Office for National Statistics

Statistical bulletin

# Monthly mortality analysis, England and Wales: November 2020

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

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# Table of contents

# 1 . Main points

- In November 2020, there were 47,910 deaths registered in England, 6,241 deaths more than the five-year average (2015 to 2019) for November; in Wales, there were 3,363 deaths registered, 576 deaths more than the five-year average for November.

- The coronavirus (COVID-19) was the leading cause of death in November 2020 for the first time since May 2020 in both England (accounting for 18.1% of all deaths registered in November) and Wales (21.6% of all deaths); looking at all deaths registered in January to November 2020, COVID-19 was the second most common cause of death in England and Wales (after dementia and Alzheimer's disease).

- The age-standardised mortality rate of deaths due to COVID-19 in November 2020 was 191.3 deaths per 100,000 people in England and was 260.0 deaths per 100,000 people in Wales; the COVID-19 mortality rate significantly increased for the third consecutive month in England and the second consecutive month in Wales.

- Based on the month of death registration, all English regions and Wales recorded the highest mortality rate for deaths due to COVID-19 in April 2020; London had the highest COVID-19 mortality rate in April (1,207.9 deaths per 100,000 people), followed by the North West (743.2 deaths per 100,000 people).

- The lowest mortality rates due to COVID-19 across all English regions and Wales were in August and September 2020; the mortality rate increased across all areas in October and November, with Yorkshire and The Humber having the highest COVID-19 mortality rate in November 2020 (383.4 deaths per 100,000 people).

- In England, the year-to-date (March to November 2020) mortality rate for deaths due to COVID-19 in the most deprived areas was 252.0 deaths per 100,000 people, this was nearly three times the mortality rate in the least deprived areas (89.7 deaths per 100,000 people).

- In Wales, the year-to-date COVID-19 mortality rate in the most deprived areas was more than twice the mortality rate in the least deprived areas (220.5 deaths per 100,000 people in the most deprived areas, 101.7 deaths per 100,000 people in the least deprived areas).

This month's bulletin includes an interactive map of deaths due to COVID-19 in each Middle Layer Super Output Area (see Section 3). The accompanying datasets also include mortality rates for deaths due to COVID-19 by local area and deprivation.

# 2 . Death registrations and the overall mortality rate for November 2020

Based on provisional data, there were 47,910 deaths registered in England in November 2020. This was 5,630 more deaths than in November 2019 and 6,241 deaths more than the five-year average (2015 to 2019). Of the deaths registered in November 2020, 24,806 were males and 23,104 were females.

In Wales, the provisional number of deaths registered was 3,363 deaths in November 2020. This was 519 more deaths than in November 2019 and 576 more deaths than the five-year average for November. Of the deaths registered in November in Wales, there were 1,670 male deaths and 1,693 female deaths.

Age-standardised mortality rates (ASMRs) are used for comparisons over time rather than numbers of deaths, as ASMRs account for changes to the population size and age structure. Since November 2001, overall mortality rates in England for the month of November had been decreasing from 1,227.9 deaths per 100,000 people in 2001, to a low of 904.0 deaths per 100,000 people in November 2014.

The statistically significant decrease in age-standardised mortality rates from 2001 was seen in both males and females (Figure 1). In 2014, mortality rates reached the lowest point in our data time series for both males and females. But since 2014, the trend of gradually improving mortality rates has stopped.

November 2020 had the highest mortality rate (1,057.4 deaths per 100,000 people) since November 2004 (1,180.3 deaths per 100,000 people) but remained significantly lower than November 2001 (1,227.9 deaths per 100,000). The mortality rate in November 2020 was 1,265.9 deaths per 100,000 males (compared with 1,491.1 in November 2001) and 885.4 deaths per 100,000 females (compared with 1,045.7 in November 2001).

In Wales, November 2003 was the year with the highest November mortality rate since our data time series began in 2001. Over time, mortality rates in Wales have decreased from 1,306.9 deaths per 100,000 people in November 2003 to a low of 942.5 deaths per 100,000 people in November 2014. Since 2014, the November mortality rate for Wales has remained similar or increased each year.

In November 2020, the mortality rate significantly increased (compared with November 2019) to 1,213.8 deaths per 100,000 people. The November 2020 mortality rate was significantly higher than the mortality rate in every year back to November 2008 and was only significantly lower than November 2003 (the highest November mortality rate in our data time series).
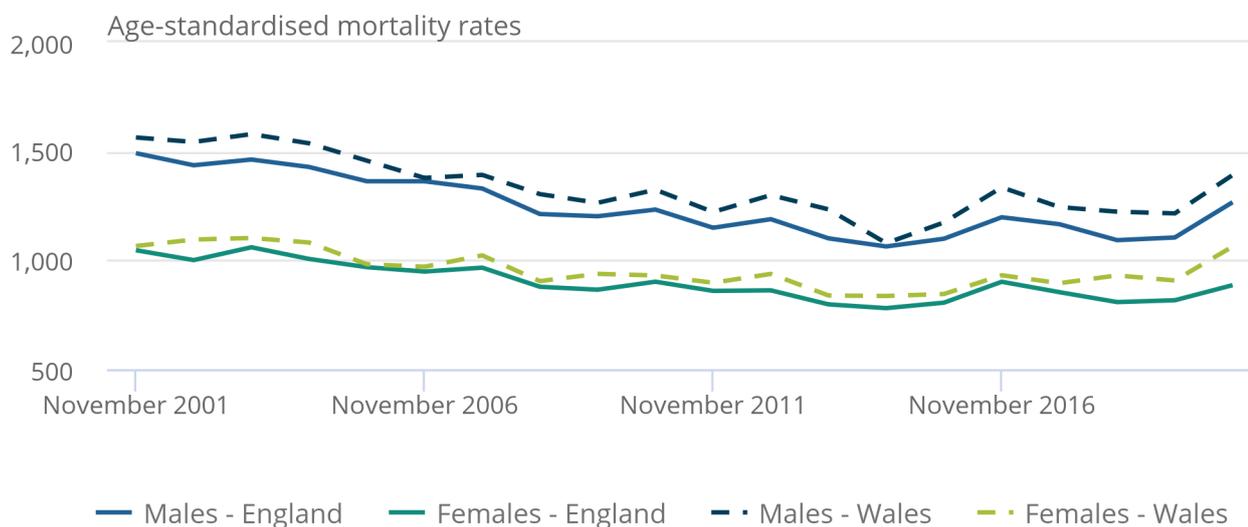
This trend was seen in both males and females, with the highest mortality rates for both sexes being in November 2003. In November 2020 in Wales, the mortality rate was 1,390.7 deaths per 100,000 males (1,578.6 in November 2003) and 1,062.4 deaths per 100,000 females (1,101.8 in November 2003). For both males and females, the November 2020 mortality rates were significantly higher than the mortality rates in November 2019.

**Figure 1: Mortality rates for the month of November have significantly increased between 2019 and 2020**

**Age-standardised mortality rates by sex, England and Wales, deaths registered in November 2001 to November 2020**

## Figure 1: Mortality rates for the month of November have significantly increased between 2019 and 2020

Age-standardised mortality rates by sex, England and Wales, deaths registered in November 2001 to November 2020



Age-standardised mortality rates

Legend: Males - England, Females - England, Males - Wales, Females - Wales

**Source: Office for National Statistics – Monthly mortality analysis**

**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.

2. Figures are for deaths registered rather than deaths occurring in each period.

3. Figures for 2020 are based on provisional mortality data and projected populations.

4. Figures exclude non-residents.

Although mortality rates have reduced over time, the rate of decline in mortality rates has been slowing since 2011. More information about how mortality rates have changed over a longer time period can be found in Changing trends in mortality in England and Wales.

# 3 . Deaths due to COVID-19 registered in November 2020

The doctor certifying a death can list all causes in the chain of events that led to the death and 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.

In most cases (91.1% in England and 88.4% in Wales) where the coronavirus (COVID-19) was mentioned on the death certificate, it was found to be the underlying cause of death. For more information on our definition of COVID-19 deaths, see Section 10: Measuring the data.

In this bulletin, we use the term "due to COVID-19" when referring only to deaths with an underlying cause of death of COVID-19 and we use the term "involving COVID-19" when referring to deaths that had COVID-19 mentioned anywhere on the death certificate, whether as an underlying cause or not.

Of the 47,910 deaths registered in November 2020 in England, 18.1% (8,686 deaths) were due to COVID-19. Taking into account all deaths involving COVID-19 increases the percentage to 20.6% of all deaths (9,867 deaths) in England.

In Wales, 21.6% of the 3,363 deaths registered in November were due to COVID-19 (726 deaths). Taking into account all deaths involving COVID-19 increases the percentage to 24.9% of all deaths (839 deaths) in Wales.

## Deaths due to COVID-19 in England and Wales

When adjusting for the size and age structure of the population, age-standardised mortality rates (ASMRs) for deaths due to COVID-19 in both England and Wales have increased significantly between October and November 2020 (Figure 2). In England, the ASMR for deaths due to COVID-19 significantly increased for the third consecutive month, with a rate of 191.3 deaths due to COVID-19 per 100,000 people in November 2020.

In Wales, the ASMR for deaths due to COVID-19 significantly increased for the second consecutive month, with a rate of 260.0 deaths per 100,000 people in November 2020. The rate of deaths due to COVID-19 was significantly higher in Wales than in England, also for the second consecutive month.
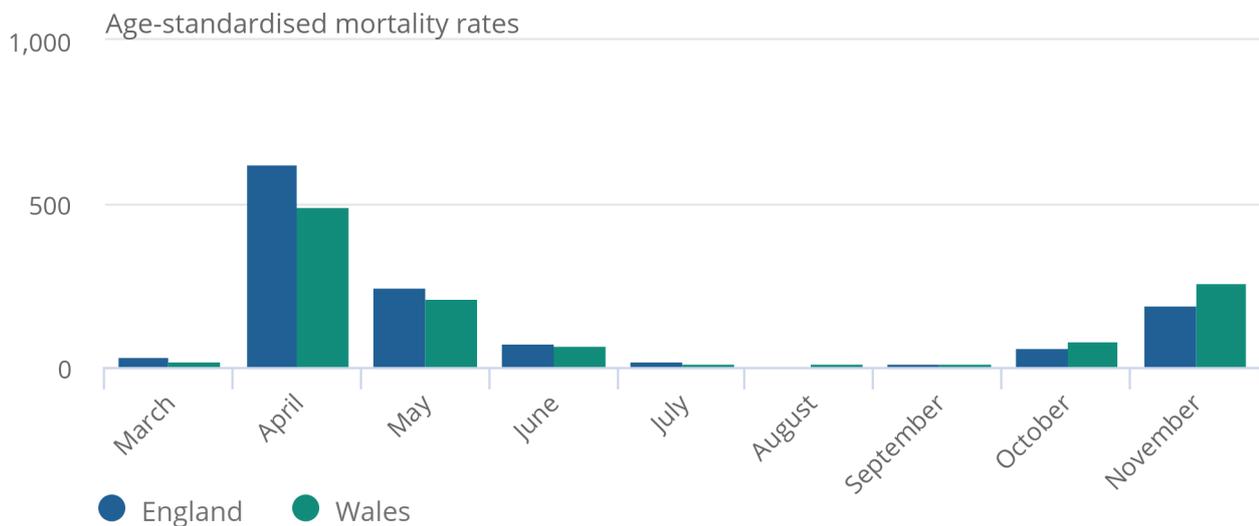
Although mortality rates due to COVID-19 have increased in October and November 2020, these remain significantly lower than in April 2020 (when both England and Wales experienced the highest COVID-19 mortality rates). In England, the ASMR due to COVID-19 in November 2020 was 69.3% lower than in April 2020 (623.2 deaths per 100,000 people). In Wales, the mortality rate due to COVID-19 in November 2020 was 47.5% lower than in April 2020 (495.1 deaths per 100,000 people).

**Figure 2: Mortality rates due to COVID-19 in November increased for the third consecutive month in England and the second consecutive month in Wales**

**Age-standardised mortality rates for deaths due to COVID-19, per 100,000 people, England and Wales, deaths registered in March to November 2020**

## Figure 2: Mortality rates due to COVID-19 in November increased for the third consecutive month in England and the second consecutive month in Wales

Age-standardised mortality rates for deaths due to COVID-19, per 100,000 people, England and Wales, deaths registered in March to November 2020

Age-standardised mortality rates



England ● Wales ●

**Source: Office for National Statistics – Monthly mortality analysis**

**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.

2. Figures are for deaths registered rather than deaths occurring in each period.

3. Figures for 2020 are based on provisional mortality data and projected populations.

4. Figures exclude non-residents of England and Wales.

5. Deaths "due to COVID-19" include only deaths where COVID-19 was the underlying cause of death. Age-standardised mortality rates for all deaths involving COVID-19 are available in the accompanying dataset.

## Deaths due to COVID-19 in each Middle-layer Super Output Area in England and Wales

Super Output Areas (SOAs) are small-area statistical geographies covering England and Wales. Each area has a similarly sized population and remains stable over time. For this analysis, Middle-layer Super Output Areas (MSOAs) have been used. The dataset shows the number of deaths from all causes, due to COVID-19, and due to other causes.

The following interactive map allows you to see the cumulative number of monthly deaths due to COVID-19 in each area.

**Figure 3: Number of deaths due to COVID-19 in Middle-layer Super Output Areas, England and Wales, deaths registered between 1 March and 30 November 2020**

**Source: Office for National Statistics - Monthly mortality analysis**

**Notes:**

1. Points on the map are placed at the centre of the local area they represent and do not show the actual location of deaths. The size of the circle is proportional to the number of deaths.

2. To protect confidentiality, a small number of deaths have been reallocated between neighbouring areas. Given the method used for this, figures for some areas may be different to previously published data.

3. Figures are for deaths registered rather than deaths occurring in each month.

4. Figures exclude death of non-residents and are based on August 2020 boundaries.

5. Deaths "due to COVID-19" include only deaths where COVID-19 was the underlying cause of death.

6. Locally adopted Middle-layer Super Output Area (MSOA) names are provided by House of Commons Library. While these names are not officially supported for National Statistics, they are provided here to help local users.

7. Figures are provisional.

Download the data

# 4 . Leading causes of death

Our leading causes of death groupings are based on a list developed by the World Health Organization (WHO). This categorises causes of death using the International Classification of Diseases, tenth edition (ICD-10) into groups that are epidemiologically more meaningful than single ICD-10 codes, for the purpose of comparing the most common causes of death in the population.

## Leading causes of death registered in November 2020

Figures 4 and 5 show the 10 most common underlying causes of death registered in November 2020 for England and Wales, compared with the five-year average for November (2015 to 2019).

**Figure 4: In England, COVID-19 was the leading cause of death in November 2020**

**Age-standardised mortality rate for selected leading causes of death, per 100,000 people, England, deaths registered in November 2020**
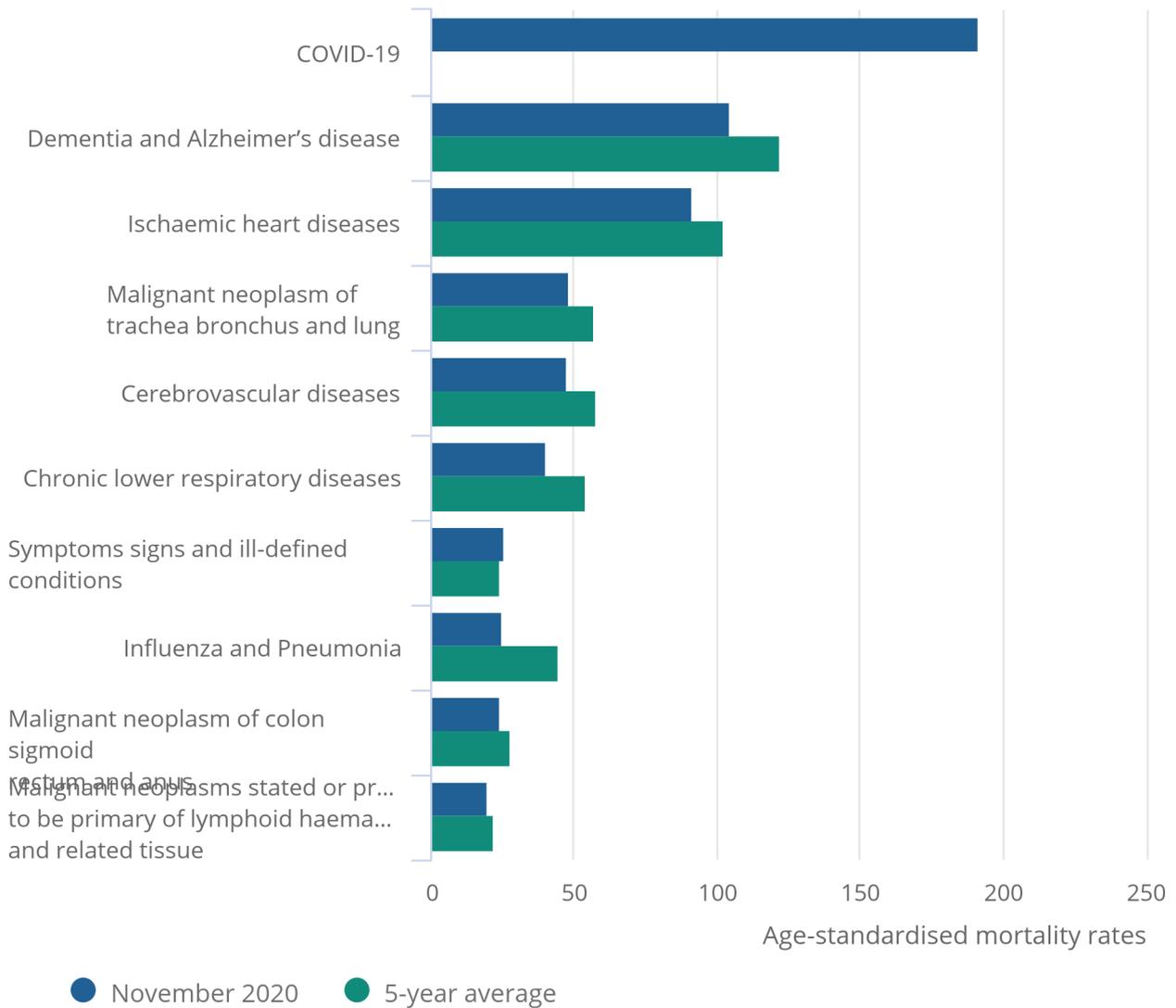
**Source: Office for National Statistics - Monthly mortality analysis**
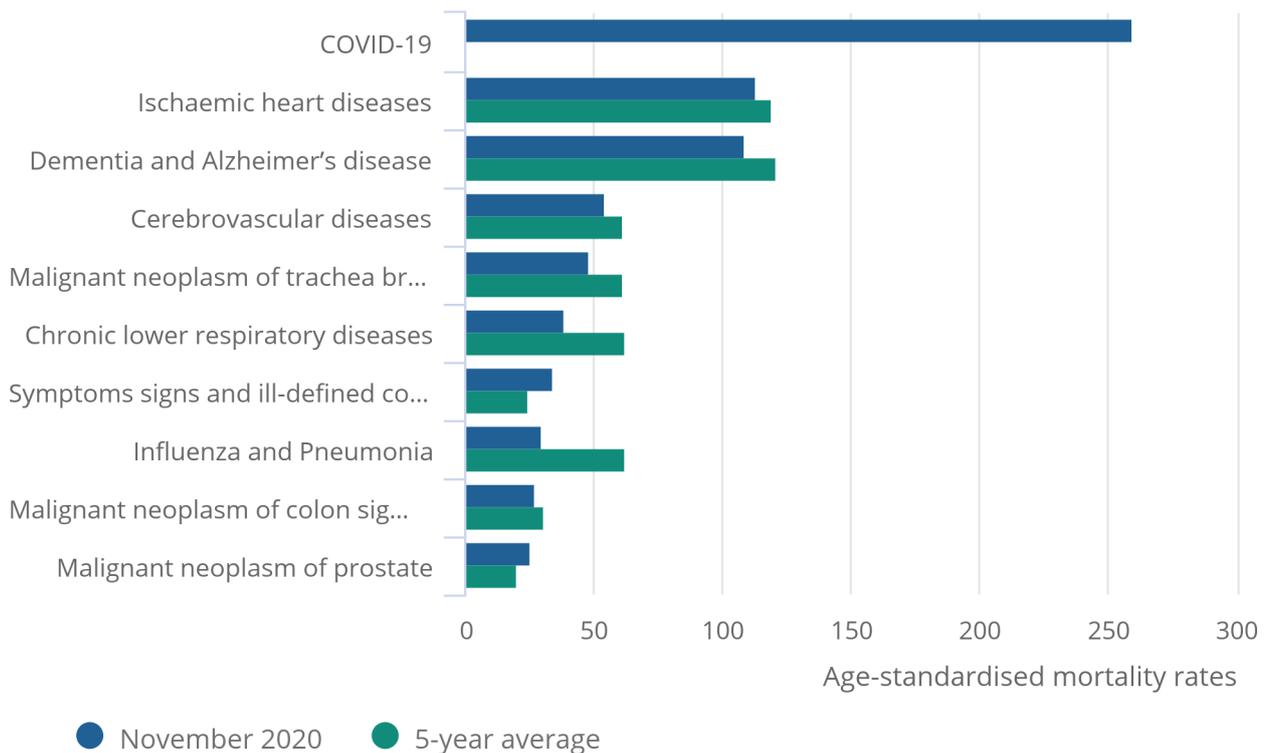
**Notes:**

1.  Age-standardised mortality rates per 100,000 population, 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.

2.  Figures are for deaths registered rather than deaths occurring in each period.

3.  Figures for 2020 are based on provisional mortality data and projected populations.

4.  Figures exclude deaths of non-residents.

5.  "COVID-19" includes only deaths where COVID-19 was the underlying cause of death.

**Figure 5: In Wales, COVID-19 was the leading cause of death in November 2020**

**Age-standardised mortality rate for selected leading causes of death, per 100,000 people, Wales, deaths registered in November 2020**

## Figure 5: In Wales, COVID-19 was the leading cause of death in November 2020

Age-standardised mortality rate for selected leading causes of death, per 100,000 people, Wales, deaths registered in November 2020



**Source: Office for National Statistics – Monthly mortality analysis**

**Notes:**

1. Age-standardised mortality rates per 100,000 population, 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.

2. Figures are for deaths registered rather than deaths occurring in each period.

3. Figures for 2020 are based on provisional mortality data and projected populations.

4. Figures exclude deaths of non-residents.

5. "COVID-19" includes only deaths where COVID-19 was the underlying cause of death.

In both England and Wales, the coronavirus (COVID-19) was the leading cause of death in November 2020, with 191.3 deaths per 100,000 people in England (8,686 deaths) and 260.0 deaths per 100,000 people in Wales (726 deaths). COVID-19 has not been the leading cause of death since May 2020. The disease has risen from the third most common cause of death registered in England and Wales in October 2020.

The rate of deaths due to COVID-19 was significantly higher than the next leading cause of death in both England and Wales. In England, the second most common cause of death in November 2020 was dementia and Alzheimer's disease, with 104.7 deaths per 100,000 people (4,772 deaths).

In Wales, ischaemic heart diseases were the second most common cause of death, with 113.5 deaths per 100,000 people (316 deaths). The COVID-19 mortality rate was more than double the next leading cause of death (ischaemic heart diseases) in Wales.

In England in November 2020, 8 of the 10 leading causes of death were significantly lower than the five-year average (2015 to 2019), with only the signs, symptoms, and ill-defined conditions category having a similar mortality rate to the five-year average. In Wales, 8 of the 10 leading causes were either significantly below or similar to the five-year average. Deaths from symptoms, signs, and ill-defined conditions were significantly above the five-year average in Wales.

## Leading causes of death registered year-to-date

In the first 11 months of 2020 (1 January to 30 November), the leading cause of death in both England and Wales was dementia and Alzheimer's disease, accounting for 11.8% of all deaths in England and 10.6% of all deaths in Wales. The rate of deaths from dementia and Alzheimer's disease was significantly above the five-year average in England (120.2 deaths per 100,000 people in 2020 compared with 118.0 deaths per 100,000 people for the five-year average), but similar to the five-year average in Wales.

COVID-19 was the second most common cause of death in both England (11.2% of all deaths) and Wales (9.8% of all deaths) for January to November 2020. More information on the 2020 year-to-date leading causes of death is available in Tables 11a and 11b of the accompanying dataset. More in-depth, annual analysis of leading causes of death is available for the UK (2001 to 2018) and England and Wales (2019).

# 5 . Age-standardised mortality rates by sex and age group, in November 2020

Generally, since 2001 (the beginning of our data time series), the age-standardised mortality rates for people aged both 0 to 74 years and 75 years and over have been decreasing in England and Wales. However, similar to the trend seen in all ages, improvements to mortality rates in both age groups have slowed since the early 2010s. More information on mortality rates by sex and age group (including age-specific mortality rates by five-year age group for people aged 75 years and over) is available in Tables 5 to 9 of the accompanying dataset.

# 6 . Deaths registered in the year-to-date

There were 517,148 deaths registered in England and 33,469 in Wales during the first 11 months (January to November) of 2020.

To gain a better idea of year-to-year differences in mortality rates, we calculated year-to-date age-standardised mortality rates (ASMR) based on deaths registered between 1 January and 30 November in each year from 2001 to 2020 (Figure 6). For England, the year-to-date age-standardised mortality rate for 2020 was 1,029.4 deaths per 100,000 people, which was statistically significantly higher than all years between 2009 and 2019.

For Wales, the year-to-date age-standardised mortality rate for 2020 was 1,088.6 deaths per 100,000 people. This was significantly higher than all years between 2010 and 2019.

**Figure 6: The mortality rate for January to November 2020 is significantly higher than the same period in each of the last 10 years**

**Age-standardised mortality rates, England and Wales, deaths registered between 1 January and 30 November 2020**

## Figure 6: The mortality rate for January to November 2020 is significantly higher than the same period in each of the last 10 years

Age-standardised mortality rates, England and Wales, deaths registered between 1 January and 30 November 2020



**Source: Office for National Statistics – Monthly mortality analysis**

**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.

2. Figures are for deaths registered rather than deaths occurring in each period.

3. Figures for 2020 are based on provisional mortality data and projected populations.

4. Figures exclude non-residents.

# 7 . Death occurrences in November 2020 and year-to-date

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. Analysis of deaths by date of registration is useful as the figures are comparable across time and geography. Owing to the length of time that it takes a death to be registered, using data based on registration can mean that we are not monitoring the most current death trends. For example, a death registered in November 2020 could have occurred in a previous month or even a previous year. Further information regarding death occurrences and registration delays can be found in Section 10: Measuring the data.

Between 1 January and 30 November 2020, 496,206 deaths occurred in England (and were registered by 5 December). This was 43,987 more deaths than the five-year average (2015 to 2019) for January to November. Of the 496,206 deaths that occurred, 11.9% were due to the coronavirus (COVID-19) (58,977 deaths).

In Wales, 32,364 deaths occurred in 2020 to date (and were registered by 5 December), which was 1,981 more deaths than the five-year average. COVID-19 was the underlying cause of death in 10.4% of all deaths that occurred (3,365 deaths).

In England, the first death due to COVID-19 occurred on 30 January 2020 (Figure 7). Since 11 March, the number of COVID-19 deaths occurring on each day rose (except for 6 April 2020, when it decreased by 12 deaths) until the peak of 1,225 deaths that occurred on 8 April 2020. Since 8 April, the number of COVID-19 deaths each day had been decreasing but began increasing again from mid-September.

The number of daily COVID-19 deaths has continued to increase throughout October and November, reaching 370 deaths on 18 November (the highest since 10 May at 387 deaths). The number of death occurrences on more recent dates are likely to rise as we receive more death registrations.

In Wales, the first death with an underlying cause of COVID-19 occurred on 15 March (Figure 8). As in England, the number of COVID-19 deaths per day reached the peak on 8 April 2020, when 70 deaths due to COVID-19 occurred in Wales. Since 8 April, the number of COVID-19 deaths occurring each day in Wales had been gradually decreasing, with no COVID-19 deaths occurring on 41 days between June and September. However, daily COVID-19 deaths increased throughout October and November, with 33 deaths occurring on 26 November 2020 (though this may be higher because of registration delays).

It is important to note that the number of death occurrences is incomplete as it is likely that more deaths need to be registered, therefore, comparisons should be treated with caution.

In particular, instances where the number of death occurrences on each day in November was below the range of the last five years are likely to be a result of when the data extract was created, as deaths that occurred towards the end of the month may not have been registered by that time. We would therefore expect the number of death occurrences to be higher in future releases.

**Figure 7: Daily deaths due to COVID-19 increased in October and November 2020 in England**

**Number of deaths occurring on each day in 2020[1], five-year average and range, England**
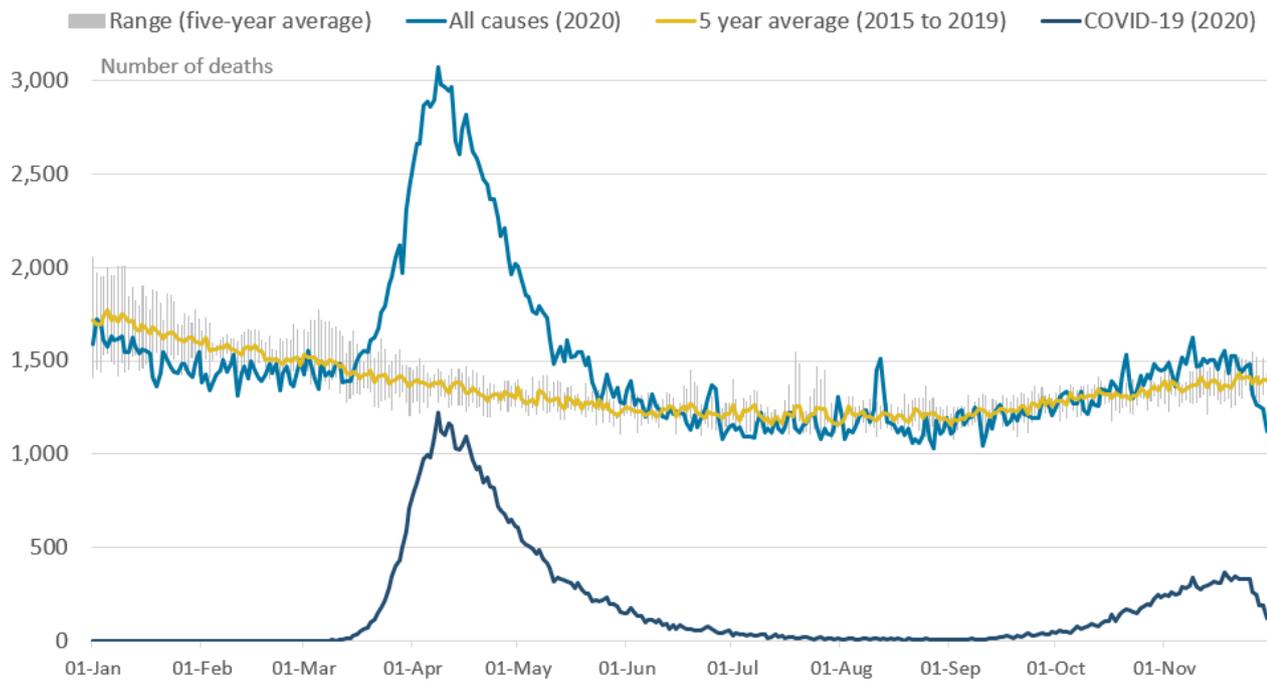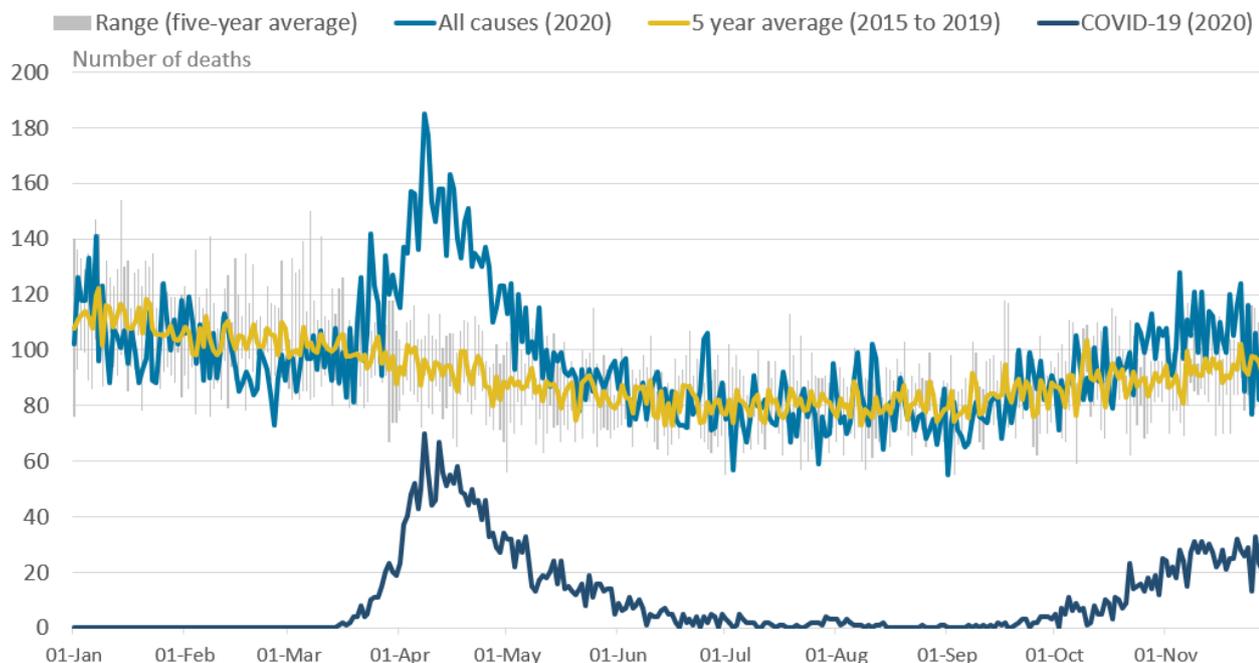


**Source: Office for National Statistics – Monthly mortality analysis**

**Notes:**

1.  Figures are for deaths occurring on each day rather than deaths registered, registered up to 5 December 2020. Death occurrences will increase as more deaths are registered, particularly for later dates.

2.  The range is the difference between the minimum and maximum value observed on each day during the five-year period (1 January to 30 November 2015 to 2019).

3.  Figures exclude non-residents.

4.  For 29 February, only data for leap years are included in the five-year average.

**Figure 8: In Wales, daily deaths due to COVID-19 increased in October and November 2020**

Number of deaths occurring on each day in 2020[1], five-year average and range, Wales



Source: Office for National Statistics – Monthly mortality analysis

Notes:

1. Figures are for deaths occurring on each day rather than deaths registered, registered up to 5 December 2020. Death occurrences will increase as more deaths are registered, particularly for later dates.

2. The range is the difference between the minimum and maximum value observed on each day during the five-year period (1 January to 30 November 2015 to 2019).

3. Figures exclude non-residents.

4. For 29 February, only data for leap years are included in the five-year average.

# 8 . Monthly mortality data

[Monthly mortality analysis, England and Wales](#)
Dataset | Released 17 December 2020
Monthly data on death registrations and death occurrences in England and Wales, broken down by sex and age. Includes deaths due to the coronavirus (COVID-19) by date of death occurrence, and comparisons of COVID-19 with the leading causes of death.

[Deaths due to COVID-19 by local area and deprivation](#)
Dataset | Released 17 December 2020
Provisional age-standardised mortality rates for deaths due to COVID-19 by age, sex, local authority and deprivation indices, and numbers of deaths by middle-layer super output area.

# 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 is available from the WHO.

## 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 date of occurrence and 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. In some circumstances, significance has also been tested using z scores. More information about this z test is available in Appendix 1 of the Sullivan guide (PDF, 1.19MB).

## 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

More quality and methodology information on strengths, limitations, appropriate uses, and how the data were created is available in the Mortality statistics in England and Wales QMI and User guide to mortality statistics.

The purpose of this bulletin is to provide timely surveillance of mortality in England and Wales, based on the best available provisional data, including all-cause mortality and deaths where the coronavirus (COVID-19) was the underlying cause.

The analysis contains deaths registered in November 2020 by age and sex, and also includes deaths that occurred in November 2020 by date of death. This expands on the quarterly data for England that were previously published in the Quarterly mortality report. Non-residents of England and Wales are excluded from this analysis. In November 2020 there were 58 deaths of non-residents that were registered in England and Wales.

More in-depth analysis on deaths due to COVID-19 is included in this bulletin in some months to meet user needs. In the November 2020 edition, we added analysis of Deaths due to COVID-19 by local area and deprivation.

Analysis by month of death registration is consistent with the weekly death registrations release and allows for a more timely analysis than would be possible using death occurrences. This is because a proportion of deaths that occurred in the previous month would not yet have been registered. On average, there is a delay of five days between a death occurring and it being registered, but this can be much longer, especially for certain causes of death. More information on this issue can be found in our impact of registration delays publication.

## Deaths data sources

This report is based primarily on death registrations, with a section on death occurrences for surveillance of recent mortality trends. Death occurrences show the number of deaths that occurred within a calendar period and give a better indication than registrations of exactly when deaths were at their highest. This allows mortality to be related to other factors such as weather patterns.

A provisional extract of death registrations and death occurrences data is taken at least four days after the end of the month, to allow time for deaths to be registered. Death registrations data for 2020 are provisional; however, we would expect only very small changes to total death registration counts once data are made final. Death occurrences are likely to change, especially for dates towards the end of the current month, as some deaths will not have been registered when the extract is taken.

Figures on deaths due to COVID-19 in this publication are different from the daily surveillance figures on COVID-19 deaths published by the Department of Health and Social Care (DHSC) on the GOV.UK website, as figures in this report are derived from the formal process of death registration. More information on the different sources of COVID-19 deaths data is available in Deaths registered weekly in England and Wales.

## Definition of COVID-19

The doctor certifying a death can list all causes in the chain of events that led to the death and pre-existing conditions that may have contributed to the death. Using this information, we determine an [underlying cause of death](). We use the term "due to COVID-19" when referring only to deaths with an underlying cause of death of COVID-19. When taking into account all of 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". Age-standardised rates for deaths due to COVID-19 and involving COVID-19 are available in the accompanying [dataset]().

Our definition of COVID-19 (regardless of whether it was the underlying cause or mentioned elsewhere on the death certificate) includes some cases where the certifying doctor suspected the death involved COVID-19 but was not certain. For example, a doctor may have clinically diagnosed COVID-19 based on symptoms, but this diagnosis may not have been confirmed because no test was available, or the test result was inconclusive.

Of the 61,361 deaths due to COVID-19, 3,971 (6.5%) were classified as "suspected" COVID-19. Including all deaths involving COVID-19, "suspected" COVID-19 was recorded on 6.7% (4,538 deaths) of all deaths involving COVID-19 in England and Wales.

## Monthly mortality rates

We publish the mid-year population estimates used for calculating rates; these are currently available up to 2019. For 2020 onwards, population projections were used.

Calculation of mortality rates for monthly 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 midpoint of the month using two years' worth of population estimates (or where these are not available, population projections). For the first half of the year (January to June), populations for the current year and the previous year are used; for the second half of the year (July to December), populations for the current year and the following year are used.

This is then multiplied by the number of days within the month 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.

For example:

June 2020 population =

$$= \left( population2019(i) + \left( (population2020(i) - population2019(i)) \times \left( \frac{m}{M} \right) \right) \right) \times \left( \frac{N}{M} \right)$$

where m is the number of days from 1 July 2019 (the start of the mid-year for the population estimate) to the midpoint of June inclusive, N is the number of days in June 2020, M is the number of days in 2020 and (i) is the age group.

July 2020 population =

$$= \left( population2020(i) + \left( (population2021(i) - population2020(i)) \times \left( \frac{m}{M} \right) \right) \right) \times \left( \frac{N}{M} \right)$$

where m is the number of days from 1 July 2019 (the start of the mid-year for the population estimate) to the midpoint of July inclusive, N is the number of days in July 2020, M is the number of days in 2020 and (i) is the age group.

For rates at lower geographical levels (such as regions and local authorities), we calculate the proportion of the country-level population that is within each geography (for example London has 19% of the England population). Then we apply this proportion to the country-level monthly populations to estimate the monthly population for this geography (for example London's monthly population for November 2020 would be 19% of the November 2020 population for England). Mid-year population estimates for 2019 are used to calculate the proportions.

## Acknowledgments

# 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 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 are 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.

Further information can be found in the Mortality statistics in England and Wales QMI and User guide to mortality statistics.

## Monthly mortality rates

As explained in Section 10: Measuring the data, rates in this publication have been adjusted to take account of the time period observed. Below country level, a more basic adjustment method has been used.

More quality and methodology information on strengths and limitations is available in the Mortality statistics in England and Wales QMI and User guide to mortality statistics.

# 12 . Related links

Deaths registered weekly in England and Wales
Bulletin | Released 15 December 2020
Provisional counts of the number of deaths registered in England and Wales, including deaths involving the coronavirus (COVID-19) pandemic, by age, sex and region, in the latest weeks for which data are available.

Deaths involving COVID-19, England and Wales
Bulletin | Released 17 July 2020
Number of deaths involving the coronavirus (COVID-19) that occurred in each month in England and Wales, by country, age, sex and place of death.

Deaths registered in England and Wales: 2019
Bulletin | Released 1 July 2020
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 involving COVID-19 by local area and socioeconomic deprivation: deaths occurring between 1 March and 31 July 2020
Bulletin | Released 28 August 2020
Provisional counts of the number of deaths and age-standardised mortality rates involving COVID-19 between 1 March and 31 July 2020 in England and Wales. Figures are provided by age, sex, geographies down to local authority level, and deprivation indices.

Deaths involving COVID-19, UK: deaths occurring between 1 March and 30 April 2020
Bulletin | Released 12 June 2020
Provisional counts of the number of deaths and age-standardised mortality rates involving the coronavirus (COVID-19) between 1 March and 30 April 2020 in the UK.

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.