Office for National Statistics

Statistical bulletin

Monthly mortality analysis, England and Wales: December 2021

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 December 2021, there were 49,428 deaths registered in England, 7,346 deaths (17.5%) more than the December five-year average (2015 to 2019); there were 3,336 deaths registered in Wales, 470 deaths (16.4%) more than the December average.
- The leading cause of death in December 2021 was dementia and Alzheimer's disease in both England (accounting for 12.4% of all deaths) and Wales (12.1% of all deaths).
- Coronavirus (COVID-19) was the fourth leading cause of death in December 2021 in both England (accounting for 5.4% of all deaths) and Wales (5.2% of all deaths).
- The proportion of deaths due to COVID-19 (of all deaths that involved COVID-19) decreased between November and December 2021 in both England (from 84.9% to 83.8%) and Wales (from 83.9% to 79.6%).
- Taking into account the population size and age structure, the age-standardised mortality rate (ASMR) for deaths due to COVID-19 decreased significantly between November and December 2021 in both England (56.3 deaths per 100,000 people) and Wales (59.3 deaths per 100,000 people).
- The East Midlands was the English region with the highest ASMR for deaths due to COVID-19 in December 2021 (72.5 deaths per 100,000 people).
- In Quarter 4 (Oct to Dec) 2021, diabetes remained the most common pre-existing condition mentioned on death certificates for deaths due to COVID-19 in England and Wales (22.5% of all deaths due to COVID-19).

2 . Death registrations and the overall mortality rate for December 2021

Based on provisional data, there were 49,428 deaths registered in England in December 2021. This was 3,232 fewer deaths than in December 2020 and 7,346 deaths more than the 2015 to 2019 five-year average (17.5% higher).

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.

From the January 2022 edition of this bulletin, we will calculate the five-year average from 2016 to 2019 and 2021. This moves our five-year average along by a year but does not include the exceptionally high number of deaths seen in 2020. This is so that deaths in 2022 are compared with a five-year average that is up-to-date while still being close to representing a usual (non-pandemic) year. For more information, see Understanding excess deaths during a pandemic.

In Wales, the provisional number of deaths registered in December 2021 was 3,336. This was 605 fewer deaths than in December 2020 and 470 more deaths than the five-year average for December (16.4% higher).

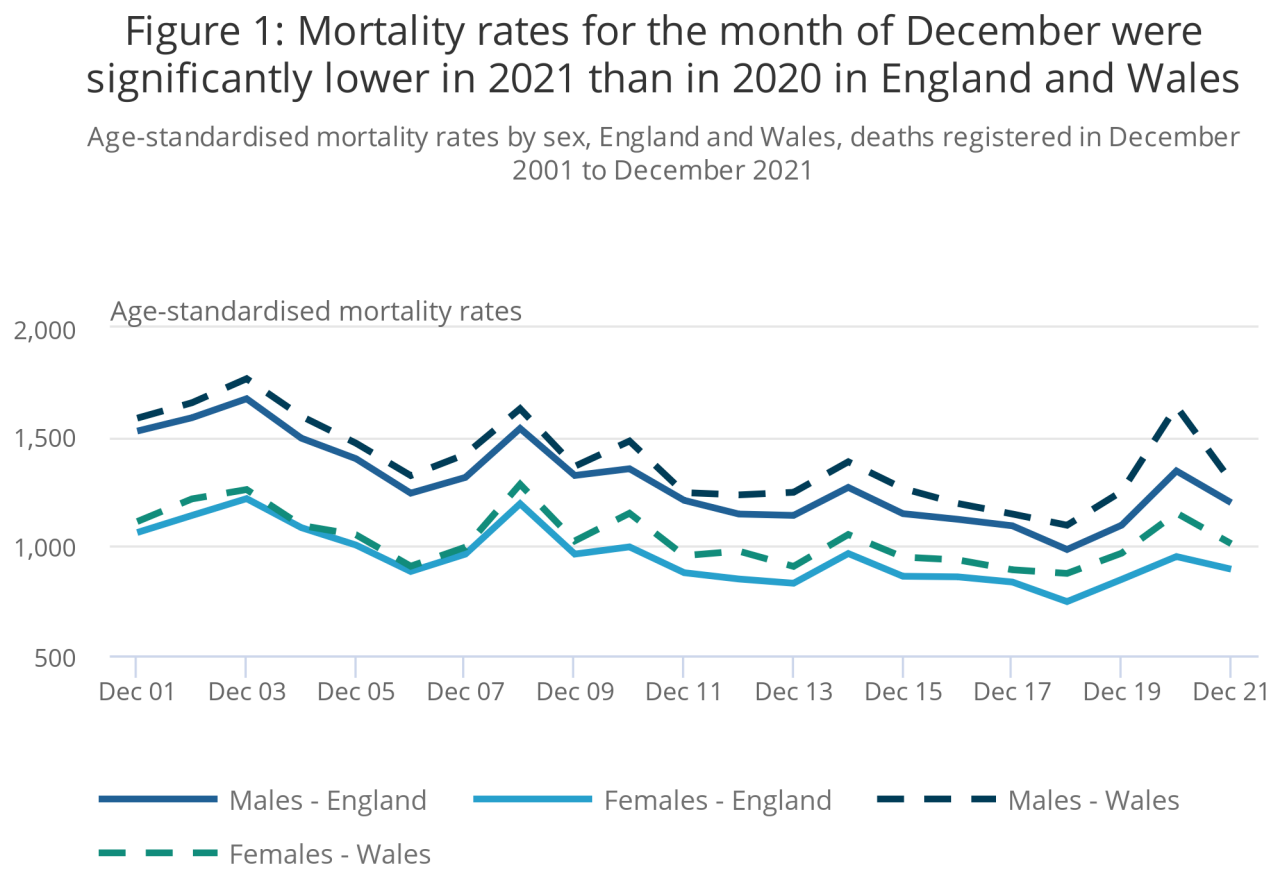
Age-standardised mortality rates (ASMRs) are used for comparisons over time rather than numbers of deaths, as ASMRs account for changes to the population size and age structure.

In England, December 2003 was the year with the highest mortality rates since our time series began in 2001, at 1,407.6 per 100,000 people. Since then, overall mortality rates in England for the month of December generally decreased to a low of 853.7 deaths per 100,000 people in December 2018. This was followed by statistically significant increases in mortality rates in December 2019 and 2020 (959.8 and 1,126.3 deaths per 100,000 people respectively). In December 2021, the ASMR significantly decreased compared with the previous year (1,033.5 deaths per 100,000 people). This pattern in ASMRs over time was seen in both males and females (Figure 1).

In Wales, mortality rates for December have generally decreased over time. The ASMR decreased from 1,470.3 per 100,000 people in December 2003 to a low of 976.3 deaths per 100,000 people in December 2018. This was followed by a statistically significant increase in ASMR in December 2019 (1,091.5 per 100,000 people) and December 2020 (1,374.8 per 100,000 people). In December 2021, the mortality rate decreased significantly to 1,146.5 deaths per 100,000 people.

Figure 1: Mortality rates for the month of December were significantly lower in 2021 than in 2020 in England and Wales

Age-standardised mortality rates by sex, England and Wales, deaths registered in December 2001 to December 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 the Measuring the data section.
2. Figures are for deaths registered rather than deaths occurring in each period.
3. Figures for 2021 are based on provisional mortality data and projected populations.
4. Figures exclude non-residents.

3 . Deaths due to COVID-19 registered in December 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 to mortality statistics.

Since March 2020 (when the first deaths involving coronavirus (COVID-19) were registered in England and Wales), when COVID-19 was mentioned on the death certificate it was the underlying cause of death in most cases (88.5% in England, 87.0% in Wales).

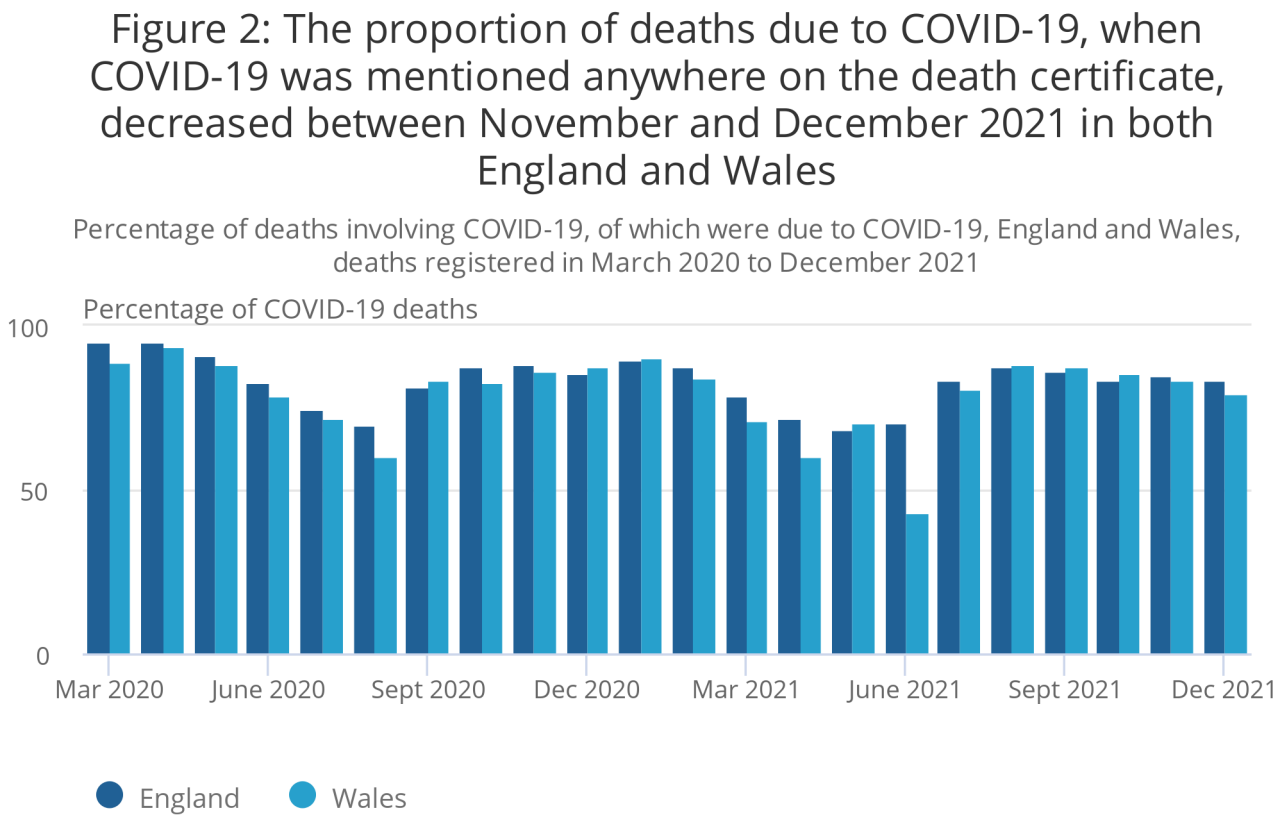
In England, April 2020 had the highest proportion of deaths involving COVID-19 that were also due to COVID-19 (95.2%), whereas May 2021 had the lowest proportion (68.8%). In Wales, April 2020 had the highest proportion of deaths involving COVID-19 that were also due to COVID-19 (94.1%), whereas June 2021 had the lowest proportion (42.9%). These proportions generally correspond with periods of low or high numbers of COVID-19 deaths in England and Wales.

The proportion of deaths due to COVID-19 (of all deaths that involved COVID-19) decreased between November and December 2021 in both England (from 84.9% to 83.8%) and Wales (from 83.9% to 79.6%). For more information on our definition of COVID-19 deaths, see the Measuring the data section.

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.

Figure 2: The proportion of deaths due to COVID-19, when COVID-19 was mentioned anywhere on the death certificate, decreased between November and December 2021 in both England and Wales

Percentage of deaths involving COVID-19, of which were due to COVID-19, England and Wales, deaths registered in March 2020 to December 2021



Source: Office for National Statistics - Monthly mortality analysis

Notes:

1. Figures are for deaths registered rather than deaths occurring in each period.
2. Figures for 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, whereas deaths “involving COVID-19” include deaths where COVID-19 was mentioned anywhere on the death certificate. For more information on our definitions of COVID-19 deaths, see the Measuring the data section.
5. Because of small numbers, the proportions for May 2021 and June 2021 in Wales should be interpreted with caution.

Of the 49,428 deaths registered in December 2021 in England, 5.4% (2,684 deaths) were due to COVID-19, a smaller proportion than in November 2021 (6.6%). Including all deaths involving COVID-19 (3,204 deaths), this percentage increases to 6.5% of all deaths in England in December 2021.

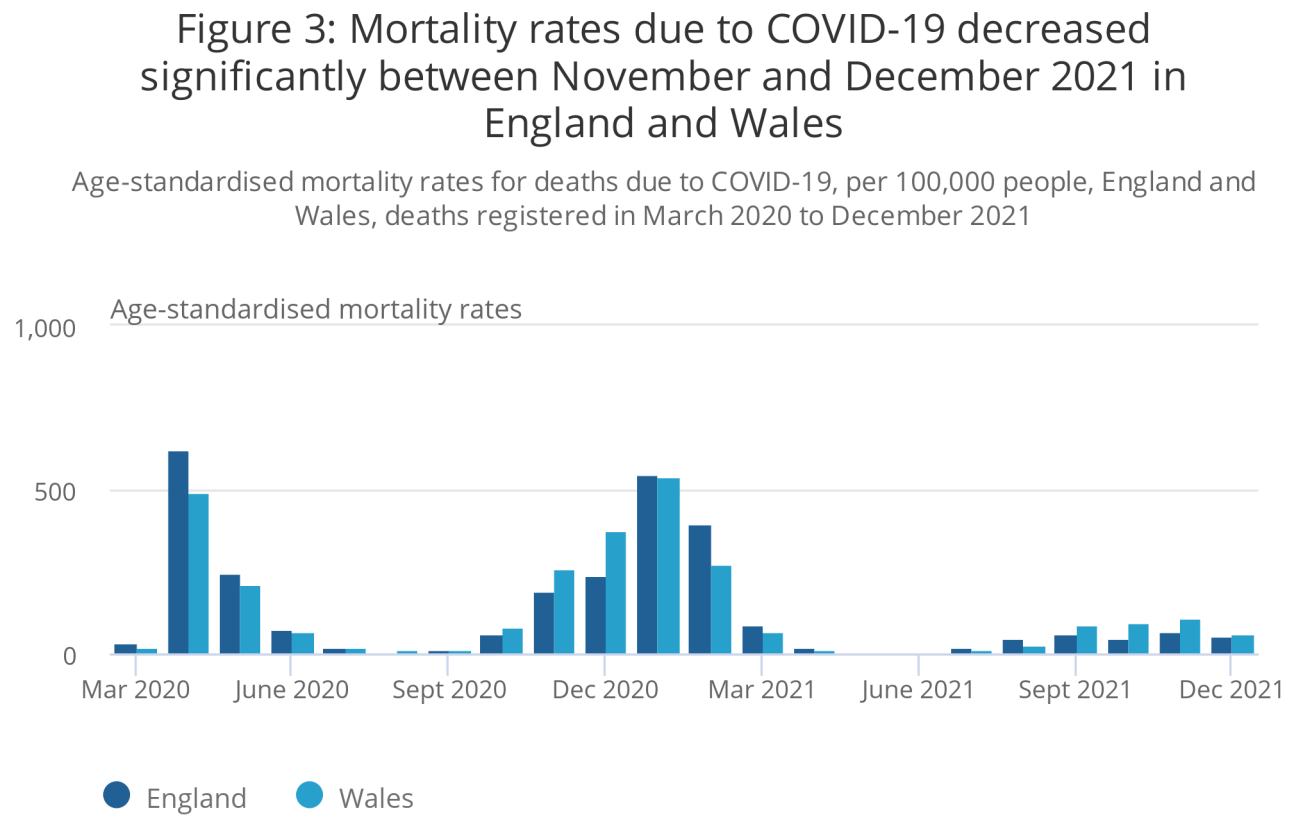
In Wales, 5.2% of the 3,336 deaths registered in December 2021 were due to COVID-19 (172 deaths), a smaller proportion than in November 2021 (9.0%). Including all deaths involving COVID-19 (216 deaths), this percentage increases to 6.5% of all deaths in Wales.

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 England for December 2021 showed statistically significant decreases compared with November 2021 (Figure 3). The ASMR for deaths due to COVID-19 decreased to 56.3 deaths per 100,000 people in December 2021 (compared with 69.3 in November 2021). In Wales, the ASMR decreased significantly to 59.3 deaths per 100,000 people in December 2021 (compared with 106.4 in November 2021). December 2021 is the fourth consecutive month where the ASMR for deaths due to COVID-19 in Wales was higher than in England.

Figure 3: Mortality rates due to COVID-19 decreased significantly between November and December 2021 in England and Wales

Age-standardised mortality rates for deaths due to COVID-19, per 100,000 people, England and Wales, deaths registered in March 2020 to December 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 the Measuring the data section.

2. Figures for 2021 are based on provisional mortality data and projected populations.

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

4. 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.

5. The International Classification of Diseases, 10th Edition (ICD-10) definitions are as follows: coronavirus (COVID-19; U07.1, U07.2 and U10.9). For more information on our definitions of COVID-19 deaths, see the Measuring the data section.

6. Because of small numbers, the rate for May 2021 in Wales is unreliable (19 deaths) so should be interpreted with caution; the rate for June 2021 (3 deaths) has not been calculated and is denoted as ":" in the data downloads.

In England, the ASMR for deaths due to COVID-19 significantly decreased in December 2021 for both males (73.7 deaths per 100,000 males) and females (42.3 deaths per 100,000 females), compared with November 2021.

In December 2021, the ASMR for deaths due to COVID-19 in Wales decreased significantly compared with November 2021 in males (64.5 deaths per 100,000 males). Similarly, the ASMR also decreased in females but this was not statistically significant (56.6 deaths per 100,000 females).

More information on mortality rates by sex is available in Tables 3a and 3b of the accompanying dataset.

More about coronavirus

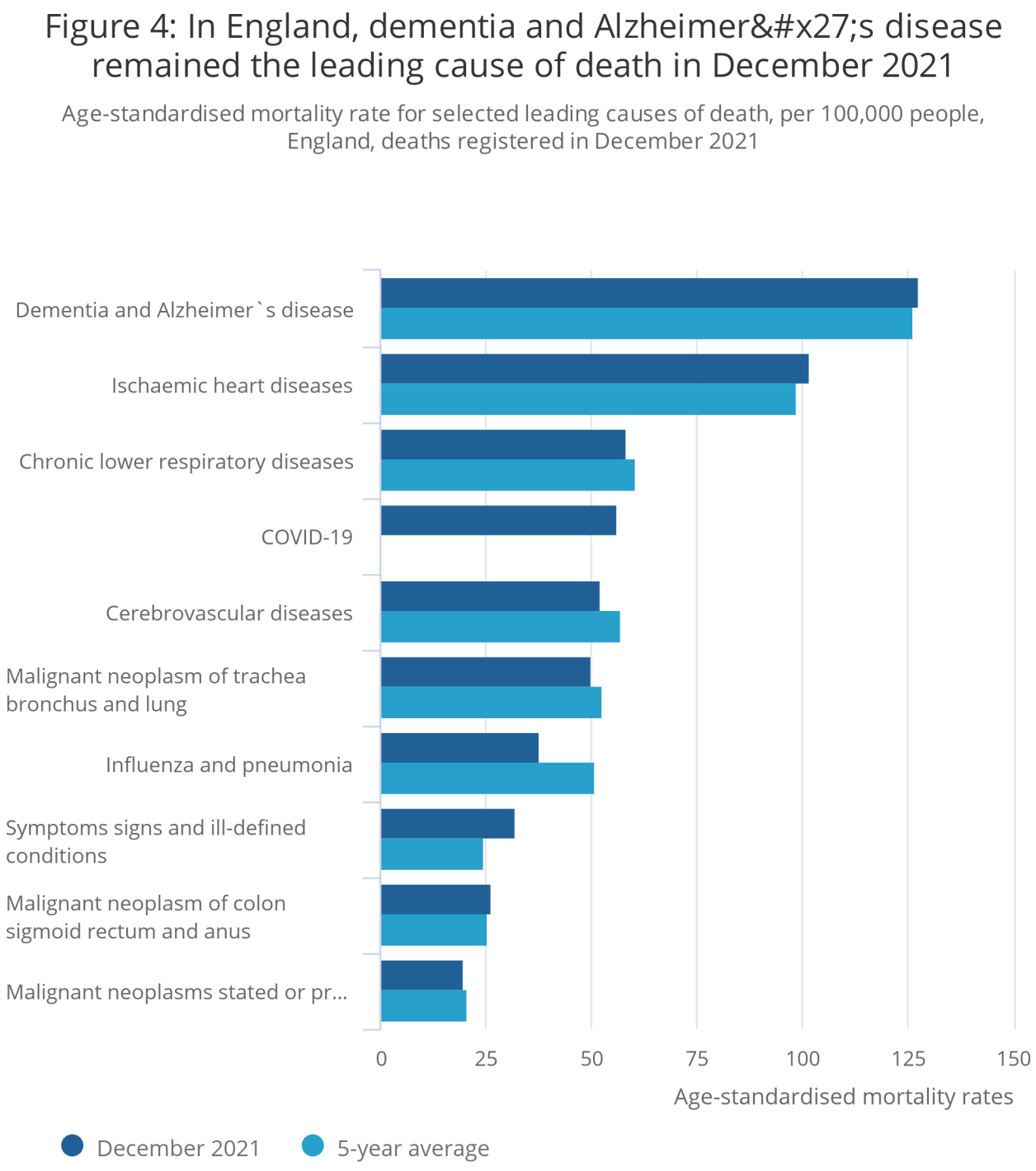
- Find the latest on coronavirus (COVID-19) in the UK.
- Explore the latest coronavirus data from the ONS and other sources.
- View all coronavirus data.
- Find out how we are working safely in our studies and surveys.

4 . Leading causes of death

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

Figure 4: In England, dementia and Alzheimer's disease remained the leading cause of death in December 2021

Age-standardised mortality rate for selected leading causes of death, per 100,000 people, England, deaths registered in December 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 in this bulletin are adjusted to allow for comparisons with annual rates. For more information, see the Measuring the data section.

2. Figures for 2021 are based on provisional mortality data and projected populations.

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

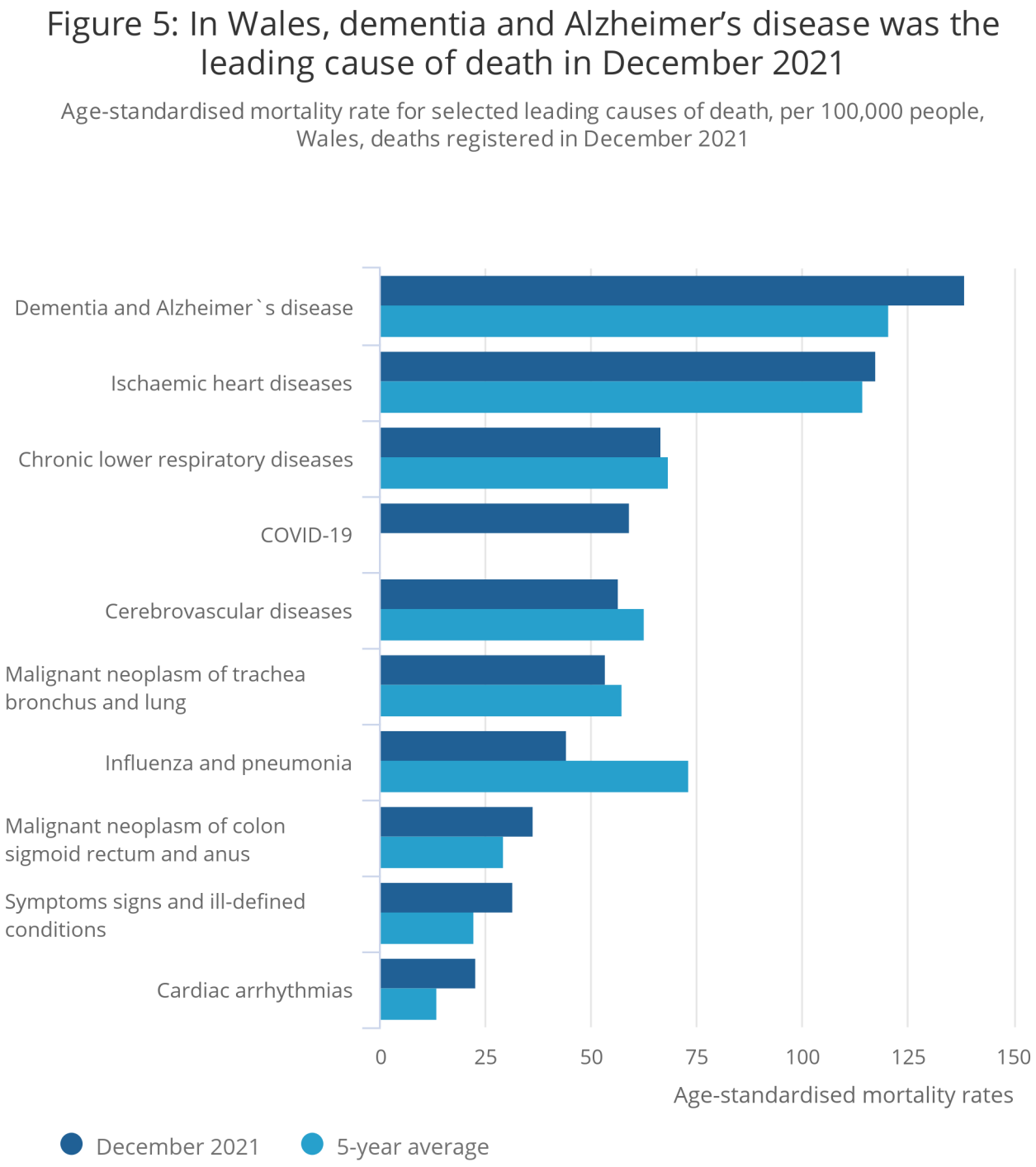
4. Figures exclude deaths of non-residents.

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. Where a five-year average cannot be provided, it is denoted as ":" in the data downloads .

6. Leading causes are ranked based on number of deaths, not age-standardised mortality rates.

Figure 5: In Wales, dementia and Alzheimer's disease was the leading cause of death in December 2021

Age-standardised mortality rate for selected leading causes of death, per 100,000 people, Wales, deaths registered in December 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 in this bulletin are adjusted to allow for comparisons with annual rates. For more information, see the Measuring the data section.

2. Figures for 2021 are based on provisional mortality data and projected populations.

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

4. Figures exclude deaths of 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. Where a five-year average cannot be provided, it is denoted as ":" in the data downloads.

6. Leading causes are ranked based on number of deaths, not age-standardised mortality rates.

In England, dementia and Alzheimer's disease continued to be the leading cause of death in December 2021, at 127.6 deaths per 100,000 people (6,153 deaths). In Wales, dementia and Alzheimer's disease was the leading cause of death for the first time since July 2021, at 138.4 deaths per 100,000 people (405 deaths).

In both England and Wales, coronavirus (COVID-19) was the fourth leading cause of death in December 2021 (2,684 and 172 deaths respectively); COVID-19 was previously the third leading cause of death for four consecutive months in England and three in Wales.

In England in December 2021, 2 of the 10 leading causes of death were statistically significantly lower than the five-year average, and 6 of the 10 leading causes were not significantly different from the five-year average. As seen in previous months, the mortality rate for deaths with an underlying cause of influenza and pneumonia was lower in December 2021 than the five-year average for December (25.7% lower). This is likely, in part, to be because of people continuing to follow coronavirus guidance, such as social distancing, reducing the spread of infections such as flu.

In December 2021, the mortality rate for symptoms, signs, and ill-defined conditions was statistically significantly higher than the five-year average for the sixth consecutive month (28.7% higher than the five-average for December). This leading cause group includes mostly deaths with a code for "old age" but is also used for causes such as "frailty".

In Wales in December 2021, 2 of the 10 leading causes of death were statistically significantly higher than the five-year average and 6 of the 10 leading causes were not significantly different from the five-year average. As seen in England, the December 2021 mortality rate for influenza and pneumonia was significantly lower than the five-year average for December (39.8% lower). The mortality rate for symptoms, signs and ill-defined conditions was significantly higher (40.8%) than the five-year average.

Provisional leading causes of death for 2021

Based on provisional data, the leading cause of death in 2021 in England was COVID-19 (113.8 deaths per 100,000 people); this was statistically significantly higher than the second leading cause of death, dementia and Alzheimer's disease (102.6 deaths per 100,000 people).

In Wales, the provisional leading cause of death in 2021 was ischaemic heart diseases (114.8 deaths per 100,000 people); this was statistically significantly higher than the second leading cause of death, COVID-19 (106.4 deaths per 100,000 people).

More information on the provisional leading causes of death for January to December 2021 is available in Tables 11a and 11b of the accompanying dataset. More in-depth, annual analysis of leading causes of death is available in Leading causes of death, UK: 2001 to 2018, Deaths registered in England and Wales: 2019 and Deaths registered in England and Wales: 2020. Analysis of finalised data for 2021, including more detailed breakdowns of the leading causes of death by age and sex, will be published later this year.

5 . Provisional deaths registered in 2021

There were 549,367 deaths registered in England and 36,141 in Wales in 2021 (January to December).

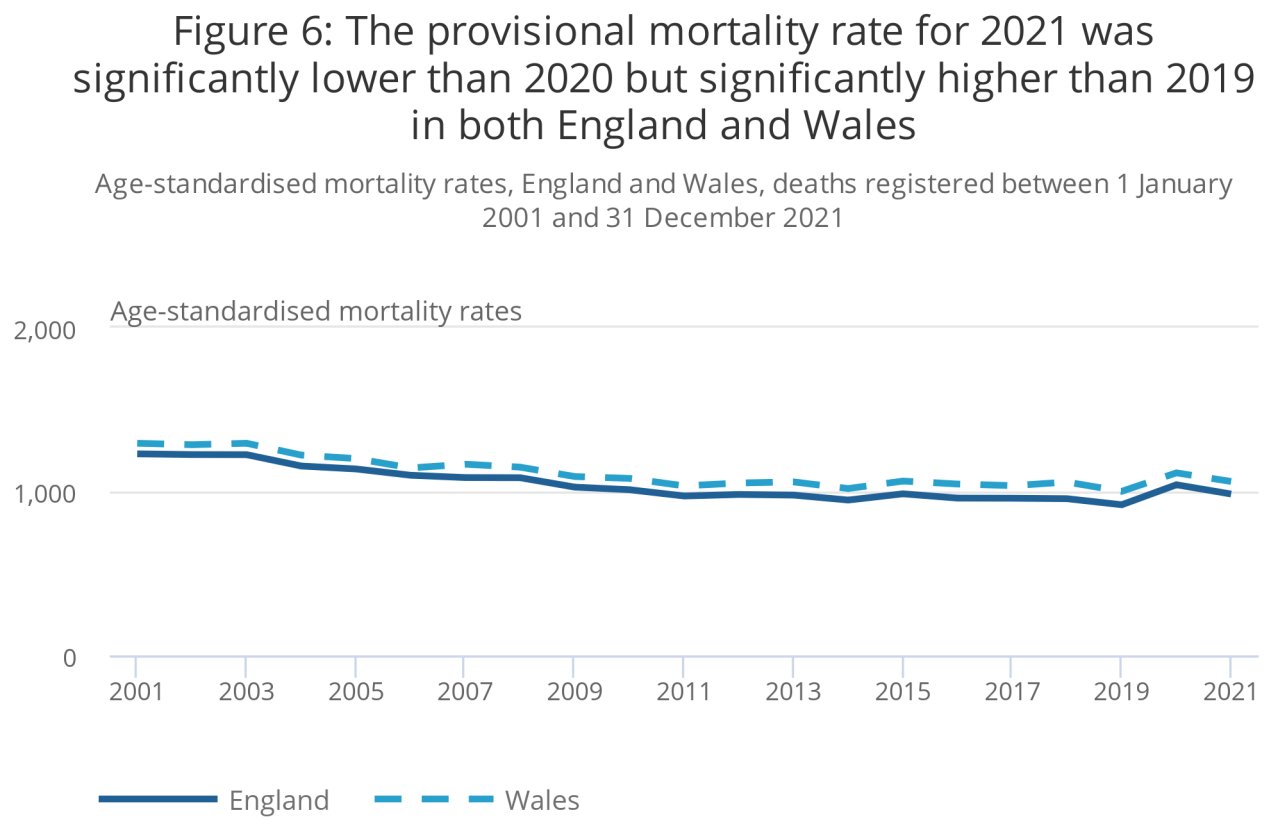
To gain a better idea of year-to-year differences in mortality rates, we calculate year-to-date age-standardised mortality rates (ASMRs) each month. In the December edition, our year-to-date analysis covers deaths registered between 1 January and 31 December of each year from 2001 to 2021 (Figure 6).

For England, the provisional ASMR for 2021 was 984.7 deaths per 100,000 people, which was statistically significantly lower than 2020 (1,041.1 deaths per 100,000 people). However, when compared with 2019 (919.2 deaths per 100,000 people), the provisional 2021 mortality rate was significantly higher.

For Wales, the provisional ASMR for 2021 significantly decreased to 1,061.3 deaths per 100,000 people when compared with the same period in 2020 (1,113.8 deaths per 100,000 people). But, as with England, 2021 was significantly higher than 2019 (1,001.2 deaths per 100,000 people).

Figure 6: The provisional mortality rate for 2021 was significantly lower than 2020 but significantly higher than 2019 in both England and Wales

Age-standardised mortality rates, England and Wales, deaths registered between 1 January 2001 and 31 December 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 the Measuring the data section.
2. Figures are for deaths registered rather than deaths occurring in each period.
3. Figures for 2021 are based on provisional mortality data and projected populations.
4. Figures exclude non-residents.
5. Year-to-date rates will differ from published annual rates as the population base has been adjusted to be comparable with our other Monthly Mortality Analysis outputs. For more information see Section 2 of the methodology article.

6 . Death occurrences in December 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 the Measuring the data section.

In England, 43,604 deaths occurred in December 2021 (and were registered by 7 January 2022). This was 3,556 fewer deaths than the five-year average (2015 to 2019) for December (7.5% lower). Of all deaths that occurred, 5.4% (2,368 deaths) were due to coronavirus (COVID-19).

In Wales, 3,081 deaths occurred in December 2021 (and were registered by 7 January 2022), which was 55 fewer deaths than the five-year average (1.8% lower). COVID-19 was the underlying cause of death in 4.8% of all deaths that occurred (147 deaths). In England, the first death due to COVID-19 occurred on 30 January 2020, whereas in Wales the first death due to COVID-19 occurred on 15 March 2020. Figures 7 and 8 show the trends in COVID-19 death occurrences from March 2020 onwards, for England and Wales respectively.

Figure 7: In England in December 2021, daily deaths due to COVID-19 remained low

Number of deaths occurring on each day from March 2020 to December 2021, five-year average and range, England

Notes:

1. Figures are for deaths occurring on each day rather than deaths registered, registered up to 7 January 2022. Death occurrences will increase as more deaths are registered, particularly for later dates.
2. Figures for 2021 (including deaths that occurred in 2020 but were registered in 2021) 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 January 2020 and two deaths in February 2020), but are not included here.

Download the data

.xlsx

Figure 8: In Wales in December 2021, daily deaths due to COVID-19 remained low

Number of deaths occurring on each day from March 2020 to December 2021, five-year average and range, Wales

Notes:

1. Figures are for deaths occurring on each day rather than deaths registered, registered up to 7 January 2022. Death occurrences will increase as more deaths are registered, particularly for later dates.
2. Figures for 2021 (including deaths that occurred in 2020 but were registered in 2021) 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.

Download the data

.xlsx

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 December 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 October to December 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 where death was due to coronavirus (COVID-19). 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 COVID-19 infection.

This section analyses data from Quarter 4 (Oct to Dec) 2021, whereas the rest of the bulletin focuses on the month of December 2021.

This analysis of pre-existing conditions covers England and Wales as a whole only. This is because of the small number of deaths due to COVID-19 in Wales in Quarter 4 2021 (758 deaths) when broken down by age and place of death. We will continue to monitor this and will provide analysis if the number of deaths in Wales increase.

Overall patterns of pre-existing conditions for COVID-19 deaths in Quarter 4 2021 were similar to Quarter 3 (July to Sept) 2021, with the top nine most common pre-existing conditions remaining the same. Diabetes remained the most common pre-existing condition of deaths due to COVID-19 (22.5%), followed by chronic lower respiratory diseases as the second most common at 18.7%.

In Quarter 4 2021, the total number of deaths due to COVID-19 in England and Wales increased to 9,135 deaths (from 6,572 deaths in Quarter 3 2021). However, the proportion of COVID-19 deaths for each age group remained similar. Those aged between 0 and 64 years accounted for 21.0% of all COVID-19 deaths in Quarter 4 2021 (compared with 24.2% in Quarter 3 2021) and those aged 65 years and over accounted for 79.0% of all COVID-19 deaths (compared with 75.8% in Quarter 3 2021). Overall, the proportion of COVID-19 deaths with no pre-existing conditions remained similar in Quarter 4 2021 (16.8%) to Quarter 3 2021 (17.4%). Likewise, the average number of different pre-existing conditions per COVID-19 death remained the same in Quarter 4 2021 as in Quarter 3 2021 (1.9 pre-existing conditions on average).

In Quarter 4 2021, diabetes remained the most common pre-existing condition for deaths due to COVID-19 occurring in hospitals (24.3%, down slightly from 24.8% in Quarter 3 2021). Dementia and Alzheimer's disease also remained the most common pre-existing condition for deaths occurring in care homes (40.4%, a small decrease from 46.3% in Quarter 3).

Diabetes remained the most common pre-existing condition of COVID-19 deaths occurring in private homes, with the proportion increasing slightly from 14.6% in Quarter 3 2021 to 16.0% in Quarter 4 2021. Hypertensive diseases were the second most common pre-existing condition for COVID-19 deaths in private homes at 14.7% (from 9.1% in Quarter 3 2021 where it was fifth most common). This was previously chronic lower respiratory diseases, which dropped to fourth most common pre-existing condition for COVID-19 deaths in private homes in Quarter 4 2021 (13.8%) even though the proportion has remained similar to Quarter 3 2021 (13.7%).

For analysis of pre-existing conditions of people whose death was due to COVID-19 in Quarter 4 2021 for England and Wales separately, see the accompanying dataset.

8 . Monthly mortality data

Monthly mortality analysis, England and Wales
Dataset | Released 21 January 2022
Monthly 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 COVID-19 by English region and Welsh health board
Dataset | Released 21 January 2022
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 21 January 2022
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 21 January 2022
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 21 January 2022
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.

Single year of age and average age of death of people whose death was due to or involved COVID-19
Dataset | Released on 21 January 2022
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.

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 the Measuring the data section.

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 Organization (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

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 December 2021 by age and sex, and also includes deaths that occurred in December 2021 by date of death. Non-residents of England and Wales are excluded. In December 2021, there were 95 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 the weekly death registrations release and allows for a more timely analysis than would be possible using death occurrences. There is 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 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 eighth of the month, to allow time for deaths to be registered. For more detail on the data sources used, see our methodology article.

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 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". The International Classification of Diseases (ICD-10) codes used to define COVID-19 are:

- U07.1: COVID-19, virus identified
- U07.2: COVID-19, virus not identified
- 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)
- U10.9: Multisystem inflammatory syndrome associated with COVID-19, unspecified

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 (U07.2). For example, a doctor may have clinically diagnosed COVID-19 based on symptoms but this diagnosis may not have been confirmed with a test, so they may write "suspected COVID-19" on the death certificate. Of the 140,794 deaths due to COVID-19, 4,148 (2.9%) were classified as "suspected" COVID-19. Including all 159,210 deaths involving COVID-19, "suspected" COVID-19 was recorded on 3.0% (4,773 deaths) of all deaths involving COVID-19 in England and Wales (excluding non-residents). For more information on the ICD-10 definition of COVID-19, see the methodology article.

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 period covered. The methodology article provides more detail on how this is calculated.

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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. However, as the data for 2021 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.

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.

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 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: 2020
Bulletin | Released 6 July 2021
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: 2020
Article | Released 6 July 2021
Deaths registered in England and Wales due to coronavirus (COVID-19) by age, sex, region, 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.

Deaths at home increased by a third in 2020, while deaths in hospitals fell except for COVID-19
Article | Released 7 May 2021
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.

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.

Deaths registered in private homes, England and Wales: 2020 final and January to June 2021, provisional
Article | Released 10 November 2021
Deaths registered in private homes by age, sex, place of occurrence and selected underlying causes of death and the leading causes of death.