

Statistical bulletin

# Monthly mortality analysis, England and Wales: April 2021

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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## Correction

**25 May 2021 09:59**

The sixth main point originally referenced "March and April 2020" rather than "March and April 2021". This has now been corrected and no other figures were affected. We apologise for any inconvenience caused.

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# 1 . Main points

- In April 2021, there were 38,899 deaths registered in England, 2,523 deaths (6.1%) fewer than the April five-year average (2015 to 2019); this was the first month that deaths were below the five-year average in England since August 2020.
- In Wales in April 2021, there were 2,562 deaths registered, 265 deaths (9.4%) fewer than the April average.
- The coronavirus (COVID-19) was the 9th leading cause of death in April 2021 in England (accounting for 2.4% of all deaths registered in April) and the 18th leading cause of death in Wales (1.4% of all deaths).
- The leading cause of death in April 2021 in England was ischaemic heart diseases (accounting for 10.7% of all deaths), changing from dementia and Alzheimer's disease in March 2021; ischaemic heart diseases continued to be the leading cause of death in Wales in April 2021 (11.7% of all deaths).
- In April 2021, the age-standardised mortality rate (ASMR) of deaths due to COVID-19 significantly decreased for the third consecutive month, to 20.6 deaths per 100,000 people in England and 12.6 deaths per 100,000 people in Wales, the lowest rates since September 2020.
- ASMRs for deaths due to COVID-19 significantly decreased across all regions of England between March and April 2021; Yorkshire and The Humber was the English region with the highest ASMR for deaths due to COVID-19 in April 2021 (30.0 deaths per 100,000 people), and the South West continued to have the lowest COVID-19 mortality rate (8.0 deaths per 100,000 people).
- In January to March 2021, the most common pre-existing condition for deaths due to COVID-19 was diabetes, identified in a fifth (20.5%) of all COVID-19 deaths; this is a change from 2020, when dementia and Alzheimer's disease was the most common pre-existing condition (identified in 25.3% of deaths due to COVID-19).

This bulletin includes an interactive map of deaths due to COVID-19 in each Middle-layer Super Output Area (see [Section 3](#)) and analysis of pre-existing conditions of people who died due to COVID-19 (see [Section 7](#)). The [accompanying datasets](#) include mortality rates for deaths due to COVID-19 by local area and deprivation, and deaths involving COVID-19 for the UK.

## 2 . Death registrations and the overall mortality rate for April 2021

Based on provisional data, there were 38,899 deaths registered in England in April 2021. This was 44,605 fewer deaths than in April 2020 and 2,523 deaths fewer than the five-year average (2015 to 2019). April 2021 was the first month where deaths in England were below the five-year average (6.1% lower) since August 2020.

The five-year average has been provided for 2015 to 2019 (rather than 2016 to 2020) because of the impact of the coronavirus (COVID-19) pandemic on deaths registered in 2020. The average for 2015 to 2019 provides a comparison of the number of deaths expected in a usual (non-pandemic) year.

In Wales, the provisional number of deaths registered in April 2021 was 2,562. This was 1,985 fewer deaths than in April 2020 and 265 fewer deaths than the five-year average for April (9.4% lower).

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. In England, mortality rates for the month of April had been generally decreasing since 2002 (the highest mortality rate in this analysis), from 1,303.2 deaths per 100,000 people in 2002, to a low of 854.8 deaths per 100,000 people in April 2017. The [statistically significant](#) decrease in ASMRs from 2002 was seen in both males and females (Figure 1). In April 2020 (when deaths due to COVID-19 reached their first peak), there was a significant increase in all-cause ASMRs (compared with April 2019), to 1,859.6 deaths per 100,000 people.

In England, the April 2021 mortality rate (851.2 deaths per 100,000 people) was the lowest mortality rate for the month of April since our data time series began in 2001. The ASMR for April 2021 was significantly lower than every other year in this analysis apart from April 2017, which had a similar mortality rate (854.8 deaths per 100,000 people).

In Wales, mortality rates for April had also been decreasing over time, from 1,399.3 deaths per 100,000 people in 2003 to a low of 976.6 deaths per 100,000 people in April 2011.

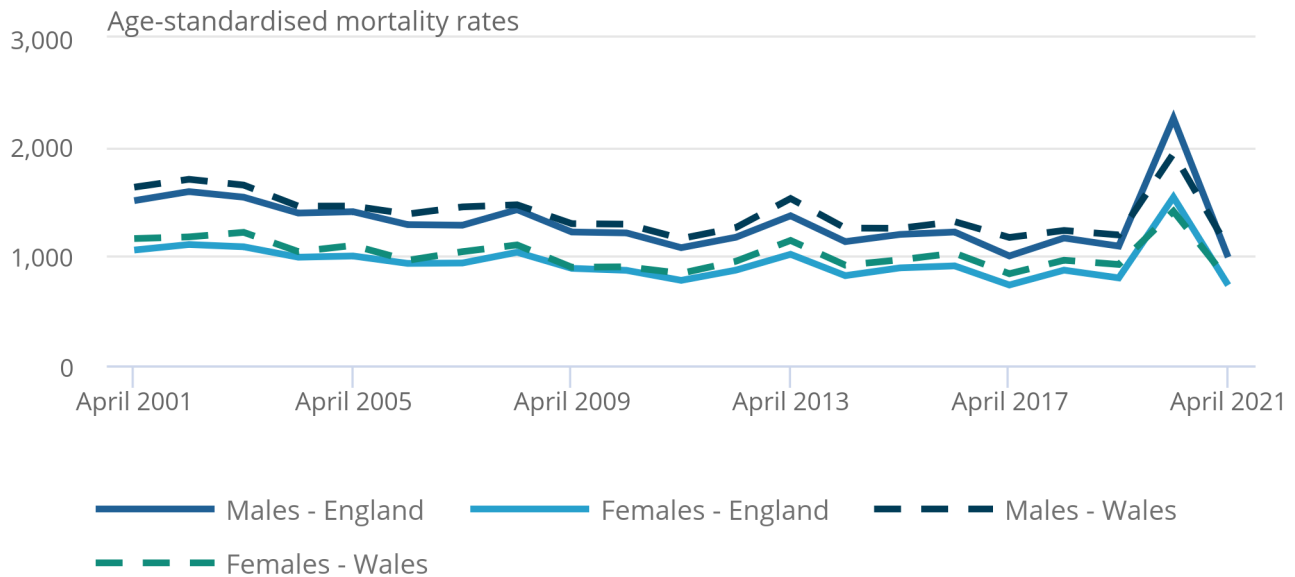
In April 2021, the mortality rate in Wales significantly decreased compared with April 2020 (1,651.3 deaths per 100,000 people) to 920.0 deaths per 100,000 people; this was because the COVID-19 pandemic reached its first peak in April 2020. The April 2021 mortality rate for Wales was significantly lower than the mortality rate in every year in our data time series, except for April 2011 and 2017.

## Figure 1: April 2021 had the lowest mortality rate in this analysis for both England and Wales

Age-standardised mortality rates by sex, England and Wales, deaths registered in April 2001 to April 2021

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Age-standardised mortality rates by sex, England and Wales, deaths registered in April 2001 to April 2021



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 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 and 2021 are based on provisional mortality data and projected populations.
4. Figures exclude non-residents.
5. The five-year average has been provided for 2015 to 2019 (rather than 2016 to 2020) because of the impact of the coronavirus (COVID-19) pandemic on deaths registered in 2020. The average for 2015 to 2019 provides a comparison of the number of deaths expected per month in a usual (non-pandemic) year.

### 3 . Deaths due to COVID-19 registered in April 2021

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 April, in most cases (72.4% in England and 62.5% in Wales) where COVID-19 was mentioned on the death certificate, it was 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 38,899 deaths registered in April 2021 in England, 2.4% (941 deaths) were due to COVID-19. Including all deaths involving COVID-19 increases the percentage to 3.3% of all deaths (1,299 deaths) in England in April 2021.

In Wales, 1.4% of the 2,562 deaths registered in April 2021 were due to COVID-19 (35 deaths). Including all deaths involving COVID-19 increases the percentage to 2.2% of all deaths (56 deaths) in Wales.

In both England and Wales, April 2021 saw the largest month-on-month decrease in deaths due to COVID-19 since the beginning of the coronavirus pandemic (77.6% decrease in England, 81.5% decrease in Wales, from March 2021).

## Mortality rates for deaths due to COVID-19

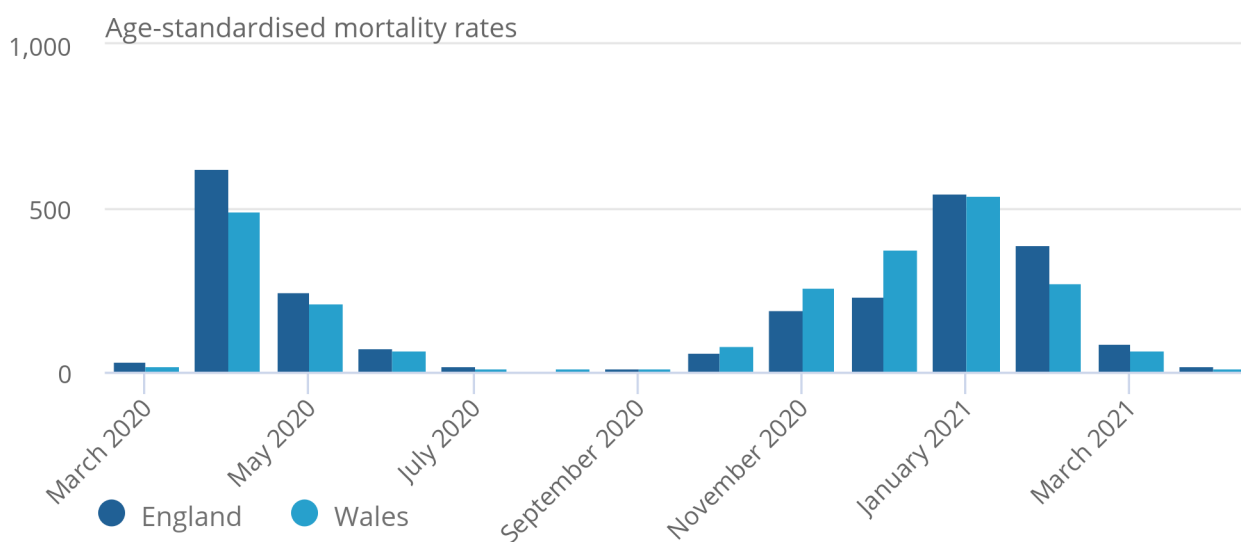
When adjusting for the size and age structure of the population, age-standardised mortality rates (ASMRs) for deaths due to COVID-19 in both England and Wales decreased significantly for the third consecutive month. In England, the ASMR for deaths due to COVID-19 decreased to 20.6 deaths per 100,000 people in April 2021 (compared with 89.3 in March 2021). In Wales, the ASMR for deaths due to COVID-19 decreased to 12.6 deaths per 100,000 people in April 2021 (compared with 65.2 in March 2021).

### Figure 2: Mortality rates due to COVID-19 in April 2021 significantly decreased for the third consecutive month

Age-standardised mortality rates for deaths due to COVID-19, per 100,000 people, England and Wales, deaths registered in March 2020 to April 2021

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Age-standardised mortality rates for deaths due to COVID-19, per 100,000 people, England and Wales, deaths registered in March 2020 to April 2021



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 are adjusted to allow for comparisons with annual rates. For more information, see [Section 10: Measuring the data](#).
2. Figures for 2020 and 2021 are based on provisional mortality data and projected populations.
3. Figures exclude non-residents.
4. Deaths "due to COVID-19" include only deaths where COVID-19 was the underlying cause of death.

In April 2021, the ASMRs for deaths due to COVID-19 significantly decreased for the third consecutive month for both males (27.8 per 100,000 males in England and 15.8 per 100,000 males in Wales) and females (14.8 per 100,000 females in England and 9.7 per 100,000 females in Wales). More information on mortality rates by sex is available in Tables 3a and 3b of the [accompanying dataset](#).

## Deaths due to COVID-19 by Middle-layer Super Output Area

[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 [accompanying dataset](#) shows the number of deaths from all causes as well as deaths due to COVID-19.

The following interactive map shows 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, March 2020 to April 2021

[Download the data](#)

#### 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 deaths of non-residents; geographical boundaries are based on the most up-to-date information available at the time of publication.
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.

Please note that the MSOA map will not be updated in future releases because of the small numbers of COVID-19 deaths across these small geographical areas. This decision will be kept under review and reconsidered if deaths start to increase again.

## 4 . Leading causes of death



## Leading causes of death registered in April 2021

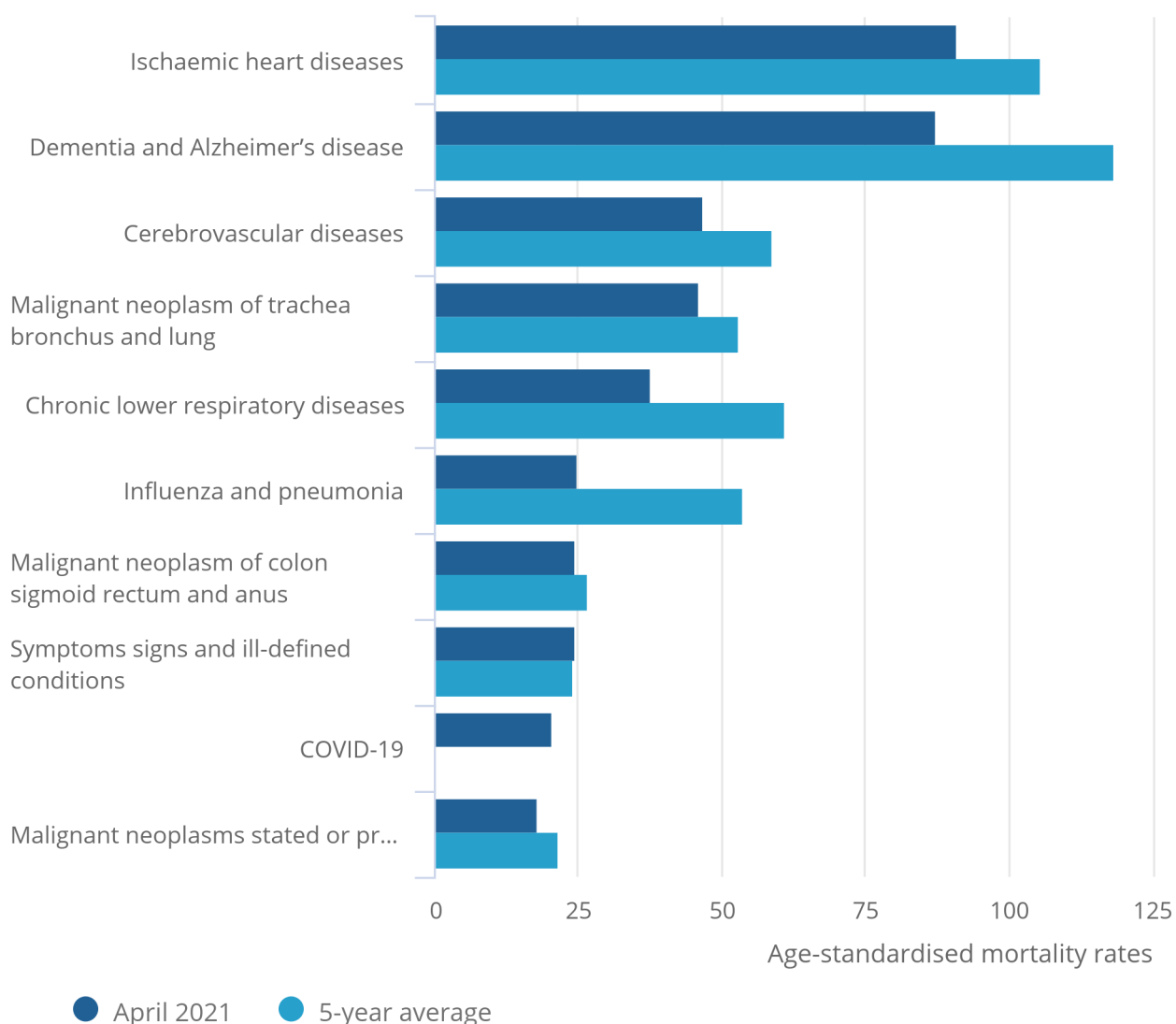
Figures 4 and 5 show the 10 most common underlying causes of death, (based on the [leading causes of death groupings](#)) registered in April 2021 for England and Wales, compared with the five-year average for April (2015 to 2019).

**Figure 4: In England, Ischaemic heart diseases was the leading cause of death in April 2021**

Age-standardised mortality rate for selected leading causes of death, per 100,000 people, England, deaths registered in April 2021

### Figure 4: In England, Ischaemic heart diseases was the leading cause of death in April 2021

Age-standardised mortality rate for selected leading causes of death, per 100,000 people, England, deaths registered in April 2021



Source: Office for National Statistics – Monthly mortality analysis

Notes:

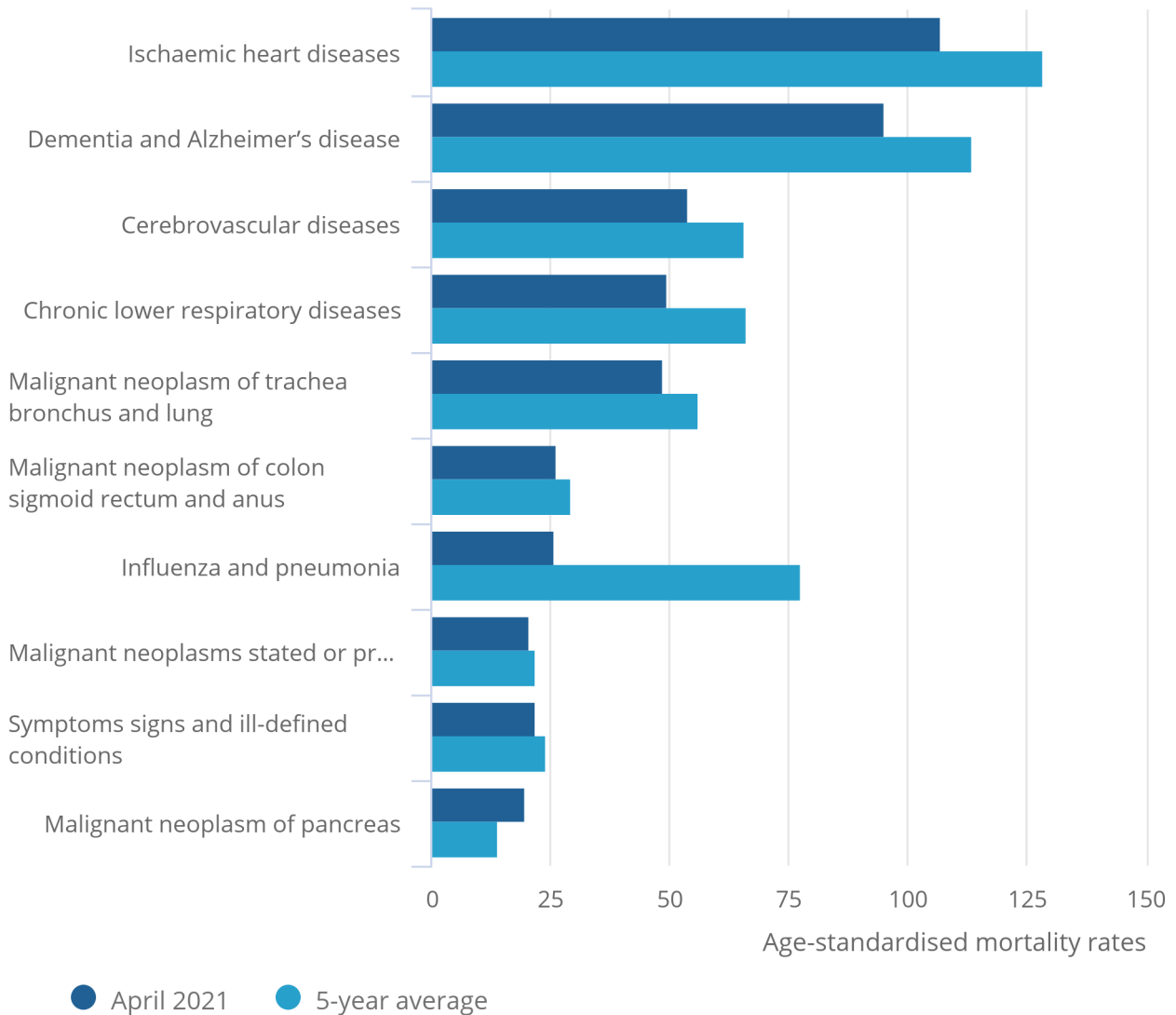
1. Age-standardised mortality rates per 100,000 population, standardised to the 2013 European Standard Population. Monthly rates are adjusted to allow for comparisons with annual rates. For more information, see [Section 10: Measuring the data](#).
2. Figures for 2020 and 2021 are based on provisional mortality data and projected populations.
3. Figures exclude deaths of non-residents.
4. "COVID-19" includes only deaths where COVID-19 was the underlying cause of death.
5. The five-year average has been provided for 2015 to 2019 (rather than 2016 to 2020) because of the impact of the coronavirus (COVID-19) pandemic on deaths registered in 2020. The average for 2015 to 2019 provides a comparison of the number of deaths expected per month in a usual (non-pandemic) year.

**Figure 5: In Wales, Ischaemic heart diseases was the leading cause of death in April 2021**

Age-standardised mortality rate for selected leading causes of death, per 100,000 people, Wales, deaths registered in April 2021

**Figure 5: In Wales, Ischaemic heart diseases was the leading cause of death in April 2021**

Age-standardised mortality rate for selected leading causes of death, per 100,000 people, Wales, deaths registered in April 2021



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 are adjusted to allow for comparisons with annual rates. For more information, see [Section 10: Measuring the data](#).
2. Figures for 2020 and 2021 are based on provisional mortality data and projected populations.
3. Figures exclude deaths of non-residents.
4. The five-year average has been provided for 2015 to 2019 (rather than 2016 to 2020) because of the impact of the coronavirus (COVID-19) pandemic on deaths registered in 2020. The average for 2015 to 2019 provides a comparison of the number of deaths expected per month in a usual (non-pandemic) year.

In both England and Wales, ischaemic heart diseases was the leading cause of death in April 2021, with 90.9 deaths per 100,000 people in England (4,144 deaths) and 107.1 deaths per 100,000 people in Wales (300 deaths). The 2nd most common cause of death in April 2021 was dementia and Alzheimer's disease, with 87.3 deaths per 100,000 people in England (4,018 deaths) and 95.0 deaths per 100,000 people in Wales (267 deaths).

In England, the coronavirus (COVID-19) was the 9th leading cause of death in April 2021 (941 deaths) and the 18th leading cause of death in Wales (35 deaths). This is compared with March 2021, where COVID-19 was the 3rd leading cause of death in both countries (4,198 deaths in England and 189 deaths in Wales).

In England in April 2021, 7 of the 10 leading causes of death were significantly lower than the five-year average (2015 to 2019). In particular, the mortality rate for deaths with an underlying cause of influenza and pneumonia was 53.7% lower in April 2021 than the five-year average for April; this is likely in part because of coronavirus restrictions and guidance, such as social distancing, reducing the spread of infections such as flu.

In Wales, 4 of the 10 leading causes were significantly lower than the five-year average, with all other leading causes for April 2021 having similar mortality rates to the five-year average. Similar to England, the April 2021 mortality rate for influenza and pneumonia was 66.9% lower than the five-year average for April.

## **Leading causes of death registered in the year-to-date**

In the first four months (January to April) of 2021, the leading cause of death in both England and Wales was COVID-19, accounting for 23.0% of all deaths in England and 19.0% of all deaths in Wales. The year-to-date mortality rate for deaths due to COVID-19 was 262.7 deaths per 100,000 people in England and 223.3 deaths per 100,000 people in Wales.

In both countries, the year-to-date COVID-19 mortality rate was significantly higher than the next leading cause of death (dementia and Alzheimer's disease in England and ischaemic heart diseases in Wales).

More information on the 2021 year-to-date leading causes of death is available in Tables 11a and 11b of the [accompanying dataset](#). More in-depth [analysis of leading causes of death](#) is available in our annual publication based on finalised mortality data.

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

There were 208,748 deaths registered in England and 13,175 in Wales during the first four months (January to April) of 2021.

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 in January to April of each year from 2001 to 2021 (Figure 6). For England, the year-to-date age-standardised mortality rate for 2021 was 1,144.1 deaths per 100,000 people, which was [statistically significantly](#) lower than the same period in 2020 (1239.3 deaths per 100,000 people). However, when compared with the same period in 2019 (994.5 deaths per 100,000 people), the 2021 year-to-date mortality rate was significantly higher.

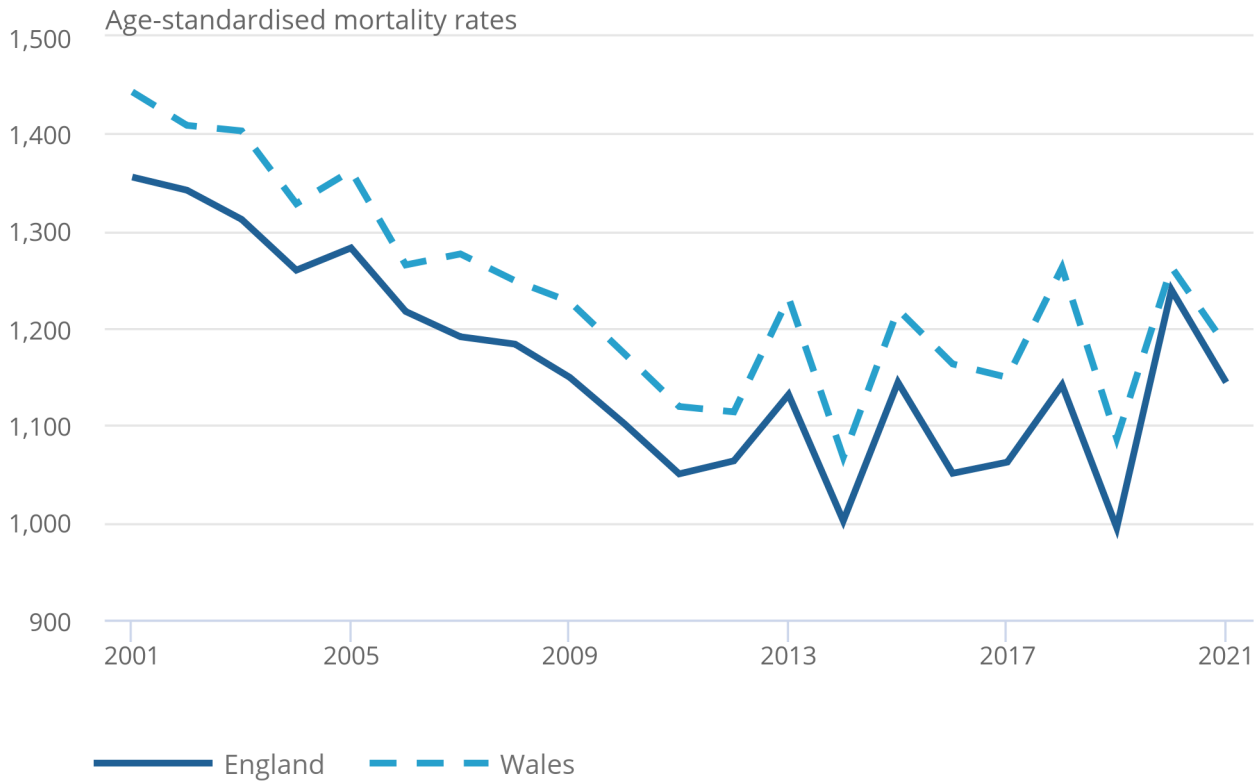
For Wales, the year-to-date age-standardised mortality rate for 2021 was 1,181.6 deaths per 100,000 people. This was statistically significantly lower than the same period in 2020 (1262.7 deaths per 100,000 people). But, similar to England, January to April 2021 was significantly higher than the same period in 2019 (1,086.2 deaths per 100,000 people).

**Figure 6: The mortality rate for January to April 2021 was significantly lower than the same period in 2020 in both England and Wales**

Age-standardised mortality rates, England and Wales, deaths registered in January to April 2001 to 2021

Figure 6: The mortality rate for January to April 2021 was significantly lower than the same period in 2020 in both England and Wales

Age-standardised mortality rates, England and Wales, deaths registered in January to April 2001 to 2021



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.

## 6 . Death occurrences in April 2021 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. Further information can be found in [Section 10: Measuring the data](#).

In April 2021, 32,967 deaths occurred in England (and were registered by 7 May). This was 7,466 fewer deaths than the five-year average (2015 to 2019) for April (18.5% lower). Of the 32,967 deaths that occurred, 1.8% were due to COVID-19 (589 deaths).

In Wales, 2,296 deaths occurred in April 2021 (and were registered by 7 May), which was 478 less deaths than the five-year average (17.2% lower). COVID-19 was the underlying cause of death in 1.3% of all deaths that occurred (29 deaths).

In England, the first death due to COVID-19 occurred on 30 January 2020. Figure 7 shows the trend in COVID-19 death occurrences from March 2020 onwards. The largest number of COVID-19 deaths that occurred in a single day in England was on 8 April 2020 (1,225 deaths), followed by 19 January 2021 (1,197 deaths).

### Figure 7: In England, daily deaths due to COVID-19 continued to decrease in April 2021

Number of deaths occurring on each day from March 2020 to April 2021<sup>1</sup>, five-year average and range, England

[Download the data](#)

#### Notes

1. Figures are for deaths occurring on each day rather than deaths registered, registered up to 7 May. Death occurrences will increase as more deaths are registered, particularly for later dates.
2. Figures exclude non-residents.
3. "COVID-19 deaths" include only deaths where COVID-19 was the underlying cause.
4. This chart includes deaths from 1 March 2020. Three deaths due to COVID-19 occurred prior to this (one death in January 2020 and two deaths in February 2020) in England, but are not included here.

In Wales, the first death with an underlying cause of COVID-19 occurred on 15 March. Figure 8 shows the trend in COVID-19 death occurrences from March 2020 onwards. The highest number of daily deaths due to COVID-19 occurred on 11 January 2021 in Wales (76 deaths), followed by 8 April 2020 (70 deaths).

### Figure 8: In Wales, daily deaths due to COVID-19 continued to decrease in April 2021

Number of deaths occurring on each day in from March 2020 and April 2021<sup>1</sup>, five-year average and range, Wales

[Download the data](#)

#### Notes

1. Figures are for deaths occurring on each day rather than deaths registered, registered up to 7 May 2021. Death occurrences will increase as more deaths are registered, particularly for later dates.
2. Figures exclude non-residents.
3. "COVID-19 deaths" include only deaths where COVID-19 was the underlying cause.

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 April was below the range of the last five years are likely to 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.



## 7 . Pre-existing conditions of people whose death was due to COVID-19, deaths registered in January to March (Quarter 1) 2021

In this section we use the multiple health conditions that can be recorded on a death certificate to identify deaths where there were pre-existing health conditions that contributed to the cause of death. Health conditions are recorded on the death certificate only if the certifying doctor or coroner believed they made some contribution to the death, direct or indirect: the death certificate does not include all health conditions from which the deceased might have suffered if they were not considered relevant. However, the fact that a pre-existing condition was recorded does not suggest that the deceased was likely to have died from that condition in the absence of the coronavirus (COVID-19) infection.

The most common pre-existing condition for deaths due to COVID-19 that were registered in January to March 2021 was diabetes. A fifth (20.5%) of all deaths due to COVID-19 registered in this period had a pre-existing condition of diabetes, with a higher proportion of deaths in those under 65 (25.2%) compared with those aged 65 years and over (19.8%). These proportions are in line with [those reported for 2020](#) (all ages, 20.0%; under 65 years, 27.3%; 65 years and over, 19.2%).

The 2nd most common pre-existing condition was dementia and Alzheimer's disease, which was mentioned in 20.0% of COVID-19 deaths registered in the first three months of 2021. This is a fall from 25.3% of COVID-19 deaths registered in 2020, [when dementia and Alzheimer's disease was the most common pre-existing condition for deaths due to COVID-19](#). There are two observable reasons for this change. Firstly, the proportion of COVID-19 deaths registered in people aged 65 years and above that mentioned dementia and Alzheimer's disease has fallen from 27.9% in 2020 to 22.7% in the first three months of 2021 (the number of those aged under 65 years with this pre-existing condition has also fallen from 2.0% to 1.5%). Secondly, the proportion of all COVID-19 deaths registered to people aged 65 years and above has also fallen, from 90% in 2020 to 87% in the first three months of 2021.

The 20 most common pre-existing conditions for deaths due to COVID-19 that were registered in January to March 2021 in England and Wales are shown in Table 1a by broad age band ([see accompanying datasets](#)); Tables 1b and 1c show data for death registrations for residents of England and Wales, respectively. Tables 3a to 3c in the dataset show the data by place of death. In these tables, pre-existing conditions are counted separately, so that a death where there was more than one pre-existing condition may appear under several different categories.

Deaths with no pre-existing conditions are those where COVID-19 was recorded on the death certificate with either no other conditions mentioned, or with conditions that are consequences of COVID-19. Overall, 13.1% of COVID-19 deaths registered in January to March 2021 had no pre-existing conditions ([Table 2](#) in the dataset). The proportion with no pre-existing conditions was higher in Wales than in England. Similarly, the mean number of pre-existing conditions of deaths in Wales (1.7) was lower than in England (2.0; [Table 2](#) in the dataset). The total number of pre-existing conditions mentioned for each COVID-19 death tended to be greater among people aged 65 years and over than among those aged under 65 years ([Table 2](#) in the dataset).

The 20 most common pre-existing conditions are analysed by place of death in Tables 3a to 3c in the [dataset](#). Diabetes was the most common pre-existing condition for deaths due to COVID-19 occurring in private homes and occurring in hospital, but the 3rd most common for deaths occurring in care homes. For deaths occurring in care homes, dementia and Alzheimer's disease was by far the most common pre-existing condition (out of 9,859 care home deaths, 4,933 had dementia and Alzheimer's disease as a pre-existing condition - 50% of all deaths due to COVID-19 that occurred in care homes).

Hypertensive diseases was the 3rd most common pre-existing condition overall for COVID-19 deaths in January to March 2021, and the 2nd most common pre-existing condition for deaths occurring in hospital and in those aged under 65 years. Strikingly, in England the proportion of COVID-19 deaths with the pre-existing condition of hypertensive diseases was much higher than in Wales (20.1% compared with 11.6%). This difference in proportions of COVID-19 deaths registered with the pre-existing condition of hypertensive diseases was also observed between [England and Wales in 2020](#).

## 8 . Monthly mortality data

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

Dataset | Released 20 May 2021

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 20 May 2021

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.

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

Dataset | Released 20 May 2021

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 20 May 2021

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.

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

Dataset | Released 20 May 2021

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 is available from the World Health Organisation ([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 was not part of the causal sequence. More information on the pre-existing conditions methodology is available in the [accompanying 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 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.

## 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 is available in the [Mortality statistics in England and Wales QMI](#) and [User guide to mortality statistics](#).

## Deaths data sources

This bulletin is based primarily on death registrations, which 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. More information can be found in our [impact of registration delays publication](#).

A section on death occurrences is included to allow 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 on the first working day after the 8th of the month, to allow time for deaths to be registered. Death registration data for 2020 and 2021 are provisional, however we would expect only very small changes to 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 bulletin differ from the [statistics 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. 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 including all 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".

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 123,744 deaths due to COVID-19, 4,012 (3.2%) were classified as "suspected" COVID-19. Including all 139,016 deaths involving COVID-19, "suspected" COVID-19 was recorded on 3.3% (4,589 deaths) of all deaths involving COVID-19 in England and Wales.

From the February 2021 bulletin, new International Classification of Diseases (ICD-10) codes for COVID-19 issued by the World Health Organization (WHO) have been implemented for COVID-19 deaths. The new codes are U09.9 (post-COVID condition, where the acute COVID had ended before the condition immediately causing death occurred) and U10.9 (Multisystem inflammatory syndrome associated with COVID-19 (also called Kawasaki-like syndrome), a specific, uncommon effect of COVID-19 in children). These are in addition to the existing codes of U07.1 (COVID-19, virus identified) and U07.2 (COVID-19, virus not identified, that is, COVID-19 stated to be unconfirmed or suspected).

As ICD-10 code U09.9 cannot be assigned to the underlying cause of death, our deaths due to COVID-19 definition does not include this code. Table 1 summarises the ICD-10 codes used to define COVID-19 deaths.

Table 1: International Classification of Diseases, Tenth Edition (ICD-10) codes used to define deaths due to COVID-19 and involving COVID-19

### ICD-10 code Description

<b>U07.1</b>	COVID-19, virus identified
<b>U07.2</b>	COVID-19, virus not identified
<b>U09.9<sup>1</sup></b>	Post-COVID condition, unspecified
<b>U10.9</b>	Multisystem inflammatory syndrome associated with COVID-19, unspecified

Source: Office for National Statistics

### Notes

1. ICD-10 code U09.9 cannot be assigned to the underlying cause of death so is not included in the deaths "due to COVID-19" definition.

There are several ICD-10 codes not included in our definitions of deaths due to COVID-19 and deaths involving COVID-19; these are summarised in Table 2. ICD-10 code U08.9 is used to record an earlier episode of COVID-19 when the person no longer suffers from COVID-19. ICD-10 codes U11.9 and U12.9 relate to COVID-19 vaccines rather than COVID-19 itself. U11.9 is an optional code that may be used when a person encounters health services for the specific purposes of receiving a COVID-19 vaccine, and U12.9 covers deaths caused by an adverse effect of the COVID-19 vaccine. Although these three codes are not included in our figures for deaths "due to" or "involving" COVID-19, a summary of deaths for these codes is available in Table 12 of the [accompanying dataset](#).

Table 2: International Classification of Diseases, Tenth Edition (ICD-10) codes for personal history of COVID-19 and COVID-19 vaccines

ICD-10 code	Description
U08.9	Personal history of COVID-19, unspecified
U11.9	Need for immunisation against COVID-19, unspecified
U12.9	COVID-19 vaccines causing adverse effects in therapeutic use, unspecified

Source: Office for National Statistics

## Monthly mortality rates

Mid-year population estimates are used for calculating rates if available; these are currently published up to 2019. For 2020 onwards, population projections are 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 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 monthly mortality rates.

For example:

June 2020 population equals

$$\left( population_{2019}(i) + \left( (population_{2020}(i) - population_{2019}(i)) \times \left( \frac{m}{M} \right) \right) \right) \times \left( \frac{N}{M} \right)$$

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 equals

$$\left( population_{2020}(i) + \left( (population_{2021}(i) - population_{2020}(i)) \times \left( \frac{m}{M} \right) \right) \right) \times \left( \frac{N}{M} \right)$$

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 geographies where population projections are not available (such as deprivation indices, which are based on Lower Super Output Areas), we calculate the proportion of the country-level population that is within each geography. Then we apply this proportion to the country-level population projections to estimate a population projection for that area. This estimated projection is then used in the monthly population method previously described. Mid-year population estimates for 2019 are used to calculate the proportions.

## Acknowledgement

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## 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. Until the data are finalised (in the summer after the reference year), they are subject to change, though we would not expect large changes to total numbers of deaths.

## Data coverage, timeliness and registration delays

Monthly death registration data give complete population coverage. 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 the [User guide to mortality statistics](#).

## Area of usual residence

Non-residents of England and Wales are excluded from this analysis. In April 2021, there were 52 deaths of non-residents that were registered in England and Wales.

## 12 . Related links

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

Bulletin | Released 18 May 2021

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 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.

### [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.

### [Deaths at home increased by a third in 2020, while deaths in hospitals fell except for COVID-19](#)

The coronavirus (COVID-19) was the main reason for a rise in the overall number of deaths registered in England and Wales in 2020. Many deaths not due to COVID-19, which would normally have occurred in hospital, happened in private homes instead.