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Statistical bulletin

Monthly mortality analysis, England and Wales: May 2023

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

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1 . Main points

- In May 2023, there were 44,608 deaths registered in England, 3,855 deaths (9.5%) above the May five-year average (2017 to 2019, 2021 and 2022); in Wales, there were 2,905 deaths registered, 159 deaths (5.8%) above the five-year average.

- Accounting for the population size and age structure, the age-standardised mortality rate (ASMR) for May 2023 in England (907.2 deaths per 100,000 people) was above the five-year average (by 2.1%), whereas the ASMR in Wales (971.6 deaths per 100,000 people) was below average (by 0.5%); this difference was only significant in England.

- Year-to-date (January to May 2023) deaths were above average in both England and Wales (by 7.6% and 6.5%, respectively); however, the year-to-date ASMR was similar to expected in both England (0.2% above average) and Wales (0.1% below average).

- The leading cause of death in England in May 2023 was dementia and Alzheimer's disease (10.9% of all deaths); in Wales, the leading cause of death was ischaemic heart diseases (11.0% of all deaths).

- The leading cause of excess death in England in May 2023 was symptoms, signs and ill-defined conditions (which includes "old age" and "frailty"), at 366 excess deaths (33.3% above average); in Wales it was dementia and Alzheimer's disease, at 21 excess deaths (7.6% above average).

2 . Death registrations in May 2023

In England, there were 44,608 deaths registered in May 2023, based on provisional data. This was 917 fewer deaths than in May 2022 and 3,855 (9.5%) more deaths than the five-year average (2017 to 2019, 2021 and 2022).

In Wales, there were 2,905 deaths registered in May 2023. This was 87 fewer deaths than May 2022 and 159 (5.8%) more deaths than the five-year average.

The five-year average for 2023 has been calculated using the years 2017 to 2019, 2021 and 2022. For more information, see our [Understanding excess deaths during a pandemic blog](#) and our [How do we measure expected and excess deaths blog](#).

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

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

In May 2023, the ASMR for England was 907.2 deaths per 100,000 people. This was [statistically significantly](#) lower than the mortality rate for both May 2022 and May 2020 (945.7 and 1,068.9 deaths per 100,000 people, respectively), but significantly higher than May 2021 (764.6 deaths per 100,000 people). The mortality rate in May 2023 was not significantly different from the pre-coronavirus (COVID-19) pandemic mortality rates for May 2019 (906.2 deaths per 100,000 people) and May 2018 (891.3 deaths per 100,000 people). This suggests that deaths in spring months may be returning to rates seen before the pandemic.

In May 2023, the ASMR in Wales was 971.6 deaths per 100,000 people. This was not significantly different from May mortality rates since May 2014 (938.8 deaths per 100,000 people), with the exception of May 2021 (855.3 deaths per 100,000 people), which was significantly lower than the mortality rate for May 2023.
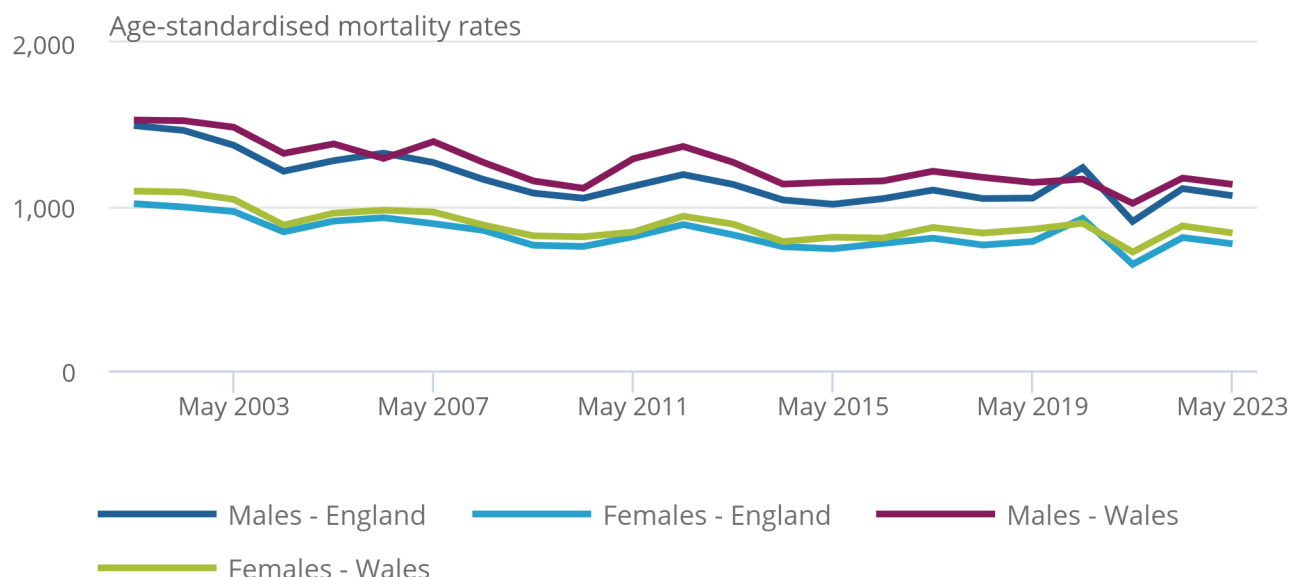
The mortality rate in May has consistently been significantly higher for males than females in both England and Wales since the beginning of our data time series in 2001 (Figure 1). For more information on the differences between male and female ASMRs, see our [accompanying dataset](#).

Figure 1: Mortality rates for May 2023 were lower than May 2022 in both England and Wales, but this was only significant in England

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

Figure 1: Mortality rates for May 2023 were lower than May 2022 in both England and Wales, but this was only significant in England

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

Source: Monthly mortality analysis from the Office for National Statistics

Notes:

1. Age-standardised mortality rates per 100,000 people, standardised to the 2013 European Standard Population. Monthly rates in this bulletin are adjusted to allow for comparisons with annual rates. For more information, see Section 10: Measuring the data.

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

3. Figures for 2022 and 2023 are based on provisional mortality statistics, and populations from July 2021 onwards are based partly or wholly on population projections.

4. Figures exclude non-residents.

Deaths registered in the year to date

There were 247,068 deaths registered in England and 16,245 in Wales during the first five months (January to May) of 2023.

To gain a better idea of year-to-year differences in mortality rates, we calculated a year-to-date ASMR based on deaths registered in January to May of each year, from 2001 to 2023 (Figure 2).

For England, the year-to-date ASMR for 2023 (1,034.1 deaths per 100,000 people) was significantly higher than the year-to-date ASMR for 2022 (978.0 deaths per 100,000 people). However, this was significantly lower than most (16 of the 22) years since our data time series started in 2001.

For Wales, the year-to-date ASMR for 2023 (1,116.3 deaths per 100,000 people) was also significantly higher than that of 2022 (1,063.5 deaths per 100,000 people). However, this was significantly lower than over half (13 of the 22) of the years since our data time series began.

Figure 2: Year-to-date mortality rates in 2023 were significantly higher than 2022 in both England and Wales, but lower than the majority of other years since 2001

Age-standardised mortality rates, England and Wales, deaths registered in January to May, 2001 to 2023
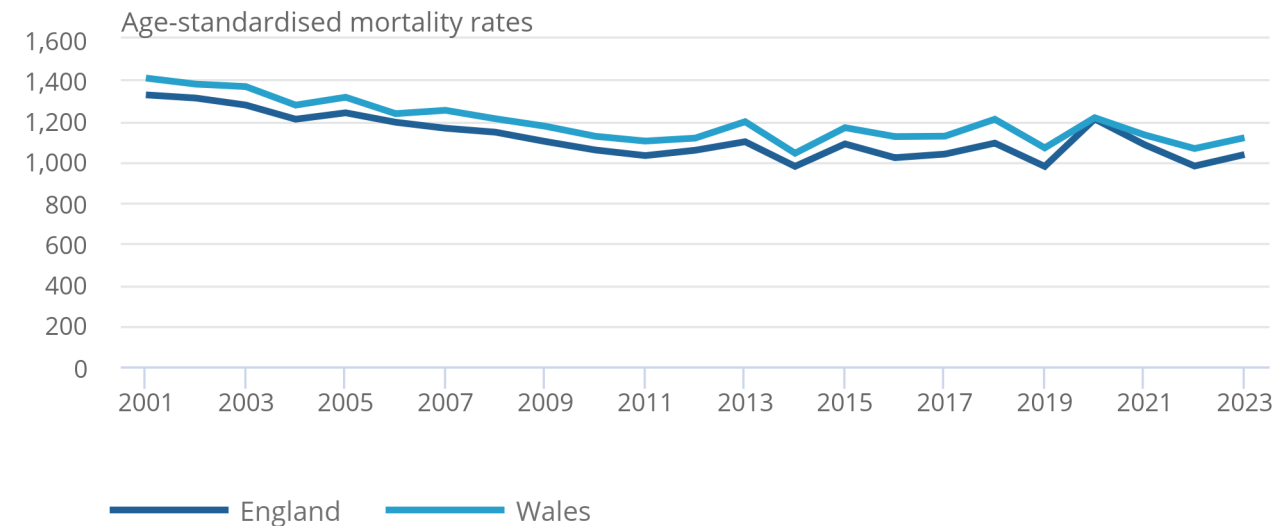
Age-standardised mortality rates

Source: Monthly mortality analysis from the Office for National Statistics

Notes:

1. Age-standardised mortality rates per 100,000 people, standardised to the 2013 European Standard Population. Monthly rates in this bulletin are adjusted to allow for comparisons with annual rates. For more information, see Section 10: Measuring the data.

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

3. Figures for 2022 and 2023 are based on provisional mortality data, and populations from July 2021 onwards are based partly or wholly on population projections.

4. Figures exclude non-residents.

3 . Excess mortality in England and Wales

Excess deaths in this bulletin are the difference between the observed deaths within a period compared with the five-year average (2017 to 2019, 2021 and 2022) for the same period. This section compares excess mortality by number of deaths with excess mortality by age-standardised mortality rate (ASMR).

In the month of May 2023, excess mortality rates have remained proportionally lower than the number of excess deaths in England (Figure 3) and in Wales (Figure 4). This was the case regardless of whether deaths or ASMRs were below or above average.

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

There are different ways of measuring excess mortality. These numbers will differ from those published elsewhere that use a different method, such as the Office for Health Improvement and Disparities' (OHID) excess deaths measure. This is because the figures in this bulletin are based on the average of five years, whereas the OHID measure looks at the trend seen between 2015 and 2019, as well as accounting for population, deprivation and ethnicity. We are now investigating different ways to calculate the expected number of deaths used in excess death calculations. The background to this work and information on how to get in contact can be found in our How we measure expected and excess deaths blog.

Figure 3: In England, the number of deaths continued to be above the five-year average in May 2023, with the mortality rate above average to a lesser extent

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

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 2022 and 2023 are based on provisional mortality statistics, and populations from July 2021 onwards are based partly or wholly on population projections.

4. Figures exclude non-residents.

5. The five-year average for 2023 has been provided for 2017 to 2019, 2021 and 2022, and the five-year average for 2022 has been provided for 2016 to 2019 and 2021.

Download the data

.xlsx

In England in May 2023, the number of deaths was 9.5% (3,855 deaths) above what we would expect using the five-year average. The mortality rate for May 2023 was statistically significantly higher than average (907.2 and 888.9 deaths per 100,000 people, respectively), at 2.1% above the expected rate. This is lower than May 2022 (compared with the five-year average of 2016 to 2019 and 2021) for both excess deaths (15.6% above average) and mortality rates (7.7% above average).

The number of deaths registered in the year to date of 2023 (January to May) was 7.6% above average, whereas the equivalent year-to-date value in 2022 was 0.2% above expected. The 2023 year-to-date ASMR was 0.2% above the five-year average, which was not significantly different (1,034.1 and 1,031.7 deaths per 100,000 people, respectively). Whereas the equivalent year-to-date ASMR in 2022 was significantly lower than average (978.0 and 1,040.8 deaths per 100,000 people, respectively), at 6.0% below expected.

Figure 4: In Wales, the number of deaths in May 2023 was above the five-year average; the mortality rate was below average, but this difference was not significant

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

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 2022 and 2023 are based on provisional mortality statistics, and populations from July 2021 onwards are based partly or wholly on population projections.

4. Figures exclude non-residents.

5. The five-year average for 2023 has been provided for 2017 to 2019, 2021 and 2022, and the five-year average for 2022 has been provided for 2016 to 2019 and 2021.

Download the data

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In Wales in May 2023, the number of deaths was 5.8% above the five-year average. The ASMR was 0.5% lower than average (971.6 and 976.0 deaths per 100,000 people, respectively), but this difference was not significant. This is a lower proportion than that of May 2022 for both excess deaths (12.4% above average) and mortality rates (5.3% above average).

The number of deaths registered in the year to date of 2023 was 6.5% above average in Wales, whereas the equivalent year to date in 2022 was 0.6% below the five-year average. The 2023 year-to-date ASMR was 0.1% below the five-year average, which was not statistically significant (1,116.3 and 1,117.0 deaths per 100,000 people, respectively). Whereas the equivalent year to date in 2022 was significantly lower than average (1,063.5 and 1,129.5 deaths per 100,000 people, respectively), at 5.8% below expected.

4 . Leading causes of death

The doctor certifying a death can list all causes in the chain of events that led to the death, and the pre-existing conditions that may have contributed to the death. Using this information, we determine an underlying cause of death. More information on this process can be found in our User guide to mortality statistics methodology.
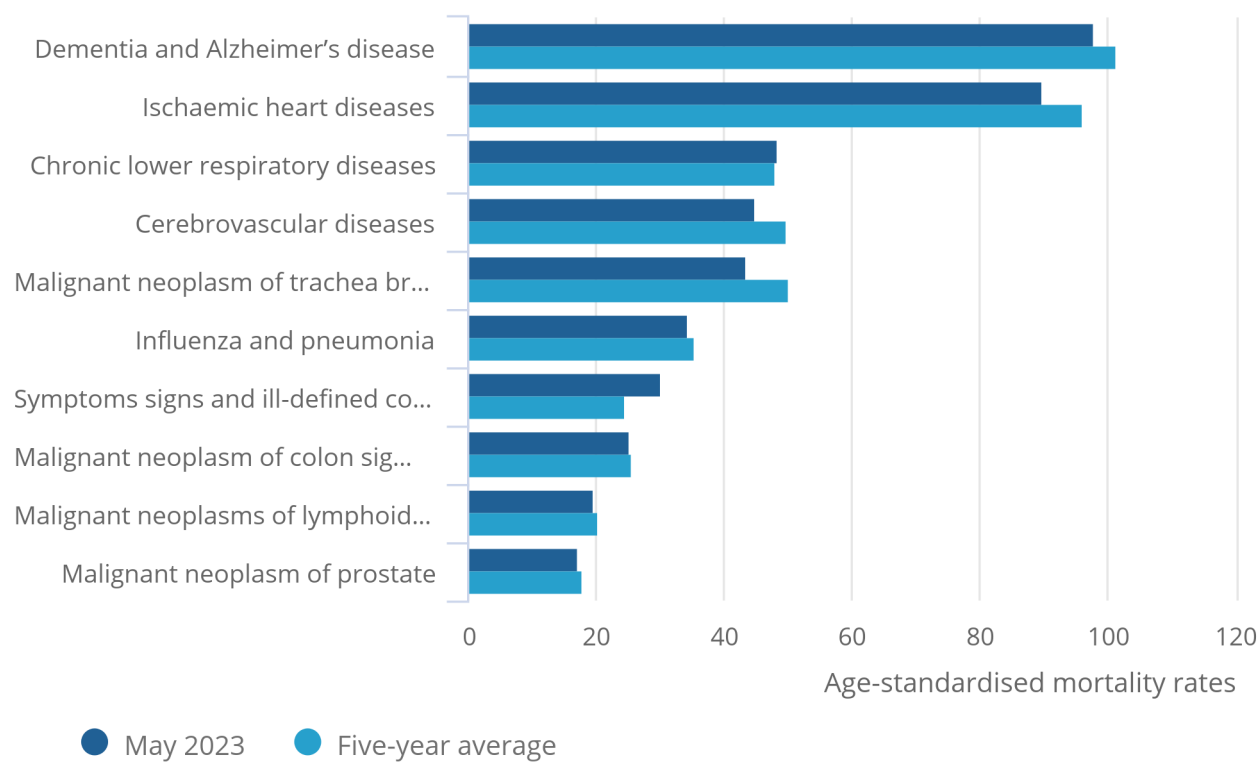
The 10 most common underlying causes of death registered in May 2023, compared with the five-year average for May (2017 to 2019, 2021 and 2022), for England and Wales, respectively, are shown in Figures 5 and 6. Causes of death are based on our leading causes of death groupings.

Figure 5: In England, dementia and Alzheimer's disease remained the leading cause of death in May 2023

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

Figure 5: In England, dementia and Alzheimer's disease remained the leading cause of death in May 2023

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

Source: Monthly mortality analysis from the Office for National Statistics

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 for 2022 and 2023 are based on provisional mortality statistics, and populations from July 2021 onwards are based partly or wholly on population projections.

3. Based on underlying cause of death.

4. Figures exclude deaths of non-residents.

5. The five-year average has been provided for 2017 to 2019, 2021 and 2022 because of the impact of the coronavirus (COVID-19) pandemic on deaths registered in 2020.

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

In England, dementia and Alzheimer's disease remained the leading cause of death in May 2023 (for the 23rd consecutive month), with 97.9 deaths per 100,000 people (4,872 deaths).
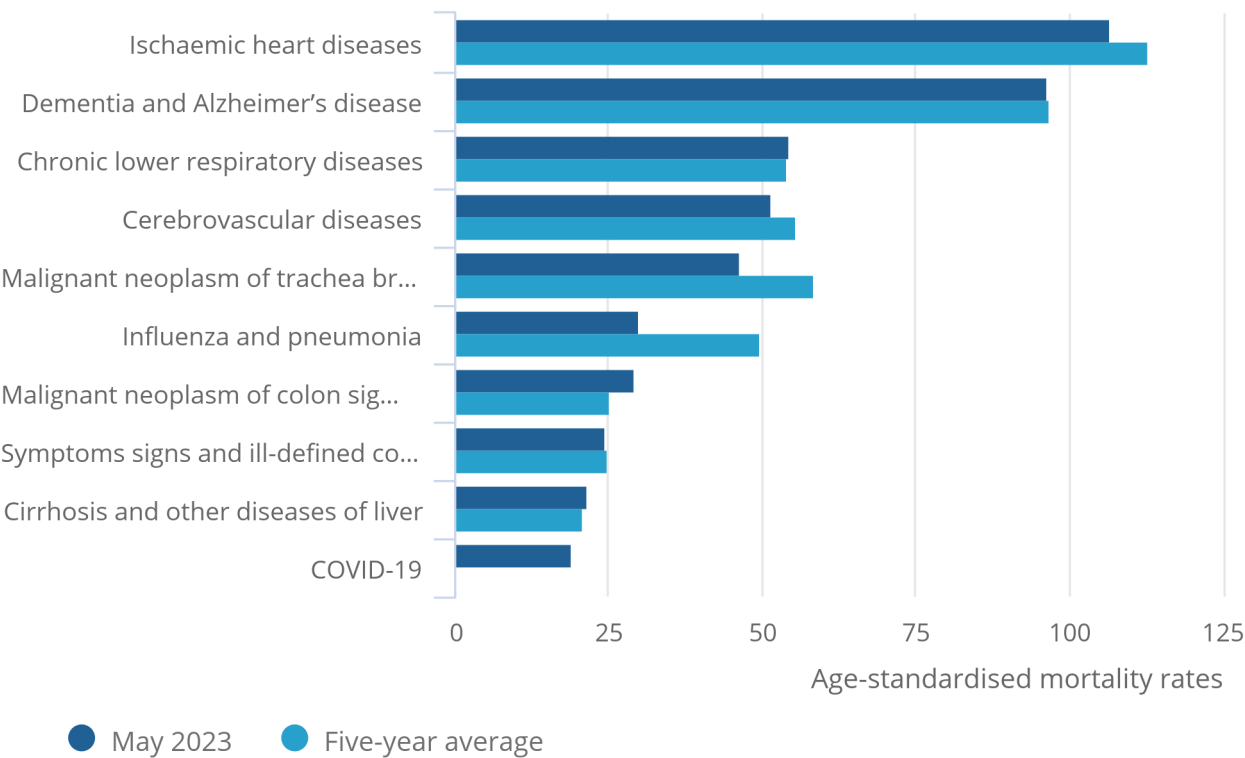
In May 2023, 9 of the 10 leading causes of death were also the leading causes of death in the year to date (January to May 2023); the ordering is also generally similar. Coronavirus (COVID-19) ranked eighth in the year to date (compared with 13th in May 2023), and malignant neoplasm of the prostate ranked 12th (compared with 10th in May 2023).

Figure 6: In Wales, ischaemic heart diseases was the leading cause of death in May 2023

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

Source: Monthly mortality analysis from the Office for National Statistics

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 for 2022 and 2023 are based on provisional mortality statistics, and populations from July 2021 onwards are based partly or wholly on population projections.

3. Based on underlying cause of death.

4. Figures exclude deaths of non-residents.

5. The five-year average has been provided for 2017 to 2019, 2021 and 2022 because of the impact of the coronavirus (COVID-19) pandemic on deaths registered in 2020. Where a five-year average cannot be provided, it is denoted as "[z]" in the data downloads.

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

In Wales, ischaemic heart diseases remained the leading cause of death for the second consecutive month, with 106.8 deaths per 100,000 people (319 deaths).

The 10 leading causes of death in May 2023 were also the leading causes of death in the year to date (January to May 2023). The top four leading causes were ranked the same in both May 2023 and the year to date, while the remaining six differed in order. The biggest difference between these rankings was in malignant neoplasm of colon, sigmoid, rectum and anus, which ranked ninth in the year to date (compared with sixth in May 2023).

More information on leading causes of death is available in Table 12 for England, and Table 13 for Wales, in our accompanying dataset. More in-depth analysis of leading causes of death is available in our annual Deaths registered in England and Wales: 2021 bulletin, based on finalised mortality data.

Coronavirus (COVID-19) mortality

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

The first deaths involving COVID-19 were registered in England and Wales in March 2020. Since then, COVID-19 was the underlying cause in most deaths that involved COVID-19 (83.6% in England, 82.6% in Wales).

In England, COVID-19 dropped to the 13th leading cause of death in May 2023 (from eighth in April 2023), at 15.8 deaths per 100,000 people (785 deaths), accounting for 1.8% of all deaths. This was statistically significantly lower than the mortality rate for deaths due to COVID-19 in April 2023, at 26.3 deaths per 100,000 people (1,260 deaths; 3.0% of all deaths). The last time COVID-19 did not appear in the top 10 leading causes of death in England was September 2022, when it was ranked 12th. This could indicate a seasonal effect, with the number of deaths being higher in winter months.

In Wales, COVID-19 decreased to the 10th leading cause of death in May 2023 (from ninth in April 2023), at 19.1 deaths per 100,000 people (57 deaths), accounting for 2.0% of all deaths. This was not significantly different than the mortality rate for deaths due to COVID-19 in April 2023, at 23.8 deaths per 100,000 people (71 deaths, 2.6% of all deaths).

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

More about coronavirus

- Find the latest on coronavirus (COVID-19) in the UK.

- Explore the latest coronavirus data from the ONS and other sources.

- View all coronavirus data.

5 . Excess mortality by causes of death

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

Please see Section 3: Excess mortality in England and Wales for ongoing methodology work on excess mortality.
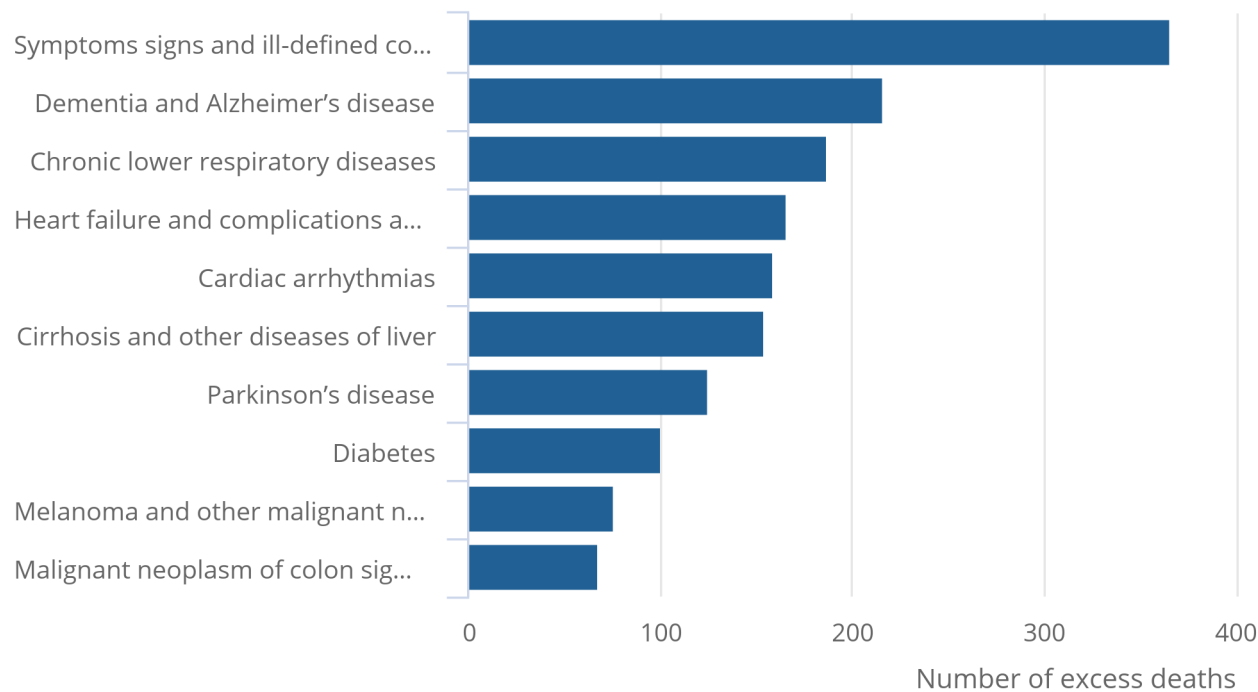
While the number of deaths by cause of death may be higher in May 2023 compared with the five-year average for May (2017 to 2019, 2021 and 2022), the age-standardised mortality rate (ASMR) may be lower. This is because ASMRs take into account changes in population size and age structure. Therefore, changing trends in the age groups affected by the cause of death, and the size of that age group in the population, will cause changes to the ASMR.

Figure 7: In England, symptoms, signs and ill-defined conditions remained the leading cause of excess death in May 2023

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

Figure 7: In England, symptoms, signs and ill-defined conditions remained the leading cause of excess death in May 2023

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

Source: Monthly mortality analysis from the Office for National Statistics

Notes:

1. Figures for 2022 and 2023 are based on provisional mortality data.

2. Based on underlying cause of death.

3. Figures exclude deaths of non-residents.

4. Leading causes are ranked based on the number of excess deaths.

5. The five-year average has been provided for 2017 to 2019, 2021 and 2022 because of the impact of the coronavirus (COVID-19) pandemic on deaths registered in 2020.

In England in May 2023, the leading cause of excess death was symptoms, signs and ill-defined conditions, with 366 excess deaths (33.3% above average) (Figure 7). The ASMR for this cause was [statistically significantly](#) higher than the May five-year average (30.3 and 24.5 deaths per 100,000 people, respectively). This leading cause group includes mostly deaths with a code for "old age" but is also used for causes such as "frailty" ; [for more information see Section 9: Glossary](#).
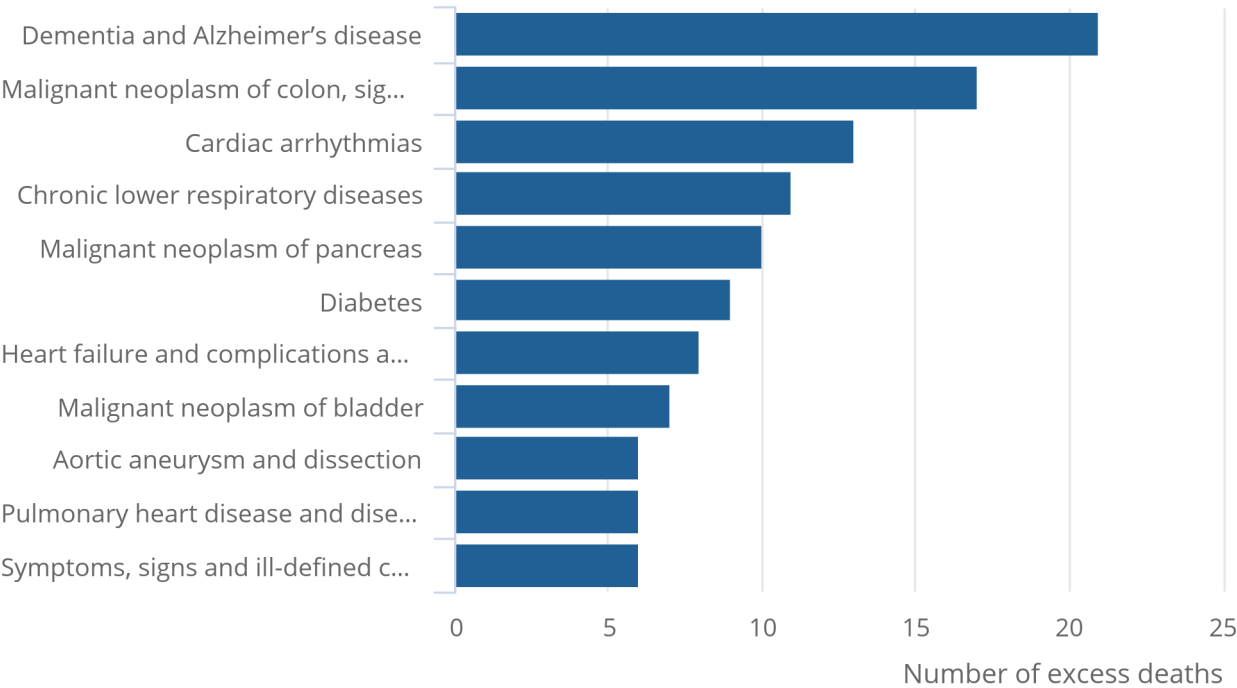
Deaths due to intestinal infectious diseases had the largest proportional increase when compared with the five-year average for both ASMR (35.2% above average) and number of deaths (42 excess deaths, 46.0% above average). Deaths due to this cause have been above average for every month in 2023, however, this was only significantly higher than average in May and January 2023.

Figure 8: In Wales, dementia and Alzheimer's disease was the leading cause of excess death in May 2023

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

Figure 8: In Wales, dementia and Alzheimer's disease was the leading cause of excess death in May 2023

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

Source: Monthly mortality analysis from the Office for National Statistics

Notes:

1. Figures for 2022 and 2023 are based on provisional mortality data.

2. Based on underlying cause of death.

3. Figures exclude deaths of non-residents.

4. Leading causes are ranked based on the number of excess deaths.

5. The five-year average has been provided for 2017 to 2019, 2021 and 2022 because of the impact of the coronavirus (COVID-19) pandemic on deaths registered in 2020.

In Wales in May 2023, the leading cause of excess deaths was dementia and Alzheimer's disease, with 21 excess deaths (7.6% above average) (Figure 8). However, this was not significantly different from the expected mortality rate (0.2% below average). This replaced symptoms, signs and ill-defined conditions, which was the leading cause of excess deaths in both March 2023 and April 2023, but has now dropped to the joint 10th leading cause of excess death. Mortality rates for all causes of death in Wales in May 2023 were either significantly lower or not significantly different compared with their five-year average.

Deaths due to cardiac arrhythmias had the largest proportional increase when compared with the five-year average for both ASMR (24.0% above average) and number of deaths (13 excess deaths, 34.9% above average). Deaths due to influenza and pneumonia had the largest proportional decrease when compared with the five-year average for both number of deaths (50 deaths below average, 35.9% lower than expected) and ASMR (39.9% below average); this difference was also significant.
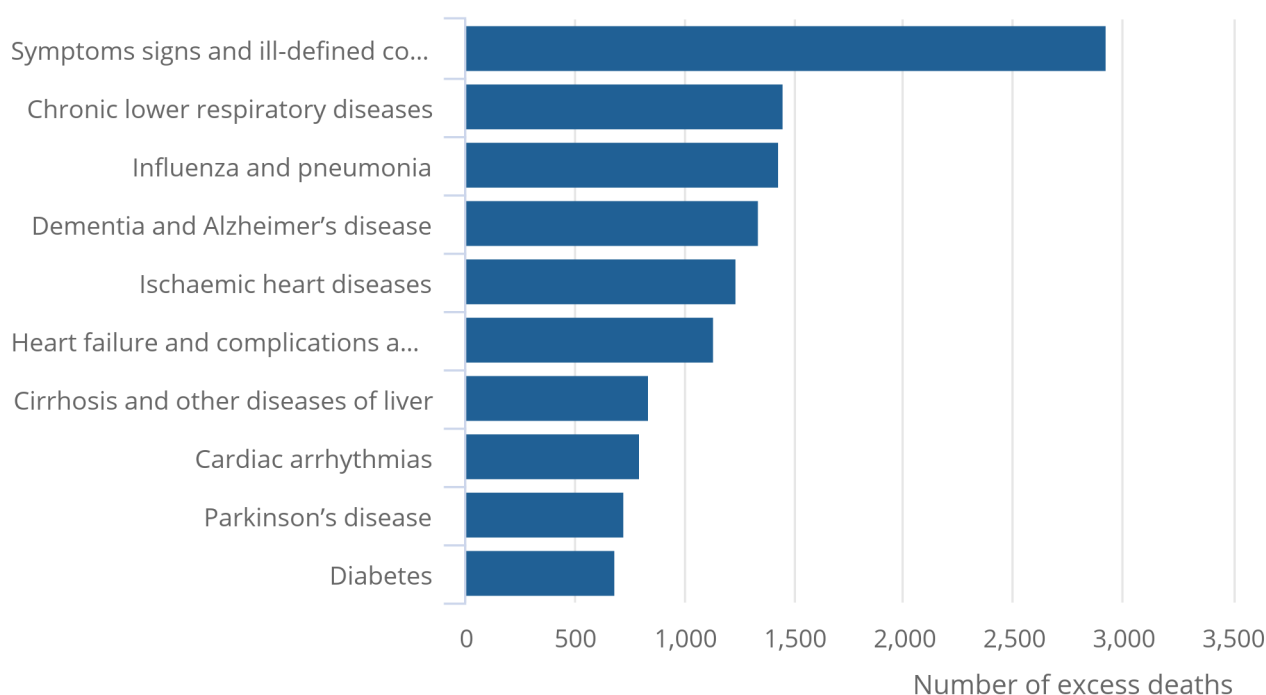
Excess mortality by causes of death in the year-to-date

Figure 9: In England, symptoms, signs and ill-defined conditions was the leading cause of excess death in the year to date for 2023

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

Figure 9: In England, symptoms, signs and ill-defined conditions was the leading cause of excess death in the year to date for 2023

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

Source: Monthly mortality analysis from the Office for National Statistics

Notes:

1. Figures for 2022 and 2023 are based on provisional mortality data.

2. Based on underlying cause of death.

3. Figures exclude deaths of non-residents.

4. Leading causes are ranked based on the number of excess deaths.

5. The five-year average has been provided for 2017 to 2019, 2021 and 2022 because of the impact of the coronavirus (COVID-19) pandemic on deaths registered in 2020.

In England, the leading cause of excess death in the year to date (January to May) of 2023 was symptoms, signs and ill-defined conditions, with 2,924 excess deaths (48.6% above average) (Figure 9). The mortality rate was significantly higher compared with the five-year average ASMR (38.1 compared with 27.6 deaths per 100,000 people, 37.9% above average).

The ASMRs for 22 of the 69 leading causes in the year to date were significantly higher than the five-year average, with 8 of these appearing in the top 10 leading causes of excess death. The largest percentage increase in both number of deaths and ASMR was in deaths due to septicaemia, with 639 excess deaths (56.9% above average) and the mortality rate at 45.6% above average (7.3 compared with 5.0 deaths per 100,000 people, respectively).
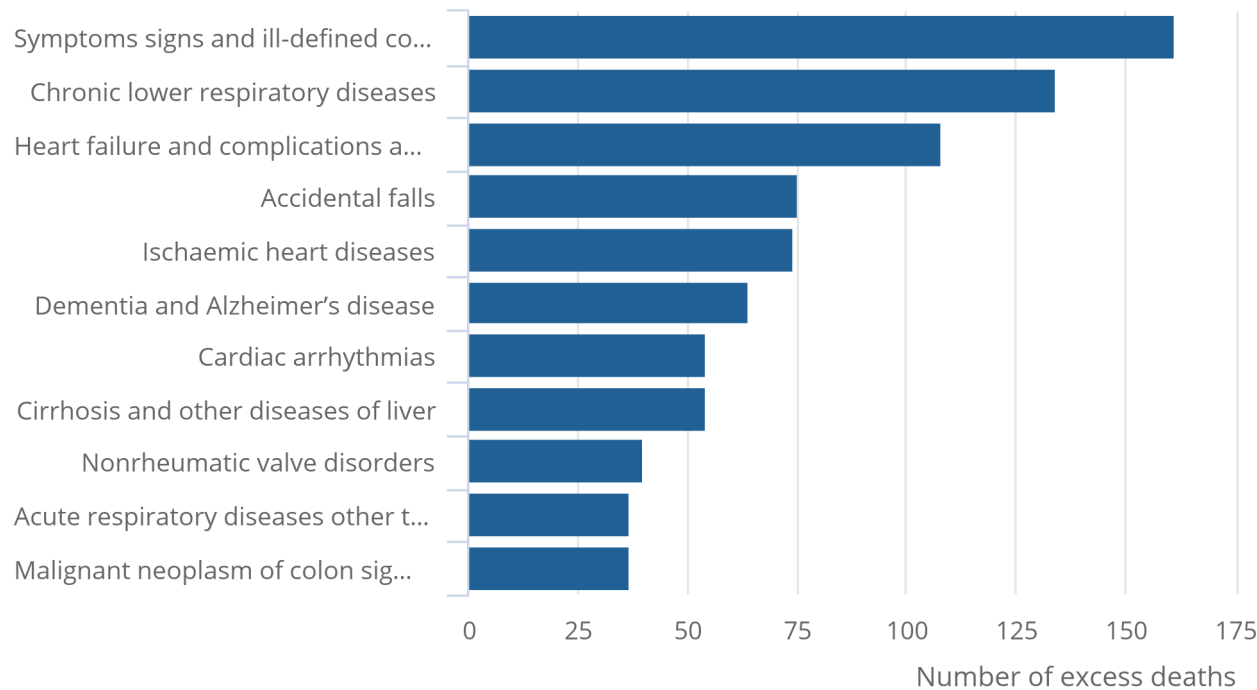
Deaths due to malignant neoplasms of the trachea, bronchus and lung had the greatest number of deaths below average, at 486 fewer deaths (4.3% below average). The mortality rate was significantly lower than average (45.7 compared with 51.3 deaths per 100,000 people), at 11.0% below average.

Figure 10: In Wales, symptoms, signs and ill-defined conditions was the leading cause of excess death in the year to date for 2023

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

Source: Monthly mortality analysis from the Office for National Statistics

Notes:

1. Figures for 2022 and 2023 are based on provisional mortality data.

2. Based on underlying cause of death.

3. Figures exclude deaths of non-residents.

4. Leading causes are ranked based on the number of excess deaths.

5. The five-year average has been provided for 2017 to 2019, 2021 and 2022 because of the impact of the coronavirus (COVID-19) pandemic on deaths registered in 2020.

In Wales, the leading cause of excess death in the year to date (January to May) of 2023 was symptoms, signs and ill-defined conditions, with 161 excess deaths (46.4% above average) (Figure 10). The mortality rate was significantly higher when compared with the five-year average ASMR (36.7 compared with 26.8 deaths per 100,000 people, an increase of 37.2%).

When considering ASMRs, the largest percentage increase was in deaths due to intestinal infectious diseases, similarly to the year to date for April 2023 (January to April), with 52.1% above average (3.4 compared with 2.3 deaths per 100,000 people, respectively).

Deaths due to influenza and pneumonia had the greatest number of deaths below average, at 85 fewer deaths (9.4% below average). The mortality rate was significantly lower than average (56.6 compared with 66.8 deaths per 100,000 people), at 15.3% below average. The only other cause of death in Wales in the year to date that was significantly lower than average was deaths due to malignant neoplasm of trachea, bronchus and lung (49.5 compared with 56.7 deaths per 100,000 people), at 12.6% below average.

6 . Death occurrences in May 2023

This section is based on the date a death occurred, rather than the date of registration used in the previous sections, to monitor current mortality trends. The number of death occurrences is incomplete because it is likely that more deaths need to be registered.

Instances where the number of daily death occurrences in May were below the range of the last five years may be a result of when the data extract was created. Specifically, deaths that occurred towards the end of the month may not have been registered by the time the data extract was created. We would therefore expect the number of death occurrences to be higher in future releases, and comparisons should be treated with caution. Further information can be found in Section 10: Measuring the data.

Figure 11: In England, the majority of daily deaths in 2023 were within the range of the five-year average

Number of deaths occurring on each day from January 2022 to May 2023, five-year average and range, England

Notes:

1. Figures are for deaths occurring on each day rather than deaths registered, registered up to 7 June 2023. Death occurrences will increase as more deaths are registered, particularly for later dates.

2. Figures for 2022 and 2023 (including deaths that occurred in previous years but were registered in 2022 and 2023) are based on provisional mortality data.

3. Figures exclude non-residents.

4. For deaths occurring in 2022, the five-year average consists of deaths occurring from 2016 to 2019, and 2021, whereas for deaths occurring in 2023, the five-year average consists of deaths occurring from 2017 to 2019, 2021 and 2022.

Download the data

.xlsx

In the first five months of 2023 (January to May), 216,889 deaths occurred in England, and were registered by 7 June 2023; this was 9,095 fewer deaths (4.0% lower) than the five-year average (2017 to 2019, 2021 and 2022) (Figure 11). Most days (66.2%) had daily death occurrences within the range of the five-year average, and 28.5% had death occurrences below the range.

In May 2023, there were 35,519 death occurrences registered by 7 June 2023; this was 4,548 fewer deaths than average (11.4% lower). This will increase as more deaths are registered. For example, since 7 May 2023, 8,246 more deaths were registered as occurring in April 2023, a 25.6% increase than that published in the April edition of our monthly analysis bulletin.

Figure 12: In Wales, the majority of daily deaths in 2023 were within the range of the five-year average

Number of deaths occurring on each day from January 2022 to May 2023, five-year average and range, Wales

Notes:

1. Figures are for deaths occurring on each day rather than deaths registered, registered up to 7 June 2023. Death occurrences will increase as more deaths are registered, particularly for later dates.

2. Figures for 2022 and 2023 (including deaths that occurred in previous years but were registered in 2022 and 2023) are based on provisional mortality data.

3. Figures exclude non-residents.

4. For deaths occurring in 2022, the five-year average consists of deaths occurring from 2016 to 2019, and 2021, whereas for deaths occurring in 2023, the five-year average consists of deaths occurring from 2017 to 2019, 2021 and 2022.

Download the data

.xlsx

In the 2023 year to date, 14,185 deaths occurred in Wales, and were registered by 7 June 2023; this was 825 fewer deaths (5.5% lower) than the five-year average (Figure 12). Most days (70.2%) had daily death occurrences within the range of the five-year average, and 25.2% had death occurrences below the range.

In May 2023, there were 2,364 death occurrences registered by 7 June 2023; this was 317 fewer deaths than average (11.8% below). This will increase as more deaths are registered. For example, 442 more deaths were registered as occurring in April 2023 since 7 May 2023, a 20.0% increase than that published in the April edition of our monthly mortality analysis bulletin.

7 . Pre-existing conditions of people whose death was due to COVID-19, deaths registered in January to March 2023

Data on pre-existing conditions of people who died due to coronavirus (COVID-19) in England and Wales between January 2020 and March 2023 can be found in our accompanying dataset. Quarter 1 (Jan to Mar) 2023 analysis is available in our Monthly mortality analysis, England and Wales: March 2023 bulletin. We will publish analysis for Quarter 2 (Apr to June) 2023 in our June 2023 edition of this bulletin.

8 . Monthly mortality data

Monthly mortality analysis, England and Wales
Dataset | Released 23 June 2023
Provisional data on death registrations and death occurrences in England and Wales, broken down by sex and age. Includes deaths due to coronavirus (COVID-19) and leading causes of death.

Deaths due to coronavirus (COVID-19) by English region and Welsh health board
Dataset | Released 23 June 2023
Provisional age-standardised mortality rates for deaths due to COVID-19 by sex, English regions and Welsh health boards.

Deaths involving coronavirus (COVID-19) by month of registration, UK
Dataset | Released 23 June 2023
Provisional age-standardised mortality rates for deaths involving COVID-19 by sex and month of death registration, for England, Wales, Scotland and Northern Ireland.

Deaths registered monthly in England and Wales
Dataset | Released 23 June 2023
Number of deaths registered each month by area of usual residence for England and Wales, by region, county, local and unitary authority, and London borough.

Single year of age and average age of death of people whose death was due to or involved coronavirus (COVID-19)
Dataset | Released 23 June 2023
Provisional deaths registration data for single year of age and average age of death (median and mean) of persons whose death involved coronavirus (COVID-19), England and Wales. Includes deaths due to COVID-19 and breakdowns by sex.

Pre-existing conditions of people who died due to coronavirus (COVID-19), England and Wales
Dataset | Released 25 April 2023
Pre-existing conditions of people who died due to COVID-19, broken down by country, broad age group, and place of death occurrence, usual residents of England and Wales.

9 . Glossary

Age-standardised mortality rates

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

Coronaviruses

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

Coronavirus (COVID-19)

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

Symptoms, signs and ill-defined conditions

Symptoms, signs and ill-defined conditions is a [leading cause of death grouping](#), which includes International Classification of Diseases (ICD-10) codes R00 to R99. This cause grouping is the same codes as Chapter 18: Symptoms, signs and abnormal clinical and laboratory findings, not elsewhere classified, of the [ICD-10](#) developed by the WHO. This cause grouping includes a variety of causes of deaths, such as abnormalities of heartbeat, somnolence, stupor and coma, old-age, and frailty.

Pre-existing condition

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

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

Registration delay

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

Statistical significance

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

95% confidence intervals

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

10 . Measuring the data

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

Analysis contains deaths registered in May 2023 by age and sex, and includes deaths that occurred in May 2023 by date of death. Non-residents of England and Wales are excluded. In May 2023, there were 108 deaths of non-residents that were registered in England and Wales.

Data sources

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

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

Definition of COVID-19 deaths

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

1. U07.1: COVID-19, virus identified

2. U07.2: COVID-19, virus not identified

3. U09.9: post-COVID condition, unspecified (this cannot be assigned to the underlying cause of death so is not included in the "deaths due to COVID-19" definition)

4. U10.9: multisystem inflammatory syndrome associated with COVID-19, unspecified

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

1. U08.9: personal history of COVID-19, unspecified

2. U11.9: need for immunisation against COVID-19, unspecified

3. U12.9: COVID-19 vaccines causing adverse effects in therapeutic use, unspecified

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

Monthly mortality rates

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

Acknowledgement

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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 2022 and 2023 are provisional, they are subject to change.

Data coverage, timeliness and registration delays

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

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

12 . Related links

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

Death registration summary statistics, England and Wales: 2022
Article | Released 11 April 2023
Number of deaths registered by year, sex, area of usual residence and selected underlying cause of death.

Deaths registered in England and Wales: 2021 (refreshed populations)
Bulletin | Released 27 January 2023
Registered deaths by age, sex, selected underlying causes of death and the leading causes of death.
Contains death rates and death registrations by area of residence and single year of age.

Coronavirus (COVID-19) latest data and analysis
Web page | Updated as and when new data become available
Brings together the latest data and analysis on the coronavirus (COVID-19) pandemic in the UK and its effect on the economy and society.

Excess deaths in England and Wales: March 2020 to December 2022
Article | Released 9 March 2023
Number of excess deaths, including deaths due to coronavirus (COVID-19) and due to other causes. Including breakdowns by age, sex and geography.

13 . Cite this statistical bulletin

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