CITY INTELLIGENCE

The demographic impact of Covid-19 in London

3 June 2020

Introduction

This briefing brings together a range of data published on the demographic impact of Covid19 to understand how the city has been affected. This briefing covers what is known about Covid-19 cases, before looking at mortality. It provides comparisons with other cities and some of the issues which affect the accuracy of such comparisons, it summarises the emerging evidence of unequal impacts for different demographic groups, especially ethnicity and workers in particular occupations and looks at the emerging data on current and past infections.

Key findings

- London emerged as an epicentre of the pandemic early in its spread across the UK, with a first positive test result on the 11th February 2020 and the first death reported in the first week of March
- Prior to lockdown on 23rd March, nearly 40% of England's confirmed cases were in London.
- London reached its daily peak of just over 1,000 tests with a positive result on 2nd April
- As of 1st June, there had been a total of 26,968 confirmed cases in London – now representing less than 18% of all confirmed cases in England
- Croydon and Brent have the highest total number of confirmed cases by borough
- Up to 22nd May 8,034 London residents were registered as having died with Covid-19 mentioned on their death certificate, measured by ONS weekly deaths estimates
- In London, the peak week for Covid-19 related deaths occurred during the week ending 10th April, with 1,931 in a single week (a week later than the peak for cases)
- In the week to 22nd May, the number of deaths had reduced to 138.
- Of the total Covid-19 related deaths recorded, 74 per cent of London deaths have occurred in hospitals, 16 per cent in care homes, with 8 per cent at home and two per cent in a hospice or elsewhere, which would include other communal establishments such as prisons
- Based on the twelve weeks between 29th February and 15th May, Brent recorded more Covid-19 related deaths than any other borough, at 467. This was 52 per cent of all deaths in the borough over this period.
- 40 per cent of all deaths in London over the twelve week period were recorded as being related to Covid-19 which was higher than for any local authority outside London.

- Excess deaths, comparing the average number of deaths in previous years with the total number of deaths from all causes for the same period this year, show a total of 46,000 excess deaths in England and 9,000 in London between 14th March and 22nd May.
- The Financial Times has used a measure of excess deaths to compare major world cities. As of 28th May, this shows that London has recorded 130 per cent more deaths than average, compared with 98 per cent for Ile de France, incorporating Paris. Both figures are now decreasing as they move further past the peak.
- New York City is recorded in the FT report as having 22,600 excess deaths, over 360 per cent more than normal
- The Covid-19 outbreak in the UK has had unequal impacts on different groups of the population. It quickly became well-established that older people, men, and people who have underlying health conditions (particularly diabetes, obesity, heart disease and chronic lung conditions) were at disproportionate risk of developing a severe infection and dying.
- An increasing body of evidence has merged to show how Black and Minority Ethnic (BAME) groups are over-represented both among those being diagnosed with the disease, among the patients who are being hospitalized with serious cases of Covid-19 and also in relation to deaths
- A new report from Public Health England found that diagnosis was much higher among the England's Black residents, with Black men three times as likely as White men to have a confirmed diagnosis
- Among those with confirmed cases, deaths were twice as high for the Bangladeshi community compared with the White British population, while most other BAME groups also had a higher than average rate of deaths.
- Occupations of workers make a difference to exposure to Covid-19 with nurses and care workers, security guards, taxi and bus drivers having much higher numbers of deaths relating to Covid-19.
- 24 in 10,000 the private household population of England had the Covid-19 infection at any given time between 11th May and 24th May
- Infection rates are higher among healthcare and care workers and also a little higher for others working outside the home, and there is some evidence that the 20-49 age group has higher infection rates than the 50-69 age group.

Key changes in the last week

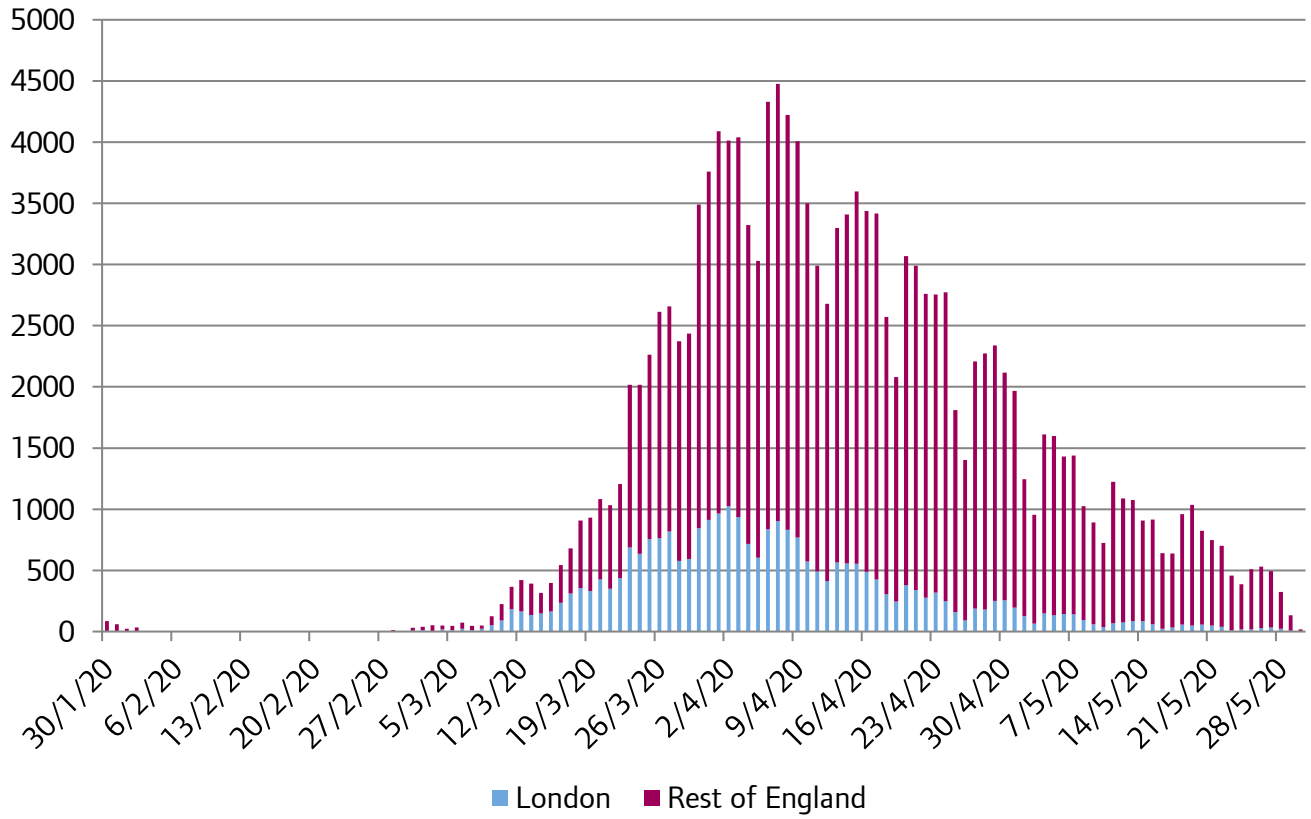
- The number of cases testing positive in London has fallen further, with the number of new daily cases below 50 each day.
- The weekly number of deaths in London with Covid-19 mentioned on the death certificate has fallen to 138 for the week ending 22nd May.
- The weekly number of deaths from all causes is close to the average for the last five years.
- A new study from PHE showed higher rates of infection among Black men and women and higher rates of death among most BAME groups than among White British residents in England with a confirmed diagnosis.
- The study also finds higher numbers of deaths from all causes among migrants, particularly those born in Central and Western Africa.
- The infection survey across England as a whole found that between 11th May and 24th May, 24 per 10,000 people living in private households had Covid-19 at any given time. This is likely to be slightly lower in London. Healthcare and care workers and people who work outside the home were found to be significantly more likely to be infected, and younger adults had higher rates than the 50-69 age group.
- New data from Public Health England suggests that 17.5% of London's population would have tested positive for the presence of Covid-19 antibodies in their blood during the week ending 3rd May 2020, which is higher than in any other English region.

The spread of Covid-19 cases

Although the first confirmed cases of the Covid-19 pandemic in the UK were outside the capital, London emerged as an epicentre of the pandemic early in its spread across the UK. The first case in London tested with a positive result was on 11th February 2020. Prior to lockdown on 23rd March, there were 3,518 cases of Covid-19 in London which had tests with a positive result. At that point, 39% of England's confirmed cases were among people who lived in London. After this date, the cases with a positive test result in the rest of England grew more rapidly than in London. London appears to have reached its daily peak of 1,024 tests with a positive result on 2nd April, whereas for the rest of England, the peak was 3,572 cases testing positive on April 7th.

To date, there are 26,986 confirmed cases in London, which is less than 18% of all cases testing positive in England (as at 1st June), though the figures for the most recent dates may still change. London had an earlier peak of infections than in the rest of England, but as the testing capacity was very limited early on in the UK's Covid-19 experience this is likely to have been a factor in the number of confirmed cases leading to an underestimate that may have impacted even more on the figures for London than elsewhere. Many people with relatively mild symptoms or no symptoms were not tested at all. It is important to note that those with symptoms who were assumed to have Covid-19 but were not tested were not recorded and are not included in these figures. Estimates of these may never be known. Testing capacity increased over time, but the largest increases in testing capacity were seen after the infections appeared to be reducing. Data for the most recent dates shows that the number of new cases was decreasing rapidly, though this has decrease has now slowed as the numbers eligible for tests has increased and the numbers are now at much lower levels, at well below 100 per day in London and below 50 new cases per day in London for the last ten days, though these numbers may change.

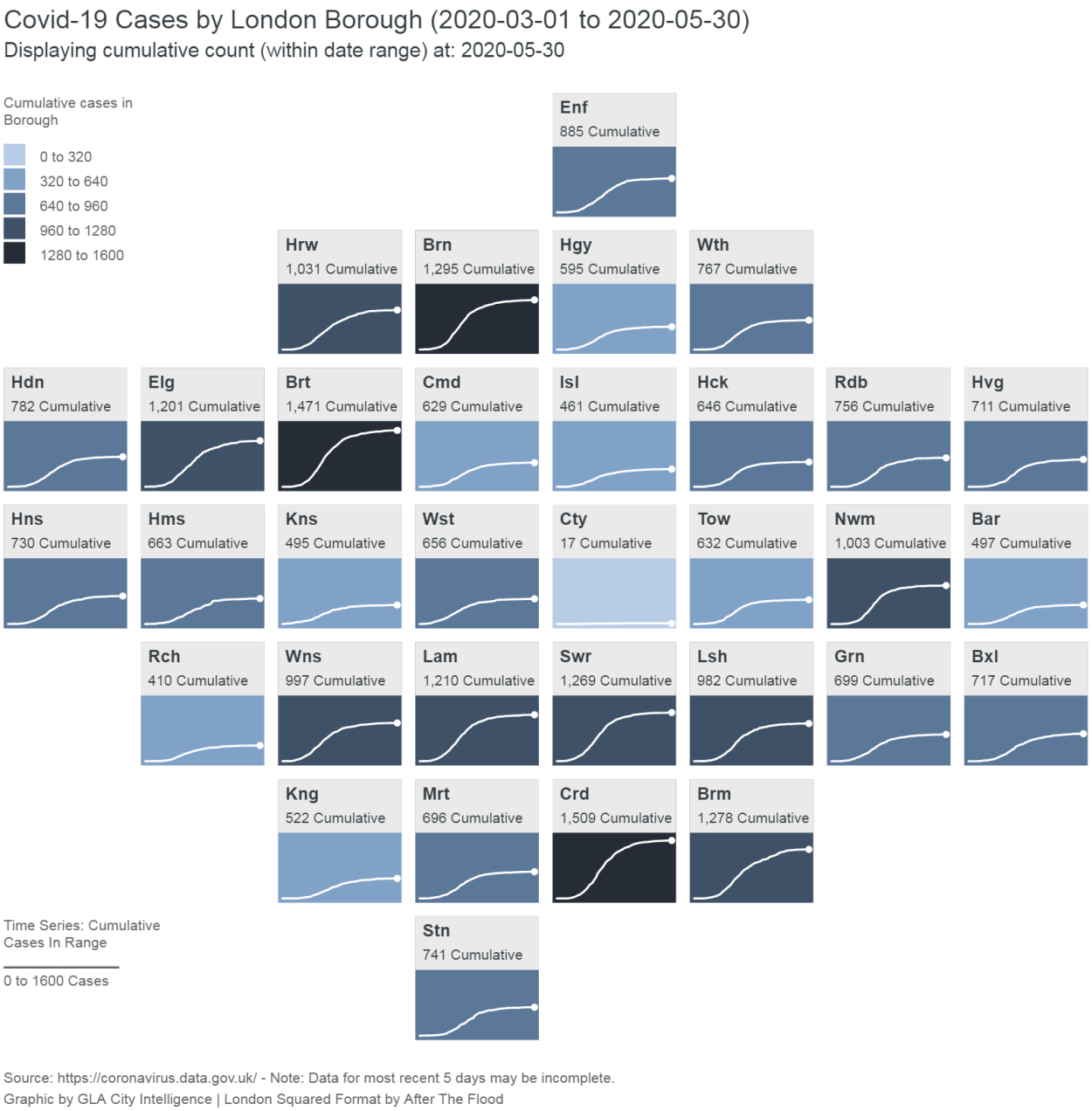
Figure 1 Confirmed cases of Covid-19 by date of swab, London and Rest of England



Source: PHE COVID-19 Dashboard (snapshot taken on 1st June – data to 30/5)

The number of confirmed cases varies widely by borough, as shown in Figure 2. Understanding the implications is far from straightforward, as again, many cases were not tested and therefore not confirmed. In addition, the total population of boroughs ranges from around 160,000 to 400,000. Croydon and Brent have the highest number of confirmed cases, though both also have large populations, they still have among the highest proportion of confirmed cases per capita, along with Harrow, Southwark and Bromley. Islington, Richmond, Tower Hamlets and Haringey are among those with relatively low numbers of cases with positive test results. There are no obvious differences between boroughs in the timeline of infections, with all boroughs seeing an increase in the number of confirmed cases over the last week, though the numbers of new cases are now very small. The largest increases in confirmed cases reported since the previous edition of this briefing was published on Friday 22nd May have been in Brent (30 cases) and Bromley (25 cases); nine of London's 33 boroughs have seen fewer than ten new cases during this period.

Figure 2



Source: https://coronavirus.data.gov.uk/ - Note: Data for most recent 5 days may be incomplete.
Graphic by GLA City Intelligence | London Squared Format by After The Flood

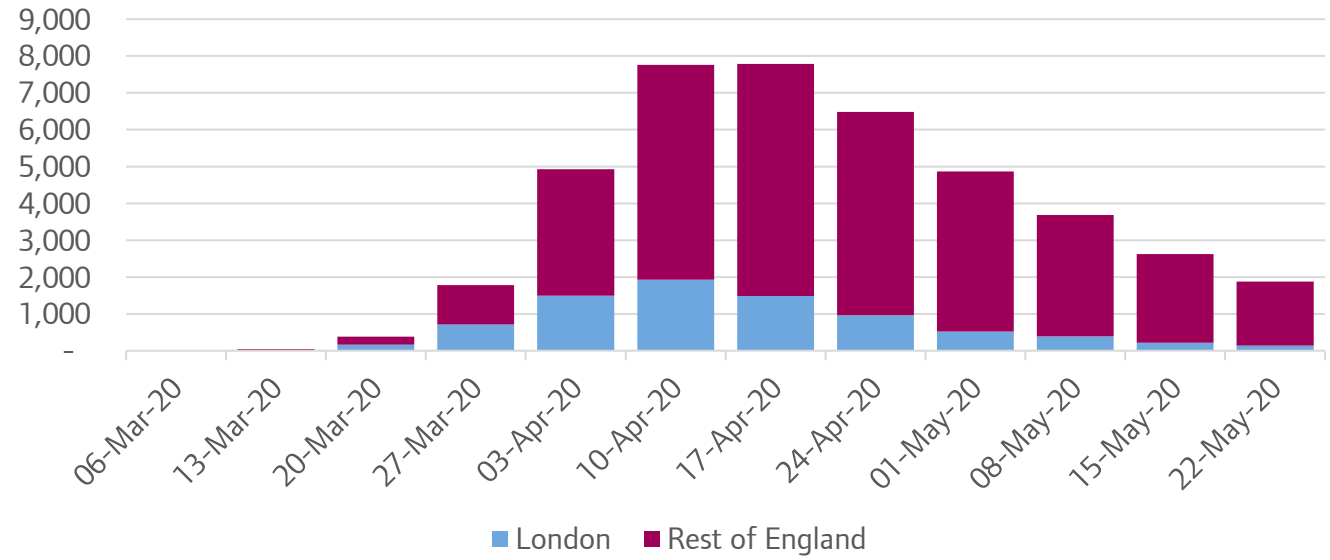
Outcomes of Covid-19 infections

The vast majority of those who contract the disease recover, particularly those who suffer with mild symptoms. There are, however, no numbers available for this in the UK. For some who are infected, the disease is more serious and can lead to admission to hospital. The numbers of hospital patients with confirmed Covid-19 is reported daily and in London is now below the number reported in the first briefing for 19th March. In all other regions and parts of the UK, the number is still several times higher than for 19th March. Some people are affected so badly that Covid-19 leads to death either directly or through other infections, such as pneumonia or worsening of other conditions such as heart disease. Globally, estimates of the mortality rates have ranged from around one per cent to ten per cent of those infected. This uncertainty is due to the fact that not everyone with the disease is tested, particularly those who do not show any of the recognised symptoms and demonstrates the difficulties in measuring any aspect of Covid-19. The most widespread estimates seem to be a mortality rate of around three per cent or lower of people with the disease.

Mortality in numbers

In the UK, the numbers of deaths are reported in different ways and so the number of deaths due to Covid-19 is equally difficult to give precise figures for. The first deaths of Londoners recorded as having Covid-19 occurred in the first week of March, the same week that 3 other deaths in the UK occurred due to the disease. In London, the peak week for Covid-19 related deaths occurred during the week ending 10th April, with 1,931 in a single week in London. This is just one week after the peak number of tests carried out in London testing positive for Covid-19. For the latest available week, ending 22nd May, the number of deaths from COVID-19 recorded in London so far was 138, which is again lower than the figure recorded the previous week (218). In total, up to 22nd May, 8,034 London residents were registered as having died with Covid-19 mentioned on their death certificate. This number is still subject to change as more deaths are registered. Not everyone with Covid-19 mentioned on their death certificate will have been tested, so in some cases it is suspected rather than confirmed, and in some cases Covid-19 may have been a supplementary or contributory infection, but not the direct cause of death. This figure represents more than eight deaths for every ten thousand residents in London. It is also worth noting that guidance on completing death certificates and how the deaths were counted changed so for some of the deaths earlier in the pandemic, prior to 31st March, relating to Covid-19 will have been missed.

Figure 3 Deaths recorded in each week of 2020 by date of occurrence, London, Rest of England



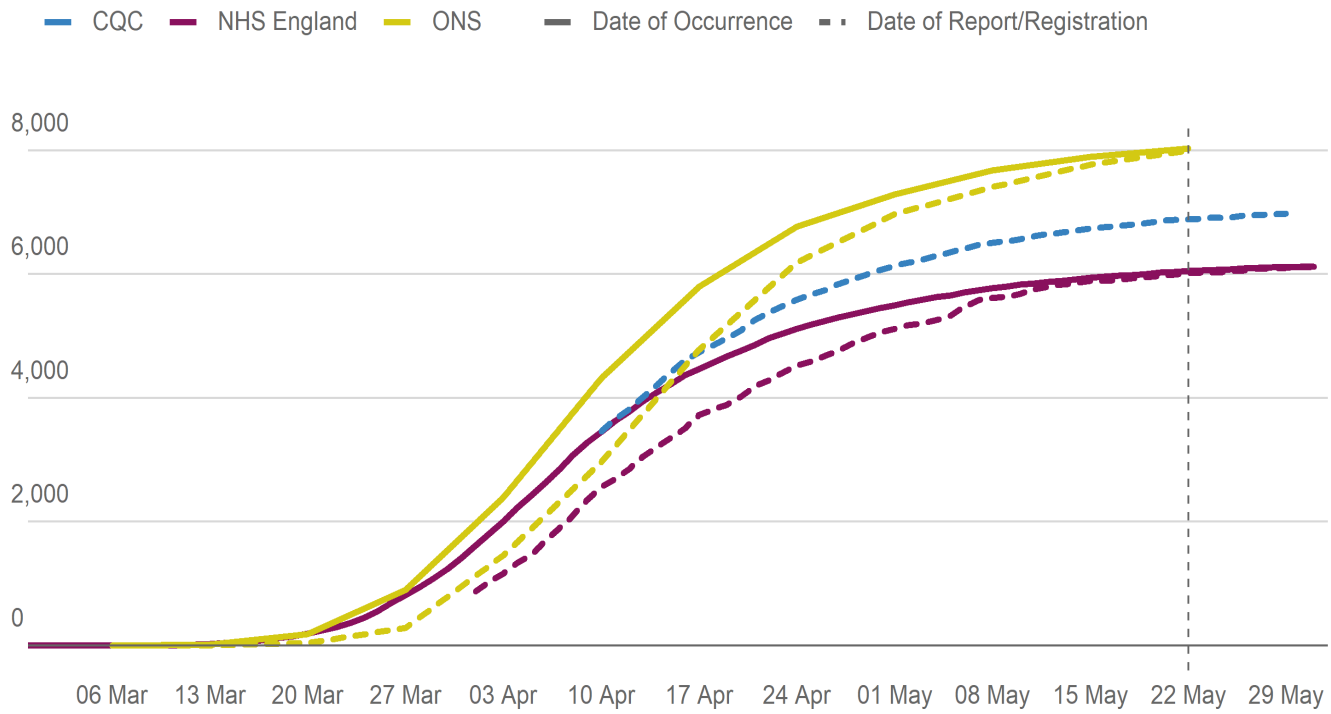
Source: ONS weekly deaths with Covid-19 mentioned on death registration

This number of deaths is higher than for any other region in the UK. The timeline of deaths occurring in the rest of England reflects that of the cases, with the peak number of deaths so far recorded occurring in the week after the peak number of deaths in London. The proportion of deaths registered as involving Covid-19 in England that were in London has followed a similar pattern to the cases, with 40 per cent in the first few weeks but only seven per cent of all deaths mentioning covid-19 for the latest week being Londoners. The proportion of the total population that are registered as dying with Covid-19 mentioned on the death certificate is nearly twice as high for London (8.96 per 10,000) as for the South West of England (4.60 per 10,000). The proportion for the North East is now higher than for London, with more than nine people per 10,000 residents having died due to Covid-19. The figure for the North West (8.95) is almost the same as for London, while it is only marginally lower for the West Midlands (8.54). These areas continue to report higher numbers of new cases than London.

While these figures provide a more complete picture of deaths where Covid-19 was a factor, there is a time lag due to delays in formally registering deaths and so these data are only available to 22nd May and are subject to change as further death registrations are completed. Out of all the deaths recorded from Covid-19, 74 per cent of London deaths (5,975) have occurred in hospitals, 16 per cent in care homes, with 8 per cent at home and 2 per cent in a hospice or elsewhere, which would include other communal establishments such as prisons. For the latest week, up to 22nd May, a third of deaths related to Covid-19 in London were in care homes, though the numbers in all setting had decreased on the previous week's figures. Across England as a whole, 64 per cent of Covid-19 related deaths have been in hospital and 29 per cent in care homes.

The number of deaths occurring in hospitals is also reported daily, and more recently, the number of deaths in care homes is also reported daily. The number of deaths reported in London's hospitals with a positive Covid-19 test result is 5,969 (as at 2nd June), with a further 168 where Covid-19 was mentioned on the death certificate; this equates to 22 per cent of the total Covid-19 related hospital deaths in England.

Figure 4 Cumulative deaths from Covid-19 in London, showing different sources of data



Source: ONS weekly deaths, NHS England COVID-19 Daily Deaths and Care Home deaths reported to the CQC
NHS England data includes deaths with no postive test from 25 April
Graphic by GLA City Intelligence

A total of 860 (reported to 29th May) deaths relating to Covid-19 have been reported to the Care Quality Commission as taking place in care homes across London. 22 of the deaths in care homes and 9 of the hospital deaths[1] have been reported since 22nd May, though due to some administrative corrections, some of these relate to deaths occurring prior to that date. The number of deaths due to Covid-19 reported in all settings in London is decreasing rapidly.

Mortality by borough

Data for the number of deaths registered in each borough with Covid-19 mentioned on the certificate is available covering the period 29th February to 22nd May. This was past the peak of deaths in all boroughs, but the timeline may vary between boroughs, so the figures should be treated with some caution. Over this period, Brent recorded more Covid-19 related deaths than any other borough. Of the total of 8,034 deaths in London, three boroughs had more than 400 each, with 467 were in Brent, with 462 in Croydon and 442 in Barnet. The lowest number of deaths recorded in this period in any London borough from the pandemic, apart from the City of London, was 120 deaths in Kensington & Chelsea.

The different population sizes and structures of London boroughs mean that figures for the numbers of deaths are difficult to interpret, as it is well known that people in older age groups have higher mortality rates from Covid-19. Comparing the Covid-19 related deaths to deaths from all causes mitigate this to some extent, though using Age Standardised Mortality Rates (ASMRs) allows for comparisons which take into account such differences across the populations of different areas. These are currently only available for the period up to 17th April, so are not included in this briefing.

Brent is the only borough where more than half of all deaths from the beginning of the pandemic to the latest date available were mentioned Covid-19 on the death certificate. This proportion is starting to decrease as the number of deaths from Covid-19 is now small. For the other two boroughs with high numbers of Covid-19 related deaths, this was much lower as a proportion of all deaths than the proportion in Kensington & Chelsea (44 per cent), at 43 per cent for Croydon and 41 per cent of all deaths in Barnet. These are both still higher than the 40 per cent of all deaths in London occurring during the same twelve-week period as a whole being registered as related to Covid-19.

[1] These figures differ from the weekly figures in several ways. They are reports of deaths in hospitals in London, so do not include all Covid-19 related deaths occurring outside of hospital settings. They could include non-London residents being treated in hospitals within London and miss some London residents being treated outside the capital, but these numbers are likely to be small. Most deaths involving Covid-19 have occurred in hospitals, but while these appear to be past the peak, and reducing rapidly, Covid-19 related deaths in care homes have made up a much higher proportion of all Covid-19 deaths in London in the most recent figures available.

Table 1 Deaths between 29th February and 22nd May in London Boroughs

	All causes	COVID 19	Percentage of all deaths that are related to Covid-19
Brent	893	467	52.3
Harrow	767	380	49.5
Haringey	548	258	47.1
Newham	632	295	46.7
Hackney	478	217	45.4
Lewisham	624	276	44.2
Hammersmith & Fulham	369	163	44.2
Kensington & Chelsea	273	120	44.0
Southwark	538	236	43.9
Tower Hamlets	414	181	43.7
Ealing	889	387	43.5
Lambeth	620	265	42.7
Croydon	1084	462	42.6
Barnet	1076	442	41.1
Westminster	438	179	40.9
Waltham Forest	581	234	40.3
Enfield	939	373	39.7
Camden	385	152	39.5
Redbridge	766	302	39.4
Hounslow	561	212	37.8
Hillingdon	806	301	37.3
Merton	514	191	37.2
Wandsworth	560	206	36.8
Islington	401	145	36.2
Barking & Dagenham	444	158	35.6
Richmond upon Thames	415	142	34.2
Bromley	934	318	34.0
Greenwich	624	212	34.0
Sutton	521	163	31.3
Havering	870	265	30.5
Bexley	678	203	29.9
Kingston upon Thames	435	125	28.7
City of London	15	4	26.7
London	**20092**	**8034**	**40.0**

Source: Death registrations and occurrences by local authority and health board, ONS (as published 2 June 2020)

Figure 5 Percentage of all deaths mentioning Covid-19, 29th February to 22nd May, London Boroughs and selected other local authorities in England

Source: ONS Deaths involving COVID-19 by local areas and deprivation, deaths occurring between 1 March and 17 April, published 1 May 2020

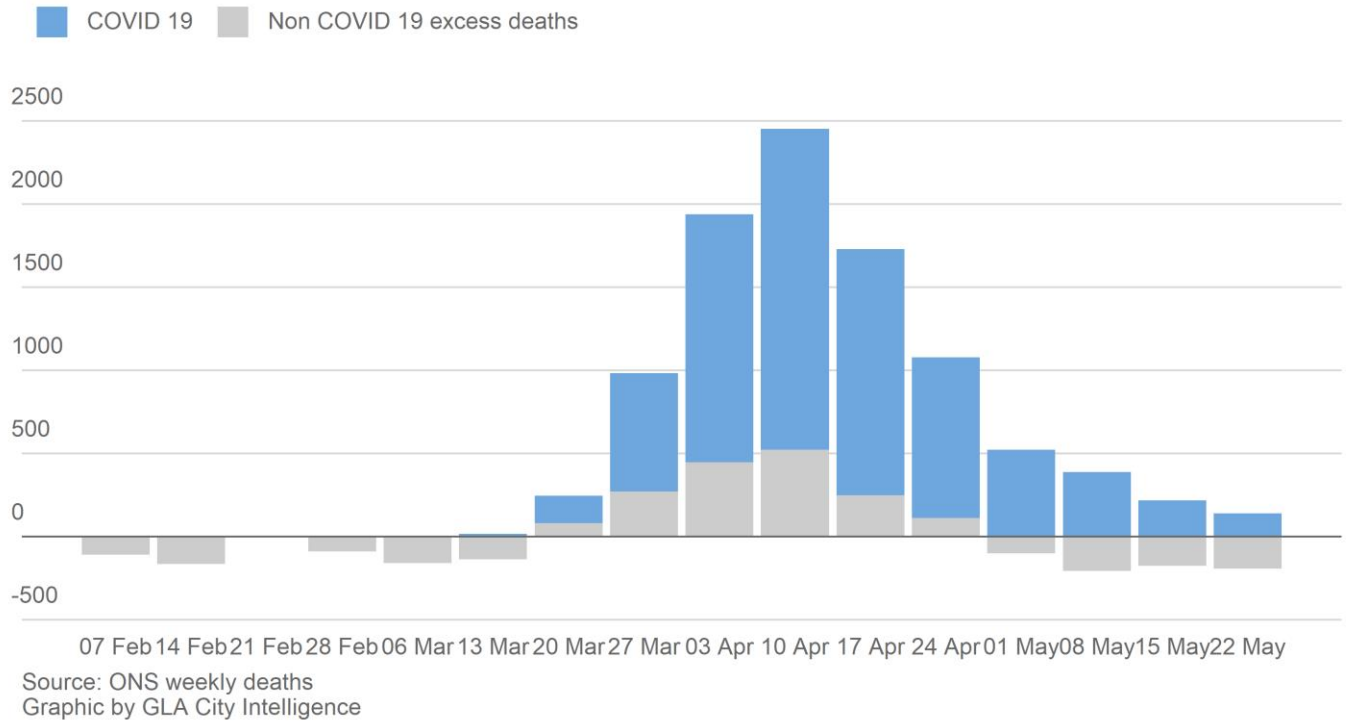
ONS Excess weekly deaths estimates

Another perspective on deaths due to Covid-19 is to look at the number of deaths taking place in each week compared with the "usual" number of deaths in the same week in other years. As the number does vary, looking at deaths in 2020 in relation to the previous five years' deaths shows that on average, there are around 1,000 deaths each week in London. The number tends to be a little lower in the summer and higher in the winter, with at least some of the variation due to flu during the winter months. The winter of 2017/18 saw a particularly high level of deaths due to flu in London, raising the average slightly. With total deaths reaching a peak of 3,275 in a single week, it is clear that not all the "excess" deaths are directly accounted for in those recorded as Covid-19 related cases. The number of deaths from all causes in London was a little below average during the first 11 weeks of the year. As Covid-19 related deaths started to impact, the underlying number of deaths also increased, as illustrated in figure 6 below.

In total, taking the deaths occurring during the weeks from 14th March (the first week with excess deaths) to 22nd May (the latest available), around 47,200 "excess" deaths have occurred during the pandemic in England. Over the same period, there had been around 9.000 excess deaths in London, though this is starting to fall as the number of non-Covid-19 related deaths has fallen below average.

This method of trying to understand the impacts of Covid-19 by comparing with previous years to give a measure of excess deaths is also not without its own difficulties[2]. Despite this, it does seem likely that some deaths attributable to Covid-19 have been missed from those recorded, though this appears to be reduced in the most recent weeks. The number of non Covid-19 deaths in London has been lower than average for each of the last four weeks, and the overall number of deaths appears to have fallen below average for the latest week reported, though this latest figure is still subject to change.

Figure 6 Weekly excess deaths in London, compared with average for 2015-2019



[2] See https://medium.com/wintoncentre/covid-and-excess-deaths-in-the-week-ending-april-10th-20ca7d355ec4 for an exploration of measuring excess deaths in relation to Covid-19
In addition, changes to London's underlying population, with an overall increase of around 80,000 people per year and an ageing population means that the expected number of deaths would naturally increase over time.

London's Covid-19 experience in context of other cities in the UK

Urban areas have been hit harder than rural areas both in the UK and globally. Analysis by the Centre for Cities[3] shows that Cardiff is the city within England and Wales with the highest rate of confirmed cases, with 571 per 100,000 residents., while Sunderland has the highest rate within England at 497cases per 100,000 residents, while Oxford and Sheffield have 417 and 416 per 100,000. London overall has 299, and is below Birmingham, Liverpool, Manchester and Middlesbrough, though the differential testing regimes at different points in the spread of the virus across the UK mean that these figures do not tell the whole story.

The numbers of Covid-19 related deaths up to 22nd May are higher in some of the very large local authorities, such as Birmingham, Leeds, Liverpool and County Durham than in individual London boroughs. However, at 1,115 Covid-19 related deaths in Birmingham (population 1.2 million) is still just 14 per cent of the deaths seen in London overall (population 9 million). For Birmingham, this represents 34 per cent of total deaths from 29th February to 22nd May, which covers the twelve weeks from the start of the pandemic in the UK to the most recent data available. This is much lower than the London proportion (40 per cent) and, as can be seen in figure 5, lower than the proportion in most London boroughs. Taking the same proportion over the same time period for all local authorities in England shows that there is no local authority outside London with a higher proportion of deaths being registered as related to Covid-19 than the London average. Hertsmere, which borders on to Harrow, Barnet and Enfield is the only English local authority outside London in the top twenty, ranked by proportion of all deaths in this twelve-week period that mention Covid-19. Salford, Watford, Reading and Tewkesbury are the only others outside London in the top thirty on this measure. City local authorities that rank in the top fifty include Birmingham, Middlesbrough, Derby and Gloucester.

Regional analysis of data on various aspects, such as confirmed cases, hospital patients and deaths shows that while the number of cases peaked in the first few days of April in London and the North East, all other regions of England were still increasing cases at that time, reaching a peak in the following week. However, given the nature of the spread of the disease, the experience of individual local authorities, towns and cities and areas within those show different patterns. As London's timeline for the spread of Covid-19 was ahead of most of the rest of the country, the figures above are still likely to evolve as more data becomes available. Comparisons with Wales Scotland and Northern Ireland are also more complex because of different rules and data collection methods in those parts of the UK, but as the numbers of deaths are decreasing in all parts of the UK, it is clear that London has a much higher proportion of excess deaths than any other region.

Comparing London with other international cities

Using a similar measure of excess deaths allows for comparisons between cities in different parts of the world, and the Financial Times has adopted this approach to compare various countries and some of the world's worst-hit areas.

In its report (as at 29 May), the Financial Times shows that London, with a population around 9 million, has recorded 9,700 or 130 per cent excess deaths[4], compared with 98 per cent or 11,300 excess deaths for Ile de France, with a population of 12.2 million, incorporating Paris. Madrid (13,900 excess deaths, population 6.6 million) and Bergamo province in Italy (5,000 excess deaths, population 1.1 million) show even higher proportions of excess deaths, though the Italian figures date from the end of March. Meanwhile, New York City with a population similar to that of London is recorded in the FT report[5] as having 22,600 excess

[3] https://www.centreforcities.org/data/coronavirus-cases-uk-cities-large-towns/

[4] The FT analysis for UK figures uses deaths by date of registration rather than date of occurrence. Using date of registration throws up particular issues around bank holidays.

[5] https://www.ft.com/content/a26fbf7e-48f8-11ea-aeb3-955839e06441

deaths, more than four times as many as normal. The New York metro area, has seen more than 35,000 excess deaths.

However, the charts appearing in the FT, as shown in figure 7, also reveal that these figures relate to different points in the timelines of the pandemic's progress in different cities, and this will impact on how these figures can be interpreted[6]. Paris, for example, is further past the peak than London, so the proportion of excess deaths has now decreased substantially. There are also other issues with conducting this approach, some of which are outlined above, such as using an average which may have other factors at play, including changing underlying population around the way data is recorded and reported for different countries. For example, Italy's data is based on a sample of 86 per cent of the country. It is clear that until the pandemic is under control everywhere, and figures are finalised, making such comparisons, even on this basis, is subject to change.

A further consideration discussed in the FT is how much the pandemic was contained within each country. In the UK, while London was the worst hit, the excess deaths measure shows that most other regions have also seen at least 60 per cent more deaths than usual. In France, the outbreak was relatively contained, with only one region outside Ile de France showing more than 50 per cent excess deaths. In Spain, again the capital was the worst hit, but three other regions experienced more than double their expected number of deaths, though the proportions are now falling as they move further past the peak. More cities in South America are now among those with the highest proportions of excess deaths.

Figure 7

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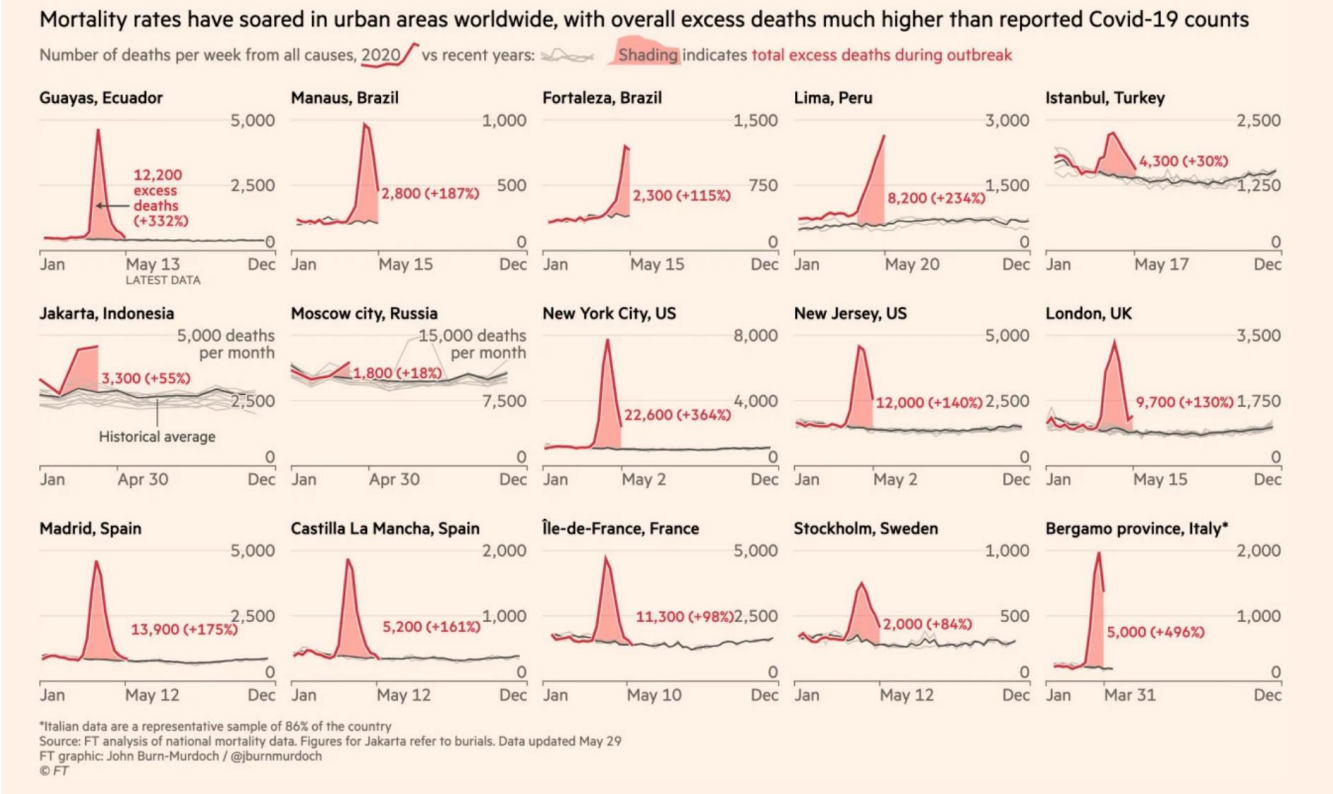


[6] Excess deaths and the percentage above the "normal" depends on the period of accounting, so for a place whose data is reported for a timepoint just past the peak of daily deaths from the outbreak, the excess will appear higher in percentage terms than for somewhere that deaths are still increasing or that the number of deaths has returned close to the average measured over a longer time period.

Covid-19 and Ethnicity

Much of the coverage of the Covid-19 outbreak in the UK has focused on the unequal impacts which it is having on people who belong to different groups within the population. It quickly became well-established that older people, men and people who have underlying health conditions (particularly diabetes, obesity, heart disease and chronic lung conditions) were at disproportionate risk of developing a severe infection and dying.[1]

Another form of inequality which has become apparent is differences in the number of cases and deaths from Covid-19 by ethnicity. An increasing body of evidence has emerged to show how Black and Minority Ethnic (BAME) groups are over-represented both among the patients who are being hospitalised with serious cases of Covid-19 and also in relation to deaths. There is also media coverage of similar issues in other countries, such as the USA and countries in Europe.

Working out whether the numbers really are as skewed as they first appear, and attempting to explain why this might be happening, is not straightforward. This is because ethnicity is only one of many socio-economic factors which contribute to making an individual more vulnerable to Covid-19. Gaining a better understanding of why these ethnic differences in Covid-19 exist is important for developing a coherent policy response to addressing them. This briefing summarises the findings from research published in the UK, as well as identifying some of the remaining gaps in our knowledge and suggesting how they could be filled.

Following media reporting of the apparent early disproportion in BAME deaths among patients and healthcare staff, a report by the Intensive Care National Audit and Research Centre (ICNARC) which was published on 29th May revealed that BAME patients were over-represented among those being admitted to intensive care with severe symptoms of Covid-19. This study looked at 9,347 patients who had been admitted to intensive care units with coronavirus in the UK, and found that 67 per cent of those with ethnicity information were White, while the remaining 33 per cent were from a BAME group. Given that only 13 per cent of the UK population was estimated to be BAME following the 2011 census, this suggests that ethnic minorities are over-represented among those being hospitalized with Covid-19.

However, a simple comparison like this fails to control for several important factors, particularly the influence of geography. BAME groups disproportionately live in cities, which were also the places which, as noted above, have been hardest-hit during the Covid-19 outbreak in the UK, therefore you would expect a larger share of them to have contracted it severely; when the ICNARC researchers compared the ethnicity of these patients with the ethnic mix of the local authority wards they lived in, they found that 15 per cent of patients with an Asian ethnicity were being hospitalized compared with 12 per cent of the population in these areas, while ten per cent of the intensive care patients were Black, compared with roughly six per cent of the population living in these areas. This replicates similar studies undertaken earlier, which showed no difference for the Asian ethnic group, but a larger difference between the proportion of Black patients and residents.

Public Health England (PHE) have reported on the disparities in risk and outcomes of Covid-19[7], investigating a number of aspects, including age, sex, geographical differences, deprivation, ethnicity and occupation. This found that the rates of diagnosis among Black women were more than double among Black women compared to White women, and almost three times as high among Black men as among White men, after adjusting for age and sex differences in the population.

Taking into account differences in age, sex, deprivation and region, for the time frame of the analysis, the report finds that among confirmed cases, "people of Bangladeshi ethnicity had around twice the risk of

[7] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/889195/disparities_review.pdf

death when compared to people of White British ethnicity." Almost all groups had a higher risk of death than the White British group, and for Chinese, Indian, Pakistani and the Black Other (not including Caribbean or African), the rates were between 20 per cent and 35 per cent higher.

Compared to previous years, the death rates from all causes for the same period was almost four times higher than usual among Black men, three times higher for Asian men and twice as high for White men. The ratios among women followed similar patterns, but were slightly lower. It is important to note that this analysis does not take into account differences in occupation, which are known to have differential risks (see below) or differences in underlying health conditions, though other evidence has shown that these factors also have disparities between ethnic groups which may account for at least some of the differences found in this analysis.

The PHE report also looks at various vulnerable groups, finding higher rates of diagnosis among homeless men and women than the general population and that among people born outside the UK and Europe deaths reported between 21st March and 8th May were more than 2.5 times a five year average, compared with 1.7 times the average for people born in the UK. Most notably, deaths among people born in Central and Western Africa were more than four times the average.

Covid-19 and occupation

Exposure to Covid-19, and thus the risk of contracting the disease is not equal across the population. Beyond that, the severity of the infection varies, as is well-documented, with age, sex and underlying health conditions having a strong association with the risk of death. As discussed above, ethnicity also appears to be correlated with the risk of dying of Covid-19, and one of the suggested contributors to that has been the occupations of those groups. ONS have conducted some research to help consider the impact of occupation on the risk of exposure to Covid-19.

In general, factors influencing the risk of exposure to a disease might be the number of people that an individual in a particular occupation is likely to come into contact with, how close that contact is, for how long and under what conditions, and the chance that those individuals would have a disease. The ONS analysis is based on research into some of these factors and occupations originally carried out in the US.

Not surprisingly, healthcare workers such as nurses and care assistants have higher risks that the individuals they come into contact with are likely to have a disease, the contact is fairly frequent and close, whereas a pharmacist generally has less close contact but high exposure to disease, while a physiotherapist is less likely to have high exposure to disease, even though they may work closely with many people. Personal protective equipment is designed to mitigate some of these risks during the pandemic.

Some occupations involve interacting with large numbers of people, sometimes at close range, but in normal times, those people have low exposure to diseases. Examples of this type of occupation can be in elementary, service, retail and hospitality roles including, such as, hairdressers, shop workers, taxi drivers and bar staff. Many of these occupations are relatively poorly paid. While some of these workers have been furloughed, that is not true for all of this group, with some shop workers and taxi drivers particularly, left with relatively high risk of contact with the disease in an enclosed space.

Many of the individuals in some of the jobs with less exposure risk – because they don't come into close contact with many other people and those they do see are relatively unlikely to have diseases in normal times – are also often higher paid and this group are also more likely to be able to work from home.

The ONS research also sets out for the highest exposure risk occupations the proportion that are women, that are over 55 and that are from one of the BAME groups. Overall, women make up a very large proportion of people in these occupations, the over 55 group has a similar proportion as in the overall

working population, and BAME groups are nearly twice as likely to be in one of these occupations. However, this analysis does not include shop workers and transport workers who may still be working with relatively high risk of exposure and without protective equipment, and which also account for a relatively high proportion of BAME workers in London.

A further piece of research from ONS, looking at deaths from Covid-19 by occupation found that nearly 2,500 of the deaths involving Covid-19 in England and Wales up to 20 April were in the working age population aged 20-64. Adjusting for age and sex differences, covid-19 related deaths were twice as high among men in the lowest-skilled occupations as among all working-age men, and more than twice as high again among men working as security guards.

Both men and women working in social care had significantly raised rates of deaths mentioning Covid-19, while healthcare workers, including doctors and nurses, did not have higher rates of death from Covid-19 than the general population, when adjusted for age and sex.

People working in some of the categories described above as bringing them into contact with a large number of people, though usually not with high levels of diseases, that have continued to work, notably taxi drivers, bus drivers, chefs and sales and retail assistants have higher rates of death involving Covid-19 than the general population.

The PHE report on disparities (see above) also notes the ONS work on occupation and shows that while nearly two per cent of nurses, midwives and nursing associates[8] were infected with Covid-19. There were again ethnic disparities in these figures, with nearly four per cent of Asians in these occupations and three per cent from the Other ethnic groups infected, compared with 1.7 per cent among White and 1.5 per cent among Black and Mixed ethnic groups from these occupational groups.

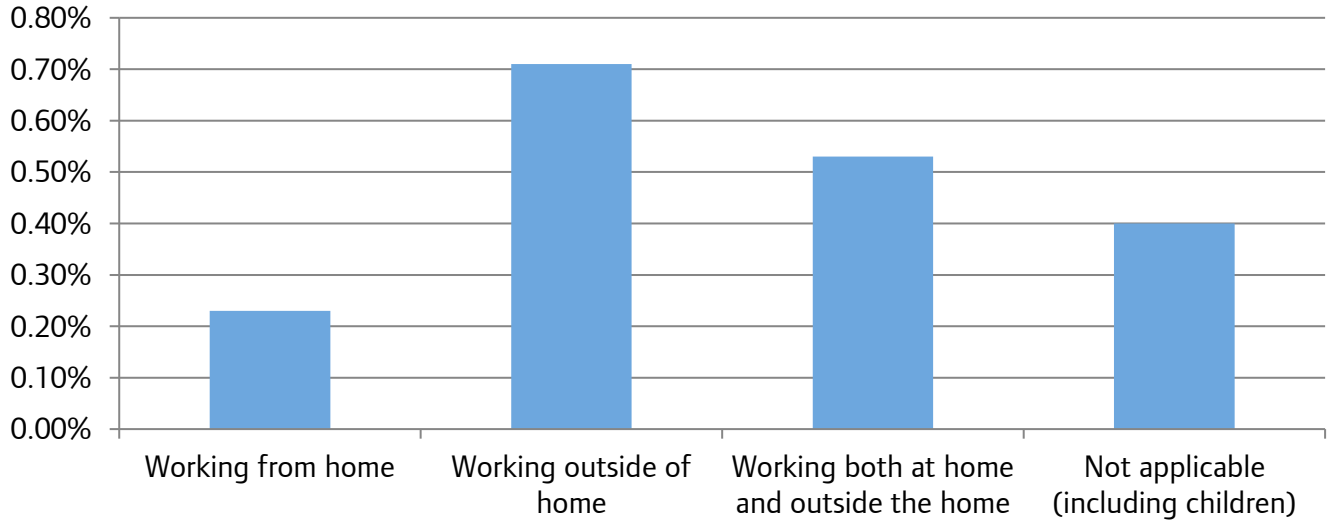
Infection rates in the UK

An infection survey carried out by ONS, published on 28th May carried out across England as a whole to estimate the real number of infections shows that at any given time between 11th May and 24th May, an average of 24 in 10,000 of the community population, that is excluding people in hospitals, care homes and other institutional settings had Covid-19. This is slightly lower than the figure reported the previous week of 25 in 10,000 infected for the period between 4th May and 17th May. The figure is likely to be lower in London as the number of new cases being confirmed is lower than the rest of England, but regional figures from the infection study are not available.

This week's data did not find that there were statistically significant differences in the rate of infection between people belonging to different age groups or genders, but they did detect that patient-facing healthcare workers and resident-facing social care workers show higher rates of positive tests than people not working in these roles (1.7 per cent, compared with 0.4 per cent). Additionally, they also found that workers who are working outside the home show significantly higher rates of infection than workers who were working from home during the period in which these data were collected.

[8] As registered with the Nursing and Midwifery Council

Figure 8 Estimated % testing positive for COVID-19 by working location, England (unweighted) between 26th April- 24th May 2020



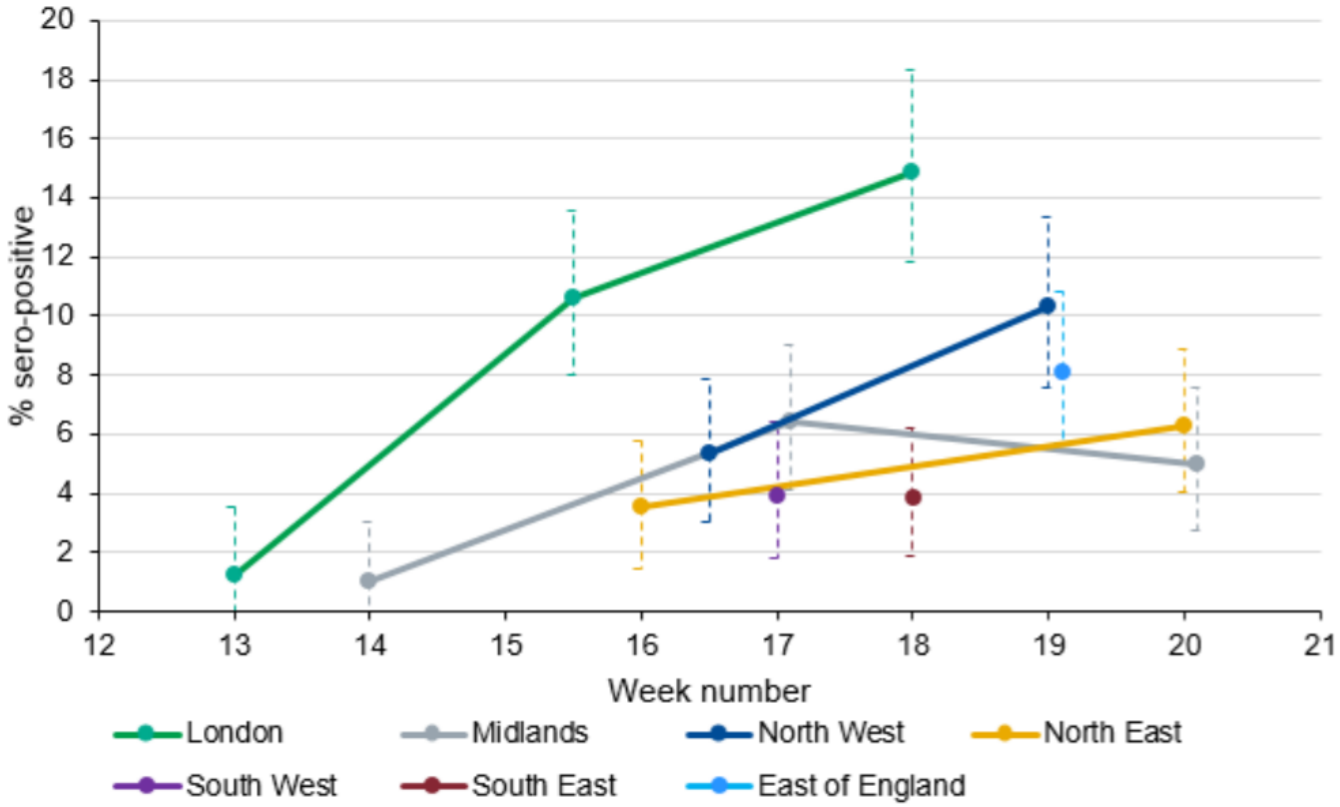
Source: ONS Coronavirus (Covid-19) Infection Survey

Sero-surveillance of COVID-19

Public Health England have recently begun publishing estimates of the proportion of the English population which has tested positive for the presence of Covid-19 antibodies in their blood, which are broken down by English region. Understanding the total level of infection in England (including asymptomatic and mild cases of Covid-19) is important to help achieve a number of different goals, such as estimating the true number of infections within the general population to understand transmission, to inform control measures such as social distancing and school closures and to provide a denominator for the estimation of severity measures such as infection fatality and infection hospitalisation ratios.

These data should be treated with caution, as they are based on blood samples taken from people who have voluntarily donated their blood to the NHS, so it is difficult to gauge how representative this sample is of the general population living in England. It is also important to stress that there remains considerable uncertainty regarding the degree of immunity from future re-infection which the presence of Covid-19 antibodies conveys on an affected individual.

Figure 9 Overall SARS-CoV-2 antibody Seroprevalence (%) in blood donors by PHE centres, using Euroimmun test adjusted for sensitivity (79%) and specificity (99%) and 95% confidence intervals (dashed lines)



The most recent estimates derived from this data that cover London, which are based on blood samples collected during week 18 of 2020 (the week ending 3rd May), suggested that 14.8% of London's population would test positive for the presence of Covid-19 antibodies in their blood. This represents an increase from 1.3% in week 13 and 10.6% in weeks 15-16, although the latter change is not statistically significant. Given that the antibody response takes at least two weeks to become detectable, those displaying a positive result in week 18 are likely to have become infected before mid-April. The estimated prevalence rates for London are much higher than for those for any other English region, with the North West being the only other one where it was above 10%.

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