

Statistical bulletin

# Coronavirus (COVID-19) related deaths by occupation, England and Wales: deaths registered between 9 March and 28 December 2020

Provisional analysis of deaths involving the coronavirus (COVID-19), by different occupational groups, among men and women aged 20 to 64 years in England and Wales.

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Next release: Discontinued

#### **Notice**

# 25 January 2021

A clarification has been made to the text in the final paragraph of Section 6 'deaths involving COVID-19 in teaching and educational professionals'.

The text previously stated: "We also compared the teaching occupations with all other professional occupations, allowing us to see how the deaths compare with professions with similar broad economic and educational backgrounds. We found that rates of death involving COVID-19 in the aforementioned occupations were not statistically significantly different to the rates seen in professional occupations (17.6 deaths per 100,000 males; 12.8 deaths per 100,000 females) as a whole, true for both sexes."

The text now states: "We also compared the teaching occupations with all other professional occupations, allowing us to see how the deaths compare with professions with similar broad economic and educational backgrounds. We found that rates of death involving COVID-19 in all teaching and educational professionals were not statistically significantly different to the rates seen in professional occupations (17.6 deaths per 100,000 males; 12.8 deaths per 100,000 females) as a whole, true for both sexes. Of the specific teaching and education professions, the rate of death involving COVID-19 in male secondary education teaching professionals was statistically significantly higher than the rate of death involving COVID-19 in professional occupations in men of the same age."

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# 1. Main points

- 7,961 deaths involving the coronavirus (COVID-19) in the working age population (those aged 20 to 64 years) of England and Wales were registered between 9 March and 28 December 2020.
- Nearly two-thirds of these deaths were among men (5,128 deaths), with the age-standardised mortality
  rate of death involving COVID-19 being statistically significantly higher in men, at 31.4 deaths per 100,000
  men aged 20 to 64 years compared with 16.8 deaths per 100,000 women (2,833 deaths).
- When looking at broad groups of occupations, men who worked in elementary occupations (699 deaths) or caring, leisure and other service occupations (258 deaths) had the highest rates of death involving COVID-19, with 66.3 and 64.1 deaths per 100,000 males, respectively.
- In women, process, plant and machine operatives (57 deaths) and caring, leisure and other service occupations (460 deaths) had the highest rates of death involving COVID-19 when looking at broad occupational groups, with 33.7 and 27.3 deaths per 100,000 females, respectively.
- Men (79.0 deaths per 100,000 males; 150 deaths) and women (35.9 deaths per 100,000 females; 319 deaths) who worked in social care occupations had statistically significantly higher rates of death involving COVID-19 when compared with rates of death involving COVID-19 in the population among those of the same age and sex.
- Almost three in four of the deaths involving COVID-19 in social care occupations (347 out of 469 deaths; 74.0%) were in care workers and home carers, with 109.9 deaths per 100,000 males (107 deaths) and 47.1 deaths per 100,000 females (240 deaths).
- Men who worked in healthcare occupations had a statistically higher rate of death involving COVID-19 (44.9 deaths per 100,000 males; 190 deaths) when compared with the rate of COVID-19 among men of the same age in the population; the rate among women who worked in healthcare occupations (17.3 deaths per 100,000 females; 224 deaths) was statistically similar to the rate in the population.
- Looking at specific healthcare occupations, nurses had statistically significantly higher rates of death involving COVID-19 when compared with the rate of COVID-19 among those of the same age and sex in the population, with 79.1 deaths per 100,000 males (47 deaths) and 24.5 deaths per 100,000 females (110 deaths); nursing auxiliaries and assistants also had elevated rates of death involving COVID-19.
- Rates of death involving COVID-19 in men and women who worked as teaching and educational
  professionals, such as secondary school teachers, were not statistically significantly raised when compared
  with the rates seen in the population among those of the same age and sex.
- This analysis does not prove conclusively that the observed rates of death involving COVID-19 are necessarily caused by differences in occupational exposure; we adjusted for age, but not other factors such as ethnic group and place of residence.

## Statistician's quote

"Today's analysis shows that jobs with regular exposure to COVID-19 and those working in close proximity to others continue to have higher COVID-19 death rates when compared with the rest of the working age population. Men continue to have higher rates of death than women, making up nearly two thirds of these deaths."

"As the pandemic has progressed, we have learnt more about the disease and the communities it impacts most. There are a complex combination of factors that influence the risk of death; from your age and your ethnicity, where you live and who you live with, to pre-existing health conditions. Our findings do not prove that the rates of death involving COVID-19 are caused by differences in occupational exposure."

Ben Humberstone, Head of Health Analysis and Life Events

# 2. Overview of coronavirus-related deaths by occupation

Rates reported in this release should not be compared with those published elsewhere; our analysis is based on 20- to 64-year olds and we have not adjusted to allow for comparisons with annual mortality rates.

This bulletin presents analysis of deaths involving the coronavirus (COVID-19) in different occupational groups among those aged 20 to 64 years in England and Wales. <a href="Occupation">Occupation</a> was defined using the <a href="Standard">Standard</a> <a href="Occupational Classification 2010 (SOC 2010)</a>. There are nine major groups of occupations (for example, skilled trades occupations), which then subdivide into 25 sub-major groups (for example, skilled construction and building trades). Sub-major groups can be subdivided into a further 90 minor groups (for example, building finishing trades) and more than 350 individual occupations (for example, painters and decorators). For further information on the definition of occupation, see the <a href="Glossary">Glossary</a>.

This analysis includes deaths involving COVID-19 that were registered up to, and including, 28 December 2020. Unlike our other analyses of COVID-19 that have been based on the date of death (occurrence), for this analysis we included all deaths involving COVID-19 registered at the time of analysis. By doing so, we captured as much information on occupation as possible, allowing a more granular look at specific occupations where the number of deaths allows.

The analysis is based on provisional data, and findings could change as more deaths are registered. In particular, there may be deaths in some occupations that have not yet been registered because a coroner's inquest is required. The findings described in this bulletin are generally consistent with those in our <u>previous release</u>. However, because of the registration of new deaths, some of the previously published rates of death involving COVID-19 will have increased.

The results of the analysis do not prove conclusively that the observed rates of death involving COVID-19 are necessarily caused by differences in <u>occupational exposure</u>. In the analysis we adjusted for age, but not for other factors such as <u>ethnic group</u>, <u>place of residence</u> or <u>deprivation</u>. Additionally, the analysis only considers the occupation of the deceased. We have not taken account of the occupations of others in the household, which could increase exposure to members of the same household. The findings should be interpreted bearing in mind the warnings in the <u>Strengths and limitations section</u>.

We have highlighted occupations that have <u>statistically significantly</u> higher rates of death involving COVID-19 when compared with the rate of death involving COVID-19 among people of the same age and sex in the general population.

There were 7,961 deaths involving COVID-19 in the working age population (aged 20 to 64 years) of England and Wales registered between 9 March and 28 December 2020.

Nearly two-thirds of these deaths (64.4%) were among men, with 5,128 deaths compared with 35.6% (2,833 deaths) among women. Men had a statistically higher rate of death involving COVID-19, with 31.4 deaths per 100,000 men of the working population, compared with 16.8 deaths per 100,000 women.

The following analyses include data where information on the occupation of the deceased was available on the death certificate. Of the deaths involving COVID-19 recorded among the working age population in this period, 75.0% (or 5,967 out of 7,961 deaths) contained information on occupation. Further information on the data, including the main reasons for missing occupation, can be found in Measuring the data.

Overall, the findings of the analysis are similar to those reported in our <u>previous release</u> for deaths registered to the end of May 2020. As such, this analysis focuses on occupations with the highest rates, alongside which we have included selected key worker occupations. The accompanying <u>datasets</u> provide data for all occupations.

# 3. Men and deaths involving COVID-19 by occupation

Six of the nine major occupational groups had <u>statistically significantly</u> higher rates of death involving the coronavirus (COVID-19) when compared with the rate of COVID-19 among men of the same age in the population. These included (from the highest to the lowest rate):

- elementary occupations (66.3 deaths per 100,000 males; 699 deaths)
- caring, leisure and other service occupations (64.1 deaths per 100,000 males; 258 deaths)
- process, plant and machine operatives (52.8 deaths per 100,000 males; 827 deaths)
- skilled trades occupations (40.4 deaths per 100,000 males; 848 deaths)
- sales and customer service occupations (40.3 deaths per 100,000 males; 156 deaths)
- administrative and secretarial occupations (39.0 deaths per 100,000 males; 186 deaths)

The remaining three major groups of occupations had statistically significantly lower rates of death involving COVID-19 when compared with the rate of COVID-19 among men of the same age in the population.

# Figure 1: Men working in elementary occupations or caring, leisure and other service occupations had the highest rates of death involving COVID-19

Age-standardised mortality rates of death involving the coronavirus (COVID-19) in England and Wales, by major occupational group, deaths registered between 9 March and 28 December 2020

#### Data download

#### Notes:

- 1. Deaths involving the coronavirus (COVID-19) include those with an underlying cause, or any mention, of U07.1 (COVID-19, virus identified) or U07.2 (COVID-19, virus not identified).
- 2. Figures are for residents of England and Wales aged 20 to 64 years.
- 3. Occupations defined using the Standard Occupational Classification 2010 (SOC 2010).
- 4. Figures are for the most recent death registrations available at the time of analysis: deaths involving COVID-19 registered between 9 March and 28 December 2020.
- 5. Age-standardised rates are only presented for occupations with 20 or more deaths.

Among elementary occupations - the major occupational group with the highest rate of death involving COVID-19 - those who worked in process plants had the highest rate of death involving COVID-19, with 143.2 deaths per 100,000 males (120 deaths). Elementary process plant workers clean metal goods, machinery and premises, operate printing machines and reprographic equipment, wrap, fill, label and seal containers and perform a variety of other manual tasks.

In the elementary occupations group, those who worked in elementary security occupations had the next highest rate of death involving COVID-19, with 93.4 deaths per 100,000 males (153 deaths). Most of these deaths were among security guards and related occupations (140 deaths; 100.7 deaths per 100,000 males).

For caring, leisure and other service occupations - the major occupational group with the next highest rate of death involving COVID-19 among men - most of this group's 258 deaths were among those who worked in caring personal services (184 deaths or 71.3%; 91.0 deaths per 100,000 males). Of the caring personal services occupations, care workers and home carers had the highest rate of death involving COVID-19 (109.9 deaths per 100,000 males; 107 deaths).

The accompanying <u>datasets</u> provide data on a wide range of occupations. Other than those already mentioned, the 10 occupations with the highest rates of death involving COVID-19 were:

- restaurant and catering establishment managers and proprietors (119.3 deaths per 100,000 males; 26 deaths)
- metal working and machine operatives (106.1 deaths per 100,000 males; 40 deaths)
- food, drink and tobacco process operatives (103.7 deaths per 100,000 males; 52 deaths)
- chefs (103.1 deaths per 100,000 males; 82 deaths)
- taxi and cab drivers and chauffeurs (101.4 deaths per 100,000 males; 209 deaths)
- nursing auxiliaries and assistants (87.2 deaths per 100,000 males; 45 deaths)
- elementary construction occupations (82.1 deaths per 100,000 males; 70 deaths)
- nurses (79.1 deaths per 100,000 males; 47 deaths)
- local government administrative occupations (72.1 deaths per 100,000 males; 23 deaths)
- bus and coach drivers (70.3 deaths per 100,000 males; 83 deaths)

All these occupations were identified as having raised rates of death involving COVID-19 in our previous release. Descriptions of individual occupations (PDF, 1.13MB) are available.

# 4. Women and deaths involving COVID-19 by occupation

Three of the nine major occupational groups had <u>statistically significantly</u> higher rates of death involving the coronavirus (COVID-19) when compared with the rate of COVID-19 among women of the same age in the population. These included (from the highest to the lowest rate):

- process, plant and machine operatives (33.7 deaths per 100,000 females; 57 deaths)
- caring, leisure and other service occupations (27.3 deaths per 100,000 females; 460 deaths)
- elementary occupations (21.1 deaths per 100,000 females; 227 deaths)

Four of the remaining major occupational groups had statistically significantly lower rates of death involving COVID-19 when compared with the rate of death involving COVID-19 in women of the same age in the population: managers, directors and senior officials; professional occupations; associate professional and technical occupations; administrative and secretarial occupations. For the remaining occupational groups, rates were not statistically different to those seen in the general population.

# Figure 2: Women working in process, plant and machine operatives, and caring, leisure and other service occupations had the highest rate of death involving COVID-19

Age-standardised mortality rates of death involving the coronavirus (COVID-19) in England and Wales, deaths registered between 9 March and 28 December 2020

#### Data download

#### Notes:

- 1. Deaths involving the coronavirus (COVID-19) include those with an underlying cause, or any mention, of U07.1 (COVID-19, virus identified) or U07.2 (COVID-19, virus not identified).
- 2. Figures are for residents of England and Wales aged 20 to 64 years.
- 3. Occupations defined using the Standard Occupational Classification 2010 (SOC 2010).
- 4. Figures are for the most recent death registrations available at the time of analysis: deaths involving COVID-19 registered between 9 March and 28 December 2020.
- 5. Age-standardised rates are only presented for occupations with 20 or more deaths.

Among process, plant and machine operative occupations - the major group with the highest rate of death involving COVID-19- assemblers and routine operatives had the highest rate, with 39.2 deaths per 100,000 females (21 deaths), including jobs such as sewing machinists. Because of the small numbers of deaths, we were unable to reliably look at specific occupations among assemblers and routine operatives.

Caring, leisure and other service occupations - the major group with the next highest rate of death involving COVID-19 - had the largest number of deaths of all the major groups (460 out of 1,742 deaths; 26.4%). Most of the deaths in this group were among those who worked in caring and personal services (326 deaths; 38.3 deaths per 100,000 females). Of the caring personal services occupations, care workers and home carers had the highest rate of death involving COVID-19 (47.1 deaths per 100,000 females; 240 deaths).

The accompanying <u>datasets</u> provide data on a wide range of occupations. Other than those already mentioned, occupations with the highest rates of death involving COVID-19 included:

- social workers (32.4 deaths per 100,000 females; 25 deaths)
- national government administrative occupations (27.9 deaths per 100,000 females; 26 deaths)
- sales and retail assistants (26.9 deaths per 100,000 females; 111 deaths)
- managers and directors in retail and wholesale (26.7 deaths per 100,000 females, 24 deaths)
- nursing auxiliaries and assistants (25.3 deaths per 100,000 females; 54 deaths)
- nurses (24.5 deaths per 100,000 females; 110 deaths)

In our <u>previous release</u> social workers, and nursing auxiliaries and assistants were not found to have statistically significantly raised rates of death involving COVID-19.

Because of the smaller number of deaths involving COVID-19 among women aged 20 to 64 years, compared with men, fewer occupations had statistically significantly higher rates of death involving COVID-19. <u>Descriptions of individual occupations (PDF, 1.13MB)</u> are available.

# 5. Deaths involving COVID-19 among men and women health and social care workers

Deaths among health and social care workers are recorded in a range of occupational groups. In this section we present analysis that grouped specific occupations into these two categories for men and women.

As seen in our <u>previous release</u>, rates of death involving the coronavirus (COVID-19) among male and female social care workers were <u>statistically significantly</u> higher than the rates of death involving COVID-19 among those of the same age and sex in England and Wales. A total of 469 deaths involving COVID-19 among social care workers were registered between 9 March and 28 December 2020, with rates of 79.0 deaths per 100,000 males (150 deaths) and 35.9 deaths per 100,000 females (319 deaths).

In this group, we included occupations such as care workers and home carers, which accounted for most of the deaths (347 out of 469 deaths, or 74.0%), social workers, managers of residential care institutions, and care escorts. Of the individual occupations, care workers and home carers (men and women) and social workers (women only) - as stated in Section 3 and Section 4 – had significantly raised rates.

Similar to our <u>previous release</u>, among healthcare workers – including occupations such as doctors, nurses and midwives, nurse assistants, paramedics and ambulance staff, and hospital porters – men had a statistically significant higher rate of death involving COVID-19 compared with the rate of death involving COVID-19 in the general working population, with 44.9 deaths per 100,000 men (190 deaths). Among women, the rate of death involving COVID-19 among healthcare workers was 17.3 deaths per 100,000 women (224 deaths) – this rate was not significantly different to that observed in the general population among women of the same age.

Of the individual healthcare worker occupations – as stated in Section 3 and Section 4 – nurses and nursing auxiliaries and assistants had significantly raised rates among both sexes.

# 6. Deaths involving COVID-19 in teaching and educational professionals

Teaching and educational professionals refers to those qualified to teach in a wide range of settings from primary school through to university level education. It does not include other jobs in the teaching and educational sector such as administration.

There were 139 deaths involving the coronavirus (COVID-19) in teaching and educational professionals aged 20 to 64 years registered between 9 March and 28 December 2020 in England and Wales. For both sexes, rates of death involving COVID-19 for this group were <u>statistically significantly</u> lower than the rate of death involving COVID-19 among those of the same age and sex, with 18.4 deaths per 100,000 males (66 deaths) and 9.8 deaths per 100,000 females (73 deaths), compared with 31.4 and 16.8 deaths per 100,000 in the population among males and females respectively.

Of the individual occupations, it was only possible to calculate a reliable rate for secondary education teaching professionals, who accounted for 37.4% of the total number of deaths among all teaching and educational professionals (52 deaths). With 39.2 deaths per 100,000 males (29 deaths) and 21.2 deaths per 100,000 females (23 deaths), rates of death involving COVID-19 in secondary education teaching professionals were not statistically significantly different than those of the same age and sex in the wider population.

We also compared the teaching occupations with all other professional occupations, allowing us to see how the deaths compare with professions with similar broad economic and educational backgrounds. We found that rates of death involving COVID-19 in all teaching and educational professionals were not statistically significantly different to the rates seen in professional occupations (17.6 deaths per 100,000 males; 12.8 deaths per 100,000 females) as a whole, true for both sexes. Of the specific teaching and education professions, the rate of death involving COVID-19 in male secondary education teaching professionals was statistically significantly higher than the rate of death involving COVID-19 in professional occupations in men of the same age.

# 7. Factors that may be associated with COVID-19-related deaths by occupation

When trying to understand rates of coronavirus (COVID-19)-related deaths by occupation, it is likely that there will be many complex factors. Our previous release provided information on a range of factors – including likelihood of exposure to the virus, where people live, and ethnic distribution by occupation – that may be associated with the deaths described in this bulletin. A further report also described the possible impact of lockdown on rates of death involving COVID-19 by occupation. Public Health England have reported a wide range of factors associated with COVID-19 (PDF, 2.79MB) more generally.

# 8. Coronavirus (COVID-19) related deaths by occupation data

Coronavirus (COVID-19) related deaths by occupation, England and Wales

Dataset | Released 25 January 2021

Provisional counts of the number of deaths and age-standardised mortality rates involving the coronavirus (COVID-19), by occupational groups, for deaths registered between 9 March and 28 December 2020 in England and Wales. Figures are provided for males and females.

# 9. Glossary

#### **Occupation**

Occupation was defined using the <u>Standard Occupational Classification 2010 (SOC 2010)</u>. Full lists of occupations used in the analysis are reported in the accompanying <u>datasets</u>, and descriptions of these can be found in the <u>Office for National Statistics (ONS) SOC Hierarchy</u>. Deaths and the population at risk (see <u>Measuring the data</u>) were both coded using this classification system.

## Working age population

In this bulletin the working age population concerns those aged 20 to 64 years. The analysis begins at 20 years to avoid the accidental inclusion of those who may still be in education, and the analysis does not include those aged 65 years and above to avoid the accidental inclusion of those who are retired. The upper age limit of 64 years is consistent with other ONS outputs looking at those who are economically active, including the number of people who are in employment.

# 10. Measuring the data

#### **Deaths data**

The figures described in this bulletin include deaths registered in England and Wales between 9 March and 28 December 2020. Deaths were only included in the analyses if the country of usual residence was also England and Wales.

Deaths were defined using the International Classification of Diseases, 10th Revision (ICD-10). Deaths involving the coronavirus (COVID-19) include those with an underlying cause, or any mention, of ICD-10 codes U07.1 (COVID-19, virus identified) or U07.2 (COVID-19, virus not identified). We applied an age restriction, selecting deaths among those aged 20 to 64 years, because of limitations of occupational mortality data for those below the age of 20 years and those above the age of 64 years.

Occupation is reported on the death certificate at the time of death registration by the informant. This information was then coded using the <u>Standard Occupational Classification 2010 (SOC 2010)</u> (see the <u>Glossary</u>).

During the period of the analysis, a total of 5,128 deaths and 2,833 deaths involving COVID-19 were registered among men and women aged 20 to 64 years, respectively. In men, 82.4% of these deaths (4,225) had information recorded on occupation; for women this figure was 61.5% (1,742 deaths). Of the records included in the analysis of COVID-19 deaths by occupation, the mean age at death for both men and women was age 56 years.

Reasons for missing occupation data included: the information was not recorded on the death certificate; the deceased was recorded as being a full-time (unpaid) carer of the home and/or dependent relatives; the deceased was working voluntarily; the deceased was retired.

Further information on death registrations data can be found in the Mortality statistics in England and Wales QMI.

## Death registration delays

Mortality statistics are compiled from information supplied when deaths are certified and registered as part of civil registration, a legal requirement. According to the <u>Births and Deaths Registration Act 1953</u>, 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.

For deaths involving COVID-19 described in this bulletin, there was a median delay of four days between the date of death and the date of death registration. The same median delay was found for both sexes, for each major occupation group, and for health and social care occupations (see the accompanying <u>datasets</u>).

It is possible that deaths in some occupations have not yet been registered because a coroner's inquest is required; 8.2% (or 423 out of 5,128) of the male and 7.6% (or 214 out of 2,833) of the female deaths involving COVID-19 described in this bulletin were certified by coroners. The small number of coroner certifications means that registration delays caused by inquests likely has minimal impact for interpreting the analysis.

#### **Population data**

Population counts for occupations were obtained from the Annual Population Survey (APS), using data collected in 2019. The APS is the largest ongoing household survey in the UK, based on interviews with members of randomly selected households. The survey covers a range of diverse topics, including information on occupation, which is then coded using the SOC 2010. The population counts were also restricted to those aged 20 to 64 years and were weighted to be representative of those living in England and Wales. Further information on the APS can be found in the APS QMI.

Mortality rates for the broader population of all usual residents in England and Wales were based on the mid-year population estimates for 2018.

## **Analysis**

Figures in the commentary are based on age-standardised mortality rates. These refer to a weighted average of deaths per 100,000 people of a particular age group that is standardised to the 2013 European Standard Population. They allow for differences in age structure of populations and therefore allow valid comparisons to be made between the sexes and different occupations.

The commentary reports findings for occupations with rates that are <u>statistically significantly</u> higher than the rate among those of the same age and sex in England and Wales. Significance has been determined using 95% <u>confidence intervals</u>, which provide the range of values within which we are 95% confident that the true value lies. Instances of non-overlapping confidence intervals between figures indicate the difference is unlikely to have arisen from random fluctuation. The 95% confidence intervals for the estimates are available in the accompanying datasets.

# 11 . Strengths and limitations

## **Strengths**

In this bulletin, we only refer to occupations that have at least 20 deaths. For these, reliable age-standardised rates can be calculated, reducing the likelihood of the findings being a result of chance. In our accompanying datasets, rates have been marked as unreliable where there are fewer than 20 deaths, and we have not produced rates for occupations with fewer than 10 deaths. A robust method is used for the analysis: age-standardised rates allow for differences in age structure of populations and therefore allow valid comparisons to be made between the sexes and different occupations.

Quality assurance procedures have been undertaken throughout all stages of the analysis to minimise the risk of error. Previous work showed that <u>our data were a good reflection of the numbers being reported in the national media</u>, when looking at a number of health and social care occupations, and those working in transport occupations.

#### Limitations

Some caution is needed in interpreting the findings as this analysis does not prove conclusively that the observed rates of death involving the coronavirus (COVID-19) are necessarily caused by differences in occupational exposure. In the analysis we adjusted for age, but not for other factors such as <a href="ethnic group">ethnic group</a>, place of residence or deprivation. We have also published an article that explores possible differences in <a href="https://occupationalexposure">occupationalexposure</a> to COVID-19. Additionally, the analysis only considers the occupation of the deceased. We have not taken account of the occupations of others in the household, which could increase exposure to other members of the same household.

The results could change as more deaths are registered over the coming weeks and months. In particular, there may be deaths in some occupations that cannot yet be registered because a coroner's inquest is required.

The data were taken from two separate sources: death certificates and the Annual Population Survey (APS). The findings could be impacted by a degree of bias because of the misalignment of occupation data between the two sources.

The occupation recorded on the death certificate is reported by the informant and likely reflects the deceased's main lifetime occupation not the occupation at the time of death. It is also possible that, when they died, the deceased was retired, unemployed or in a different job altogether. Despite this, the occupations found to have higher rates of death involving COVID-19 are generally consistent with recent literature on the occupations that are more likely to be exposed to the coronavirus.

With the data recorded on death certificates on occupation, we are unable to tell whether the deceased was furloughed at the time of death.

At the time of analysis, we used the most recently available occupation populations, based on data collected in 2019. The analysis may be affected if there has been a rapid increase or decrease in the number of workers in a specific occupation since then.

## 12. Related links

Coronavirus (COVID-19) related deaths by occupation, before and during lockdown, England and Wales: deaths registered between 9 March and 30 June 2020

Bulletin | Released 22 September 2020

Provisional analysis of deaths involving the coronavirus (COVID-19) by occupation where the infection may have been acquired either before or during the period of lockdown.

COVID-19 infections among teachers, healthcare workers and other working-age adults, Scotland, Public Health Scotland

Report | Released 16 December 2020

As part of a programme of COVID-19 surveillance in education, Public Health Scotland (PHS) has implemented approaches to monitor the impact of COVID-19 on the health of the education workforce. This report provides the results of this analysis for four periods: before school closure, after school closure and during "lockdown", after "lockdown" but before school return, and after school return (up to 26 November 2020). Data tables relating to the report of record linkage study of COVID-19 among teachers, healthcare workers and other working-age adults are also provided.

#### Deaths registered weekly in England and Wales, provisional

Bulletin | Weekly

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

#### Coronavirus (COVID-19) latest insights

Interactive tool | Updated as and when data become available

Explore the latest data and trends about the coronavirus (COVID-19) pandemic from the ONS and other official sources.

#### Coronavirus (COVID-19) roundup

Blog | Updated as and when new data become available

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