# The Segment Tool

**Updated May 2016**

**Segmenting life expectancy gaps by cause of death**

## Key results for England

### Introduction

The Segment Tool has been developed by Public Health England's (PHE) Epidemiology and Surveillance team and provides information on the causes of death that are driving inequalities in life expectancy at local area level. Targeting the causes of death which contribute most to the life expectancy gap should have the biggest impact on reducing inequalities.

The tool provides data tables and charts showing the breakdown of the life expectancy gap in 2012 to 2014 for two comparisons:

1. The gap between the local authority as a whole and England as a whole.
2. The gap between the most deprived quintile of the selected local authority and the least deprived quintile of the local authority.

The tool, along with a user guide and technical document, can be downloaded from  http://fingertips.phe.org.uk/profile/segment.

This document presents key results at national level, specifically looking at the gap between the most deprived quintile of England and the least deprived quintile of England.

**Due to changes made in this version of the Segment Tool, the results presented here are not directly comparable with previous versions.**

### Interpreting the charts

Two types of chart are included below.

The scarf chart shows, for each broad cause of death, the percentage contribution that it makes to the overall life expectancy gap between the most deprived quintile of England and the least deprived quintile of England. If a cause shows a contribution of 0, this means that the cause of death does not make any contribution to the life expectancy gap.

The bar charts show, for a more detailed breakdown of causes of death, the years of life expectancy that would be gained or lost in the most deprived quintile of England, if it had the same mortality rates as the least deprived quintile of England.

The tables show the percentage contributions and years of life gained for each cause of death. The number of deaths occurring in the most deprived quintile of England in 2012 to 2014 are shown, and alongside, the number of excess deaths. Excess deaths are the number of 'extra' deaths that occur in the most deprived quintile of England because it has a higher mortality rate for that cause of death than the least deprived quintile of England. If these deaths were prevented, then the contribution of that cause of death to the overall life expectancy gap would be eliminated.

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**Key messages**

Within England as a whole in 2012 to 2014, male life expectancy at birth was 7.6 years higher in the least deprived fifth of areas than in the most deprived fifth. For females this gap was 5.9 years.

Chart 1 shows that for both males and females, circulatory diseases and cancer are the key contributors to the life expectancy gap at national level. Almost half of the gap in life expectancy between the most and least deprived areas in England is due to excess deaths from these causes in the most deprived areas. Excess deaths from respiratory diseases also make a large contribution to the life expectancy gap, 15% in males and 20% in females.

The more detailed breakdown of cause of death in Chart 3 shows that for males, reducing excess deaths from coronary heart disease in the most deprived fifth of areas would have the biggest impact on the life expectancy gap. Over a year of life would be gained in the most deprived areas if men there had the same mortality rate for coronary heart disease as men in the least deprived areas. For females 0.7 years of life would be gained if excess deaths from chronic obstructive airways disease were eliminated in the most deprived fifth of areas.

At local level, the Segment Tool shows that there is considerable variation in the causes of death which are driving the life expectancy gap, both within local authorities, and between local authorities and England, however, excess deaths from circulatory diseases, cancer and respiratory diseases tend to contribute the most in the majority of areas.

For queries relating to this document, please contact: EandS-Enquiries@phe.gov.uk

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**Contextual information**

| Information on inequalities in life expectancy within England | Male | Female |
| --- | --- | --- |
| Life expectancy at birth in the most deprived quintile of England, 2012 to 2014 | 75.1 | 79.8 |
| Life expectancy at birth in the least deprived quintile of England, 2012 to 2014 | 82.7 | 85.7 |
| Absolute gap in life expectancy between most deprived and least deprived areas within England* | -7.6 | -5.9 |

*A value below 0 indicates a lower life expectancy in the most deprived quintile compared with the least deprived quintile.
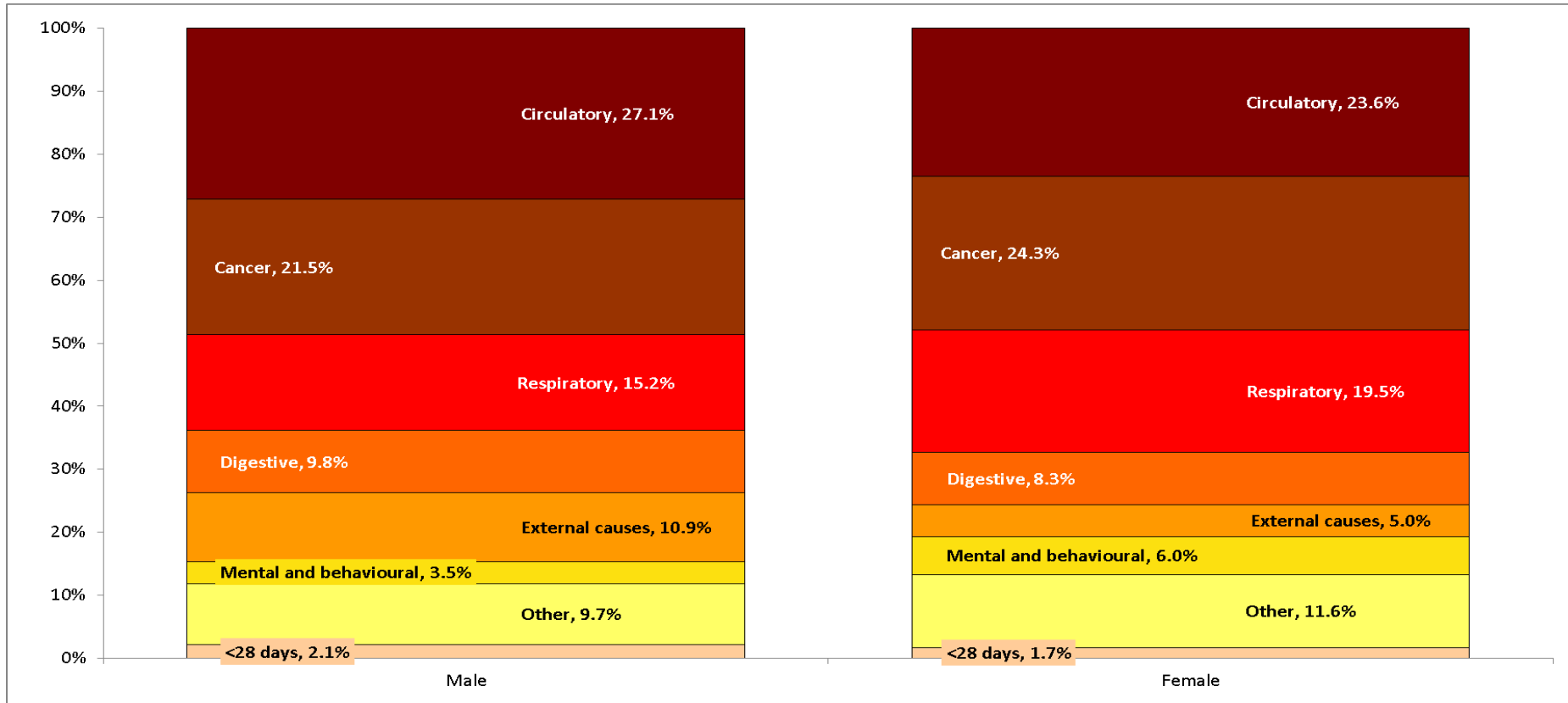
**Sources:**
- Life expectancies for deprivation quintiles within England  - Analysis by Public Health England  Epidemiology and Surveillance
  team based on ONS death registration data, and mid year population estimates, and DCLG Index of Multiple Deprivation, 2015

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**Within area inequalities: Life expectancy gap between the most deprived quintile and least deprived quintile of England**

**Chart 1. Scarf chart showing the breakdown of the life expectancy gap between England most deprived quintile and England least deprived quintile, by broad cause of death, 2012 to 2014**



Footnote: Circulatory diseases includes coronary heart disease and stroke. Respiratory diseases includes flu, pneumonia and chronic obstructive airways disease. Digestive diseases includes alcohol-related conditions such as chronic liver disease and cirrhosis. External causes include deaths from injury, poisoning and suicide. Mental and behavioural includes dementia and Alzheimer's disease.

Analysis by Public Health England's (PHE) Epidemiology and Surveillance team based on ONS death registration data, and mid year population estimates, and DCLG Index of Multiple Deprivation, 2015

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**Chart 2. Bar chart showing life expectancy years gained or lost in the most deprived quintile of England, if it had the same mortality rates as the least deprived quintile of England, by broad cause of death, 2012 to 2014**

**Male**



**Female**



Footnote: Circulatory diseases includes coronary heart disease and stroke. Respiratory diseases includes flu, pneumonia and chronic obstructive airways disease. Digestive diseases includes alcohol-related conditions such as chronic liver disease and cirrhosis. External causes include deaths from injury, poisoning and suicide. Mental and behavioural includes dementia and Alzheimer's disease.
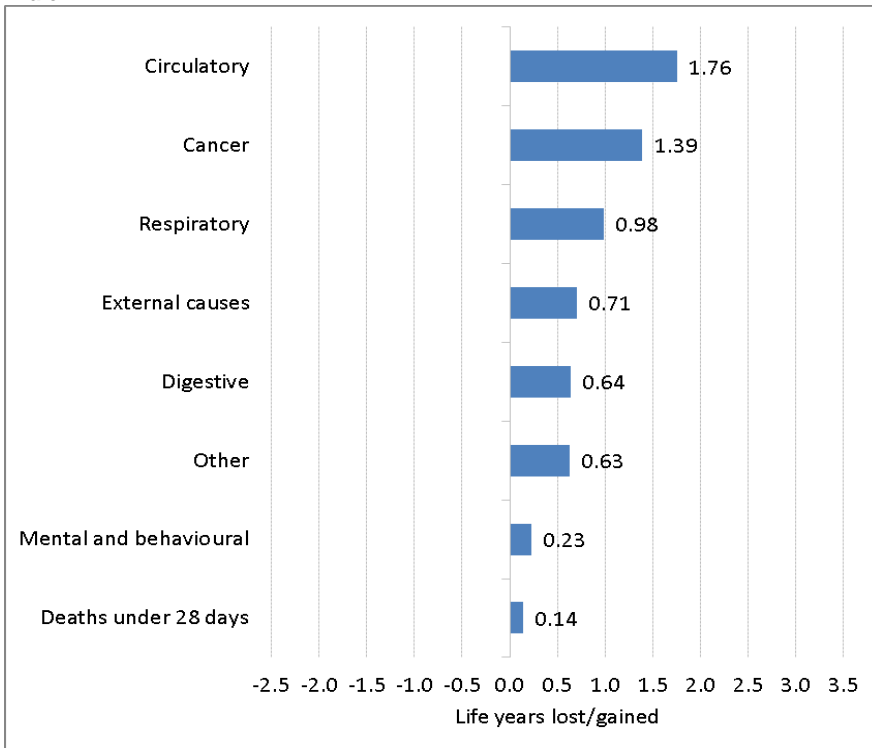
Analysis by Public Health England's (PHE) Epidemiology and Surveillance team based on ONS death registration data, and mid year population estimates, and DCLG Index of Multiple Deprivation, 2015
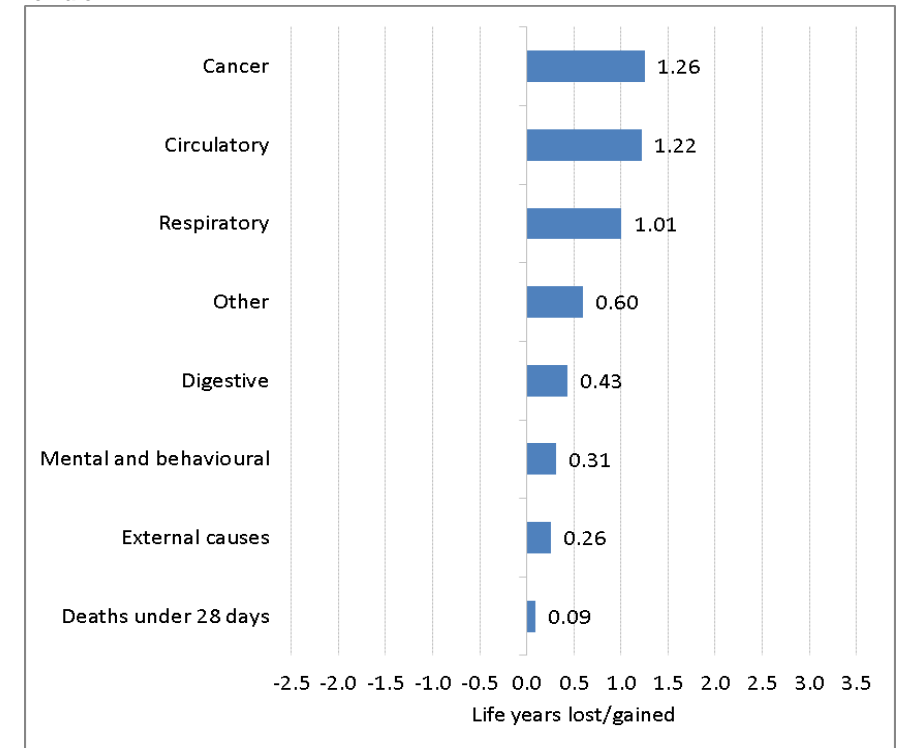
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**Segmenting life expectancy gaps by cause of death**

**Table 1. Breakdown of the life expectancy gap between England most deprived quintile and England least deprived quintile, by broad cause of death, 2012 to 2014**

| Broad cause of death | Male | | | | Female | | | |
|---|---|---|---|---|---|---|---|---|
| | Number of deaths in most deprived quintile | Number of excess deaths in most deprived quintile | Number of years of life gained/lost* in most deprived quintile | Contribution to the gap (%) | Number of deaths in most deprived quintile | Number of excess deaths in most deprived quintile | Number of years of life gained/lost* in most deprived quintile | Contribution to the gap (%) |
| Circulatory | 40,261 | 18,474 | 1.76 | 27.1 | 37,351 | 12,450 | 1.22 | 23.6 |
| Cancer | 41,822 | 15,066 | 1.39 | 21.5 | 37,144 | 11,674 | 1.26 | 24.3 |
| Respiratory | 21,279 | 11,871 | 0.98 | 15.2 | 22,929 | 11,195 | 1.01 | 19.5 |
| Digestive | 9,034 | 5,779 | 0.64 | 9.8 | 8,063 | 3,886 | 0.43 | 8.3 |
| External causes | 8,793 | 4,791 | 0.71 | 10.9 | 4,590 | 1,820 | 0.26 | 5.0 |
| Mental and behavioural | 8,853 | 3,382 | 0.23 | 3.5 | 17,387 | 5,041 | 0.31 | 6.0 |
| Other | 14,043 | 5,688 | 0.63 | 9.7 | 17,457 | 5,268 | 0.60 | 11.6 |
| Deaths under 28 days | 1,111 | 507 | 0.14 | 2.1 | 839 | 294 | 0.09 | 1.7 |
| Total | 145,196 | | | 100 | 145,760 | | | 100 |

Counts of deaths have been adjusted take account of changes in ICD-10 coding made in 2014. This means totals may differ between tables. Further details can be found in the technical document.

* A positive figure indicates that life expectancy years would be gained if the most deprived quintile had the same mortality rate as the least deprived quintile (ie the mortality rate in the most deprived quintile for the cause is higher than that of the least deprived quintile). A negative figure indicates that life expectancy years would be lost if the most deprived quintile had the same mortality rate as the least deprived quintile.

Analysis by Public Health England's (PHE) Epidemiology and Surveillance team based on ONS death registration data, and mid year population estimates, and DCLG Index of Multiple Deprivation, 2015

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**Chart 3. Bar chart showing life expectancy years gained or lost in the most deprived quintile of England, if it had the same mortality rates as the least deprived quintile of England, by detailed cause of death, 2012 to 2014**

**Male**

| Cause | Life years lost/gained |
|---|---|
| Coronary Heart Disease | 1.09 |
| Other cancers | 0.70 |
| Lung cancer | 0.66 |
| Chronic obstructive airways disease | 0.57 |
| Other external | 0.48 |
| Other circulatory | 0.37 |
| Chronic liver disease including cirrhosis | 0.37 |
| Other digestive | 0.26 |
| Pneumonia | 0.24 |
| Other | 0.24 |
| Stroke | 0.24 |
| Suicide | 0.22 |
| Dementia & Alzheimer's disease | 0.18 |
| Other respiratory disease | 0.15 |
| Deaths under 28 days | 0.14 |
| Ill defined conditions | 0.13 |
| Infectious and parasitic diseases | 0.10 |
| Diabetes | 0.09 |
| Urinary conditions | 0.07 |
| Other mental and behavioural disorders | 0.05 |

Life years lost/gained

**Female**

| Cause | Life years lost/gained |
|---|---|
| Chronic obstructive airways disease | 0.66 |
| Lung cancer | 0.63 |
| Coronary Heart Disease | 0.61 |
| Other cancers | 0.60 |
| Other circulatory | 0.37 |
| Dementia & Alzheimer's disease | 0.29 |
| Other | 0.25 |
| Other digestive | 0.25 |
| Stroke | 0.22 |
| Other external | 0.22 |
| Pneumonia | 0.20 |
| Chronic liver disease including cirrhosis | 0.18 |
| Other respiratory disease | 0.13 |
| Infectious and parasitic diseases | 0.10 |
| Diabetes | 0.09 |
| Deaths under 28 days | 0.09 |
| Urinary conditions | 0.09 |
| Ill defined conditions | 0.06 |
| Suicide | 0.05 |
| Other mental and behavioural disorders | 0.02 |

Life years lost/gained

Footnote: See table below for details of cause groupings. Details of causes of death included in the 'other' category can be found in the Technical Document.
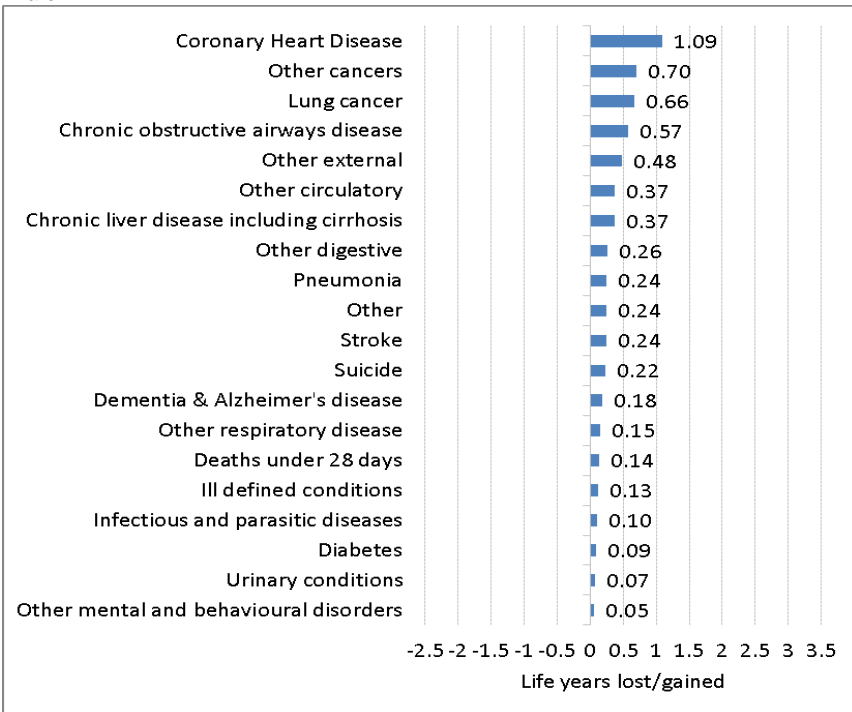Analysis by Public Health England's (PHE) Epidemiology and Surveillance team based on ONS death registration data, and mid year population estimates, and DCLG Index of Multiple Deprivation, 2015
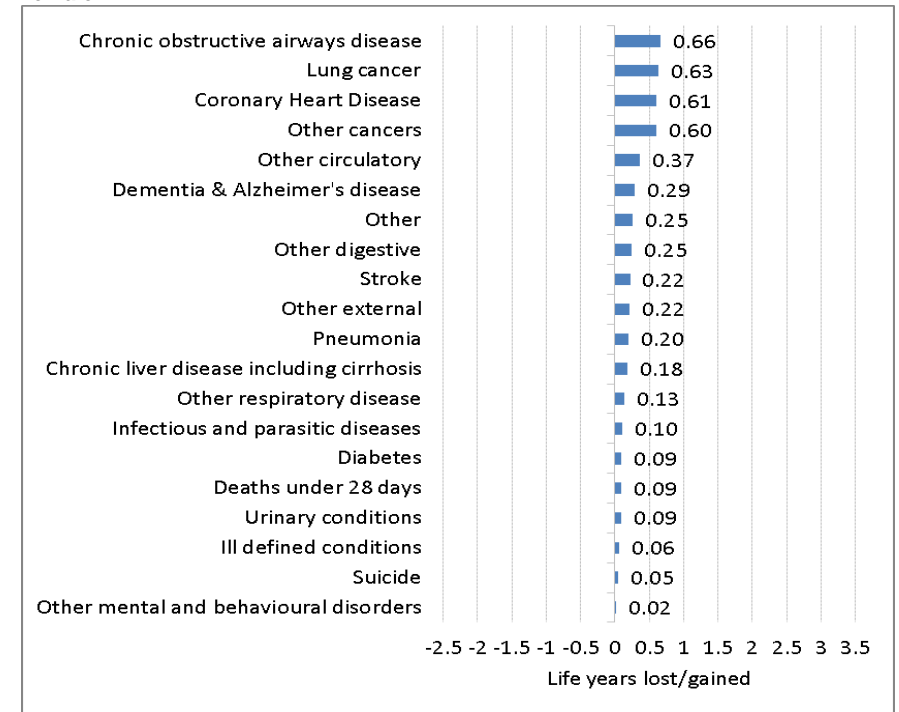
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**Table 2. Breakdown of the life expectancy gap between England most deprived quintile and England least deprived quintile, by detailed cause of death, 2012 to 2014**

| Broad cause of death | Detailed cause of death | Male — Number of deaths in most deprived quintile | Male — Number of excess deaths in most deprived quintile | Male — Number of years of life gained/lost* in most deprived quintile | Female — Number of deaths in most deprived quintile | Female — Number of excess deaths in most deprived quintile | Female — Number of years of life gained/lost* in most deprived quintile |
|---|---|---|---|---|---|---|---|
| Circulatory | Coronary Heart Disease | 22,853 | 11,678 | 1.09 | 15,089 | 6,628 | 0.61 |
| Circulatory | Stroke | 7,611 | 2,902 | 0.24 | 10,227 | 2,129 | 0.22 |
| Circulatory | Other circulatory | 9,799 | 3,896 | 0.37 | 12,110 | 3,726 | 0.37 |
| Cancer | Lung cancer | 12,148 | 7,660 | 0.66 | 10,165 | 6,394 | 0.63 |
| Cancer | Other cancers | 29,674 | 7,406 | 0.70 | 26,979 | 5,281 | 0.60 |
| Respiratory | Pneumonia | 6,668 | 2,887 | 0.24 | 8,066 | 2,301 | 0.20 |
| Respiratory | Chronic obstructive airways disease | 10,409 | 7,279 | 0.57 | 10,580 | 7,468 | 0.66 |
| Respiratory | Other respiratory disease | 4,146 | 1,738 | 0.15 | 4,201 | 1,438 | 0.13 |
| Digestive | Chronic liver disease including cirrhosis | 3,855 | 2,946 | 0.37 | 1,914 | 1,285 | 0.18 |
| Digestive | Other digestive | 5,096 | 2,773 | 0.26 | 6,149 | 2,602 | 0.25 |
| External | Suicide | 2,902 | 1,466 | 0.22 | 762 | 262 | 0.05 |
| External | Other external | 5,891 | 3,326 | 0.48 | 3,864 | 1,587 | 0.22 |
| Mental and behavioural | Dementia and Alzheimer's disease | 8,328 | 2,980 | 0.18 | 17,132 | 4,928 | 0.29 |
| Mental and behavioural | Other mental and behavioural disorders | 527 | 403 | 0.05 | 251 | 112 | 0.02 |
| Other | Infectious and parasitic diseases | 1,664 | 938 | 0.10 | 1,898 | 980 | 0.10 |
| Other | Urinary conditions | 1,996 | 917 | 0.07 | 2,797 | 1,059 | 0.09 |
| Other | Ill defined conditions | 1,912 | 987 | 0.13 | 3,846 | 534 | 0.06 |
| Other | Diabetes | 1,719 | 1,019 | 0.09 | 1,811 | 999 | 0.09 |
| Other | Other | 6,747 | 1,838 | 0.24 | 7,020 | 1,673 | 0.25 |
| < 28 days | Deaths under 28 days | 1,111 | 507 | 0.14 | 839 | 294 | 0.09 |
| | Total | 145,056 | | | 145,702 | | |

Counts of deaths have been adjusted take account of changes in ICD-10 coding made in 2014. This means totals may differ between tables. Further details can be found in the technical document.

* A positive figure indicates that life expectancy years would be gained if the most deprived quintile had the same mortality rate as the least deprived quintile (ie the mortality rate in the most deprived quintile for the cause is higher than that of the least deprived quintile). A negative figure indicates that life expectancy years would be lost if the most deprived quintile had the same mortality rate as the least deprived quintile.

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