Office for National Statistics

Statistical bulletin

Coronavirus (COVID-19) related deaths by occupation, England and Wales: deaths registered between 9 March and 25 May 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.

Contact:
Dr Ben Windsor-Shellard and Asim Butt
health.data@ons.gov.uk
+44 (0)1633 456068

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Next release:
To be announced

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1 . Main points

- A total of 4,761 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 25 May 2020.
- Nearly two-thirds of these deaths were among men (3,122 deaths), with the age-standardised mortality rate of death involving COVID-19 being statistically higher in men, at 19.1 deaths per 100,000 men aged 20 to 64 years compared with 9.7 deaths per 100,000 women (1,639 deaths).
- Compared with the rate among people of the same sex and age in England and Wales, men working in elementary occupations had the highest rate of death involving COVID-19, with 39.7 deaths per 100,000 men (421 deaths); of the specific elementary occupations, men working as security guards had the highest rate, with 74.0 deaths per 100,000 (104 deaths).
- Men and women working in social care, a group including care workers and home carers, both had significantly raised rates of death involving COVID-19, with rates of 50.1 deaths per 100,000 men (97 deaths) and 19.1 deaths per 100,000 women (171 deaths).
- Among health care professions as a whole, including those with jobs such as doctors and nurses, only men had higher rates of death involving COVID-19 (30.4 deaths per 100,000 men or 130 deaths) when compared with the rate among those whose death involved COVID-19 of the same age and sex in the general population; of the specific health care professions, nurses had elevated rates among both sexes (50.4 deaths per 100,000 men or 31 deaths; 15.3 deaths per 100,000 women or 70 deaths).
- Among women, four specific occupations had raised rates of death involving COVID-19, including sales and retail assistants (15.7 deaths per 100,000 women, or 64 deaths).
- Because of the higher number of deaths among men, 17 specific occupations were found to have raised rates of death involving COVID-19, some of which included: taxi drivers and chauffeurs (65.3 deaths per 100,000; 134 deaths); bus and coach drivers (44.2 deaths per 100,000; 53 deaths); chefs (56.8 deaths per 100,000; 49 deaths); and sales and retail assistants (34.2 deaths per 100,000; 43 deaths).
- Of the 17 specific occupations among men in England and Wales found to have higher rates of death involving COVID-19, data from the Annual Population Survey (APS) show that 11 of these have statistically significantly higher proportions of workers from Black and Asian ethnic backgrounds; for women, APS data show that two of the four specific occupations with elevated rates have statistically significantly higher proportions of workers from Black and Asian ethnic backgrounds.
- 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 for other factors such as ethnic group and place of residence.

Statisticians quote

“There are lots of complex things playing out during the pandemic and the risk of death involving COVID-19 is influenced by a range of factors including the job someone does, but also age, ethnicity and underlying health conditions. We also know that people living in the most deprived local areas, and those living in urban areas such as London, have been found to have the highest rates of death involving COVID-19.

“Today’s analysis shows that jobs involving close proximity with others, and those where there is regular exposure to disease, have some of the highest rates of death from COVID-19. However, our findings do not prove conclusively that the observed rates of death involving COVID-19 are necessarily caused by differences in occupational exposure.”

Ben Humberstone, Head of Health Analysis and Life Events

Rates in this release differ to those published elsewhere; our analysis is based on 20- to 64-year-olds and we are unable to adjust for the period being observed. See Measuring the data for more information.

2 . Overview of coronavirus-related deaths by occupation

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. Occupation was defined using the Standard Occupational Classification 2010 (SOC 2010). 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 Glossary.

This analysis includes deaths involving COVID-19 that were registered up to, and including, 25 May 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 previous release. However, because of the registration of new deaths, some of the previously published rates of death involving COVID-19 may have increased, and we have also identified additional occupations with elevated rates.

The results of the analysis do not prove conclusively that the observed rates of death involving COVID-19 are necessarily caused by differences in occupational exposure. In the analysis we adjusted for age, but not for other factors such as ethnic group, place of residence or deprivation. 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 Strengths and limitations section.

We have highlighted occupations that have statistically significantly 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.

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 we are working safely in our studies and surveys.

For deaths registered between 9th March and 25 May 2020, there were 4,761 deaths involving COVID-19 in the working age population (aged 20 to 64 years) of England and Wales.

Nearly two-thirds of these deaths (65.6%) were among men, with 3,122 deaths compared with 34.4% (1,639 deaths) among women. Men had a statistically higher rate of death involving COVID-19, with 19.1 deaths per 100,000 men of the working population, compared with 9.7 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 recorded among the working age population in this period, 75.6% (or 3,600 out of 4,761 deaths) contained information on occupation. Further information on the data, including the main reasons for missing occupation, can be found in Measuring the data.

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

Among men, six of the nine major occupational groups had statistically higher age-standardised mortality rates of death involving the coronavirus (COVID-19) than the rate of death involving COVID-19 among men of the same age in the general population (Figure 1).

Two major groups of occupations were found to have similarly high rates of death involving COVID-19. The first was elementary workers with 39.7 deaths per 100,000 men (421 deaths). The occupations in this group include those performing mostly routine tasks, such as construction workers and cleaners. The second was caring, leisure and other service occupations (39.6 deaths per 100,000 men, or 160 deaths), which include occupations such as nursing assistants, care workers and ambulance drivers.

Other major occupational groups with high mortality rates of death involving COVID-19, when compared with the rate among men of working age in the population, included:

- process, plant and machine operatives occupations (30.1 deaths per 100,000 men; 473 deaths)
- administrative and secretarial occupations (26.0 deaths per 100,000 men; 125 deaths)
- sales and customer service occupations (24.7 deaths per 100,000 men; 98 deaths)
- skilled trades occupations (23.9 deaths per 100,000 men; 500 deaths)

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 25 May 2020

Download the data

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 25 May 2020.
5. Age-standardised rates are only presented for occupations with 20 or more deaths

Elementary workers, the major group with the highest mortality rate, can be subdivided into several smaller groups of occupations. Figure 2 shows the seven subgroups of elementary workers for which reliable rates could be calculated – all had higher rates of death involving COVID-19 compared with the rate among men of the same age in the general population.

The highest rate was seen in elementary process plant occupations, with 73.3 deaths per 100,000 men (equivalent to 62 deaths). This occupation generally includes those working in factories, such as those who clean industrial machines, and those who pack goods. For this group, we were unable to produce estimates at the most specific level of occupation – most of the deaths were recorded on death certificates as “factory workers” with no specific information on the type of factory work they did.

The second highest rate was seen in the elementary security occupations, with 68.2 deaths per 100,000 men (equivalent to 113 deaths). Among the specific occupations included in this group, security guards and related occupations had the highest rate, with 74.0 deaths per 100,000 men, equivalent to 104 deaths.

Elementary construction workers (42.1 deaths per 100,000 men, or 36 deaths) and elementary service occupations (38.3 deaths per 100,000 men, or 45 deaths) also had high rates of death involving COVID-19. Elementary service occupations include jobs such as hospital porters, bar staff and leisure and theme park attendants. Because of the smaller numbers of deaths, we were unable to calculate reliable mortality rates for these specific occupations.

Figure 2: Among elementary workers, men working in elementary process plant 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 25 May 2020

Download the data

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5. Age-standardised rates are only presented for occupations with 20 or more deaths.

Male care workers and home carers had a higher rate of death involving COVID-19 than men of the same age in the general population

The major occupational group with the next highest mortality rate for deaths involving COVID-19 was caring, leisure and other service occupations. This can also be divided into smaller groups. Of these, most of the deaths were among the caring personal service occupations group, with a rate of 50.1 deaths per 100,000 men, equivalent to 126 deaths.

At the lowest level of granularity, this finding was largely explained by the rate among those providing care and support within residential care establishments, within day care establishments or to people in their own homes – care workers and home carers (71.1 deaths per 100,000 men, or 70 deaths). Nursing auxiliaries and assistants were also found to have an elevated rate of 58.9 deaths per 100,000 men (30 deaths).

Road transport drivers, including taxi and cab drivers and chauffeurs, had some of the highest rates of death involving COVID-19 for men

Of the remaining major occupational groups with high rates among men, those who worked in process, plant and machine operative occupations had one of the highest number of deaths overall (473 deaths). This group includes occupations where the main tasks are to operate and monitor industrial equipment; assemble products; and drive and assist in the operation of transport vehicles and other machines.

In this group, at a more granular level, road transport drivers were found to account for the largest proportion of deaths (67.7% of the major group deaths, or 35.2 deaths per 100,000 men).

Among road transport drivers (Figure 3), taxi and cab drivers and chauffeurs had the highest rate, with 65.3 deaths per 100,000 men (134 deaths). Other occupations with significantly higher rates include bus and coach drivers, with 44.2 deaths per 100,000 men (53 deaths), and van drivers (26.7 deaths per 100,000 men; 66 deaths).

Figure 3: Among road transport drivers, taxi and cab drivers and chauffeurs had the highest rate of death involving COVID-19 for men

Age-standardised mortality rates of death involving the coronavirus (COVID-19) in England and Wales, men, deaths registered between 9 March and 25 May 2020

Download the data

Notes:

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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 25 May 2020.
5. Age-standardised rates are only presented for occupations with 20 or more deaths.

The accompanying datasets contain more analysis on deaths involving COVID-19 among men. Other specific occupations found to have statistically significantly higher rates, when compared with the rate among men in the general population of the same age, included:

- chefs (56.8 deaths per 100,000 men, or 49 deaths)
- sales and retail assistants (34.2 deaths per 100,000 men, or 43 deaths)
- food, drink and tobacco process operatives (64.3 deaths per 100,000 men, or 32 deaths)
- vehicle technicians, mechanics and electricians (44.3 deaths per 100,000 men, or 36 deaths)
- book-keepers, payroll managers and wages clerks (34.5 deaths per 100,000 men, or 26 deaths)

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

Among women, as seen in our previous release, only one of the nine major occupational groups had a statistically significantly higher mortality rate for deaths involving the coronavirus (COVID-19) than the rate of death involving COVID-19 among women of the same age in the general population. That was the caring, leisure and other service occupations, which had a rate of 15.4 deaths per 100,000 women, equivalent to 264 deaths.

As with men, most of these deaths (223 deaths) were among caring personal occupations, where the rate of deaths involving COVID-19 was 15.2 deaths per 100,000 women. These deaths were largely from women care workers and home care workers (25.9 deaths per 100,000 women, or 134 deaths).

Process, plant and machine operatives also had an elevated rate, however, because of the small number of deaths (26 in total), this was not significantly different to the rate among women of the same age in the population.

Other specific occupations found to have statistically significantly higher rates, when compared with the rate among women in the general population of the same age, included: sales and retail assistants (15.7 deaths per 100,000 women, or 64 deaths); and national government administrative occupations (23.4 deaths per 100,000 women, or 22 deaths). In the latter occupation, job holders undertake a variety of administrative and clerical duties in national government departments, and in local offices of national government departments.

Figure 4: Women working in caring, leisure and other service occupations had the highest rate of death involving COVID-19 compared with women of the same age in the general population

Age-standardised mortality rates of death involving the coronavirus (COVID-19) in England and Wales, women, deaths registered between 9 March and 25 May 2020

Download the data

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 25 May 2020.

5. Age-standardised rates are only presented for occupations with 20 or more deaths.

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 both men and women.

In our analysis, as seen in our previous release, rates of death involving the coronavirus (COVID-19) among men and women social care workers were found to be statistically significantly higher than the rates of death involving COVID-19 among those of the same age and sex in England and Wales. A total of 268 deaths involving COVID-19 among social care workers were registered between 9 March and 25 May 2020, with rates of 50.1 deaths per 100,000 men (97 deaths) and 19.1 deaths per 100,000 women (171 deaths).

In this group, we included occupations such as care workers and home carers, which accounted for most of the deaths (204 out of 268 deaths, or 76.1%), social workers, managers of residential care institutions, and care escorts. Of the individual occupations, we were only able to calculate a reliable rate for care workers and home carers – as stated in Section 3 and Section 4, significantly raised rates for this occupation were found among both men and women.

Among health care 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 30.4 deaths per 100,000 men (130 deaths). An elevated rate among male health care workers was not found in our previous release, because of the smaller number of registered deaths for this occupation when we conducted the previous analysis. Among women, the rate of death involving COVID-19 among health care workers was 11.0 deaths per 100,000 women (142 deaths) – this rate was not significantly different to that observed in the general population among women of the same age.

With the registration of more deaths involving COVID-19 since our previous release, this time we found elevated rates among some of the individual health care professions. Nurses were found to have statistically significantly higher rates of death involving COVID-19, with 50.4 deaths per 100,000 men (31 deaths) and 15.3 deaths per 100,000 women (70 deaths). Nursing auxiliaries and assistants were also found to have elevated rates among men (58.9 deaths per 100,000 men or 30 deaths).

Figure 5: Men working as social care workers and health care workers had a significantly elevated 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 25 May 2020

Download the data

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5. Age-standardised rates are only presented for occupations with 20 or more deaths.

Figure 6: Women working as social care workers had a significantly elevated 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 25 May 2020

Download the data

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6 . Deaths involving COVID-19 by occupation, before and during the lockdown

Previous analysis shows that some occupations, mainly those involving close and frequent interaction with others, have the highest potential exposure to the coronavirus (COVID-19). With the lockdown that came into place on 23 March 2020, it is possible this changed the likelihood of people in certain occupations becoming exposed to COVID-19.

Presently, we do not have the information required to look at deaths involving COVID-19 by occupation where the infection was acquired either before or during the period of lockdown. The length of COVID-19 illness is not consistently recorded on death certificates, and our death registrations data are not linked to another data source to obtain this information. Additionally, research on the timeline of COVID-19, such as the time between infection to symptom onset, and from symptom onset to recovery or death, is limited.

The challenges of this analysis include understanding the timeline of COVID-19: Government guidelines show the maximum time from infection to symptom onset is 14 days, and research based on COVID-19 infections in China shows that, on average, there are a further 20 days from symptom onset to death, in the most extreme cases of the disease.

Additionally, at present, we do not have a way of knowing how many deaths were among furloughed workers, something that could also be associated with occupational risk for COVID-19. When more data become available, we will look at the impact of lockdown on rates of death involving COVID-19 by occupation.

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. In this section, we provide information on a range of factors that may be associated with the deaths described in this bulletin. A recent report from Public Health England describes a wide range of factors associated with COVID-19 more generally.

Some occupations are more likely to be exposed to the virus than others

Analysis on the occupations with the highest potential exposure to the coronavirus (COVID-19) shows that jobs involving close proximity with others, and those where there is regular exposure to disease, are most likely to be exposed to COVID-19. Examples include health care workers, though during the pandemic some of these are more likely to be using personal protective equipment (PPE).

The results of this analysis show that occupations, such as nurses, with high potential exposure to COVID-19, also had elevated rates of death involving COVID-19. However, our findings do not prove conclusively that the observed rates of death involving COVID-19 are necessarily caused by differences in occupational exposure. Additionally, our 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.

Where people live appears to impact rates of death involving COVID-19

People living in the most deprived local areas, and those living in urban areas such as London, have been found to have the highest rates of death involving COVID-19. By occupation, similar findings are also seen. Reasons for such patterns are not yet fully understood, however, people in deprived areas are more likely to be diagnosed with COVID-19 and to have poor outcomes following diagnosis than those in less deprived areas. Additionally, people living in urban areas compared with rural areas are more likely to test positive for COVID-19.

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. The analysis described here categorises neighbourhoods into five equal groups (quintiles), ranging from the most deprived neighbourhoods (quintile 1) to the least deprived (quintile 5).

Using England as an example, around three-quarters of deaths involving COVID-19 in male elementary workers – the major group occupation with the highest rate – were among those who lived in the most deprived neighbourhoods (IMD quintiles 1 and 2; 296 out of 401 deaths or 73.8%). Additionally, and for the same major group, the rate of death involving COVID-19 was three times higher among those who lived in the most deprived quintile, compared with the rate in the least deprived quintile (56.9 deaths per 100,000 men in quintile 1, and 18.4 deaths per 100,000 men in quintile 5; Figure 7). We are unable to provide equivalent analysis for Wales, because of the smaller numbers of deaths.

Figure 7: For men in elementary occupations in England, the rate of death involving COVID-19 was three times higher among those who lived in the most deprived neighbourhoods compared with the least deprived

Age-standardised mortality rates among elementary workers by Index of Multiple Deprivation (quintiles), deaths involving COVID-19 registered among men aged 20 to 64 years in England between 9 March and 25 May 2020

Download the data

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5. Age-standardised rates are only presented for occupations with 20 or more deaths.
6. Deprivation quintiles are based on the English Index of Multiple Deprivation (IMD; version 2019). 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. Neighbourhoods (lower layer super output areas or LSOAs) are grouped into five equal groups (quintiles), ranging from the most deprived (quintile 1) to the least deprived (quintile 5).

Among women, caring, leisure and other service occupations was the only major group occupation in England to have an elevated rate of death involving COVID-19, relative to that in the population among women of the same age. In this group, 59.7% of deaths were in the most deprived neighbourhoods (quintiles 1 and 2; 151 out of 253 deaths).

Additionally, the rate of death involving COVID-19 was found to be at least two times higher in the most deprived quintiles, that is, quintile 1 (20.1 deaths per 100,000 women) and quintile 2 (23.7 deaths per 100,000 women), when compared with the rate seen in the least deprived quintile (9.3 deaths per 100,000 women in quintile 5).

Figure 8: For women working in caring, leisure and other service occupations, rates of death involving COVID-19 in the most deprived areas (quintiles 1 and 2) were at least two times higher than the rate in the least deprived areas

Age-standardised mortality rates among caring, leisure and other service occupations by Index of Multiple Deprivation (quintiles), deaths involving COVID-19 registered among women aged 20 to 64 years in England between 9 March and 25 May 2020

Download the data

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The disparity between those living in the most and least deprived areas of England is also seen in major group occupations that have significantly lower rates of death involving COVID-19 overall.

Among male managers, directors and senior officials, the rate of death involving COVID-19 was 15.5 deaths per 100,000 men, significantly lower than the rate among men of the same age and sex in England (19.4 deaths per 100,000). However, this was not found among men in the same major occupation group who lived in the most deprived quintile of deprivation – for these men, the rate of death involving COVID-19 was statistically significantly higher than that in the population, with 34.4 deaths per 100,000 men (quintile 1). The rate among male managers, directors and senior officials in the most deprived quintile was also 3.5 times higher than that in the least deprived (quintile 5; 9.5 deaths per 100,000 men).

Figure 9: For male managers, directors and senior officials in England, the rate of death involving COVID-19 among those who lived in the most deprived neighbourhoods was statistically significantly higher than that seen in the population

Age-standardised mortality rates among managers, directors and senior officials by Index of Multiple Deprivation (quintiles), deaths involving COVID-19 registered among men aged 20 to 64 years in England between 9 March and 25 May 2020

Download the data

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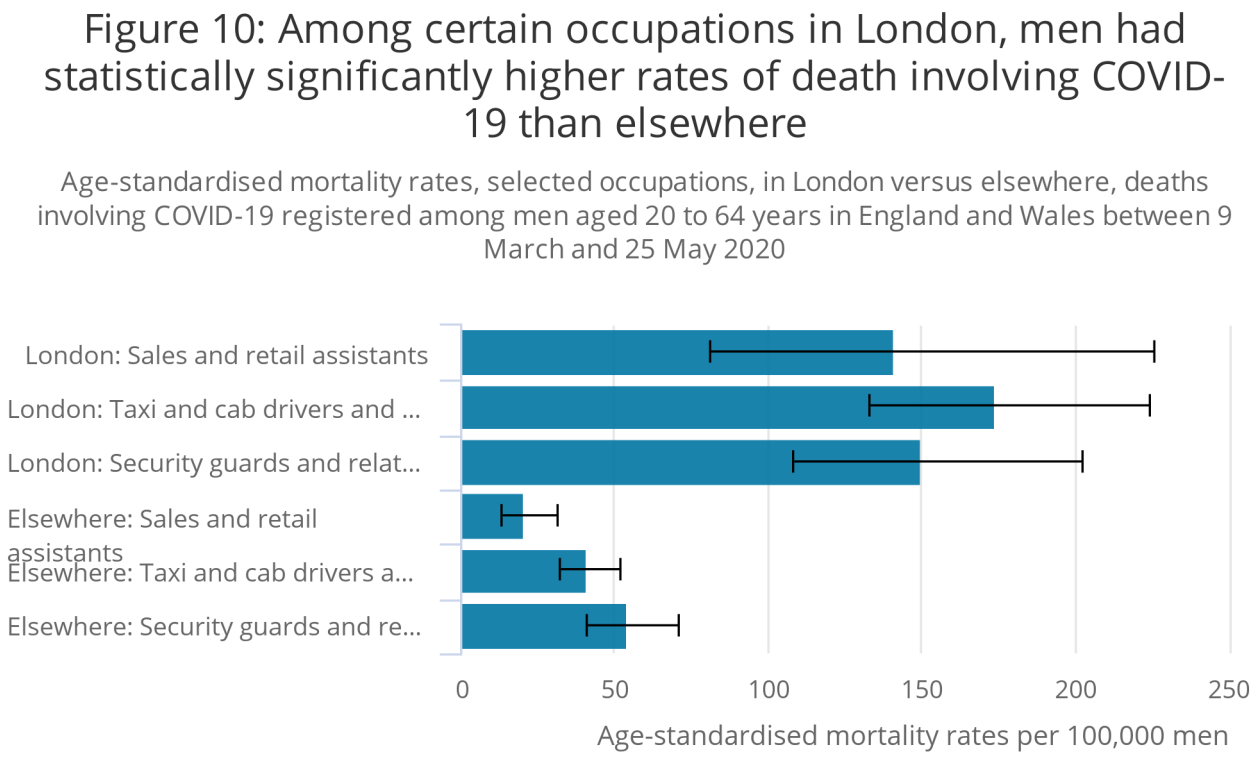
Analysis has also shown high rates of death involving COVID-19 in urban areas , such as London. By occupation, a similar pattern is seen, however, we have only been able to look at a very limited number of occupations, and we have only been able to compare rates in London with elsewhere in England and Wales, because of small numbers of deaths.

For the occupations that we were able to calculate reliable rates for, we found statistically significantly higher rates in London compared with elsewhere in England and Wales in men working as sales and retail assistants, taxi and cab drivers and chauffeurs, and security guards and related occupations (see Figure 10). For women, this was found among care workers and home carers (44.6 deaths per 100,000 women in London compared with 23.7 deaths per 100,000 women elsewhere). Similar disparities were also seen among men and women health and social care professionals (Figure 11).

Figure 10: Among certain occupations in London, men had statistically significantly higher rates of death involving COVID-19 than elsewhere

Age-standardised mortality rates, selected occupations, in London versus elsewhere, deaths involving COVID-19 registered among men aged 20 to 64 years in England and Wales between 9 March and 25 May 2020



Source: Office for National Statistics

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Figure 11: Disparities in rates of death involving COVID-19, between London and elsewhere, were also seen in health and social care professionals

Age-standardised mortality rates, health and social care professions, in London compared with elsewhere, deaths involving COVID-19 registered among men and women aged 20 to 64 years in England and Wales between 9 March and 25 May 2020

Download the data

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 25 May 2020.
5. Age-standardised rates are only presented for occupations with 20 or more deaths.

Some ethnic groups may be more susceptible to COVID-19 than others

Recent analysis has shown higher rates of death involving COVID-19 among people from Black and Asian ethnic groups. In particular, after adjusting for region, population density, socio-demographic and household characteristics, the raised risk of death involving COVID-19 for people of Black ethnic background of all ages was two times greater for men and 1.4 times greater for women, compared with those of White ethnic background.

Men of Bangladeshi or Pakistani backgrounds, and Indian ethnic backgrounds also had a significantly higher risk of death involving COVID-19 (1.5 and 1.6 times, respectively) than White men. A recent report from Public Health England provides an overview of possible explanations for the disproportionate impact of COVID-19 on people from Black and Asian ethnic backgrounds groups.

While this time it has not been possible to produce separate rates by ethnic group for the occupations detailed in this bulletin, data from a separate source, the Annual Population Survey (APS – data collected in 2019), show that higher proportions of people from Black and Asian ethnic groups work in a number of the specific occupations found to have elevated rates of death involving COVID-19.

For the 17 specific occupations among men in England and Wales found to have higher rates of death involving COVID-19 (see Table 6a in the accompanying datasets), data from the APS show that 11 of these had statistically significantly higher proportions of Black and Asian ethnic workers (Figure 12). Examples include:

- among security guards and related occupations, the individual occupation with the highest rate, APS data show higher proportions of men from Bangladeshi or Pakistani ethnic backgrounds (10.9% of men in this occupation compared with 3.1% of men in all occupations), and men from Black ethnic backgrounds (15.0% of men in this occupation compared with 3.2% of men in all occupations)

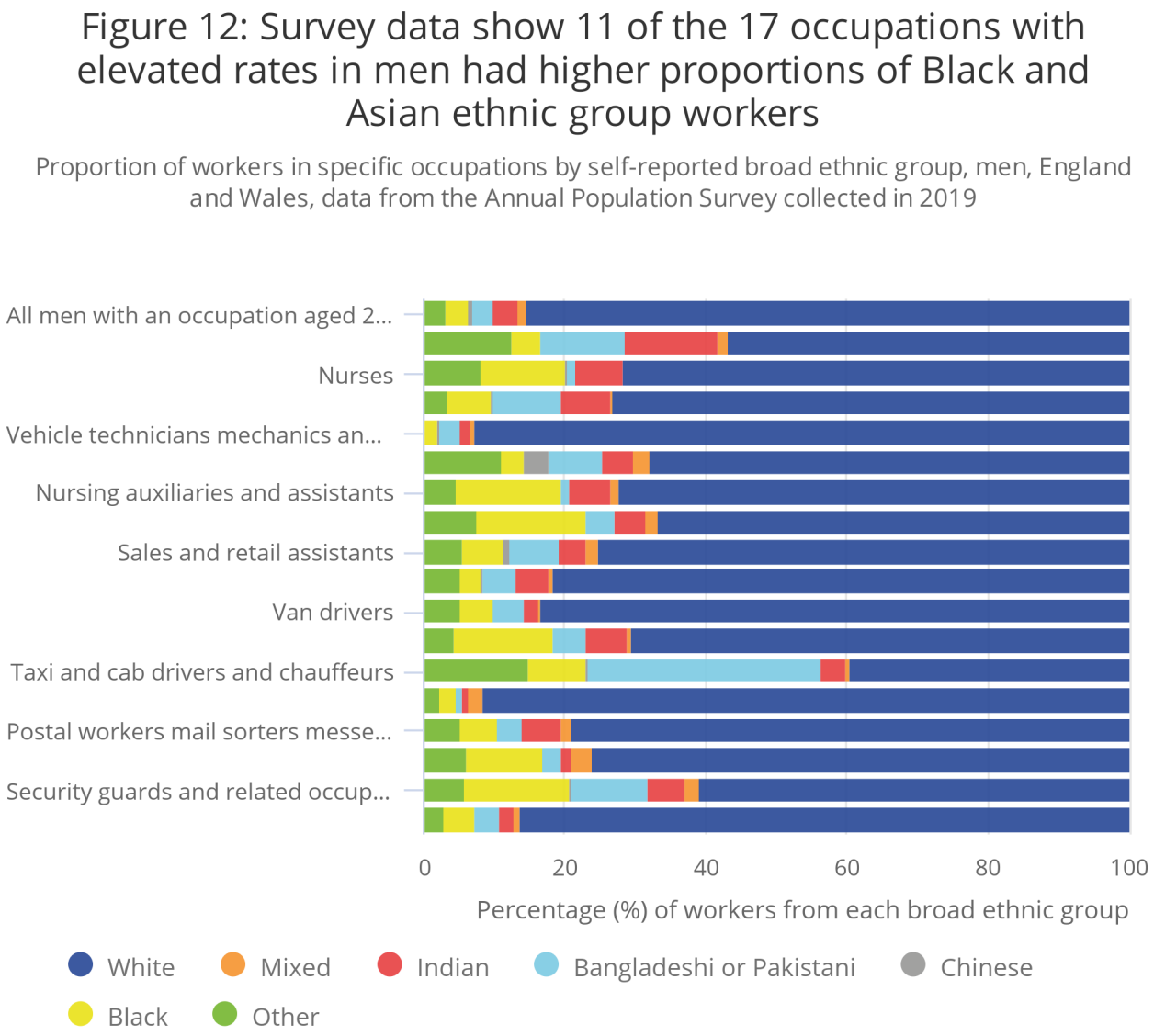
- among taxi and cab drivers and chauffeurs, APS data show higher proportions of men from Bangladeshi or Pakistani ethnic backgrounds (33.0% of men in this occupation compared with 3.1% of men in all occupations), and men from Black ethnic backgrounds (8.4% of men working in this occupation compared with 3.2% of men in all occupations)

- among care workers and home carers, APS data show a higher proportion of men from Black ethnic backgrounds (15.7% of men in this occupation compared with 3.2% of men in all occupations)

- among shopkeepers and proprietors (wholesale and retail), APS data show higher proportions of men from Indian ethnic backgrounds (13.2% of men working in this occupation compared with 3.4% in all occupations), Bangladeshi or Pakistani ethnic backgrounds (11.9% of men working in this occupation compared with 3.1% of men in all occupations), and other ethnic backgrounds (12.7% of men in this occupation compared with 3.3% of men in all occupations)

Figure 12: Survey data show 11 of the 17 occupations with elevated rates in men had higher proportions of Black and Asian ethnic group workers

Proportion of workers in specific occupations by self-reported broad ethnic group, men, England and Wales, data from the Annual Population Survey collected in 2019



Source: Office for National Statistics

Notes:

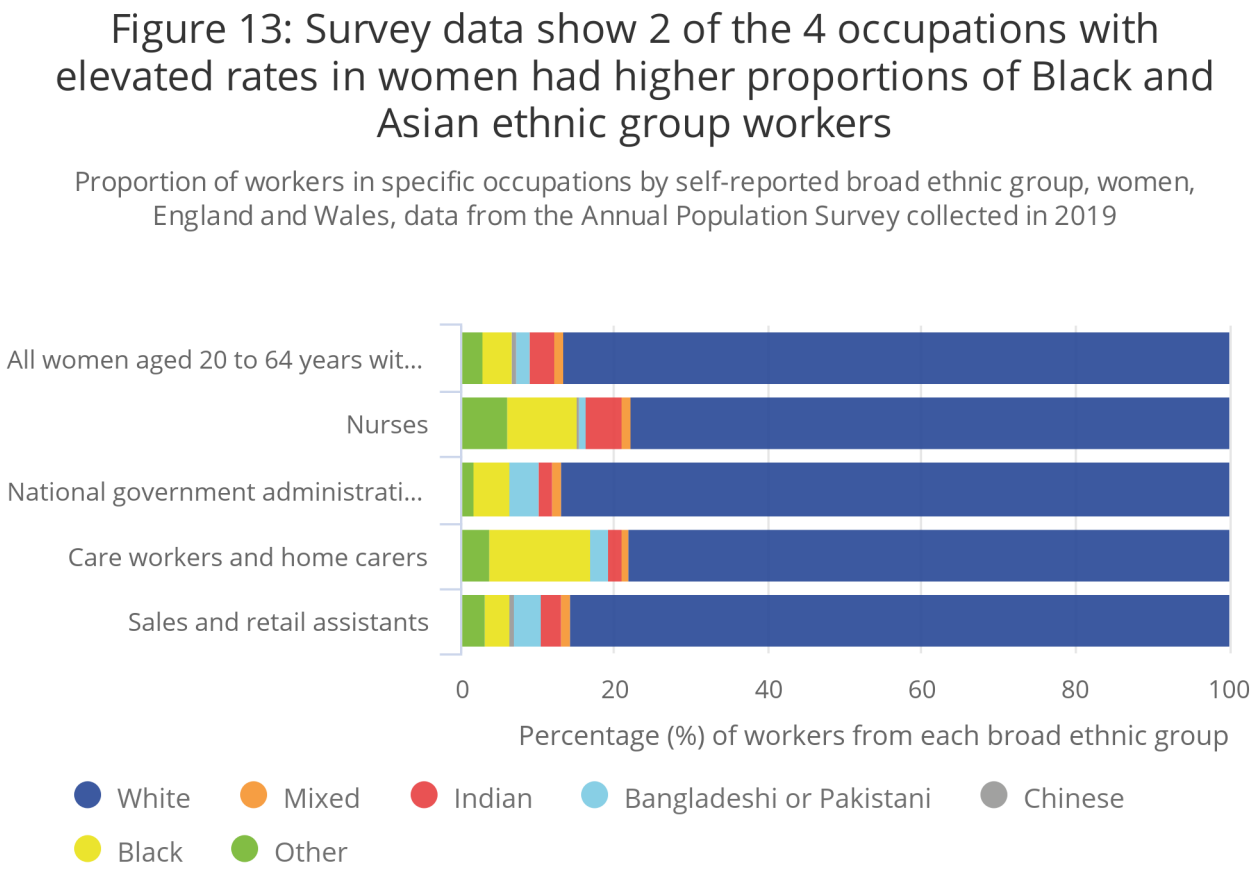
1. Annual Population Survey (APS) data collected in 2019.
2. Figures are for residents of England and Wales aged 20 to 64 years.
3. Occupations defined using the Standard Occupational Classification 2010 (SOC 2010).
4. Estimates were weighted to be representative of the population and take account of survey design and non-response.
5. Definitions of the broad ethnic groups can be found in the glossary.

Of the four specific occupations among women in England and Wales to have higher rates of death involving COVID-19 (see Table 6b from the accompanying datasets), data from the APS show that two of these had statistically significantly higher proportions of workers from Black and Asian ethnic backgrounds (Figure 13).

Among care workers and home carers, APS data show a higher proportion of women from Black ethnic backgrounds (13.2% of women in this occupation compared with 3.9% of women in all occupations). Among nurses, APS data show higher proportions of women from Indian ethnic backgrounds (4.6% of women in this occupation compared with 3.0% of women in all occupations), Black ethnic backgrounds (9.1% of women in this occupation compared with 3.9% of women in all occupations), and other ethnic backgrounds (6.1% of women in this occupation compared with 2.9% of women in all occupations).

Figure 13: Survey data show 2 of the 4 occupations with elevated rates in women had higher proportions of Black and Asian ethnic group workers

Proportion of workers in specific occupations by self-reported broad ethnic group, women, England and Wales, data from the Annual Population Survey collected in 2019



Source: Office for National Statistics – Annual Population Survey

Notes:

1. Annual Population Survey (APS) data collected in 2019.
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. Estimates were weighted to be representative of the population and take account of survey design and non-response.
5. Definitions of the broad ethnic groups can be found in the glossary.

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

Coronavirus (COVID-19) related deaths by occupation, England and Wales
Dataset | Released 26 June 2020
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 25 May 2020 in England and Wales. Figures are provided for men and women.

9 . Glossary

Occupation

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

Broad ethnic group

For the analysis in this bulletin, we combined certain ethnic groups to ensure we could provide robust statistical analysis. Table 1 defines the broad ethnic groups used in this release.

Table 1: Ethnic breakdowns used in this bulletin

Ethnic group	Detailed composition of group
White	White British; White Irish; Other White.
Mixed	White and Black Caribbean; White and Black African; White and Asian; Other Mixed/ multiple ethnic background.
Indian	Indian.
Pakistani or Bangladeshi	Pakistani; Bangladeshi.
Chinese	Chinese
Black	Black African; Black Caribbean; Other Black/ African/ Caribbean background.
Other	Other Asian background; Other ethnic group.

Source: Office for National Statistics

10 . Measuring the data

Deaths data

The figures described in this bulletin include deaths registered in England and Wales between 9 March and 25 May 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 Standard Occupational Classification 2010 (SOC 2010) (see the Glossary).

During the period of analysis, a total of 3,122 deaths and 1,639 deaths involving COVID-19 were registered among men and women aged 20 to 64 years, respectively. Among men, 82.5% of the deaths (or 2,575 deaths) had information on occupation recorded on the death certificate. For women, this figure was 1,025 deaths (or 62.5%). For the 547 deaths with no recorded information on occupation among men, the majority of these were because the occupation was not stated on the death certificate (88.3% of these deaths, or 483 deaths). Among women, the majority of the 614 records with no information on occupation were recorded as: full-time carers of the home and/or dependent relatives or that they were working voluntarily (53.6% of these deaths, or 329 deaths) or the occupation was not stated (44.1% of these deaths, or 271 deaths). Of the records included in the analysis of COVID-19 deaths by occupation, the mean age at death for men was 55.9 years and for women it was 55.1 years.

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

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 statistically significantly higher than the rate among those of the same age and sex in England and Wales. Significance has been determined using 95% confidence intervals, 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. Our previous bulletin showed our data were a good reflection of the numbers being reported in the national media, 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 ethnic group, place of residence or deprivation. We have also published an article that explores possible differences in occupation exposure 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. For the deaths involving COVID-19 described in this release, the median delay between the date of death and the date of death registration was four days.

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 or 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

Deaths registered weekly in England and Wales, provisional
Bulletin | Released 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 data and analysis
Web page | Updated as and 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.

Coronavirus (COVID-19) roundup
Article | Updated as and when data become available
Catch up on the latest data and analysis related to the coronavirus (COVID-19) pandemic and its impact on our economy and society.