

Statistical bulletin

# Monthly mortality analysis, England and Wales: February 2023

Provisional death registration data for England and Wales, broken down by sex, age and country. Includes deaths due to coronavirus (COVID-19) and leading causes of death.

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# 1 . Main points

- In February 2023, there were 46,389 deaths registered in England, 40 deaths (0.1%) below the February five-year average (2017 to 2019, 2021 and 2022).
- There were 2,966 deaths registered in Wales in February 2023, in line with the five-year February average (one fewer death).
- The leading cause of death in England in February 2023 was dementia and Alzheimer's disease (11.8% of all deaths).
- The leading cause of death in Wales in February 2023 was ischaemic heart diseases (11.7% of all deaths).
- The leading cause of excess death in England in February 2023 was symptoms, signs and ill-defined conditions, at 432 excess deaths (36.1% above average).
- The leading cause of excess death in Wales in February 2023 was ischaemic heart diseases, at 26 excess deaths (8.1% above average).

## 2 . Death registrations in February 2023

Based on provisional data, there were 46,389 deaths registered in England in February 2023. This was 3,305 more deaths than in February 2022 and 40 fewer deaths (0.1%) than the five-year average (2017 to 2019, 2021 and 2022).

In Wales, there were 2,966 deaths registered in February 2023. This was 236 more deaths than February 2022 and one fewer death (0.0%) than the five-year average.

The five-year average for 2023 has been calculated using the years 2017 to 2019, 2021 and 2022. This moves our five-year average along by a year but does not include the exceptionally high number of deaths observed in 2020. This is so that deaths in 2023 are compared with a five-year average that is up to date (rather than 2015 to 2019), while still being close to representing a usual (non-coronavirus (COVID-19) pandemic) year. For more information, see our [Understanding excess deaths during a pandemic blog post](#).

Currently, the Office for National Statistics (ONS) compares the number of deaths in a given period to the average of five previous years. We are now investigating different ways to calculate the expected number of deaths used in excess death calculations. The background to this work and information on how to get in contact can be found in our [How we measure expected and excess deaths blog post](#).

Age-standardised mortality rates (ASMRs) are used for comparisons over time, rather than numbers of deaths, because ASMRs account for changes to the population size and age structure.

Since the beginning of our time series in 2001, mortality rates have generally been decreasing for the month of February.

In 2023, the February ASMR for England was 1,048.9 deaths per 100,000 people. This was statistically significantly higher than the mortality rate for February 2022 (1,002.4 deaths per 100,000 people), but significantly lower than the mortality rate for February 2021 (1,326.6 deaths per 100,000 people). This is because the February 2021 mortality rate was affected by the high number of deaths during the second wave of the pandemic.

In February 2023, the ASMR in Wales was 1,098.8 deaths per 100,000 people. This was not significantly different to the February mortality rate for 2022 (1,043.3 deaths per 100,000 people) but was significantly lower than the February mortality rate for 2021 (1,247.7 deaths per 100,000 people). This is because the February 2021 mortality rate was affected by the second wave of the pandemic.

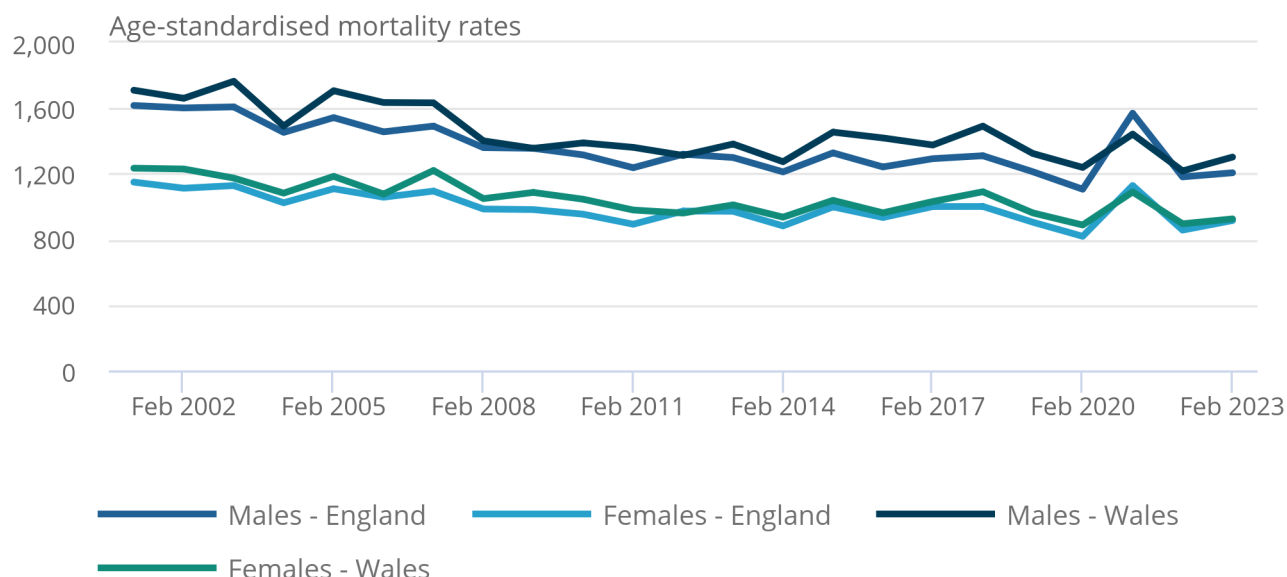
For more information on the differences between male and female ASMRs, see our [accompanying dataset](#).

**Figure 1: Mortality rates for February 2023 were significantly higher than February 2022 in England but were similar to February 2022 in Wales**

Age-standardised mortality rates by sex, England and Wales, deaths registered in February 2001 to February 2023

Figure 1: Mortality rates for February 2023 were significantly higher than February 2022 in England but were similar to February 2022 in Wales

Age-standardised mortality rates by sex, England and Wales, deaths registered in February 2001 to February 2023



Source: Monthly mortality analysis from the Office for National Statistics

Notes:

1. Age-standardised mortality rates per 100,000 people, standardised to the 2013 European Standard Population. Monthly rates in this bulletin are adjusted to allow for comparisons with annual rates. For more information, see [Section 10: Measuring the data section](#).
2. Figures are for deaths registered, rather than deaths occurring in each period.
3. Figures for 2022 and 2023 are based on provisional mortality statistics, and populations from July 2021 onwards are based partly or wholly on population projections.
4. Figures exclude non-residents.

### 3 . Excess mortality in England and Wales

Excess deaths in this bulletin are the difference between the observed deaths within a period compared with the five-year average (2017 to 2019, 2021 and 2022) for the same period. Most of this bulletin compares observed deaths in 2023 with the five-year average. However, this section compares excess mortality with the number of deaths, and then compares this measure with excess mortality by the age-standardised mortality rates (ASMRs). This is to explain why there are differences between these measures.

We are currently looking at different ways to measure excess mortality. Our [How we measure expected and excess deaths blog post](#) outlines the work planned to look at the expected number of deaths used to calculate excess mortality. It also contains information on how to contact us about this work.

Because mortality rates take into account the population size and age structure at a given period, it is not unusual for excess mortality rates to be lower than excess deaths. This is because while deaths may be higher than we would expect, they may not be higher when relative to the population. For example, if the population was larger in the observed period than the average population of the years making up the five-year average, then the deaths per 100,000 people could be lower.

However, it is important to note here that the ASMRs for July 2021 onwards are based wholly or partly on population projections, based on 2018-population estimates. This means the projections do not currently take into account major events that would have affected the population, such as the coronavirus (COVID-19) pandemic. Once further revised populations are applied to the ASMR calculation that account for the Census 2021 population, there will be changes to the mortality rates. We will update rates in due course as revised population estimates are produced by the Office for National Statistics (ONS).

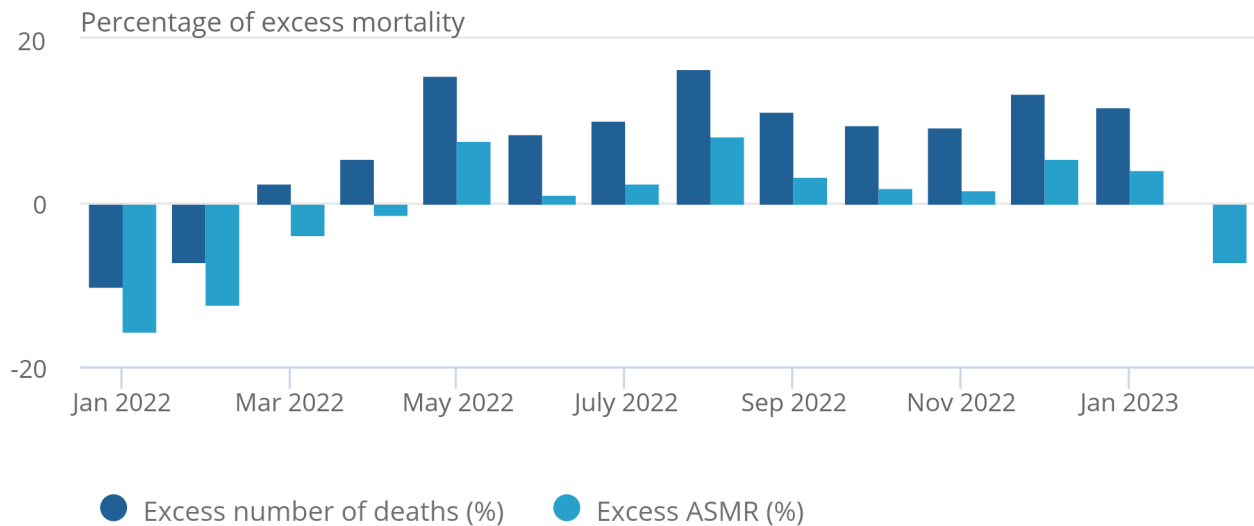
In the month of February 2023, the excess mortality rate was proportionally lower than excess death registrations in England (Figure 2) and in Wales (Figure 3).

**Figure 2: In England, deaths in February 2023 were below average; when accounting for population size and age structure, mortality rates were below average**

Percentage of excess mortality, compared with the five-year average, by number of deaths and age-standardised mortality rates, England, deaths registered from January 2022 to February 2023

Figure 2: In England, deaths in February 2023 were below average; when accounting for population size and age structure, mortality rates were below average

Percentage of excess mortality, compared with the five-year average, by number of deaths and age-standardised mortality rates, England, deaths registered from January 2022 to February 2023



Source: Monthly mortality analysis from the Office for National Statistics

Notes:

1. Age-standardised mortality rates per 100,000 people, standardised to the 2013 European Standard Population. Monthly rates in this bulletin are adjusted to allow for comparisons with annual rates. For more information, see [Section 10: Measuring the data section](#).
2. Figures for 2022 and 2023 are based on provisional mortality statistics, and populations from July 2021 onwards are based partly or wholly on population projections.
3. Figures exclude non-residents.
4. The five-year average for 2023 has been provided for 2017 to 2019, 2021 and 2022, and the five-year average for 2022 has been provided for 2016 to 2019 and 2021 because of the impact of the coronavirus (COVID-19) pandemic on deaths registered in 2020. This provides an up-to-date (rather than 2015 to 2019) comparison of the number of deaths expected per month in a usual (non-coronavirus pandemic) year.

In England, in February 2023, deaths were 0.1% below what we would expect using the five-year average, with excess mortality rates at 7.0% below the expected rates.

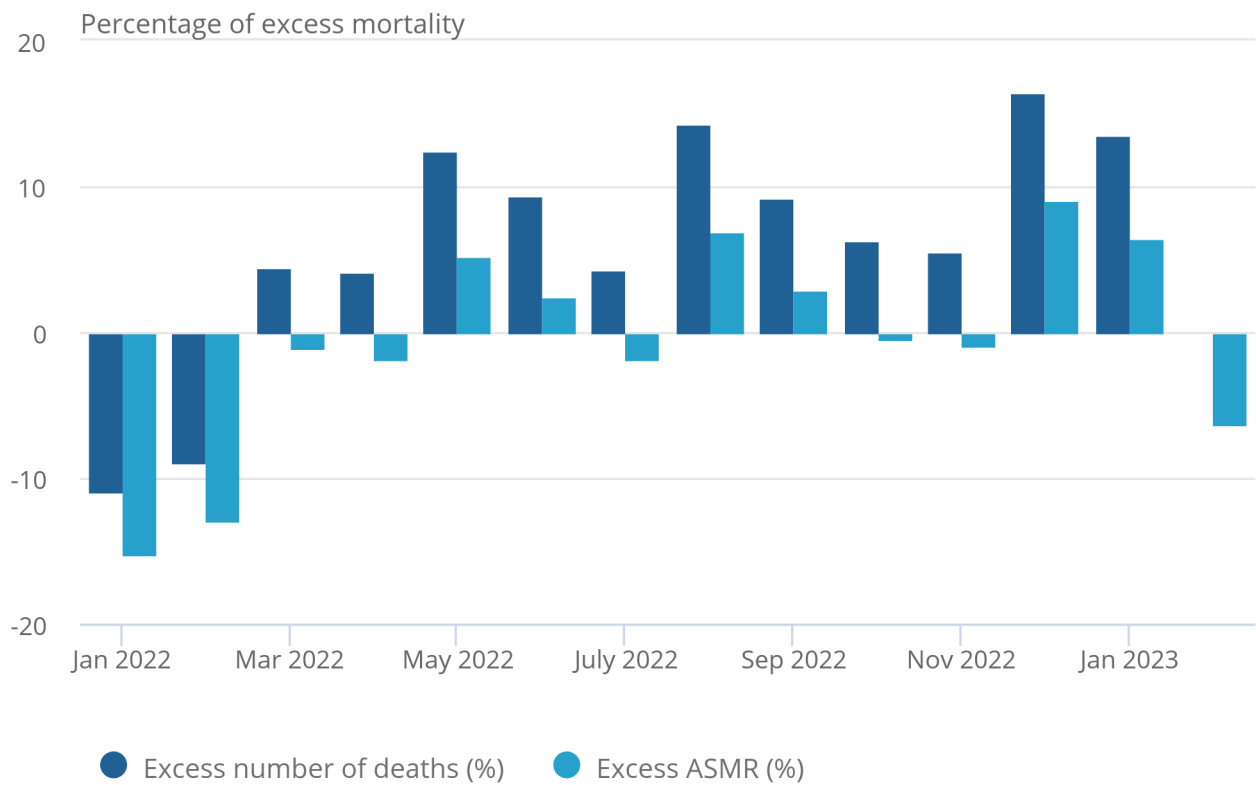
There are different ways of measuring excess mortality. These numbers will differ from those published elsewhere that use a different method, such as the [Office for Health Improvement and Disparities' \(OHID\) excess deaths measure](#). This is because the figures in this bulletin are based on the average of five years, whereas the OHID measure looks at the trend seen between 2015 and 2019, as well as accounting for population, deprivation and ethnicity. The ONS are currently working with multiple organisations to review our excess mortality measures, details of which can be found in our [blog post on measuring expected and excess deaths](#).

**Figure 3: In Wales, deaths in February 2023 were similar to the average; when accounting for population size and age structure, the mortality rate was below average**

Percentage of excess mortality, compared with the five-year average, by number of deaths and age-standardised mortality rates, Wales, deaths registered from January 2022 to February 2023

Figure 3: In Wales, deaths in February 2023 were similar to the average; when accounting for population size and age structure, the mortality rate was below average

Percentage of excess mortality, compared with the five-year average, by number of deaths and age-standardised mortality rates, Wales, deaths registered from January 2022 to February 2023



Source: Monthly mortality analysis from the Office for National Statistics

Notes:

1. Age-standardised mortality rates per 100,000 people, standardised to the 2013 European Standard Population. Monthly rates in this bulletin are adjusted to allow for comparisons with annual rates. For more information, see [Section 10: Measuring the data section](#).
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In Wales, in February 2023, the number of deaths was similar to the five-year average, with excess mortality rates at 6.3% below expected.



## 4 . Leading causes of death

The doctor certifying a death can list all causes in the chain of events that led to the death, and the pre-existing conditions that may have contributed to the death. Using this information, we determine an underlying cause of death. More information on this process can be found in our [User guide to mortality statistics methodology](#).

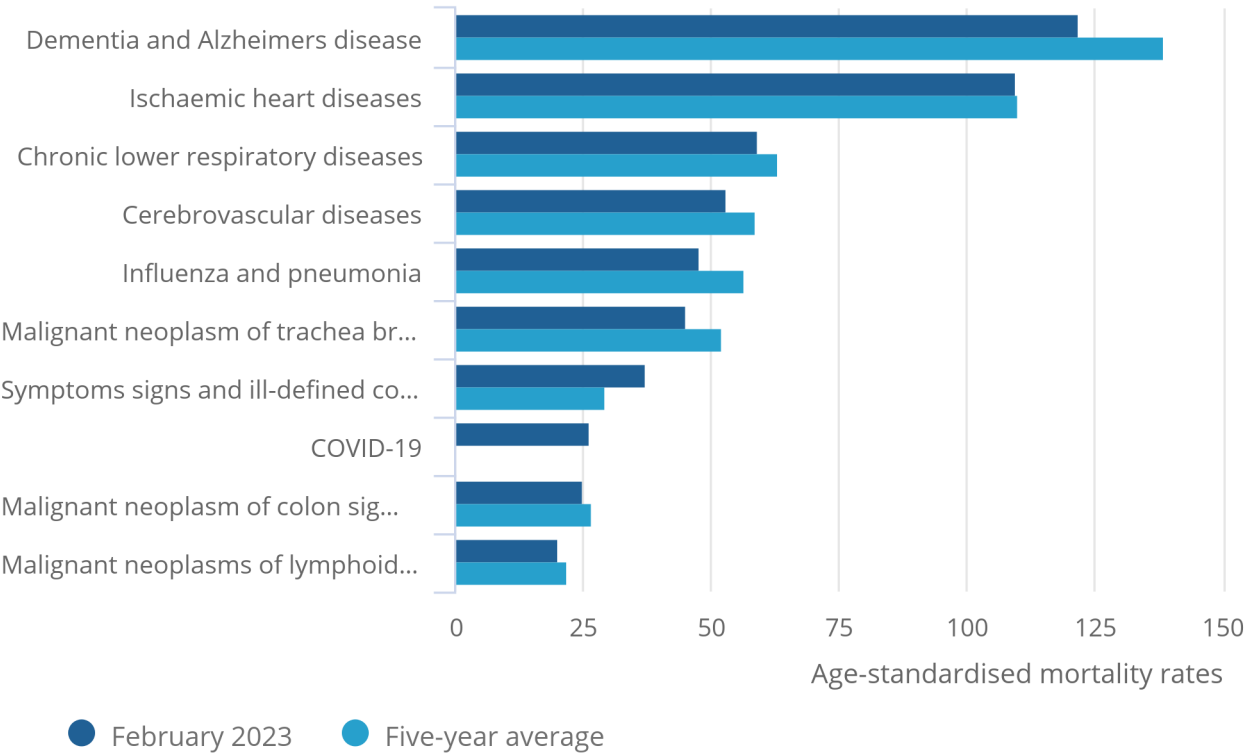
The 10 most common underlying causes of death registered in February 2023, compared with the five-year average for February (2017 to 2019, 2021 and 2022), for England and Wales, respectively, are shown in Figures 5 and 6. Causes of death are based on our [leading causes of death groupings](#).

**Figure 4: In England, dementia and Alzheimer’s disease remained the leading cause of death in February 2023**

Age-standardised mortality rate for selected leading causes of death, per 100,000 people, England, deaths registered in February 2023

Figure 4: In England, dementia and Alzheimer’s disease remained the leading cause of death in February 2023

Age-standardised mortality rate for selected leading causes of death, per 100,000 people, England, deaths registered in February 2023



Source: Monthly mortality analysis from the Office for National Statistics

Notes:

1. Age-standardised mortality rates per 100,000 people, standardised to the 2013 European Standard Population. Monthly rates in this bulletin are adjusted to allow for comparisons with annual rates. For more information, see [Section 10: Measuring the data section](#).
2. Figures for 2022 and 2023 are based on provisional mortality statistics, and populations from July 2021 onwards are based partly or wholly on population projections.
3. Based on underlying cause of death.
4. Figures exclude deaths of non-residents.
5. The five-year average has been provided for 2017 to 2019, 2021 and 2022 because of the impact of the coronavirus (COVID-19) pandemic on deaths registered in 2020. This provides an up-to-date (rather than 2015 to 2019) comparison of the number of deaths expected per month in a usual (non-coronavirus pandemic) year. Where a five-year average cannot be provided, it is denoted as "[z]" in the data downloads.
6. Leading causes are ranked based on the number of deaths, not the age-standardised mortality rates.

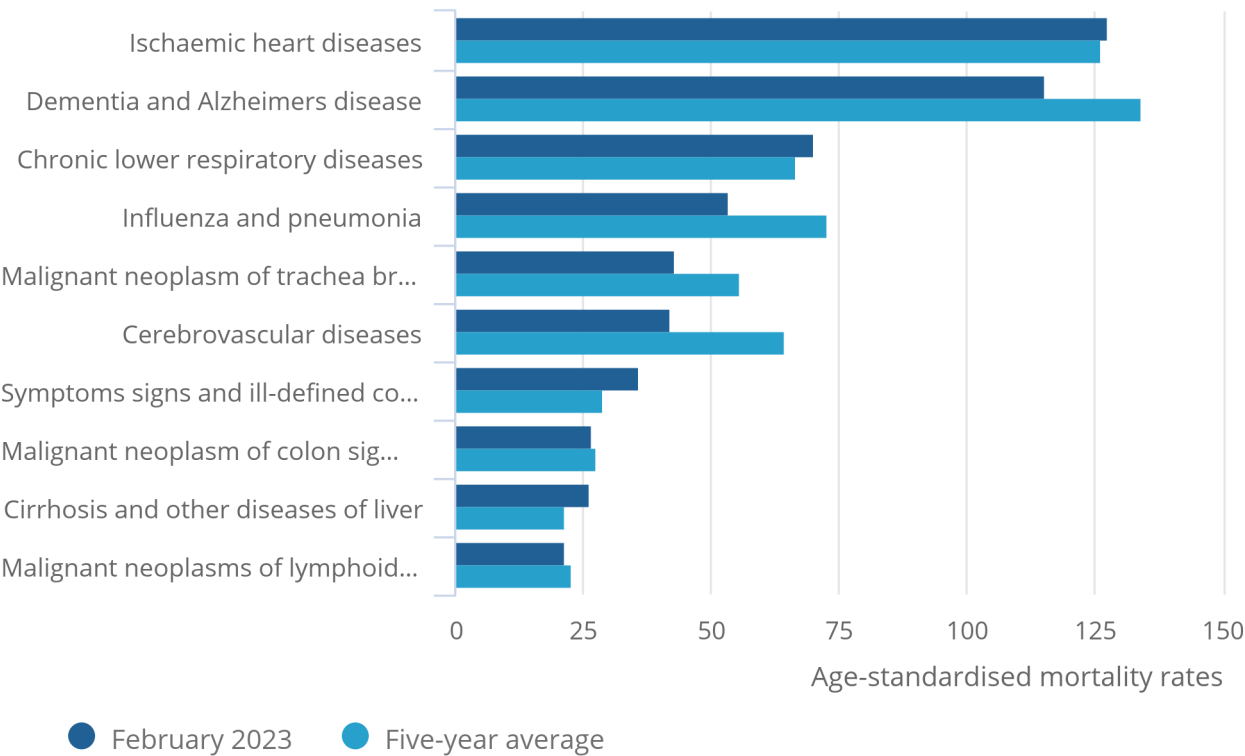
In England, dementia and Alzheimer's disease remained the leading cause of death in February 2023 (for the 20th consecutive month), with 122.1 deaths per 100,000 people (5,466 deaths). In England in February 2023, mortality rates for 5 of the 10 leading causes of death were [statistically significantly](#) lower than the five-year average.

Figure 5: In Wales, ischaemic heart diseases were the leading cause of death in February 2023

Age-standardised mortality rate for selected leading causes of death, per 100,000 people, Wales, deaths registered in February 2023

Figure 5: In Wales, ischaemic heart diseases were the leading cause of death in February 2023

Age-standardised mortality rate for selected leading causes of death, per 100,000 people, Wales, deaths registered in February 2023



Source: Monthly mortality analysis from the Office for National Statistics

Notes:

1. Age-standardised mortality rates per 100,000 people, standardised to the 2013 European Standard Population. Monthly rates in this bulletin are adjusted to allow for comparisons with annual rates. For more information, see [Section 10: Measuring the data section](#).
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3. Based on underlying cause of death.
4. Figures exclude deaths of non-residents.
5. The five-year average has been provided for 2017 to 2019, 2021 and 2022 because of the impact of the coronavirus (COVID-19) pandemic on deaths registered in 2020. This provides an up-to-date comparison (rather than 2015 to 2019) of the number of deaths expected per month in a usual (non-coronavirus pandemic) year. Where a five-year average cannot be provided, it is denoted as "[z]" in the data downloads.
6. Leading causes are ranked based on the number of deaths, not the age-standardised mortality rates.

In Wales, the leading cause of death in February was ischaemic heart diseases, with 127.8 deaths per 100,000 people (348 deaths). In Wales in February 2023, mortality rates for 3 of the 10 leading causes of death were significantly lower than the five-year average. More information on leading causes of death is available in Table 12 for England, and Table 13 for Wales, in our [accompanying dataset](#). More in-depth analysis of leading causes of death is available in our annual [Deaths registered in England and Wales: 2021 bulletin](#), based on finalised mortality data.

## Coronavirus (COVID-19) mortality

We use the term "due to" when referring only to deaths where COVID-19 was the underlying cause of death. We use the term "involving" when referring to deaths that had COVID-19 mentioned anywhere on the death certificate, whether as an underlying cause or not.

The first deaths involving COVID-19 were registered in England and Wales in March 2020. Since then, COVID-19 was the underlying cause of death in most deaths that involved COVID-19 (84.1% in England, 83.0% in Wales). In England, COVID-19 remained the eighth leading cause of death in February 2023, at 26.2 deaths per 100,000 people (1,162 deaths), accounting for 2.5% of all deaths. This was statistically significantly lower than the mortality rate for deaths due to COVID-19 in January 2023, at 42.8 deaths per 100,000 people (2,106; 3.3% of all deaths).

In Wales, COVID-19 decreased to the twelfth leading cause of death in February 2023, at 19.4 deaths per 100,000 (53 deaths), accounting for 1.8% of all deaths. This was significantly lower than the mortality rate for deaths due to COVID-19 in January 2022, when it was ranked seventh, at 56.0 deaths per 100,000 people (169, 4.0% of all deaths).

For more information on our definition of coronavirus (COVID-19) deaths, see [Section 10: Measuring the data](#).

### More about coronavirus

- Find the latest on [coronavirus \(COVID-19\) in the UK](#).
- [Explore the latest coronavirus data](#) from the ONS and other sources.
- View [all coronavirus data](#).

## 5 . Excess mortality by causes of death

Changing trends in causes of death can help us to understand possible causes of excess mortality. Leading causes of excess deaths can include some of the 10 most common causes of death (see [Section 4: Leading causes of death](#)), but will also include other leading cause of death groupings, which contribute to above average mortality.

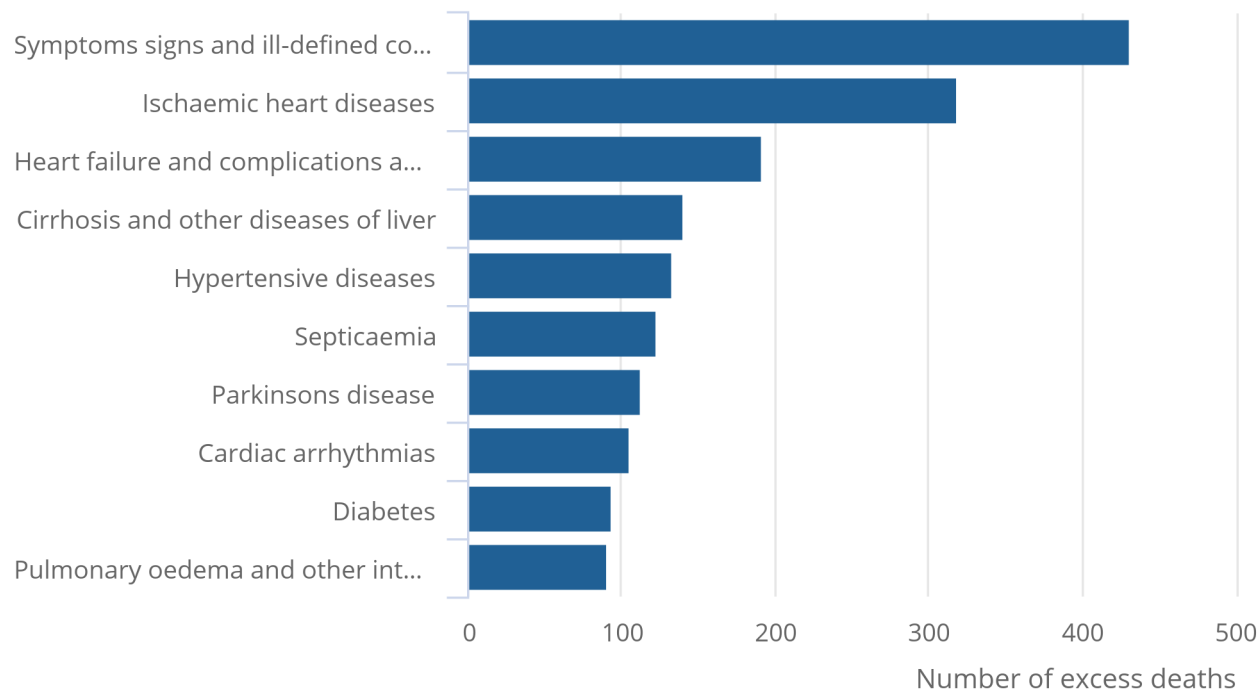
We are currently looking at different ways to measure excess mortality. Our [How do we measure expected and excess deaths blog post](#) outlines the work planned to look at the expected number of deaths used to calculate excess mortality. It also contains information on how to contact us about this work. While the number of deaths by cause of death may be higher in February 2023 compared with the five-year average for February (2017 to 2019, 2021 and 2022), the age standardised mortality rate (ASMR) may be lower. This is because ASMRs take into account population size at each age group and weight. Therefore, changing trends in the age groups affected by the cause of death, and the size of that age group in the population, will cause changes to the ASMR.

**Figure 6: In England, symptoms, signs and ill-defined conditions were the leading cause of excess death in February 2023**

Number of excess deaths, compared with the 2017 to 2019, 2021 and 2022 five-year average, for selected leading causes of death, England, deaths registered in February 2023

Figure 6: In England, symptoms, signs and ill-defined conditions were the leading cause of excess death in February 2023

Number of excess deaths, compared with the 2017 to 2019, 2021 and 2022 five-year average, for selected leading causes of death, England, deaths registered in February 2023



Source: Monthly mortality analysis from the Office for National Statistics

Notes:

1. Figures for 2022 and 2023 are based on provisional mortality data.
2. Based on underlying cause of death.
3. Figures exclude deaths of non-residents.
4. Leading causes are ranked based on the number of excess deaths.
5. The five-year average has been provided for 2017 to 2019, 2021 and 2022 because of the impact of the coronavirus (COVID-19) pandemic on deaths registered in 2020. This provides an up-to-date comparison (rather than 2015 to 2019) of the number of deaths expected per month in a usual (non-coronavirus pandemic) year. Where a five-year average cannot be provided, it is denoted as "[z]" in the data downloads.

In England in February 2023, the leading cause of excess death was symptoms, signs and ill-defined conditions, with 432 excess deaths (36.1% above average). Septicaemia was also observed to have the largest proportional increase in mortality rate when compared with the five-year average (37.4 deaths per 100,000 people, 26.2% above average).

It was not possible to test the significance for 11 of the 69 leading causes of death groupings in England in February 2023. This is because the number of deaths, either in 2023 or the five-year average, for these causes was less than 10, resulting in suppressed mortality rates. The five-year average ASMR is also not available for coronavirus (COVID-19) deaths.

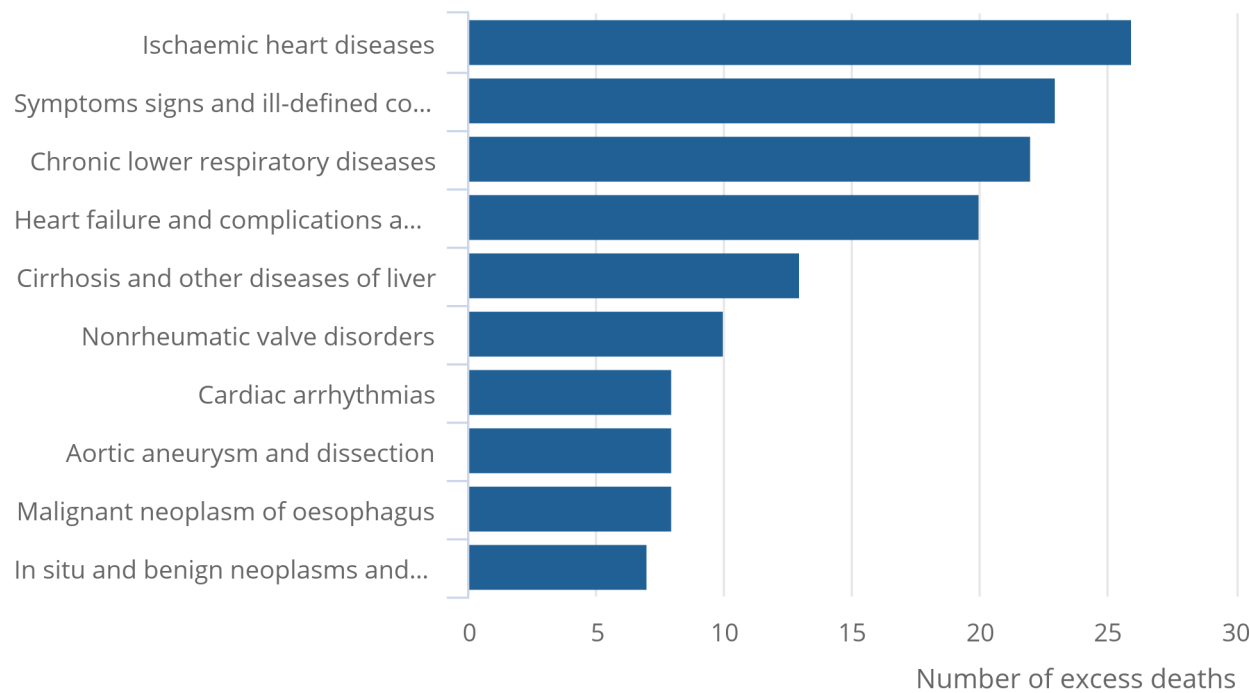
Of the remaining 58 causes of death, 6 were significantly higher than the five-year average, and 13 causes of death were significantly lower. The ASMRs for the remaining leading causes of death groupings for February 2023 were not significantly different from the average.

Figure 7: In Wales, ischaemic heart diseases were the leading cause of excess death in February 2023

Number of excess deaths, compared with the 2017 to 2019, 2021 and 2022 five-year average, for selected leading causes of death, Wales, deaths registered in February 2023

Figure 7: In Wales, ischaemic heart diseases were the leading cause of excess death in February 2023

Number of excess deaths, compared with the 2017 to 2019, 2021 and 2022 five-year average, for selected leading causes of death, Wales, deaths registered in February 2023



Source: Monthly mortality analysis from the Office for National Statistics

Notes:

1. Figures for 2022 and 2023 are based on provisional mortality data.
2. Based on underlying cause of death.
3. Figures exclude deaths of non-residents.
4. Leading causes are ranked based on the number of excess deaths.
5. The five-year average has been provided for 2017 to 2019, 2021 and 2022 because of the impact of the coronavirus (COVID-19) pandemic on deaths registered in 2020. This provides an up-to-date comparison (rather than 2015 to 2019) of the number of deaths expected per month in a usual (non-coronavirus pandemic) year. Where a five-year average cannot be provided, it is denoted as "[z]" in the data downloads.

In Wales, the leading cause of excess deaths was ischaemic heart diseases, with 26 excess deaths (8.1% above average). The mortality rate (127.8 deaths per 100,000 people) was similar to the five-year average (126.5 deaths per 100,000 people) and represented a 1.0% increase.



It was not possible to test the significance for 20 of the 69 leading causes of death groupings in Wales in February 2023. This is because the number of deaths, either in 2023 or the five-year average, for these causes was less than 10, resulting in suppressed mortality rates. The five-year average ASMR is also not available for COVID-19 deaths.

Of the remaining 38 causes of death, 4 were significantly lower than the five-year average, and the remaining leading causes for February 2023 were not significantly different than average.

## 6 . Death occurrences in February 2023

This section is based on the date a death occurred, rather than the date of registration used in the previous sections, to monitor current mortality trends. The number of death occurrences is incomplete because it is likely that more deaths need to be registered. Instances where the number of daily death occurrences in February were below the range of the last five years may be a result of when the data extract was created. Specifically, deaths that occurred towards the end of the month may not have been registered by the time the data extract was created. We would therefore expect the number of death occurrences to be higher in future releases, and comparisons should be treated with caution. Further information can be found in [Section 10: Measuring the data](#).

### Figure 8: In England, the number of daily deaths occurring in February 2023 decreased compared with February 2022

Number of deaths occurring on each day from March 2020 to February 2023, five-year average and range, England

#### Notes:

1. Figures are for deaths occurring on each day rather than deaths registered, registered up to 7 March 2023. Death occurrences will increase as more deaths are registered, particularly for later dates.
2. Figures for 2022 and 2023 (including deaths that occurred in previous years but were registered in 2022 and 2023) are based on provisional mortality data.
3. Figures exclude non-residents.
4. "COVID-19" includes only deaths where COVID-19 was the underlying cause.
5. This chart includes deaths from 1 March 2020. Three deaths due to COVID-19 occurred prior to this in England (one death in February 2020 and two deaths in March 2020) but are not included here.
6. For deaths occurring in 2020 and 2021, the five-year average consists of deaths occurring between 2015 to 2019, whereas for deaths occurring in 2022 the five-year average consists of deaths occurring between 2016 to 2019 and 2021. For deaths occurring in 2023, the five-year average consists of deaths occurring between 2017 to 2019, 2021 and 2022.
7. The five-year average for 2023 has been provided for 2017 to 2019, 2021 and 2022, because of the impact of the coronavirus pandemic on deaths occurring in 2020. This provides an up-to-date comparison (rather than 2015 to 2019) of the number of deaths expected per day in a usual (non-coronavirus pandemic) year.

Download this chart

[.xlsx](#)

In England, 37,045 deaths occurred in February 2023 (and were registered by 7 March 2023). This was 7,652 fewer deaths than the five-year average (2017 to 2019, 2021 and 2022) for February (17.1% lower), and 14,897 fewer deaths than in January 2023 (28.7% lower).

### Figure 9: In Wales, the number of daily deaths in February 2023 decreased compared with February 2022

Number of deaths occurring on each day from March 2020 to February 2023, five-year average and range, Wales

## Notes:

1. Figures are for deaths occurring on each day rather than deaths registered, registered up to 7 March 2023. Death occurrences will increase as more deaths are registered, particularly for later dates.
2. Figures for 2022 and 2023 (including deaths that occurred in previous years but were registered in 2022 and 2023) are based on provisional mortality data.
3. Figures exclude non-residents.
4. "COVID-19 deaths" include only deaths where COVID-19 was the underlying cause.
5. This chart includes deaths from 1 March 2020. Three deaths due to COVID-19 occurred prior to this in England (one death in February 2020 and two deaths in March 2020) but are not included here.
6. For deaths occurring in 2020 and 2021 the five-year average consists of deaths occurring between 2015 to 2019, whereas for deaths occurring in 2022 the five-year average consists of deaths occurring between 2016 to 2019 and 2021. For deaths occurring in 2023, the five-year average consists of deaths occurring between 2017 to 2019, 2021 and 2022.
7. The five-year average for 2023 has been provided for 2017 to 2019, 2021 and 2022, because of the impact of the coronavirus pandemic on deaths occurring in 2020. This provides an up-to-date comparison (rather than 2015 to 2019) of the number of deaths expected per day in a usual (non-coronavirus pandemic) year.

Download this chart

[.xlsx](#)

In Wales, 2,425 deaths occurred in February 2023 (and were registered by 7 March 2023). This was 492 fewer deaths than the five-year average (2017 to 2019, 2021 and 2022) for February (16.9% below), and 1,060 fewer deaths than in January 2022 (30.4% lower).

## 7 . Pre-existing conditions of people whose death was due to COVID-19, deaths registered in October to December 2022

Data on pre-existing conditions of people who died due to coronavirus (COVID-19) in England and Wales between February 2020 to December 2022 can be found in our [accompanying dataset](#). Quarter 4 (Oct to Dec) 2022 analysis is available in our [Monthly mortality analysis, England and Wales: December 2022 bulletin](#). We will publish analysis for Quarter 1 (Jan to Mar) 2023 in our March 2023 edition of this bulletin.

## 8 . Monthly mortality data

### [Monthly mortality analysis, England and Wales](#)

Dataset | Released 23 March 2023

Provisional data on death registrations and death occurrences in England and Wales, broken down by sex and age. Includes deaths due to coronavirus (COVID-19) by date of death occurrence, and comparisons of COVID-19 with the leading causes of death.

### [Deaths due to coronavirus \(COVID-19\) by English region and Welsh health board](#)

Dataset | Released 23 March 2023

Provisional age-standardised mortality rates for deaths due to COVID-19 by sex, English regions and Welsh health boards.

### [Deaths involving coronavirus \(COVID-19\) by month of registration, UK](#)

Dataset | Released 23 March 2023

Provisional age-standardised mortality rates for deaths involving COVID-19 by sex and month of death registration, for England, Wales, Scotland and Northern Ireland.

### [Deaths registered monthly in England and Wales](#)

Dataset | Released 23 March 2023

Number of deaths registered each month by area of usual residence for England and Wales, by region, county, local and unitary authority, and London borough.

### [Single year of age and average age of death of people whose death was due to or involved coronavirus \(COVID-19\)](#)

Dataset | Released 23 March 2023

Provisional deaths registration data for single year of age and average age of death (median and mean) of persons whose death involved coronavirus (COVID-19), England and Wales. Includes deaths due to COVID-19 and breakdowns by sex.

### [Pre-existing conditions of people who died due to coronavirus \(COVID-19\), England and Wales](#)

Dataset | Released 20 January 2023

Pre-existing conditions of people who died due to COVID-19, broken down by country, broad age group, and place of death occurrence, usual residents of England and Wales.

## 9 . Glossary

### Age-specific mortality rates

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

### Age-standardised mortality rates

Age-standardised mortality rates (ASMRs) are used to allow comparisons between populations that may contain different proportions of people of different ages. The 2013 European Standard Population is used to standardise rates. In this bulletin, we have adjusted the monthly ASMRs to allow for comparisons with annual rates. For more information see [Section 10: Measuring the data](#).

### Coronaviruses

The World Health Organization (WHO) defines coronaviruses as "a large family of viruses that are known to cause illness ranging from the common cold to more severe diseases such as Middle East respiratory syndrome (MERS) and severe acute respiratory syndrome (SARS)." Between 2001 and 2018, there were 12 deaths in England and Wales due to a coronavirus infection, with a further 13 deaths mentioning the virus as a contributory factor on the death certificate.

## Coronavirus (COVID-19)

COVID-19 refers to the "coronavirus disease 2019" and is a disease that can affect the lungs and airways. It is caused by a type of coronavirus. Further [information about COVID-19 is available from the WHO](#).

### Pre-existing condition

A pre-existing condition is defined as any condition that either preceded the disease of interest (for example, COVID-19) in the sequence of events leading to death or was a contributory factor in the death but not part of the causal sequence.

More information on the pre-existing conditions methodology is available in our [Pre-existing conditions of people who died due to COVID-19, England and Wales dataset](#).

### Registration delay

Mortality statistics are compiled from information supplied when deaths are certified and registered as part of civil registration, a legal requirement. According to the [Births and Deaths Registration Act 1953](#), a death should be registered within five days unless it is referred to a coroner for investigation. Mortality statistics for a given time period can be based on occurrence (death date) or registration (registration date); registration delay is the difference between the date of occurrence and the date of registration.

### Statistical significance

The term "significant" refers to statistically significant changes or differences. Significance has been determined using the 95% confidence intervals, where instances of non-overlapping confidence intervals between estimates indicate the difference is unlikely to have arisen from random fluctuation.

### 95% confidence intervals

A confidence interval is a measure of the uncertainty around a specific estimate. If a confidence interval is 95%, it is expected that the interval will contain the true value on 95 occasions if repeated 100 times. As intervals around estimates widen, the level of uncertainty about where the true value lies increases. The size of the interval around the estimate is strongly related to the number of deaths, prevalence of health states and the size of the underlying population. At a national level, the overall level of error will be small compared with the error associated with a local area or a specific age and sex breakdown. More information is available on our [uncertainty pages](#).

## 10 . Measuring the data

This bulletin provides timely surveillance of mortality in England and Wales, based on the best available provisional data, including all-cause mortality and coronavirus (COVID-19) deaths.

Analysis contains deaths registered in February 2023 by age and sex, and includes deaths that occurred in February 2023 by date of death. Non-residents of England and Wales are excluded. In February 2023, there were 247 deaths of non-residents that were registered in England and Wales.

### Data sources

This bulletin is based primarily on death registrations. Analysis by month of death registration is consistent with our [Deaths registered weekly in England and Wales, provisional bulletin](#) and allows for a more timely analysis than would be possible using death occurrences. Death occurrences show the number of deaths that occurred within a calendar period and give a better indication of exactly when deaths were at their highest. This allows mortality to be related to other factors such as weather patterns. Figures on death occurrences are available in our [accompanying dataset](#) for surveillance of recent mortality trends.

A provisional extract of death registrations and death occurrences data is taken on the first working day after the eighth day of the month, to allow time for deaths to be registered. For more detail on the data sources used, see our [Coronavirus and mortality in England and Wales methodology](#).

## Definition of COVID-19 deaths

We use the term "due to COVID-19" when referring only to deaths with an underlying cause of death of COVID-19. When considering all the deaths that had COVID-19 mentioned anywhere on the death certificate, whether as an underlying cause or not, we use the term "involving COVID-19." The International Classification of Diseases (ICD-10) codes used to define COVID-19 are:

1. U07.1: COVID-19, virus identified 2. U07.2: COVID-19, virus not identified 3. U09.9: post-COVID condition, unspecified (this cannot be assigned to the underlying cause of death so is not included in the "deaths due to COVID-19" definition) 4. U10.9: multisystem inflammatory syndrome associated with COVID-19, unspecified

There are several ICD-10 codes not included in our definitions of deaths due to COVID-19 and deaths involving COVID-19. These are:

1. U08.9: personal history of COVID-19, unspecified 2. U11.9: need for immunisation against COVID-19, unspecified 3. U12.9: COVID-19 vaccines causing adverse effects in therapeutic use, unspecified

Tables 14 and 15 of our [accompanying dataset](#) provide figures of each COVID-19 ICD-10 code registered since March 2020. Our figures usually consist of first registrations only. On occasion, and after further investigation, a death can be re-registered as a different cause of death. For transparency of our statistics, these tables include re-registrations as well as initial registrations. All the other figures remain as first registration only.

## Monthly mortality rates

To calculate monthly mortality rates that are comparable with annual rates, adjustments must be made to annual population estimates to account for the time covered. Our [Coronavirus and mortality in England and Wales methodology](#) provides more detail on how this is calculated.

## Acknowledgement

We would like to thank Andreas Christofi, Heidi Wilson, and Paul Brown for their valued contribution to this bulletin.

# 11 . Strengths and limitations

## Provisional data are used

Provisional death registrations and death occurrences data are used in this bulletin. This enables timely analysis to be completed to monitor mortality trends. However, as the data for 2022 and 2023 are provisional, they are subject to change.

## Data coverage, timeliness, and registration delays

Mortality data give complete population coverage. They ensure the estimates are of high precision and representative of the underlying population at risk. However, because of [registration delays](#), monthly death occurrence data are always somewhat incomplete. This is especially true for deaths that occurred towards the end of the month.

More quality and methodology information on strengths, limitations, appropriate uses and how the data were created is available in our [Mortality statistics in England and Wales Quality and Methodology Information \(QMI\)](#) and our [User guide to mortality statistics methodology](#).

## 12 . Related links

### [Deaths registered weekly in England and Wales](#)

Bulletin | Released weekly

Provisional counts of the number of deaths registered in England and Wales, including deaths involving coronavirus (COVID-19), in the latest weeks for which data are available.

### [Death registration summary statistics, England and Wales: 2021](#)

Article | Released 9 June 2022

Number of deaths registered by year, sex, area of usual residence and selected underlying cause of death.

### [Deaths registered in England and Wales: 2021 \(refreshed populations\)](#)

Bulletin | Released 27 January 2023

Registered deaths by age, sex, selected underlying causes of death and the leading causes of death. Contains death rates and death registrations by area of residence and single year of age.

### [Deaths due to COVID-19, registered in England and Wales: 2021](#)

Article | Released 1 July 2022

Deaths registered in England and Wales due to coronavirus (COVID-19) by age, sex, region, indices of deprivation, place of death and pre-existing condition.

### [Coronavirus \(COVID-19\) latest data and analysis](#)

Web page | Updated as and when new data become available

Brings together the latest data and analysis on the coronavirus (COVID-19) pandemic in the UK and its effect on the economy and society.

### [Excess mortality and mortality displacement in England and Wales: 2020 to mid-2021](#)

Article | Released 15 October 2021

Deaths registered in England and Wales by week, from 28 December 2019 to 2 July 2021. Breakdowns include country, sex, age group, region, place of death and leading cause. Includes analysis of excess deaths and relative cumulative age-standardised mortality rates.

### [Excess deaths in England and Wales: March 2020 to June 2022](#)

Article | Released 20 September 2022

Number of excess deaths, including deaths due to coronavirus (COVID-19) and due to other causes. Including breakdowns by age, sex and geography.

## 13 . Cite this statistical bulletin

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