

Article

# Quarterly mortality report, England: January to March 2019

Provisional death registration and death occurrence data for England, broken down by sex and age.

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## 1 . Main points

- There were 134,337 deaths registered in England in Quarter 1 (Jan to Mar) 2019 which was 5,497 fewer deaths than the five-year average (2014 to 2018) for this quarter.
- The age-standardised mortality rate for deaths registered in Quarter 1 2019 was 1,017 deaths per 100,000 population, which was statistically significantly lower than all years since 2001, except for 2014 when the rate was the same.
- For those aged 75 years and over, the mortality rates for Quarter 1 2019 were statistically significantly lower than rates observed in Quarter 1 2018.

## 2 . Analysis of mortality in Quarter 1 (Jan to Mar) 2019

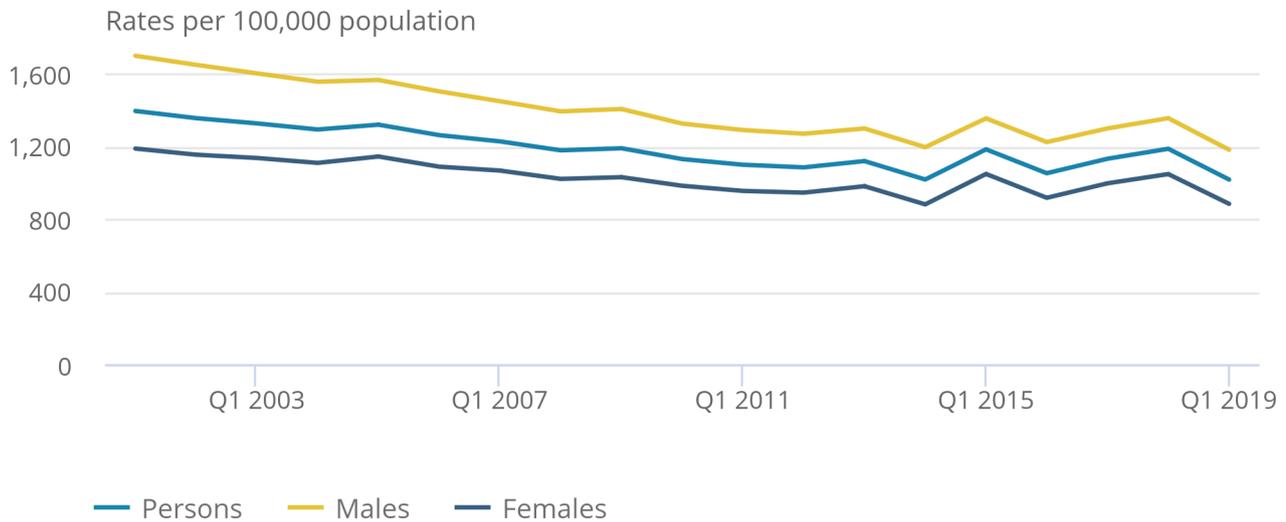
In Quarter 1 (Jan to Mar) 2019, there were 134,337 deaths registered in England. This was 19,384 fewer deaths than 2018 and 5,497 fewer deaths than the five-year average (2014 to 2018). Of the deaths registered in Quarter 1 2019, the number of male deaths was 66,592 and the number of female deaths was 67,745.

## Figure 1: Mortality rates in Quarter 1 2019 were statistically significantly lower than Quarter 1 2018

Age-standardised mortality rates by sex, deaths registered in Quarter 1 (Jan to Mar) 2001 to 2019, England

### Figure 1: Mortality rates in Quarter 1 2019 were statistically significantly lower than Quarter 1 2018

Age-standardised mortality rates by sex, deaths registered in Quarter 1 (Jan to Mar) 2001 to 2019, England



Source: Office for National Statistics

#### Notes:

1. Age-standardised mortality rates per 100,000 population, standardised to the 2013 European Standard Population.
2. Q1 refers to Quarter 1 (1 January to 31 March).
3. Figures are for deaths registered rather than deaths occurring in each period.
4. Figures for 2018 and 2019 are based on provisional mortality data and projected populations.
5. Figures exclude non-residents.

Figure 1 shows the age-standardised mortality rates for deaths registered in each Quarter 1 between 2001 and 2019, allowing for a comparison of deaths registered in each of the last 19 years.

Quarter 1 mortality rates have fallen from an initial 1,394 deaths per 100,000 population (1,698 deaths per 100,000 males and 1,187 deaths per 100,000 females) in 2001 to 1,017 deaths per 100,000 population (1,181 deaths per 100,000 males and 883 deaths per 100,000 females) in 2019. Quarter 1 2019 mortality rates have statistically significantly decreased since 2018, following the statistically significant increases observed for two consecutive years in 2017 and 2018. This has led the Quarter 1 2019 mortality rate to be statistically significantly lower than all years, except 2014, which was a notably low year for mortality and had the same rate for all persons in 2019.

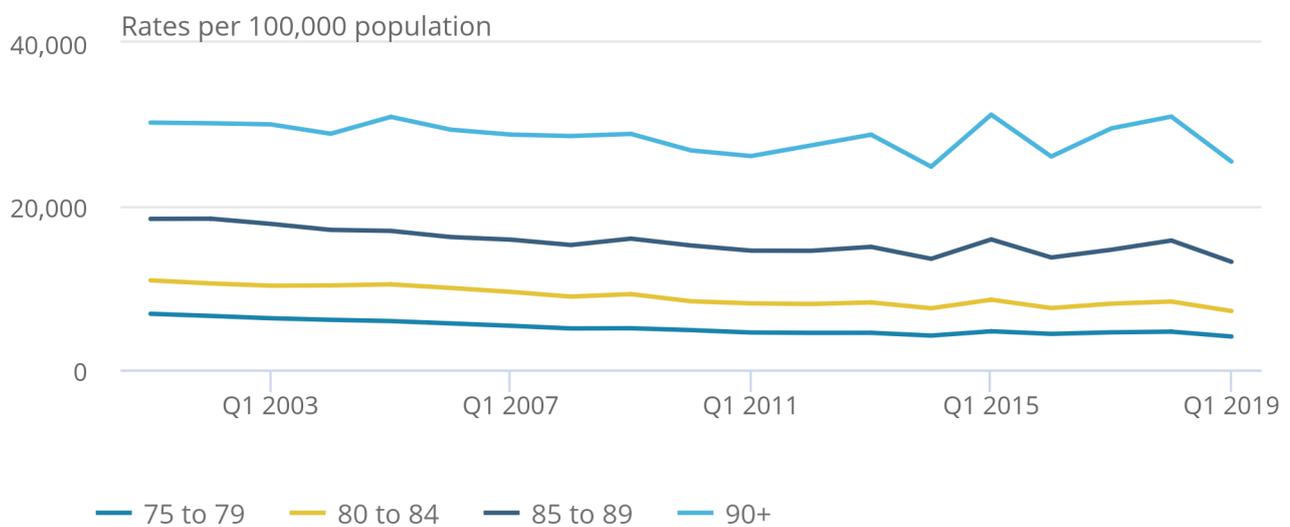
Whilst mortality rates have shown a decline in 2019, the annual rate of improvement between 2011 and 2019 is only half that observed between 2001 and 2010 for all persons and both males and females. There is also less stability in the trend in deaths between 2011 and 2019, where rates have fluctuated, compared to a more regular pattern shown between 2001 and 2010.

**Figure 2a: Mortality rates statistically significantly decreased in males aged 75 years and over in Quarter 1 2019 compared to Quarter 1 2018**

Age-specific mortality rates, males aged 75 years and over, deaths registered in Quarter 1 (Jan to Mar) 2001 to 2019, England

Figure 2a: Mortality rates statistically significantly decreased in males aged 75 years and over in Quarter 1 2019 compared to Quarter 1 2018

Age-specific mortality rates, males aged 75 years and over, deaths registered in Quarter 1 (Jan to Mar) 2001 to 2019, England



Source: Office for National Statistics

Notes:

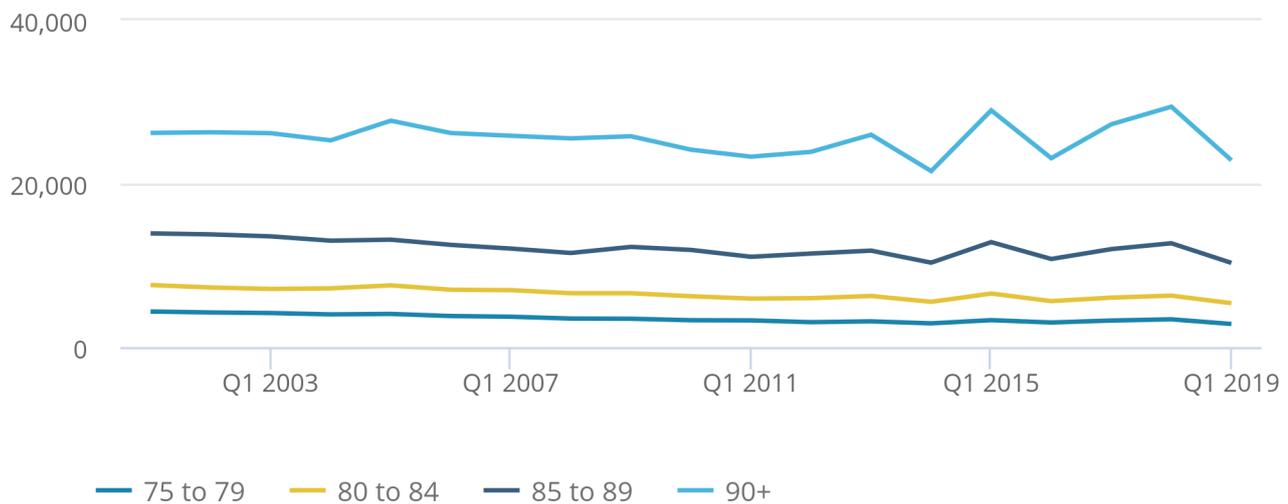
1. Age-specific mortality rates per 100,000 population.
2. Q1 refers to Quarter 1 (1 January to 31 March).
3. Figures are for deaths registered rather than deaths occurring in each period.
4. Figures for 2018 and 2019 are based on provisional mortality data and projected populations.
5. Figures exclude non-residents.

**Figure 2b: Mortality rates statistically significantly decreased in females aged 75 years and over in Quarter 1 2019 compared to Quarter 1 2018**

Age-specific mortality rates, females aged 75 years and over, deaths registered in Quarter 1 (Jan to Mar) 2001 to 2019, England

Figure 2b: Mortality rates statistically significantly decreased in females aged 75 years and over in Quarter 1 2019 compared to Quarter 1 2018

Age-specific mortality rates, females aged 75 years and over, deaths registered in Quarter 1 (Jan to Mar) 2001 to 2019, England



Source: Office for National Statistics

Notes:

1. Age-specific mortality rates per 100,000 population.
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Figures 2a and 2b show that between Quarter 1 2001 and 2011, mortality rates have generally declined for both males and females. Since then mortality rates have fluctuated, with Quarter 1 2019 having the lowest rates for 75- to 89-year-olds, whilst 2014 had the lowest rate for ages 90 years and over. When comparing Quarter 1 2018 with Quarter 1 2019, a statistically significant decrease was observed for males and females across all older age groups.

Figure 3 shows there were statistically significant decreases in mortality rates in Quarter 1 2019 for both males and females aged 0 to 74 years compared with Quarter 1 2018.

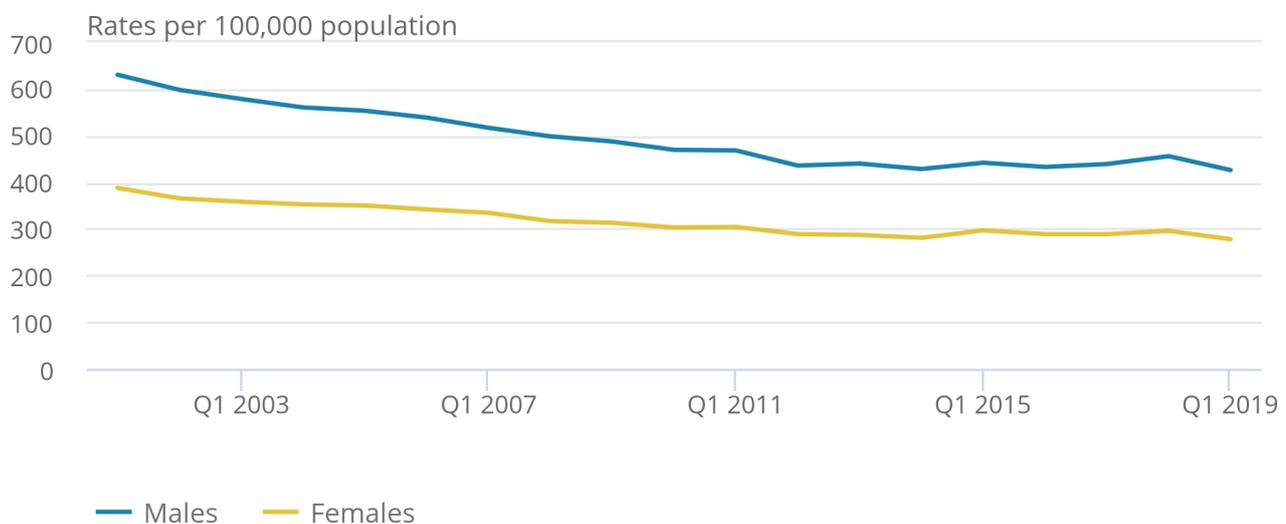
While the Quarter 1 2019 mortality rate for males and females aged 0 to 74 years was lower than all Quarter 1 periods since 2001, the rate of improvement observed between 2001 and 2010 has not been sustained in recent years. For both males and females, the annual rate of improvement in mortality rates has slowed since 2011 and is less than half that observed between 2001 and 2010. More information regarding the slowdown in mortality rates can be found in [Office for National Statistics \(ONS\)](#) and [Public Health England \(PHE\)](#) analyses of the mortality trends in England.

**Figure 3: Annual rate of improvement in mortality for ages 0 to 74 years slowed for both males and females since 2011**

Age-standardised mortality rates by sex, ages 0 to 74 years, deaths registered in Quarter 1 (Jan to Mar) 2001 to 2019, England

Figure 3: Annual rate of improvement in mortality for ages 0 to 74 years slowed for both males and females since 2011

Age-standardised mortality rates by sex, ages 0 to 74 years, deaths registered in Quarter 1 (Jan to Mar) 2001 to 2019, England



Source: Office for National Statistics

Notes:

1. Age-standardised mortality rates per 100,000 population, standardised to the 2013 European Standard Population.
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## Death occurrences

Data reported in this section are based on deaths that occurred between 1 January and 31 March, rather than deaths that were registered in this period (as in the rest of this report). Further information about death occurrences can be found in the [measuring these data section of this report](#).

There were 124,595 deaths that occurred between 1 January and 31 March 2019 in England, 6,208 fewer deaths than the five-year average (2014 to 2018) for that quarter. Predominantly, the number of deaths that occurred each day in Quarter 1 2019 were lower than the five-year average on the same day with 72 days (80%) lower whilst 18 days (20%) were higher.

Increased winter deaths can sometimes be related to cold weather, though the relationship between mortality and temperature is complex. On 1 February 2019, there were 108 more deaths than the five-year average for the same day. It is interesting to note that [Met Office](#) data shows 31 January and 1 February 2019 had the lowest reported temperatures between 1 January to 31 March 2019 reaching a maximum of only 1.7 and 2.7 degrees Celsius respectively. Figure 4 indicates that deaths continued to rise above the five-year average during this cold spell, before seeing a sharp decrease in deaths.

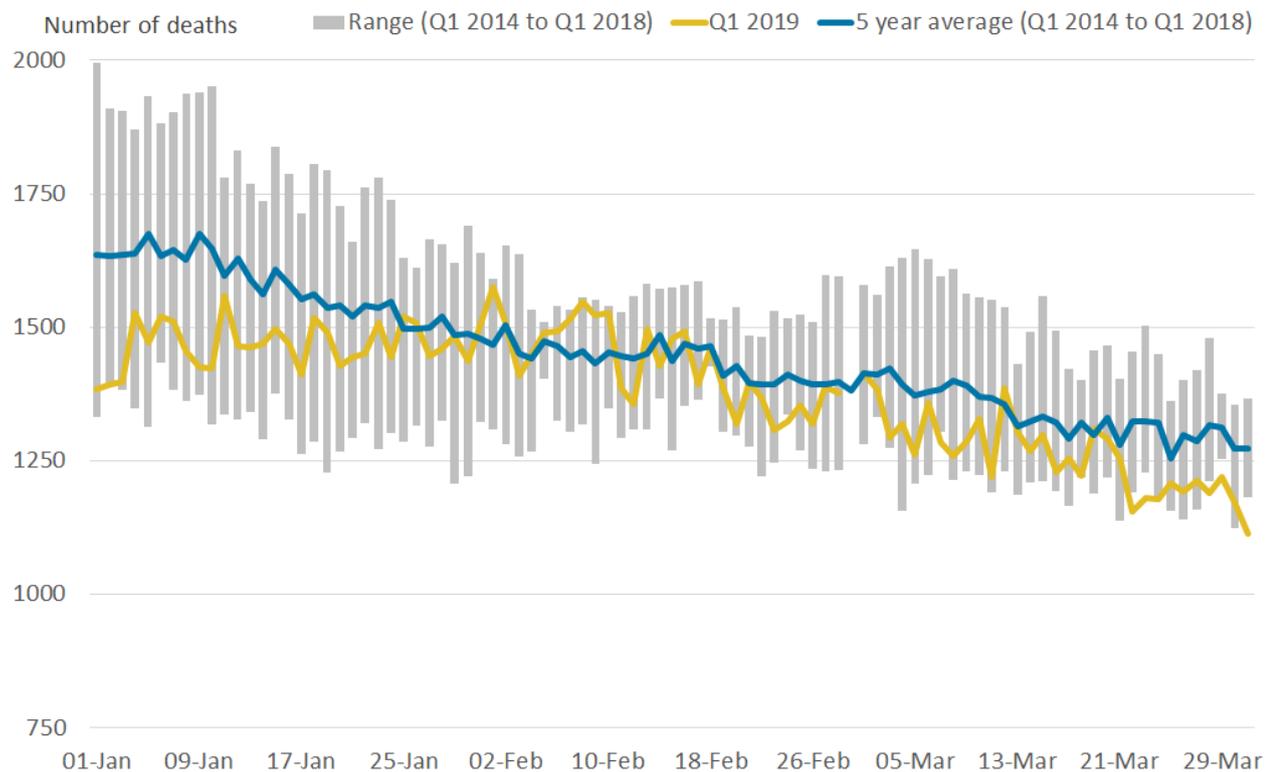
The [Met Office](#) data also indicated that the mean temperature for February (6.5 degrees Celsius) and March (7.7 degrees Celsius) in 2019 was higher than the five-year average temperature for February (4.6 degrees Celsius) and March (6.5 degrees Celsius) which could have had a declining effect in death occurrences.

In addition, increased winter deaths can often be related to the level of seasonal influenza circulating in the population. Public Health England's weekly [national influenza report](#) indicates that the influenza-like illness (ILI) GP consultation rate peaked at 23.1 per 100,000 population in week 6 (week commencing 7 February 2019). This is in comparison to Quarter 1 2018 figures, which indicated that the ILI GP consultation rate peaked in week 3 (week commencing 18 January 2018) at 54.1 per 100,000 population. The lower consultation rates in Quarter 1 2019 could also act as a marker for the decline in death occurrences observed. More information on [Seasonal influenza](#) is available from Public Health England.

The range of death occurrences for Quarter 1 2014 to 2018 refers to the difference between the lowest and highest number of deaths seen on each individual day during this period. The number of deaths occurring each day during Quarter 1 2019 were predominately within the range of the number of deaths occurring each day in Quarter 1 during the last five years.

**Figure 4: There were 124,595 death occurrences in Quarter 1 2019 in England**

Number of deaths occurring on each day in Quarter 1 (Jan to Mar) 2019, five-year average and range, England



Source: Office for National Statistics

**Notes:**

1. Deaths occurring on each day, which were registered by 30 April of each respective year.
2. Q1 refers to Quarter 1 (1 January to 31 March).
3. The range is the difference between the minimum and maximum value seen on each day in Quarter 1 in the five-year period from 2014 to 2018.
4. Figures exclude non-residents.

### 3 . Quarterly mortality data

[Quarterly mortality, England](#)

Quarterly data on death registrations and death occurrences in England broken down by sex and age.

### 4 . Glossary

## Age-standardised mortality rates

Age-standardised mortality rates are used to allow comparisons between populations, which may contain different proportions of people of different ages.

## Age-specific mortality rates

Age-specific mortality rates are used to allow comparisons between specified age groups.

## Statistical significance

The term “significant” refers to statistically significant changes or differences. Significance is determined by the 95% confidence intervals, where non-overlapping confidence intervals between figures demonstrate that the difference is unlikely to be due to random fluctuation.

## Quarter 1

Quarter 1 is the period covering 1 January to 31 March.

# 5 . Measuring these data

The purpose of this report is to provide timely surveillance of mortality in England, based on the best available provisional data. This report focuses on Quarter 1 (Jan to Mar).

## Deaths data sources

This report is based primarily on death registrations, with a section on death occurrences towards the end of the quarterly overview. Death occurrences show the number of deaths that occurred within a calendar period and gives a better indication than registrations of exactly when deaths were at their highest. This allows mortality to be related to other factors such as influenza activity and weather patterns.

A provisional extract of death registrations and death occurrences data for Quarter 1 2019, covering 1 January to 31 March, was created on 30 April 2019, roughly four weeks after the end of the reporting period.

Death registrations data for 2018 and 2019 are provisional; however, we would expect only very small changes to total death registration counts once data are made final.

[Due to registration delays](#), deaths that occurred during this period may not have been registered by the extraction date. For this reason, the quarterly occurrences data are always somewhat incomplete and we would expect the number of death occurrences in Quarter 1 2019 reported in future articles to be higher than the number reported here. In addition, because a specific extraction date (30 April) is used to ensure occurrence data are consistent throughout the time period, if a different extraction date is used in future reports, the number of occurrences reported will be different from the number reported here.

## Quarterly populations

We publish the [mid-year population estimates](#) used for calculating rates. For 2018 and 2019, the [2016-based ONS population projections were used](#).

Calculation of mortality rates for quarterly deaths requires adjustments to be made to annual population estimates to calculate rates that are comparable with annual rates.

We calculate an annual population centred on the mid-point of the quarter using two years' worth of population estimates or projections. This is then multiplied by the number of days within the quarter as a proportion of the total number of days within that year. The output is used as the population denominator in calculations of age-standardised and age-specific mortality rates:

Quarter 1 2019 population

$$= \left( population_{2018}(i) + \left( (population_{2019}(i) - population_{2018}(i)) * \left( \frac{m}{M} \right) \right) \right) * \left( \frac{N}{M} \right)$$

where  $m$  is the number of days from 1 July 2018 (the start of the mid-year for the population estimate) to the midpoint of Quarter 1 inclusive,  $N$  is the number of days in Quarter 1 2019 and  $M$  is the number of days in 2019 and  $(i)$  is the age group.

## Early access for quality assurance purposes

We provide early access for quality assurance purposes to a small number of analysts within Public Health England (PHE) and Department of Health and Social Care (DHSC). The analysts are not permitted to share the findings or the report more widely in their organisations. The report is provided for the analysts to provide technical comment on our findings. However, the Office for National Statistics (ONS) itself independently produces these statistics, including determining the focus, content, commentary, illustration and interpretation of these measures presented and the comments provided by PHE and DHSC are purely advisory.

## Quality and Methodology Information report

The [Mortality statistics in England and Wales Quality and Methodology Information report](#) contains important information on:

- the strengths and limitations of the data and how it compares with related data
- uses and users of the data
- how the output was created
- the quality of the output including the accuracy of the data

## 6 . Strengths and limitations

The strengths of the quarterly mortality report include:

- provisional data are used to enable timely analysis to be completed to monitor mortality trends
- mortality data give complete population coverage and ensure the estimates are of high precision and representative of the underlying population at risk
- coding for cause of death is carried out according to the World Health Organisation's (WHO) [International Classification of Diseases ICD-10](#) and internationally agreed rules

The limitations of the quarterly mortality report include:

- provisional death registrations and death occurrences data are used, which means the data are subject to change
- quarterly occurrence data are always somewhat incomplete due to registration delays, especially for deaths that occurred towards the end of the quarter
- an “artificial” extraction dates are used to generate death occurrences of previous years, data may be different in future reports for the same time series if different extraction dates are used

Further information can be found in the [Mortality statistics Quality and Methodology Information report](#) and the [User guide to mortality statistics](#).

## 7 . You may also be interested in

[Changing trends in mortality in England and Wales: 1990 to 2017 \(Experimental Statistics\)](#)

Article | Released 18 June 2018

Analysis of whether there have been recent changes in the trends of mortality rates in England and Wales from 1990 to 2017.

[Changing trends in mortality: a cross-UK comparison, 1981 to 2016](#)

Article | Released 7 August 2018

Analysis of age-specific and age-standardised mortality rates for the UK, England, Wales, Scotland and Northern Ireland from 1981 to 2016.

[Changing trends in mortality: an international comparison: 2000 to 2016](#)

Article | Released 7 August 2018

Analysis of period life expectancies and mortality in selected countries globally from 2000 to 2016.

[Excess winter mortality in England and Wales: 2017 to 2018 \(provisional\) and 2016 to 2017 \(final\)](#)

Bulletin | 30 November 2018

More people die in the winter than the summer. We present data by sex, age, region and cause of death.

[Deaths registered in England and Wales \(series DR\): 2017](#)

Bulletin | 23 October 2018

Registered deaths by age, sex, selected underlying causes of death and the leading causes of death for both males and females.