

Statistical bulletin

Deaths involving COVID-19, England and Wales: deaths occurring in May 2020

Number of deaths involving the coronavirus (COVID-19) that occurred in each month in England and Wales, by country, age, sex and place of death.



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1 . Main points

- There were 46,687 deaths involving the coronavirus (COVID-19) that occurred between 1 March and 31 May 2020 registered up to 6 June 2020 in England and Wales; of these, 43,763 had COVID-19 assigned as the underlying cause of death.
- Of the deaths involving COVID-19 that occurred in England and Wales in March to May 2020, there was at least one pre-existing condition in 90.9% of cases; this is a similar level to that shown in March and April 2020.
- Taking into account the age structure of the population, the rate of deaths in the period due to COVID-19 was 210.3 per 100,000 persons in England compared with 193.3 per 100,000 persons in Wales; in both England and Wales, the mortality rate in May 2020 was significantly lower than in April 2020.
- COVID-19 was the most frequent underlying cause of death for deaths occurring in May 2020, with a fifth of all deaths (21.6%) being due to COVID-19; this was a smaller proportion than seen in April, when 36.1% of all deaths were due to COVID-19.
- Males had a significantly higher rate of death due to COVID-19 than females; the age-standardised mortality rate (ASMR) for males in England was 250.2 deaths per 100,000 males compared with 178.5 per 100,000 females; in Wales, this was 226.1 deaths per 100,000 males compared with 168.3 per 100,000 females.
- Dementia and Alzheimer disease was the most common main pre-existing condition found among deaths involving COVID-19 and was involved in 11,950 deaths (25.6% of all deaths involving COVID-19) in March to May 2020.

Rates used in this release have been adjusted to take into account the period observed and therefore may differ to other rates published. More information can be found in [Section 11: Measuring the data](#).

2 . Introduction

This bulletin contains detailed analysis of all deaths that occurred in England and Wales between 1 March and 31 May 2020, registered up to 6 June 2020, where the coronavirus (COVID-19) was involved. There are breakdowns by age and sex and the causes of death mentioned on the death certificate.

The information used to produce these statistics is based on details collected when certified deaths are registered with the local registration office. In England and Wales, deaths should be registered within five days of the death occurring, but there are some situations that result in the registration of the death being delayed. For example, when a death needs to be investigated by a coroner. Therefore, there may be some deaths involving COVID-19 that occurred between March and May but are yet to be registered, meaning they will not be included in this analysis.

Figures on deaths published by the Office for National Statistics (ONS) differ from those produced by the Department of Health and Social Care (DHSC) and the UK's public health agencies for two main reasons: the time between death and reporting of the death and the ONS's wider inclusion criteria. Our blog [Counting deaths involving COVID-19](#) helps to explain the [differences](#).

Deaths involving COVID-19 are reported for each week in our [Deaths registered weekly in England and Wales, provisional](#) release. The weekly numbers reported as "occurring" change over time, as more deaths are registered that happened in past weeks. Unlike most ONS publications on deaths, this bulletin is based on occurrence (date of death), not date of registration.

As explained in the [measuring the data](#) section, we use population projections in creating the monthly age-standardised and age-specific mortality rates. A correction to these projections for Wales was applied on 11 June 2020, however due to the timing of this release we were not able to use the corrected populations. This means that there may be small changes to the rates reported here, however the rates would still fall within the confidence intervals. The revised populations for Wales will be incorporated in our next monthly release. Population projections for England, and England and Wales combined are calculated separately to Wales so have not been affected.

3 . How many people have died from COVID-19

Between 1 March and 31 May 2020, there were 180,586 deaths that occurred in England and Wales and were registered by 6 June 2020. A quarter of these deaths (25.9%) involved the coronavirus (COVID-19) (46,687 deaths). The doctor certifying a death can list all causes in the chain of events that led to the death and pre-existing conditions that may have contributed to the death. Using this information, we determine an underlying cause of death. More information on this process can be found in our user guide. In the majority of cases (43,763 deaths, 93.7%) when COVID-19 was mentioned on the death certificate, it was found to be the underlying cause of death.

Our definition of COVID-19 includes some cases where the certifying doctor suspected the death involved COVID-19 but was not certain, for example, because no test was done. Of the 43,763 deaths with an underlying cause of COVID-19, 3,622 (8.3%) were classified as “suspected” COVID-19. Including mentions, “suspected” COVID-19 was recorded on 8.7% of all deaths involving COVID-19.

In this bulletin, we use the term “due to COVID-19” when referring only to deaths with an underlying cause of death as COVID-19, and we use the term “involving COVID-19” when referring to deaths that had COVID-19 mentioned anywhere on the death certificate, whether as an underlying cause or not.

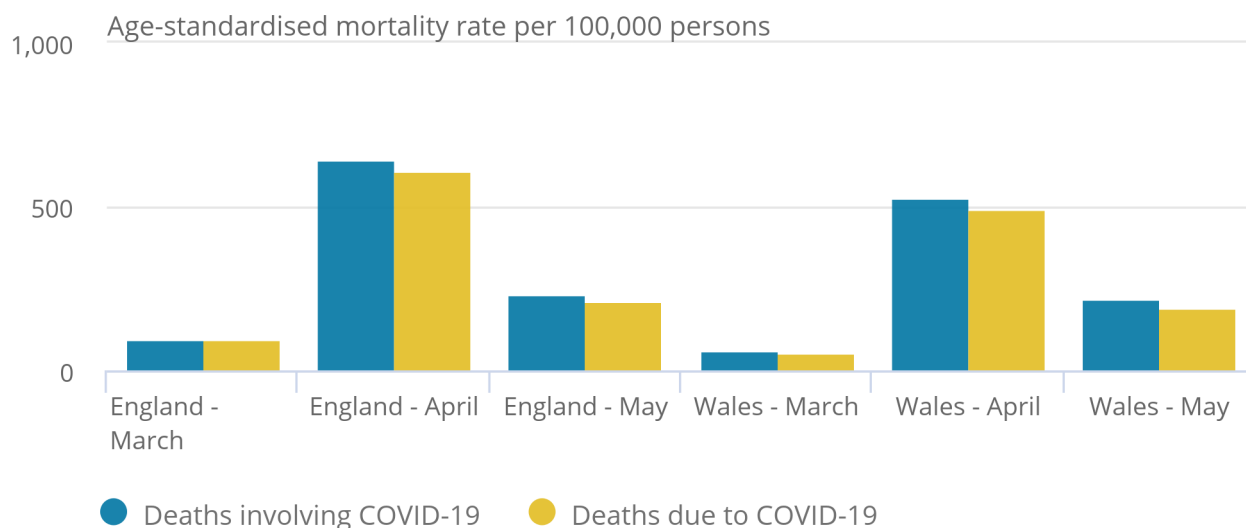
Figure 1 shows the age-standardised mortality rates (ASMRs) for deaths “due to” and “involving” COVID-19. ASMRs are a better measure of mortality than the number of deaths, as they account for the population size and age structure. They are also better for comparing between areas and over time.

Figure 1: The rate of deaths involving COVID-19 decreased between April and May 2020

Age-standardised mortality rates for deaths involving and due to COVID-19, per 100,000 persons, England and Wales, deaths occurring between March and May 2020

Figure 1: The rate of deaths involving COVID-19 decreased between April and May 2020

Age-standardised mortality rates for deaths involving and due to COVID-19, per 100,000 persons, England and Wales, deaths occurring between March and May 2020



Source: Office for National Statistics – Deaths involving COVID-19

Notes:

1. Figures exclude deaths of non-residents.
2. Based on the date a death occurred rather than when it was registered.
3. Figures are provisional.
4. In this bulletin, we use the term “due to COVID-19” when referring only to deaths with an underlying cause of death as the coronavirus (COVID-19) and the term “involving COVID-19” when referring to deaths that had COVID-19 mentioned anywhere on the death certificate, whether as underlying cause or not.
5. Age-standardised mortality rates (ASMRs) 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 11: Measuring the data](#).

When adjusting for the size and age structure of the population, all mortality rates for deaths involving and due to COVID-19 decreased between April and May 2020. There were 210.3 deaths per 100,000 persons in England and 193.3 deaths per 100,000 persons in Wales due to COVID-19 in May 2020. Taking into account all deaths involving COVID-19 increases the rate to 233.0 deaths per 100,000 persons and 219.9 deaths per 100,000 persons in England and Wales respectively.

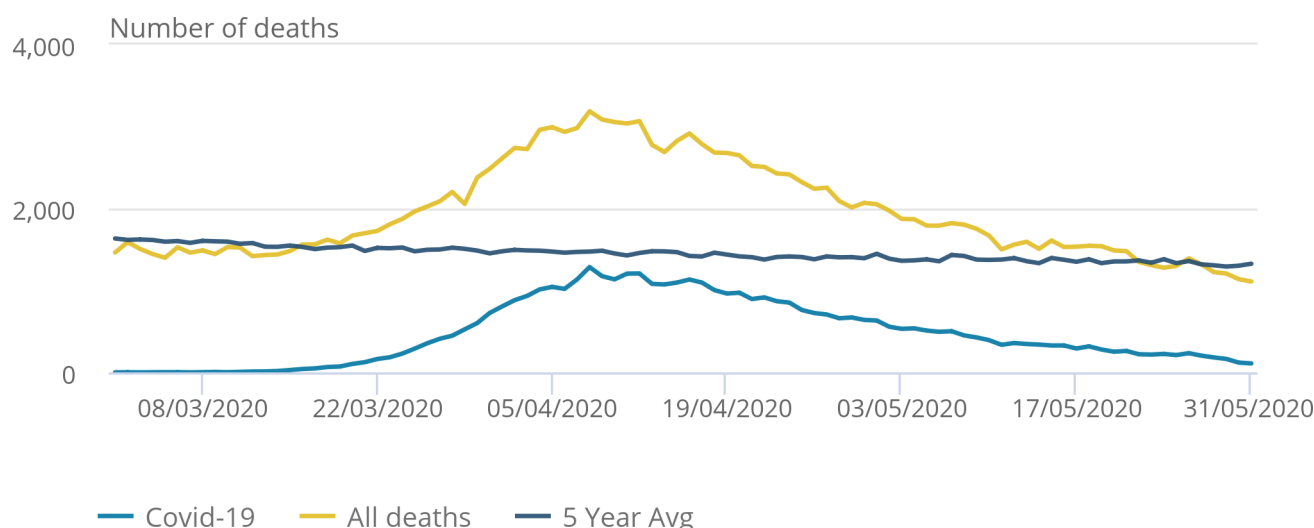
Figure 2: The number of deaths due to COVID-19 decreased throughout May 2020

Number of deaths due to COVID-19, England and Wales, all deaths occurring in 2020 and five-year average per day between March and May 2020

Figure 2: The number of deaths due to COVID-19 decreased throughout May 2020

Deaths will increase are registered, particularly on later dates

Number of deaths due to COVID-19, England and Wales, all deaths occurring in 2020 and five-year average per day between March and May 2020



Source: Office for National Statistics – Deaths involving COVID-19

Notes:

1. Figures include deaths of non-residents.
2. Based on the date a death occurred rather than when it was registered. Over time, as more deaths are registered, the number of deaths that are known to have occurred will rise, especially for later dates.
3. Figures are provisional.

Figure 2 presents the number of deaths with an underlying cause of death of COVID-19 that occurred on each day since 2 March 2020, the first date a COVID-19 death occurred in England and Wales. We have included deaths that were registered up to 6 June 2020 but occurred in March, April or May. Over time, as more deaths are registered, the number of cases that are known to have occurred between March and May will rise, especially for dates in the later part of May.

Since 11 March 2020, the number of COVID-19 deaths occurring on each day rose (except for 6 April 2020, when it decreased by 24 deaths) until the peak of 1,285 deaths that occurred on 8 April 2020. Since 8 April, the number of COVID-19 deaths occurring on each day has been decreasing, with 109 deaths occurring on 31 May, although the number of recorded deaths on more recent dates will rise as we receive more death registrations.

Figure 2 also shows the number of deaths per day from March to May 2020 for all causes of death combined and the five-year average for each day. At the start of March, the number of deaths per day was below the five-year average, possibly because of the mild winter and low levels of [circulating flu](#). However, towards the end of the month, the number of deaths was above the five-year average. On 8 April, the number of deaths (3,187) was more than double the five-year average (1,474 deaths). The increase in overall daily deaths coincided with the increase in daily deaths due to COVID-19. Throughout May, the number of all-cause deaths gradually decreased back down to around the five-year average. But, the number of deaths towards the later part of May is likely to increase as we receive more death registrations; this could result in the number of deaths at the end of May 2020 being above the five-year average.

4 . Comparing COVID-19 to other causes of death

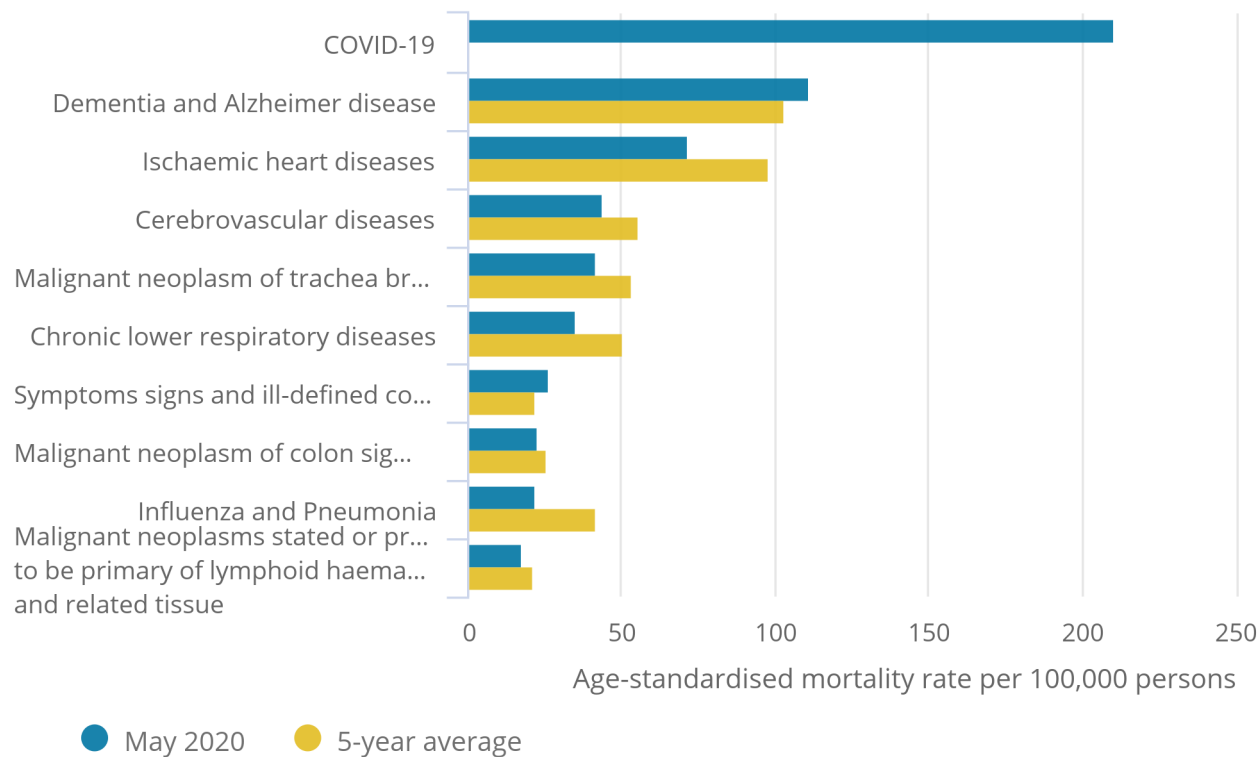
The Office for National Statistics's (ONS's) [leading causes of death](#) groupings are based on a list developed by the World Health Organization (WHO). This categorises causes of death using the International Classification of Diseases, tenth edition (ICD-10) into groups that are epidemiologically more meaningful than single ICD-10 codes, for the purpose of comparing the most common causes of death in the population.

Figure 3: COVID-19 was the most frequent underlying cause of death for deaths occurring in England in May 2020

Age-standardised mortality rate for the 10 leading causes of death, per 100,000 persons, England, deaths occurring in May 2020

Figure 3: COVID-19 was the most frequent underlying cause of death for deaths occurring in England in May 2020

Age-standardised mortality rate for the 10 leading causes of death, per 100,000 persons, England, deaths occurring in May 2020



Source: Office for National Statistics – Deaths involving COVID-19

Notes:

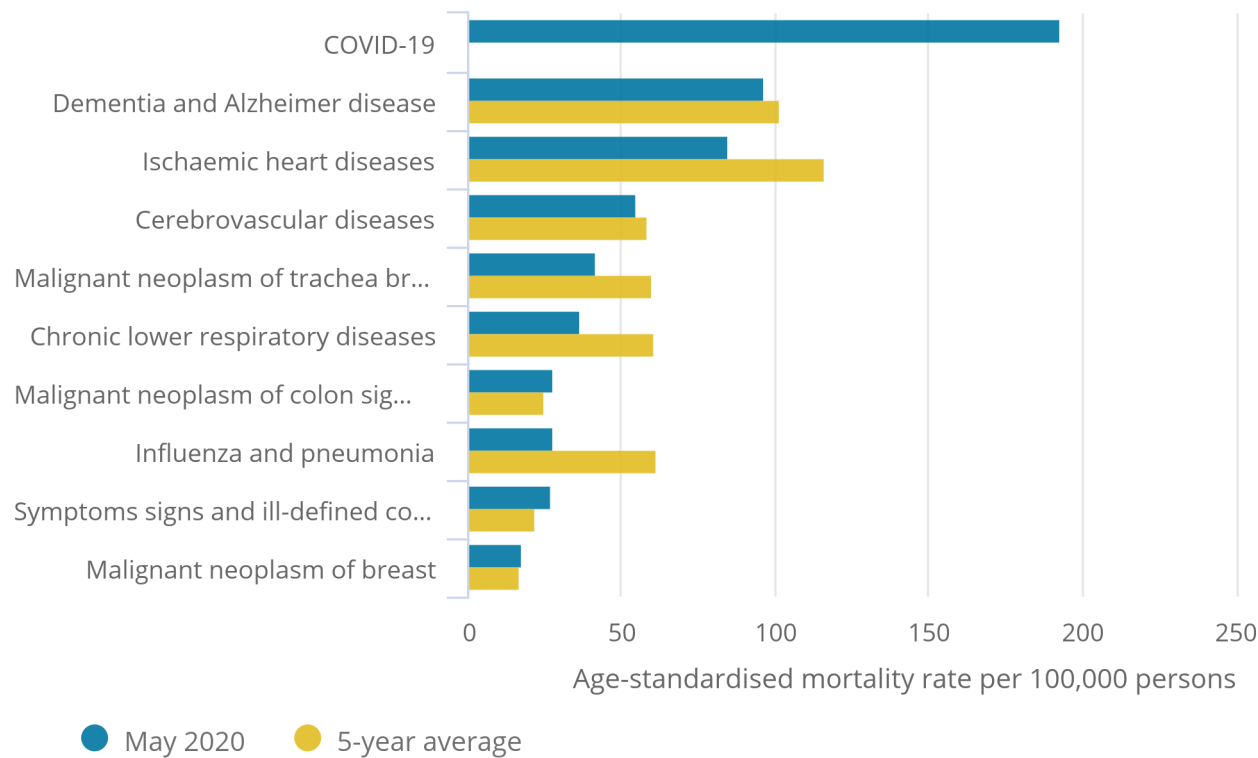
1. Figures exclude deaths of non-residents.
2. Based on the date a death occurred rather than when it was registered. As more deaths are registered, the mortality rates for leading causes of death will change, so the provisional death occurrences data should be interpreted with caution.
3. Figures are provisional.
4. Age-standardised mortality rates (ASMRs) 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 11: Measuring the data](#).

Figure 4: COVID-19 was the most frequent underlying cause of death for deaths occurring in Wales in May 2020

Age-standardised mortality rate for the 10 leading causes of death, per 100,000 persons, Wales, deaths occurring in May 2020

Figure 4: COVID-19 was the most frequent underlying cause of death for deaths occurring in Wales in May 2020

Age-standardised mortality rate for the 10 leading causes of death, per 100,000 persons, Wales, deaths occurring in May 2020



Source: Office for National Statistics – Deaths involving COVID-19

Notes:

1. Figures exclude deaths of non-residents.
2. Based on the date a death occurred rather than when it was registered. As more deaths are registered, the mortality rates for leading causes of death will change, so the provisional death occurrences data should be interpreted with caution.
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4. Age-standardised mortality rates per 100,000 population, standardised to the 2013 European Standard Population. Monthly rates in this report are adjusted to allow for comparisons with annual rates. For more information see [Section 11: Measuring the data](#).

For both England and Wales, the coronavirus (COVID-19) was the leading cause of death for the period. In both countries, this was followed by Dementia and Alzheimer disease; ischaemic heart diseases; cerebrovascular diseases; malignant neoplasms of the trachea, bronchus and lung; and chronic lower respiratory diseases.

For England specifically, COVID-19 was the underlying cause of death for 9,793 deaths, 21.8% of the total. This was almost double the next cause of death (Dementia and Alzheimer disease with 5,200 deaths). The age-standardised mortality rate (ASMR) of deaths due to COVID-19 was 210.3 per 100,000 persons, less than half the rate [reported in April 2020](#).

Compared with the five-year average, the rate of deaths due to Dementia and Alzheimer disease was significantly higher in May 2020, at 111.4 deaths per 100,000 persons (compared with 103.3 deaths per 100,000 persons for the five-year average). The mortality rate from the Symptoms, signs and ill-defined conditions category was also significantly higher than the five-year average, at 26.5 deaths per 100,000 population in May 2020 (compared with 21.8 deaths per 100,000 population for the five-year average). Rates for all of the other leading causes shown in Figure 3 were significantly lower than the five-year average. As more deaths are registered, the mortality rates for leading causes of death will change, so the provisional death occurrences data should be interpreted with caution.

In Wales, COVID-19 was the underlying cause of 553 deaths, 19.3% of the total. This was double the next cause of death (Dementia and Alzheimer disease with 275 deaths). The ASMR of deaths due to COVID-19 was 193.3 deaths per 100,000 persons. In May 2020, the mortality rates from the leading causes shown in Figure 4 were all either lower than, or similar to, the five-year averages. For example, the rate of deaths due to ischaemic heart disease was 84.8 deaths per 100,000 population in May 2020, which was significantly lower than the five-year average of 116.4 deaths per 100,000 population.

Detailed analysis on non-COVID-19-related deaths is available in [Analysis of death registrations not involving coronavirus \(COVID-19\)](#).

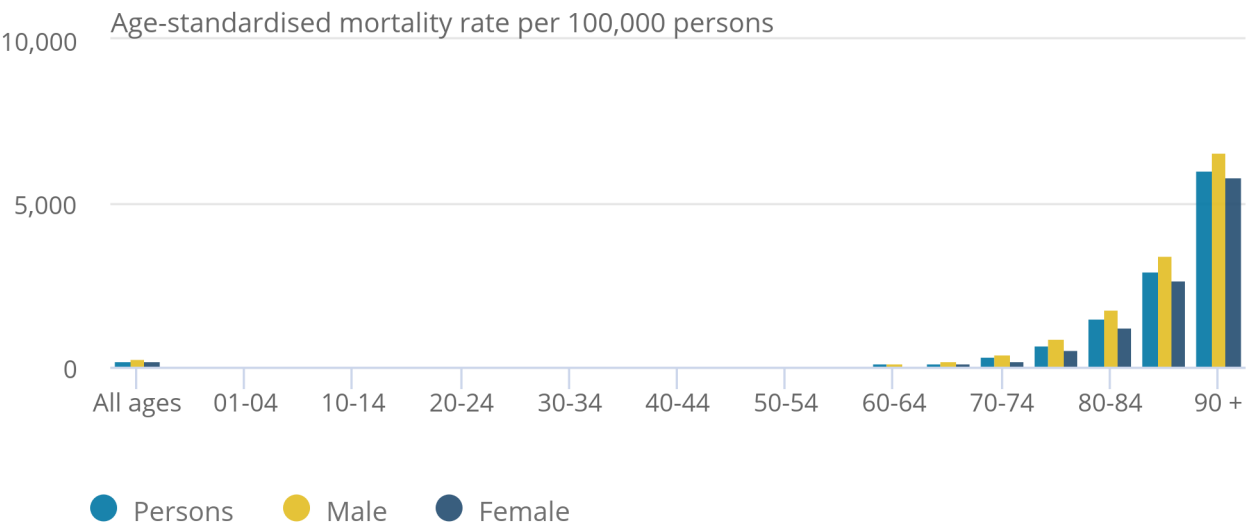
5 . Characteristics of those dying from COVID-19

Figure 5: Across all age groups in England, males had a higher rate of COVID-19 deaths than females

Age-specific mortality rates due to COVID-19, per 100,000 persons, England, deaths occurring in May 2020

Figure 5: Across all age groups in England, males had a higher rate of COVID-19 deaths than females

Age-specific mortality rates due to COVID-19, per 100,000 persons, England, deaths occurring in May 2020



Source: Office for National Statistics – Deaths involving COVID-19

Notes:

1. Figures exclude deaths of non-residents.
2. Based on the date a death occurred rather than when it was registered.
3. Figures are provisional.
4. Rate is not supplied for an age group with fewer than three deaths.
5. Rates based on small numbers of deaths (persons ages 20 to 39 years, males ages 25 to 39 years, females ages 30 to 44 years) are unreliable and should be interpreted with caution.
6. Age-specific mortality rates per 100,000 population, standardised to the 2013 European Standard Population. Monthly rates in this report are adjusted to allow for comparisons with annual rates. For more information see [Section 11: Measuring the data](#).

The age-standardised mortality rate (ASMR) in England for all ages combined was significantly higher in males (250.2 deaths per 100,000 males) than females (178.5 deaths per 100,000 females). Looking at the mortality rates by age and sex, the difference between males and females increased with age. In all age groups below 50 years, the age-specific mortality rates were similar in males and females. In the oldest age groups (starting from 80 to 84 years), males had a significantly higher COVID-19 mortality rate than females.

There were no deaths due to COVID-19 in the three youngest age groups (those aged 0 to 9 years). The youngest age group to record a death was those aged 10 to 14 years, with one male COVID-19 death. There were several deaths involving COVID-19 in these younger age groups, as reported in [Deaths registered weekly in England and Wales](#), but none of these deaths had COVID-19 recorded as the underlying cause, so they are not included in our “due to” COVID-19 analysis.

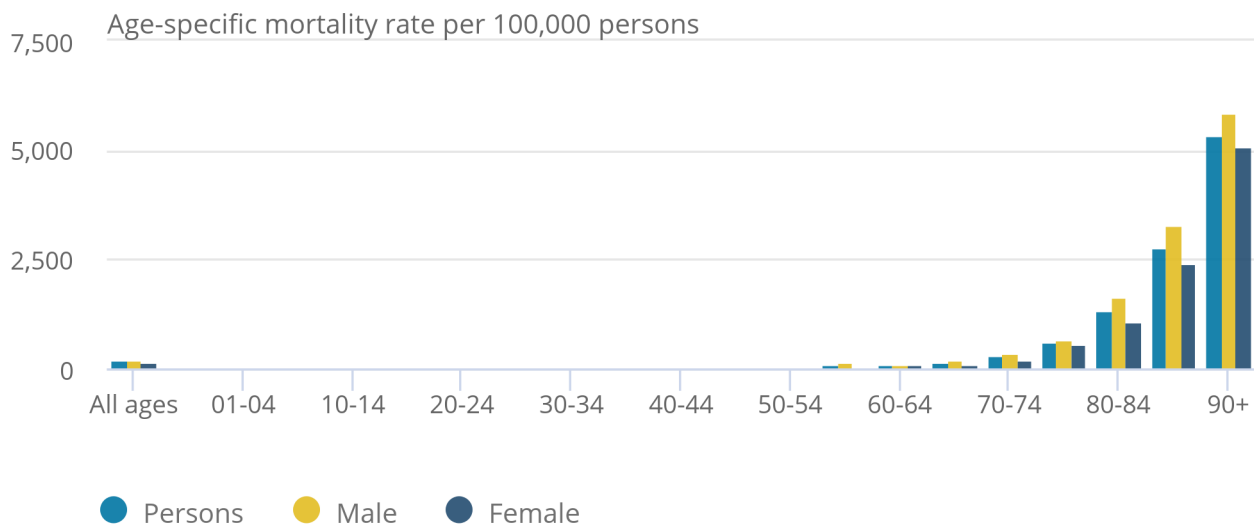
The age group 90 years and over had the highest age-specific mortality rate for both males (6,555.6 per 100,000 males) and females (5,787.7 per 100,000 females), with 2,675 COVID-19 deaths occurring overall in this age group in May. The mortality rate in this age group was significantly higher than that of all other ages for both sexes. The age-specific mortality rate due to COVID-19 increased significantly in each age group, starting from ages 45 to 49 years in males and from ages 50 to 54 years in females.

Figure 6: Across all age groups in Wales, males had a higher rate of COVID-19 deaths than females

Age-specific mortality rates due to COVID-19, per 100,000 persons, Wales, deaths occurring in May 2020

Figure 6: Across all age groups in Wales, males had a higher rate of COVID-19 deaths than females

Age-specific mortality rates due to COVID-19, per 100,000 persons, Wales, deaths occurring in May 2020



Source: Office for National Statistics – Deaths involving COVID-19

Notes:

1. Figures exclude deaths of non-residents.
2. Based on the date a death occurred rather than when it was registered.
3. Figures are provisional.
4. Rate is not supplied for an age group with fewer than three deaths.
5. Rates based on small numbers of deaths (persons ages 45 to 49 years and 55 to 64 years, males ages 55 to 74 years, females ages 55 to 74 years) are unreliable and should be interpreted with caution.
6. Age-specific mortality rates per 100,000 population, standardised to the 2013 European Standard Population. Monthly rates in this report are adjusted to allow for comparisons with annual rates. For more information see [Section 11: Measuring the data](#).

The ASMR in Wales for all ages combined was significantly higher in males (226.1 deaths per 100,000 males) than females (168.3 deaths per 100,000 females).

The youngest age group to record a death due to COVID-19 was those aged 30 to 34 years, with one female death. Because of the small numbers, rates for Wales could only be calculated from age group 45 to 49 years onwards, and those that were calculated should be interpreted with caution. As in England, the age-specific mortality rate for all persons, males and females increased with age. The age group 90 years and over had the highest age-specific mortality rate for both males (15,861.1 deaths per 100,000 males) and females (5,067.5 deaths per 100,000 females), with 138 deaths occurring overall in this age group. In each age group where a rate was recorded for May 2020, males had a higher age-specific mortality rate than females, but none of these differences were significant.

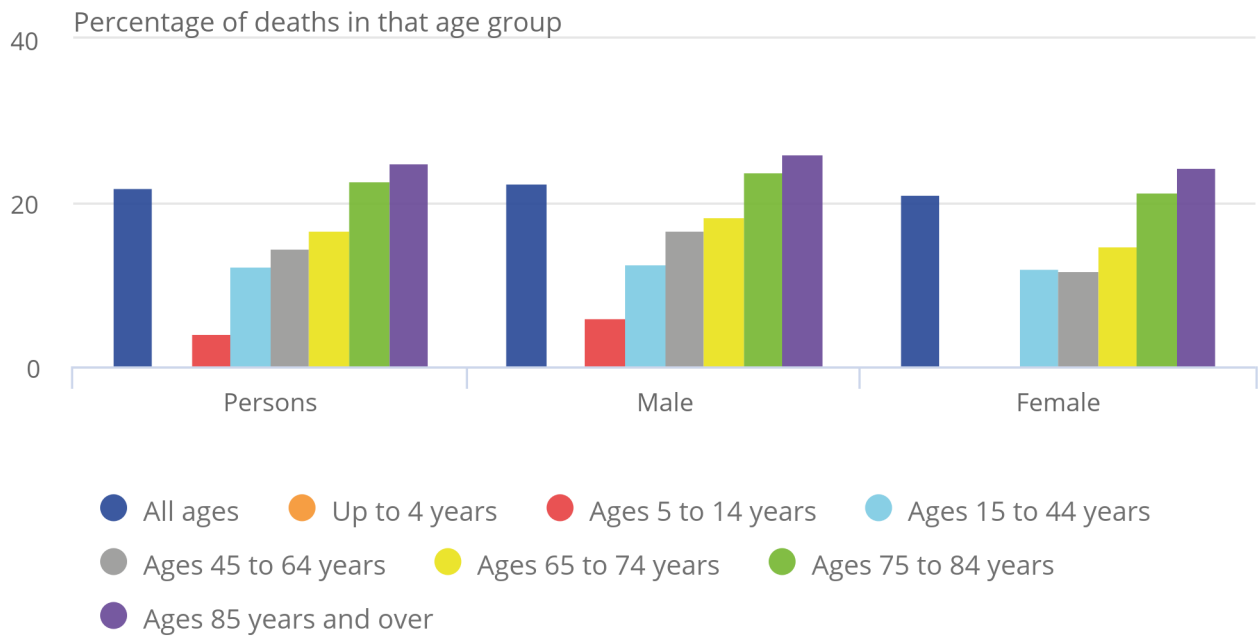
This section looks at the proportion COVID-19 deaths accounted for out of all deaths in each age group.

Figure 7: Deaths due to COVID-19 accounted for more than a fifth of all deaths in England

Percentage of the total deaths in each age group that were due to COVID-19, England, occurring in May 2020

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Percentage of the total deaths in each age group that were due to COVID-19, England, occurring in May 2020



Source: Office for National Statistics – Deaths involving COVID-19

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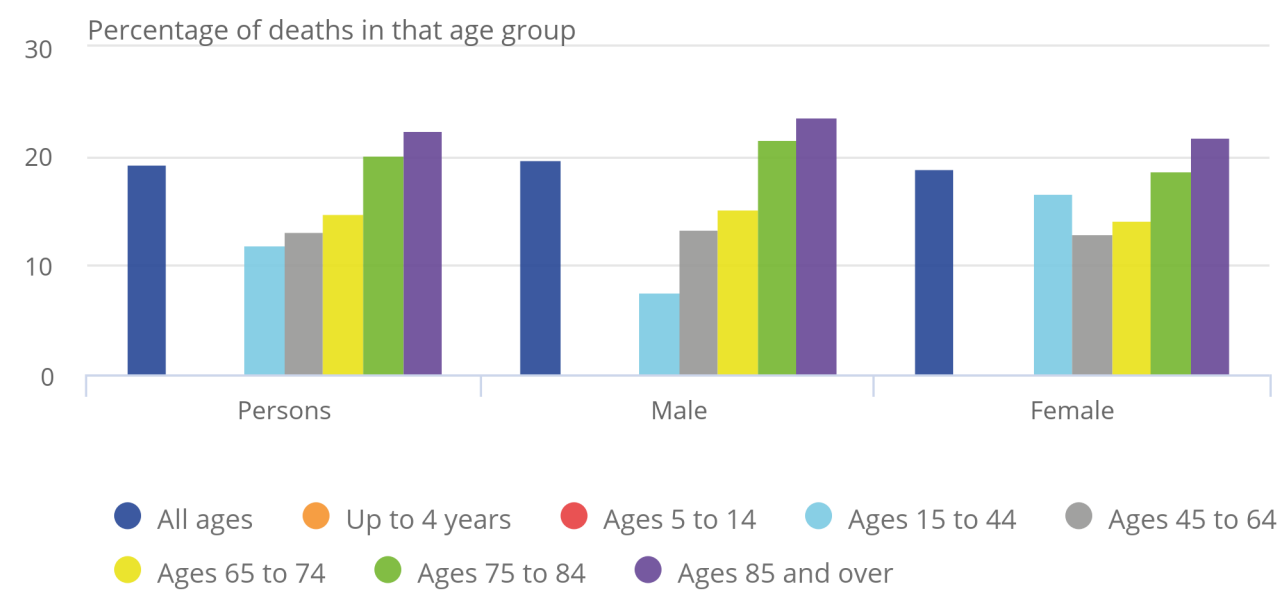
In May 2020 in England, 21.8% of all deaths occurring were due to COVID-19. When broken down by sex, this was 22.5% of all deaths for males and 21.1% of all deaths for females. When looking at the proportion by age group, the highest proportion of deaths due to COVID-19 was in age group 85 years and over, with a quarter (25.0%) of all deaths in this age group having an underlying cause of COVID-19. The 85 years and over age group had the highest proportion of COVID-19 deaths in both males (26.1%) and females (24.3%). A greater proportion of deaths in males were due to COVID-19; for people aged under 45 years, COVID-19 was the underlying cause of death in 18.5% of males versus 12.0% of females.

Figure 8: Deaths due to COVID-19 accounted for nearly a fifth of all deaths in Wales

Percentage of the total deaths in each age group that were due to COVID-19, Wales, occurring in May 2020

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Percentage of the total deaths in each age group that were due to COVID-19, Wales, occurring in May 2020



Source: Office for National Statistics – Deaths involving COVID-19

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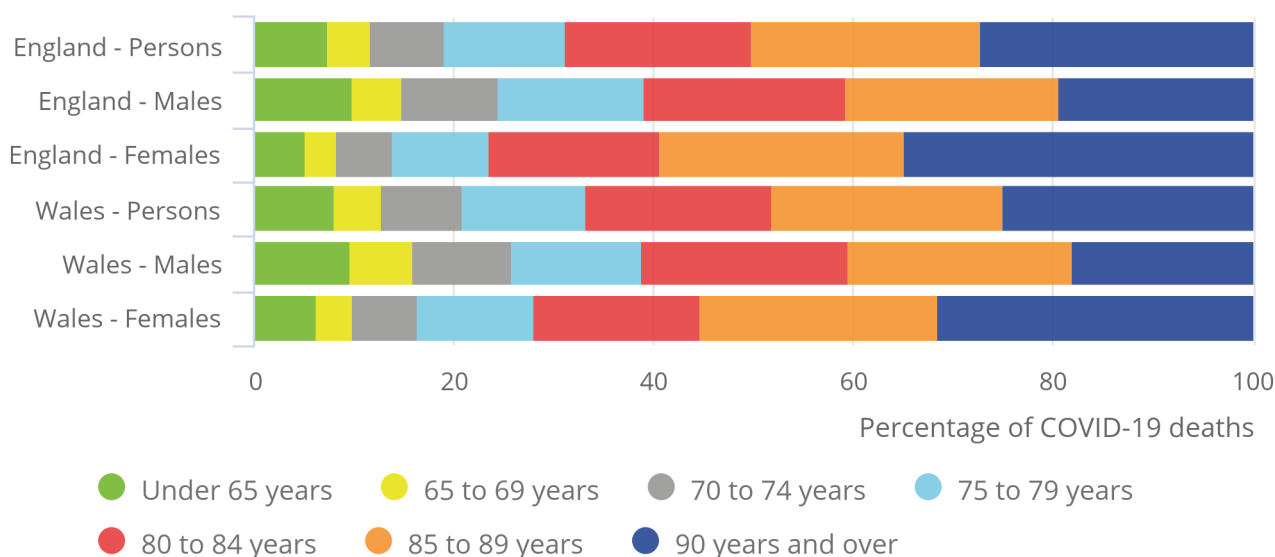
In May 2020 in Wales, 19.3% of all deaths occurring were due to COVID-19. When broken down by sex, this was 19.7% of all deaths for males and 19.0% of all deaths for females. When looking at the proportion by age group, the highest proportion of deaths due to COVID-19 was in age group 85 years and over, with 22.4% of all deaths in this age group having an underlying cause of COVID-19. For males and females, the highest proportion of deaths due to COVID-19 was also in those aged 85 years and over with 23.6% and 21.7% respectively.

Figure 9: Those aged 90 years and over made up the largest proportion of COVID-19 deaths

Percentage of the total COVID-19 deaths by age group, England and Wales, occurring in May 2020

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Percentage of the total COVID-19 deaths by age group, England and Wales, occurring in May 2020



Source: Office for National Statistics – Deaths involving COVID-19

Notes:

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2. Based on the date a death occurred rather than when it was registered.
3. Figures are provisional.

For both England and Wales, in May 2020 a quarter of deaths due to COVID-19 occurred in those aged 90 years and over, at 27.3% and 24.9% respectively. The age group that made up the highest proportion of COVID-19 deaths in males was those aged 85 to 89 years, with this age group accounting for 21.3% of deaths in England and 22.5% of deaths in Wales. For females, the age group that made up the highest proportion of deaths due to COVID-19 was those aged 90 years and over with 35.0% of COVID-19 deaths in England and 31.6% of COVID-19 deaths in Wales. The higher proportions of COVID-19 deaths in females aged 90 years and over could be because the over-90-years female population (371,864) is larger than the over-90-years male population (175,925) in [England and Wales](#).

6 . Pre-existing conditions of people who died with COVID-19

We define a pre-existing condition as any health condition mentioned on the death certificate that either came before the coronavirus (COVID-19) or was an independent contributory factor in the death. Where only COVID-19 was recorded on the death certificate, or COVID-19 and subsequent conditions caused by COVID-19 were recorded, we refer to these deaths as having “No pre-existing conditions”.

Of the 46,687 deaths that occurred in March, April and May 2020 involving COVID-19 in England and Wales, 42,444 (90.9%) had at least one pre-existing condition, while 4,243 (9.1%) had none. The mean number of pre-existing conditions for deaths involving COVID-19 between March and May 2020 was 2.1 for those aged 0 to 69 years and 2.3 for those aged 70 years and over.

This section presents analysis for England and Wales combined, and the [accompanying data tables](#) present data for England and Wales combined as well as for England and Wales separately.

Main pre-existing conditions

Here, we analyse deaths involving COVID-19 by the main pre-existing condition. This is defined as the one pre-existing condition that is, on average, most likely to be the underlying cause of death for a person of that age and sex had they not died from COVID-19. For more detail on how pre-existing conditions and main pre-existing conditions are derived, please see the accompanying methodology article, [Measuring pre-existing health conditions in death certification – deaths involving COVID-19](#).

The most common main pre-existing condition in England and Wales was Dementia and Alzheimer disease, with 11,950 deaths in March to May 2020 (25.6% of all deaths involving COVID-19). The proportion of COVID-19 deaths with a main pre-existing condition of Dementia and Alzheimer disease has increased from 20.1% during March and April. This reflects the large proportion of those who have died from COVID-19 being in the older age groups where Dementia and Alzheimer disease is most prevalent.

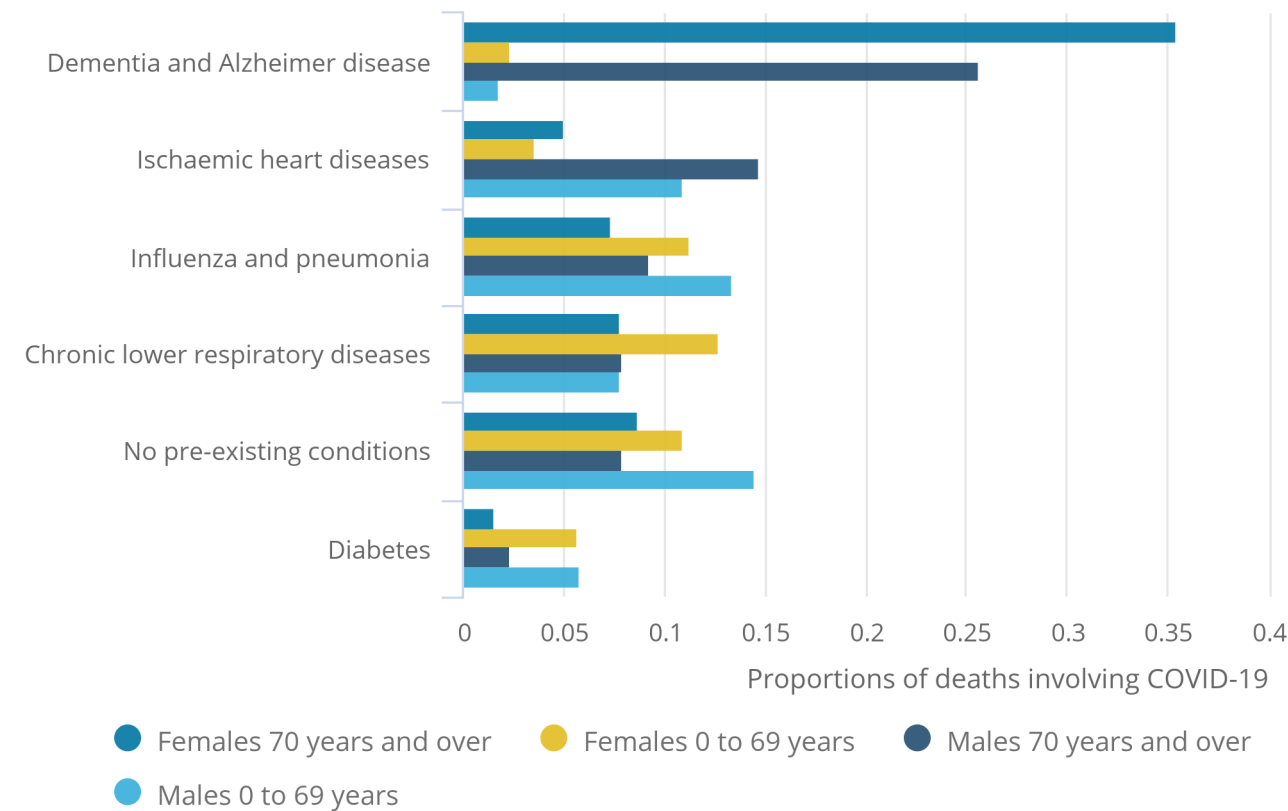
Ischaemic heart disease remains the second most common main pre-existing condition across all ages and sexes in England and Wales, with 4,614 deaths (9.9% of all deaths involving COVID-19). The most common main pre-existing conditions differed by age group. Figure 10 shows the proportion of deaths involving COVID-19 with six main pre-existing cause groups, for males and females aged 0 to 69 years and 70 years and over. For age groups younger than age 70 years, “No pre-existing conditions” ranks much higher than in those aged 70 years and over, where conditions such as Dementia and Alzheimer disease are much more prominent.

Figure 10: Dementia and Alzheimer disease was the most common main pre-existing health condition in deaths involving COVID-19 in March to May 2020

Proportion of deaths involving COVID-19 by main pre-existing condition, sex and age, England and Wales, occurring in March to May 2020

Figure 10: Dementia and Alzheimer disease was the most common main pre-existing health condition in deaths involving COVID-19 in March to May 2020

Proportion of deaths involving COVID-19 by main pre-existing condition, sex and age, England and Wales, occurring in March to May 2020



Source: Source: Office for National Statistics – Deaths involving COVID-19

Notes:

1. Figures are provisional.
2. Figures include deaths of non-residents.
3. Based on the date a death occurred rather than when it was registered.
4. Including deaths registered up until 6 June 2020.
5. In this bulletin, we use the term “due to COVID-19” when referring only to deaths with an underlying cause of death as the coronavirus (COVID-19) and the term “involving COVID-19” when referring to deaths that had COVID-19 mentioned anywhere on the death certificate, whether as underlying cause or not.
6. Pre-existing conditions are grouped using the Office for National Statistics’ (ONS’s) leading causes of deaths list and the International Classification of Diseases, tenth edition (ICD-10) blocks of causes.

The accompanying [dataset](#) provides breakdowns of the main pre-existing conditions for all persons, males and females by five-year age group from age 45 years onwards for England and Wales combined and separately.

All pre-existing conditions

Here, we analyse all pre-existing conditions on the death certificate, not just the main pre-existing condition for deaths involving COVID-19. This allows us to look at conditions that are less likely to be selected as the main pre-existing condition but are still prevalent.

For example, when looking across all pre-existing conditions in deaths involving COVID-19, Diabetes is the fourth most common condition in England and Wales. However, when only considering the main pre-existing condition, it is the eighth most common main pre-existing condition for deaths involving COVID-19. This is because when Diabetes is recorded alongside other pre-existing conditions, it is less likely to be selected as the main pre-existing condition.

Additionally, obesity is grouped into the “other” category for main pre-existing conditions analyses, but when all pre-existing conditions are considered it is the 23rd most common pre-existing condition, mentioned on 532 death certificates involving COVID-19 in England and Wales between March and May 2020.

The most common pre-existing condition in deaths involving COVID-19 was Dementia and Alzheimer disease with 12,856 deaths across both sexes and all ages in England and Wales between March and May 2020. This was followed by Symptoms, signs and ill-defined conditions (10,977 deaths), Influenza and Pneumonia (10,089 deaths), and Diabetes (9,203 deaths).

The average number of pre-existing conditions varied by age and by sex with males aged 70 years and over having an average of 2.4 pre-existing conditions, whereas males aged 0 to 69 years had fewer pre-existing conditions overall with an average of 2.0 pre-existing conditions. For females, the difference between ages was smaller with an average of 2.1 pre-existing conditions for those aged 0 to 69 years and 2.2 for those aged 70 years and over.

Figure 11 shows the counts of deaths involving COVID-19 for the most common pre-existing conditions. Deaths may be counted more than once here as someone may have more than one pre-existing condition.

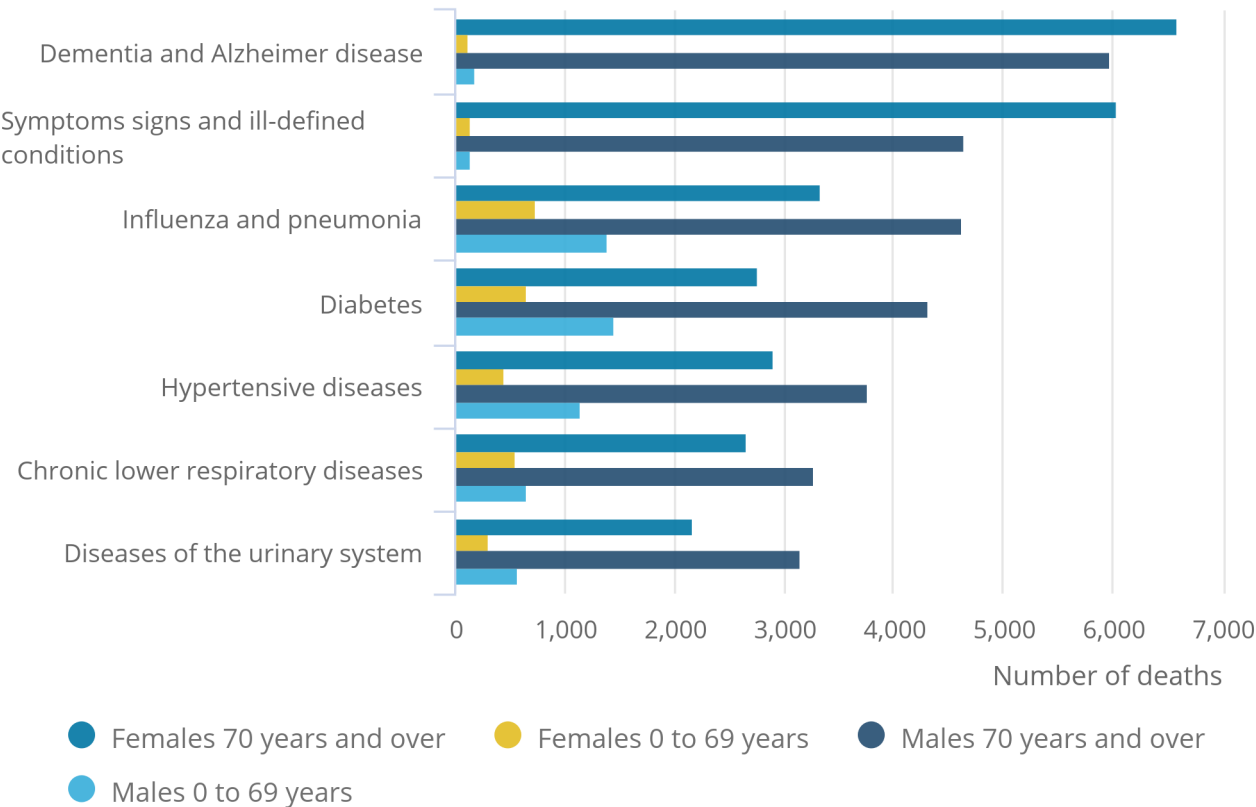
The “Symptoms, signs and ill-defined conditions” category is mostly deaths with a code for “Old age”.

Figure 11: Dementia and Alzheimer disease was the most common pre-existing health condition in deaths involving COVID-19 in March to May 2020

Number of deaths involving COVID-19 by common pre-existing condition, sex and age, England and Wales, occurring in March to May 2020

Figure 11: Dementia and Alzheimer disease was the most common pre-existing health condition in deaths involving COVID-19 in March to May 2020

Number of deaths involving COVID-19 by common pre-existing condition, sex and age, England and Wales, occurring in March to May 2020



Source: Source: Office for National Statistics – Deaths involving COVID-19

Notes:

1. Figures are provisional.
2. Figures include deaths of non-residents.
3. Based on the date a death occurred rather than when it was registered.
4. Including deaths registered up until 6 June 2020.
5. In this bulletin, we use the term “due to COVID-19” when referring only to deaths with an underlying cause of death as the coronavirus (COVID-19) and the term “involving COVID-19” when referring to deaths that had COVID-19 mentioned anywhere on the death certificate, whether as underlying cause or not.
6. Pre-existing conditions are grouped using the Office for National Statistics’ (ONS’s) leading causes of deaths list and the International Classification of Diseases, tenth edition (ICD-10) blocks of causes.
7. Deaths may be counted more than once here as someone may have more than one pre-existing condition.

7 . Time taken for the deaths in March, April and May to be registered

Deaths should normally be registered within five days of the date of death, but there are a number of situations where the registration of a death will be delayed. The length of registration delay can vary greatly, with some deaths taking much longer to be registered than the majority. Deaths certified by a coroner after inquest generally take much longer to be registered than the more "routine" deaths certified by a doctor. Deaths from causes such as suicide, alcohol, drugs or accidents, or that took place in suspicious circumstances, are most often referred to a coroner, so they have a longer registration delay.

This section looks at how long the deaths that occurred between March and May 2020 took to be registered. As there is a delay between death occurrence and death registration, we do not know the final number of deaths that occurred between March and May 2020 yet. The median registration delay may therefore increase as those deaths not registered yet but occurring between March and May 2020 are registered. More information on this issue can be found in our [impact of registration delays](#) release.

Table 1 shows the median delay of death registration in days for deaths that occurred between March and May 2020 for all causes of death and for those involving the coronavirus (COVID-19). The median delay in registration was the same (four days) for deaths involving COVID-19 and for all causes of death.

Table 1: Median delay in registration was the same for COVID-19 deaths and all causes of death in March to May 2020

Median registration delay, lower and upper quartiles, minimum and maximum delay for deaths occurring in England and Wales, March to May 2020

Statistics (days)	All causes of death	Deaths involving COVID-19
Median registration delay	4	4
Lower quartile	2	2
Upper quartile	6	6
Minimum	0	0
Maximum	95	87

Source: Office for National Statistics – Deaths involving COVID-19

Notes

1. Figures are provisional. [Back to table](#)
2. Based on deaths occurring in March to May 2020 rather than deaths registered in March to May 2020. [Back to table](#)
3. Including deaths registered up until 6 June 2020. [Back to table](#)

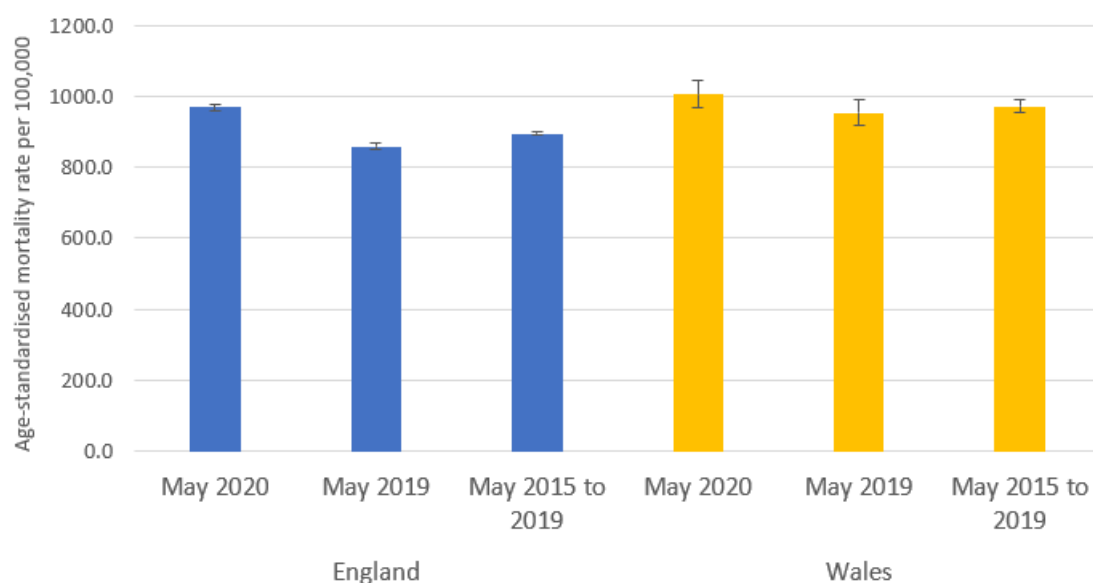
Looking at the percentage of deaths registered within seven days of death, 81.7% of all deaths that occurred between March and May 2020 were registered within seven days, whereas 86.5% of deaths involving COVID-19 that occurred between March and May 2020 were registered within seven days. This indicates that deaths involving COVID-19 overall are registered faster than all causes of death.

8 . COVID-19 and the overall mortality rate for May

Figure 12 shows the age-standardised mortality rate (ASMR) for May 2020 as well as comparative figures for May 2019 and the five-year May average between 2015 and 2019.

Figure 12: The rate of deaths from all causes in May 2020 was above the five-year average

Age-standardised mortality rates for all deaths, per 100,000 persons, England and Wales, May 2020, May 2019, and the five-year average for May



Source: Office for National Statistics – Deaths involving COVID-19

Notes:

1. Figures exclude deaths of non-residents.
2. Based on the date a death occurred rather than when it was registered.
3. Figures for 2020 are provisional.
4. Age-standardised mortality rates (ASMRs) 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 11: Measuring the data](#).

It is important to note that the number of deaths for May 2020 is likely to increase as we receive more registrations. Currently, the rate of deaths occurring in May 2020 (969.1 deaths per 100,000 persons for England and 1,005.4 deaths per 100,000 persons for Wales) is significantly higher than the five-year average of May 2015 to May 2019 (894.9 deaths per 100,000 persons for England and 972.1 deaths per 100,000 persons for Wales). The mortality rate in May 2020 was also significantly higher when compared with the same month in 2019, which had a rate of 858.0 deaths per 100,000 population for England and 952.8 per 100,000 population for Wales.

9 . Analysis of deaths involving COVID-19 data

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

Dataset | Released 28 May 2020

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.

[Deaths involving COVID-19, England and Wales](#)

Dataset | Released 23 June 2020

Number of deaths registered each month in England and Wales, including deaths involving the coronavirus (COVID-19), by age, sex and country.

10 . 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 11: Measuring the data.

Coronaviruses

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

Coronavirus (COVID-19)

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

Pre-existing condition

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

The main pre-existing condition is defined as the one pre-existing condition that is, on average, mostly likely to be the underlying cause of death for a person of that age and sex.

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. In some circumstances, significance has also been tested using z scores. More information about this z test is available in Appendix 1 of the [Sullivan guide](#).

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. Therefore, the widths of the confidence intervals reported in this release will have sizable differences.

11 . Measuring the data

More quality and methodology information on strengths, limitations, appropriate uses, and how the data were created is available in the [Mortality statistics in England and Wales QMI](#).

To meet user needs, we are providing more information alongside our usual [Deaths registered monthly in England and Wales](#) dataset. This information is presented by sex and age group. We are also providing age-standardised mortality rates (ASMRs) and age-specific mortality rates for recent time periods and breakdowns of deaths involving the coronavirus (COVID-19) by associated pre-existing health conditions.

Different sources of COVID-19 data

These figures are different from the daily surveillance figures on COVID-19 deaths published by the Department of Health and Social Care (DHSC) on the [GOV.UK](#) website, for the UK as a whole and its constituent countries. Figures in this bulletin are derived from the formal process of death registration and may include cases where the doctor completing the death certificate diagnosed possible cases of COVID-19, for example, where this was based on relevant symptoms but no test for the virus was conducted. Our figures also include any deaths that occur outside hospital.

In contrast to the GOV.UK figures, we include only deaths registered in England and Wales, which is the legal remit of the Office for National Statistics (ONS). Table 2 provides an overview of the differences in definitions between sources.

Table 2: Definitions of coronavirus (COVID-19) deaths between different sources
Office for National Statistics – Deaths involving COVID-19

	DHSC COVID-19 (as published on GOV.UK) before 29 April	DHSC COVID-19 (as published on GOV.UK) from 29 April	ONS COVID-19 deaths registered	ONS COVID-19 death occurrence (actual date of death)	NHS England	Public Health Wales
Coverage	UK (however we only include England and Wales breakdowns for comparable coverage with ONS data)	UK (however we only include England and Wales breakdowns for comparable coverage with ONS data)	Registrations in England and Wales	Registrations in England and Wales	England only	Wales only
			Selected UK figures are included in the weekly release	In discussions with devolved nations to create UK estimates in the near future		
	Deaths in hospitals	Includes any place of death, including care homes and community	Any place of death, including care homes and community	Any place of death, including care homes and community	Deaths in hospitals	Includes any place of death, including care homes and community
Inclusion	Deaths where patient has been tested for COVID-19	Deaths where patient has been tested for COVID-19	Deaths where COVID-19 has been mentioned on the death certificate	Deaths where COVID-19 has been mentioned on the death certificate	Deaths where patient has been tested for COVID-19	Deaths where patient has been tested for COVID-19
Timeliness	Provided daily but not officially registered	Provided daily but not officially registered	Weekly registrations are 11 days behind because of the time taken to register, process and publish	Weekly registrations are 11 days behind because of the time taken to register, process and publish	Updated daily for each date of death	Updated daily for each date of death

There is usually a delay of at least five days between occurrence and registration. More information on this issue can be found in our [impact of registration delays](#) release.

Monthly mortality rates

We publish the [mid-year population estimates](#) used for calculating rates; these are currently available up to 2019. For 2020, [population projections](#) were used.

Calculation of mortality rates for monthly deaths requires adjustments to be made to annual population estimates to calculate rates that are comparable with annual rates.

We calculate an annual population centred on the midpoint of the month using two years' worth of population estimates (or where these are not available, population projections). This is then multiplied by the number of days within the month as a proportion of the total number of days within that year. The output is used as the population denominator in calculations of ASMRs and age-specific mortality rates:

May 2020 population =

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

where m is the number of days from 1 July 2019 (the start of the mid-year for the population estimate) to the midpoint of May inclusive, N is the number of days in May 2020, M is the number of days in 2020 and (i) is the age group.

Our [User guide to mortality statistics](#) provides further information on data quality, legislation and procedures relating to mortality and includes a [glossary of terms](#).

12 . Strengths and limitations

Figures are based on the date the death occurred, not when it was registered. There is usually a delay of at least five days between occurrence and registration, so there may be some deaths that occurred between March and May 2020 that are not yet registered. More information on this issue can be found in our [impact of registration delays](#) release.

13 . Related links

[Deaths registered in England and Wales: 2018](#)

Bulletin | Released 6 August 2019

Registered deaths by age, sex, selected underlying causes of death and the leading causes of death. Contains death rates and death registrations by area of residence and single year of age.

[Coronavirus \(COVID-19\) product page](#)

Product page | Updated as and when new data are available

Brings together the latest data and analysis on the COVID-19 pandemic in the UK and its effect on the economy and society.

[Coronavirus \(COVID-19\) roundup](#)

Blog | Updated as and when data become available

Catch up on the latest data and analysis related to the COVID-19 pandemic and its impact on our economy and society.

[Deaths registered weekly in England and Wales, provisional: week ending 5 June 2020](#)

Bulletin | Released 16 June 2020

Provisional counts of the number of deaths registered in England and Wales, including deaths involving COVID-19, by age, sex and region, in the latest weeks for which data are available.

[Where to find statistics on UK deaths involving the coronavirus \(COVID-19\) and infection rates by country](#)

Article | Released on 19 May 2020

Links to statistics on coronavirus (COVID-19) deaths and infection rates published by the different constituent countries of the UK.

