Office for National Statistics

Statistical bulletin

Monthly mortality analysis, England and Wales: December 2022

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

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1 . Main Points

- In December 2022, there were 49,339 deaths registered in England, 5,871 deaths (13.5%) above the December five-year average (2016 to 2019, and 2021); there were 3,432 deaths registered in Wales, 482 deaths (16.3%) above the December average.

- In 2022 (using provisional monthly data), deaths were above average in both England and Wales (6.3% and 5.0% above average, respectively), but when accounting for population size and age structure, the age standardised mortality rate (ASMR) for the year was below average for both England and Wales (0.7% and 1.1% below average, respectively).

- In December 2022, the leading cause of death in both England and Wales was dementia and Alzheimer's disease (12.0% of all deaths in both England and in Wales).

- In December 2022, the leading cause of excess death in England was influenza and pneumonia, at 574 excess deaths (26.2% above average); in Wales, it was symptoms, signs, and ill-defined conditions (which includes "old age" and "frailty"), at 62 excess deaths (95.4% above average).

- For 2022 overall, the leading cause of excess deaths was symptoms, signs, and ill-defined conditions in both England, with 4,756 excess deaths (36.9% above average), and Wales, with 231 excess deaths (30.4% above average).

- Considering 2022 overall, deaths due to influenza and pneumonia had the greatest number of deaths below average in both England (4,665 fewer deaths; 19.9% below average) and Wales (537 fewer deaths; 27.9% below average).

- In Quarter 4 (Oct to Dec) 2022, 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 1,227 deaths (29.4% of deaths due to COVID-19).

2 . Death registrations in December 2022

Based on provisional data, there were 49,339 deaths registered in England in December 2022. This was 87 fewer deaths than December 2021 and 5,871 more deaths (13.5%) than the five-year average (2016 to 2019, and 2021).

In Wales, there were 3,432 deaths registered in December 2022. This was 96 more deaths than December 2021 and 482 more deaths (16.3%) than the five-year average.

The five-year average for 2022 has been calculated using the years 2016 to 2019, and 2021. This moves our five-year average along by a year, but does not include the exceptionally high number of deaths seen in 2020. This is so that deaths in 2022 are compared with a five-year average that is up-to-date (rather than 2015 to 2019), while still being close to representing a usual (non-coronavirus (COVID-19) pandemic) year. For more information, see our Understanding excess deaths during a pandemic 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 time series in 2001, mortality rates have generally been decreasing for the month of December.

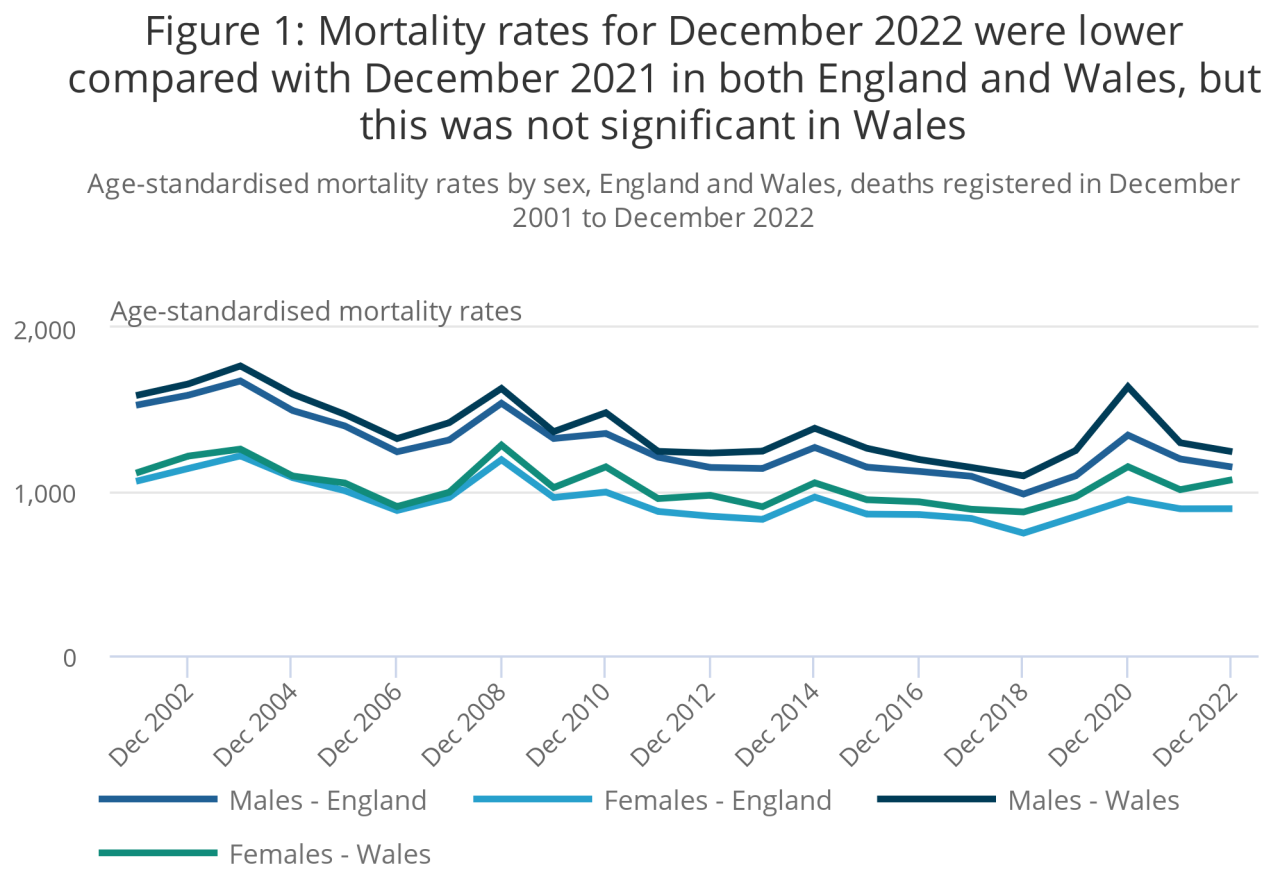
In 2022, the December ASMR for England was 1,010.7 deaths per 100,000 people. This was statistically significantly lower than the mortality rates for both December 2021 and December 2020 (1,033.5 and 1,126.3 deaths per 100,000 people, respectively), both of which fell within the coronavirus pandemic. This suggests deaths in colder months may be returning to rates seen before the coronavirus pandemic, however, the December 2022 rate was still significantly higher than December 2019 (959.8 deaths per 100,00 people).

In December 2022, the ASMR in Wales was 1,155.1 deaths per 100,000 people. This was not significantly different from the December mortality rate for both 2021 and 2019 (1,146.5 and 1,091.5 deaths per 100,000 people, respectively); these mortality rates were also not significantly different from each other. This suggests December mortality rates may be returning to pre-coronavirus-pandemic levels. The ASMR for December 2020 in Wales (1,374.8 deaths per 100,000 people) was significantly higher than all three years, because of the second wave of the coronavirus pandemic.

For more information on the differences between male and female ASMRs, see our accompanying dataset.

Figure 1: Mortality rates for December 2022 were lower compared with December 2021 in both England and Wales, but this was not significant in Wales

Age-standardised mortality rates by sex, England and Wales, deaths registered in December 2001 to December 2022



Source: Office for National Statistics - Monthly mortality analysis

Notes:

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

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

3. Figures for 2022 are based on provisional mortality data and both 2021 and 2022 are based on projected populations.

4. Figures exclude non-residents.

Provisional deaths registered in 2022

Based on provisional data, in 2022, there were 540,338 deaths registered in England and 35,692 in Wales. Finalised data for 2022 will be available in mid-2023, in our Deaths registered in England and Wales bulletin.

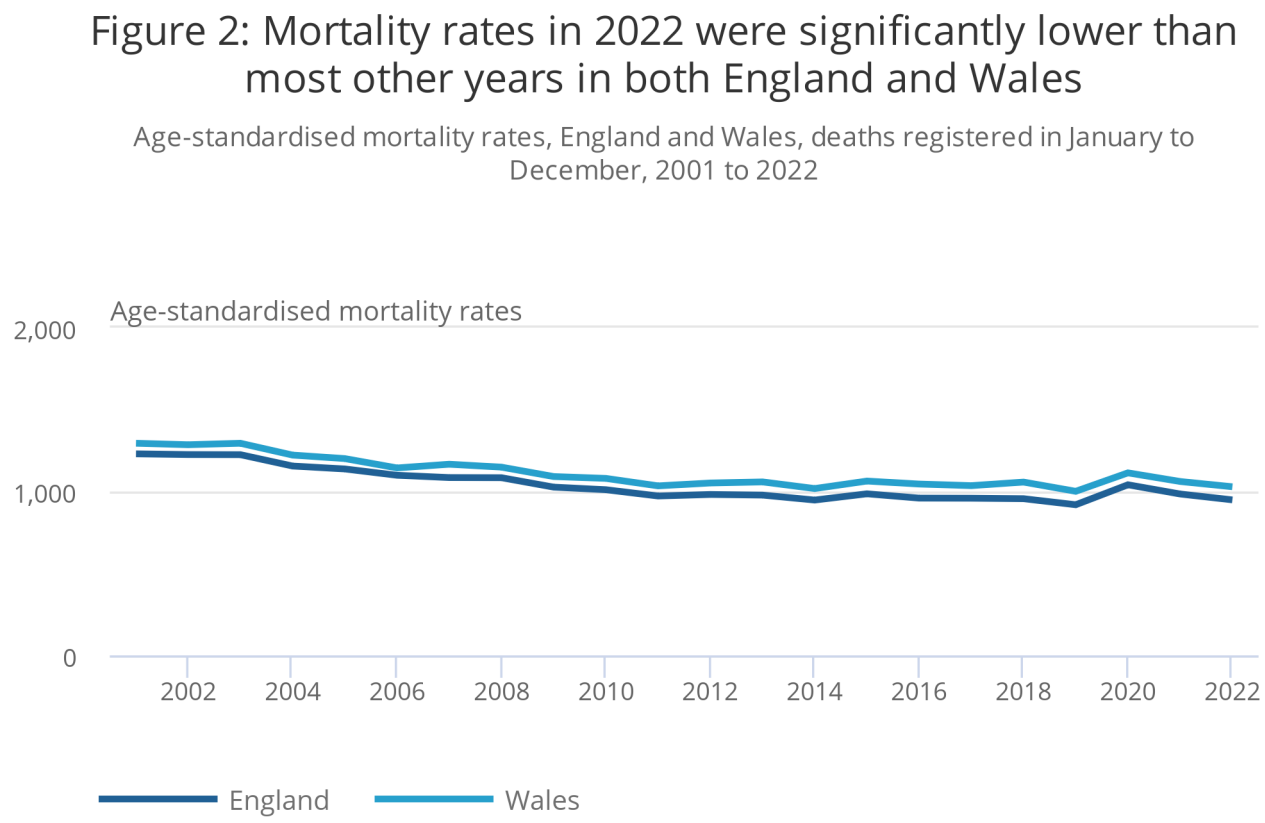
To gain a better idea of year-to-year differences in mortality rates, we calculated a year-to-date ASMR based on deaths registered in January to December of each year, from 2001 to 2022 (Figure 2). Year-to-date rates will differ from published annual rates, as the population base has been adjusted to be comparable with our other monthly mortality analysis outputs. For more information see our Coronavirus and mortality in England and Wales methodology.

For England, the ASMR for 2022 (948.9 deaths per 100,000 people) was statistically significantly lower than most years since our data time series started in 2001. This is except for 2019, which was significantly lower, and 2014, which was not significantly different than 2022.

For Wales, the ASMR for 2022 (1,029.0 deaths per 100,000 people) was statistically significantly lower than most years since our data time series began. This is except for 2019, which was significantly lower than 2022, and 2011, 2014, 2016 and 2017, which were not significantly different than 2022.

Figure 2: Mortality rates in 2022 were significantly lower than most other years in both England and Wales

Age-standardised mortality rates, England and Wales, deaths registered in January to December, 2001 to 2022



Source: Office for National Statistics - Monthly mortality analysis

Notes:

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

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

3. Figures for 2022 are based on provisional mortality data and both 2021 and 2022 are based on projected populations

4. Figures exclude non-residents

5. Year-to-date rates will differ from published annual rates as the population base has been adjusted to be comparable with our other Monthly Mortality Analysis outputs. For more information see Section 2 of the methodology article.

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 (2016 to 2019, and 2021) for the same period. Most of this article compares observed deaths in 2022 with the five-year average. However, this section compares excess mortality by the number of deaths, compared with excess mortality by the age-standardised mortality rates (ASMRs), and explains why there are differences between these measures.

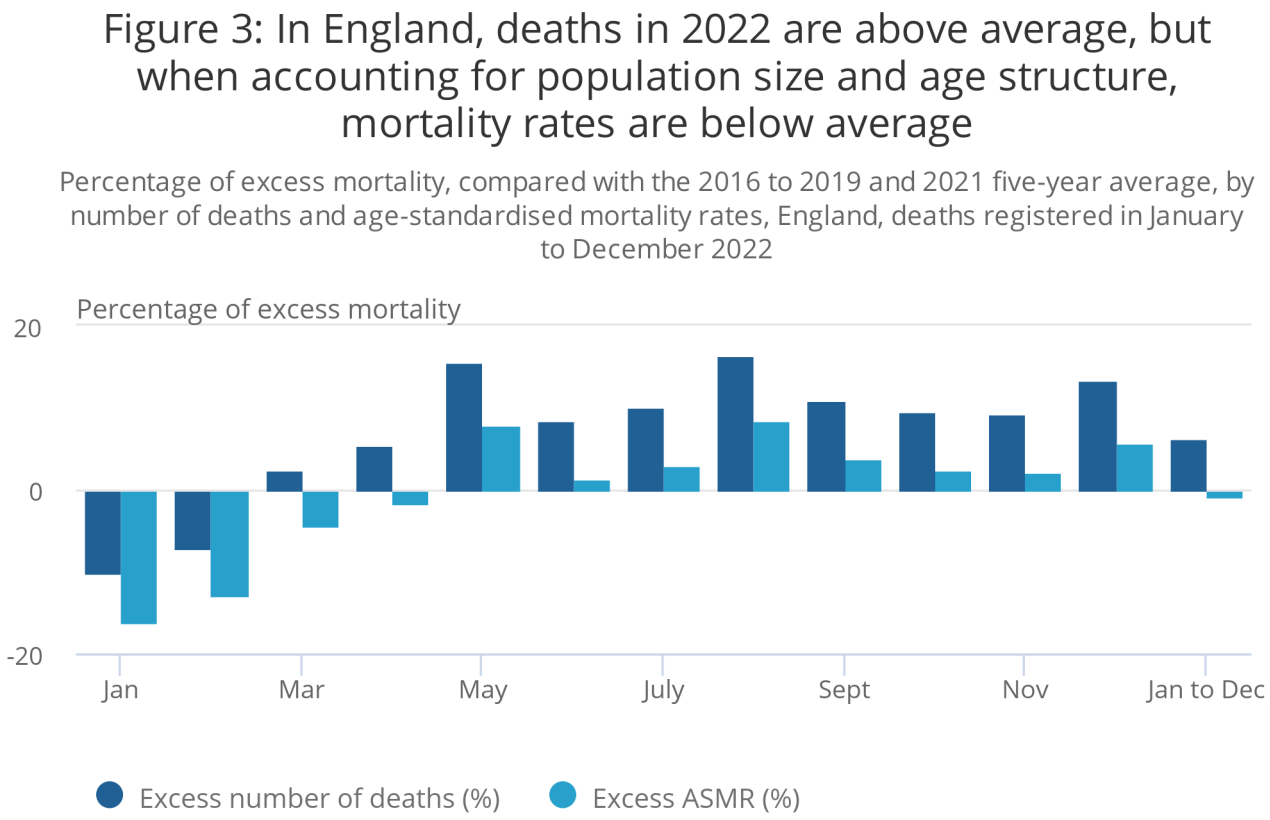
Because mortality rates take into account the population size and age structure at a given period, it is not unusual for excess mortality rates to be lower than excess deaths. This is because while deaths may be higher than what we would expect, it may not be when relative to the population. For example, 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.

However, it is important to note here that the ASMRs for both 2021 and 2022 use population projections, based on 2018-population estimates. This means the projections do not currently take into account major events that would have affected the population, such as the coronavirus (COVID-19) pandemic. Once revised populations are applied in the ASMR calculation, which take into account the census, there may be changes to the mortality rates. We will update rates in due course.

Since the beginning of 2022, excess mortality rates have been proportionally lower than 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. For information on the excess mortality patterns over the course of the year, see our Monthly mortality analysis, England and Wales: November 2022 bulletin.

Figure 3: In England, deaths in 2022 are above average, but when accounting for population size and age structure, mortality rates are below average

Percentage of excess mortality, compared with the 2016 to 2019 and 2021 five-year average, by number of deaths and age-standardised mortality rates, England, deaths registered in January to December 2022



Source: Office for National Statistics - Monthly mortality analysis

Notes:

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

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

3. Figures for 2022 are based on provisional mortality data and both 2021 and 2022 are based on projected populations.

4. Figures exclude non-residents.

5. The five-year average has been provided for 2016 to 2019 and 2021 because of the impact of the coronavirus pandemic on deaths registered in 2020. This provides an up to date (rather than 2015 to 2019) comparison of the number of deaths expected per month in a usual (non-coronavirus pandemic) year.

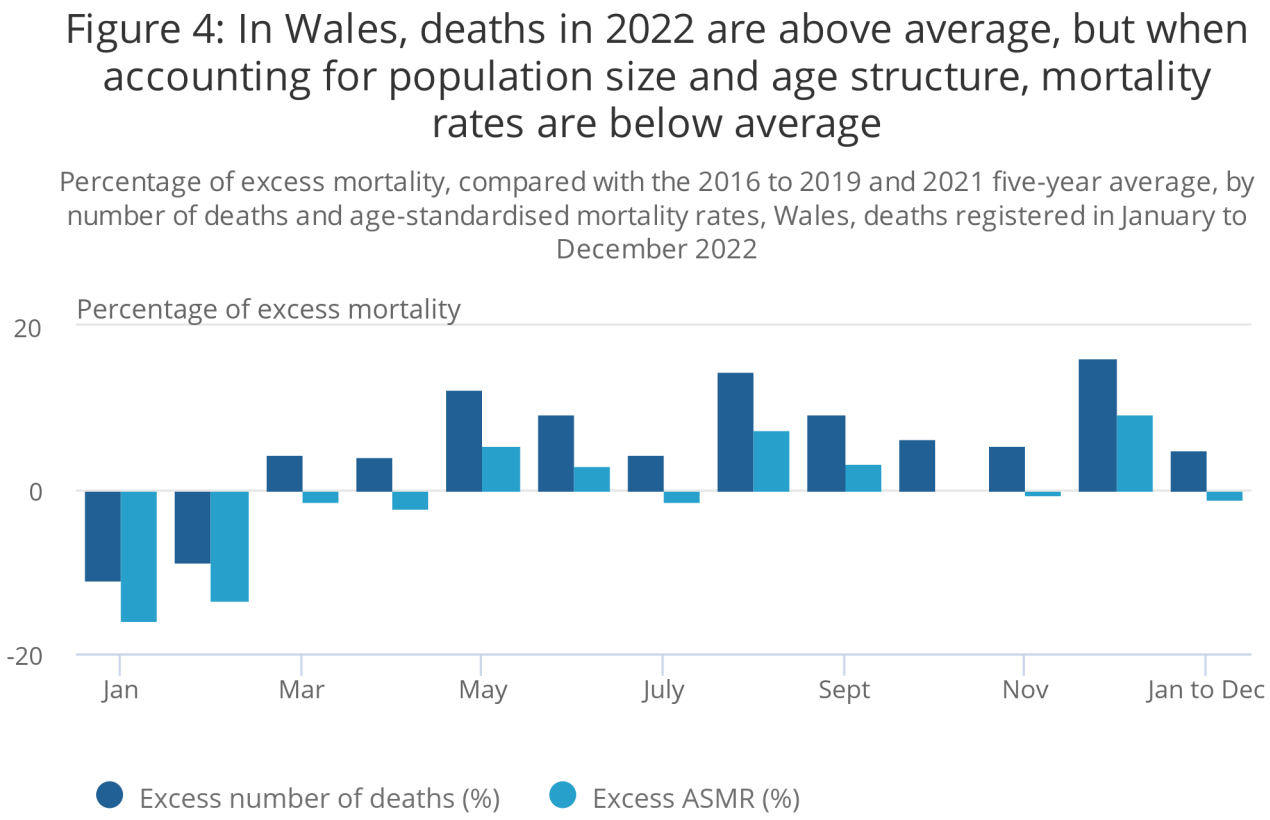
6. The individual month's figures are not refreshed each month and therefore may not sum to the year-to-date figure, which is updated every month.

In England, in December 2022, excess deaths were 13.5% above what we would expect, with excess mortality rates continuing to be lower at 5.8% above average. However, when looking at the excess mortality in 2022 overall (based on provisional data), deaths were 6.3% above average, whereas ASMRs were 0.7% below average.

There are different ways of measuring excess mortality and these numbers will differ from those published elsewhere that use a different method, for example the Office for Health Improvement and Disparities' (OHID) excess deaths measure. This is because the figures here 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. The Office for National Statistics and OHID are currently working together to review their excess mortality measures.

Figure 4: In Wales, deaths in 2022 are above average, but when accounting for population size and age structure, mortality rates are below average

Percentage of excess mortality, compared with the 2016 to 2019 and 2021 five-year average, by number of deaths and age-standardised mortality rates, Wales, deaths registered in January to December 2022



Source: Office for National Statistics - Monthly mortality analysis

Notes:

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

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5. The five-year average has been provided for 2016 to 2019 and 2021 because of the impact of the coronavirus pandemic on deaths registered in 2020. This provides an up to date (rather than 2015 to 2019) comparison of the number of deaths expected per month in a usual (non-coronavirus pandemic) year.

6. The individual month's figures are not refreshed each month and therefore may not sum to the year-to-date figure, which is updated every month.

In Wales, in December 2022, excess deaths were 16.3% above average, with excess mortality rates at 9.4% above expected. When considering excess mortality in 2022 in Wales, deaths were 5.0% above average, whereas ASMRs were 1.1% below expected.

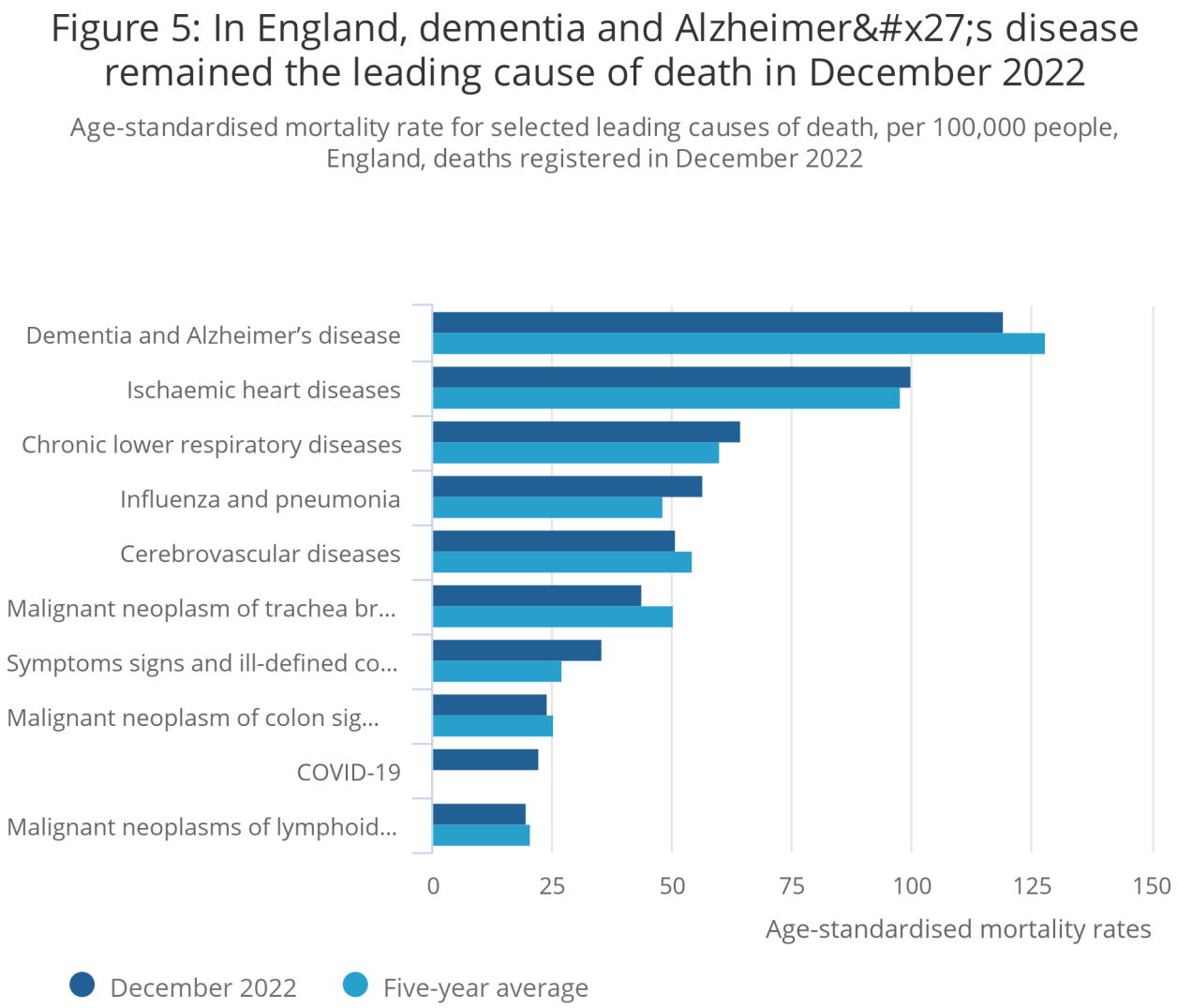
4 . Leading causes of death

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

The 10 most common underlying causes of death registered in December 2022, compared with the five-year average for December (2016 to 2019, and 2021), 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 December 2022

Age-standardised mortality rate for selected leading causes of death, per 100,000 people, England, deaths registered in December 2022



Source: Office for National Statistics - Monthly mortality analysis

Notes:

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

2. Figures for 2022 are based on provisional mortality data and both 2021 and 2022 are based on projected populations.

3. Based on underlying cause of death.

4. Figures exclude deaths of non-residents.

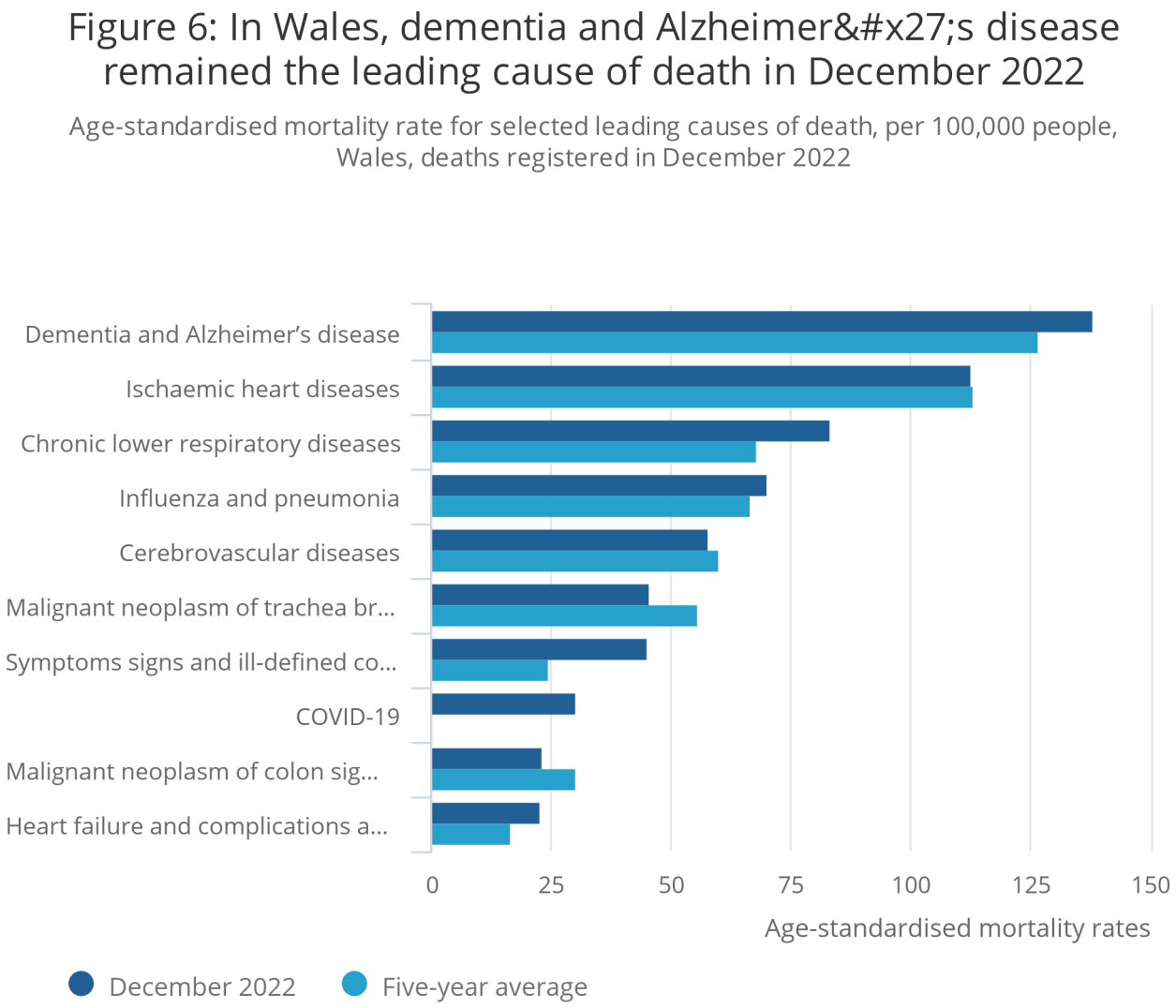
5. The five-year average has been provided for 2016 to 2019 and 2021 because of the impact of the coronavirus pandemic on deaths registered in 2020. This provides an up to date (rather than 2015 to 2019) comparison of the number of deaths expected per month in a usual (non-coronavirus pandemic) year. Where a five-year average cannot be provided, it is denoted as "[z]" in the data downloads.

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

In England, dementia and Alzheimer's disease remained the leading cause of death in December 2022 (for the 18th consecutive month), with 119.4 deaths per 100,000 people (5,900 deaths). Dementia and Alzheimer’s disease was also the leading cause of death in 2022 overall (based on provisional data) in England, at 107.8 deaths per 100,000 people.

Figure 6: In Wales, dementia and Alzheimer's disease remained the leading cause of death in December 2022

Age-standardised mortality rate for selected leading causes of death, per 100,000 people, Wales, deaths registered in December 2022



Source: Office for National Statistics - Monthly mortality analysis

Notes:

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

2. Figures for 2022 are based on provisional mortality data and both 2021 and 2022 are based on projected populations.

3. Based on underlying cause of death.

4. Figures exclude deaths of non-residents.

5. The five-year average has been provided for 2016 to 2019 and 2021 because of the impact of the coronavirus pandemic on deaths registered in 2020. This provides an up-to-date comparison (rather than 2015 to 2019) of the number of deaths expected per month in a usual (non-coronavirus pandemic) year. Where a five-year average cannot be provided, it is denoted as "[z]" in the data downloads.

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

In Wales, the leading cause of death was also dementia and Alzheimer's disease (for the fifth consecutive month), with 138.0 deaths per 100,000 people (412 deaths). However, the 2022 leading cause of death in Wales was ischaemic heart diseases (111.9 deaths per 100,000 people), which was the leading cause of death in the individual months from January to July 2022.

More information on leading causes of death is available in Tables 12a and 12b for England, and Tables 13a and 13b 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 of death in most deaths that involved COVID-19 (84.6% in England, 83.4% in Wales).

In England, COVID-19 decreased to the ninth leading cause of death in December 2022, at 22.2 deaths per 100,000 people (1,086 deaths), accounting for 2.2% of all deaths. This was statistically significantly lower than the mortality rate for deaths due to COVID-19 in November 2022, when it was ranked eighth, at 26.1 deaths per 100,000 people (1,239 deaths; 2.6% of all deaths). In 2022, COVID-19 was the sixth leading cause of death in England, at 36.9 deaths per 100,000 people.

In Wales, COVID-19 increased to the eighth leading cause of death in December 2022, at 30.1 deaths per 100,000 (92 deaths), accounting for 2.7% of all deaths. This was greater than the mortality rate for deaths due to COVID-19 in November 2022, when it was ranked ninth, at 27.4 deaths per 100,000 people (79 deaths, 2.5% of all deaths), however, this change was not significant. In 2022, COVID-19 was the seventh leading cause of death in Wales, at 38.5 deaths per 100,000 people.

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.
- Find out how we are working safely in our studies and surveys.

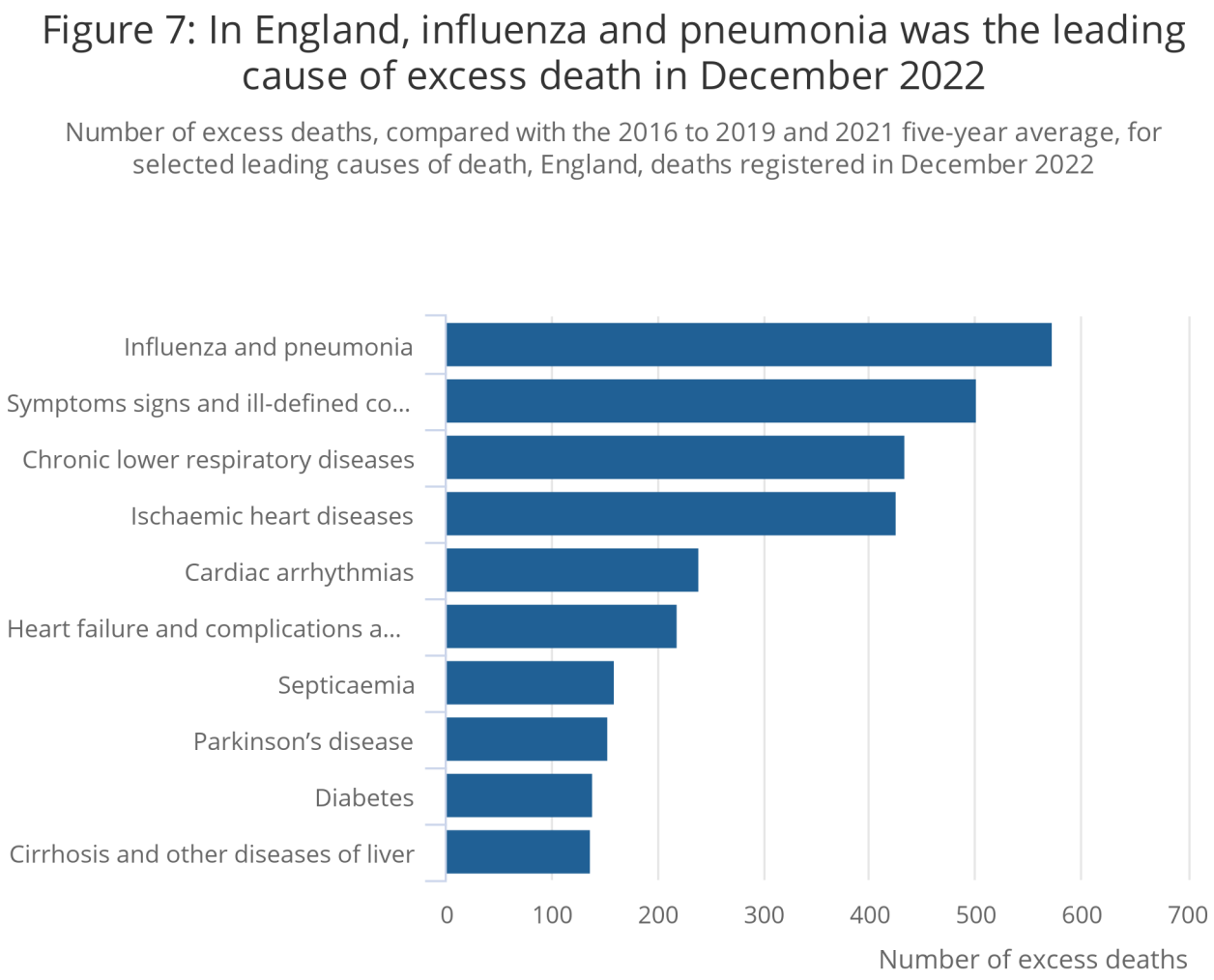
5 . Excess mortality by causes of death

Changing trends in causes of death can help us to understand possible drivers in 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.

While the number of deaths by cause of death may be higher in December 2022, compared with the five-year average for December (2016 to 2019, and 2021), the age standardised mortality rate (ASMR) may be lower. This is because ASMRs take into account population size at each age group and weight accordingly to account for this. 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, influenza and pneumonia was the leading cause of excess death in December 2022

Number of excess deaths, compared with the 2016 to 2019 and 2021 five-year average, for selected leading causes of death, England, deaths registered in December 2022



Source: Office for National Statistics - Monthly mortality analysis

Notes:

1. Figures for 2022 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 number of excess deaths.

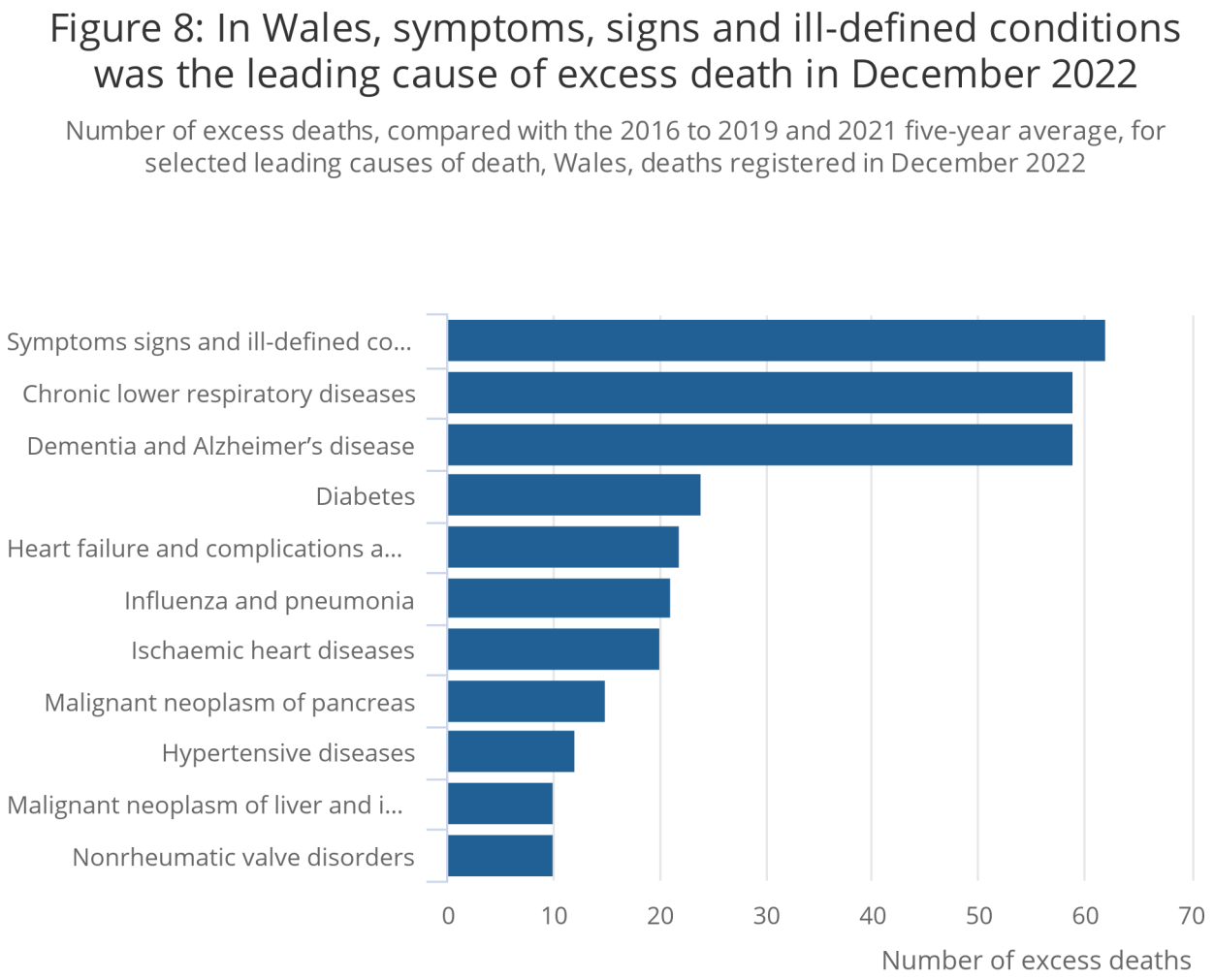
In England in December 2022, the leading cause of excess death was influenza and pneumonia, with 574 excess deaths (26.2% above average). The mortality rate for influenza and pneumonia (56.5 deaths per 100,000 people) was statistically significantly higher compared with the five-year average for December (48.2 deaths per 100,000 people).

It was not possible to test significance for 12 of the 69 leading causes of death groupings in England in December 2022. This is because the number of deaths, either in 2022 or the five-year average, for these causes were less than 10, resulting in suppressed mortality rates. The five-year average ASMR is also not available for coronavirus (COVID-19) deaths.

Of the remaining 57 causes of death, 12 were significantly greater than the five-year average, and 10 causes of death were significantly lower. The ASMRs for the remaining leading causes of death groupings for December 2022 were not significantly different than average.

Figure 8: In Wales, symptoms, signs and ill-defined conditions was the leading cause of excess death in December 2022

Number of excess deaths, compared with the 2016 to 2019 and 2021 five-year average, for selected leading causes of death, Wales, deaths registered in December 2022



Source: Office for National Statistics - Monthly mortality analysis

Notes:

1. Figures for 2022 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 number of excess deaths.

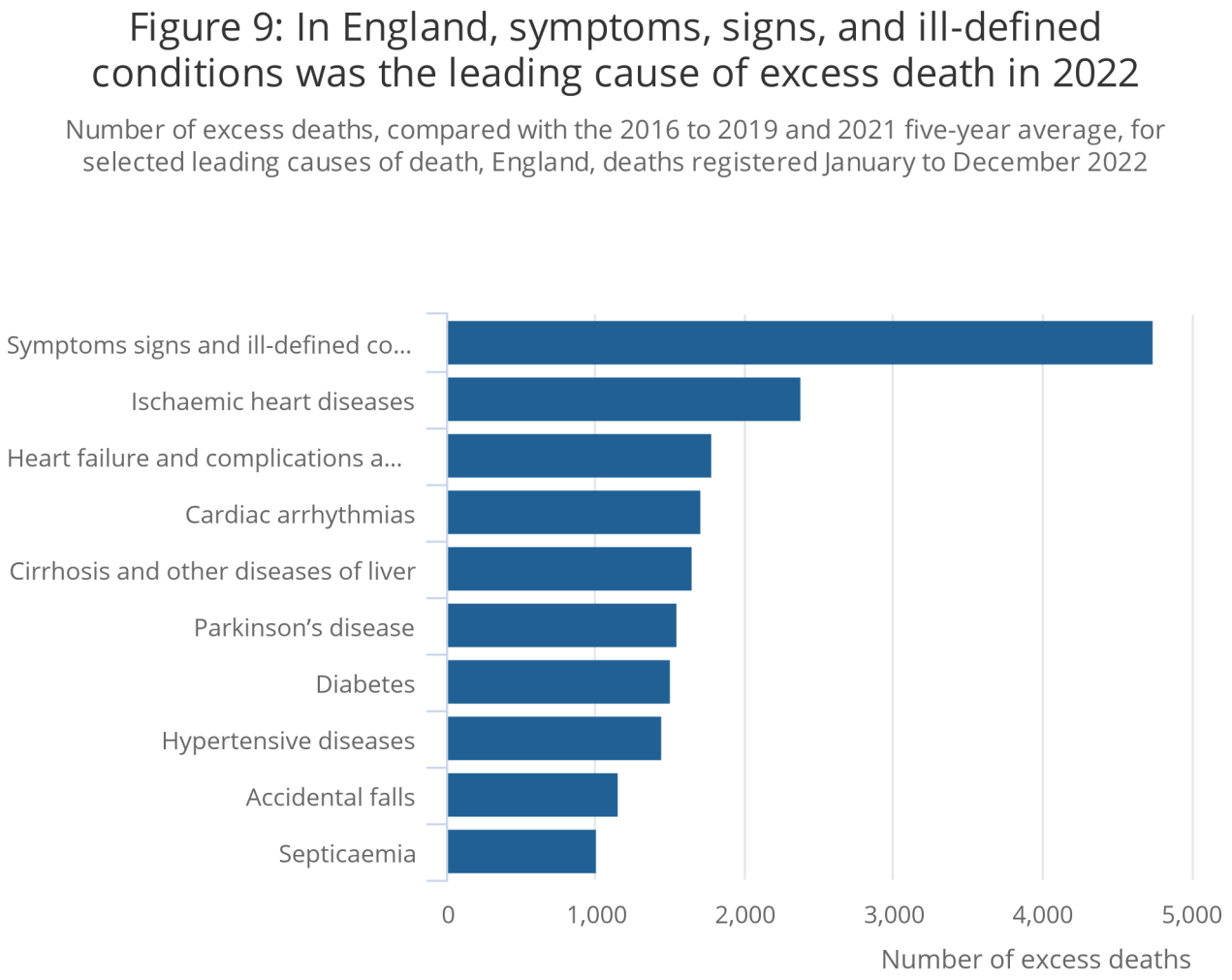
In Wales, the leading cause of excess deaths was symptoms, signs, and ill-defined conditions, with 62 excess deaths (95.4% above average). The mortality rate (45.1 deaths per 100,000 people) was statistically significantly higher compared with the five-year average (24.4 deaths per 100,000 people).

It was not possible to test significance for 31 of the 69 leading causes of death groupings in Wales in December 2022. Of the remaining 38 causes of death, 3 were significantly greater than the five-year average. The remaining leading causes of excess death for December 2022 were not significantly different than average.

Provisional leading causes of excess deaths in 2022

Figure 9: In England, symptoms, signs, and ill-defined conditions was the leading cause of excess death in 2022

Number of excess deaths, compared with the 2016 to 2019 and 2021 five-year average, for selected leading causes of death, England, deaths registered January to December 2022



Source: Office for National Statistics - Monthly mortality analysis

Notes:

1. Figures for 2022 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 number of excess deaths.

Based on provisional data, the leading cause of excess death in 2022 in England was symptoms, signs, and ill-defined conditions, with 4,756 excess deaths (36.9% above average). The mortality rate (31.5 deaths per 100,000 people) was statistically significantly higher compared with the five-year average (24.6 deaths per 100,000 people). The second leading cause of excess death in 2022 was ischaemic heart diseases (2,383 excess deaths; 4.5% above average). However, when accounting for age structure and population size, the ASMR was significantly lower than average (96.9 and 99.3 deaths per 100,000 people, respectively).

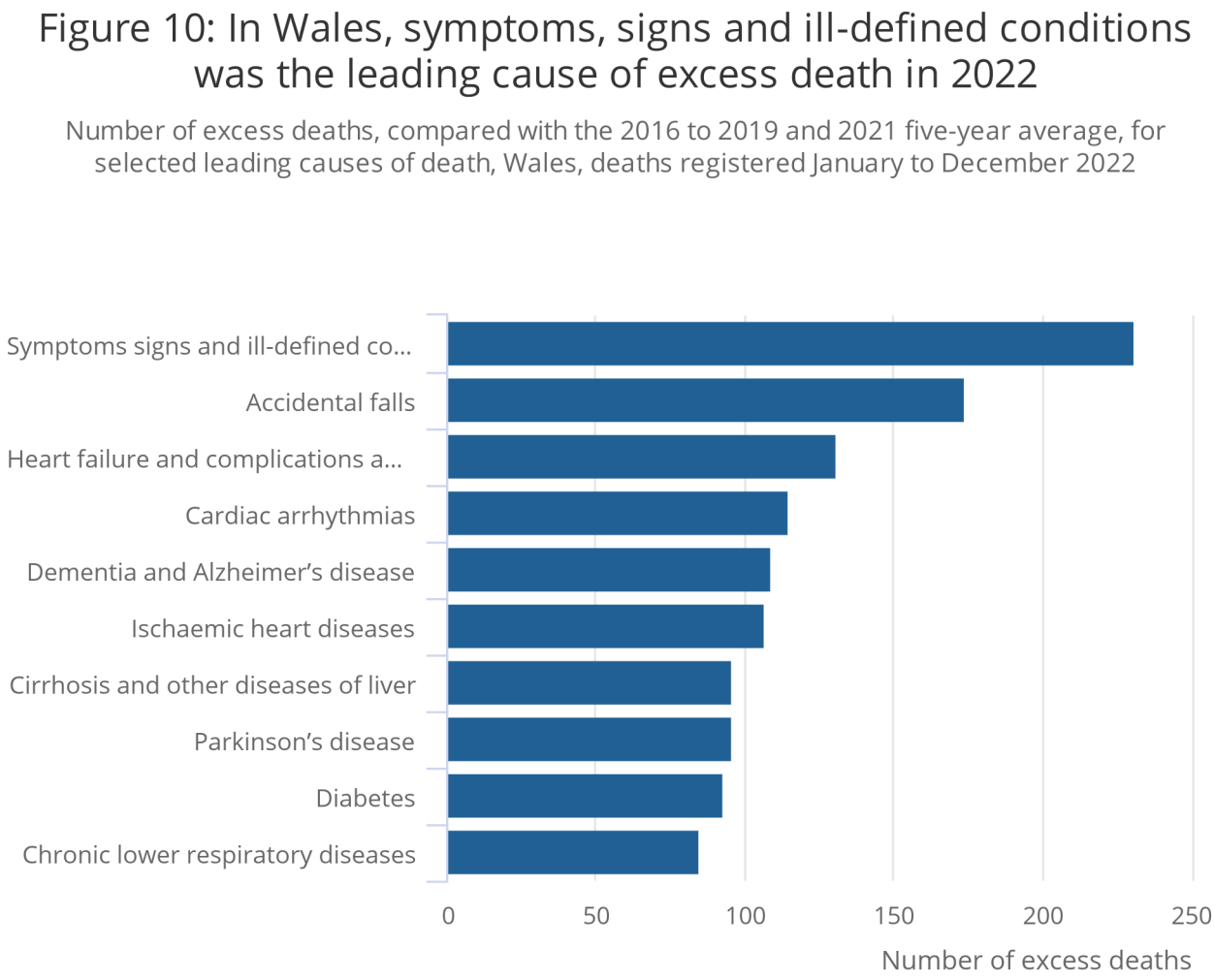
When considering ASMRs, the largest percentage increase was in deaths due to mental and behavioural disorders due to psychoactive substance use, with 53.8% above average (2.0 compared with 1.3 deaths per 100,000 people, respectively).

In 2022, deaths due to influenza and pneumonia had the greatest number of deaths below average, at 4,665 fewer deaths (19.9% below average). The mortality rate (33.0 deaths per 100,000 people) was significantly lower than average (44.2 deaths per 100,000 people), at 25.3% below average.

It was not possible to test significance for 3 of the 69 leading causes of death groupings in England in 2022. Of the remaining 66 causes of death, 14 were significantly greater than average, and 19 leading causes of death were significantly lower. The ASMRs for the remaining provisional leading causes of excess death in England for 2022 were not significantly different than average.

Figure 10: In Wales, symptoms, signs and ill-defined conditions was the leading cause of excess death in 2022

Number of excess deaths, compared with the 2016 to 2019 and 2021 five-year average, for selected leading causes of death, Wales, deaths registered January to December 2022



Source: Office for National Statistics - Monthly mortality analysis

Notes:

1. Figures for 2022 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 number of excess deaths.

In Wales, the provisional leading cause of excess death in 2022 was symptoms, signs, and ill-defined conditions, with 231 excess deaths (30.4% above average). The mortality rate (30.2 deaths per 100,000 people) was significantly higher compared with the five-year average (24.4 deaths per 100,000 people).

When considering ASMRs, the largest percentage increase was in deaths due to cerebral palsy and other paralytic syndromes, with 42.9% above average (1.0 compared with 0.7 deaths per 100,000 people, respectively).

Despite being the leading cause of excess death in Wales in December 2022, deaths due to influenza and pneumonia for 2022 overall had the greatest number of deaths below average when compared with the five-year average (537 fewer deaths; 27.9% below average). The mortality rate for influenza and pneumonia (40.4 deaths per 100,000 people) was significantly lower than average (59.3 deaths per 100,000 people), at 31.9% below average.

It was not possible to test significance for 12 of the 69 leading causes of deaths in Wales in 2022. Of the remaining 57 causes of death, 6 were significantly greater than average and 7 leading causes of death were significantly lower. The ASMRs for the remaining provisional leading causes of excess death in Wales for 2022 were not significantly different than average.

In both England and Wales, heart failure and complications and ill-defined heart disease was the third leading cause of excess deaths in England (1,789 excess deaths) and Wales (131 excess deaths). Of these excess deaths in England and Wales (including non-residents), 83.1% were in those aged 75 years and over, 2.3% in those aged under 55 years, and the majority of excess deaths were in International Classification of Diseases code I50.9 (heart failure, unspecified).

6 . Death occurrences in December 2022 and year-to-date

This section is based on the date a death occurred, rather than the date of registration used in the previous sections, to monitor current mortality trends. 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 December 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 inSection 10: Measuring the data.

Figure 11: In England, the number of daily deaths occurring in December 2022 increased compared with November 2022

Number of deaths occurring on each day from March 2020 to December 2022, five-year average and range, England

Notes:

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

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

3. Figures exclude non-residents.

4. "COVID-19" includes only deaths where COVID-19 was the underlying cause.

5. This chart includes deaths from 1 March 2020. Three deaths due to COVID-19 occurred prior to this in England (one death in January 2020 and two deaths in February 2020), but are not included here.

6. For deaths occurring in 2020 and 2021, the five-year average consists of deaths occurring between 2015 to 2019, whereas for deaths occurring in 2022 the five-year average consists of deaths occurring between 2016 to 2019 and 2021.

7. The five-year average for 2022 has been provided for 2016 to 2019 and 2021, because of the impact of the coronavirus pandemic on deaths occurring in 2020. This provides an up-to-date comparison (rather than 2015 to 2019) of the number of deaths expected per day in a usual (non-coronavirus pandemic) year.

Download the data

.xlsx

In England, 44,966 deaths occurred in December 2022 (and were registered by 7 January 2023). This was 3,785 fewer deaths than the five-year average (2016 to 2019, and 2021) for December (7.8% lower), and 2,881 more deaths than occurred in November 2022 (6.8% higher).

Figure 12: In Wales, the number of daily deaths in December 2022 increased compared with November 2022

Number of deaths occurring on each day from March 2020 to December 2022, five-year average and range, Wales

Notes:

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

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

3. Figures exclude non-residents.

4. “COVID-19 deaths” include only deaths where COVID-19 was the underlying cause.

5. For deaths occurring in 2020 and 2021 the five-year average consists of deaths occurring between 2015 to 2019, whereas for deaths occurring in 2022 the five-year average consists of deaths occurring between 2016 to 2019 and 2021.

6. The five-year average for 2022 has been provided for 2016 to 2019 and 2021, because of the impact of the coronavirus pandemic on deaths occurring in 2020. This provides an up-to-date comparison (rather than 2015 to 2019) of the number of deaths expected per day in a usual (non-coronavirus pandemic) year.

Download the data

.xlsx

In Wales, 3,198 deaths occurred in December 2022 (and were registered by 7 January 2023). This was 49 fewer deaths than the five-year average (1.5% below), and 395 more deaths than occurred in November 2022 (14.1% higher).

7 . Pre-existing conditions of people whose death was due to COVID-19, deaths registered in October to December 2022

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. However, the fact that a pre-existing condition was recorded does not suggest that the deceased was likely to have died from that condition in the absence of the COVID-19 infection.

This section analyses data from Quarter 4 (Oct to Dec) 2022, whereas the rest of the bulletin focuses on the month of December 2022.

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 4 2022 (278 deaths). We will continue to monitor this and provide analysis if the number of deaths in Wales increases.

When comparing pre-existing conditions for COVID-19 deaths in Quarter 4 2022 with Quarter 3 (Jul to Sept) 2022, the top 20 most common pre-existing conditions remained consistent, but varied in ranking. 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 4 2022 (29.4%), followed by chronic lower respiratory diseases as the second most common at 15.7%.

In addition, the proportion of COVID-19 deaths for each age group in Quarter 4 2022 have remained similar to the proportions seen in Quarter 3 2022. Of the 4,174 deaths due to COVID-19, the proportion of deaths among those aged 0 to 64 years was 7.5%, which was less than the proportion in Quarter 3 2022 (8.3%). Whereas the proportion among those aged 65 years and over increased slightly (92.5% in Quarter 4 2022 compared with 91.7% in Quarter 3 2022).

Overall, the proportion of COVID-19 deaths with no pre-existing conditions decreased from 12.8% in Quarter 3 2022 to 11.8% in Quarter 4 2022. However, the average number of different pre-existing conditions per COVID-19 death remained at 2.0 in Quarter 4 2022, consistent with Quarter 2 (Apr to June) 2022 and Quarter 3 2022.

In Quarter 4 2022, symptoms, signs, and ill-defined conditions remained the most common pre-existing condition for deaths due to COVID-19 occurring in hospitals (31.8%, an increase from 28.4% in Quarter 3 2022). Dementia and Alzheimer's disease remained the most common pre-existing condition for deaths occurring in care homes (37.5%, an increase from 32.9% in Quarter 3 2022).

Chronic lower respiratory diseases was the most common pre-existing condition of COVID-19 deaths occurring in private homes, at 15.0% of deaths in private homes.

For further analysis of pre-existing conditions of people whose deaths were due to COVID-19 in Quarter 4 2022 for England and Wales, see our accompanying dataset.

8 . Monthly mortality data

Monthly mortality analysis, England and Wales
Dataset | Released 20 January 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) by date of death occurrence, and comparisons of COVID-19 with the leading causes of death.

Deaths due to coronavirus (COVID-19) by English region and Welsh health board
Dataset | Released 20 January 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 20 January 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 20 January 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 20 January 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 20 January 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-specific mortality rates

Age-specific mortality rates are used to allow comparisons between specified age groups.

Age-standardised mortality rates

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

Coronaviruses

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

Coronavirus (COVID-19)

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

Pre-existing condition

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

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

Registration delay

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

Statistical significance

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

95% confidence intervals

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

10 . Measuring the data

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

Analysis contains deaths registered in December 2022 by age and sex, and includes deaths that occurred in December 2022 by date of death. Non-residents of England and Wales are excluded. In December 2022, there were 123 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 the 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 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.

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11 . Strengths and weaknesses

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 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 and our User guide to mortality statistics.

12 . Related links

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

Death registration summary statistics, England and Wales: 2021
Article | Released 9 June 2022
Number of deaths registered by year, sex, area of usual residence and selected underlying cause of death.

Deaths registered in England and Wales: 2021
Bulletin | Released 1 July 2022
Registered deaths by age, sex, selected underlying causes of death and the leading causes of death. Contains death rates and death registrations by area of residence and single year of age.

Deaths due to COVID-19, registered in England and Wales: 2021
Article | Released 1 July 2022
Deaths registered in England and Wales due to coronavirus (COVID-19) by age, sex, region, indices of deprivation, place of death and pre-existing condition.

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

Excess mortality and mortality displacement in England and Wales: 2020 to mid-2021
Article | Released 15 October 2021
Deaths registered in England and Wales by week, from 28 December 2019 to 2 July 2021. Breakdowns include country, sex, age group, region, place of death and leading cause. Includes analysis of excess deaths and relative cumulative age-standardised mortality rates.

Excess deaths in England and Wales: March 2020 to June 2022
Article | Released 20 September 2022
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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