

Analysis of Leeds and national data for COVID-19 cases and mortality, using comparisons of available information.

Introduction

This report summarises COVID-19 cases and mortality information from various sources (NHS England, Public Health England, Office of National Statistics (ONS), and Leeds Registrations Office), comparing available data for Leeds to national data where possible. Information used to produce this report: Office of National Statistics (ONS) data from 1st March to 1st May; Leeds registrations data from 1st March to 6th May.

Summary

- COVID-19 is a new disease and while our knowledge and understanding of it is increasing all the time, there are still things that remain unclear. The figures and data presented below give us an idea of the situation to date in Leeds and the evidence emerging from national data, but this picture will become clearer with time as more data and information come to light.
- The majority of deaths in Leeds, where COVID-19 is mentioned, are occurring in those over 65 years, with 65% occurring in those aged 75 – 89 years. This is similar to the national picture.
- National data shows a clear link between number of deaths and deprivation. Many other diseases follow a social gradient and COVID-19 is no exception.
- In Leeds there is emerging evidence of higher deaths rates in more deprived communities: there have been 37 per 100,000 COVID-19 deaths in the 10% most deprived areas of Leeds compared to 23 per 100,000 COVID-19 deaths in the 10% least deprived areas.
- Some of the local data reported here, particularly at individual middle layer super output area (MSOA) level, is based on small numbers. This makes it more difficult to interpret as the additional of one or two deaths can have a large effect on the overall picture
- A high proportion of the Leeds shielding cohort are found within the most deprived areas and 36% of Leeds care home deaths occurred in 20% most deprived areas
- There are likely to be several different ways in which deprivation could increase the risk of death from COVID-19:
 - Underlying health conditions – those in more deprived areas are more likely to have underlying health conditions, smoke, be overweight and have fewer resources and opportunities to follow healthy lifestyle advice.
 - Exposure – those in more deprived areas are more likely to be in low-paid keyworker jobs, be unable to work at home due to job commitments or financial concerns, more reliant on public transport and be living in more crowded and densely populated areas
- National data shows that BAME groups appear to be at greater risk of death from COVID-19, even when underlying medical conditions, age and socio-demographic factors are taken into account. BAME groups who are hospitalised are also more likely to require admission to intensive care than those of white ethnicity.

- The relatively small numbers of deaths and the fact that ethnicity data is not always recorded, make it difficult to draw conclusions about the link between deaths and ethnicity for Leeds. But it does appear that BAME people living in the most deprived areas are experiencing higher rates of deaths than BAME people living in the least deprived areas. This does not show a clear pattern for those of white ethnicity.
- National data suggests that men and women working in certain occupations are experiencing higher rates of deaths involving COVID-19, including those working in social care. Limited local data on deaths by occupation and ethnicity and small numbers mean it has not been possible at this time to indicate whether this holds true for Leeds.
- All data has limitations. The number of positive cases only represents those who have had a formal test whereas deaths recorded as COVID-19 includes all deaths where COVID-19 is mentioned on the death certificate and is based on the clinical judgement of the certifying doctor not just on a positive COVID-19 test results.
- This paper does not let us see the people behind these figures and the real impact COVID-19 has had and continues to have on their lives.

1. Mortality

We are able to monitor trends in COVID-19 mortality trends from three different sources, including local reporting from Leeds City Council registrars and national reporting.¹

This sources are summarised in Table1 & Figure1. There are differences in these figures due to definition and the timeliness of reporting:

- NHS E / PHE provides daily COVID-19 test positive deaths in hospital (LTHT deaths are quoted below)
- LCC registrations include any death recorded by a Leeds registrar for a Leeds resident where the death certificate mentions COVID-19
- ONS provides all deaths for Leeds residents irrespective of location, on a weekly basis 11 days in arrears.

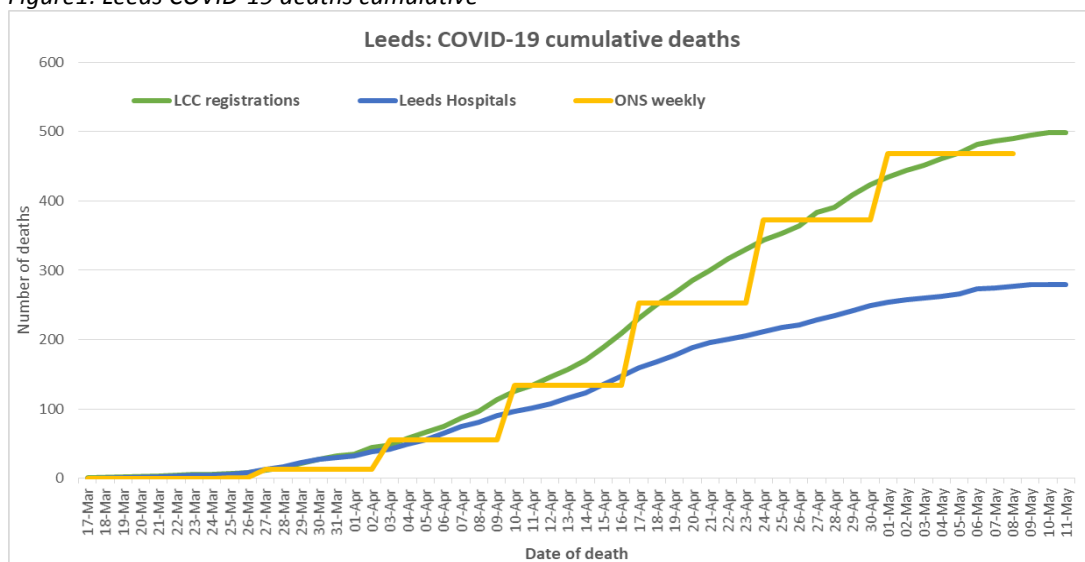
Table1: Total number of deaths reported by various sources

Source	NHS E / PHE	LCC Registration	ONS
Latest date of death	11th May	12th May	1st May
Number of deaths	281	499	468

¹ Deaths by NHS Trust - NHS E website, data 1 day in arrears <https://www.england.nhs.uk/statistics/statistical-work-areas/covid-19-daily-deaths/>

ONS Comparison of weekly death occurrences in England <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/causesofdeath/articles/comparisonofweeklydeathoccurrencesinenglandandwales/uptoweekending10april2020>

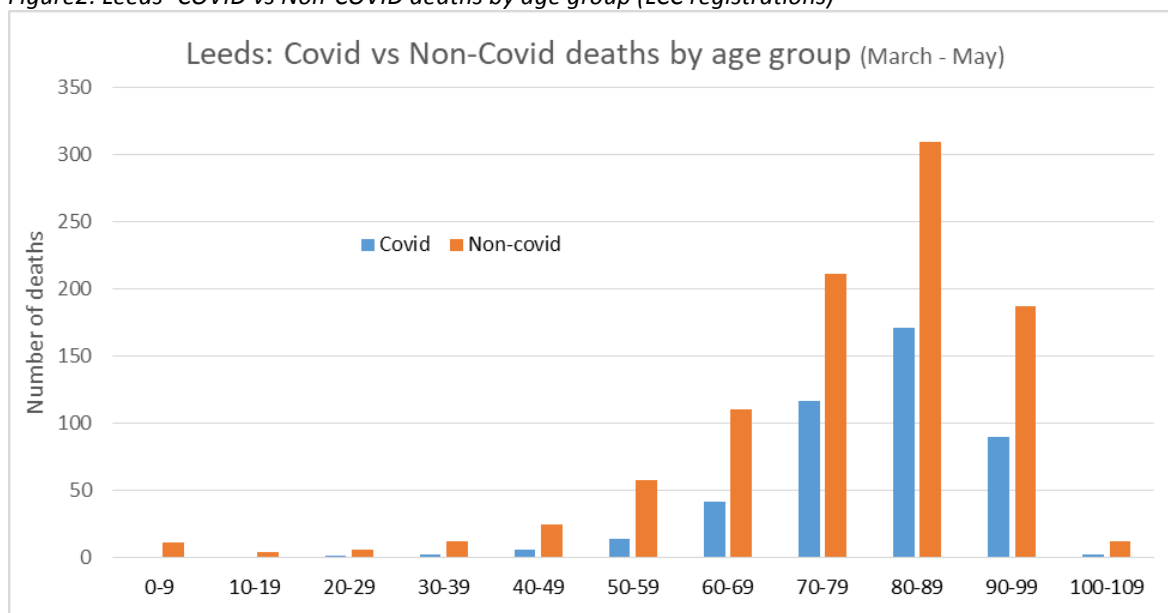
Figure1: Leeds COVID-19 deaths cumulative



Local registration data

Between March 1st and May 6th 2020, there were 1,392 deaths registered with Leeds City Council, of these 32% (445) were COVID-19. **Age group analysis shows COVID deaths in people aged between 70-89 years is higher than other age groups** (Figure 2).

Figure2: Leeds -COVID vs Non-COVID deaths by age group (LCC registrations)



Source: Leeds registrations

Local registration data shows the majority of deaths mentioning COVID are among people aged 65 and over (399 out of 445), **with 65% of these occurring in people aged between 75 – 89 years.**

Location

Latest available information on COVID deaths by place of occurrence shows a high proportion of deaths in hospitals (3 in 5 deaths) and care homes (1 in 3 deaths) compare to other settings (Table 2, ONS weekly deaths). Up to Week 18 (week ending 1 May 2020), 293 (62.6%) deaths occurred in hospital, 145 (31.0%) in care homes, 21 (4.5%) in private homes, and 9 (1.9%) in hospices.

Table 2: COVID-19 deaths by place of death

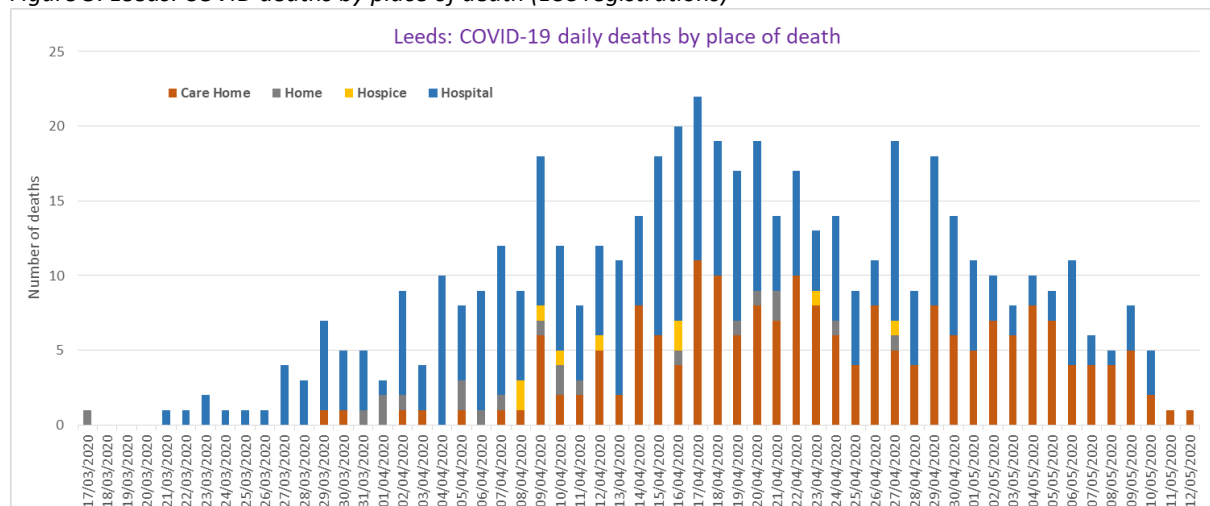
Publication date Latest date of death	NHS E / PHE	LCC Registrations		ONS weekly deaths	
	12th May	12th May		12th May	
	11th May	11th May		1st May	
	n	n	%	n	%
Care Home		191	38.3%	145	31.0%
Home		20	4.0%	21	4.5%
Hospice		9	1.8%	9	1.9%
Hospital	281	279	55.9%	293	62.6%
Total COVID deaths	281	499	100%	468	100%

Source: NHS E, ONS and LCC

LCC Registrar

Local registrations data trend indicates more COVID deaths occurred in hospital followed by care homes than other settings. Since April, the overall number of COVID deaths per day has declined.

Figure 3: Leeds: COVID deaths by place of death (LCC registrations)



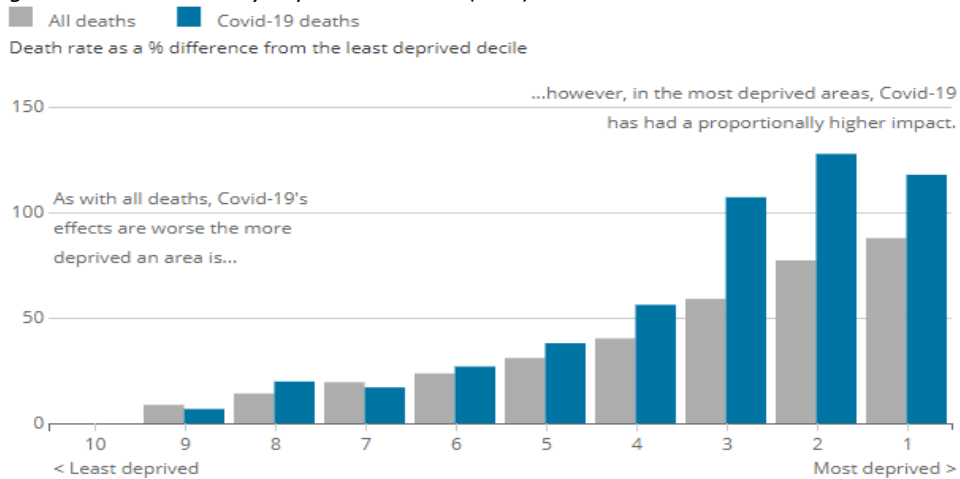
Source Leeds registrations

2. Deprivation

ONS

Provisional data from ONS for England illustrates a higher impact of COVID-19 on mortality in areas of greater deprivation.² The high proportion of deaths in care homes and the location of these homes in less affluent areas may account for some of this difference, but the difference remains a concern.

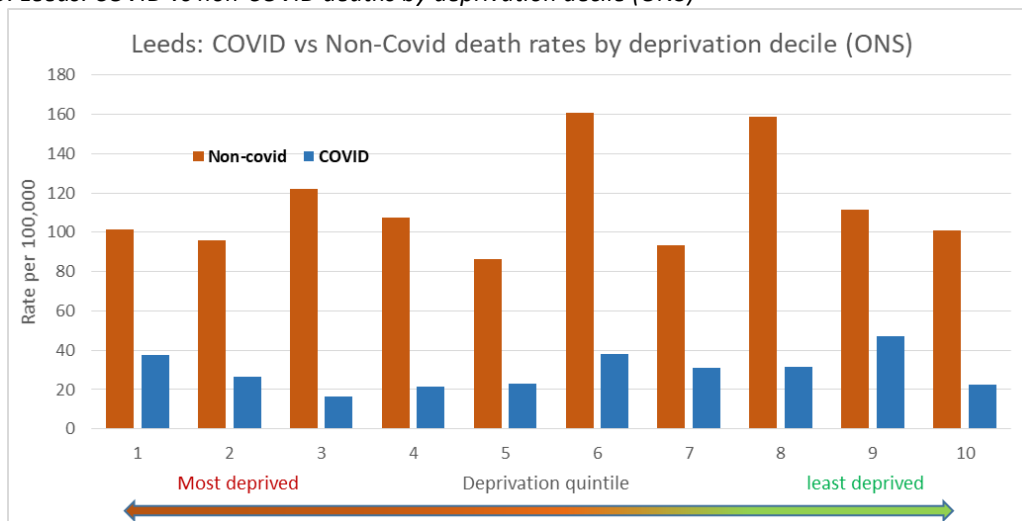
Figure 4: England: COVID deaths by deprivation decile (ONS)



ONS MSOA level

Provisional MSOA level mortality data indicates 37 deaths per 100,000 population from COVID-19 in the 10% most deprived areas of Leeds whereas the rate is 23 per 100,000 in the 10% least deprived areas of Leeds (Figure 5).

Figure 5: Leeds: COVID vs non-COVID deaths by deprivation decile (ONS)



Source: ONS

2

<https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/deathsinvolvedbylocalareasanddeprivation/deathsoccurringbetween1marchand17april#english-index-of-multiple-deprivation>

Link to national ONS data on deaths involving COVID-19 by MSOA:

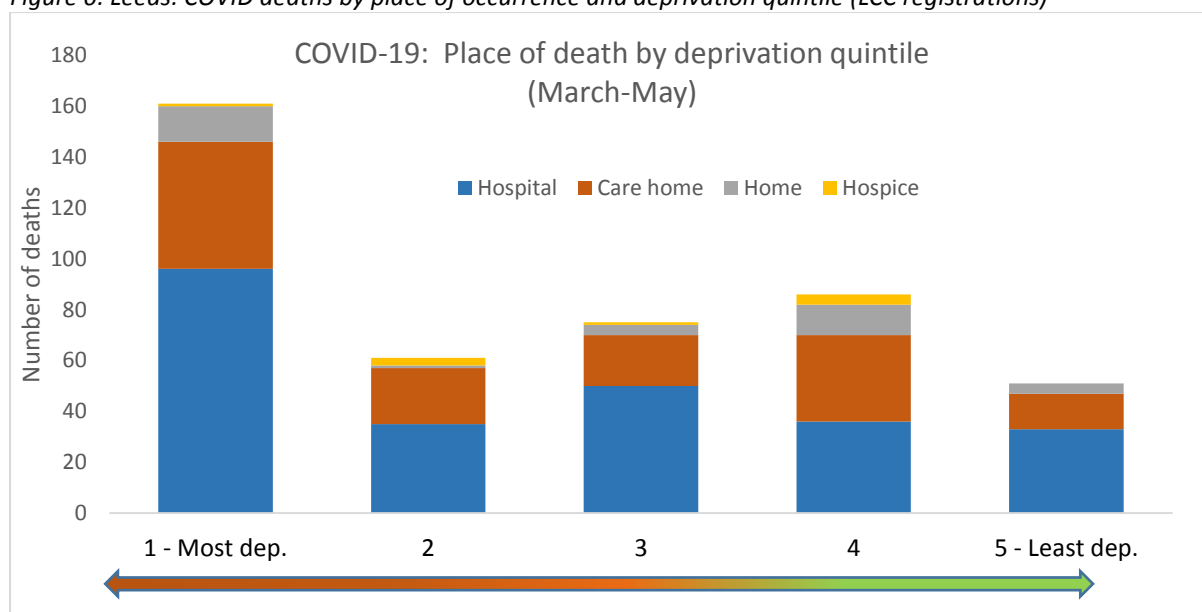
<https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletin/s/deathsinvolvingcovid19bylocalareasanddeprivation/deathsoccurringbetween1marchand17april>

LCC Registrar

The greatest number of deaths where COVID-19 is mentioned occurred in the most deprived quintile. Some care homes are located in areas of higher deprivation and as we know a large number of COVID-19 mentioned deaths occurred in care homes. **However, excluding care home deaths, the proportion of deaths is still highest in the most deprived quintile.**

Overall 37% of COVID deaths are in the 20% most deprived area. 36% of care home deaths are in the 20% most deprived areas and 38% hospitals deaths are from those living in the most deprived areas. Out of 35 home deaths, 14 people (40% deaths) from the 20% most deprived areas died at home.

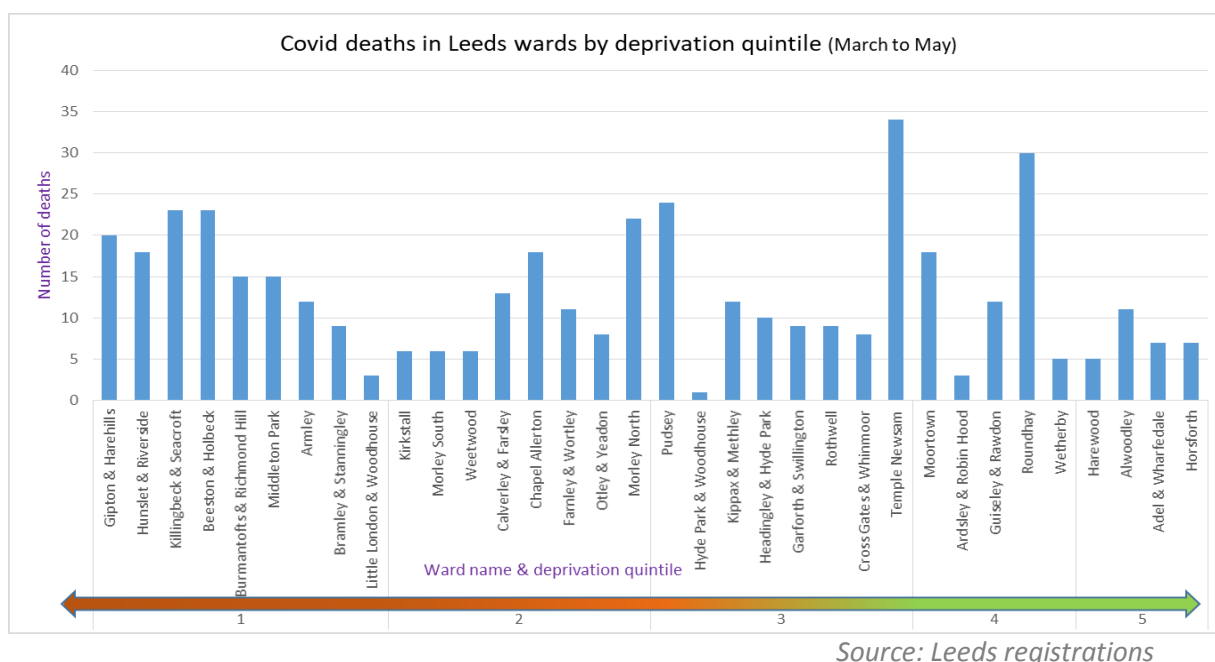
Figure 6: Leeds: COVID deaths by place of occurrence and deprivation quintile (LCC registrations)



Source: Leeds registrations

When reviewing the data by individual wards, 32% of COVID deaths (138 out of 433 deaths) were in the 20% most deprived wards, whereas only 7% deaths (30 deaths) from 20% least deprived area (Figure 7). Postcode data is not recorded on death registrations making it more difficult to match deaths to a particular MSOA or ward. Data at this level is harder to interpret due to small numbers. Other factors apart from deprivation will also influence this data for example some wards may have a higher proportion of older people or may include a care home which has experienced an outbreak.

Figure 7: Leeds: COVID deaths in Leeds wards by deprivation quintile (LCC registrations)



Source: Leeds registrations

3. Ethnicity

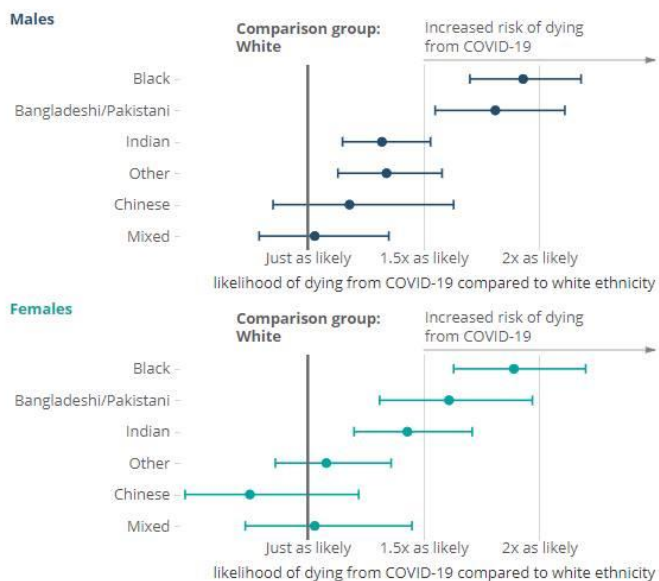
ONS

National data analysis by the ONS has concluded that “When taking into account age in the analysis, Black males are 4.2 times more likely to die from a COVID-19-related death and Black females are 4.3 times more likely than White ethnicity males and females. After taking account of age and other socio-demographic characteristics and measures of self-reported health and disability at the 2011 Census, the risk of a COVID-19-related death for males and females of Black ethnicity reduced to 1.9 times more likely than those of White ethnicity.”³ **Black and Bangladeshi/Pakistani and Indian ethnic groups have a greater risk of COVID-19 related death compared to White ethnicity.** The reasons for this are not yet clear but national work is ongoing to explore this in more detail.

3

<https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/articles/coronavirusrelateddeathsbyethnicgroupenglandandwales/2march2020to10april2020#ethnic-group-differences-in-deaths-involving-COVID-19-adjusted-for-main-socio-demographic-factors>

Panel B - Fully adjusted model



Source: Office for National Statistics

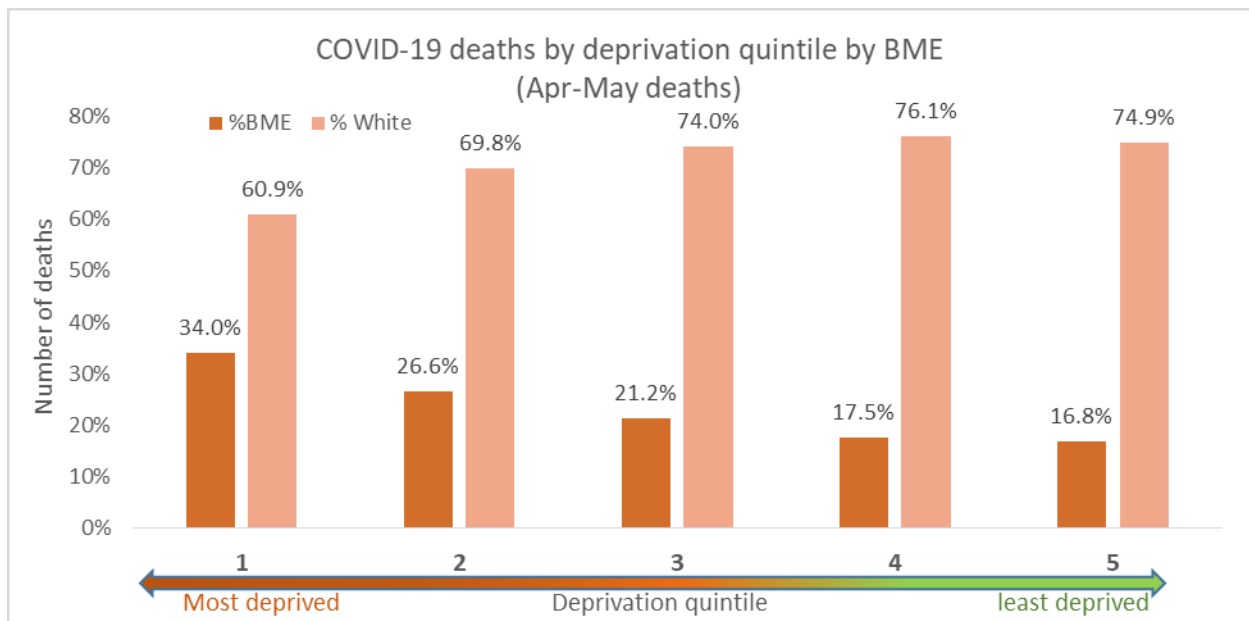
LTHT deaths of COVID-19 positive patients

BAME people represent around 14% of the total population of Leeds. As of 11/05/20, BAME people accounted for 8.1% of all deaths from COVID-19 in hospital. At present there are insufficient numbers of deaths by ethnic group reported from LTHT to draw conclusions on health inequalities for BAME communities using local data.

LCC Ethnicity:

Local COVID deaths data indicates there is clear variation within Black Minor Ethnic (BME) deaths by deprivation quintile. 34% of COVID deaths in BME population from 20% most deprived area where as only 16.8% from least deprived area (Figure 8).

Figure 8: Leeds: COVID deaths by Ethnicity and deprivation quintile (LCC registrations)



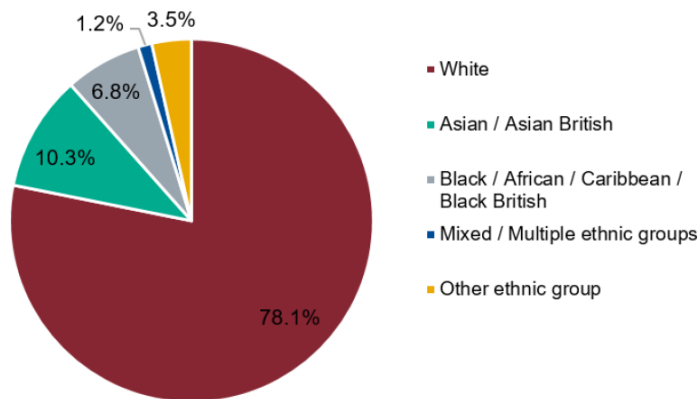
Source: Leeds registrations

PHE national data on ethnicity

86% of the total population of England and Wales are White, with 7.5% Asian and 3.3% Black. This suggests that Black people are over represented in numbers of confirmed cases of COVID-19 and White people are underrepresented. Year: 2020 Week: 18.⁴

Confirmed cases in England Year: 2020 Week: 18

Figure 3: Ethnic group of laboratory confirmed COVID-19 cases (n= 78,906)



PHE national data on hospitalisation

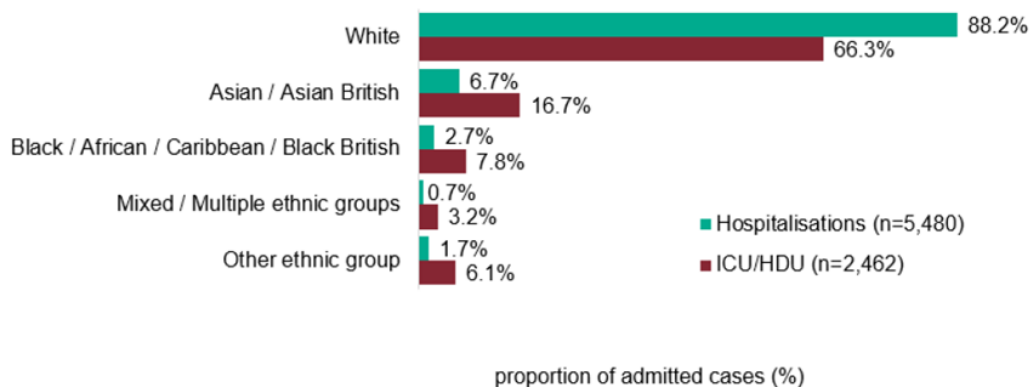
Nationally a higher proportion of people from non-White ethnic groups require ICU/HDU care than the White ethnic group compared to the proportion admitted

⁴

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/882420/COVID19_Epidemiological_Summary_w18_FINAL.pdf

COVID-19 Hospitalisation in England Surveillance System (CHES)

Figure 16: Ethnic group of new hospitalisations (lower level of care) (n=5,480) and ICU/ HDU (n=2,462) COVID-19 cases reported through CHES, England

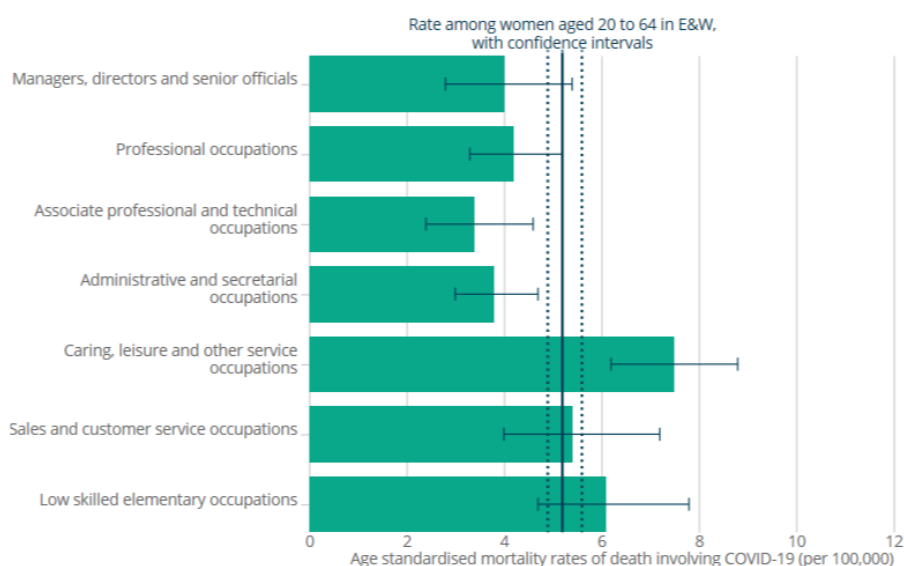


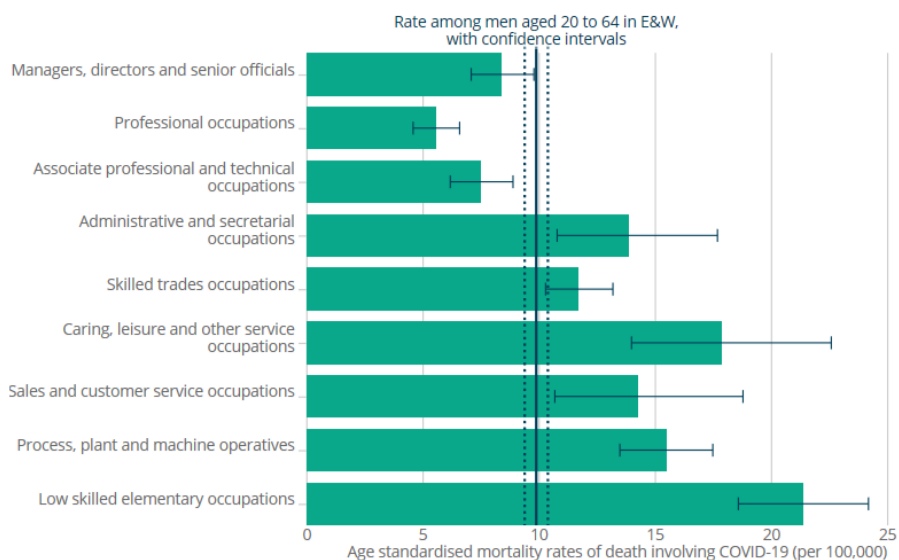
4. Key workers

National data

The ONS has looked at COVID-19 deaths by occupation (where this was recorded). Elementary occupations had the highest age standardised death rates, followed by caring, leisure and other service occupations. Male road transport drivers had some of the highest rates of death involving COVID-19, for women this was highest for those in the caring, leisure and other service occupations. Rates of death for male and female social care workers were statistically significantly higher than those of the same age and sex in England and Wales.

Age-standardised mortality rates of death involving the coronavirus (COVID-19) in England and Wales, deaths registered up to, and including, 20 April 2020





LCC registrar

Local deaths registration data on key work groups only provides small numbers that can be readily classified as key workers. These indicate that 7% of Leeds COVID deaths (31 people out of 445) are in key worker groups, but this may be higher due to the difficulty in matching the information on registrations to recognised key worker roles (Table 3). Of those data retrieved on key workers for Leeds, the highest proportions are from the health and social care sector (58%) and transport (16%). It was not possible to review number of deaths by occupation and ethnicity due to small numbers and incomplete data.

Table 3: COVID-19 deaths by key worker group

Key worker group	Deaths	% of key worker deaths
Health & Social care	18	58.1%
Transport	5	16.1%
Police	3	9.7%
Education	2	6.5%
Bank/finance	1	3.2%
Defence	1	3.2%
Food/retail	1	3.2%

Source: Leeds registration

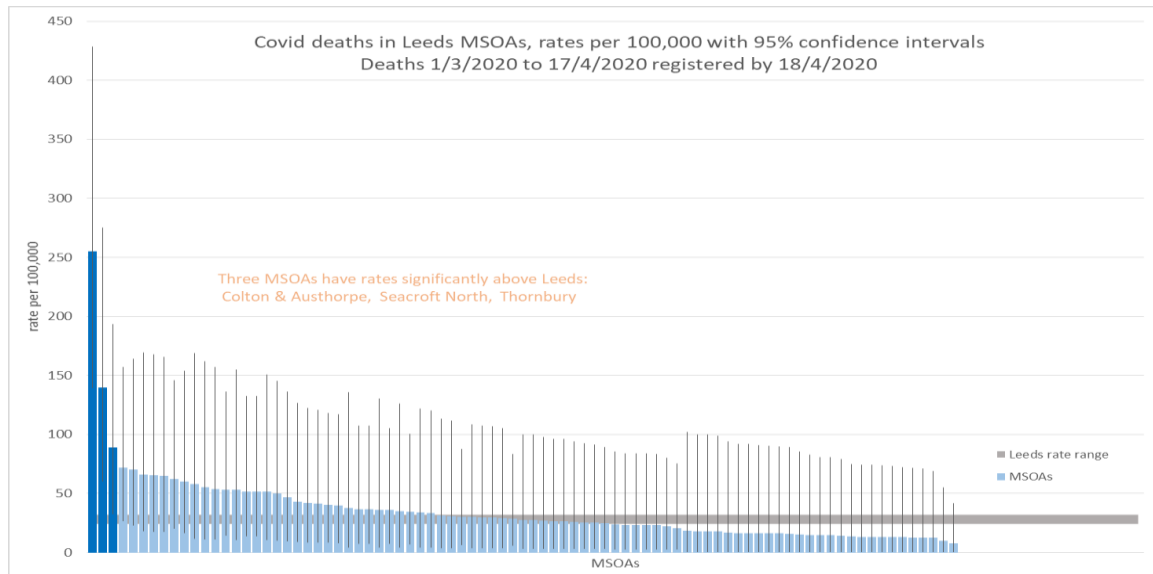
5. Geography

ONS MSOA counts

MSOA level COVID death rates show the difference in death rates due to COVID across Leeds (Figure 9). Three MSOAs show significantly higher rates than the Leeds average but the numbers at MSOA

level are small, meaning that a small increase or decrease could alter the picture. Wide confidence intervals are due to small numbers.

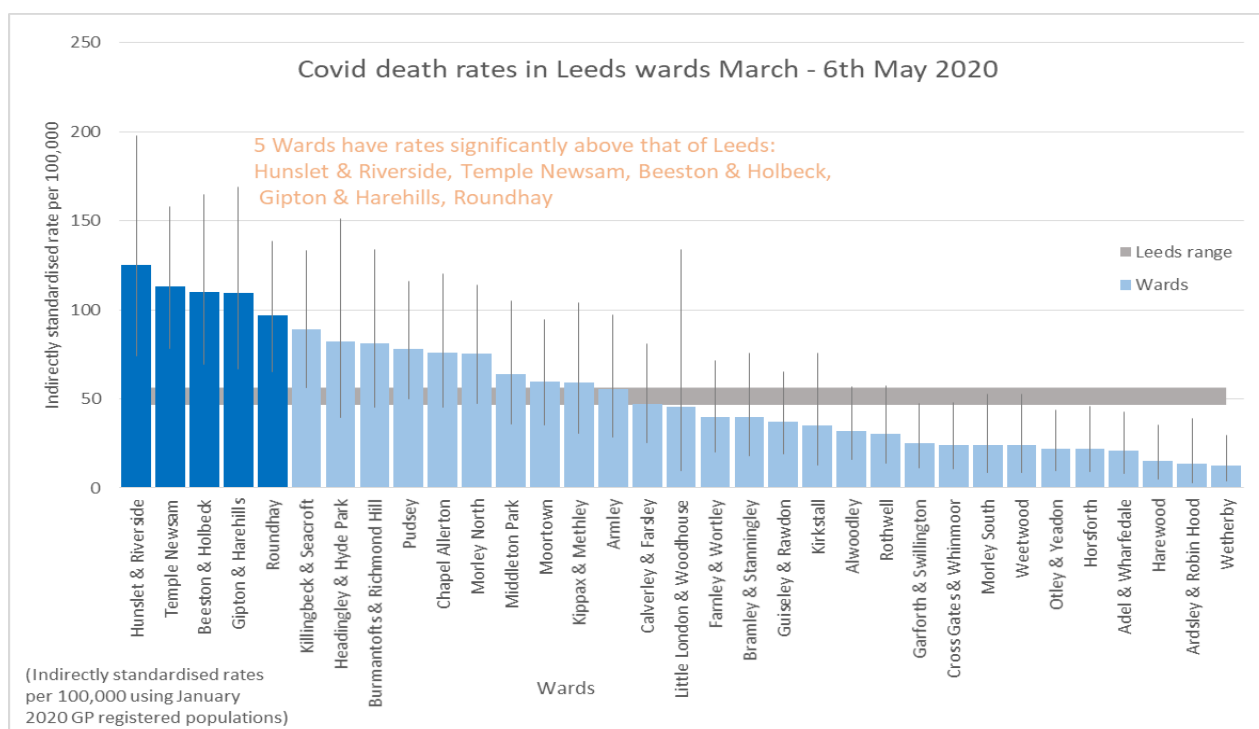
Figure 9: Leeds: COVID deaths by MSOA (ONS)



Source: ONS

Ward level ISR (Indirectly standardised rates) shows there were 5 wards (Hunslet & Riverside, Temple Newsam, Beeston & Holbeck, Gipton & Harehills, Roundhay) in Leeds with significantly high death rates than others (Figure 10). It should be noted that three of these wards include some of the most deprived areas in Leeds and some of the numbers are small.

Figure 10: Leeds: COVID deaths by ward (ISR) (Leeds registrations)



Source: Leeds Registrations

6. Shielded cohort

The number people in the shielded cohort has recently increased, local BI teams are working to understand the change in criteria for inclusion in this cohort. For the Leeds the cohort increased from 18,050 to 45,713. The number of shielded people both identified and self-registered is higher in the most deprived areas (figure 11). The proportion of people self-registering is higher in less deprived areas, suggesting there may be higher levels of both met and unmet need in the most deprived areas.

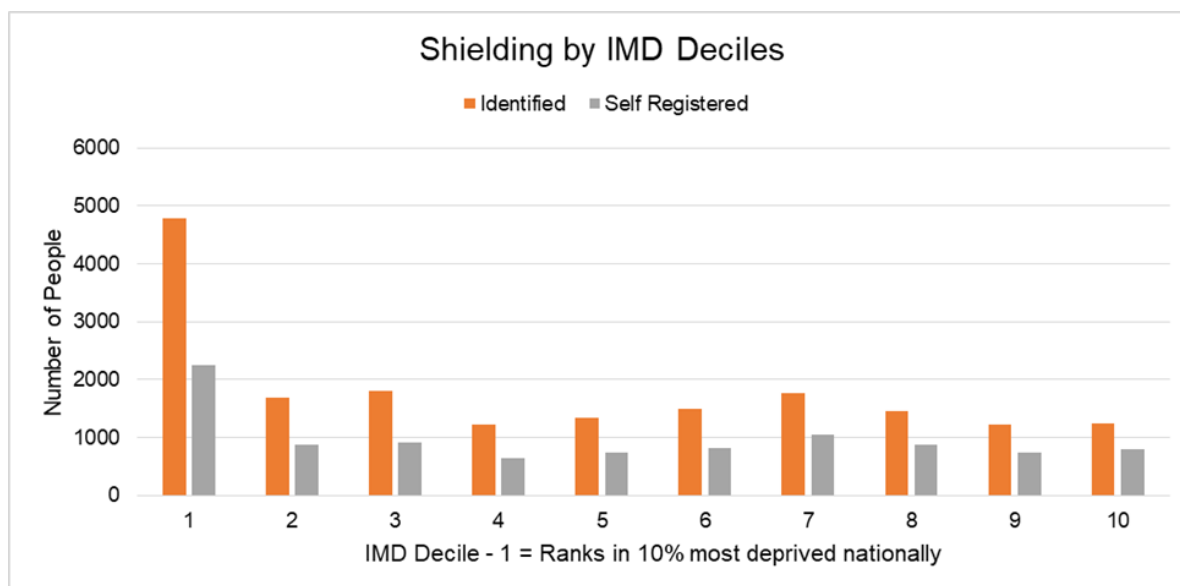


Figure 11: Leeds: Number of people shielding by deprivation decile

Report prepared by Suresh Perisetla, Public Health Intelligence Manager, Frank Wood, Chief Analyst and Ruth Speare, Consultant in Public Health on behalf of Victoria Eaton, Director of Public Health. 18th May 2020