Office for National Statistics

Statistical bulletin

Monthly mortality analysis, England and Wales: June 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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Notice

21 July 2023

We plan to merge or remove some of the tables and analyses contained in Monthly Mortality Analysis, England and Wales and its related datasets, including reducing the number of tables relating to COVID-19, in order to reflect current user needs. We would like to invite user input prior to making these changes, please contact health.data@ons.gov.uk with any needs we should consider.

Table of contents

1 . Main points

- In June 2023, there were 43,842 deaths registered in England, 5,250 deaths (13.6%) above the June five-year average (2017 to 2019, 2021 and 2022); in Wales, there were 2,882 deaths registered, 337 deaths (13.3%) above the five-year average.

- Accounting for the population size and age structure, the age-standardised mortality rate (ASMR) for June 2023 was statistically significantly higher than the five-year average for both England (919.2 compared with 868.8 deaths per 100,000 people, respectively) and Wales (994.1 compared with 935.0 deaths per 100,000 people, respectively).

- The number of deaths in the year-to-date (January to June 2023) was above average in both England and Wales (by 8.5% and 7.5%, respectively); the year-to-date ASMR was also above average, but to a lesser extent, in both England and Wales (by 1.0% and 0.9%, respectively).

- The leading cause of death in England in June 2023 was dementia and Alzheimer's disease (10.5% of all deaths); in Wales, the leading cause of death was ischaemic heart diseases (10.4% of all deaths).

- The leading cause of excess death in England in June 2023 was chronic lower respiratory diseases, at 359 excess deaths (18.0% above average); in Wales, it was symptoms, signs and ill-defined conditions (which includes "old age" and "frailty"), at 24 excess deaths (40.9% above average).

- In Quarter 2 (Apr to Jun) 2023, symptoms, signs and ill-defined conditions remained the most common pre-existing condition mentioned on death certificates for deaths due to coronavirus (COVID-19) in England and Wales, at 807 deaths (29.9% of all deaths due to COVID-19).

2 . Death registrations in June 2023

In England, there were 43,842 deaths registered in June 2023, based on provisional data. This was 2,402 more deaths than June 2022 and 5,250 (13.6%) more deaths than the five-year average (2017 to 2019, 2021 and 2022).

In Wales, there were 2,882 deaths registered in June 2023. This was 142 more deaths than June 2022 and 337 (13.3%) 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 June.

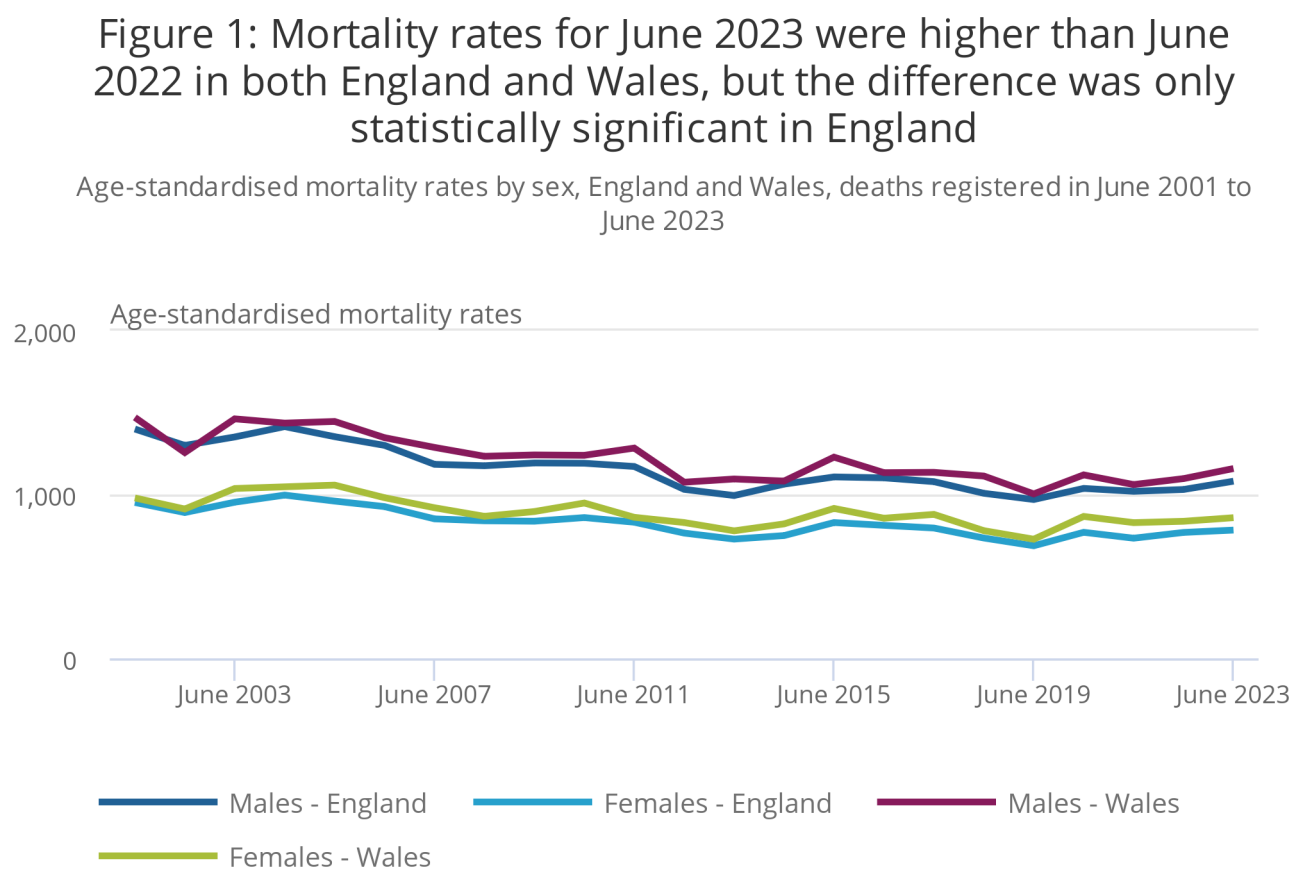
In June 2023, the ASMR in England was 919.2 deaths per 100,000 people. This is the second consecutive year that June mortality rates have statistically significantly increased; the ASMRs for June 2022 and 2021 were 887.4 and 862.9 deaths per 100,000 people, respectively. The ASMR for June 2023 was also significantly higher than the June ASMRs since 2017 (922.7 deaths per 100,000 people).

In June 2023, the ASMR in Wales was 994.1 deaths per 100,000 people. This was not statistically significantly different from June mortality rates since June 2013 (912.6 deaths per 100,000 people), except for June 2019 (854.5 deaths per 100,000 people), which was significantly lower than the mortality rate for June 2023.

The mortality rate in June has consistently been statistically 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 June 2023 were higher than June 2022 in both England and Wales, but the difference was only statistically significant in England

Age-standardised mortality rates by sex, England and Wales, deaths registered in June 2001 to June 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 290,909 deaths registered in England and 19,129 in Wales during the first six months (January to June) of 2023.

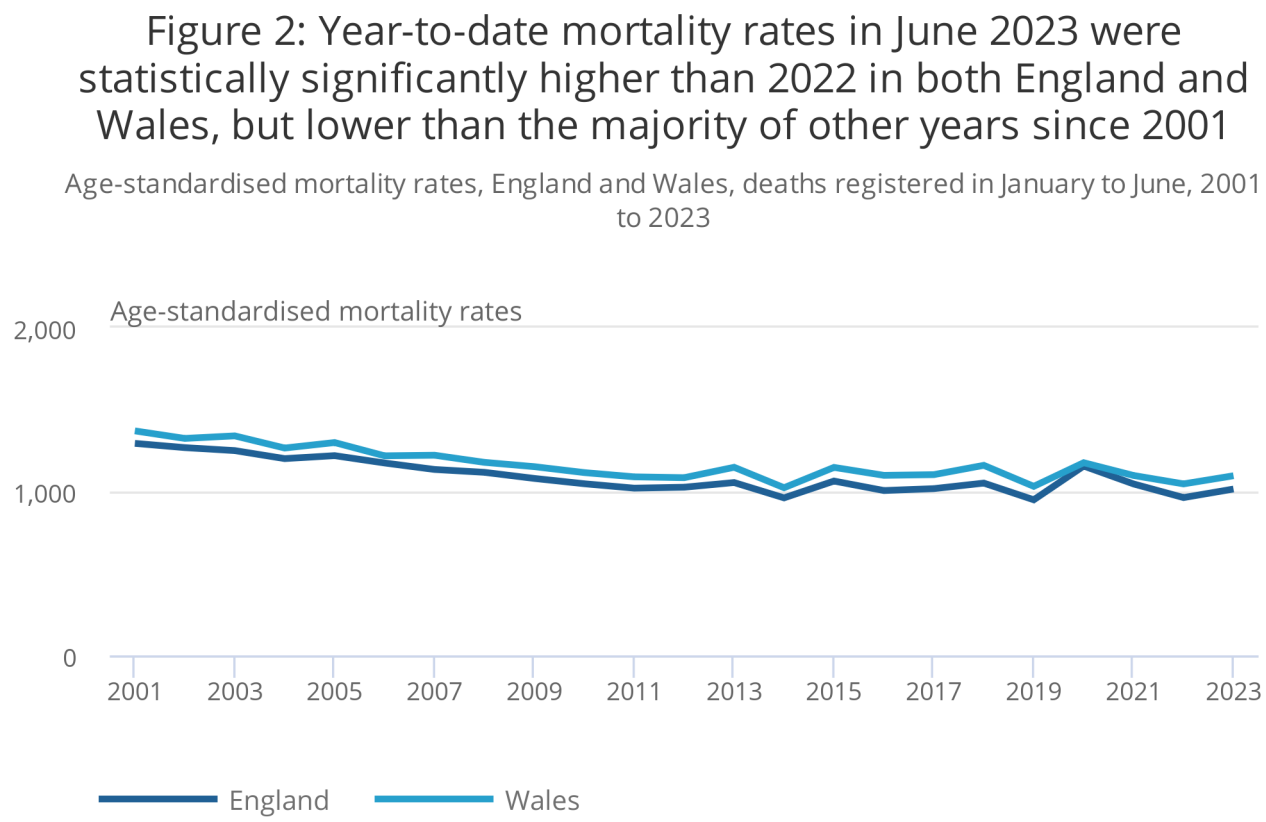
To gain a better idea of year-to-year differences in mortality rates, we calculated a year-to-date ASMR based on deaths registered in January to June of each year, from 2001 to 2023 (Figure 2).

For England, the year-to-date ASMR for 2023 (1,015.0 deaths per 100,000 people) was significantly higher than the year-to-date ASMR for 2022 (962.9 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.

This was similar in Wales; the year-to-date ASMR for 2023 (1,096.1 deaths per 100,000 people) was significantly higher than that of 2022 (1,046.4 deaths per 100,000 people). However, it 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 June 2023 were statistically 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 June, 2001 to 2023



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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 June 2023, excess mortality rates 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 and has been consistent since the start of our timeseries in January 2022.

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 June 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 June, 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 June 2023, the number of deaths was 13.6% (5,250 deaths) above what we would expect using the five-year average. The mortality rate was statistically significantly above average (919.2 and 868.8 deaths per 100,000 people, respectively), by 5.8%. These were proportionally greater than June 2022 (compared with the five-year average of 2016 to 2019 and 2021) for both numbers of deaths (8.5%) and mortality rates (1.0%), and the highest proportional excesses of 2023 to date.

The number of deaths registered in the year to date of 2023 (January to June) was 8.5% above average, whereas the equivalent year-to-date value in 2022 was 1.4% above expected. The 2023 year-to-date ASMR was significantly higher than average, by 1.0% (1,015.0 and 1,004.6 deaths per 100,000 people, respectively). The equivalent year-to-date ASMR in 2022 was significantly lower than average (962.9 and 1,013.9 deaths per 100,000 people, respectively), at 5.0% below expected.

Figure 4: In Wales, the number of deaths continued to be above the five-year average in June 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, Wales, deaths registered from January to June, 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.

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In Wales, in June 2023, the number of deaths was 13.3% above the five-year average. The ASMR was significantly higher than average (994.1 and 935.0 deaths per 100,000 people, respectively), at 6.3% above average. These were proportionally greater than June 2022 for both numbers of deaths (9.4%) and mortality rates (2.5%), and the highest proportional excesses of 2023 to date.

The number of deaths registered in the year to date of 2023 was 7.5% above average in Wales, whereas the equivalent year to date value in 2022 was 0.8% above average. The 2023 year-to-date ASMR was not significantly different from average, at 0.9% above (1,096.1 and 1,086.7 deaths per 100,000 people, respectively). The equivalent year-to-date ASMR in 2022 was significantly lower than average (1,046.4 and 1,097.7 deaths per 100,000 people, respectively), at 4.7% below expected.

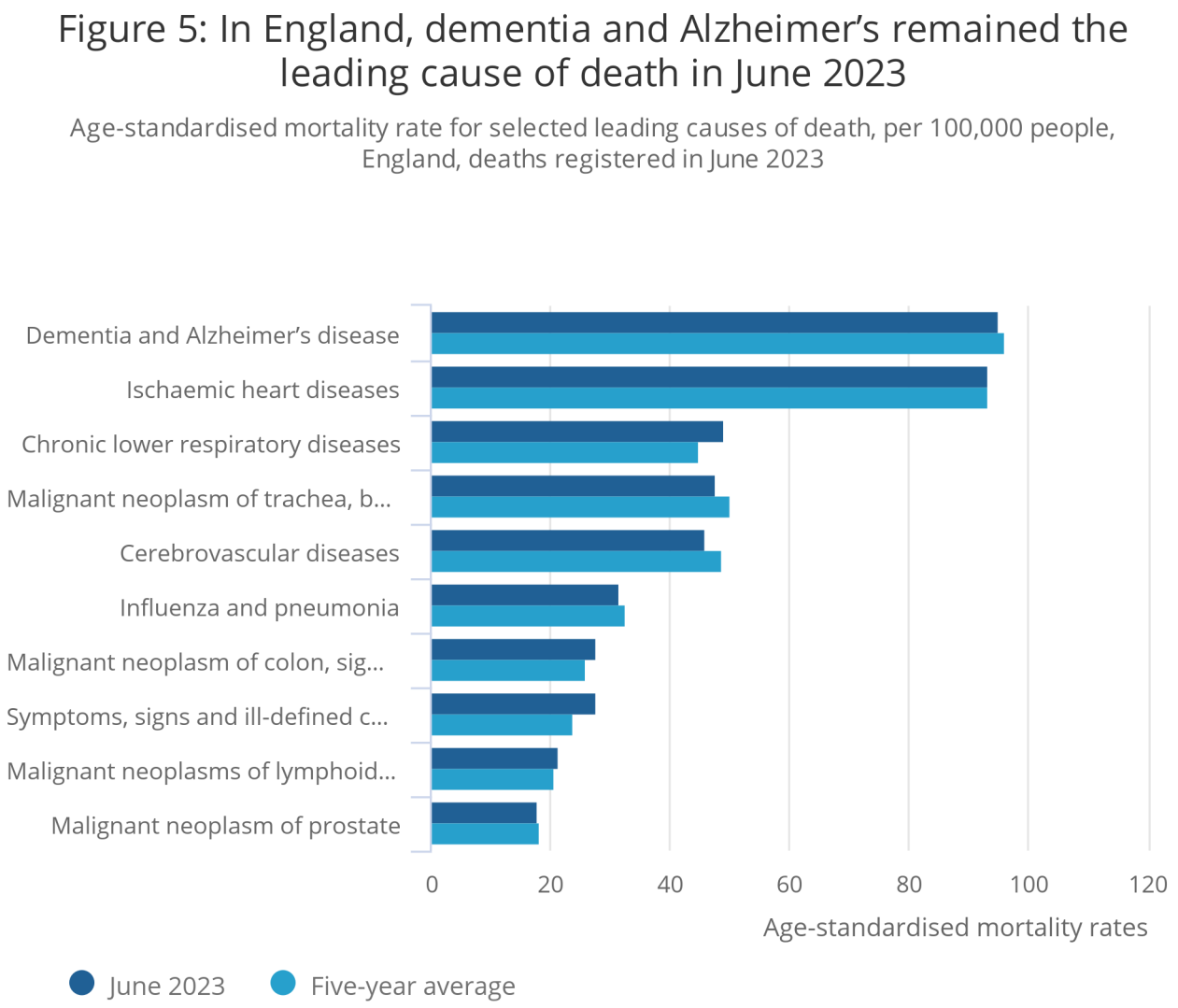
4 . Leading causes of death

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 Section 9 of our User guide to mortality statistics methodology.

The 10 most common underlying causes of death registered in June 2023, compared with the five-year average for June (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 remained the leading cause of death in June 2023

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

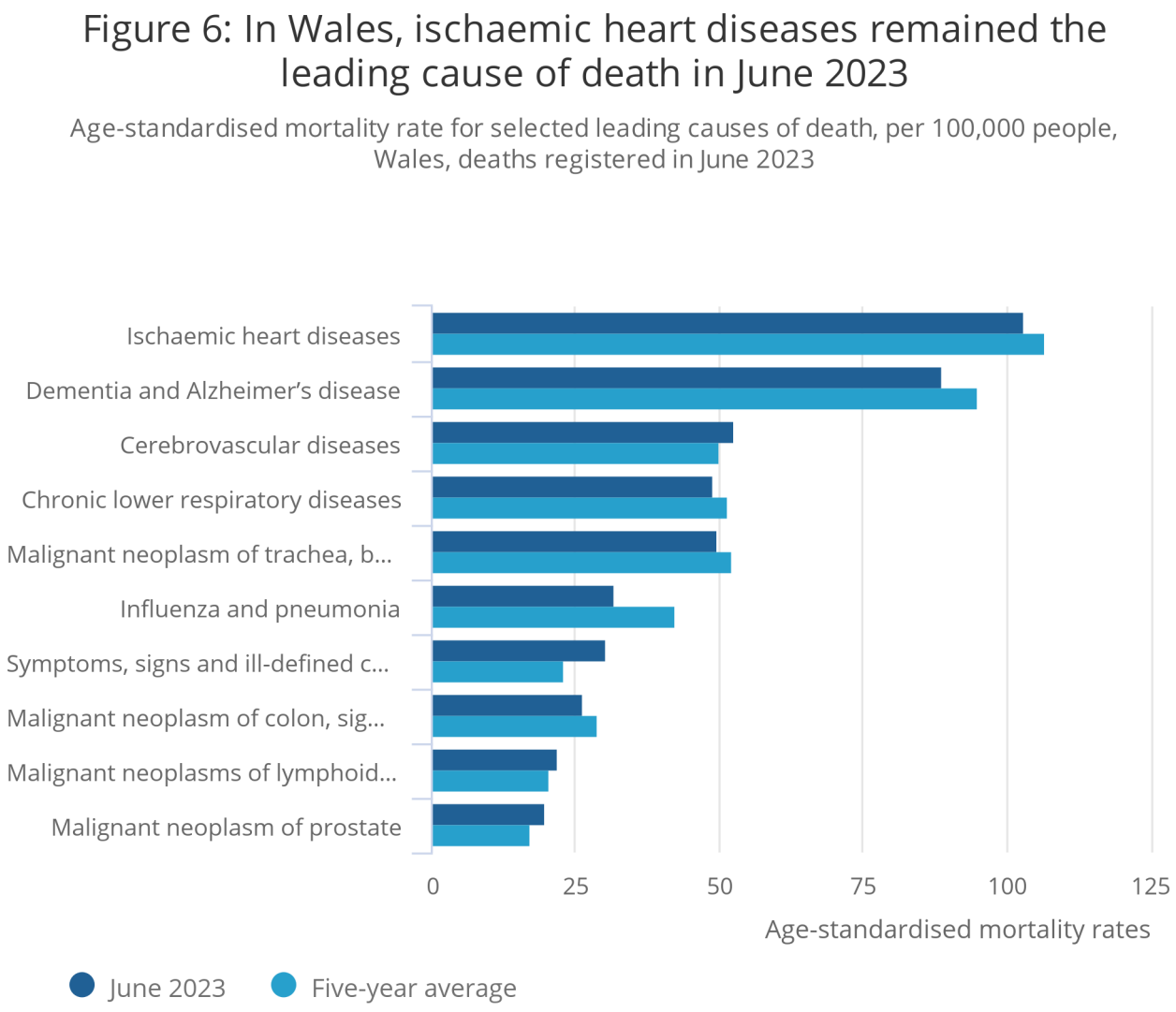
6. Leading causes are ranked based on the number of deaths, not the age-standardised mortality rates.

In England, dementia and Alzheimer's disease remained the leading cause of death in June 2023 (for the 24th consecutive month), with 95.0 deaths per 100,000 people (4,595 deaths).

In June 2023, 9 of the 10 leading causes of death were also the leading causes of death in the year to date (January to June 2023). The ranking was also generally similar, with the top three causes in June 2023 remaining consistent with the top three causes in the year to date. Coronavirus (COVID-19) ranked eighth in the year to date, compared with 24th in June 2023.

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

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



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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 third consecutive month, with 103.0 deaths per 100,000 people (301 deaths).

In June 2023, 8 of the 10 leading causes of death were also the leading causes of death in the year to date (January to June 2023). COVID-19 ranked ninth in the year to date, compared with 19th in June 2023. Cirrhosis and other diseases of liver ranked 10th in the year to date, compared with 12th in June 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 (83.5% in England, 82.6% in Wales).

In England, COVID-19 dropped to the 24th leading cause of death in June 2023 (from 13th in May 2023), at 9.4 deaths per 100,000 people (451 deaths), accounting for 1.0% of all deaths. This was statistically significantly lower than the mortality rate for deaths due to COVID-19 in May 2023, at 15.8 deaths per 100,000 people (785 deaths; 1.8% of all deaths).

This was the lowest ranking for deaths due to COVID-19 in any month since June 2021, when it was ranked 26th, at a rate of 7.5 deaths per 100,000 people (344 deaths). It also ranked 15th in June 2022; this could indicate a seasonal effect, with the number of deaths being higher in winter months.

In Wales, COVID-19 decreased to the 19th leading cause of death in June 2023 (from 10th in May 2023), at 11.8 deaths per 100,000 people (35 deaths), accounting for 1.2% of all deaths. This was not significantly different to the mortality rate for deaths due to COVID-19 in May 2023, at 19.1 deaths per 100,000 people (57 deaths, 2.0% of all deaths). COVID-19 was also the 19th leading cause of death in June 2022, further indicating the possible seasonal effect on COVID-19 mortality.

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.
- All ONS analysis, summarised in our coronavirus latest insights.
- View all coronavirus data.

5 . Excess mortality by causes of death

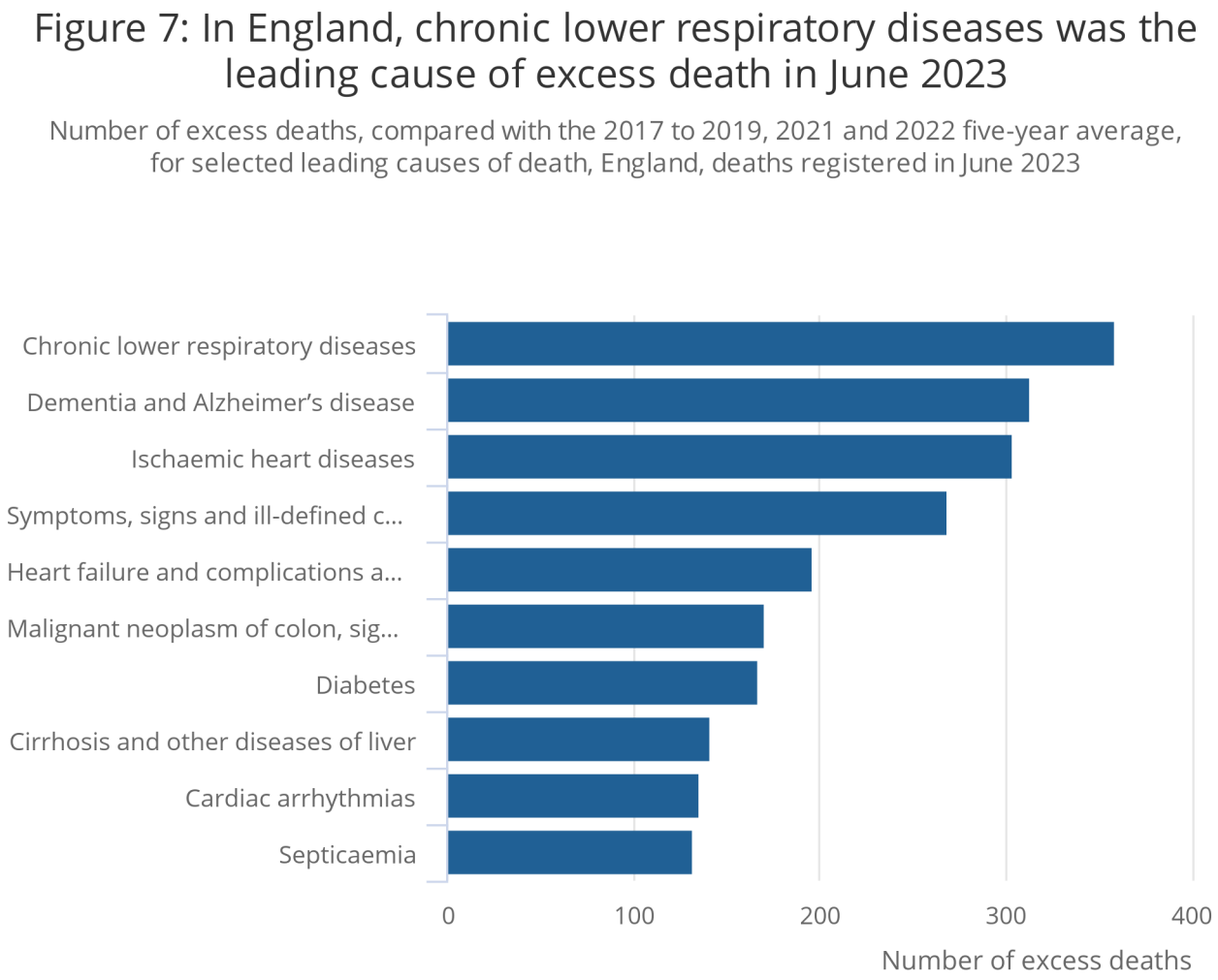
Changing trends in causes of death can help us to understand possible causes of excess mortality. Leading causes of excess deaths can include some of the 10 most common causes of death (see Section 4: Leading causes of death), but will also include other leading cause of death groupings, which contribute 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 June 2023 compared with the five-year average for June (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, chronic lower respiratory diseases was the leading cause of excess death in June 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 June 2023



Source: Monthly mortality analysis from the Office for National Statistics

Notes:

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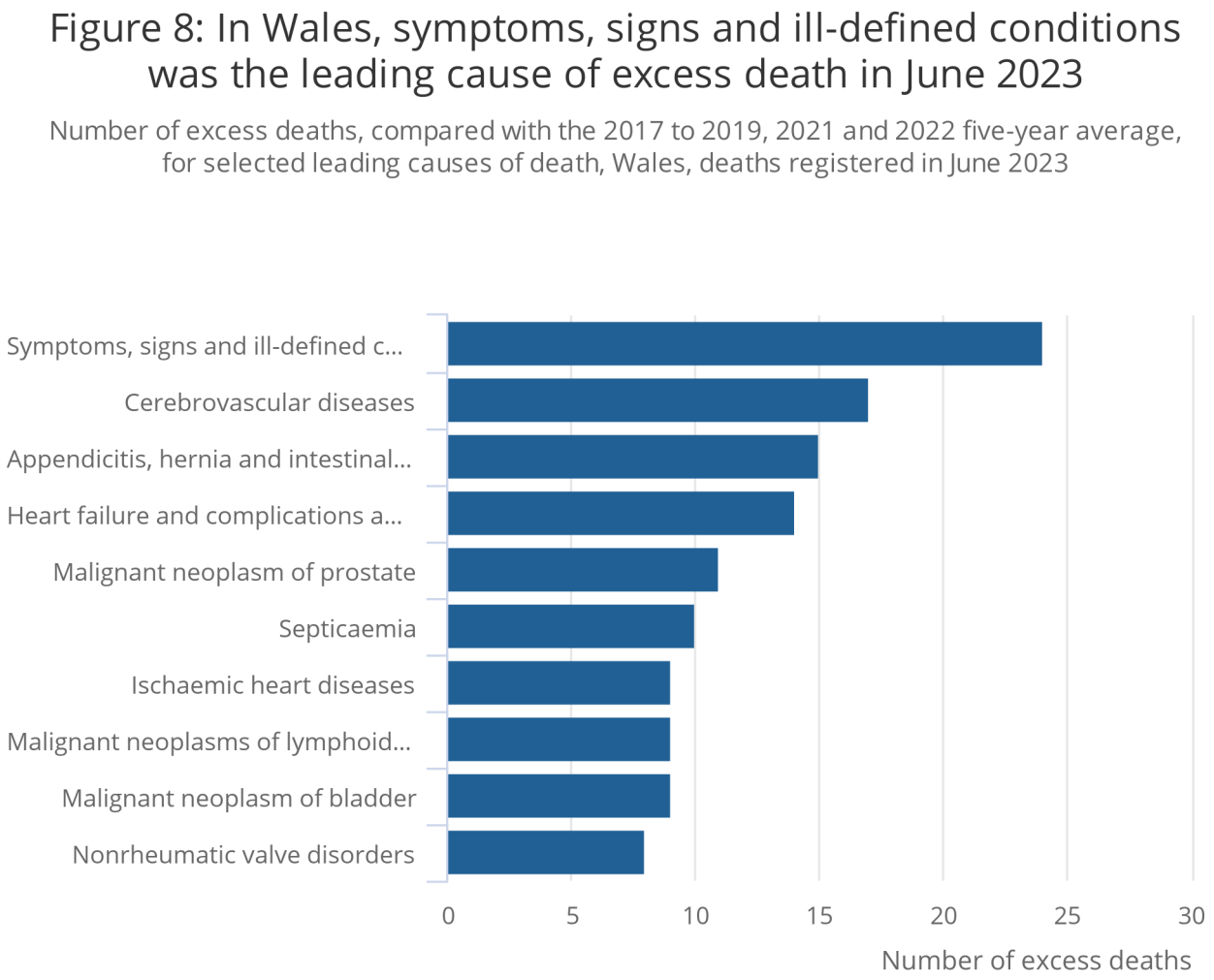
2. Based on underlying cause of death.
3. Figures exclude deaths of non-residents.
4. Leading causes are ranked based on the number of excess deaths.
5. The five-year average has been provided for 2017 to 2019, 2021 and 2022 because of the impact of the coronavirus (COVID-19) pandemic on deaths registered in 2020.

In England in June 2023, the leading cause of excess death was chronic lower respiratory diseases, with 359 excess deaths (18.0% above average) (Figure 7). The ASMR for this cause was statistically significantly higher than the June five-year average (49.2 and 45.0 deaths per 100,000 people, respectively). This replaced symptoms, signs and ill-defined conditions, the leading cause of excess death for the previous four months, which dropped to fourth in June 2023 (269 excess deaths, 26.2% above average). 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 septicaemia had the greatest proportional increase when compared with the June five-year average for both number of deaths (132 excess deaths, 62.7% above average) and ASMR (50.3% above average). The ASMR for deaths due to this cause has been significantly above average in every month of 2023.

Figure 8: In Wales, symptoms, signs and ill-defined conditions was the leading cause of excess death in June 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 June 2023



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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 June 2023, the leading cause of excess deaths was symptoms, signs and ill-defined conditions, with 24 excess deaths (40.9% above average) (Figure 8). This replaced dementia and Alzheimer's disease, which was the leading cause of excess death in May 2023 but dropped to joint 19th in June 2023 (3 excess deaths, 1.3% above average). The leading cause of excess death in Wales has generally varied by month in 2023, with four different causes being the monthly leading cause across the six months to date.

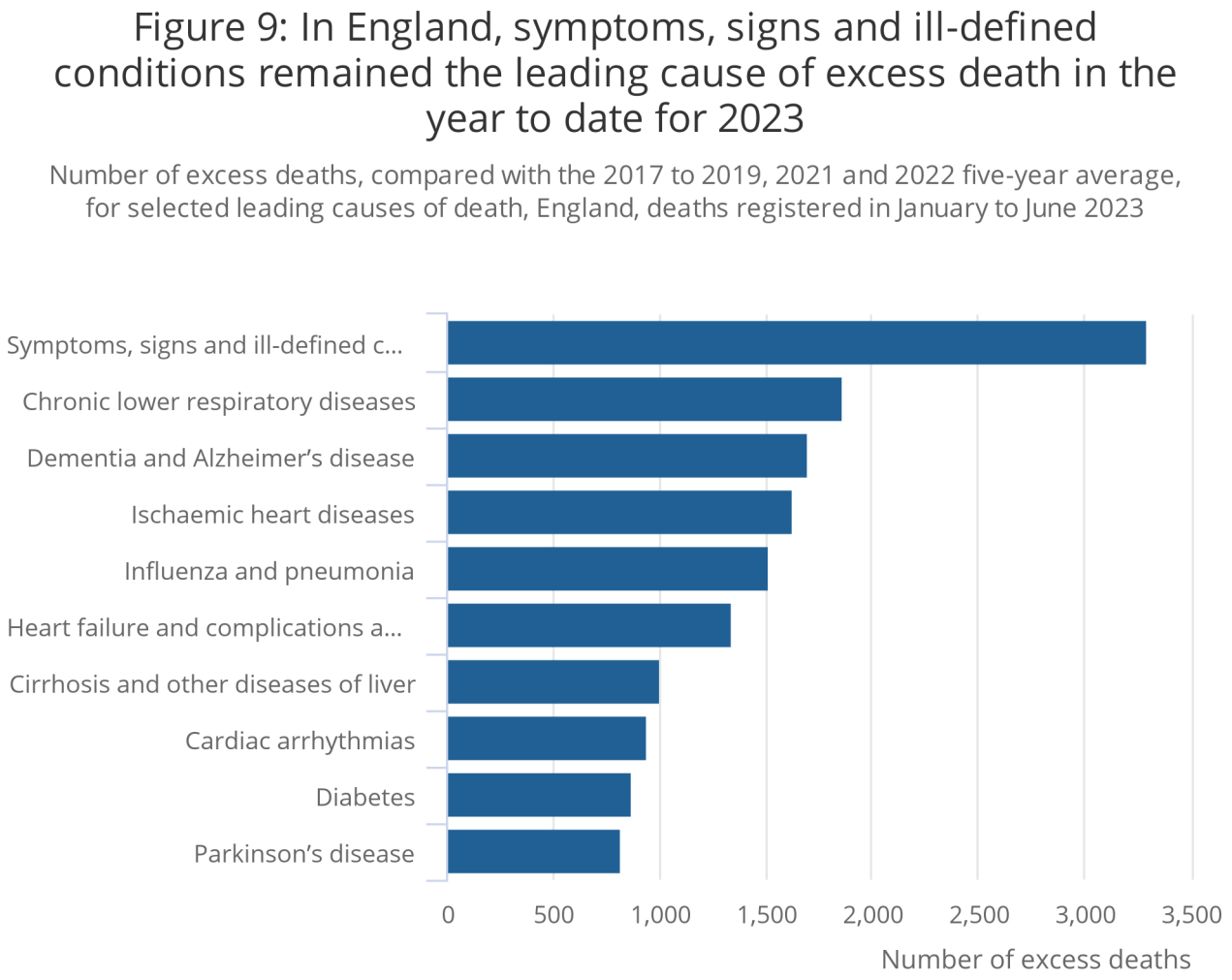
Deaths due to symptoms, signs and ill-defined conditions also had the greatest proportional increase in ASMR when compared to the June five-year average (32.7% above average, 30.4 compared with 22.9 deaths per 100,000 people, respectively). This increase, though, was not statistically significant; the greater level of uncertainty here reflects the smaller population and numbers of deaths in Wales, compared with England.

Mortality rates for all causes of death in Wales in June 2023 were not significantly different compared with the five-year average. The exception was deaths due to accidental falls, which was significantly lower than average. However, this is likely because deaths due to this cause have a typical registration delay of 91 days, and therefore are yet to be registered. For more information, see our Impact of registration delays on mortality statistics in England and Wales: 2021 article.

Excess mortality by causes of death in the year-to-date

Figure 9: In England, symptoms, signs and ill-defined conditions remained 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 June 2023



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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.

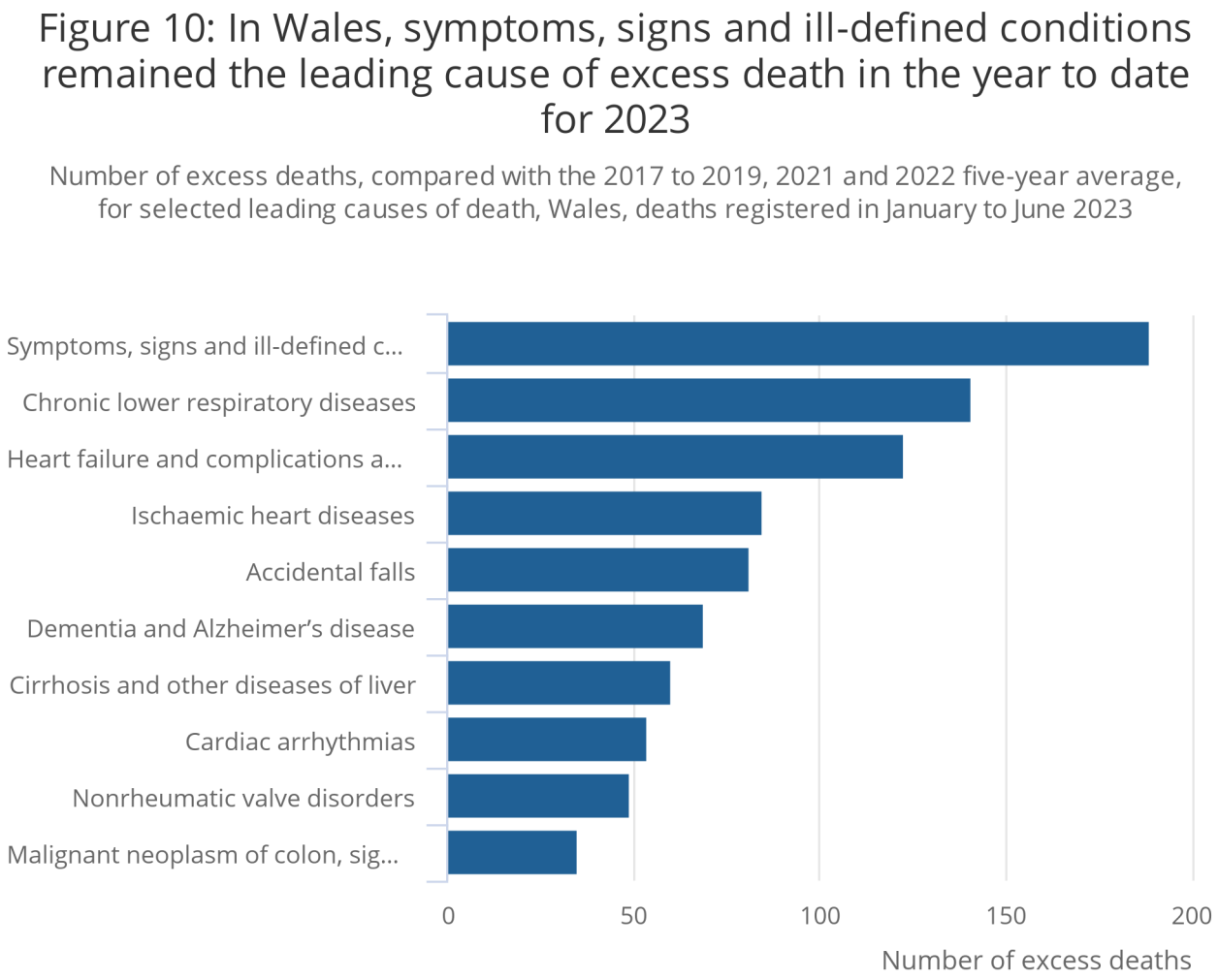
In England, the leading cause of excess death in the year to date (January to June) of 2023 was symptoms, signs and ill-defined conditions, with 3,293 excess deaths (46.7% above average) (Figure 9). The mortality rate was significantly higher compared with the five-year average ASMR at 36.1% above average (36.7 compared with 26.9 deaths per 100,000 people, respectively).

The ASMRs for 22 of the 69 leading causes in the year to date were significantly higher than the five-year average, with eight of these appearing in the top 10 leading causes of excess death. Deaths due to septicaemia had the largest proportional increase in both number of deaths at 58.0% above average (774 excess deaths), and ASMR at 46.5% 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 continued to have the greatest number of deaths below average, at 423 fewer deaths (3.1% below average). The mortality rate was significantly lower than average (46.1 compared with 51.2 deaths per 100,000 people), at 9.9% below average.

Figure 10: In Wales, symptoms, signs and ill-defined conditions remained 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 June 2023



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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 June) of 2023 was symptoms, signs and ill-defined conditions, with 189 excess deaths (46.4% above average) (Figure 10). The mortality rate was significantly higher when compared with the five-year average ASMR (35.8 compared with 26.1 deaths per 100,000 people, an increase of 37.2%).

For numbers of deaths, intestinal infectious diseases had the greatest proportional increase compared to the five-year average, at 59.1% (23 excess deaths).

The ASMRs for 5 of the 69 leading causes in the year to date were significantly higher than the five-year average, with four of these appearing in the top 10 leading causes of excess death. The largest percentage increase was in deaths due to mental and behavioural disorders due to psychoactive substance use, with 53.1% above average (2.2 compared with 1.4 deaths per 100,000 people, respectively).

Deaths due to influenza and pneumonia continued to have the greatest number of deaths below average, at 106 fewer deaths (10.4% below average). The mortality rate was significantly lower than average (52.6 compared with 62.8 deaths per 100,000 people), at 16.3% below average. Malignant neoplasm of trachea, bronchus and lung continued to be the only other cause of death in Wales in the year to date that was significantly lower than average (49.6 compared with 56.0 deaths per 100,000 people), at 11.5% below average.

6 . Death occurrences in June 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 June 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 June 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 July 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 between 2016 to 2019 and 2021, whereas for deaths occurring in 2023, the five-year average consists of deaths occurring between 2017 to 2019, 2021 and 2022.

Download the data

.xlsx

In the first six months of 2023 (January to June), 256,982 deaths occurred in England and were registered by 7 July 2023; this was 6,785 fewer deaths (2.6% lower) than the five-year average (2017 to 2019, 2021 and 2022) (Figure 11). Most days (74.6%) had daily death occurrences within the range of the five-year average, and 20.4% had death occurrences below the range.

In June 2023, there were 34,767 deaths occurrences registered by 7 July 2023; this was 2,961 fewer deaths than average (7.8% lower). This will increase as more deaths are registered. For example, between 7 June and 7 July 2023, 3,217 more deaths were registered as occurring in May 2023, a 9.1% increase from that published in the May 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 June 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 July 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 year of 2023 to date, 16,771 deaths occurred in Wales and were registered by 7 July 2023; this was 764 fewer deaths (4.4% lower) than the five-year average (Figure 12). Most days (71.3%) had daily death occurrences within the range of the five-year average, and 22.7% had death occurrences below the range.

In June 2023, 2,314 deaths occurred and were registered by 7 July 2023; this was 201 fewer deaths than average (8.0% below). This will increase as more deaths are registered. For example, between 7 June and 7 July 2023, 174 more deaths were registered as occurring in May 2023, a 7.4% increase from that published in the May edition of our monthly analysis bulletin.

Heat-related mortality

In both England and Wales, June 2023 had the highest mean temperature for the month of June since data recording began in 1884, according to the Met Office press release, Climate change impacts June temperature records. In England, the mean Central England Temperature reached 21.7°C on June 12. On this day, 1,345 deaths occurred in England (and were registered by 7 July 2023), the highest daily number in June 2023 and 149 deaths above the five-year average for June 12. This was also the only day where the number of deaths was above the range of the five-year average in June 2023 in England. For more information on excess mortality during heat-periods and heat-related mortality, see our Excess mortality during heat-periods: 1 June to 31 August 2022 article.

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

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 a death 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, directly or indirectly. The death certificate does not include all health conditions from which the deceased might have suffered if they were not considered relevant. 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 2 (Apr to Jun) 2023, the rest of the bulletin focuses on the month of June 2023.

This analysis of pre-existing conditions covers England and Wales as a whole. This is because of the small number of deaths due to COVID-19 in Wales in Quarter 2 2023 (166 deaths). We will continue to monitor this and provide analysis if the number of deaths in Wales increases.

When comparing pre-existing conditions for deaths due to COVID-19 in Quarter 2 2023 with Quarter 1 (Jan to Apr) 2023, the top 20 most common pre-existing conditions remained largely consistent. The exception was other peripheral vascular diseases, which replaced cirrhosis and other diseases of liver in the 20th position.

Symptoms, signs and ill-defined conditions (which includes "old age" and "frailty") remained the most common pre-existing condition mentioned on death certificates, in Quarter 2 2023 (29.9% of all deaths due to COVID-19). However, some variation in the ranking of pre-existing conditions was observed between Quarter 1 and Quarter 2. For instance, dementia and Alzheimer's disease dropped to fourth in Quarter 2 (13.2%) from second in Quarter 1 (16.6%).

Symptoms, signs and ill-defined conditions was the most common pre-existing condition for deaths due to COVID-19 among those aged 65 years and over, at 31.9%. However, among those aged 0 to 64 years, this proportion was 3.2%. The most common pre-existing condition among this age group was chronic lower respiratory diseases, at 19.7%.

Overall, the proportion of deaths due to COVID-19 with no pre-existing conditions increased from 10.9% in Quarter 1 2023, to 11.6% in Quarter 2 2023. The average number of different pre-existing conditions per death due to COVID-19 decreased to 1.9 in Quarter 2 2023, from 2.0 in Quarter 1 2023. This average had previously been consistent for three consecutive quarters.

In Quarter 2 2023, symptoms, signs and ill-defined conditions remained the most common pre-existing condition for deaths occurring in hospitals (31.7%, a slight decrease from 33.2% in Quarter 1 2023). Dementia and Alzheimer's disease remained the most common pre-existing condition for deaths occurring in care homes (37.2%, a decrease from 40.6% in Quarter 1 2023).

Ischaemic heart diseases was the most common pre-existing conditions for deaths occurring in private homes, at 15.4% (an increase from 12.8% in Quarter 1 2023). This replaced symptoms, signs and ill-defined conditions, which became the third most common, at 13.1% (a decrease from 18.0% in Quarter 1 2023). In other settings, chronic lower respiratory diseases was the most common, at 26.3% (an increase from 9.1% in Quarter 1). This replaced symptoms, signs and ill-defined conditions, which became the joint third most common, at 7.9% (a decrease from 24.2% in Quarter 1).

For further analysis of pre-existing conditions of people whose deaths were due to COVID-19 in Quarter 2 2023 for England and Wales, see our accompanying dataset.

8 . Monthly mortality data

Monthly mortality analysis, England and Wales
Dataset | Released 21 July 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 21 July 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 21 July 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 21 July 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 21 July 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 21 July 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 in Section 5 of our Uncertainty and how we measure it for our surveys page.

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 June 2023 by age and sex, and includes deaths that occurred in June 2023 by date of death. Non-residents of England and Wales are excluded. In June 2023, there were 114 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. For more information on how this is calculated, see our Coronavirus and mortality in England and Wales methodology.

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. For more information on registration delays, see our Impact of registration delays on mortality statistics in England and Wales: 2021 article.

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.

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.

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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