.8	39.9	50.9	52.7	37.8	47.1	45.2
Least deprived decile rate	40.7	37.4	40.1	26.6	36.2	36.2	35.5	25.2	31.0	21.8	28.1	24.0	30.2	22.3	23.0
Absolute range	9.3	8.3	3.4	23.0	15.3	15.6	7.0	29.3	3.8	18.2	22.9	28.7	7.6	24.8	22.2

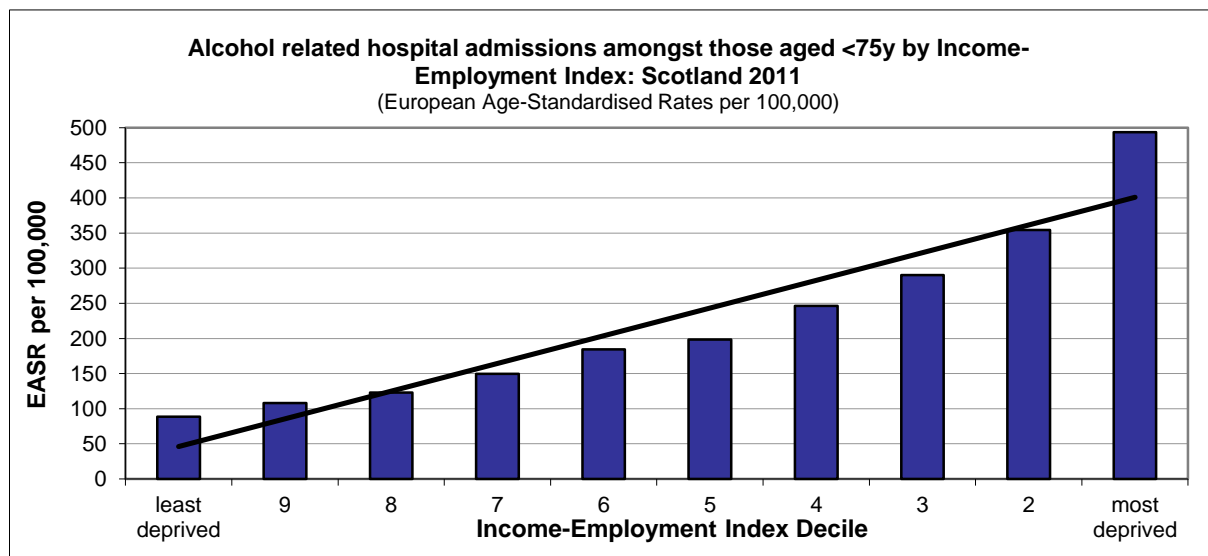
Alcohol - first ever hospital admission aged under 75 years

Summary

- The level of absolute inequality has fallen since 1997, while relative inequality has remained stable over the same period.

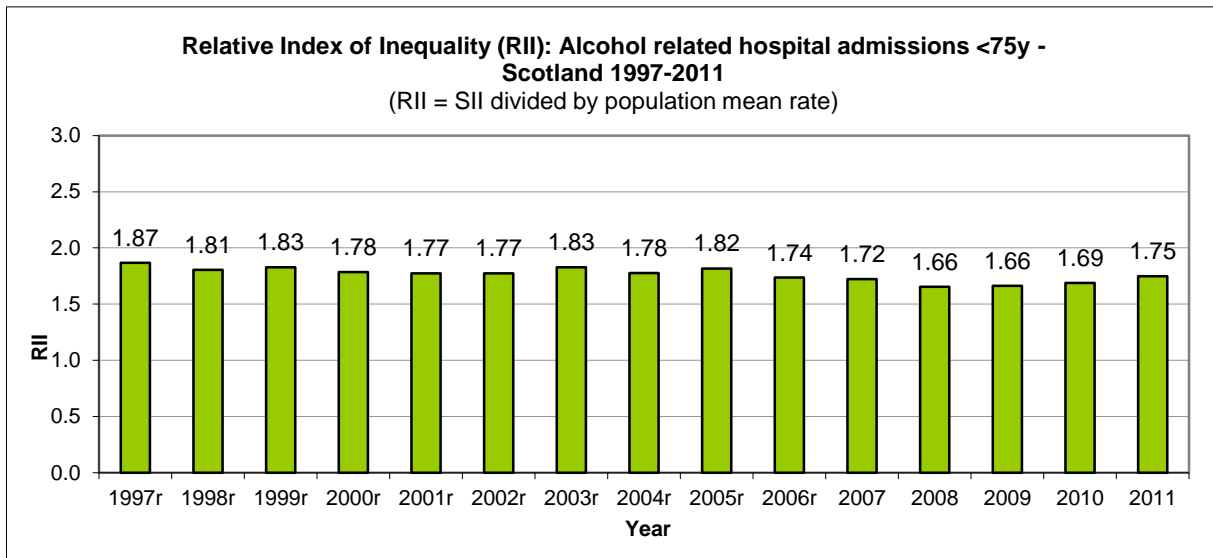
Between 1997⁸ and 2011, rates of new hospital admissions for alcohol-related conditions among those aged under 75 years fell by 16% to around 11,000 new cases in 2011. These types of admissions are more common in deprived areas – 493 per 100,000 population compared to 89 per 100,000 population in areas of low deprivation. Relative inequality has remained broadly stable over time. There has been a decrease in absolute inequality since 1997, mainly caused by a decrease in the admission rate in the most deprived decile from 629 per 100,000 population in 1997 to 493 per 100,000 population in 2011.

Inequalities gradient in the most recent year available

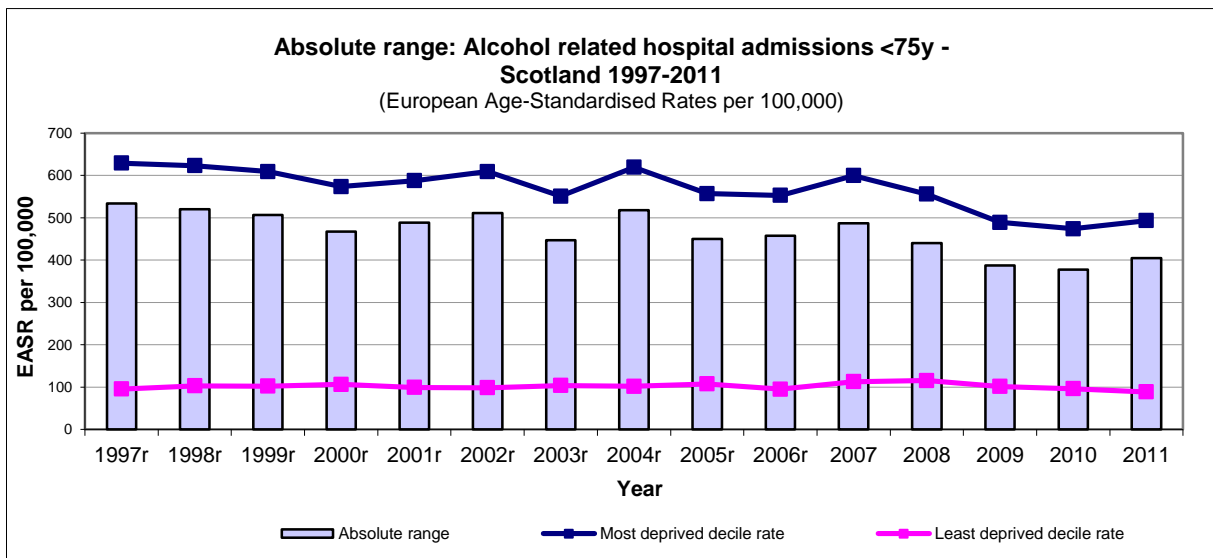


⁸ Results for 1997 to 2006 were excluded from the October 2012 report to allow for a review of the methodology used to produce data for this indicator. Following subsequent changes in the methodology, these figures have now been revised and reinstated.

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^r	12,447	4,740,269	266.3
1998^r	12,762	4,729,975	271.3
1999^r	12,645	4,721,298	268.7
2000^r	12,189	4,708,667	259.1
2001^r	12,844	4,703,661	271.3
2002^r	12,836	4,690,508	270.2
2003^r	12,201	4,690,603	255.0
2004^r	13,325	4,706,922	275.2
2005^r	12,515	4,718,403	257.4
2006^r	12,665	4,734,676	259.4
2007	13,628	4,755,963	279.0
2008	13,161	4,775,321	266.2
2009	11,833	4,795,479	237.6
2010	11,175	4,816,465	222.7
2011	11,042	4,841,726	223.6

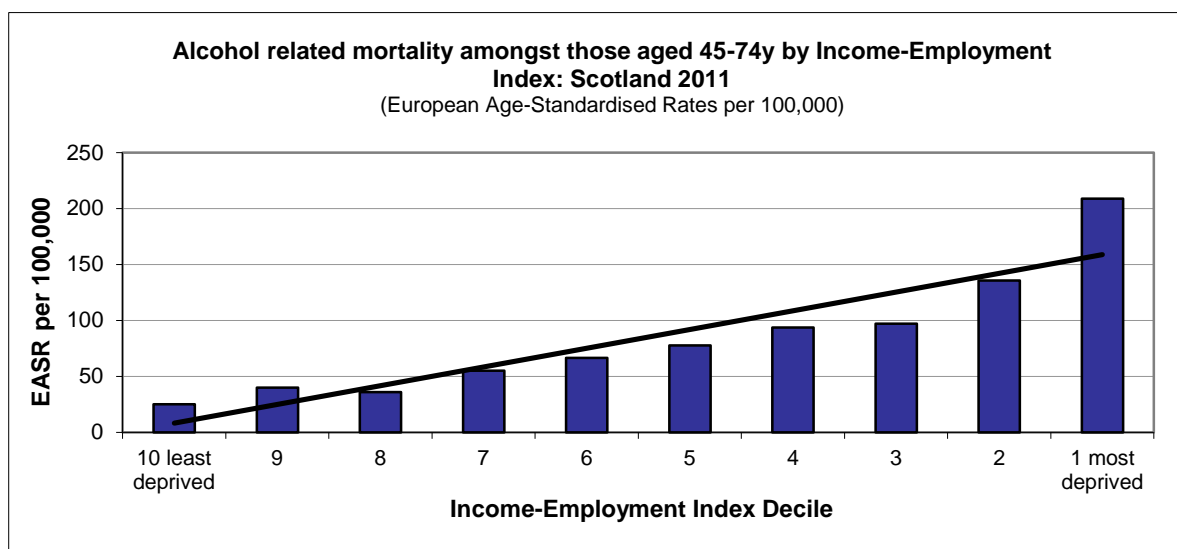
Alcohol - deaths aged 45-74 years

Summary

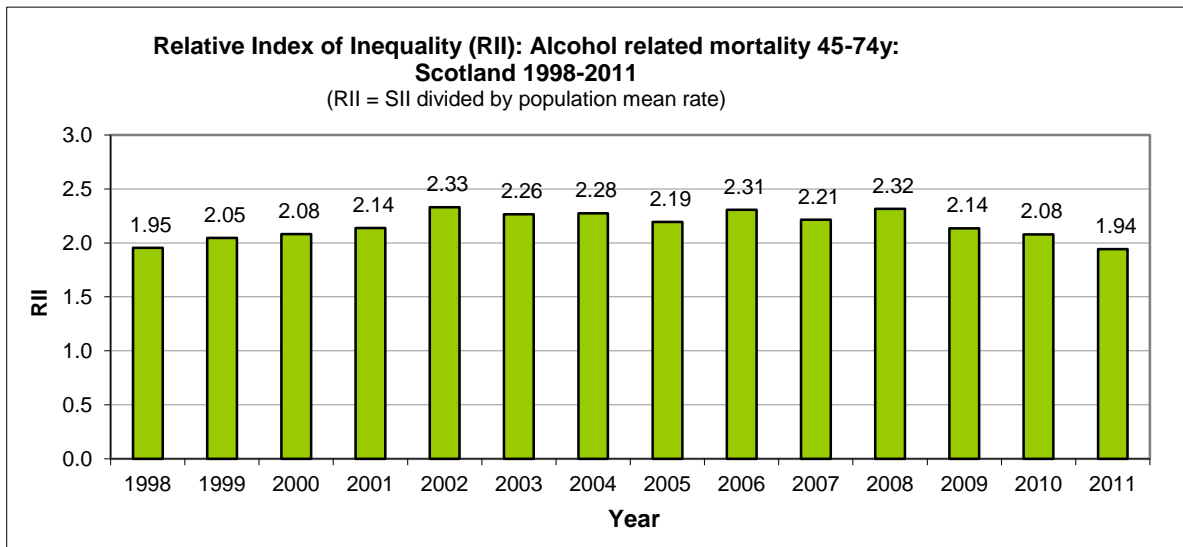
- The level of relative inequality has fallen to its lowest level in the reporting period (1998 to 2011). The level of absolute inequality is slightly higher than in 1998, but is lower than in all other years over the reporting period.

Between 1998 and 2006, there was a 24% increase in the rate of alcohol-related deaths among those aged 45-74 years. Since the peak in 2006, the rate of alcohol-related deaths has continued to fall, and, in 2011, is now at its lowest level in the reporting period (1998 to 2011). The overall death rate in this age group was 80.4 per 100,000 population, with the rate in the most deprived areas around 8 times higher than in areas of low deprivation (209 per 100,000 compared to 25 per 100,000). The longer term pattern in alcohol related deaths has been driven by variations in the most deprived areas, while the death rate in the least deprived areas has remained stable. This resulted in a widening of inequalities in both relative and absolute terms between 1998 and 2006. However, inequalities have now reduced, in line with the overall pattern in deaths.

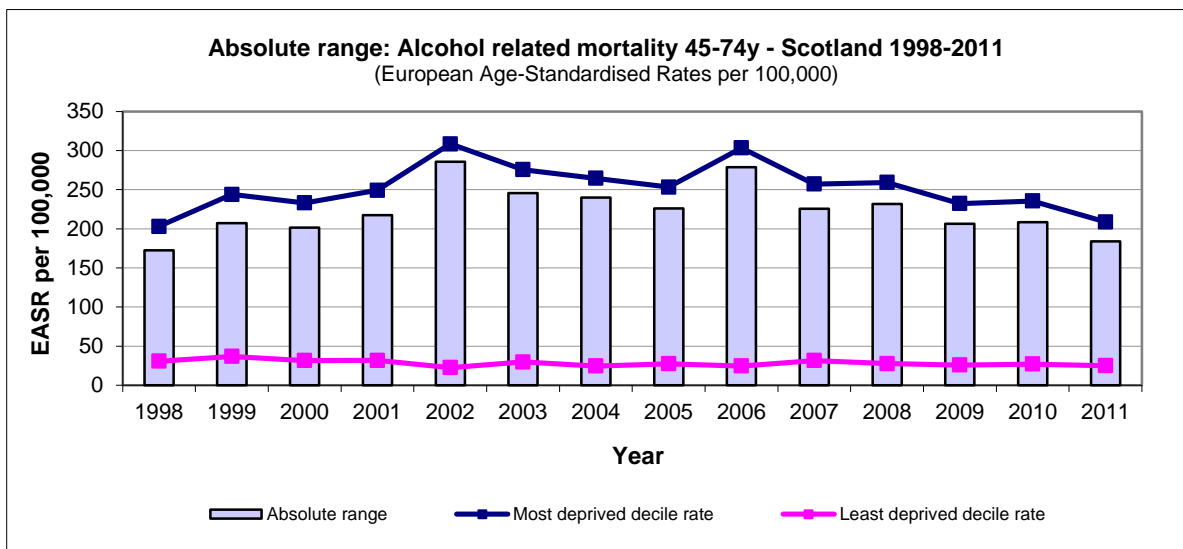
Inequalities gradient in the most recent year available



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	1,801	1,818,202	98.7
2008	1,782	1,843,609	95.9
2009	1,611	1,869,363	85.2
2010	1,674	1,893,493	87.3
2011	1,571	1,915,930	80.4

All-cause mortality aged 15-44 years

Summary

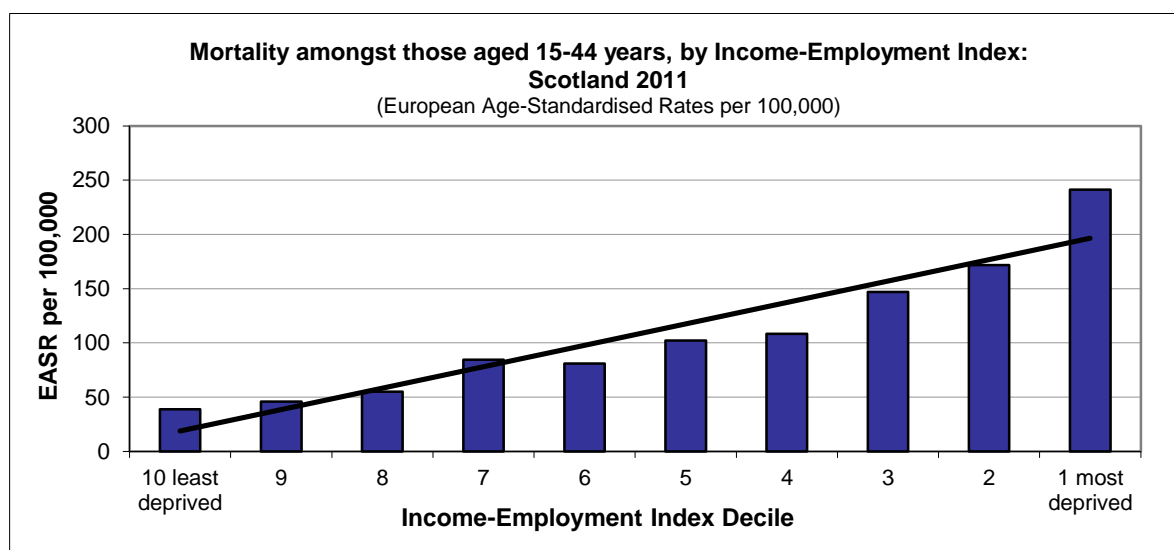
- The level of relative inequality has increased since 1997 but in recent years has been more stable. Absolute inequality shows no clear trend over time.

Between 1997 and 2011, the rate of death amongst those aged 15-44 years has remained broadly stable (between 106 and 118 per 100,000 population). Within this age group, rates of drug related deaths have more than doubled over the same period (to around 22 per 100,000) and rates of death from assault have remained stable (around 3 per 100,000).

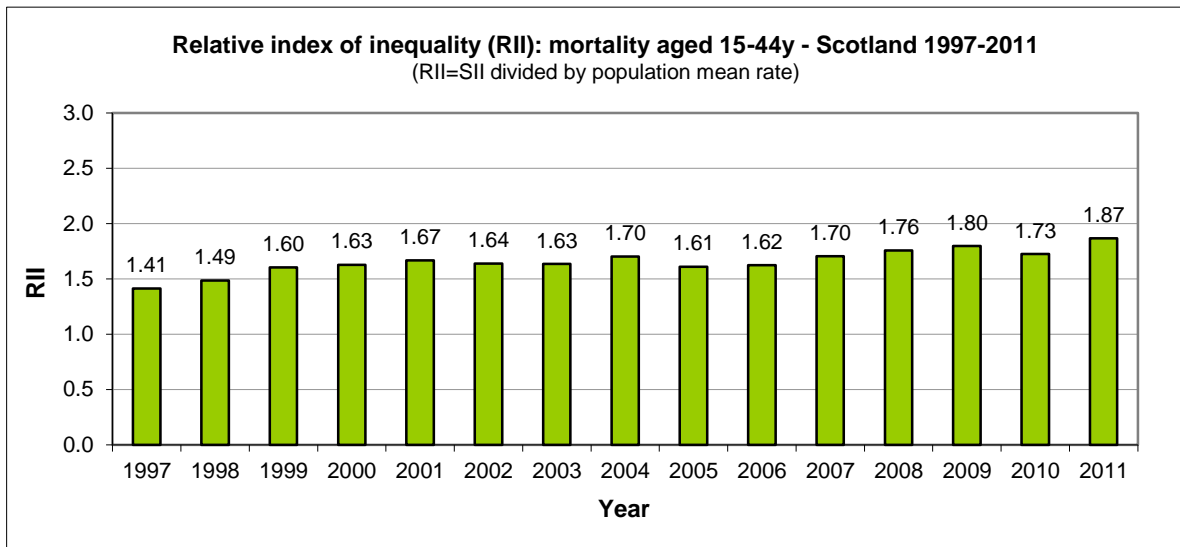
Rates of death from suicide decreased by 14% between 1997 and 2010. In 2011, there was a change to the way suicides were coded following an update of death classification by the World Health Organisation (WHO), resulting in some deaths previously coded under 'mental and behavioural disorders due to psychoactive substance use' now being classed as 'self-poisoning of undetermined intent'. Therefore, from 2011 there is a break in series for the number of suicides. Under previous coding rules, the overall number of suicide deaths (ages 15-44) in 2011 was estimated to be 420.

Deaths amongst those aged 15-44 years are more common in deprived areas than in areas of low deprivation (241 per 100,000 population compared to 39 per 100,000, in 2011). While there have been some short term fluctuations in both the relative and absolute level of inequalities, the rates of both have remained broadly stable since 1999.

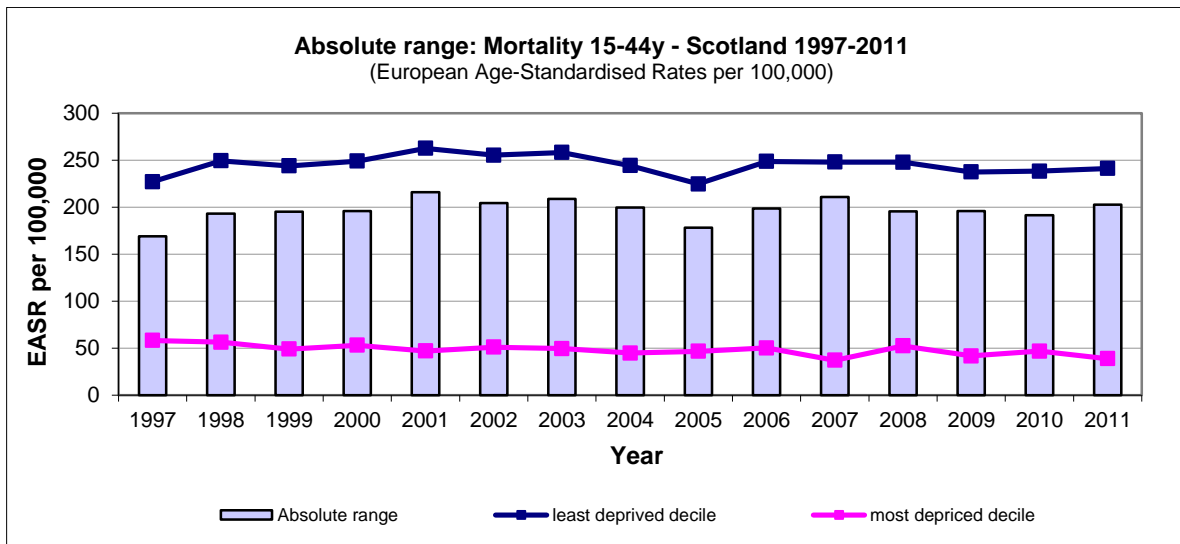
Inequalities gradient in the most recent year available



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
2009	2,389	2,075,639	112.0
2010	2,229	2,071,351	105.8
2011	2,262	2,071,905	107.8

	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
2009	47	2.3	436	21.0	432	20.6
2010	54	2.6	384	18.6	423	20.3
2011 ⁹	53	2.6	454	22.0	525 ⁹	25.3 ⁹

⁹ There was a change to the way suicides were coded following an update of death classification by the World Health Organisation (WHO). This resulted in some deaths previously coded under 'mental and behavioural disorders due to psychoactive substance use' now being classed as 'self-poisoning'

Annex 1: 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 from 2009 than previous 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 (2008-2012).

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, and have been age-standardised for the first time in the 2013 report for each year in the time series.

▪ **Low birthweight**

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

of undetermined intent'. Therefore, there is a break in series from 2011 for suicides in the table (page 52). Under previous coding rules, the number of suicide deaths (ages 15-44) in 2011 was estimated to be 420.

See NRS website for further information: <http://www.gro-scotland.gov.uk/statistics/theme/vital-events/deaths/suicides/main-points.html>

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). Low birth birthweight is defined as <2,500g - the standard World Health Organisation definition. Figures for the most recent year are provisional.

▪ **Healthy birthweight**

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

Definition: A baby is considered to be of healthy birthweight (a weight appropriate for its gestational age) when it lies between the 5th and 95th centile for weight at its gestational age. Gestational age is a way of expressing the age or development of a baby. It is typically based on an antenatal ultrasound scan. However, it may also be estimated from the number of weeks since the mother's last normal menstrual period. Centiles for birthweight charts for gestational age are derived from Scottish data on births between the years 1998 and 2003¹⁰.

▪ **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 28th July 2012.

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.

▪ **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.

All Cancers- 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').

Prostate cancer (males only)- ICD-10 C61

Breast cancer (females only)- ICD-10 C50

Cancer of the trachea, bronchus and lung- ICD-10 C33-C34

Colorectal cancer- ICD-10 C18-C20

¹⁰ See for further information: [Centile charts for birthweight for gestational age for Scottish singleton births](#), Sandra Bonellie

- **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.

All cancers- 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'.

Prostate cancer (males only)- ICD-10 C61

Breast cancer (females only)- ICD-10 C50

Cancer of the trachea, bronchus and lung- ICD-10 C33-C34

Colorectal cancer- ICD-10 C18-C20

- **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 include 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.

- **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 2: Technical Notes

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:

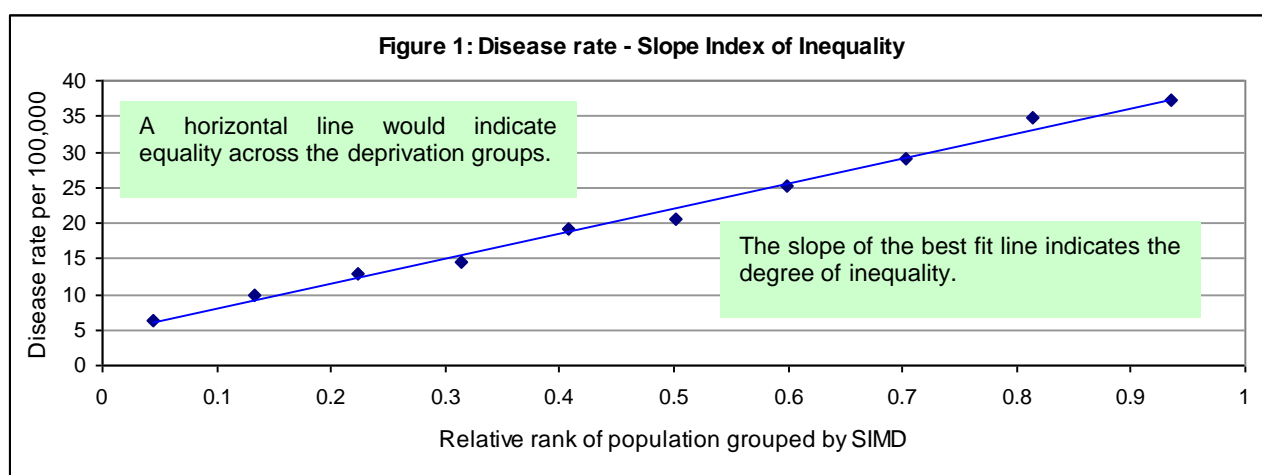
http://www.scotpho.org.uk/home/Publications/scotphoreports/pub_measuringinequalities.asp

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 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.

Following discussion with colleagues from the Scottish Collaboration for Public Health Research and Policy (SCPHRP), we investigated the alcohol related indicators to assess possible non-linearity using a 'knot and spline' based approach¹¹. While there was evidence of non-linearity in some years, the technical expert group concluded that it was minor and that it did not invalidate the calculation of RII using the linear method. The group concluded that the linear methodology should be retained due to the complexity of non-linear methods, and the need of consistent reporting and general understanding.

Absolute range: How big is the gap?

This measure describes the absolute difference between the extremes of deprivation.

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.

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

¹¹ See Sergeant JC, Firth D. Relative index of inequality: definition, estimation, and inference. *Biostatistics* 2006;7:213-24 for further details

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.

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

CHD = Coronary Heart Disease

HLE = Healthy Life Expectancy

UL = Upper Limit

LL = Lower Limit

R = Revised

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