

# Statistical Bulletin

Health & Social Care Series

An Official Statistics Publication for Scotland

## Long-term Monitoring of Health Inequalities

### October 2014 Report

Summary of results: 2012

#### All-cause mortality

- **Ages under 75 years**: The absolute gap between most and least deprived areas is now smaller than in any other year covered by this report. However, relative inequality has been stable since 2006 and increased over the longer term.
- **Ages 15 to 44 years**: Inequalities have reduced in the last year. This followed a reduction in mortality rates in the most deprived areas, while rates in the least deprived areas increased. Relative inequalities are at their lowest level since 1998.

#### Coronary heart disease (CHD)

- **Heart attack admissions (under 75 years)**: In recent years, admission rates have increased more in the most deprived areas compared to the least deprived, resulting in rising inequality levels.
- **CHD deaths (45-74 years)**: An increase in relative inequality in the last year took it to its highest level in the time series. However, the absolute gap between the most and least deprived areas has continued to fall.

#### Cancer

- **Cancer incidence (under 75 years)**: There is no clear long-term trend in the pattern of inequalities. Patterns vary further when examining cancer incidence by type, although, of the four most common types, inequality levels are highest for cancer of the trachea, bronchus and lung.
- **Cancer mortality (45-74 years)**: Relative inequality has increased slightly over the long term, while the absolute gap has reduced. There are varied patterns among different cancer types, with higher levels of inequality, which have proportionately increased over the long term, observed in deaths from cancer of the trachea, bronchus and lung.

## Alcohol

- [Alcohol-related hospital admissions \(under 75 years\)](#): Admission rates are falling fastest in the most deprived areas, resulting in reduced inequality levels over the long term with both relative and absolute inequalities reaching their lowest levels in 2012.
- [Alcohol-related mortality \(45-74 years\)](#): Although relative inequality has risen in the last year, the difference between rates in the most and least deprived areas is currently the smallest observed in the reporting period.

## Birthweight

- [Healthy birthweight](#): Inequalities in both absolute and relative terms remain very low.
- [Low birthweight](#): Recent increases in low birthweight in deprived areas have resulted in a rise to inequalities, particularly in absolute terms, since 2008-2010, though they remain fairly low when viewed over the long term.

## Background

A Ministerial Task Force on Health Inequalities led by the Minister for Public Health was established in 2007 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. The group recommended a range of indicators on health inequalities to be monitored over time, and most recently met in 2012 to review the list of indicators and methods<sup>1</sup>. This publication updates those headline indicators<sup>2</sup>.

In 2012, the Ministerial Task Force on Health Inequalities was reconvened to review progress. Through the review, the Task Force received an update on the latest evidence. The Task Force noted that, despite a lot of commitment and resource, the scale of health inequalities - as measured by the indicators - had not reduced.

The Task Force heard evidence from a Policy Review<sup>3</sup> conducted by NHS Health Scotland that, whilst the publication of Equally Well<sup>4</sup> in 2008 marked the desire to shift focus to the social determinants of health, link beyond the NHS and engage local authorities, in practice there had been a tendency towards focussing on 'downstream' activities (dealing with people after they have acquired problems) rather than dealing with issues 'upstream' in order to prevent these problems arising in the first place.

The Task Force was asked to reflect on changes in the way that people and communities were being engaged in decisions that affect them, and the impact of the Christie Commission on how health inequalities are being tackled. In addition, the Task Force looked at how "place" had an impact on health inequalities.

The Task Force published its findings in March 2014<sup>5</sup>. In doing so, it re-iterated the commitment to tackling health inequalities, identifying priorities including a focus on developing social capital and supporting Community Planning Partnerships. The Task Force agreed that a regular 2 year review may not be the best way to monitor progress nor influence the current way of working, and agreed alternative arrangements should be considered. Since publication, a new Inequalities Action Group has been established to progress delivery of actions that contribute to reducing health inequalities.

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<sup>1</sup> For further information on the recommendations of the technical group, see: <http://www.scotland.gov.uk/Topics/Statistics/Browse/Health/TrendHealthOutcome>

<sup>2</sup> 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>

<sup>3</sup> NHS Health Scotland Policy Review, March 2014: <http://www.healthscotland.com/documents/23047.aspx>

<sup>4</sup> Equally Well, 2008: <http://www.scotland.gov.uk/Publications/2008/06/25104032/0>

<sup>5</sup> Report of the Ministerial Task Force on Health Inequalities, March 2014: <http://www.scotland.gov.uk/Publications/2014/03/2561>

## Indicators

The indicators recommended by the technical advisory group are:

### **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
- Low birthweight
- Healthy birthweight

### **Indicators of inequalities in morbidity and mortality from specific causes and 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

This year's report does not include results for **healthy life expectancy** or **mental wellbeing**. Healthy life expectancy is updated every second year using data covering a two year period. Data for the mental wellbeing indicator for 2013 is not yet available. Users will be consulted on the timing for the next update.

Inequalities indicators for **cancer incidence and mortality** are presented for all cancers and each of the four most common types of cancer.

## Methods

The report uses a combination of measures of health inequalities to give a fuller understanding of the different aspects of inequalities. These are:

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

Following recommendations from the expert group, an area-based index derived from the income and employment domains of the Scottish Index of Multiple Deprivation (SIMD) has been used to define deprivation, in the absence of individual-level data on socio-economic circumstance. These indicators and measures were recommended for long-term monitoring of health inequalities due to deprivation at Scotland level. Monitoring health inequalities due to other factors, such as age, gender and ethnicity, and indicators at a local level, may require different indicators and measures. Further information on the methods is provided in Annex 1.

## Technical developments since last report

A number of developments have occurred since the 2013 publication of this report. The net impact is that the figures included this year are not comparable with those published in previous years. However, all trends have been backdated and are therefore shown on a consistent basis over time within this report. The patterns of trends over time are broadly consistent with those presented in previous reports. An illustration of the impact on trends is provided in Annex 2.

The technical developments are listed below and described in more detail in Annex 2.

### **European age-standardised rates**

Rates are age-standardised in order to show trends after taking account of changes in the age distribution of the population over time. The 2013 European Standard Population (ESP) has been used to calculate European age-standardised rates in this publication. Previous versions of this report used the ESP which was first produced in 1976.<sup>6</sup>

### **Revised population estimates for Scotland**

Population estimates for Scotland between the years 2002 and 2010 were updated by National Records of Scotland (NRS) in December 2013, and again in May 2014 at datazone level. The revised estimates are based on the 2011 Census. These revisions impact the calculation of age-standardised rates and also the income-employment methodology described below.

### **Income-employment deciles**

Income-employment deciles, which define the deprivation scale used in this report, have been recalculated for all years. These changes take account of revised population estimates for years 2002 to 2010. The use of SIMD throughout the period of the report was also reviewed, with some changes made to ensure that the most appropriate year's SIMD update was used in the derivation of income-employment deciles throughout the time series.

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<sup>6</sup> Further information on the change to the European Standard Population is available on the Office for National Statistics website: <http://www.ons.gov.uk/ons/guide-method/user-guidance/health-and-life-events/revised-european-standard-population-2013--2013-esp-/index.html>

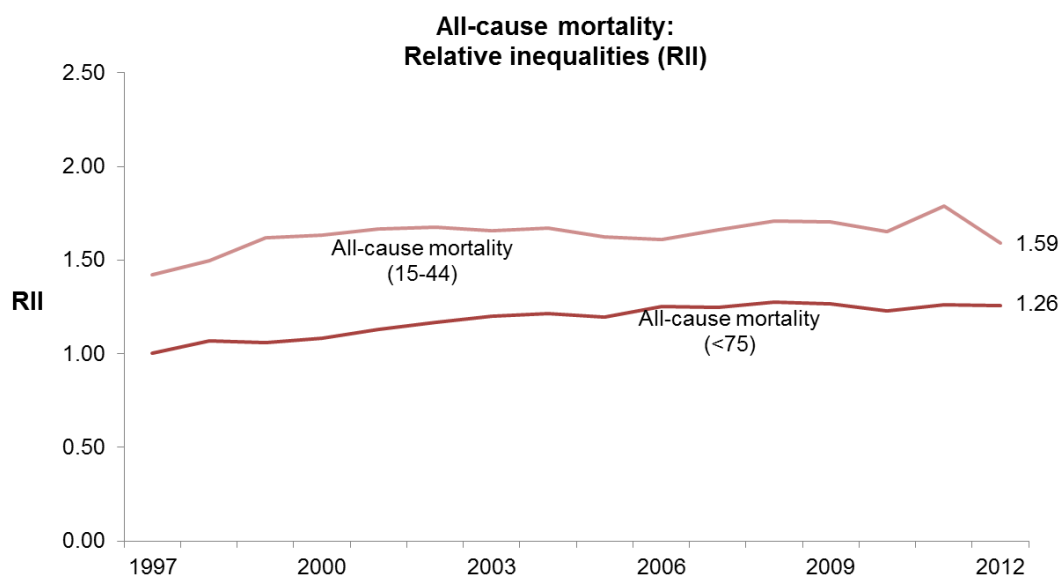
## Trends in relative inequalities (RII)

RII indicates the extent to which health outcomes are worse in the most deprived areas compared to the mean. While comparisons of RII between indicators are possible, they should be made with some caution, in particular where absolute values are significantly higher or lower in the compared indicators, or where the measurement scale differs (for example, relative inequalities in Mental Wellbeing scores, which are based on responses to survey questions, compared to relative inequalities in an age-standardised mortality rate).

The following charts group indicators in this report by theme: all-cause mortality, cancer, coronary heart disease, alcohol and birthweight. Across the full range of indicators, relative inequalities have remained highest for the all-cause mortality, coronary heart disease mortality and alcohol-related indicators throughout the period covered by this report.

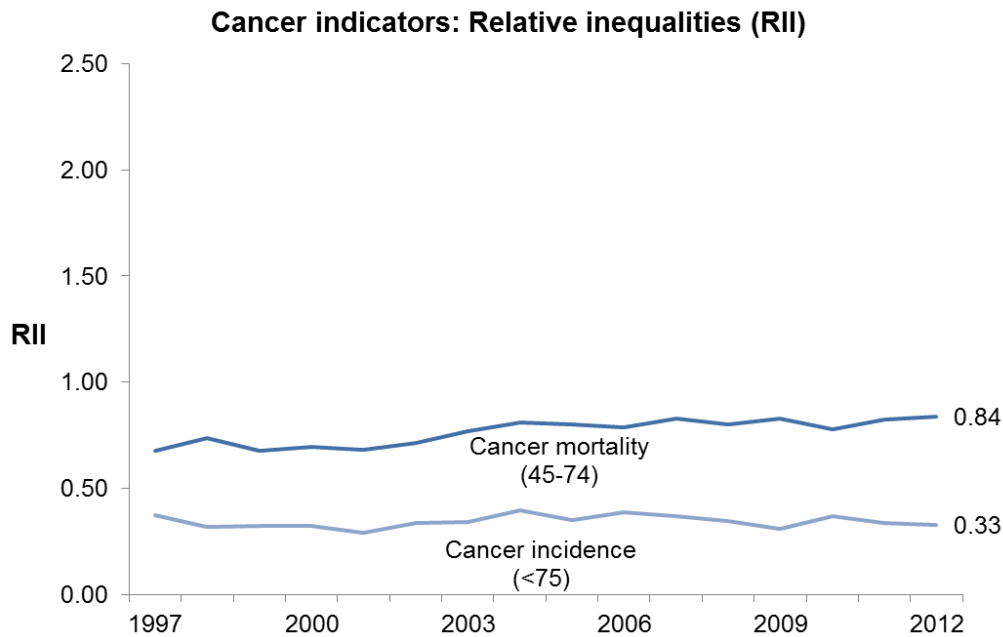
### **All-cause mortality**

Relative inequalities in premature mortality (all ages under 75) have been stable since 2006, and are unchanged in the last year despite a continued reduction in premature mortality rates across Scotland. Among the 15-44 age group, which accounts for more than 2,000 deaths each year, relative inequalities have reached their lowest level since 1998 following a drop from their highest level in 2011.



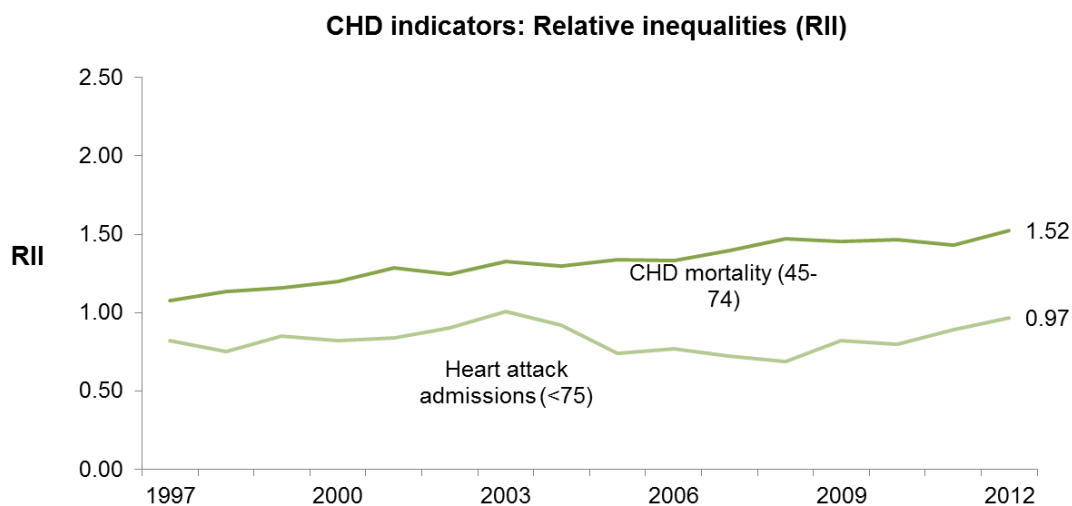
## Cancer

There is no clear long-term trend in relative inequalities in cancer incidence among people aged under 75 over the time series. Relative inequalities in cancer mortality, between ages 45 and 74, increased slightly until 2004 and have been fairly stable since.



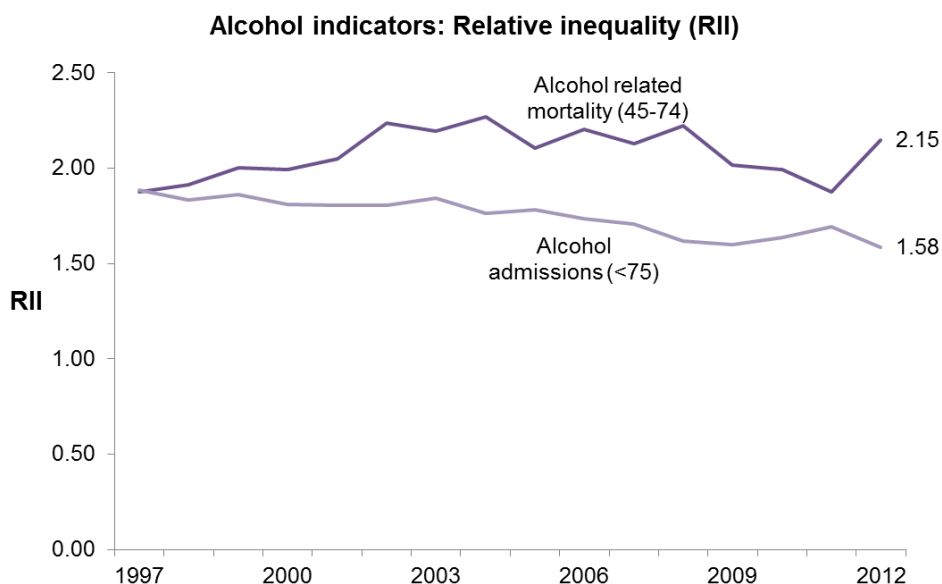
## Coronary heart disease

Relative inequalities have increased in CHD mortality among adults aged 45-74 over the long term. Despite stabilising somewhat since 2008, an increase in the last year took RII to its highest level in the time series. Relative inequality in heart attack admissions (ages under 75) has increased from its lowest level in 2008.



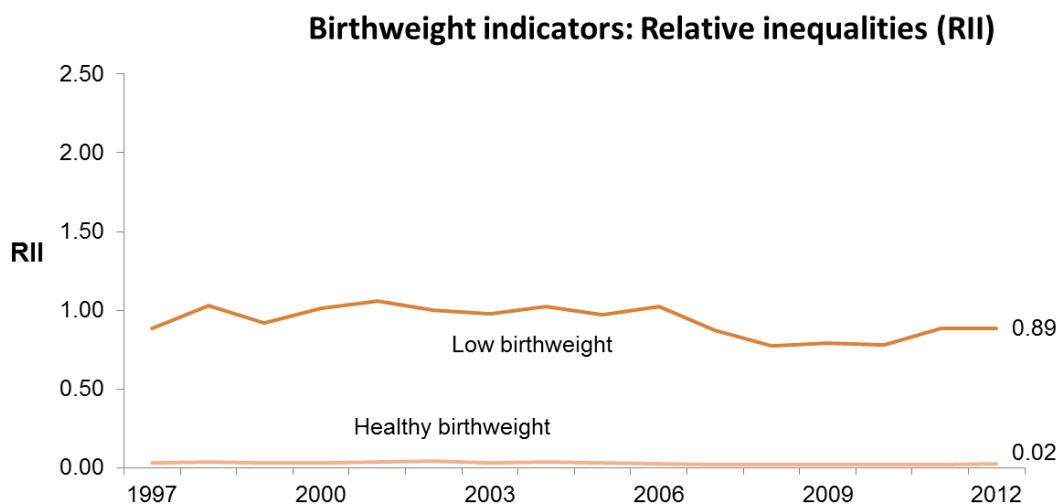
## Alcohol

The long-term pattern of decreasing relative inequality in alcohol-related hospital admissions began to stabilise from 2008, but reached its lowest level in the time series in 2012. Relative inequalities in mortality rates, between ages 45 and 74, increased in 2012. Although mortality rates reached their lowest levels in the most and least deprived areas, the decrease was proportionately greater in the least deprived areas, resulting in an increase to RII.



## Birthweight

Relative inequality in the proportion of babies with a healthy birthweight has remained very low. Although there are more cases of babies born 'small for gestational age' in the most deprived areas, the effect is partly balanced out by a greater proportion of babies in the least deprived areas born 'large for gestational age'. Relative inequality in the low birthweight indicator is greater, with more babies born weighing below 2.5 kg in more deprived areas. Relative inequality has increased slightly in the last two years following a decline from 2006.





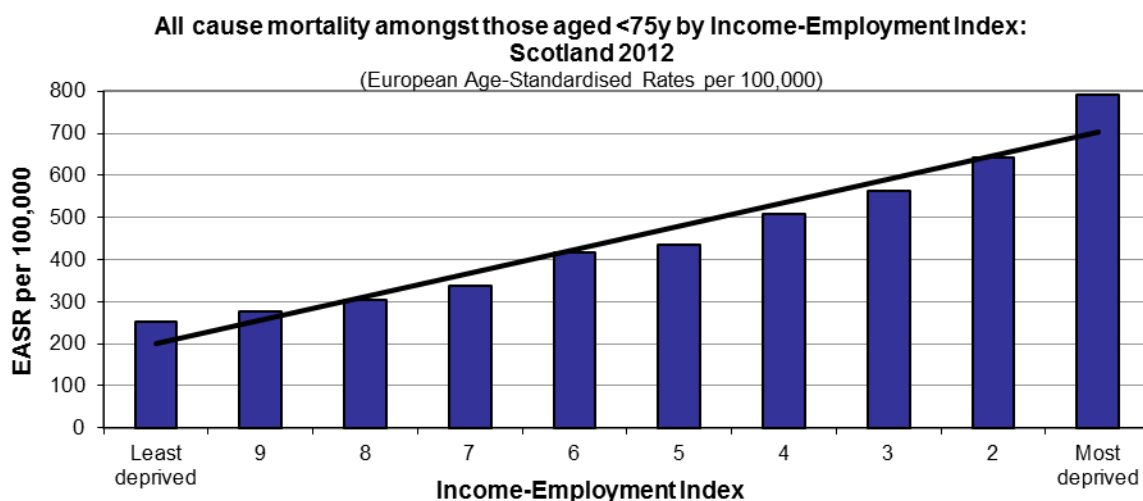
## Premature Mortality - from all causes, aged under 75 years

Between 1997 and 2012, the European age-standardised death rate amongst those aged under 75 years decreased by 32%. However, it remains the case that more than 20,000 individuals in Scotland aged under 75 die each year.

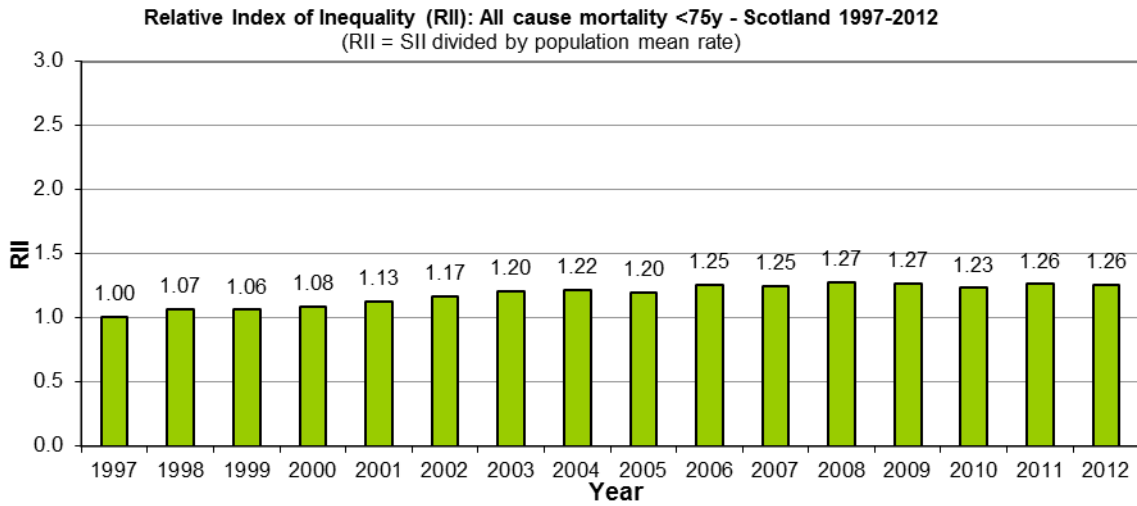
In 2012, deaths in the most deprived areas were more than three times as common as deaths in the least deprived. The reduction in deaths between 1997 and 2006 occurred at a slower rate in the most deprived areas compared to the least deprived, which saw a widening of inequalities in relative terms. However, since 2006, the level of relative inequality has stabilised, and is unchanged from last year.

Despite some fluctuation, absolute inequality has continued to fall since peaking in 2002. There have been consecutive falls since 2007, and the difference between rates in the most and least deprived areas is now smaller than in any other year in the time series.

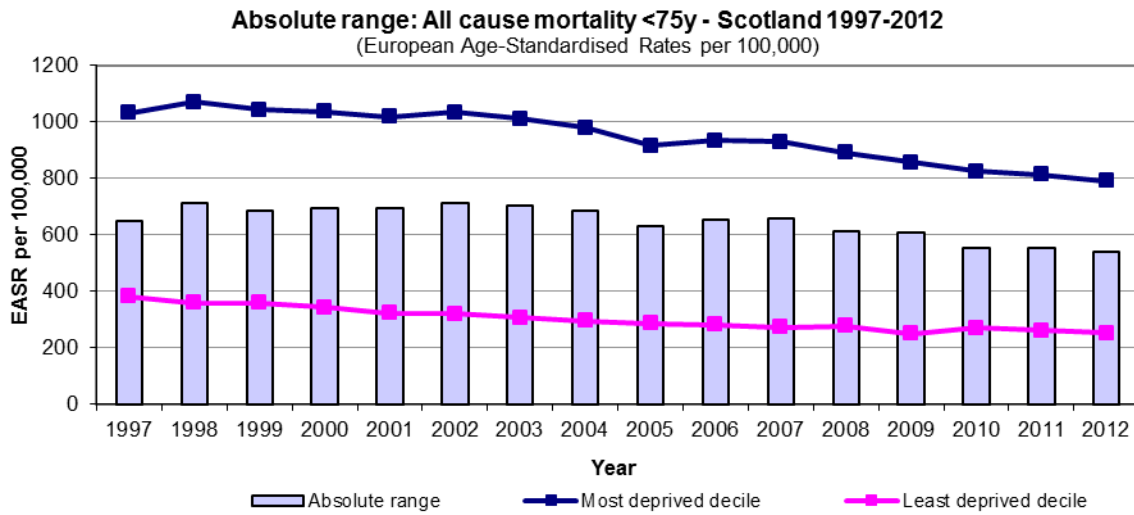
### **Inequalities gradient in 2012**



## Relative Index of Inequality (RII) over time



## Absolute range over time



## Scale / context

|             | <b>Number of deaths</b> | <b>Target population size</b> | <b>Rate per 100,000 (EASR)</b> |
|-------------|-------------------------|-------------------------------|--------------------------------|
| <b>1997</b> | 26,081                  | 4,740,269                     | 651.9                          |
| <b>1998</b> | 25,857                  | 4,729,975                     | 643.3                          |
| <b>1999</b> | 25,491                  | 4,721,298                     | 632.5                          |
| <b>2000</b> | 24,593                  | 4,708,667                     | 607.3                          |
| <b>2001</b> | 24,168                  | 4,703,661                     | 593.1                          |
| <b>2002</b> | 24,219                  | 4,701,958                     | 588.9                          |
| <b>2003</b> | 23,789                  | 4,702,431                     | 573.4                          |
| <b>2004</b> | 22,896                  | 4,714,233                     | 546.2                          |
| <b>2005</b> | 22,441                  | 4,735,320                     | 530.3                          |
| <b>2006</b> | 22,237                  | 4,752,425                     | 520.4                          |
| <b>2007</b> | 22,359                  | 4,783,452                     | 516.8                          |
| <b>2008</b> | 22,005                  | 4,811,453                     | 501.3                          |
| <b>2009</b> | 21,229                  | 4,835,007                     | 477.0                          |
| <b>2010</b> | 20,997                  | 4,858,058                     | 467.4                          |
| <b>2011</b> | 20,685                  | 4,888,316                     | 456.1                          |
| <b>2012</b> | 20,446                  | 4,895,114                     | 445.3                          |

## Low Birthweight

Low birthweight (less than 2.5 kg) is a major determinant of infant mortality and morbidity<sup>7</sup>. Despite a decrease in 2012, around 2,800 low birthweight babies are born in Scotland each year, accounting for 5-6% of total live singleton births.

Low birthweight babies are more common in deprived areas than in areas of low deprivation. In 2012, 7.4% of live singleton births in the most deprived areas were recorded as low birthweight, compared to 3.2% in the least deprived. Inequalities were broadly stable between 1998 and 2006, but narrowed in both relative and absolute terms between 2006 and 2010. This 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.

Since 2010, there have been consecutive increases in the rate in the most deprived areas, leading to more inequality in both relative and absolute terms. In the last year, while the absolute gap between the most and least deprived areas has widened, there has not been a correspondingly large increase in relative inequality, largely driven by reductions in the rate in the second and third most deprived deciles. Inequalities in 2012 remain fairly low when viewed over the long term.

Note that data for 2012 are provisional, and relative inequality for 2008 has been revised in this report (details included in Annex 2).

### **Inequalities gradient in 2012**

**Low birthweight babies by Income-Employment Index: Scotland 2012<sup>P</sup>**  
(As a percentage of all live singleton births)

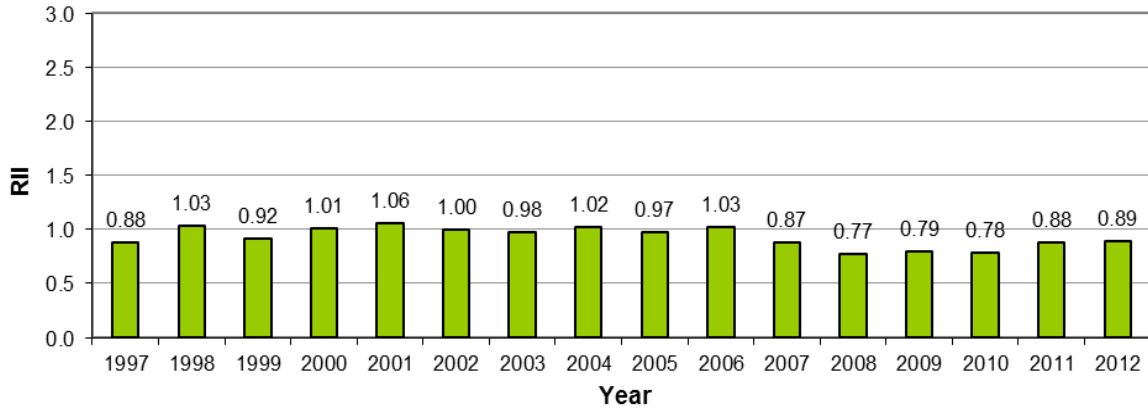


<sup>7</sup> <https://isdscotland.scot.nhs.uk/Health-Topics/Maternity-and-Births/Publications/2014-08-26/2014-08-26-Births-Report.pdf>

## Relative Index of Inequality (RII) over time

**Relative Index of Inequality (RII): Low birthweight babies  
Scotland 1997-2012<sup>P</sup>**

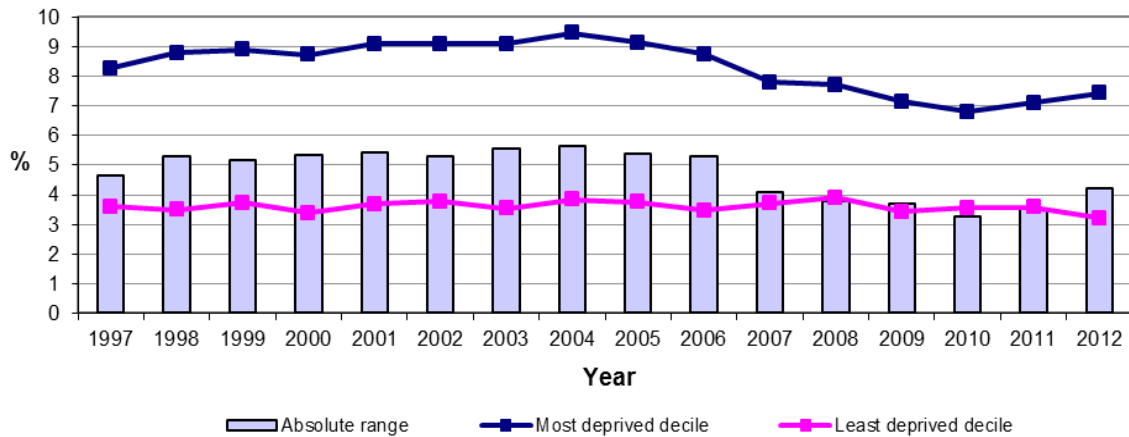
(RII = SII divided by population mean rate)



## Absolute range over time

**Absolute range: Low birthweight babies - Scotland 1997-2012<sup>P</sup>**

(As a percentage of all live singleton births)



**Scale / context**

|                         | <b>Number of low BW babies</b> | <b>Target population size (live singleton births)</b> | <b>Percentage</b> |
|-------------------------|--------------------------------|---|-------------------|
| <b>1997</b>             | 3,149                          | 56,982  | 5.5               |
| <b>1998</b>             | 3,108                          | 55,152  | 5.6               |
| <b>1999</b>             | 3,098                          | 52,726  | 5.9               |
| <b>2000</b>             | 2,906                          | 51,057  | 5.7               |
| <b>2001</b>             | 2,848                          | 49,744  | 5.7               |
| <b>2002</b>             | 2,910                          | 48,950  | 5.9               |
| <b>2003</b>             | 3,026                          | 50,069  | 6.0               |
| <b>2004</b>             | 3,030                          | 51,807  | 5.8               |
| <b>2005</b>             | 3,058                          | 51,436  | 5.9               |
| <b>2006</b>             | 2,939                          | 52,467  | 5.6               |
| <b>2007</b>             | 3,095                          | 55,271  | 5.6               |
| <b>2008</b>             | 3,134                          | 56,929  | 5.5               |
| <b>2009</b>             | 2,894                          | 56,106  | 5.2               |
| <b>2010</b>             | 2,815                          | 56,063  | 5.0               |
| <b>2011</b>             | 2,944                          | 55,965  | 5.3               |
| <b>2012<sup>p</sup></b> | 2,761                          | 55,223  | 5.0               |

## Healthy birthweight

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 (91.1% and 89.0% respectively, in 2012). However, since 1997, levels of both relative and absolute inequality have been low and stable.

Note that data for 2012 are provisional.

## Inequalities gradient in 2012

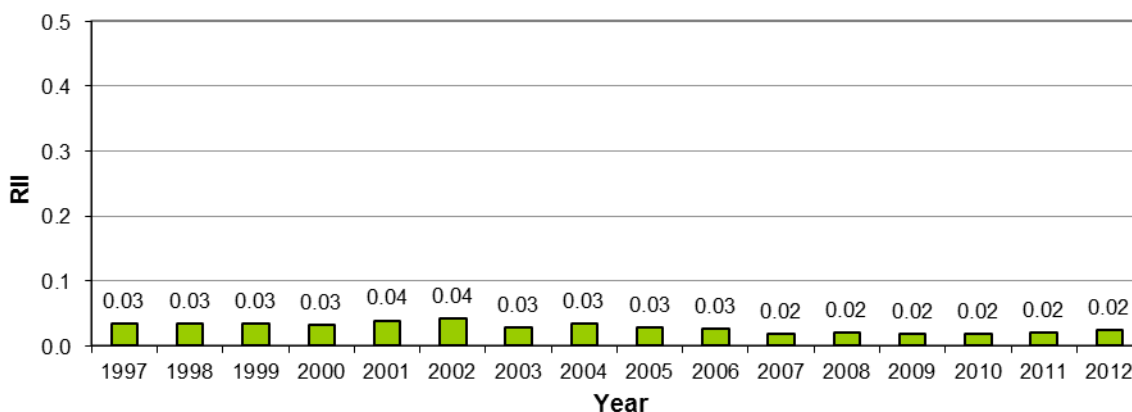
**Healthy birthweight babies by Income-Employment Index: Scotland 2012<sup>P</sup>**  
(As a percentage of all live singleton births)



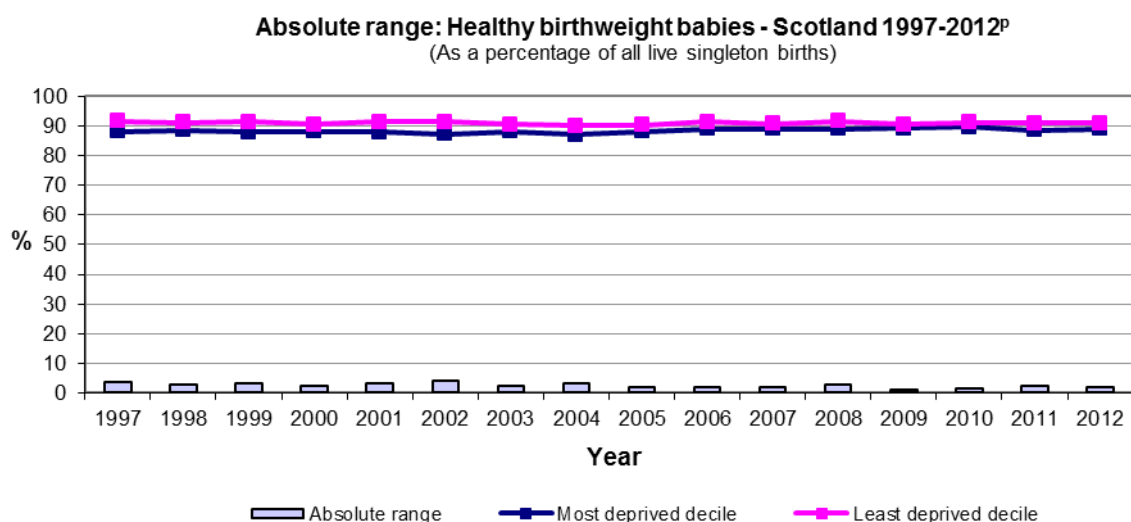
## Relative Index of Inequality (RII) over time

**Relative Index of Inequality (RII): Healthy birthweight babies**  
**Scotland 1997-2012<sup>P</sup>**

(RII = SII divided by population mean rate)



## Absolute range over time



## Scale / context

|                         | Number of healthy BW babies | Target population size (live singleton births) | Percentage |
|-------------------------|-----------------------------|--|------------|
| <b>1997</b>             | 51,280                      | 56,878   | 90.2       |
| <b>1998</b>             | 49,401                      | 54,982   | 89.8       |
| <b>1999</b>             | 47,240                      | 52,607   | 89.8       |
| <b>2000</b>             | 45,516                      | 50,927   | 89.4       |
| <b>2001</b>             | 44,526                      | 49,632   | 89.7       |
| <b>2002</b>             | 43,323                      | 48,375   | 89.6       |
| <b>2003</b>             | 43,856                      | 48,945   | 89.6       |
| <b>2004</b>             | 45,462                      | 50,879   | 89.4       |
| <b>2005</b>             | 45,194                      | 50,538   | 89.4       |
| <b>2006</b>             | 46,481                      | 51,815   | 89.7       |
| <b>2007</b>             | 49,176                      | 54,836   | 89.7       |
| <b>2008</b>             | 50,943                      | 56,732   | 89.8       |
| <b>2009</b>             | 50,119                      | 55,869   | 89.7       |
| <b>2010</b>             | 50,325                      | 55,782   | 90.2       |
| <b>2011</b>             | 49,357                      | 55,013   | 89.7       |
| <b>2012<sup>P</sup></b> | 49,568                      | 55,015   | 90.1       |



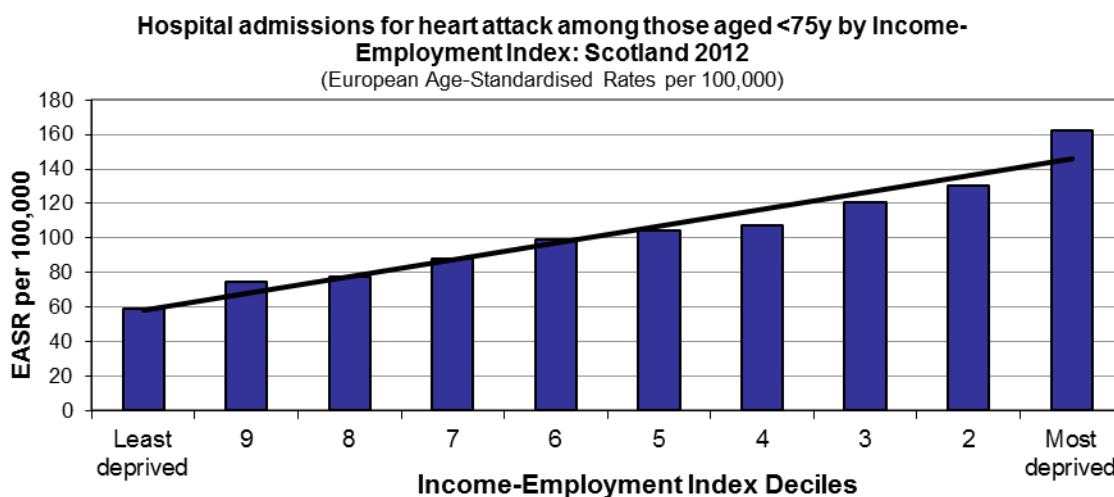
## Coronary Heart Disease - first ever hospital admission for heart attack aged under 75 years

In 2012, around 4,750 new cases of heart attack (for those aged under 75 years) were recorded in Scottish hospitals. 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.

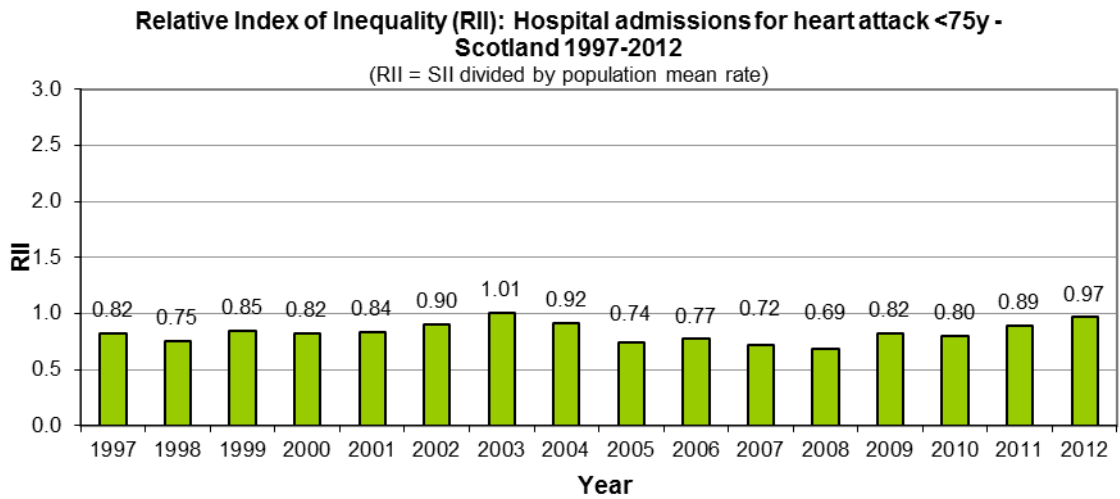
The latest admission rate is nearly three times higher in the most deprived areas compared to the least deprived (162.0 compared to 58.8 cases per 100,000 population). Relative inequality fell between 2003 and 2008, but, having reached its lowest level in 2008, has been steadily increasing. Similarly, despite consecutive falls between 2003 and 2007, absolute inequality has also increased in recent years to its highest level since 2003.

The latest patterns reflect the faster rate at which admissions are rising in Scotland's most deprived areas compared to the least deprived. The admission rate in the most deprived areas has increased by 45% since 2007 and by 15% in the last year. In contrast, the rate in the least deprived areas increased by 6% from 2007 and *decreased* by 10% in the last year.

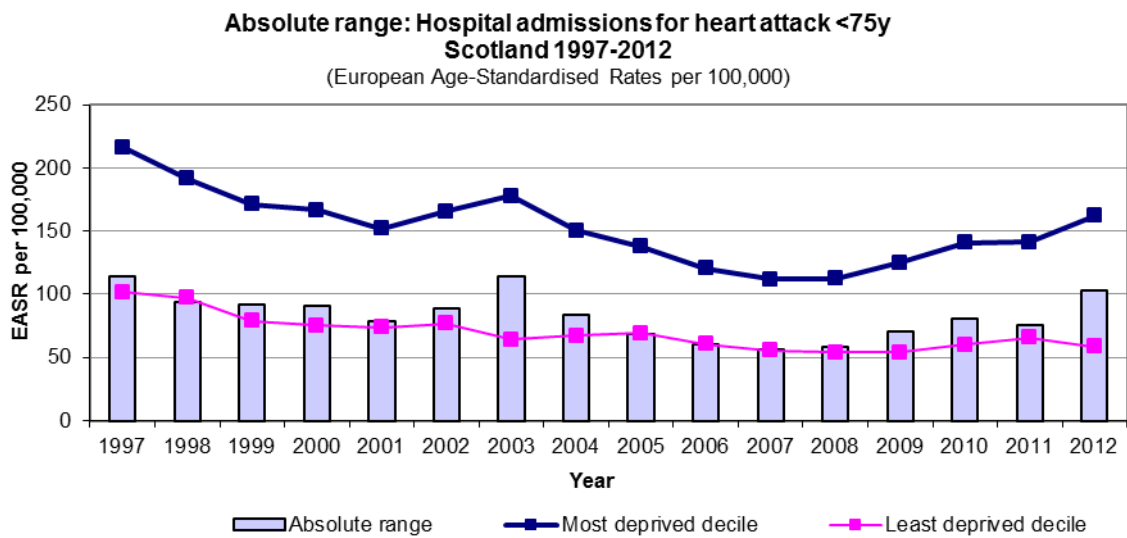
### **Inequalities gradient in 2012**



## Relative Index of Inequality (RII) over time



## Absolute range over time



## Scale / context

|             | <b>Number of new cases</b> | <b>Target population size</b> | <b>Rate per 100,000 (EASR)</b> |
|-------------|----------------------------|-------------------------------|--------------------------------|
| <b>1997</b> | 5,764                      | 4,740,269                     | 145.1                          |
| <b>1998</b> | 5,676                      | 4,729,975                     | 141.5                          |
| <b>1999</b> | 5,101                      | 4,721,298                     | 126.6                          |
| <b>2000</b> | 4,812                      | 4,708,667                     | 118.4                          |
| <b>2001</b> | 4,776                      | 4,703,661                     | 116.9                          |
| <b>2002</b> | 4,833                      | 4,701,958                     | 116.6                          |
| <b>2003</b> | 4,569                      | 4,702,431                     | 109.0                          |
| <b>2004</b> | 4,413                      | 4,714,233                     | 103.9                          |
| <b>2005</b> | 4,047                      | 4,735,320                     | 94.2                           |
| <b>2006</b> | 3,750                      | 4,752,425                     | 86.4                           |
| <b>2007</b> | 3,549                      | 4,783,452                     | 80.4                           |
| <b>2008</b> | 3,655                      | 4,811,453                     | 81.7                           |
| <b>2009</b> | 3,851                      | 4,835,007                     | 84.9                           |
| <b>2010</b> | 4,377                      | 4,858,058                     | 95.4                           |
| <b>2011</b> | 4,537                      | 4,888,316                     | 97.7                           |
| <b>2012</b> | 4,747                      | 4,895,114                     | 100.8                          |

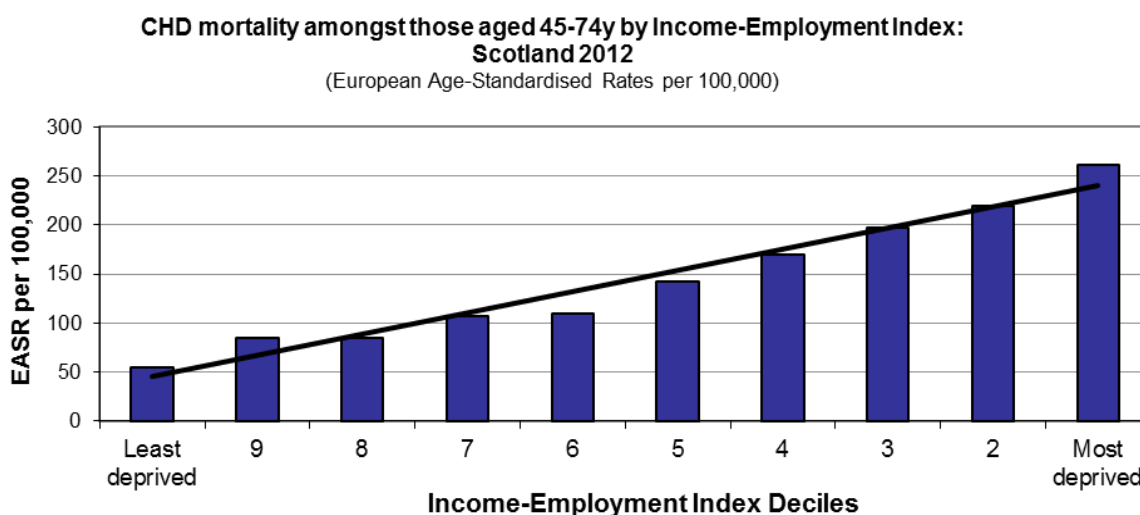
## Coronary Heart Disease (CHD) - deaths aged 45-74 years

Since 1997, there has been a considerable decrease in CHD mortality amongst the population aged 45-74 years. The death rate fell by 63% over this period to 139.7 per 100,000 in 2012, the lowest rate in the reporting period (1997 to 2012). However, CHD remains one of Scotland's biggest causes of premature mortality, with around 2,600 deaths occurring in this age group in 2012.

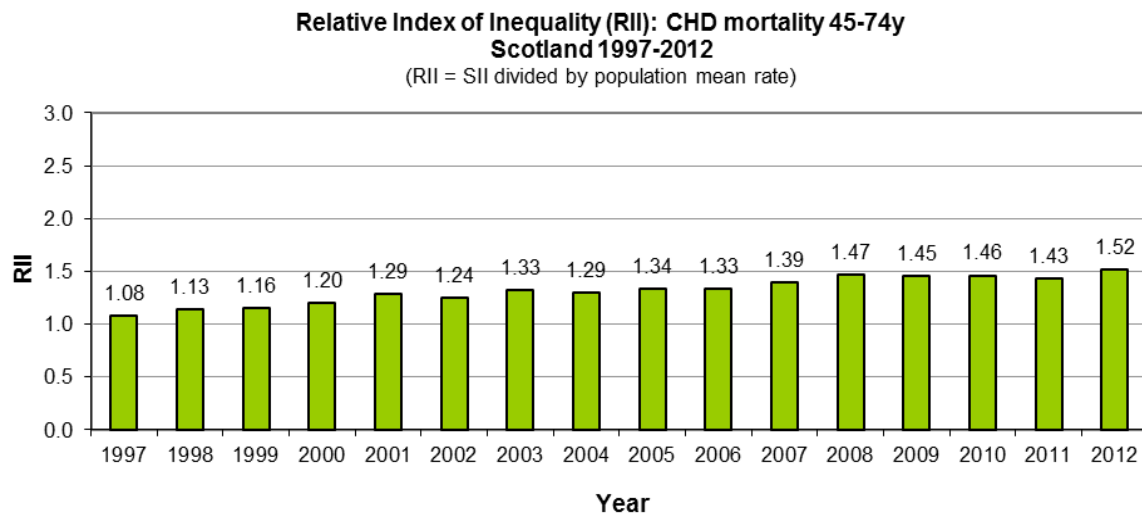
Premature mortality from CHD is around five times more common in Scotland's most deprived areas than in the least deprived (261.4 deaths per 100,000 population compared to 54.2 per 100,000, in 2012). Over time, the death rate, in percentage terms, has fallen more quickly in the least deprived areas than in the most deprived, resulting in increased relative inequality. This trend has stabilised somewhat since 2008, though a further increase in the last year took relative inequality to its highest level in the time series in 2012.

The level of inequality in absolute terms has fallen over time, with consecutive decreases from 1998 to 2002 and 2003 to 2006. The gap between rates in the most and least deprived areas is now 47% smaller than in 1998 (when the gap was widest in the time series).

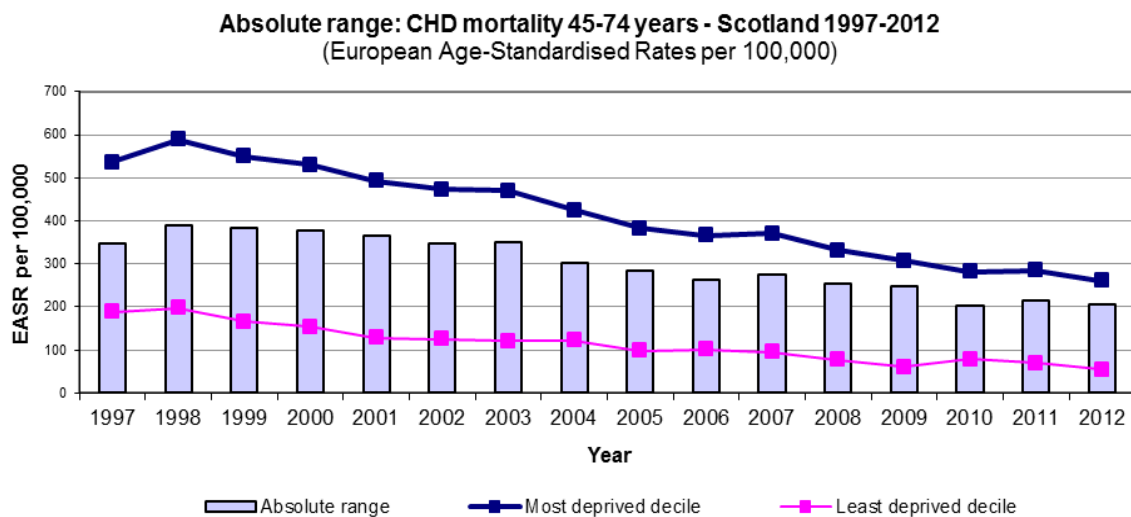
### **Inequalities gradient in 2012**



## Relative Index of Inequality (RII) over time



## Absolute range over time



## Scale / context

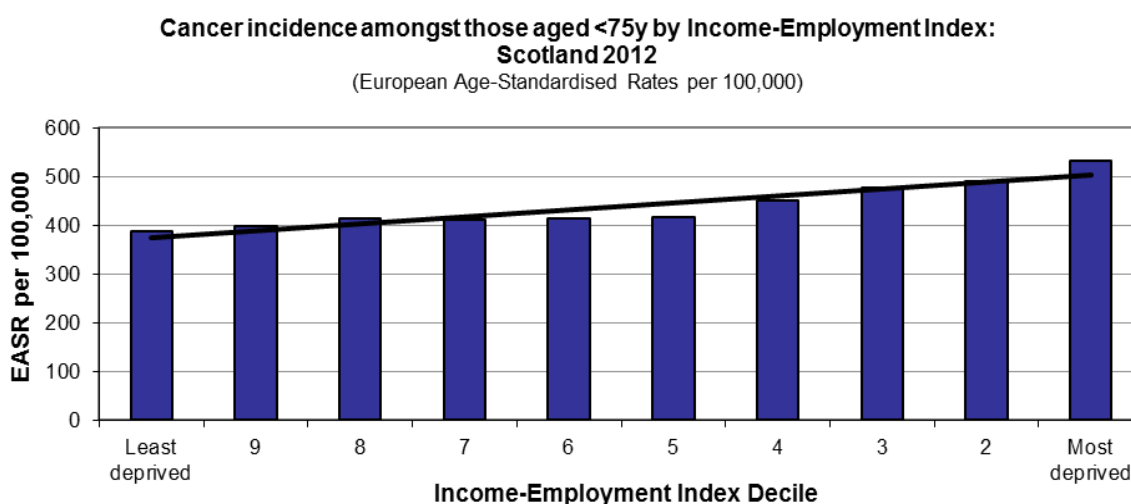
|             | <b>Number of deaths</b> | <b>Target population size</b> | <b>Rate per 100,000 (EASR)</b> |
|-------------|-------------------------|-------------------------------|--------------------------------|
| <b>1997</b> | 5,887                   | 1,635,590                     | 372.5                          |
| <b>1998</b> | 5,675                   | 1,646,711                     | 357.9                          |
| <b>1999</b> | 5,389                   | 1,658,124                     | 338.9                          |
| <b>2000</b> | 4,858                   | 1,670,660                     | 303.9                          |
| <b>2001</b> | 4,483                   | 1,687,422                     | 279.3                          |
| <b>2002</b> | 4,310                   | 1,706,141                     | 265.9                          |
| <b>2003</b> | 4,197                   | 1,727,112                     | 256.3                          |
| <b>2004</b> | 3,840                   | 1,751,037                     | 232.3                          |
| <b>2005</b> | 3,721                   | 1,774,865                     | 222.3                          |
| <b>2006</b> | 3,393                   | 1,799,382                     | 200.8                          |
| <b>2007</b> | 3,374                   | 1,827,320                     | 196.6                          |
| <b>2008</b> | 3,155                   | 1,856,874                     | 180.9                          |
| <b>2009</b> | 2,857                   | 1,885,693                     | 160.7                          |
| <b>2010</b> | 2,811                   | 1,914,226                     | 156.6                          |
| <b>2011</b> | 2,592                   | 1,941,253                     | 142.6                          |
| <b>2012</b> | 2,584                   | 1,964,203                     | 139.7                          |

## Cancer - incidence rate aged under 75 years

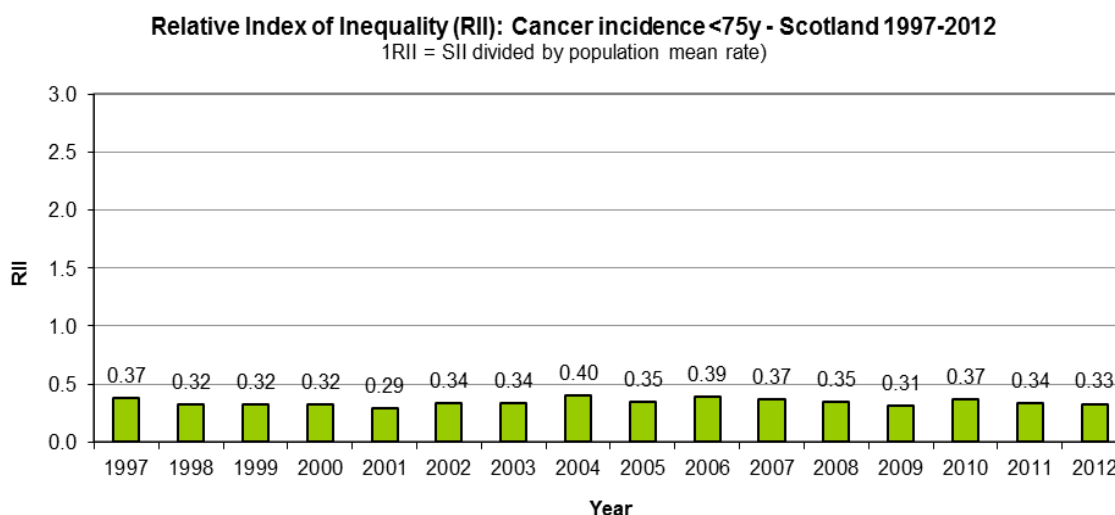
There were more than 20,000 new cases of cancer diagnosed in 2012 among people aged under 75. Although the number of cases increased, the age-standardised incidence rate remained broadly stable between 1997 and 2007, and appears to have increased slightly from that position in more recent years. Overall, the incidence of cancer is more common in the most deprived areas of Scotland than the least deprived (531.2 cases per 100,000 population compared to 388.4 per 100,000 in 2012), though this is not the case for all types of cancer.

While there have been short-term fluctuations in both the relative and absolute levels of inequality, there is no clear long-term trend.

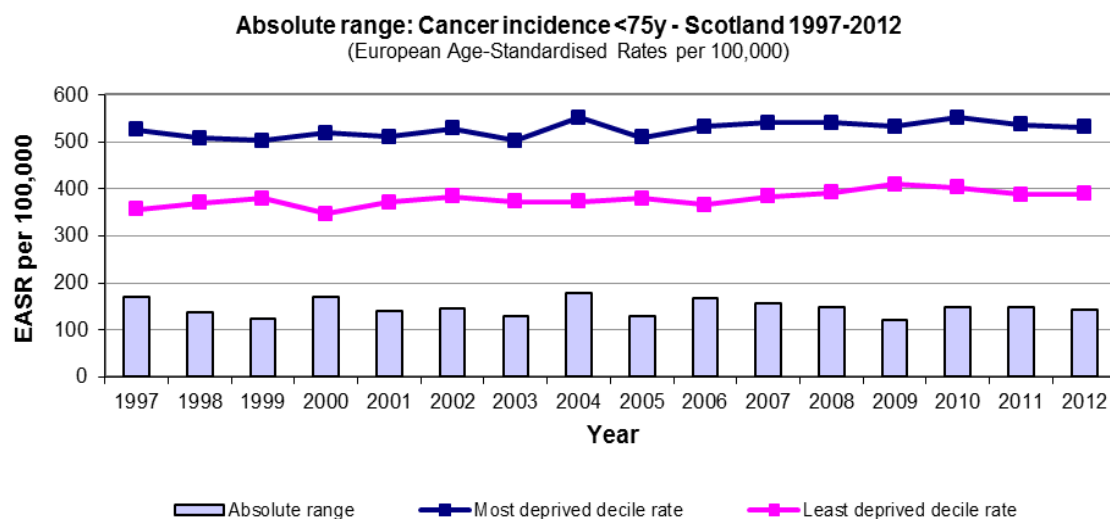
### **Inequalities gradient in 2012**



### **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) |
|-------------|---------------------|------------------------|-------------------------|
| <b>1997</b> | 17,167              | 4,740,269              | 427.4                   |
| <b>1998</b> | 17,109              | 4,729,975              | 424.3                   |
| <b>1999</b> | 16,914              | 4,721,298              | 417.5                   |
| <b>2000</b> | 17,138              | 4,708,667              | 420.6                   |
| <b>2001</b> | 17,147              | 4,703,661              | 418.9                   |
| <b>2002</b> | 17,530              | 4,701,958              | 423.6                   |
| <b>2003</b> | 17,574              | 4,702,431              | 420.8                   |
| <b>2004</b> | 18,159              | 4,714,233              | 430.3                   |
| <b>2005</b> | 17,987              | 4,735,320              | 421.9                   |
| <b>2006</b> | 18,167              | 4,752,425              | 423.3                   |
| <b>2007</b> | 18,775              | 4,783,452              | 430.8                   |
| <b>2008</b> | 19,449              | 4,811,453              | 439.7                   |
| <b>2009</b> | 19,999              | 4,835,007              | 446.6                   |
| <b>2010</b> | 20,015              | 4,858,058              | 441.9                   |
| <b>2011</b> | 20,208              | 4,888,316              | 441.3                   |
| <b>2012</b> | 20,296              | 4,895,114              | 436.8                   |



## Cancer incidence by type

Incidence rates by income-employment index decile are presented below for each of the four most common types of cancer.

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

Prostate cancer incidence has increased over time, with 95.6 new cases per 100,000 population in 2012 compared to 59.7 per 100,000 in 1997. Higher rates are observed in the least deprived areas, though this may be in part due to higher rates of testing in less deprived areas<sup>8</sup>. In 2012, the incidence rate was 113.2 per 100,000 in the least deprived areas, compared to 72.6 in the most deprived areas. Relative inequality has remained fairly low throughout the reporting period, with no clear trend.

### **Prostate cancer incidence trend tables**

#### **Scale/context**

|             | <b>Number of new cases</b> | <b>Target population size</b> | <b>Rate per 100,000 (EASR)</b> |
|-------------|----------------------------|-------------------------------|--------------------------------|
| <b>1997</b> | 1,037                      | 2,326,799                     | 59.7                           |
| <b>1998</b> | 1,113                      | 2,321,135                     | 63.7                           |
| <b>1999</b> | 1,168                      | 2,316,272                     | 66.1                           |
| <b>2000</b> | 1,180                      | 2,309,161                     | 66.5                           |
| <b>2001</b> | 1,309                      | 2,307,518                     | 72.9                           |
| <b>2002</b> | 1,509                      | 2,306,786                     | 82.7                           |
| <b>2003</b> | 1,560                      | 2,307,280                     | 84.7                           |
| <b>2004</b> | 1,737                      | 2,312,963                     | 92.1                           |
| <b>2005</b> | 1,632                      | 2,324,634                     | 85.6                           |
| <b>2006</b> | 1,723                      | 2,334,922                     | 89.4                           |
| <b>2007</b> | 1,780                      | 2,352,623                     | 90.2                           |
| <b>2008</b> | 1,906                      | 2,367,934                     | 94.8                           |
| <b>2009</b> | 2,030                      | 2,380,837                     | 99.0                           |
| <b>2010</b> | 1,925                      | 2,392,701                     | 91.7                           |
| <b>2011</b> | 2,094                      | 2,410,321                     | 98.6                           |
| <b>2012</b> | 2,076                      | 2,413,137                     | 95.6                           |

#### **Inequalities**

|                                   | 1997        | 1998        | 1999        | 2000        | 2001        | 2002        | 2003        | 2004        | 2005        | 2006        | 2007        | 2008        | 2009        | 2010        | 2011        | 2012        |
|-----------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>RII</b>                        | <i>0.43</i> | <i>0.41</i> | <i>0.41</i> | <i>0.57</i> | <i>0.52</i> | <i>0.45</i> | <i>0.49</i> | <i>0.23</i> | <i>0.32</i> | <i>0.38</i> | <i>0.48</i> | <i>0.40</i> | <i>0.43</i> | <i>0.32</i> | <i>0.39</i> | <i>0.42</i> |
| <b>Most deprived decile rate</b>  | 42.9        | 50.5        | 60.7        | 51.4        | 52.6        | 73.5        | 69.7        | 79.1        | 84.1        | 79.9        | 76.7        | 80.1        | 70.5        | 81.4        | 88.6        | 72.6        |
| <b>Least deprived decile rate</b> | 77.0        | 86.5        | 96.1        | 88.8        | 89.3        | 115.5       | 109.6       | 97.4        | 119.2       | 117.0       | 112.8       | 120.2       | 126.7       | 115.2       | 132.6       | 113.2       |
| <b>Absolute range</b>             | 34.1        | 36.0        | 35.3        | 37.3        | 36.7        | 42.0        | 39.9        | 18.2        | 35.1        | 37.1        | 36.1        | 40.0        | 56.3        | 33.8        | 43.9        | 40.6        |

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

<sup>8</sup> 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 reporting period, with 123.7 new cases per 100,000 population in 1997 compared to 143.6 per 100,000 in 2012. 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 less deprived populations<sup>9</sup>. The difference between rates in the most and least deprived areas has consistently been fairly low, but there has been fluctuation in both relative and absolute inequalities over time with no clear pattern.

### Breast cancer incidence trend tables

#### Scale/context

|      | Number of new cases | Target population size | Rate per 100,000 (EASR) |
|------|---------------------|------------------------|-------------------------|
| 1997 | 2,654               | 2,413,470              | 123.7                   |
| 1998 | 2,748               | 2,408,840              | 126.9                   |
| 1999 | 2,847               | 2,405,026              | 130.4                   |
| 2000 | 2,899               | 2,399,506              | 132.2                   |
| 2001 | 2,736               | 2,396,143              | 124.0                   |
| 2002 | 2,828               | 2,395,172              | 126.9                   |
| 2003 | 2,978               | 2,395,151              | 132.4                   |
| 2004 | 3,073               | 2,401,270              | 135.2                   |
| 2005 | 3,089               | 2,410,686              | 134.7                   |
| 2006 | 3,190               | 2,417,503              | 138.4                   |
| 2007 | 3,191               | 2,430,829              | 136.8                   |
| 2008 | 3,304               | 2,443,519              | 139.7                   |
| 2009 | 3,387               | 2,454,170              | 141.5                   |
| 2010 | 3,496               | 2,465,357              | 144.5                   |
| 2011 | 3,558               | 2,477,995              | 145.9                   |
| 2012 | 3,540               | 2,481,977              | 143.6                   |

### Inequalities

|                                   | 1997  | 1998        | 1999        | 2000  | 2001        | 2002        | 2003        | 2004        | 2005        | 2006        | 2007        | 2008        | 2009        | 2010        | 2011        | 2012        |
|-----------------------------------|-------|-------------|-------------|-------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>RII</b>                        | 0.01  | <i>0.21</i> | <i>0.20</i> | 0.14  | <i>0.15</i> | <i>0.15</i> | <i>0.22</i> | <i>0.01</i> | <i>0.28</i> | <i>0.04</i> | <i>0.18</i> | <i>0.16</i> | <i>0.27</i> | <i>0.18</i> | <i>0.14</i> | <i>0.20</i> |
| <b>Most deprived decile rate</b>  | 126.5 | 122.6       | 124.9       | 128.1 | 121.7       | 130.7       | 108.1       | 131.6       | 111.9       | 121.6       | 130.5       | 126.6       | 124.6       | 149.6       | 131.7       | 129.4       |
| <b>Least deprived decile rate</b> | 124.6 | 146.9       | 146.5       | 125.2 | 136.3       | 140.1       | 141.4       | 138.8       | 148.0       | 136.9       | 164.9       | 146.3       | 149.7       | 168.1       | 151.1       | 157.0       |
| <b>Absolute range</b>             | 1.9   | 24.4        | 21.6        | 2.8   | 14.6        | 9.4         | 33.3        | 7.2         | 36.1        | 15.3        | 34.4        | 19.7        | 25.1        | 18.5        | 19.4        | 27.5        |

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

<sup>9</sup>See <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

Cancer of the trachea, bronchus and lung incidence rates have fallen since 1997, though there are still around 3,000 new cases diagnosed each year. The 2012 rate, 65.6 cases per 100,000 population, is the lowest in the reporting period. Levels of absolute inequality have fluctuated throughout this period with no clear trend, but with higher rates consistently observed in the most deprived areas. In 2012, the incidence rate in the most deprived areas was more than four times higher than in the least deprived areas (134.9 new cases per 100,000 population, compared to 30.6 per 100,000). Relative inequality has increased since 1997. Although it has been broadly stable since 2003, it reached its highest level in the time series in 2012.

## Cancer of the trachea, bronchus and lung incidence trend tables

### Scale/context

|      | Number of new cases | Target population size | Rate per 100,000 (EASR) |
|------|---------------------|------------------------|-------------------------|
| 1997 | 3,064               | 4,740,269              | 78.5                    |
| 1998 | 3,090               | 4,729,975              | 78.8                    |
| 1999 | 2,869               | 4,721,298              | 73.0                    |
| 2000 | 2,877               | 4,708,667              | 72.7                    |
| 2001 | 2,797               | 4,703,661              | 70.4                    |
| 2002 | 2,920               | 4,701,958              | 72.9                    |
| 2003 | 2,810               | 4,702,431              | 69.2                    |
| 2004 | 2,890               | 4,714,233              | 70.4                    |
| 2005 | 2,850               | 4,735,320              | 68.7                    |
| 2006 | 2,891               | 4,752,425              | 69.3                    |
| 2007 | 2,938               | 4,783,452              | 69.1                    |
| 2008 | 2,935               | 4,811,453              | 68.0                    |
| 2009 | 3,021               | 4,835,007              | 69.4                    |
| 2010 | 2,949               | 4,858,058              | 67.0                    |
| 2011 | 2,954               | 4,888,316              | 66.3                    |
| 2012 | 2,985               | 4,895,114              | 65.6                    |

### Inequalities

|                                   | 1997  | 1998  | 1999  | 2000  | 2001  | 2002  | 2003  | 2004  | 2005  | 2006  | 2007  | 2008  | 2009  | 2010  | 2011  | 2012  |
|-----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <b>RII</b>                        | 1.29  | 1.30  | 1.35  | 1.28  | 1.21  | 1.36  | 1.59  | 1.42  | 1.51  | 1.53  | 1.51  | 1.58  | 1.52  | 1.59  | 1.46  | 1.62  |
| <b>Most deprived decile rate</b>  | 142.7 | 138.5 | 129.2 | 129.8 | 125.0 | 130.1 | 136.1 | 141.4 | 124.7 | 143.1 | 139.7 | 136.6 | 136.3 | 134.1 | 127.9 | 134.9 |
| <b>Least deprived decile rate</b> | 35.1  | 33.3  | 35.2  | 37.6  | 36.3  | 39.6  | 27.5  | 32.7  | 31.4  | 34.8  | 31.2  | 30.7  | 33.2  | 32.3  | 32.7  | 30.6  |
| <b>Absolute range</b>             | 107.7 | 105.2 | 94.0  | 92.2  | 88.7  | 90.5  | 108.6 | 108.7 | 93.3  | 108.4 | 108.4 | 105.9 | 103.2 | 101.8 | 95.3  | 104.3 |

## Colorectal cancer incidence rate aged under 75 years

Incidence of colorectal cancer, at around 50 new cases per 100,000 population since 1997, 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. Between 2009 and 2012, higher incidence was observed in the most deprived areas (for example, in 2012 there were 58.9 new cases per 100,000 population in the most deprived areas, compared to 47.0 per 100,000 in the least deprived). In some years (e.g. 2005) slightly higher incidence has been observed in the least deprived areas, while in others (e.g. 2000) 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) |
|------|---------------------|------------------------|-------------------------|
| 1997 | 1,969               | 4,740,269              | 50.0                    |
| 1998 | 2,026               | 4,729,975              | 51.3                    |
| 1999 | 1,995               | 4,721,298              | 50.4                    |
| 2000 | 2,127               | 4,708,667              | 53.4                    |
| 2001 | 2,125               | 4,703,661              | 52.9                    |
| 2002 | 2,027               | 4,701,958              | 50.0                    |
| 2003 | 2,003               | 4,702,431              | 48.9                    |
| 2004 | 2,006               | 4,714,233              | 48.5                    |
| 2005 | 1,994               | 4,735,320              | 47.6                    |
| 2006 | 2,043               | 4,752,425              | 48.4                    |
| 2007 | 2,096               | 4,783,452              | 48.8                    |
| 2008 | 2,333               | 4,811,453              | 53.7                    |
| 2009 | 2,350               | 4,835,007              | 53.3                    |
| 2010 | 2,401               | 4,858,058              | 53.9                    |
| 2011 | 2,450               | 4,888,316              | 54.2                    |
| 2012 | 2,321               | 4,895,114              | 50.4                    |

## Inequalities

|                                   | 1997 | 1998 | 1999 | 2000        | 2001        | 2002 | 2003        | 2004 | 2005        | 2006 | 2007 | 2008        | 2009 | 2010 | 2011 | 2012 |
|-----------------------------------|------|------|------|-------------|-------------|------|-------------|------|-------------|------|------|-------------|------|------|------|------|
| <b>RII</b>                        | 0.13 | 0.01 | 0.03 | <i>0.13</i> | <i>0.14</i> | 0.04 | <i>0.02</i> | 0.18 | <i>0.07</i> | 0.12 | 0.27 | <i>0.02</i> | 0.15 | 0.09 | 0.34 | 0.16 |
| <b>Most deprived decile rate</b>  | 51.8 | 46.4 | 48.1 | 50.8        | 56.4        | 53.4 | 43.8        | 54.5 | 44.3        | 52.1 | 56.7 | 53.2        | 56.9 | 53.2 | 63.8 | 58.9 |
| <b>Least deprived decile rate</b> | 42.4 | 43.7 | 46.9 | 51.7        | 59.7        | 51.1 | 51.2        | 47.7 | 52.6        | 47.0 | 41.0 | 55.2        | 48.9 | 49.4 | 43.6 | 47.0 |
| <b>Absolute range</b>             | 9.3  | 2.7  | 1.1  | 0.9         | 3.4         | 2.3  | 7.4         | 6.8  | 8.3         | 5.1  | 15.7 | 2.0         | 7.9  | 3.8  | 20.2 | 11.9 |

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

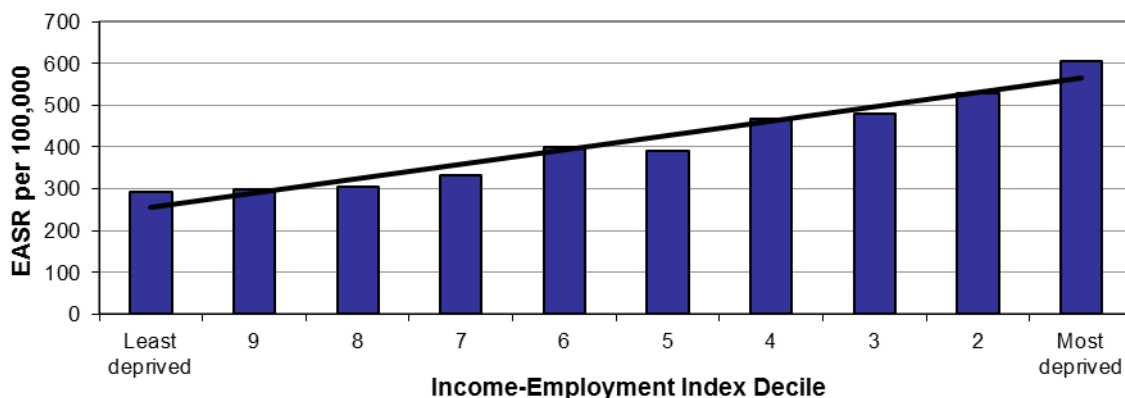
The mortality rate for cancer amongst those aged 45-74 years has fallen by 20% since 1997 (to 406.2 per 100,000, in 2012). People in this age group who live in the most deprived areas are more than twice as likely to die of cancer than those in the least deprived (607.1 per 100,000, compared to 291.3 per 100,000, in 2012).

Between 1997 and 2009, the death rate in the most deprived areas reduced by a similar amount as in the least deprived areas, though there was fluctuation throughout this period. The absolute gap has since narrowed, as mortality rates in the 10% most deprived areas have reduced. However, a similar reduction has not occurred over the same time period in the second, third or fourth most deprived deciles, while rates in the least deprived areas have not continued to decrease. Therefore, relative inequality, which has increased slightly over the long term, has been more stable since 2004, including over the years since 2009.

### **Inequalities gradient in 2012**

**Cancer mortality amongst those aged 45-74y by Income-Employment Index:  
Scotland 2012**

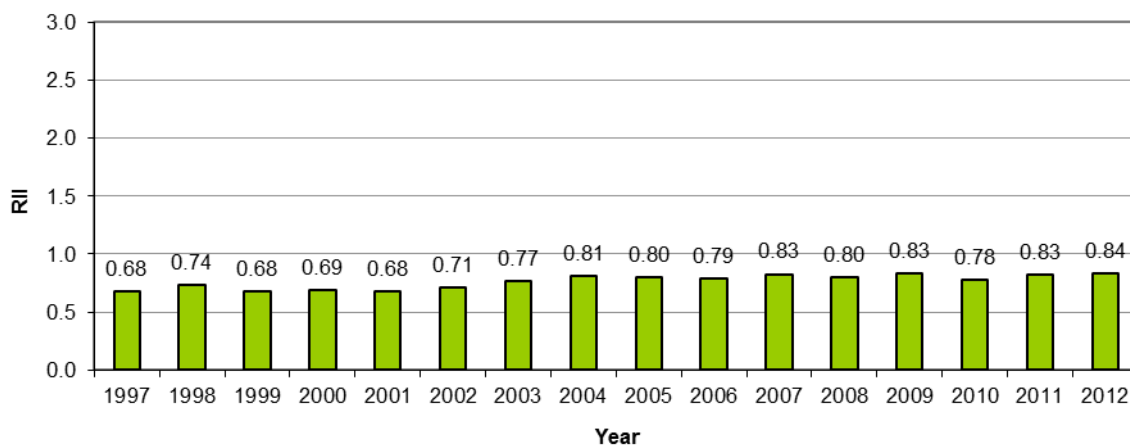
(European Age-Standardised Rates per 100,000)



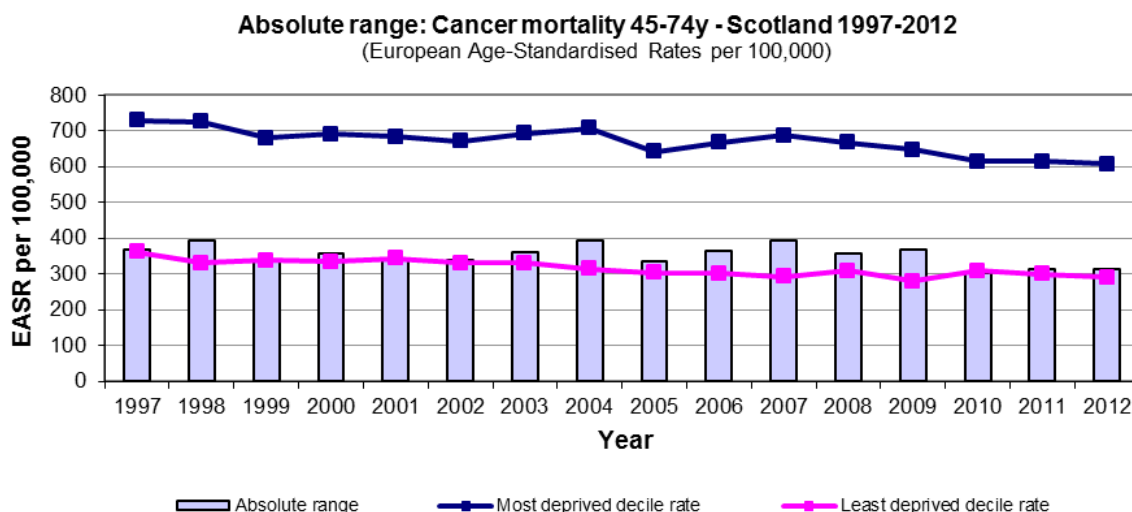
### **Relative Index of Inequality (RII) over time**

**Relative Index of Inequality (RII): Cancer mortality 45-74y - Scotland 1997-2012**

(RII = SII divided by population mean rate)



## Absolute range over time



## Scale / context

|             | Number of deaths | Target population size | Rate per 100,000 (EASR) |
|-------------|------------------|------------------------|-------------------------|
| <b>1997</b> | 8,068            | 1,635,590              | 509.1                   |
| <b>1998</b> | 7,995            | 1,646,711              | 501.9                   |
| <b>1999</b> | 7,904            | 1,658,124              | 494.4                   |
| <b>2000</b> | 7,776            | 1,670,660              | 484.8                   |
| <b>2001</b> | 7,903            | 1,687,422              | 489.2                   |
| <b>2002</b> | 7,850            | 1,706,141              | 481.2                   |
| <b>2003</b> | 7,706            | 1,727,112              | 467.4                   |
| <b>2004</b> | 7,678            | 1,751,037              | 460.9                   |
| <b>2005</b> | 7,606            | 1,774,865              | 451.8                   |
| <b>2006</b> | 7,486            | 1,799,382              | 441.3                   |
| <b>2007</b> | 7,569            | 1,827,320              | 439.5                   |
| <b>2008</b> | 7,536            | 1,856,874              | 431.0                   |
| <b>2009</b> | 7,481            | 1,885,693              | 421.2                   |
| <b>2010</b> | 7,394            | 1,914,226              | 411.1                   |
| <b>2011</b> | 7,428            | 1,941,253              | 408.5                   |
| <b>2012</b> | 7,514            | 1,964,203              | 406.2                   |

## Cancer deaths by type

Mortality rates by income-employment index decile are presented below for each of the four most common types of cancer.

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

Prostate cancer mortality rates have reduced slightly over time, from 39.0 deaths per 100,000 population in 1997 to 29.4 per 100,000 in 2012. 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, mortality rates were higher in the least deprived areas than the most deprived areas. The absolute range has not exceeded 20 deaths per 100,000 since 1998.

### **Prostate cancer mortality trend tables**

#### **Scale/ context**

|             | <b>Number of deaths</b> | <b>Target population size</b> | <b>Rate per 100,000 (EASR)</b> |
|-------------|-------------------------|-------------------------------|--------------------------------|
| <b>1997</b> | 272                     | 777,554                       | 39.0                           |
| <b>1998</b> | 260                     | 784,561                       | 37.3                           |
| <b>1999</b> | 289                     | 791,405                       | 40.6                           |
| <b>2000</b> | 276                     | 798,634                       | 38.9                           |
| <b>2001</b> | 270                     | 808,259                       | 37.7                           |
| <b>2002</b> | 285                     | 818,160                       | 39.3                           |
| <b>2003</b> | 274                     | 828,737                       | 37.3                           |
| <b>2004</b> | 292                     | 840,971                       | 39.6                           |
| <b>2005</b> | 246                     | 853,706                       | 32.8                           |
| <b>2006</b> | 254                     | 866,473                       | 33.0                           |
| <b>2007</b> | 265                     | 881,417                       | 34.5                           |
| <b>2008</b> | 259                     | 896,220                       | 32.7                           |
| <b>2009</b> | 258                     | 910,517                       | 32.2                           |
| <b>2010</b> | 253                     | 925,186                       | 30.7                           |
| <b>2011</b> | 252                     | 939,372                       | 30.5                           |
| <b>2012</b> | 250                     | 950,729                       | 29.4                           |

#### **Inequalities**

|                                   | 1997        | 1998        | 1999        | 2000        | 2001        | 2002        | 2003        | 2004        | 2005        | 2006        | 2007        | 2008        | 2009        | 2010        | 2011        | 2012        |
|-----------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>RII</b>                        | <i>0.37</i> | <i>0.51</i> | <i>0.23</i> | <i>0.21</i> | <i>0.07</i> | <i>0.36</i> | <i>0.38</i> | <i>0.02</i> | <i>0.10</i> | <i>0.46</i> | <i>0.02</i> | <i>0.12</i> | <i>0.20</i> | <i>0.32</i> | <i>0.09</i> | <i>0.29</i> |
| <b>Most deprived decile rate</b>  | 37.6        | 48.7        | 29.6        | 33.2        | 34.4        | 51.2        | 46.2        | 49.8        | 31.1        | 30.8        | 38.4        | 40.0        | 29.9        | 48.2        | 42.5        | 37.9        |
| <b>Least deprived decile rate</b> | 48.2        | 25.8        | 42.4        | 32.8        | 35.1        | 31.2        | 31.1        | 47.2        | 30.7        | 23.1        | 41.5        | 25.1        | 21.6        | 36.4        | 33.5        | 23.4        |
| <b>Absolute range</b>             | 10.6        | 22.9        | 12.8        | 0.4         | 0.7         | 20.0        | 15.1        | 2.6         | 0.3         | 7.7         | 3.2         | 14.9        | 8.3         | 11.8        | 9.0         | 14.5        |

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, from 76.3 per 100,000 population in 1997 to 56.6 per 100,000 in 2012. There have been very low levels of both relative and absolute inequality throughout this period, most recently (in 2012) with only three more deaths per 100,000 population reported in the least deprived areas compared to the most deprived (60.4 per 100,000, compared to 57.5 per 100,000). In some years, mortality rates are higher in the most deprived areas; in others, rates are higher in the least deprived areas; while, in some years, the differences between rates in the most and least deprived areas are negligible.

## Breast cancer mortality trend tables

### Scale/ context

|             | Number of deaths | Target population size | Rate per 100,000 (EASR) |
|-------------|------------------|------------------------|-------------------------|
| <b>1997</b> | 653              | 858,036                | 76.3                    |
| <b>1998</b> | 642              | 862,150                | 74.6                    |
| <b>1999</b> | 634              | 866,719                | 73.4                    |
| <b>2000</b> | 612              | 872,026                | 70.6                    |
| <b>2001</b> | 612              | 879,163                | 70.2                    |
| <b>2002</b> | 583              | 887,981                | 66.2                    |
| <b>2003</b> | 615              | 898,375                | 69.1                    |
| <b>2004</b> | 578              | 910,066                | 64.3                    |
| <b>2005</b> | 591              | 921,159                | 64.9                    |
| <b>2006</b> | 571              | 932,909                | 62.6                    |
| <b>2007</b> | 563              | 945,903                | 60.7                    |
| <b>2008</b> | 506              | 960,654                | 54.0                    |
| <b>2009</b> | 505              | 975,176                | 53.1                    |
| <b>2010</b> | 503              | 989,040                | 52.1                    |
| <b>2011</b> | 551              | 1,001,881              | 56.3                    |
| <b>2012</b> | 562              | 1,013,474              | 56.6                    |

## Inequalities

|                                   | 1997 | 1998 | 1999        | 2000        | 2001 | 2002        | 2003        | 2004 | 2005 | 2006        | 2007 | 2008        | 2009 | 2010 | 2011        | 2012        |
|-----------------------------------|------|------|-------------|-------------|------|-------------|-------------|------|------|-------------|------|-------------|------|------|-------------|-------------|
| <b>RII</b>                        | 0.01 | 0.16 | <i>0.17</i> | <i>0.03</i> | 0.14 | <i>0.03</i> | <i>0.06</i> | 0.35 | 0.30 | <i>0.06</i> | 0.29 | <i>0.06</i> | 0.30 | 0.14 | <i>0.22</i> | <i>0.06</i> |
| <b>Most deprived decile rate</b>  | 78.3 | 85.2 | 73.5        | 54.8        | 61.4 | 62.7        | 70.6        | 93.3 | 62.0 | 71.7        | 74.1 | 48.2        | 61.6 | 57.3 | 57.4        | 57.5        |
| <b>Least deprived decile rate</b> | 77.0 | 64.5 | 76.1        | 65.5        | 53.5 | 71.5        | 88.4        | 57.1 | 44.0 | 76.0        | 49.6 | 54.0        | 45.7 | 50.2 | 61.8        | 60.4        |
| <b>Absolute range</b>             | 1.3  | 20.7 | 2.6         | 10.7        | 7.9  | 8.8         | 17.7        | 36.3 | 18.0 | 4.3         | 24.5 | 5.8         | 15.9 | 7.1  | 4.5         | 3.0         |

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 160.2 per 100,000 population in 1997 to 120.0 per 100,000 in 2012 (a fall of 25%). Throughout this period, mortality rates have been around four to five times higher in the most deprived areas compared to the least deprived. While the absolute gap between the most and least deprived areas has fluctuated, relative inequality has increased over the long term and reached its highest level in 2012. There were 245.8 deaths per 100,000 population in the most deprived areas, compared to 55.3 per 100,000 in the least deprived, in 2012.

## 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              | 160.2                   |
| 1998 | 2,430            | 1,646,711              | 153.1                   |
| 1999 | 2,402            | 1,658,124              | 150.9                   |
| 2000 | 2,309            | 1,670,660              | 144.4                   |
| 2001 | 2,334            | 1,687,422              | 145.4                   |
| 2002 | 2,421            | 1,706,141              | 149.4                   |
| 2003 | 2,206            | 1,727,112              | 134.5                   |
| 2004 | 2,244            | 1,751,037              | 135.2                   |
| 2005 | 2,240            | 1,774,865              | 133.7                   |
| 2006 | 2,262            | 1,799,382              | 134.0                   |
| 2007 | 2,258            | 1,827,320              | 131.7                   |
| 2008 | 2,254            | 1,856,874              | 129.5                   |
| 2009 | 2,275            | 1,885,693              | 129.0                   |
| 2010 | 2,205            | 1,914,226              | 123.4                   |
| 2011 | 2,257            | 1,941,253              | 125.3                   |
| 2012 | 2,205            | 1,964,203              | 120.0                   |

### Inequalities

|                                   | 1997  | 1998  | 1999  | 2000  | 2001  | 2002  | 2003  | 2004  | 2005  | 2006  | 2007  | 2008  | 2009  | 2010  | 2011  | 2012  |
|-----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| <b>RII</b>                        | 1.25  | 1.42  | 1.31  | 1.27  | 1.32  | 1.28  | 1.48  | 1.43  | 1.47  | 1.47  | 1.51  | 1.53  | 1.49  | 1.52  | 1.44  | 1.59  |
| <b>Most deprived decile rate</b>  | 291.3 | 286.4 | 268.6 | 257.1 | 256.7 | 258.2 | 271.5 | 252.4 | 250.9 | 273.5 | 262.8 | 264.0 | 260.9 | 246.7 | 242.7 | 245.8 |
| <b>Least deprived decile rate</b> | 73.9  | 63.0  | 70.3  | 71.3  | 63.6  | 74.1  | 54.4  | 60.4  | 67.2  | 61.8  | 54.7  | 56.5  | 61.6  | 55.4  | 67.8  | 55.3  |
| <b>Absolute range</b>             | 217.4 | 223.4 | 198.3 | 185.8 | 193.1 | 184.1 | 217.1 | 192.0 | 183.7 | 211.7 | 208.1 | 207.5 | 199.3 | 191.3 | 174.9 | 190.5 |

## Colorectal cancer deaths aged 45-74 years

Between 1997 and 2012, colorectal cancer mortality rates fell by 29% to 37.3 deaths per 100,000 population. Despite consistently higher rates in the most deprived areas - in 2012 there were 51.8 per 100,000 population compared to 29.6 per 100,000 in the least deprived – 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              | 52.2                    |
| 1998 | 813              | 1,646,711              | 51.2                    |
| 1999 | 792              | 1,658,124              | 49.7                    |
| 2000 | 743              | 1,670,660              | 46.5                    |
| 2001 | 753              | 1,687,422              | 46.8                    |
| 2002 | 752              | 1,706,141              | 46.2                    |
| 2003 | 735              | 1,727,112              | 44.7                    |
| 2004 | 712              | 1,751,037              | 43.0                    |
| 2005 | 738              | 1,774,865              | 43.8                    |
| 2006 | 702              | 1,799,382              | 41.4                    |
| 2007 | 709              | 1,827,320              | 41.3                    |
| 2008 | 762              | 1,856,874              | 43.7                    |
| 2009 | 726              | 1,885,693              | 40.9                    |
| 2010 | 647              | 1,914,226              | 35.9                    |
| 2011 | 666              | 1,941,253              | 36.6                    |
| 2012 | 687              | 1,964,203              | 37.3                    |

### Inequalities

|                                   | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|-----------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| <b>RII</b>                        | 0.31 | 0.12 | 0.09 | 0.45 | 0.20 | 0.17 | 0.19 | 0.69 | 0.19 | 0.30 | 0.26 | 0.71 | 0.25 | 0.57 | 0.50 | 0.54 |
| <b>Most deprived decile rate</b>  | 60.3 | 55.5 | 47.3 | 52.6 | 64.7 | 51.2 | 49.1 | 58.0 | 39.4 | 43.9 | 55.3 | 56.7 | 45.1 | 52.0 | 49.1 | 51.8 |
| <b>Least deprived decile rate</b> | 49.9 | 42.3 | 40.4 | 31.2 | 42.9 | 44.4 | 44.7 | 28.6 | 33.2 | 25.5 | 33.5 | 35.1 | 32.4 | 25.7 | 26.3 | 29.6 |
| <b>Absolute range</b>             | 10.5 | 13.2 | 6.9  | 21.4 | 21.8 | 6.8  | 4.4  | 29.4 | 6.2  | 18.5 | 21.7 | 21.6 | 12.7 | 26.3 | 22.8 | 22.3 |

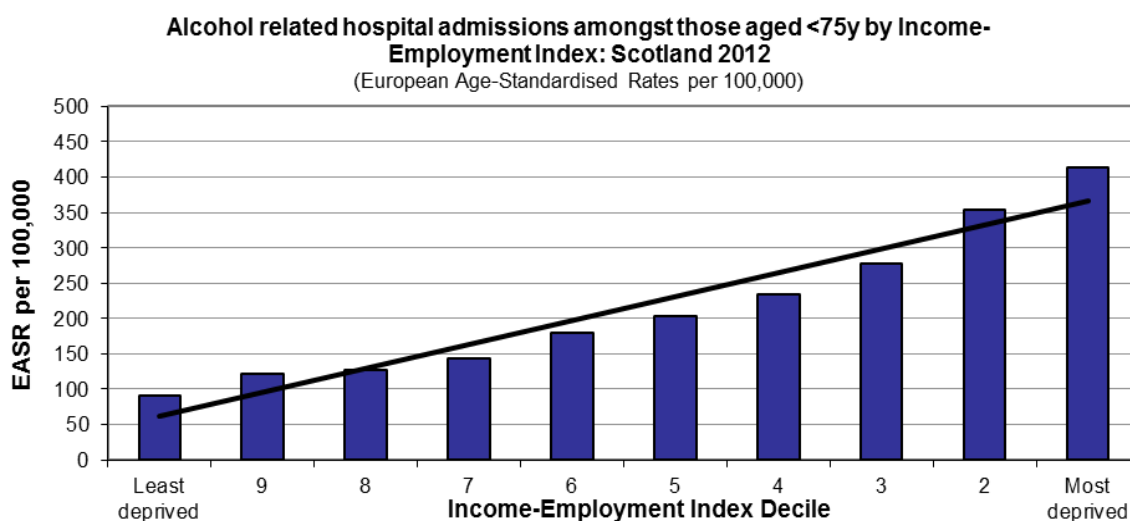
## Alcohol - first ever hospital admission aged under 75 years

Between 1997 and 2012, rates of new hospital admissions for alcohol-related conditions among those aged under 75 years fell by 24% to 214.6 new cases per 100,00 population. These types of admissions are around five times more common in the most deprived areas compared to the least deprived. In 2012, there were 413.1 per 100,000 population in the most deprived areas, compared to 90.4 per 100,000 in areas of least deprivation.

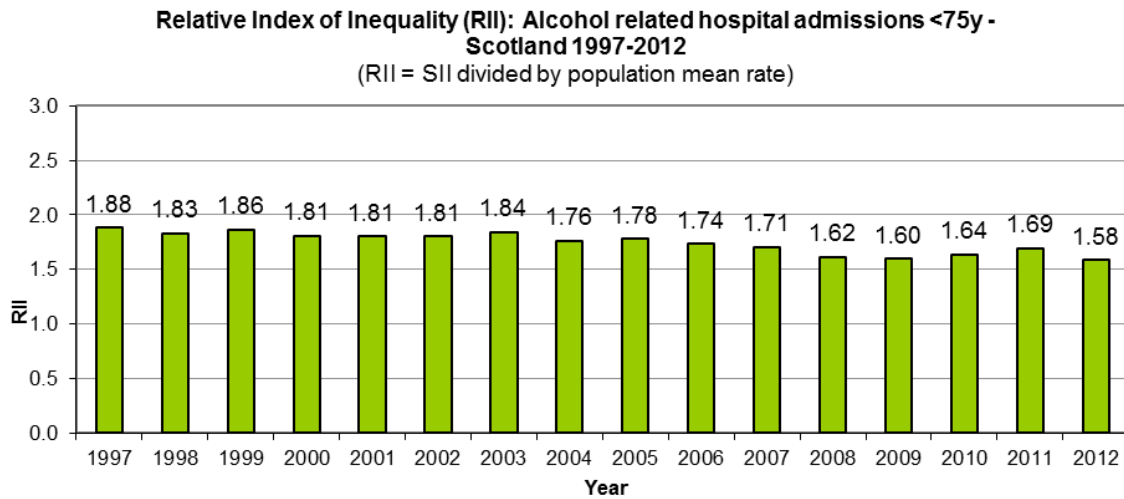
A gradual downward trend was observed in relative inequality from 1997, which, since 2008, had begun to stabilise. However, the rate of relative inequality in 2012 reached its lowest level in the time series.

Absolute inequality has also reduced over time, despite some fluctuation, and is now at the lowest level in the time series. The reduction over the long term in both relative and absolute inequality is largely due to the fall in deaths in the most deprived areas, which have been reducing more quickly than those in the least deprived.

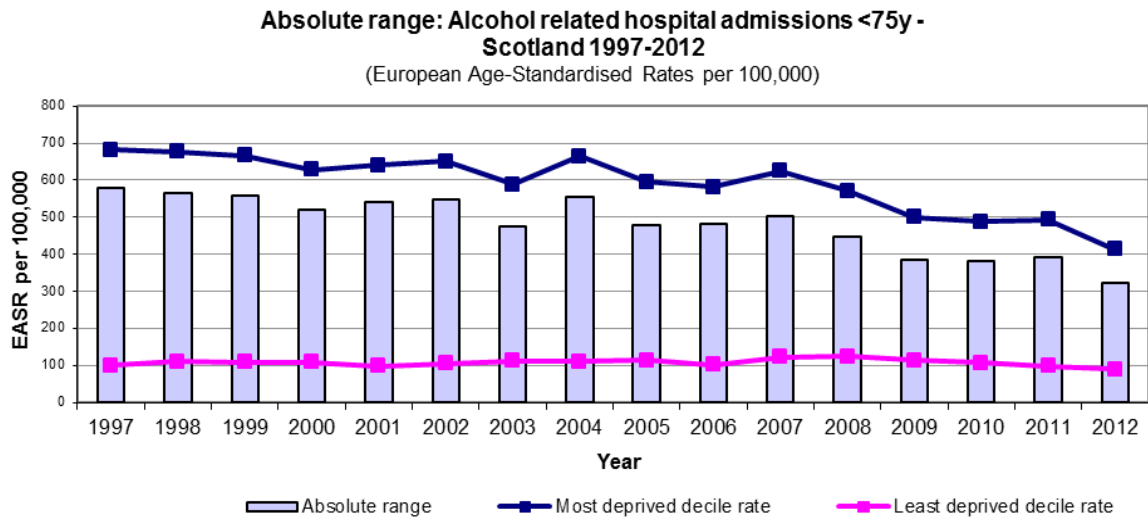
### **Inequalities gradient in 2012**



## Relative Index of Inequality (RII) over time



## Absolute range over time



## Scale / Context

|             | <b>Number of new cases</b> | <b>Target population size</b> | <b>Rate per 100,000 (EASR)</b> |
|-------------|----------------------------|-------------------------------|--------------------------------|
| <b>1997</b> | 12,483                     | 4,740,269                     | 282.0                          |
| <b>1998</b> | 12,806                     | 4,729,975                     | 288.2                          |
| <b>1999</b> | 12,689                     | 4,721,298                     | 285.4                          |
| <b>2000</b> | 12,223                     | 4,708,667                     | 273.0                          |
| <b>2001</b> | 12,864                     | 4,703,661                     | 286.0                          |
| <b>2002</b> | 12,863                     | 4,701,958                     | 285.0                          |
| <b>2003</b> | 12,227                     | 4,702,431                     | 271.8                          |
| <b>2004</b> | 13,337                     | 4,714,233                     | 294.9                          |
| <b>2005</b> | 12,542                     | 4,735,320                     | 275.0                          |
| <b>2006</b> | 12,682                     | 4,752,425                     | 274.4                          |
| <b>2007</b> | 13,641                     | 4,783,452                     | 290.7                          |
| <b>2008</b> | 13,182                     | 4,811,453                     | 278.9                          |
| <b>2009</b> | 11,852                     | 4,835,007                     | 249.7                          |
| <b>2010</b> | 11,195                     | 4,858,058                     | 234.2                          |
| <b>2011</b> | 11,066                     | 4,888,316                     | 230.0                          |
| <b>2012</b> | 10,344                     | 4,895,114                     | 214.6                          |

## Alcohol - deaths aged 45-74 years

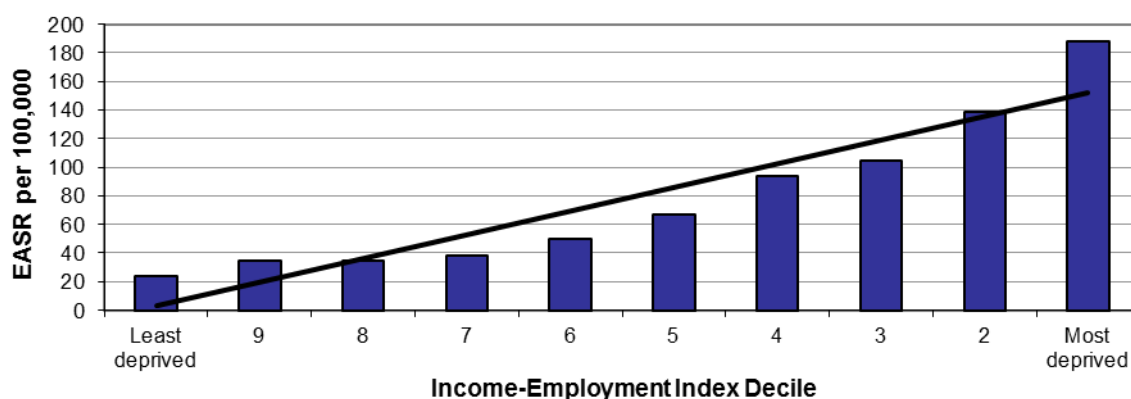
Alcohol-related deaths among those aged 45-74 years, which peaked at around 1,900 in 2006, have continued to fall. At 1,441 deaths, or 74.3 deaths per 100,000 population, figures for 2012 are the lowest in the reporting period. However, the rate in the most deprived areas is around 8 times higher than in areas of low deprivation (187.6 per 100,000 compared to 24.0 per 100,000).

The longer term pattern in alcohol-related deaths has been driven by variations in the most deprived areas. This pattern resulted in a widening of inequalities in both relative and absolute terms until 2006, when absolute inequality levels began to fall (the difference between rates in the most and least deprived areas in 2012 was the smallest observed in the reporting period). Over the same period, relative inequality levels have fluctuated, and, despite consecutive drops between 2008 and 2011, relative inequality is now the highest observed since 2008, as rates dropped to their lowest level in the least deprived areas in 2012.

### **Inequalities gradient in 2012**

**Alcohol related mortality amongst those aged 45-74y by Income-Employment Index: Scotland 2012**

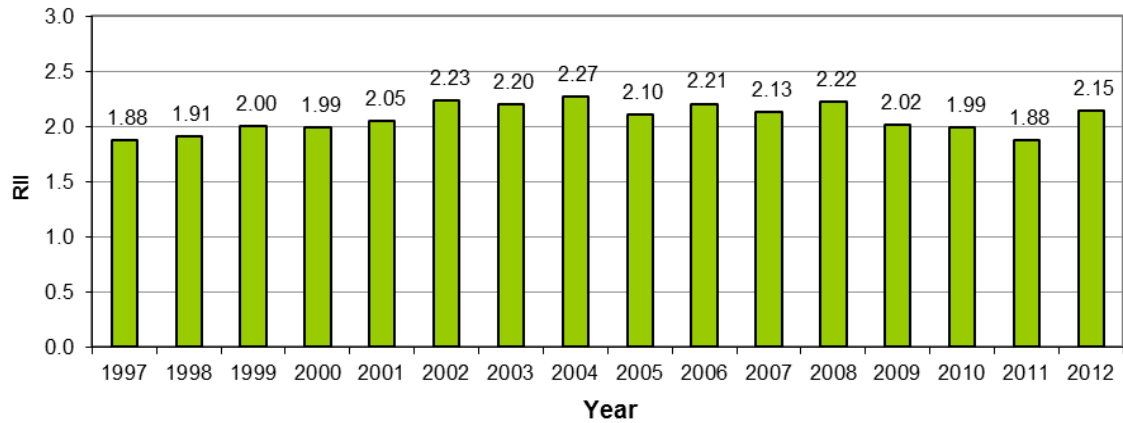
(European Age-Standardised Rates per 100,000)



## Relative Index of Inequality (RII) over time

**Relative Index of Inequality (RII): Alcohol related mortality 45-74y: Scotland 1997-2012**

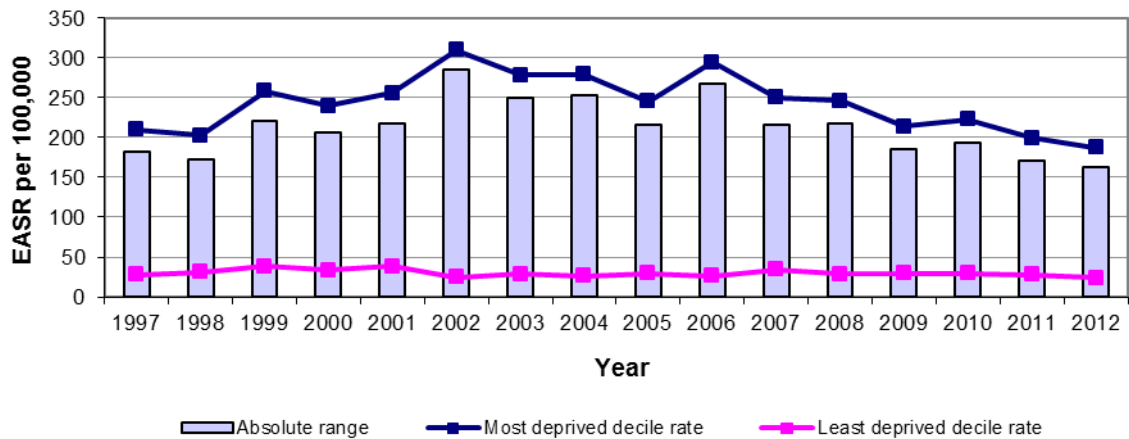
(RII = SII divided by population mean rate)



## Absolute range over time

**Absolute range: Alcohol related mortality 45-74y - Scotland 1997-2012**

(European Age-Standardised Rates per 100,000)



## Scale / context

|             | <b>Number of deaths</b> | <b>Target population size</b> | <b>Rate per 100,000 (EASR)</b> |
|-------------|-------------------------|-------------------------------|--------------------------------|
| <b>1997</b> | 1,318                   | 1,635,590                     | 81.1                           |
| <b>1998</b> | 1,415                   | 1,646,711                     | 86.4                           |
| <b>1999</b> | 1,508                   | 1,658,124                     | 91.5                           |
| <b>2000</b> | 1,489                   | 1,670,660                     | 89.8                           |
| <b>2001</b> | 1,565                   | 1,687,422                     | 93.5                           |
| <b>2002</b> | 1,753                   | 1,706,141                     | 103.5                          |
| <b>2003</b> | 1,749                   | 1,727,112                     | 102.1                          |
| <b>2004</b> | 1,764                   | 1,751,037                     | 101.5                          |
| <b>2005</b> | 1,790                   | 1,774,865                     | 101.6                          |
| <b>2006</b> | 1,899                   | 1,799,382                     | 106.7                          |
| <b>2007</b> | 1,801                   | 1,827,320                     | 99.5                           |
| <b>2008</b> | 1,782                   | 1,856,874                     | 97.0                           |
| <b>2009</b> | 1,611                   | 1,885,693                     | 86.4                           |
| <b>2010</b> | 1,674                   | 1,914,226                     | 88.5                           |
| <b>2011</b> | 1,571                   | 1,941,253                     | 82.4                           |
| <b>2012</b> | 1,441                   | 1,964,203                     | 74.3                           |

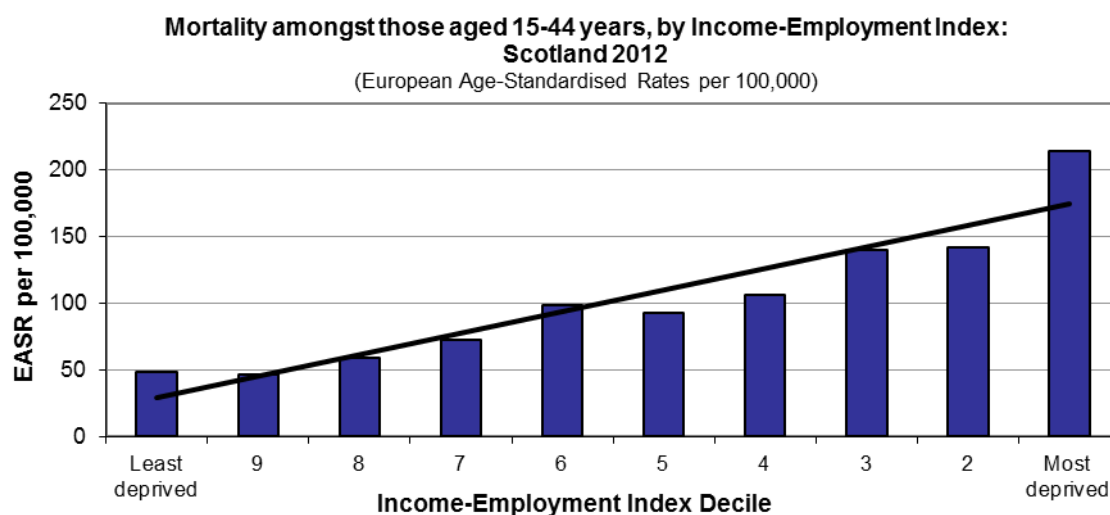


## All-cause mortality aged 15-44 years

Between 1997 and 2011, the mortality rate amongst those aged 15-44 years varied between 109 and 122 deaths per 100,000 population, and decreased to 103 per 100,000 in 2012. Within this age group, the drug-related death rate has more than doubled over the same period (to 20.8 per 100,000). The rate of death from assault, despite a decrease in the last year, has been relatively stable (at around 2 to 4 deaths per 100,000 population) while the suicide rate has dropped on consecutive years since 2008 to 18.3 deaths per 100,000 population - the lowest in the time series<sup>10</sup>.

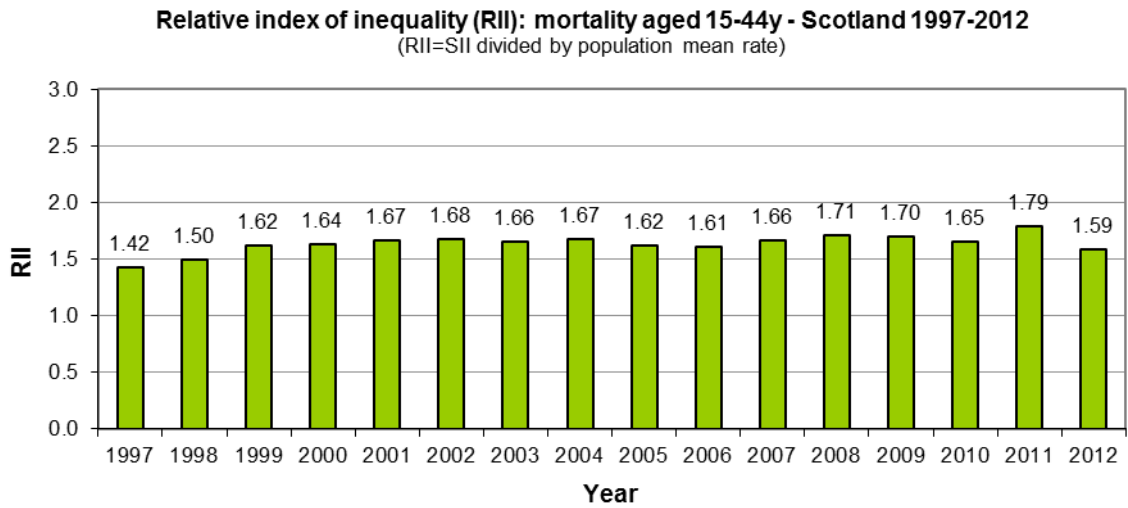
Deaths amongst those aged 15-44 years are more than four times as common in deprived areas than in areas of low deprivation (213.8 per 100,000 population compared to 48.6 per 100,000, in 2012). Relative inequality levels increased between 2007 and 2011 to their highest level in the time series, before dropping sharply in 2012 to their lowest level since 1998. This followed a reduction in mortality rates in the most deprived areas, while conversely rates in the least deprived areas increased.

### **Inequalities gradient in 2012**

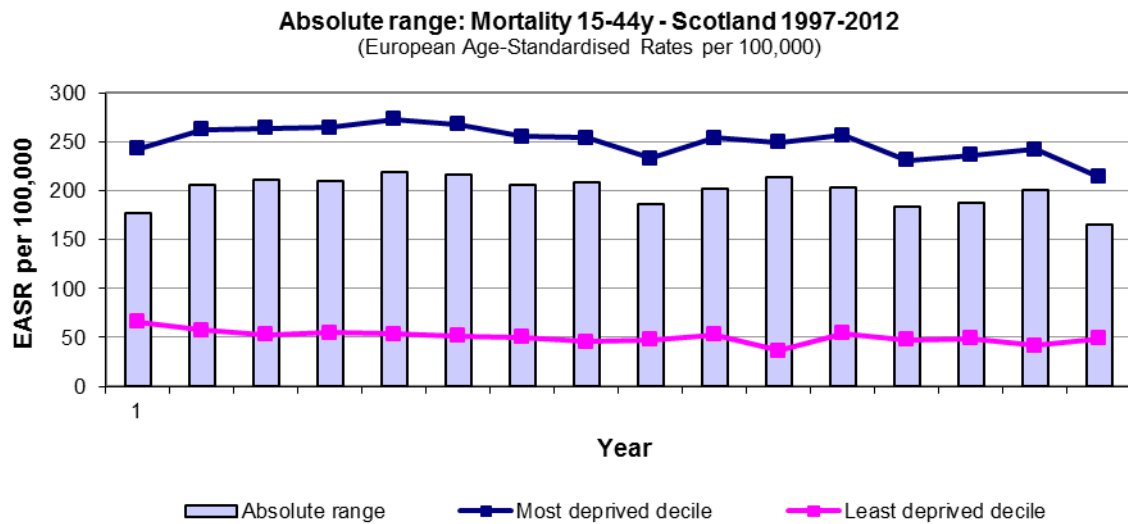


<sup>10</sup> See Annex 2 for full details on the way suicides were coded. Data in this report are defined consistently over time to aid interpretation of long-term trends.

## 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 | 2,440                       | 2,158,030              | 116.3                   |
| 1998 | 2,507                       | 2,142,787              | 119.4                   |
| 1999 | 2,507                       | 2,129,794              | 119.0                   |
| 2000 | 2,501                       | 2,118,568              | 118.7                   |
| 2001 | 2,509                       | 2,111,242              | 119.0                   |
| 2002 | 2,566                       | 2,102,670              | 122.0                   |
| 2003 | 2,461                       | 2,094,408              | 116.9                   |
| 2004 | 2,409                       | 2,088,563              | 114.7                   |
| 2005 | 2,305                       | 2,091,415              | 109.3                   |
| 2006 | 2,482                       | 2,091,581              | 118.3                   |
| 2007 | 2,461                       | 2,097,902              | 117.5                   |
| 2008 | 2,443                       | 2,096,495              | 117.5                   |
| 2009 | 2,389                       | 2,092,065              | 115.1                   |
| 2010 | 2,229                       | 2,087,635              | 108.6                   |
| 2011 | 2,262                       | 2,092,311              | 110.8                   |
| 2012 | 2,071                       | 2,077,902              | 102.8                   |

Note the total number of deaths in 1998 and 1997 has been subject to a minor revision since the previous report.

|      | Deaths from assault |                  | Drug related deaths |                  | Suicides |                  |
|------|---------------------|------------------|---------------------|------------------|----------|------------------|
|      | Number              | EASR per 100,000 | Number              | EASR per 100,000 | Number   | EASR per 100,000 |
| 1997 | 56                  | 2.6              | 196                 | 8.9              | 518      | 23.9             |
| 1998 | 65                  | 3.0              | 227                 | 10.6             | 526      | 24.4             |
| 1999 | 86                  | 4.0              | 274                 | 12.9             | 529      | 24.7             |
| 2000 | 60                  | 2.9              | 268                 | 12.7             | 541      | 25.6             |
| 2001 | 63                  | 3.0              | 289                 | 13.8             | 531      | 25.3             |
| 2002 | 76                  | 3.6              | 345                 | 16.7             | 539      | 25.7             |
| 2003 | 71                  | 3.4              | 282                 | 13.6             | 456      | 21.8             |
| 2004 | 78                  | 3.8              | 311                 | 15.2             | 475      | 22.7             |
| 2005 | 50                  | 2.4              | 277                 | 13.4             | 436      | 21.0             |
| 2006 | 83                  | 4.0              | 350                 | 17.1             | 435      | 20.9             |
| 2007 | 54                  | 2.6              | 392                 | 19.1             | 453      | 21.8             |
| 2008 | 53                  | 2.5              | 477                 | 23.3             | 480      | 23.4             |
| 2009 | 47                  | 2.3              | 436                 | 21.3             | 432      | 20.8             |
| 2010 | 54                  | 2.6              | 384                 | 18.9             | 423      | 20.5             |
| 2011 | 53                  | 2.6              | 454                 | 22.5             | 420      | 20.5             |
| 2012 | 37                  | 1.9              | 416                 | 20.8             | 375      | 18.3             |

## Annex 1: 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.

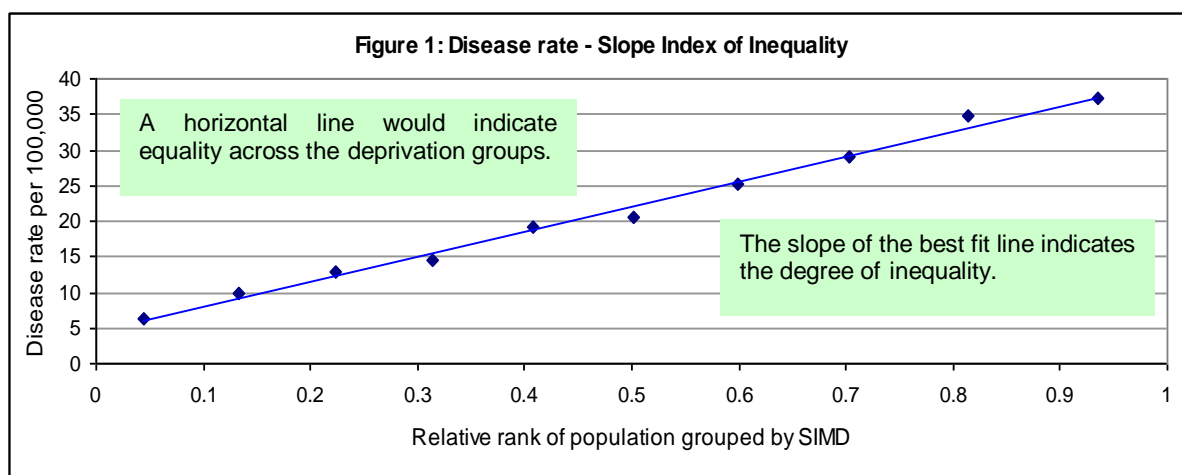
Information about different measures of inequality and their calculation was based on work done by the Scottish Public Health Observatory, available at: [http://www.scotpho.org.uk/home/Publications/scotphoreports/pub\\_measuringinequalities.asp](http://www.scotpho.org.uk/home/Publications/scotphoreports/pub_measuringinequalities.asp)

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), indicating no inequalities. The larger the absolute value of SII, the greater 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 approach<sup>11</sup>. 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 income and employment domains. The reasoning behind this was 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

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

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 ensures the deciles 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 considered to be important for the types of inequalities analyses presented in this report.

#### European age-standardised rates

Rates are age-standardised in order to show patterns over time on a consistent basis, taking account of changes in the age distribution of the Scottish population, therefore more clearly showing any underlying trend. Similar, age-standardisation allows comparisons of rates for different countries, by taking account of differences in the age distributions in the populations of each country.

The 2013 European Standard Population (ESP) has been used to calculate European age-standardised rates included in this publication. Previous versions of this report have used the ESP which was first produced in 1976. The impact of the change is illustrated in Annex 2.

## Annex 2: Data sources and quality

### **Data quality**

Except where the source data is held by Scottish Government (i.e. the mental wellbeing indicator), aggregate data is provided by National Records of Scotland for the all-cause mortality and alcohol mortality indicators, and by ISD Scotland for all other indicators in this report. Scottish Government statisticians carry out quality assurance checks on the aggregate data, comparing it with past trends and against other published data, such as national level data published by NRS or ISD. For the mental wellbeing indicator, Scottish Government statisticians quality assure the aggregate data in the same way but take the additional step of double checking the programming methods used to derive the figures within the responsible team.

ISD Scotland and NRS are responsible for the quality assurance of their own datasets. Detailed information on the quality control of the relevant ISD datasets is available online<sup>12</sup>. National Records of Scotland have published detailed information on the quality of data on deaths<sup>13</sup>. Analysts at both ISD and NRS are provided with income-employment decile-datazone lookups and population estimates before a request for aggregate data is submitted.

### **Revisions and timeliness of report**

Our general approach to revisions and release schedules is described at the following web address: <http://www.scotland.gov.uk/Topics/Statistics/Browse/Health/TrendHealthOutcome/Results>

For this year's publication, the mental wellbeing indicator could not be updated as the data would not be available until December 2014. Users will be consulted about the most appropriate time and method for the next update to that indicator. The healthy life expectancy indicator is updated every second year and will next be included in the 2015 report. The following revisions apply to this year's report:

- Revisions to income-employment methodology

Income-employment deprivation deciles have been recalculated for all years. This takes account of revised population estimates between years 2002 and 2010, by datazone, published by National Records of Scotland in May 2014. Other changes to the application of SIMD in the income-employment decile methodology were implemented, in discussion with the technical group and Scottish Government statisticians. These are:

For years 1997 up to 2004, deciles have been derived from the income and employment domains of SIMD 2004. This is a revision from previous reports which defined income-employment deciles on SIMD 2006 for the earliest years in the time

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<sup>12</sup> <http://www.isdscotland.org/Products-and-Services/Hospital-Records-Data-Monitoring/>  
<http://www.isdscotland.org/Health-Topics/Cancer/Scottish-Cancer-Registry/Quality-Assurance/>

<sup>13</sup> <http://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/vital-events/deaths/deaths-background-information/quality-of-nrs-data-on-deaths>

series. This change has a relatively small impact on inequalities compared to previous reports. The benefit is that deciles are now based on SIMD data closer to the year of each point in the time series.

Datazone rankings for the SIMD 2009 income domain were corrected in 2010, but the corrections were not reflected in this report until this year's update. For 2007 and 2008, the revised version of the SIMD 2009 income domain has been used in the derivation of income-employment deciles in this report. The impact of the correction for the full list of datazone ranks is shown at the following web address: <http://www.scotland.gov.uk/Topics/Statistics/SIMD/SIMD09V2DZImpact>

For 2009, the first annual update to income and employment data in SIMD 2009 (denoted SIMD 2009 + 1) has been used to derive income-employment deciles. This is a change from previous reports which used the unrevised, original SIMD 2009 ranks. This change also means deciles are based on underlying SIMD data closer to the relevant point in the time series.

For 2010, the second annual update (denoted SIMD 2009 + 2) has been used, in line with previous reports. For 2011 onwards, SIMD 2012 has been used, also in line with previous reports.

Information on use of SIMD to analyse change over time is provided on the Scottish Government website at the following address: <http://www.scotland.gov.uk/Topics/Statistics/SIMD/ChangeOverTimePaper>

- Rebased population estimates for Scotland

Population estimates for Scotland between the years 2002 and 2010 were updated by National Records of Scotland (NRS) in December 2013, and then in May 2014 at datazone level. The revised estimates are based on the 2011 Census. Further information is available on the NRS website: <http://www.nrscotland.gov.uk/statistics-and-data/statistics/statistics-by-theme/population/population-estimates/mid-year-population-estimates/mid-2002-to-mid-2010-revision>

These revisions impact the calculation of age-standardised rates and also the income-employment methodology described above.



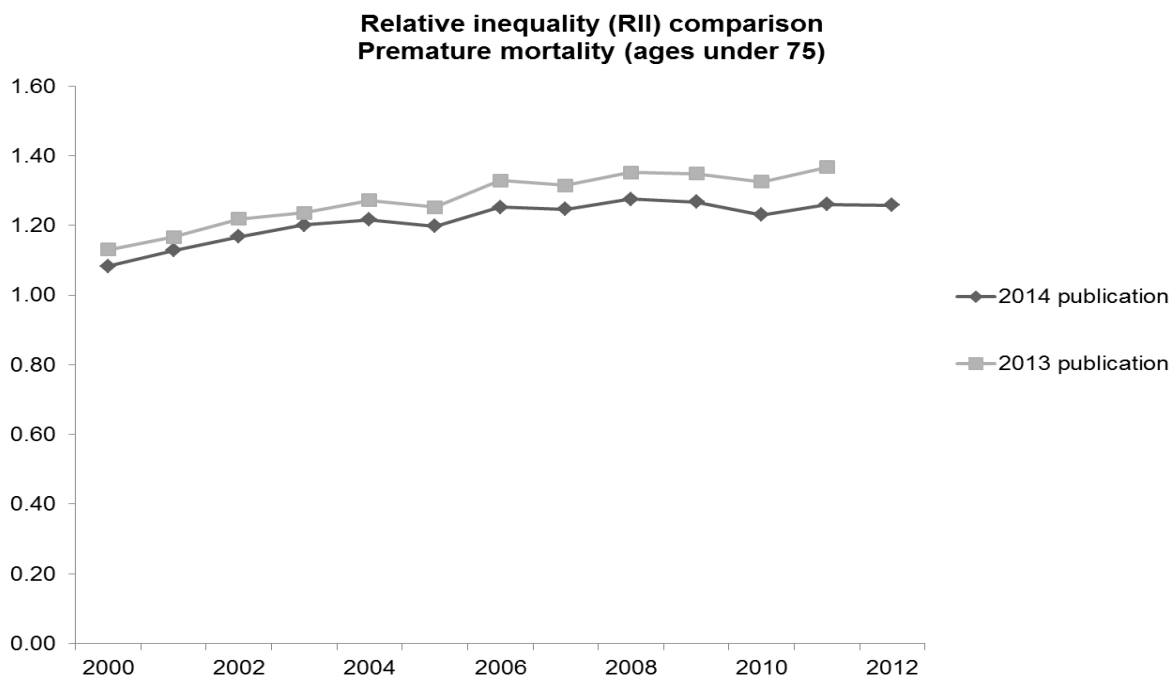
- **New European Standard Population**

Because the 2013 ESP is more heavily weighted towards older ages than the 1976 ESP, there is a significant increase in most age-standardised rates when using the 2013 ESP. While age-standardised (mortality and incidence) rates included in this report are all shown for specific age groups, there is still a significant impact of moving to the new ESP. Although there is a step change in rates, patterns over time are unchanged. Detailed information on the impact of moving to the 2013 ESP on mortality rates in Scotland has been published by NRS:

<http://www.nrscotland.gov.uk/files//statistics/age-standardised-death-rates-esp/age-standard-death-rates-background.pdf>

The focus of this report is on inequalities, i.e. the absolute and relative differences in rates between areas on a scale of deprivation. The scale of impact of the new ESP is smaller when measuring relative inequalities. Analysis of the net impact of revisions to income-employment methodology, rebased population estimates and the new ESP on all indicators was carried out in the quality assurance stage of this report's production. The effect is slightly greater in later years, for two reasons. Firstly, population estimates being rebased on the 2011 Census has a greater impact in those years. Secondly, the correction to the application of SIMD 2009 for years 2007 and 2008, and the move to using the first annual update of SIMD 2009 for the year 2009, introduces small changes for those years.

For all indicators, patterns over time followed a similar pattern to those previously reported. The following chart illustrates the net impact of these methodological changes on relative inequality trends for the premature mortality indicator.



- Probable suicide coding

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, and the change was reflected in the 2013 version of this report with a 'break in series' in trends from 2011. This year, probable suicide rates have been presented entirely on the basis of the old coding, in order to aid interpretation of long-term trends.

- Low birthweight: RII

Quality assurance of data for previous years has identified that relative inequality in the low birthweight indicator was incorrectly displayed for the year 2008 in previous versions of this report. RII had been erroneously displayed as 0.87 rather than 0.77 due to a data input error.

## **Pre-release access**

In accordance with the Pre-release Access to Official Statistics (Scotland) Order 2008, pre-release access to these statistics was provided to Scottish Government policy and communications colleagues 5 working days before release for the purposes of briefing ministers. NHS Health Scotland were also provided pre-release access from 5 working days before release for the purposes of making a statement or issuing a press release at the time of, or shortly after, publication.

## **Indicators**

### **▪ 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.

### **▪ 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). Low 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 2003<sup>14</sup>.

- **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).

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

- **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

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<sup>14</sup> See for further information: [Centile charts for birthweight for gestational age for Scottish singleton births](#), Sandra Bonellie

- **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'.

Notes to tables

P = Provisional

RII = Relative index of inequality

EASR = European age-standardised rate using the 2013 European Standard Population

ICD = International classification of disease

BW = Birth weight

CHD = Coronary Heart Disease

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The data collected for this statistical bulletin:

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