

Statistical bulletin

Deaths involving COVID-19 by local area and socioeconomic deprivation: deaths occurring between 1 March and 17 April 2020

Provisional counts of the number of deaths and age-standardised mortality rates involving the coronavirus (COVID-19) between 1 March and 17 April 2020 in England and Wales. Figures are provided by age, sex, geographies down to local authority level and deprivation indices.

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1 . Main points

- Between 1 March and 17 April 2020, there were 90,232 deaths occurring in England and Wales that were registered by 18 April; 20,283 of these deaths involved the coronavirus (COVID-19).
- When adjusting for size and age structure of the population, there were 36.2 deaths involving COVID-19 per 100,000 people in England and Wales.
- London had the highest age-standardised mortality rate with 85.7 deaths per 100,000 persons involving COVID-19; this was [statistically significantly](#) higher than any other region and almost double the next highest rate.
- The local authorities with the highest age-standardised mortality rates for deaths involving COVID-19 were all London Boroughs; Newham had the highest age-standardised rate with 144.3 deaths per 100,000 population followed by Brent with a rate of 141.5 deaths per 100,000 population and Hackney with a rate of 127.4 deaths per 100,000 population.
- The age-standardised mortality rate of deaths involving COVID-19 in the most deprived areas of England was 55.1 deaths per 100,000 population compared with 25.3 deaths per 100,000 population in the least deprived areas
- In Wales, the most deprived areas had a mortality rate for deaths involving COVID-19 of 44.6 deaths per 100,000 population, almost twice as high as the least deprived area of 23.2 deaths per 100,000 population.

Statistician's comment

“By mid-April, the region with the highest proportion of deaths involving COVID-19 was London, with the virus being involved in more than 4 in 10 deaths since the start of March. In contrast, the region with the lowest proportion of COVID-19 deaths was the South West, which saw just over 1 in 10 deaths involving coronavirus. The 11 local authorities with the highest mortality rates were all London boroughs, with Newham, Brent and Hackney suffering the highest rates of COVID-19 related deaths.

“People living in more deprived areas have experienced COVID-19 mortality rates more than double those living in less deprived areas. General mortality rates are normally higher in more deprived areas, but so far COVID-19 appears to be taking them higher still.”

Nick Stripe, Head of Health Analysis, Office for National Statistics.

2 . Introduction

This article contains analysis of all deaths that occurred in England and Wales between 1 March and 17 April 2020, registered up to 18 April 2020, where the coronavirus (COVID-19) was involved, focussing on differences between local areas.

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 (such as referral to a coroner) that result in later registration. Therefore, there may be some deaths involving COVID-19 that occurred in the period 1 March to 17 April 2020 that 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. The statement [The different uses of figures on deaths from COVID-19 published by DHSC and the ONS](#) 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 article is based on occurrence (date of death), not date of registration.

The following analysis looks at the number and age-standardised rates by different geographies and level of deprivation. There may be some interaction between geographies and level of deprivation, but this will need further investigation.

3 . Country and region

More about coronavirus

- Find the latest on [coronavirus \(COVID-19\) in the UK](#).
- All ONS analysis, summarised in our [coronavirus roundup](#).
- View [all coronavirus data](#).

- Find out how our studies and surveys are [serving public need](#).

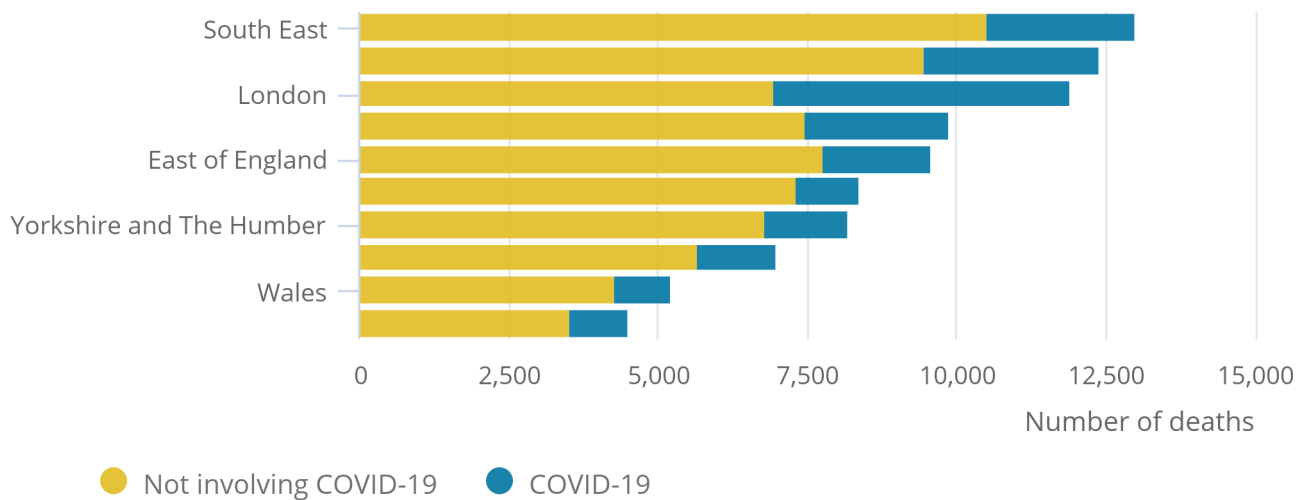
The numbers of deaths by country and region are published each week in our [Deaths registered weekly in England and Wales provisional](#) release. This analysis looks at deaths that occurred between 1 March and 17 April 2020 and uses age-standardised mortality rates to take into account the population and age structure of each area.

Figure 1: London had the highest proportion of deaths involving the coronavirus (COVID-19)

Number of deaths involving and not involving the coronavirus (COVID-19), Wales and regions of England, deaths occurring between 1 March and 17 April 2020

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

Notes:

1. Deaths occurring between 1 March 2020 and 17 April 2020 and registered by 18 April 2020.
2. Figures exclude death of non-residents and are based on February 2020 boundaries.
3. Coronavirus (COVID-19) was the underlying cause or was mentioned on the death certificate as a contributory factor (ICD-10 codes U07.1 and U07.2).

Between 1 March and 17 April 2020, the highest number of deaths occurring that were registered by 18 April was in the South East with 13,024 deaths; of these, 2,508 deaths involved COVID-19 (19% of deaths). The lowest number of deaths was in the North East with 4,513 deaths, of which 979 involved COVID-19 (22% of deaths).

The area with the highest proportion of deaths involving COVID-19 was London with 4,950, making up 42% of the 11,922 total deaths. The lowest proportion of deaths involving COVID-19 was in the South West with 1,051, making up 13% of the 8,389 total deaths. However, the lowest number of COVID-19 deaths was in Wales with 929 deaths, making up 18% of all Wales deaths.

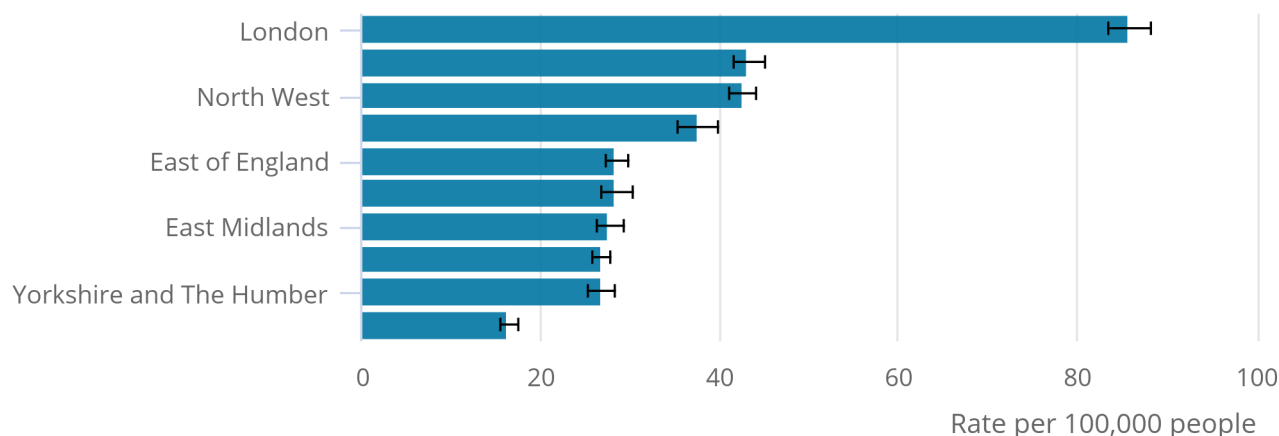
Between 1 March and 17 April 2020, there were 90,232 deaths occurring in England and Wales that were registered by 18 April; of these, 20,283 deaths involved COVID-19. When adjusting for size and age structure of the population, there were 36.2 deaths involving COVID-19 per 100,000 people in England and Wales in the time period (Figure 2): 36.6 deaths per 100,000 people in England and 28.4 deaths per 100,000 people in Wales.

Figure 2: London had the highest age-standardised mortality rate of deaths involving the coronavirus (COVID-19)

Age-standardised mortality rates for deaths involving the coronavirus (COVID-19), per 100,000 population, England and Wales, by country and region, deaths occurring between 1 March and 17 April 2020

Figure 2: London had the highest age-standardised mortality rate of deaths involving the coronavirus (COVID-19)

Age-standardised mortality rates for deaths involving the coronavirus (COVID-19), per 100,000 population, England and Wales, by country and region, deaths occurring between 1 March and 17 April 2020



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

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3. Coronavirus (COVID-19) was the underlying cause or was mentioned on the death certificate as a contributory factor (ICD-10 codes U07.1 and U07.2).
4. Rates have been standardised using European Standard Population 2013 (ESP 2013) and are expressed per 100,000 people.

London had the highest age-standardised mortality rate, with 85.7 deaths per 100,000 persons involving COVID-19. This was [statistically significantly](#) higher than any other English region or Wales, and it was almost double the next highest rate of 43.2 deaths per 100,000 population found in the West Midlands. Conversely, the South West saw the lowest age-standardised mortality rate of 16.4 deaths per 100,000 population. This was statistically significantly lower than any other region or country.

As well as the South West, five other areas had a statistically significantly lower age-standardised rate than the England and Wales average: East of England, Wales, East Midlands, South East, and Yorkshire and The Humber. The three areas with a statistically significantly higher mortality rate than the England and Wales average were London, West Midlands and the North West.

For all areas, males had a significantly higher mortality rate than females. More information can be found in the [accompanying datasets](#).

4 . Local authorities

Along with our weekly provisional release for England and Wales, we publish [number of deaths by local authority and health board](#) by week and place of occurrence (hospital, home, care home, hospice, other communal establishment and elsewhere). The following analysis looks at age-standardised mortality rates of local authorities in England and Wales.

Figure 3: The 11 local authorities with the highest age-standardised mortality rates were all London boroughs

Age-standardised mortality rates for all causes and deaths involving the coronavirus (COVID-19), local authorities in England and Wales, deaths occurring between 1 March and 17 April 2020

Figure 3 is a map of local authorities in England and Wales, showing age-standardised mortality rates for deaths involving the coronavirus (COVID-19) and all causes. The highest rates of deaths involving COVID-19 were in London. Rates were also high in the major cities of Liverpool, Birmingham and Manchester. A few other local authorities including Hertsmere, Salford, Watford, Middlesbrough, Luton, Sandwell and Slough also had rates above 65 deaths per 100,000 people.

Taking a closer look at deaths involving COVID-19 in London, of the 33 local authorities in London, 31 had a [statistically significantly](#) higher age-standardised mortality rate than the England and Wales average. The 11 local authorities in England and Wales with the highest age-standardised mortality rates were all London boroughs. The area with the highest overall age-standardised mortality rate involving COVID-19 in England and Wales was Newham, with a rate of 144.3 deaths per 100,000 population, followed by Brent with a rate of 141.5 deaths per 100,000 population and Hackney with a rate of 127.4 deaths per 100,000 population.

The [accompanying datasets](#) provide a gender breakdown; for males, the 18 highest local authority age-standardised mortality rates were in London boroughs.

5 . Local health boards

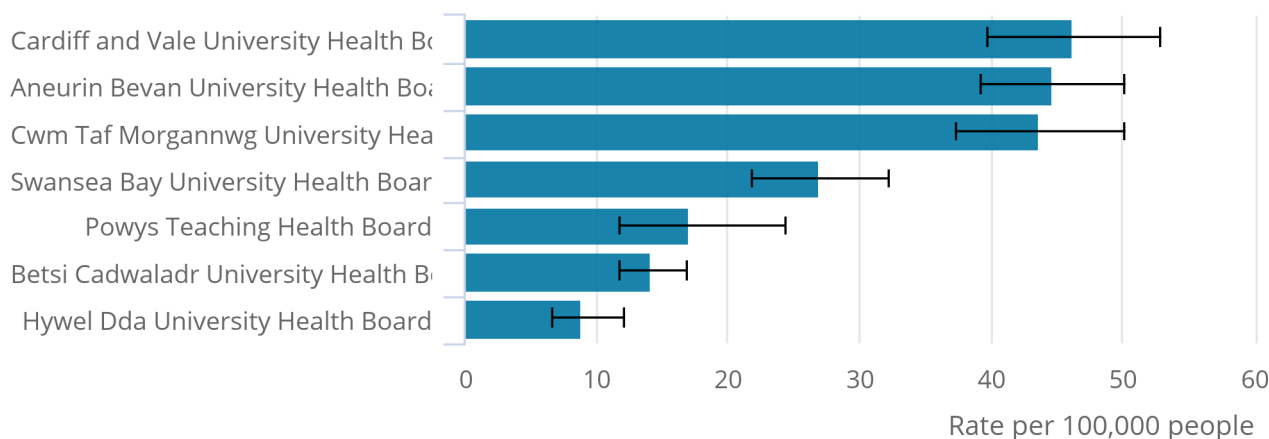
As well as local authorities, Wales also has seven local health boards.

Figure 4: Hywel Dda University Health Board had the lowest age-standardised mortality rate in Wales

Age-standardised mortality rates of deaths involving the coronavirus (COVID-19), Wales, deaths occurring between 1 March and 17 April 2020

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Age-standardised mortality rates of deaths involving the coronavirus (COVID-19), Wales, deaths occurring between 1 March and 17 April 2020



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

Notes:

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4. Rates have been standardised using European Standard Population 2013 (ESP 2013) and are expressed per 100,000 people.

The three highest age-standardised mortality rates of deaths involving the coronavirus (COVID-19) were all [statistically significantly](#) higher than the overall Wales rate (28.4 deaths per 100,000 population). They were Cardiff and Vale University Health Board with 46.2 deaths per 100,000 population; Aneurin Bevan University Health Board with 44.6 deaths per 100,000 population; and Cwm Taf Morgannwg University Health Board with 43.7 deaths per 100,000 population.

The lowest age-standardised mortality rate for deaths involving COVID-19 was in Hywel Dda University Health Board with 8.9 deaths per 100,000 population, which was statistically significantly lower than Wales and all local health boards apart from Powys Teaching Health Board and Betsi Cadwaladr University Health Board.

6 . Middle Layer Super Output Areas

Super Output Areas are a small area statistical geography covering England and Wales. Each area has a similarly sized population and remains stable over time. For this analysis, Middle Layer Super Output Areas have been used. The [accompanying datasets](#) show the number of all deaths as well as deaths involving the coronavirus (COVID-19).

The following interactive allows you to see the number of deaths in each area.

Figure 5: Number of deaths involving COVID-19 in Middle Layer Super Output Areas

7 . Rural and urban areas

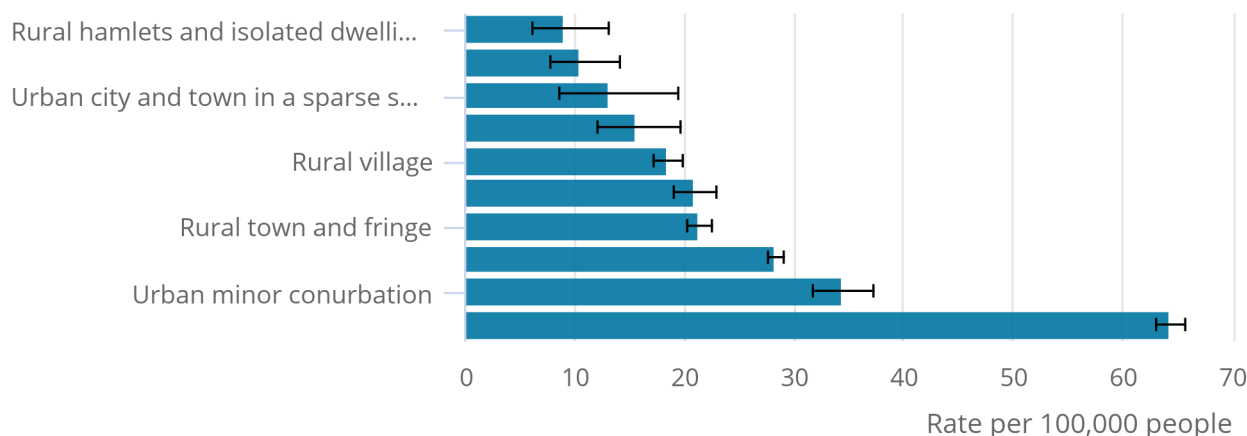
The [Rural Urban Classification for England and Wales](#) is used to distinguish rural and urban areas of different housing sparsity and location for analytical and policy purposes. Areas with 10,000 resident population or more are defined as urban; urban areas are split into major conurbations, minor conurbations, and city and town categories. Rural areas are split between town and fringe, village, and hamlets and isolated dwellings.

Figure 6: Urban major conurbation had a significantly higher age-standardised mortality rate than any other Rural Urban Classification

Age-standardised mortality rate of deaths involving the coronavirus (COVID-19), Urban Rural Classification, deaths occurring between 1 March and 17 April 2019

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Age-standardised mortality rate of deaths involving the coronavirus (COVID-19), Urban Rural Classification, deaths occurring between 1 March and 17 April 2019



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

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The highest age-standardised mortality rate involving the coronavirus (COVID-19) was in urban major conurbations, with 64.3 deaths per 100,000 population, significantly statistically higher than all other categories. The next two highest rates were also [statistically significantly](#) different to all other categories: urban minor conurbations had 34.3 deaths per 100,000 population, and urban cities and towns had 28.2 deaths per 100,000 population. The lowest rates were all found in sparse settings, rural hamlets and isolated dwellings in a sparse setting, which all had the lowest age-standardised mortality rate of 9.0 deaths per 100,000 population.

"Major towns and cities" is a statistical geography created to provide comparable definitions of the major towns and cities in England and Wales, excluding London. This definition has been developed specifically for the production and analysis of statistics. The aim is to provide a precise definition, with a focus on the "core" built-up area of a town or city rather than its surrounding area. It should be noted that in this geography, the boundaries do not follow administrative areas; instead, they are defined to cover the built-up area of each town or city.

Of the 111 major towns and cities, the highest age-standardised mortality rate was in Salford, with a rate of 112.6 deaths per 100,000 population. The lowest rate was 4.9 deaths per 100,000 population in Norwich.

8 . English Index of multiple deprivation

The Index of Multiple Deprivation (IMD) is an overall measure of deprivation based on factors such as income, employment, health, education, crime, the living environment and access to housing within an area. There are different measurements for England and Wales, which are not directly comparable.

Figure 7: The coronavirus (COVID-19) has had a proportionally higher impact on the most deprived areas

Age-standardised mortality rates, all deaths and deaths involving the coronavirus (COVID-19), Index of Multiple Deprivation, England, deaths occurring between 1 March and 17 April 2020

Looking at deaths involving the coronavirus (COVID-19), the rate for the least deprived area was 25.3 deaths per 100,000 population and the rate in the most deprived area was 55.1 deaths per 100,000 population; this is 118% higher than the least deprived area. In the least deprived area (decile 10), the age-standardised mortality rate for all deaths was 122.1 deaths per 100,000 population. In the most deprived area (decile one), the age-standardised mortality rate for all deaths was 88% higher than that of the least deprived, at 229.2 deaths per 100,000 population.

Figure 7 shows how much higher each decile is compared with the least deprived decile for all deaths and deaths involving COVID-19. For deciles 4 to 9, the percentage increase in age-standardised mortality rate of deaths involving COVID-19 is similar to that of overall deaths. However, the least deprived deciles (one to three) are proportionally worse than when comparing with overall deaths.

9 . Welsh Index of Multiple Deprivation analysis

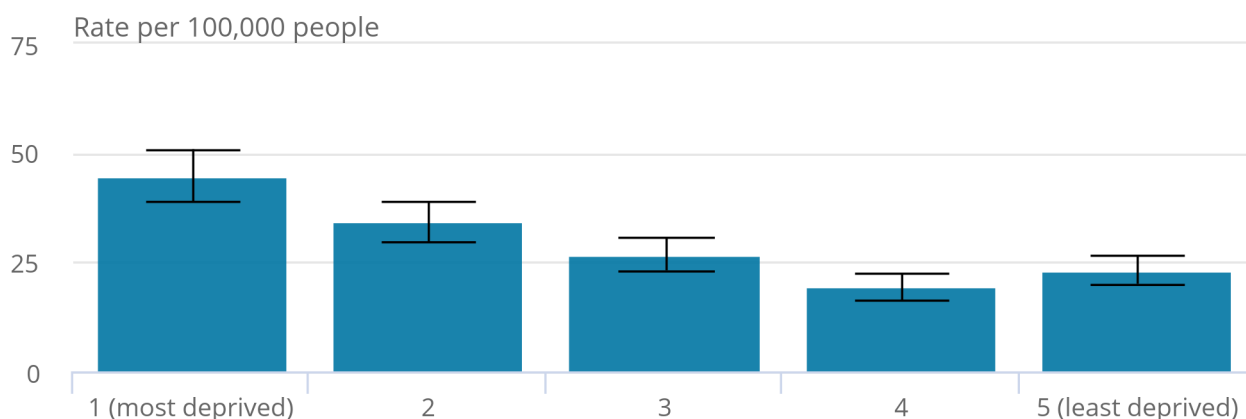
The Index of Multiple Deprivation (IMD) is an overall measure of deprivation based on factors such as income, employment, health, education, crime, the living environment and access to housing within an area. There are different measurements for England and Wales, which are not directly comparable.

Figure 8: The age-standardised mortality rate of the most deprived area was almost twice as high as that of the least deprived area

Age-standardised mortality rates, all deaths and deaths involving the coronavirus (COVID-19), Index of Multiple Deprivation, Wales, deaths occurring between 1 March and 17 April 2020

Figure 8: The age-standardised mortality rate of the most deprived area was almost twice as high as that of the least deprived area

Age-standardised mortality rates, all deaths and deaths involving the coronavirus (COVID-19), Index of Multiple Deprivation, Wales, deaths occurring between 1 March and 17 April 2020



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

Notes:

1. Deaths occurring between 1 March 2020 and 17 April 2020 and registered by 18 April 2020.
2. Figures exclude death of non-residents and are based on February 2020 boundaries.
3. Coronavirus (COVID-19) was the underlying cause or was mentioned on the death certificate as a contributory factor (ICD-10 codes U07.1 and U07.2).
4. Rates have been standardised using European Standard Population 2013 (ESP 2013) and are expressed per 100,000 people.
5. Deprivation quintiles are based on the Welsh Index of Multiple Deprivation, version 2019 (WIMD 2019).

The most deprived fifth of areas (quintile) in Wales had a rate of 44.6 deaths involving the coronavirus (COVID-19) per 100,000 population; this was almost twice as high as the least deprived areas (23.2 deaths per 100,000 population) and over twice as high as the lowest mortality rate in quintile four (19.5 deaths per 100,000 population).

The increase in mortality rate in quintile five compared with quintile four is not found when looking at overall mortality (this is provided in the [datasets](#)). Care should be taken when comparing this increase because of the wide [confidence intervals](#).

10 . Analysis of deaths involving COVID-19 data

[Deaths involving COVID-19 by local area and deprivation](#)

Dataset | Released 1 May 2020

Provisional counts of the number of deaths and age-standardised mortality rates involving the coronavirus (COVID-19) between 1 March and 17 April 2020 in England and Wales. Figures are provided by age, sex, geographies down to local authority level and deprivation indices.

11 . Glossary

Age-standardised mortality rates

Age-standardised mortality rates 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.

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.

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 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.

12 . 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 and age-specific mortality rates for recent time periods and breakdowns of deaths involving the coronavirus (COVID-19) by associated pre-existing health conditions.

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 report 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 1 provides an overview of the differences in definitions between sources.

Table 1: Definitions of coronavirus (COVID-19) deaths between different sources

	DHSC COVID-19 (as published on GOV.UK)	ONS COVID-19 deaths registered	ONS COVID-19 death occurrence (actual date of death)	NHS England
Coverage	UK (however, we only include England and Wales breakdowns for comparable coverage with ONS data)	Registrations in England and Wales In discussions with devolved nations to create UK estimates in the near future	Registrations in England and Wales In discussions with devolved nations to create UK estimates in the near future	England
Inclusion	Deaths in hospitals Deaths where patient has been tested for COVID-19	Any place of death, including nursing homes Deaths where COVID-19 has been mentioned on the death certificate	Any place of death, including nursing homes Deaths where COVID-19 has been mentioned on the death certificate	Deaths in hospitals Deaths where patient has been tested for COVID-19
Timeliness	Provided daily but not officially registered. Data are provided to NHS-E directly by hospitals Data only published once confirmed family have been notified of death	Weekly registrations are 11 days behind because of the time taken to register, process and publish Registered in the week ending 17 April 2020 (Week 16)	Weekly registrations are 11 days behind because of the time taken to register, process and publish Deaths which occurred in Week 16 but were registered up to 25 April 2020	Updated daily for each date of death

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

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](#).

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

13 . 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 in March that are not yet registered. More information on this issue can be found in our [impact of registration delays release](#).

14 . 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 when new data are available

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

[Deaths registered weekly in England and Wales, provisional: week ending 3 April 2020](#)

Bulletin | Released 14 April 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.