



**WIRRAL
INTELLIGENCE
SERVICE**

Risk & Outcomes of COVID-19 in Wirral

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**Wirral Public Health
Intelligence Team (Wirral
Intelligence Service)**

Risk & Outcomes of COVID-19 in Wirral

For further information please contact:

Public Health Intelligence Team,
Wirral Intelligence Service,
Marriss House, Hamilton Street, Birkenhead,
Wirral CH41 5AL
Email: intelligencerequests@wirral.gov.uk
Website: www.wirralintelligenceservice.org.uk

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Introduction

This is a descriptive review of data on disparities in the risk and outcomes from COVID-19 in Wirral between March and June 2020. The review presents findings based on surveillance data available Wirral Intelligence Service at the time of publication, including that available through linkage to other health data sets (e.g. via the Wirral Care Record). The format is based on the Public Health England report, “Disparities in the risk and outcomes of COVID-19” published in June 2020 [1] and takes a population health approach.

It is widely predicted that the UK may experience a ‘second wave’ of COVID later in 2020 and our team continue to monitor the data closely. This report will be updated to reflect the period following June 2020 and highlight any further trends and disparities in risk and outcomes relating to COVID-19 following any future phases.

Executive Summary

Age and sex

- Although females in Wirral comprised a larger number and proportion of positive COVID-19 cases, hospitalisations and mortality (females comprised 60% of positive cases; 54% of hospitalisations and 51% of deaths), age and sex standardised rates indicated men were more at risk than women of dying from COVID-19 (both in Wirral and nationally)
- In Wirral, 92% of deaths from COVID-19 were in those aged 65+ and the average age of death in COVID-19 patients was over 3 years higher than Non-COVID patients to 30/06/2020 (the average age of COVID-19 deaths was 81.5, while for Non-COVID-19 deaths it was 78.1)

Geography

- Wirral had a significantly higher death rate from COVID-19 than England, the North-West, Merseyside overall and near statistical neighbour Sefton
- The locations within Wirral most affected in terms of positive COVID-19 cases, hospitalisations and mortality broadly corresponded (Clatterbridge, Woodchurch/ Upton, New Brighton and Oxtan areas); all have large proportions of older population and/or large numbers of care homes
- There appeared to be no discernible association between excess deaths and deprivation locally (e.g. Heswall experienced a larger percentage increase in excess deaths compared to Rock Ferry and Seacombe)

Deprivation

- Nationally, PHE found that people living in deprived areas had both higher diagnosis and death rates from COVID-19 than those living in less deprived areas. Locally however, the relationship between positive diagnosis, hospitalisations, deaths, and deprivation was less clear, with rates of all three highest in Quintiles 2 and 4
- A contributory factor appears likely to be the location of Care Homes in Wirral, as the majority of COVID-19 deaths in Quintiles 2 and 4 occurred in Care Home residents; deaths in non-Care Home residents showed a pattern much more comparable with national findings (i.e. death rates then highest in Quintile 1 and lowest in Quintile 5)
- Nationally, evidence indicates that COVID-19 had a disproportionate impact on excess mortality in the most deprived groups, but it appears that in Wirral, all of the Quintiles (except the least deprived, Quintile 5) experienced higher mortality. Reasons for this are unclear, but may reflect more flexibility to work from home and/or self-isolate, during the lockdown period a lower prevalence of pre-existing poor health and as previously mentioned, the location of Care Homes.

Ethnicity

- Nationally, ethnicity was significantly associated with higher diagnosis, hospitalisation, and mortality rates from COVID-19
- Locally, a combination of the small BAME population in Wirral, incomplete data and/or data quality and the relatively small number of positive tests, hospitalisations and deaths (relative to the UK overall) mean it is difficult to draw conclusions about the impact of COVID-19 on BAME populations in Wirral
- Given the total number of deaths from COVID-19 in Wirral (as of 30/06/2020, n=425), it might be expected that between 34-38 of those deaths would be from the BAME population; in fact, as of 30/06/20, there had been less than 5 recorded deaths in people classed as BAME in Wirral

Occupation

- Nationally, PHE report that men working as security guards, transport workers, chefs, sales/retail assistants, lower skilled workers in construction and processing plants and social care workers of both genders had significantly high rates of death from COVID-19
- Locally, information about the occupation/field of occupation was unavailable for the majority of positive cases of COVID-19 in Wirral (due to data not being collected at source); among the tiny proportion of positive cases for whom occupational field was recorded, the largest group was 'Health & Social Care' (4% of positive cases)
- In Wirral, just 57 out of a total of 425 COVID-19 deaths (to 30/06/2020) were of working age (aged 16-67); almost one in four of those deaths (23%) had a blank field for occupation
- With the caveat that numbers locally are small, the largest categories of occupational field for deaths from COVID-19 in Wirral were Professional, Scientific & Technical (12%), Health & Social Work (11%) and Motor Trade, Wholesale & Retail (9%)
- Reasons why Professional, scientific & technical were over-represented among COVID-19 deaths locally are unclear, but as previously stated, may be due to a relatively small numbers
- The most over-represented occupational group in Wirral was Transport & Storage (incl. postal), which employs only 3.5% of the Wirral population, but accounted for 9.1% of deaths (caveat of small numbers); this is in line with national findings identifying Transport workers however

Inclusion Health Groups

- Nationally, data suggests a much higher COVID-19 diagnoses and mortality rates among rough sleepers, people with LD and people born outside of the UK and Ireland compared to the general population; local data is currently unavailable which could confirm if this is the case in Wirral, suggesting improvements to data quality are necessary before conclusions can be drawn locally

Care Homes

- A minimum of 189 residents of Care Homes in Wirral tested positive for COVID-19 during this period, this was at least 10% of all Care Home residents (this is likely to be a considerably underestimate and does not include suspected cases or those unknown to the local authority)
- This means around one in 12 of all Care Home residents tested positive during this period, compared to 1 in 167 of the Wirral population overall
- Just over one in three (36%) of all COVID-19 deaths in Wirral occurred in Care Homes (n=153 deaths from a total of 425 COVID-19 deaths in Wirral); nationally, the same figure was 30%
- Nationally, deaths in care homes peaked slightly later than other deaths; the same pattern was also observed in Wirral
- PHE analyses showed that nationally, there were 2.3 times the number of deaths in care homes compared to the previous 5 year average; in Wirral, this figure was 1.6 times

- There were 258 excess deaths in care homes in Wirral to 30/60/2020, of which 59% were due to COVID-19; this suggests a considerable number of excess deaths were from other causes or that COVID-19 deaths were under-reported

Co-morbidities

- Among confirmed positive cases of COVID-19 in Wirral, those with Dementia and conditions which placed them on the Palliative Care register (taking register size into account) were most likely to test positive for COVID-19
- Local hospitalisation analysis indicated the rate of admission encounters in patients diagnosed with COVID-19 (within 21 days of their admission) was highest in patients recorded as being on the Palliative Care register, followed by patients recorded as having Heart Failure had the second highest rates of admission during this period, followed by those with Peripheral Arterial Disease and Stroke, perhaps underlining COVID-19 impact on patients with vascular conditions
- Relative to list size, the rate of death (from COVID-19) locally was highest in patients on the Dementia register. Patients recorded as being on the Palliative Care register had the second highest rates of death during this period, followed by those with Heart Failure and Stroke, perhaps again underlining the impact of COVID-19 on patients with vascular conditions

Shielding list/Vulnerable list

- Wirral was very similar to England overall in terms of the age/gender breakdown of people on the NHS Shielding List
- Of all those on the NHS Shielding List, 0.8% had tested positive for COVID-19 as of 30/06/20. This compares to 0.6% in the general population and 8.4% of the Care Home population
- Nationally, one in five NHS Shielded patients felt that their condition had deteriorated during lockdown; equivalent local figures are not available

Age and sex

NHS England in conjunction with Imperial College produced a report identifying risk factors for susceptibility to, exposure to and recovery from COVID-19 [7]. Age and male sex (plus various other factors such as occupation, pre-existing comorbidities, in particular cardiac comorbidities) were observed to increase a patient's susceptibility to COVID-19 and reduce the likelihood of recovery [7].

PHE reached a similar conclusion, finding that despite making up 46% of diagnosed cases, men made up almost 60% of deaths from COVID-19 and 70% of admissions to intensive care units [1].

Public Health England (PHE) also found that nationally, deaths from COVID-19 had a slightly older age distribution and that the age specific death rates from COVID-19 among males were around double the rates in females, compared with 1.5 times for all-cause mortality in previous years [1].

Main messages

- Although females in Wirral comprised a larger number and proportion of positive COVID-19 cases, hospitalisations and mortality (females comprised 60% of positive cases; 54% of hospitalisations and 51% of deaths), age and sex standardised rates indicated men were more at risk than women of dying from COVID-19 (both in Wirral and nationally)
- In Wirral, 92% of deaths from COVID-19 were in those aged 65+ and the average age of death in COVID-19 patients was over 3 years higher than Non-COVID patients to 30/06/2020 (the average age of COVID-19 deaths was 81.5, while for Non-COVID-19 deaths it was 78.1)

Cases

Table 1 and **Figure 1** below show confirmed COVID-19 positive cases in Wirral by age and gender.

Table 1: confirmed COVID-19 cases by age and gender, Wirral (as at 30/06/2020)

Age band	Female	Male	Total	%
0-9	7	12	19	1%
10-19	24	10	34	2%
20-29	124	60	184	10%
30-39	132	64	196	11%
40-49	147	110	257	14%
50-59	199	101	300	16%
60-69	113	99	212	11%
70-79	98	109	207	11%
80+	278	179	457	24%
Total	1,122	744	1,866	100%

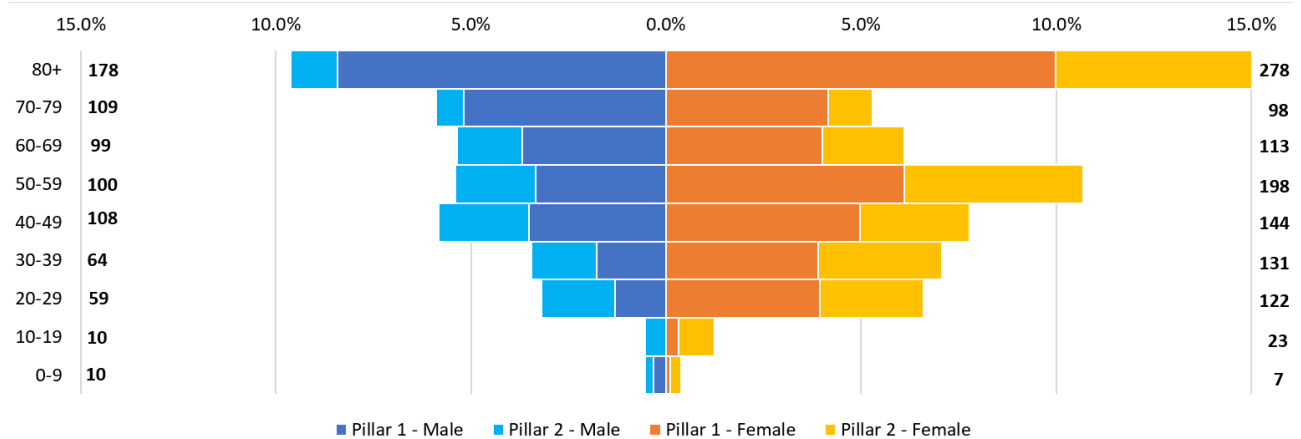
Source: PHE North West COVID-19 - Merseyside LRF report using data from SGSS data (restricted data source)

Note: SGSS includes only laboratory-confirmed cases reported to PHE. Where postcode is missing LA has been derived from GP practice or lab and does not include where age or gender is unknown.

As **Table 1** above shows, the 80+ age group comprised almost a quarter of all positive cases diagnosed (24% or 457 cases) as of 30/06/2020, the largest number and proportion of cases of any age band. This reflects those most susceptible to the virus and the large number of cases in Care Homes (see section x). The next largest group was the 50-59 group (16% of all cases), many of whom are likely to still be in employment.

Figure 1 below show the same information as the above table, but visually to make differences more apparent.

Figure 1: Population pyramid of COVID-19 positive cases in Wirral by age and gender, as of 30/06/2020



Source: PHE North West COVID-19 – Second Generation Surveillance System (SGSS) (restricted data source)

Note(s): SGSS includes only laboratory-confirmed cases reported to PHE. Where postcode is missing LA has been derived from GP practice or lab and does not include where age or gender is unknown.

Figure 1 above show that the composition of those testing positive is skewed toward females, with 60% of positive cases in women in Wirral during this period. It is not possible to determine if this is because more women present for testing (as we do not receive negative testing data), or whether prevalence rates really are higher among women compared to men. This trend (higher number of positive cases in women) is also apparent at the regional and national level.

Please note that this information is up to the 30/06/2020 only. There is, however, emerging data to indicate that positive cases have become more prevalent in younger age groups during July and early August. See [Weekly Surveillance Reports](#) [17]. See **Table 2** below for outbreaks in school settings in Wirral, the North-West and England showing that as of 30/06/2020, there had been 7 outbreaks in school settings in the North-West, with none in Wirral (at the point schools broke up at the end of July, outbreaks remained zero in Wirral).

Table 2: Outbreaks of suspected or confirmed COVID-19 in schools; Wirral, North West and England, cumulative total to 30/06/2020

Area	Total School Outbreaks
Wirral	0
North West	7
England	182

Source: PHE North West COVID-19 - Merseyside LRF report using data from SGSS

Note: Outbreaks with a missing or invalid postcode are excluded by local authority, but are included in the centre and England total

Suspected community prevalence

Currently in the UK, COVID-19 testing is recommended for certain groups only (symptomatic people, people in particular professions such as health and social care, people living in settings such as care homes etc...). The population in general are not being widely tested, so other sources of data are needed in order to estimate community prevalence; the ONS Infection Survey and the REACT-2 survey are two ways in which community prevalence can be estimated.

The Office for National Statistics (ONS) Infection Survey [2], estimated that an average of 1 in 3,900 individuals within the community population in England had COVID-19 at any given time between 22 June and 5 July 2020. This compares to an average of 1 in 400 individuals between 27th April and 10th May. The trend over time suggests that incidence of new infections appears to have decreased since mid-May and had now levelled off in England overall by the end of June 2020.

England prevalence rates extrapolated to Wirral would equate to 83 individuals (in the community only) who had COVID-19 at any given point between 22 June and 5th July 2020. Rates for the North-West however, were slightly higher than England overall, and extrapolated to Wirral produce slightly higher numbers (n=194). As the ONS Infection Survey is a household survey, their figures do not include people in hospitals, care homes or other institutional settings. In these settings, rates of COVID-19 infection are likely to be different.

In addition to the ONS Infection Survey, the Department for Health & Social Care also commissioned the REACT-2 surveillance study carried out by Imperial College London in England [15]. REACT-2 examines the prevalence of antibodies in the community, trends in antibody levels and how they vary across different population subgroups.

Results have recently been published by Imperial College for June 2020 and show that prevalence of antibodies in the community in England was 6.0% (95% CI, 5.8, 6.1) [15]. Prevalence antibodies indicating previous infection was slightly higher in males (6.2%) than females (5.8%) and there was also an association with age. The highest levels of 7.9% were observed in young adults aged 18 to 24 years, decreasing to the lowest levels of 3.2% in older adults aged 65 to 74.

Those who had had contact with a confirmed case had an adjusted prevalence of 21.0% compared with 3.5% for people who had had no contact with a suspected or confirmed case. Those who had had COVID-19 confirmed by a swab test had an adjusted antibody prevalence of 96.2% compared with 0.9% for people who had not had COVID-19 (either confirmed by test, suspected by a doctor or suspected by the individual themselves) [15].

Interestingly, those who reported more severe symptoms at the time of suspected or confirmed infection had an adjusted prevalence of 28.7% compared with 13.7% in people reporting no symptoms at the time of suspected or confirmed infection [15].

Of the 276 NHS workers with confirmed SARS-CoV-2 infection 72% reported no, mild or moderate symptoms, 28% reported severe symptoms and the most common symptoms described were lethargy (78%), loss of smell (66%), fever (61%), myalgia (61%) and headache (61%); less than half reported persistent cough (46%) or dyspnoea (41%) [15].

Locally, antibody testing carried out with WUTH (Wirral University Teaching Hospital NHS Trust) and COCH (Countess of Chester Hospital NHS Foundation Trust) indicates that as of 30/06/2020, one in 7 WUTH and COCH staff (16.7% and 16.3% respectively) have previously had COVID-19. This is higher than results from the REACT-2 study on antibody prevalence which showed that in England overall, 11.7% of healthcare workers with direct patient contact had detectable antibodies [15].

Hospitalisations

Nationally, PHE found that the rate of diagnosed cases increases with age, but the age profile is markedly different among those in critical care. The largest number of patients in critical care come from age groups between 50 and 70 for both males and females, with only small numbers aged over 80 [1].

Locally, data on hospitalisations (or admissions, includes all those with a confirmed positive diagnosis of COVID-19 in the 21 days prior to, or following their admission/attendance) showed that up to 30/06/2020, there were 5,936 admissions, by a total of 2,441 people (meaning some patients were admitted on more than one occasion). The reason the analysis was completed in this way is to obtain a better estimate of the number of hospital encounters where COVID-19 may have been a contributing factor. Including only those encounters where a confirmation of COVID-19 status was listed could result in an underestimate of COVID-related hospitalisations/encounters (e.g. if someone were admitted and discharged prior to a positive test result becoming available).

Table 3: Admissions in patients confirmed as being COVID-19 positive in the 21 days prior to or following their admission, by age and gender to 30/06/2020

Age band	Female	Male	Total	%
0-9	24	34	58	2.4%
10-19	20	9	29	1.2%
20-29	79	37	116	4.8%
30-39	115	58	173	7.1%
40-49	123	111	234	9.6%
50-59	161	138	299	12.2%
60-69	169	187	356	14.6%
70-79	213	226	439	18.0%
80-89	266	243	509	20.9%
90+	147	81	228	9.3%
Total	1,317	1,124	2,441	100.0%

Source: Healthintent (2020)

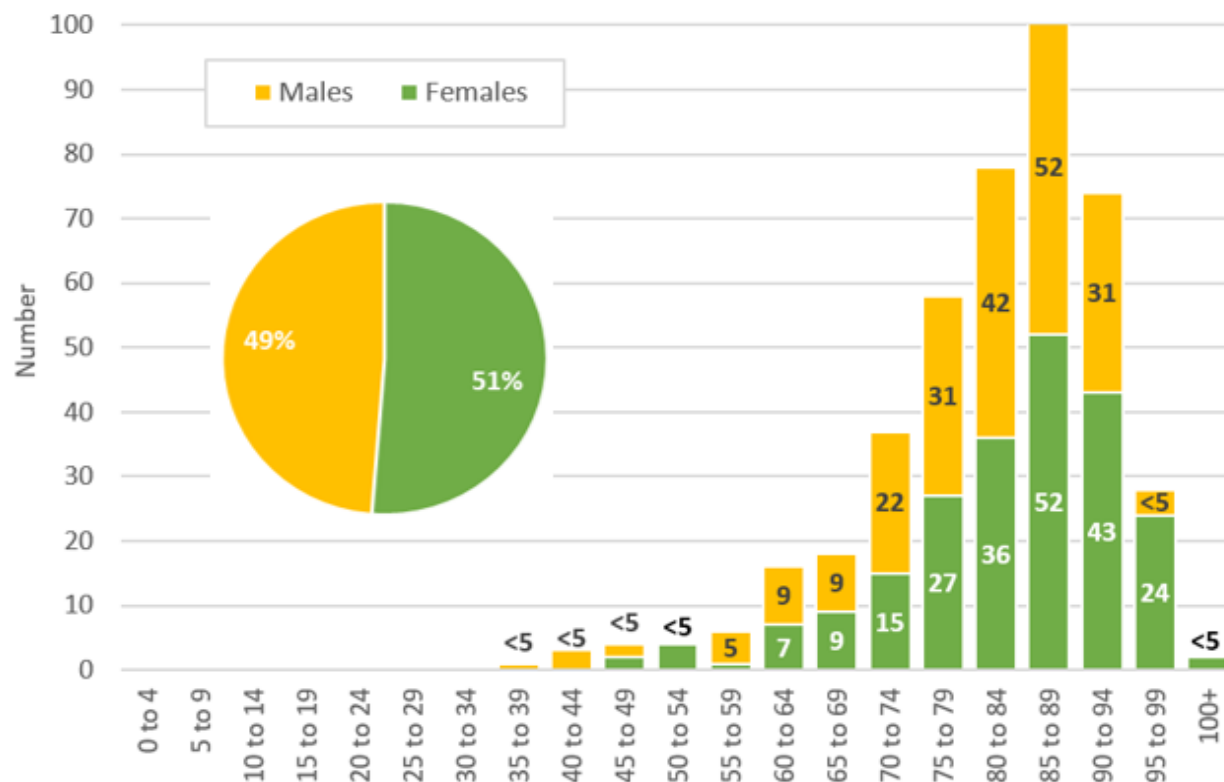
Notes: Numbers shown persons, total admissions/encounters is higher. Where individuals were admitted more than once in this period, admission may not necessarily have been for the same cause on each occasion.

Of the 2,441 patients admitted, 54% were in females, 46% were in males. The proportions were very similar for admission encounters (5,934 total encounters, just over half were female, n=3,125 or 53%, while 2,809 or 47%, were male). The largest proportion of admissions were in the 80-89 age group, who accounted for over one in 5 of all admissions.

Mortality

Figure 2 below shows the number of COVID-19 deaths by age and gender.

Figure 2: Age and gender breakdown of COVID-19 deaths in Wirral (number and proportion) as of 30/06/2020

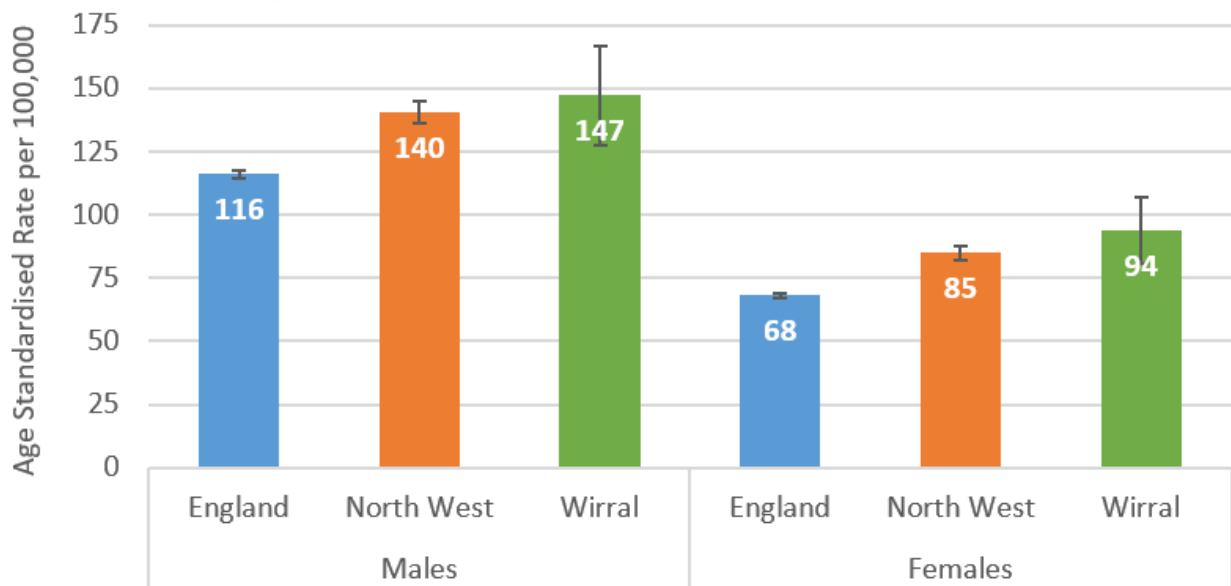


Source: Combined/multiple local data source including WUTH, HealthEDW and ASC data. Data from 1-3-2020 to 5-7-2020

As **Figure 2** above shows, the ratio of COVID-19 mortality between the genders in Wirral is fairly equal in terms of numbers with a slightly higher number of females deaths (51% female vs 49% male). This is different from the national picture where males outnumber females in deaths attributable to COVID-19 (45% female vs 55% male) [ONS, 2020]. Reasons for this are unclear, but may be due to Wirral having an older population than England overall (and the majority of those aged over 85 are women).

Although it is useful to look at the raw number of deaths from COVID-19 by age and gender in order to understand those most at risk, it is also informative to look at age standardised rates, in order to ensure that demographic differences in population are taken into account. **Figure 3** below shows the age standardised COVID-19 and Non-COVID death rates in Wirral, by gender, between March and 30/06/2020 (with confidence intervals).

Figure 3: Age standardised death rates (per 100,000) from COVID-19 in Wirral, North-West & England, by gender (as of 30/06/2020)



Source: [ONS \(2020\)](#) [14]

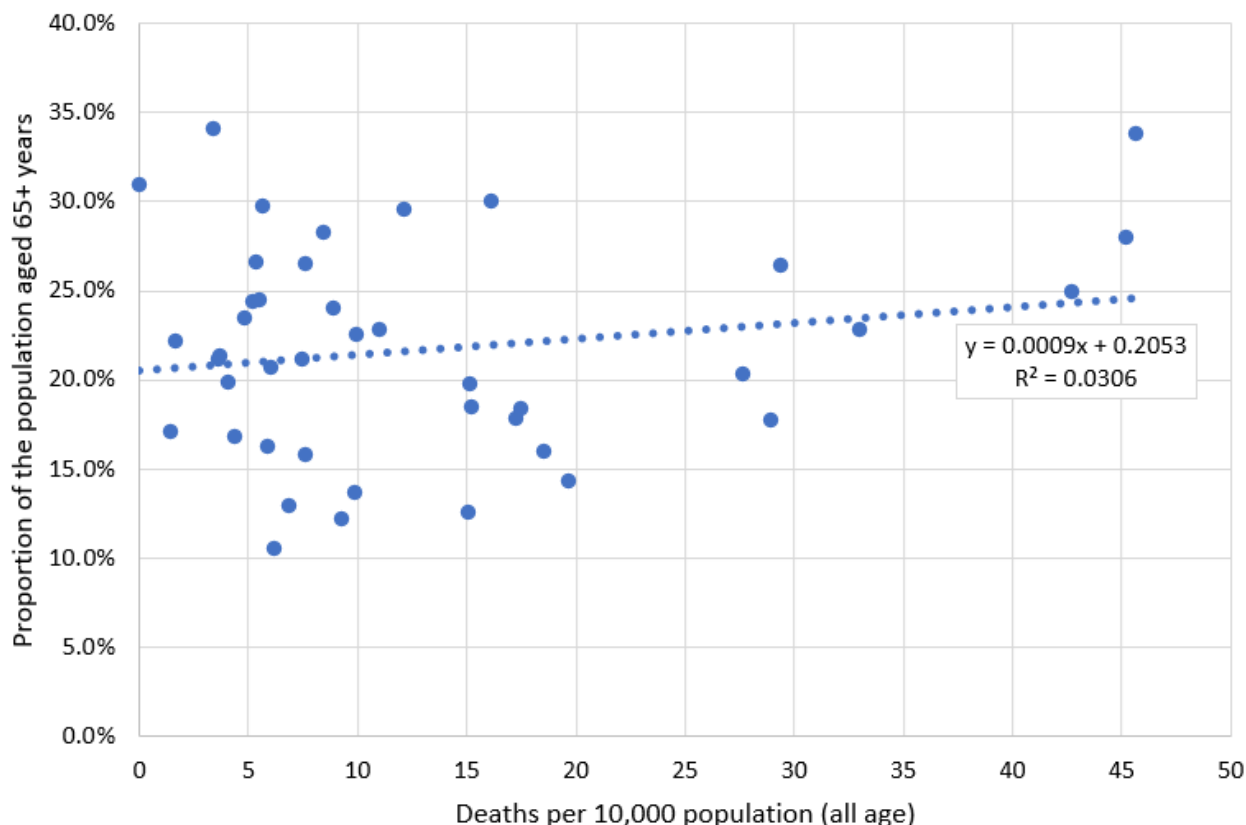
Figure 3 above shows that both men and women in Wirral had a higher rate of deaths from COVID-19 than both the North-West and England. The error (or confidence interval) bars show however, that while deaths in Wirral are significantly higher than England (for both genders), they are not significantly different to the North-West.

Figure 3 also shows that when the structure of the Wirral population is taken into account (by using an age standardised rate), males had a higher death rate than females, despite the raw *number* of deaths in males and females not being vastly different. This is because there are far fewer males in the upper age bands, so relatively equal numbers mean that actually, men have a greater chance of dying from COVID-19 than women. This is particularly striking given that women make up a greater proportion of diagnosed cases than men in Wirral.

Figure 3 also shows that this finding was not peculiar to Wirral; males also had higher death rates than women in the North-West and England overall. In fact, in Wirral, the difference between the genders was not quite as large as it was in England and the North-West overall. In England, the ASR for males was 70% higher than that of females, in the North-West it was 76% higher. In Wirral, the ASR was 56% higher for men compared to women.

Figure 4 below shows the relationship between age and death rates in Wirral. Each dot on **Figure 4** is an MSOA (Middle Super Output Area, a geography smaller than ward, each MSOA contains an average of 7,500 residents), and the 2 indicators shown are the proportion of the population of each MSOA aged 65+ (y axis) and the rate of deaths in that MSOA (x axis).

Figure 4: Relationship between older age (proportion of the population aged 65+) and death rates in Wirral, by MSOA, to 30/06/2020



Source: Population data: [Office for National Statistics, 2020](#); Deaths data: PCMD (Primary Care Mortality Dataset - restricted), 2020
Note: For explanation of MSOAs, see Glossary (at end of this document)

As **Figure 4** above shows, there appear to be a relationship (a weak, non-significant relationship, $p=0.2$) between the proportion of the population (in each MSOA) and death rates by MSOA. This indicates that death rates are associated with older age (or in other words, as the proportion of the population aged 65+ increases, so does the rate of death), but that age alone cannot account for the variation in death rates between MSOAs.

Geography

The PHE disparities report focused mainly on differences between the English regions, for instance, that the North West and North East had the highest diagnosis rates, while London had the highest mortality rates [1]. PHE also reported that people living in urban areas (versus rural areas) had increased odds of testing positive for COVID-19 and hypothesised that at the local authority level in England, population density, deprivation and other factors associated with urban areas such as the presence of more ethnically diverse populations may also be associated with higher mortality from COVID-19 [1].

Main messages

- Wirral had a significantly higher death rate from COVID-19 than England, the North-West, Merseyside overall and near statistical neighbour Sefton
- The locations within Wirral most affected in terms of positive COVID-19 cases, hospitalisations and mortality broadly corresponded (Clatterbridge, Woodchurch/ Upton, New Brighton and Oxtan areas); all have large proportions of older population and/or large numbers of care homes
- There appeared to be no discernible association between excess deaths and deprivation locally (e.g. Heswall experienced a larger percentage increase in excess deaths compared to Rock Ferry and Seacombe)

Cases

The data in **Table 4** below is from both Pillar 1 & Pillar 2 testing combined (see Appendices for explanation of testing pillars). It compares positive cases in Wirral to Merseyside overall, other Merseyside local authorities and England overall (as a rate per 100,000 population).

Table 4: Confirmed COVID-19 cases (number and rate per 100,000) as of 30/06/2020 by local authorities in Merseyside (Merseyside overall, North-West and England also shown for comparison)

Area	Cumulative Cases	Rate per 100,000
St. Helens	1,193	660.6
Knowsley	983	651.6
Wirral	2,018	622.8
Sefton	1,496	541.2
Liverpool	2,416	485.1
Merseyside	8,106	566.9
North-West	42,456	578.3
England	244,246	433.9

Source: Confirmed cases: <https://coronavirus.data.gov.uk/> Population data: [Office for National Statistics, 2020](https://www.ons.gov.uk/peoplepopulationandcommunity/healthandlife/bulletins/articlesandreports/coronavirus/2020-06-01)

Note(s): Data is subject to change due to data cleansing (including deduplication) and will therefore be subject to retrospective updates in any future reports or publications. This data differs to other

As **Table 4** shows, Liverpool had the most cases (numbers), but the lowest rate due to their larger population. Wirral confirmed/cumulative case rate sits in the middle of other authorities in Merseyside, but was above the rate seen for Merseyside, North West, and England, as of 30/06/2020. Wirral was ranked 19th out of 150 local authorities in England (1 being highest) by rate of confirmed cases per 100,000 (crude rate).

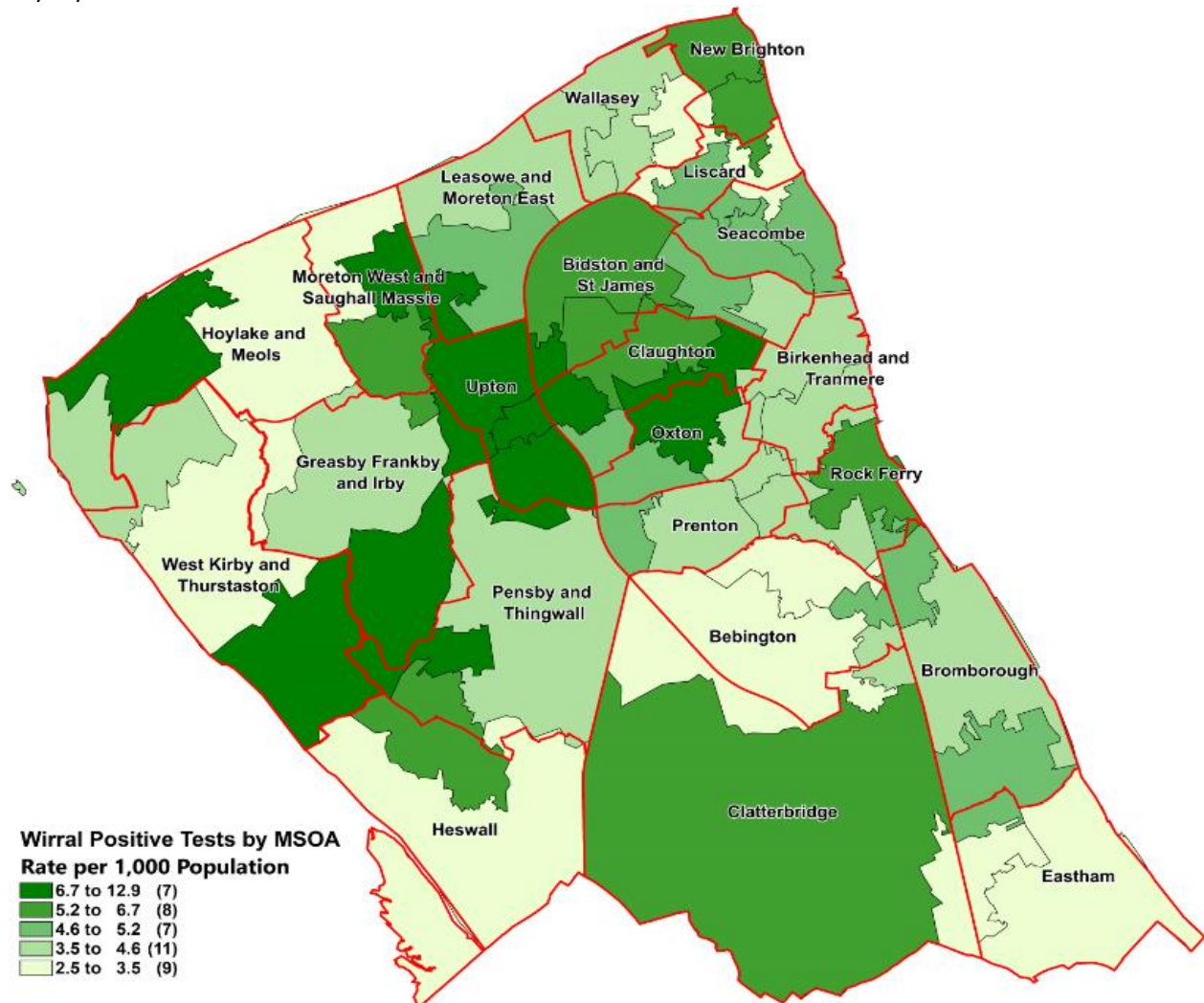
The REACT-2 surveillance study in England which examined the prevalence of antibodies in the community, showed that prevalence of antibodies in the community in England varied considerably between regions. So for example, the prevalence in England overall was 6.0% (95% CI, 5.8, 6.1), whereas in London it was 13.0% (95% CI, 12.3, 13.6) [15].

Figures have not yet been published for the regions, so there is no equivalent figure available for the North-West at the time of writing. Locally in Wirral, antibody testing is focused on key workers only, so no data is available for community prevalence currently. See page 8 for details of antibody prevalence in key workers working in local NHS Trusts (WUTH (Wirral University Teaching Hospital NHS Trust) and COCH (Countess of Chester Hospital NHS Foundation Trust)).

Data obtained from PHE showing both Pillar 1 and Pillar 2 cases highlights the differential number of cases within Wirral. **Map 1** below show the cumulative number of positive cases in Wirral from both Pillar 1 and Pillar 2 testing (where cases contained a valid postcode, n=1,684) by small area geography (MSOA) as of 30/6/2020. MSOAs or Middle Super Output Area, are areas smaller than ward.

Map 1 shows the rate of all positive cases in Wirral to 30/06/2020 (minus 800+ cases incorrectly assigned to the testing laboratory in Bromborough North MSA). These cases were excluded because cases should be assigned to the home postcode of the person tested rather than the laboratory, we cannot be certain they were Wirral residents and they skewed the map considerably, making Bromborough North stand out and all other MSOAs look negligible. Cases with the postcode for the laboratory in Bromborough excluded gives a more accurate picture and indicates a higher rate of positive cases in the Oxton, Woodchurch/Upton, Moreton, Thurstaston/Irby, and Hoyle areas.

Map 1: Cumulative rate (per 1,000) positive Wirral cases by MSOA (with Ward boundaries overlaid) as of 03/07/2020



Source: PHE Situational Explorer Data Portal (restricted site)

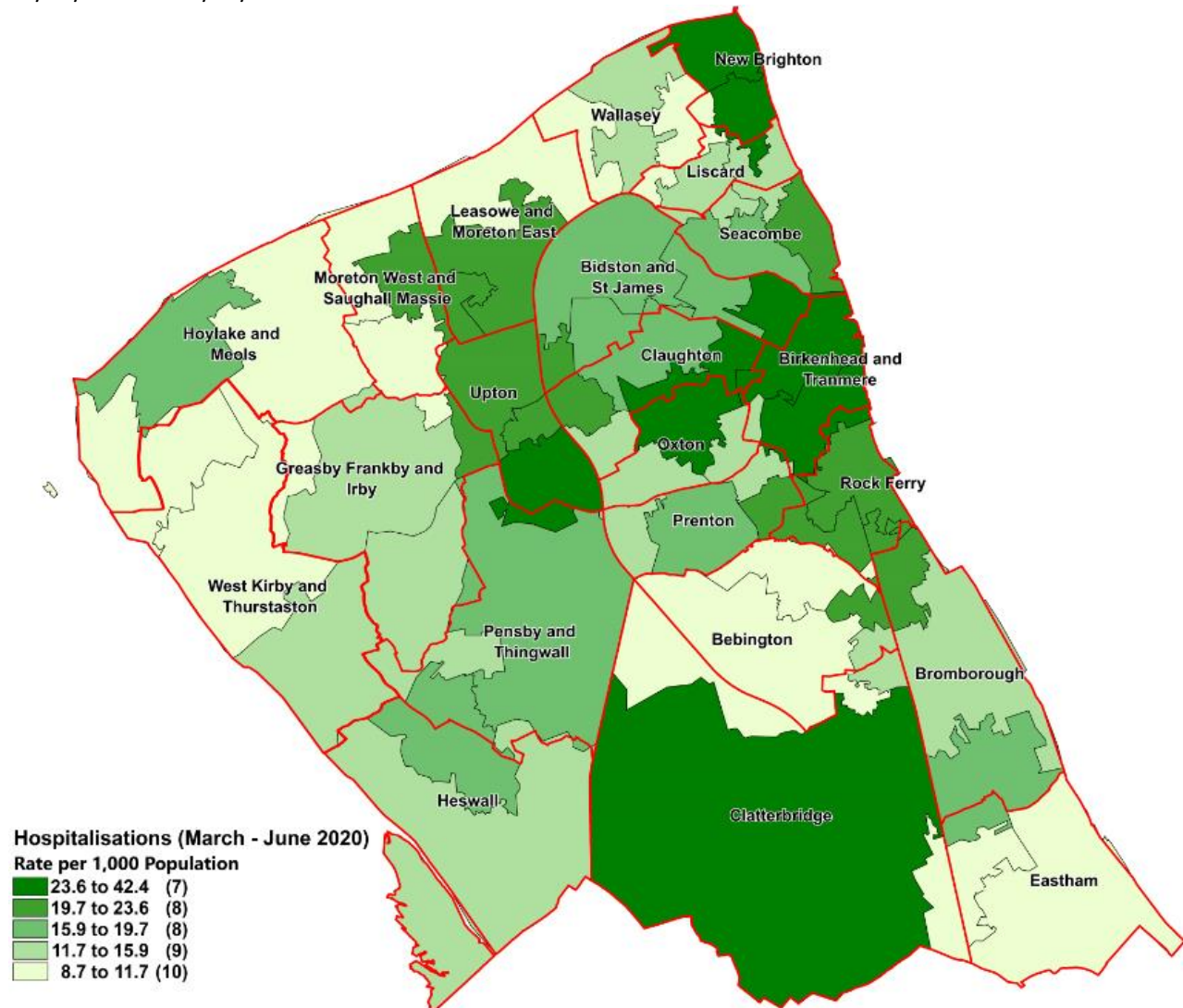
Note: MSOAs often cross ward boundaries as map above shows. For an explanation of MSOAs, please see Glossary.

Hospitalisations

The data shown **Map 2** below relates to hospitalisations (or admissions) and includes all those with a confirmed positive diagnosis of COVID-19 in the 21 days prior to, or following their admission/attendance, where the hospitalisation was between 01/03/2020 and 30/06/2020. **Map 2** is based on a total of 5,936 admissions, in 2,441 individuals (meaning some patients were admitted on more than one occasion). As mentioned earlier, analysis was completed in this way in order not to omit any admissions/encounters for which a positive test was not available at the time of admission or discharge.

Map 2 shows that the rate of hospital admissions in those with confirmed COVID-19, were highest in the Clatterbridge, Upton, New Brighton, Oxton and Birkenhead & Tranmere areas. The first four of these areas match the areas which also had the highest mortality rates. Upton & Oxton areas also had high rates of confirmed COVID-19 (as shown in the previous map), so there is a degree of symmetry between positive cases, admissions and mortality. The exceptions were West Kirby & Thurstaston (high rate of positive cases, but no correspondingly high rates of admissions or mortality) and Birkenhead & Tranmere (high rates of admissions, but no correspondingly high rates of positive cases or mortality). Reasons for this are unclear, but may relate to the methodology used to determine admissions, the age profile of these areas and pre-existing levels of health and ill-health in these areas.

Map 2: Hospitalisations in COVID-19 positive individuals, by MSOA (with Ward boundaries overlaid), 01/03/2020 to 30/06/2020



Source: HealthIntent (2020)

Notes: Includes all admissions with a confirmed positive diagnosis of COVID-19 in the 21 days prior to or following their admission and where that admission occurred between 01/03/2020 to 30/06/2020. Admissions shown for all causes. Where individuals were admitted more than once in this period, admission may not necessarily have been for the same cause on each occasion.

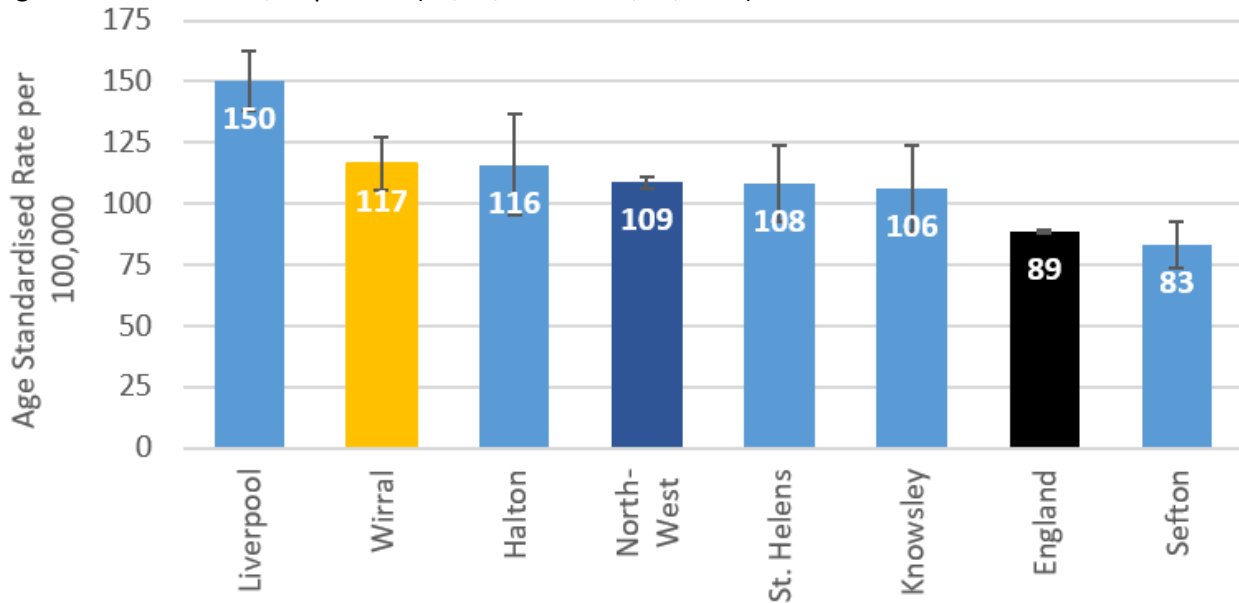
Mortality

COVID-19 mortality by local authority

As **Figure 5** below shows, when age structure of the population is taken into account, Wirral had a significantly higher death rate from COVID-19 than England, the North-West and near statistical neighbour Sefton. Of all the Merseyside authorities, Liverpool had the highest ASR. This may be due in the fact that it is the most urbanised area in Merseyside. As PHE found nationally [1], more urban authorities, in particular London, suffered a higher burden of COVID-19 mortality and that appears to have been replicated in Merseyside. Reasons why Wirral had a significantly higher rate of mortality than Sefton (which is a near statistical neighbour due to its demographic similarity to Wirral) are unclear.

Figure 5 below shows the age standardised rate (ASR) mortality rate for COVID-19 in Wirral and other Liverpool City Region local authorities between 01/03/2020 and 30/06/2020 (all persons).

Figure 5: Age standardised death rates (per 100,000) from COVID-19 in Wirral and other Liverpool City Region local authorities, all persons (01/03/2020 to 30/06/2020)

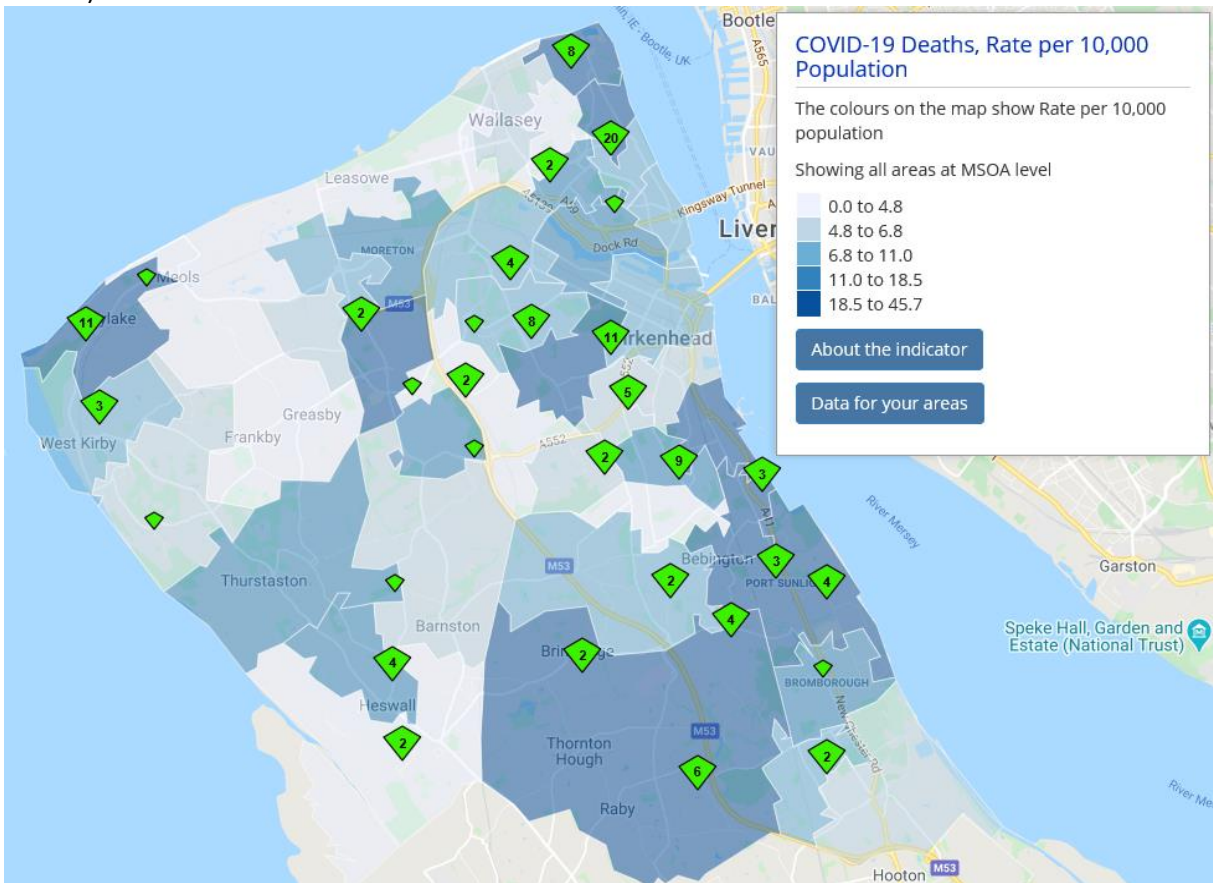


Source: [ONS, 2020](#) [14]

COVID-19 mortality by within Wirral geography

Deaths by geographical location (as a rate per 10,000) is shown in Map 3 below. It should be noted that the number of deaths from COVID-19 in Wirral remain relatively small (<500).

Map 3: Rate (per 10,000) of COVID-19 deaths by MSOA of residence, as of 30/06/2020 (with Care Homes overlaid)



Source: [Local Insight](#), 2020

Note: Green diamonds indicate Care Homes. Number inside some triangles denotes the number of Care Homes in that vicinity.

Map 3 indicates that deprivation alone does not explain the pattern of COVID-19 mortality in Wirral as of 30/06/2020. Although there are some areas of deprivation (Rock Ferry, Liscard), with high death rates, the areas with the highest rates (Hoylake, Upton and Clatterbridge, all of which have death rates in excess of 20 per 10,000) are also areas which have large proportions of older population and/or large numbers of care homes (care homes shown on the map by green diamonds, with number indicating the number of care homes in that area). It should be noted that a care home situated in the Clatterbridge area was a key location for T2A beds in Wirral at this time. See Care Homes section on page 32 for more details.

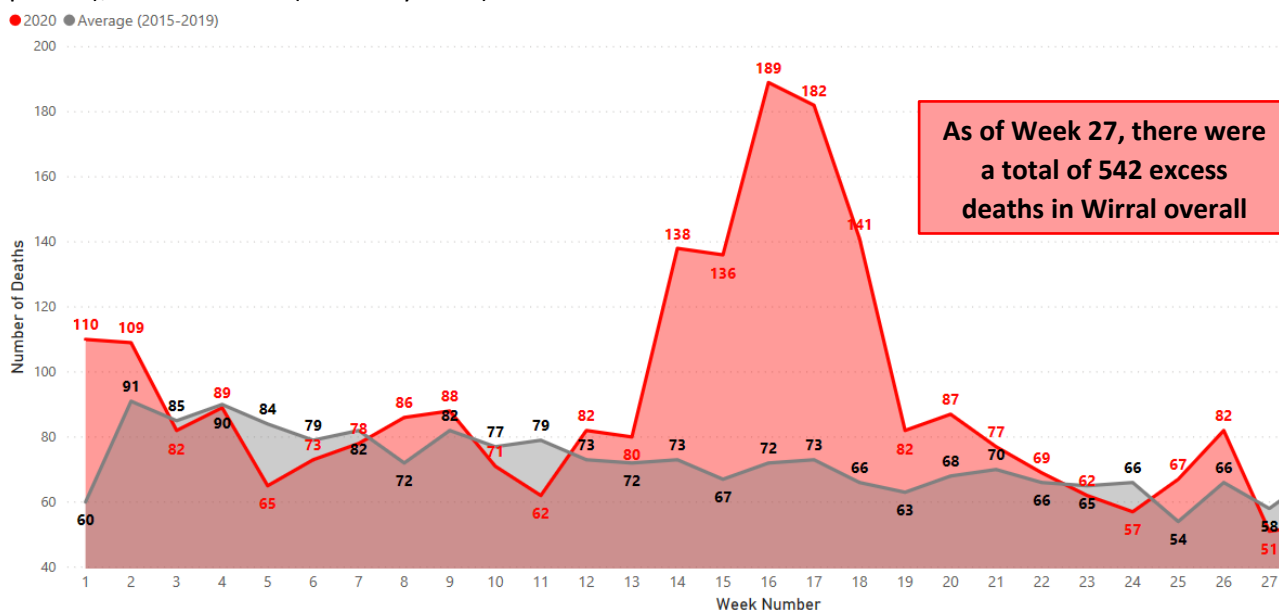
Excess mortality

Excess mortality is calculated by comparing the number of all deaths in 2020, to a comparator period (a five year average of deaths during 2015-19 has been used by Wirral Public Health Intelligence Team throughout this report as the comparator period, as this was the same methodology used by PHE).

Analysis of excess mortality is important, as research indicates that quantifying only COVID-19 mortality underestimates the overall impact, as it does not take account of indirect mortality effects of the pandemic and/or because of problems with the identification of the disease as the cause of death [12].

Excess mortality can be calculated for different locations (see later in this report for analysis of excess deaths in care homes); below are the results of calculations for both Wirral overall and Wirral ward.

Figure 6: Number and trend in Wirral excess deaths from all causes: 2020 compared to 2015-19 (5 years pooled), Weeks 1 to 27 (to 3rd July 2020)



Source: ONS, 2020

As **Figure 6** above shows, there have been several weeks between January and 30/06/2020 where mortality was lower than the 2015-19 average (Week 27 – the last week of June - being one of these, with an average of 58 deaths in 2015-19, compared to 51 deaths in 2020).

The majority of the excess mortality (in total, n=542 as of Week 27) occurred during weeks 14 to 18 of 2020 and for the 2 peak weeks of the pandemic locally (Weeks 16 and 17), deaths were almost 3 times the 5 year average. Overall, excess mortality analysis indicates that COVID-19 has resulted (directly or indirectly) in 28% higher mortality than the previous 5 year average (as of Week 27).

As of the end of Week 27, in Wirral COVID-19 accounted for a total of 425 deaths in Wirral; as total excess deaths are calculated to be 542, this means that COVID-19 accounted for 78% of all excess deaths. This also means that there were an additional 117 deaths in Wirral which were from non-COVID-19 causes.

Possible explanations for this could be either that COVID-19 deaths have been under-reported, or that the pandemic has indirectly resulted in additional deaths from other causes.

Excess Mortality by Wirral ward

Table 5: Number and trend in Wirral excess deaths from all causes: first 6 months of 2020 compared to same period in 2015-19 (01/01/2015 to 30/06/2019)

Ward	2015-19 deaths	2020 deaths	% difference
Bebington	100	101	1%
Bidston & St James	86	97	13%
Birkenhead & Tranmere	73	104	42%
Bromborough	94	113	20%
Clatterbridge	101	150	49%
Clughton	131	157	20%
Eastham	80	86	7%
Greasby, Frankby & Irby	71	75	6%
Heswall	83	104	26%
Hoylake & Meols	103	143	39%
Leasowe & Moreton East	77	116	51%
Liscard	96	125	31%
Moreton West & Saughall Massie	75	95	27%
New Brighton	97	137	42%
Oxton	71	80	12%
Pensby & Thingwall	76	93	22%
Prenton	76	91	20%
Rock Ferry	97	112	15%
Seacombe	81	94	16%
Upton	129	151	17%
Wallasey	71	79	11%
West Kirby & Thurstaston	77	83	8%
Wirral	1,943	2,386	23%

Source: PCMD (Primary Care Mortality Dataset - restricted), 2020

Notes: Cases minus a full and valid Wirral postcode excluded from this analysis

As **Table 5** shows, the three Wards with the highest percentage of excess deaths in the first half of 2020 (when compared with the 5-year average of 2015-19) were Leasowe and Moreton East (+51%), Clatterbridge (+49%) and New Brighton (+42%).

There were no wards which saw a decrease in deaths in 2020 compared to the 2015-19 average, all wards experienced excess deaths compared to the 5 year average.

There appears to be no discernible association with deprivation, with Heswall for example (one of the most affluent wards in Wirral) experiencing a 26% increase compared to the 5 year average; whereas Rock Ferry and Seacombe (two of the most deprived wards in Wirral) had much lower increases of 15% and 16% respectively.

Deprivation

Nationally, PHE have reported that mortality rates from COVID-19 in the most deprived areas were more than double the least deprived areas, for both males and females [1]. This is greater than the difference observed (in all-cause mortality) between 2014 and 2018, indicating that COVID-19 has resulted in greater inequality in death rates compared to other causes [1].

PHE also found that people in deprived areas were more likely to be diagnosed with COVID-19 than those in less deprived areas and hypothesised that this may be due to geographic proximity to infections, or a high proportion of workers in occupations that are more likely to be exposed [1]. Poor outcomes remained after adjusting for ethnicity, but the role of underlying health conditions requires further investigation. For more information on deprivation analysis, the IMD (Index of Multiple Deprivation) and Quintiles, please see Glossary.

Main Messages

- Nationally, PHE found that people living in deprived areas had both higher diagnosis and death rates from COVID-19 than those living in less deprived areas. Locally however, the relationship between positive diagnosis, hospitalisations, deaths, and deprivation was less clear, with rates of all three highest in Quintiles 2 and 4
- A contributory factor appears likely to be the location of Care Homes in Wirral, as the majority of COVID-19 deaths in Quintiles 2 and 4 occurred in Care Home residents; deaths in non-Care Home residents showed a pattern much more comparable with national findings (i.e. death rates then highest in Quintile 1 and lowest in Quintile 5)
- Nationally, evidence indicates that COVID-19 had a disproportionate impact on excess mortality in the most deprived groups, but it appears that in Wirral, all of the Quintiles (except the least deprived, Quintile 5) experienced higher mortality. Reasons for this are unclear, but may reflect more flexibility to work from home and/or self-isolate, during the lockdown period a lower prevalence of pre-existing poor health and as previously mentioned, the location of Care Homes.

Cases

Table 6 and **Figure 7** below show the number and rate of positive cases of COVID-19 in Wirral, by IMD (Index of Multiple Deprivation 2019) Quintile.

Table 6: Number and rate of positive cases of COVID-19 in Wirral by deprivation quintile, as of 30/06/2020

Quintile	Positive Cases (number)	Population	Rate per 100,000
1 Most Deprived	565	115,726	488
2	328	53,582	612
3	225	51,898	434
4	357	59,732	598
5 Least Deprived	174	42,297	411
Total	1,649	323,235	510

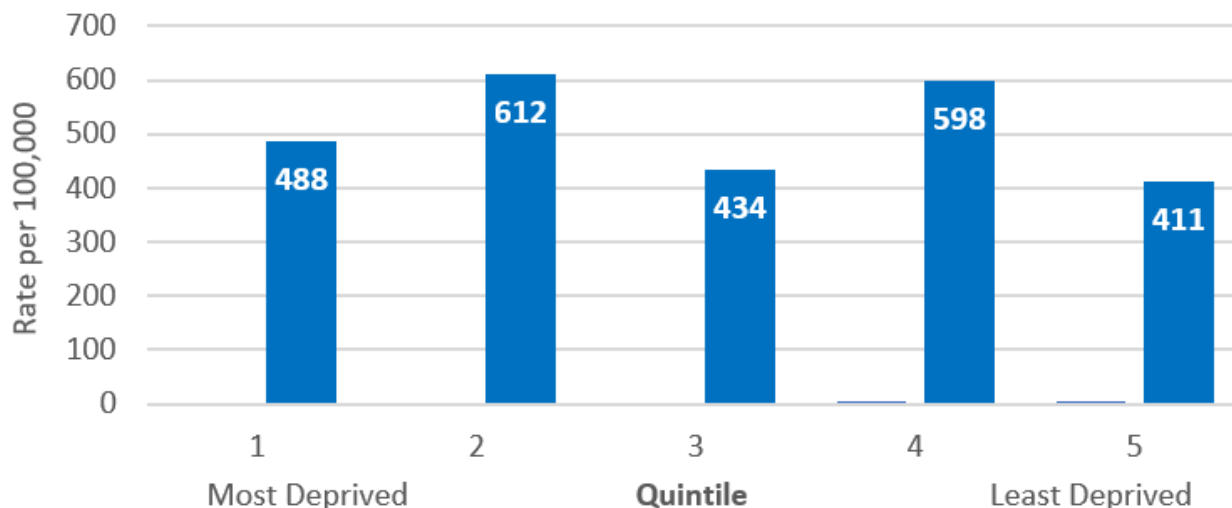
Source: PHE Situational Explorer (restricted site)

Note: Deaths missing a valid Wirral postcode excluded, as IMD quintile cannot not be assigned without a postcode.

As **Table 6** above shows, although in terms of raw numbers, there have been a higher number of positive cases in Quintile 1 (most deprived), the highest rates are actually in Quintiles 2 and 4. This is because 37% of the Wirral population (115,725) live in Quintile 1, so when the high population is taken into account (by calculating positive cases as a rate per 100,000 population in each quintile), Quintile 1 actually has a fairly low positive diagnosis rate. Quintile 5 has the lowest rate of diagnosed positive cases of any of the 5 Quintiles, but otherwise, the pattern appears quite different to the national picture.

Figure 7 below shows the rates per 100,000 in each Quintile visually.

Figure 7: Rate of positive cases of COVID-19 (rate per 100,000) in Wirral by IMD Quintile, to 30/06/2020



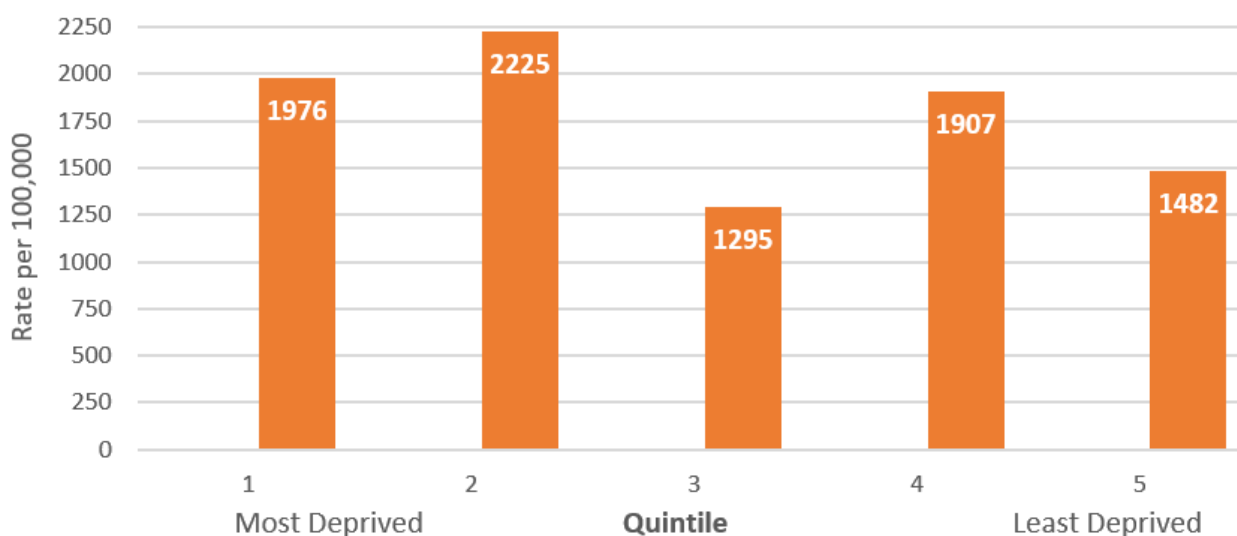
Source: PHE Situational Explorer (restricted site)

Note: Deaths missing a valid Wirral postcode excluded, as IMD quintile cannot not be assigned without a postcode.

Hospitalisations

Figure 8 below showing admissions/hospitalisations by deprivation quintile relates to 5,936 admissions in people who tested COVID-19 in the 21 days prior to or following their admission; data is shown as a rate per 100,000.

Figure 8: Admissions in patients confirmed as being COVID-19 positive in the 21 days prior to or following their admission, by deprivation quintile, 01/03/2020 to 30/06/2020



Source: Healtheintent (2020)

Notes: Local data on hospitalisations produced using the Healtheintent platform (which underpins the Wirral Care Record). Numbers shown are encounters, not persons.

Figure 8 above shows some similarities to the pattern seen in both diagnosed cases and mortality from COVID-19 in Wirral; namely that Quintile 2 (2nd most deprived quintile) had the highest rate of admissions in the period 01/03/2020 to 30/06/2020. For admissions however, the lowest rates were seen in Quintile 3 (for positive cases and mortality, the lowest rates were seen in Quintile 5, the least deprived quintile). Reasons for this are uncertain, but may relate to the location of care homes in Wirral, as detailed in the next section on mortality relating to deprivation (see below) and in the section on Care Homes (see page 32).

Mortality

Table 7 and Figure 9 below show the number of deaths from COVID-19 in Wirral as of 30/06/2020.

Table 7: Number and rate of COVID-19 deaths (rate per 100,000) in Wirral by IMD Quintile, to 30/06/2020

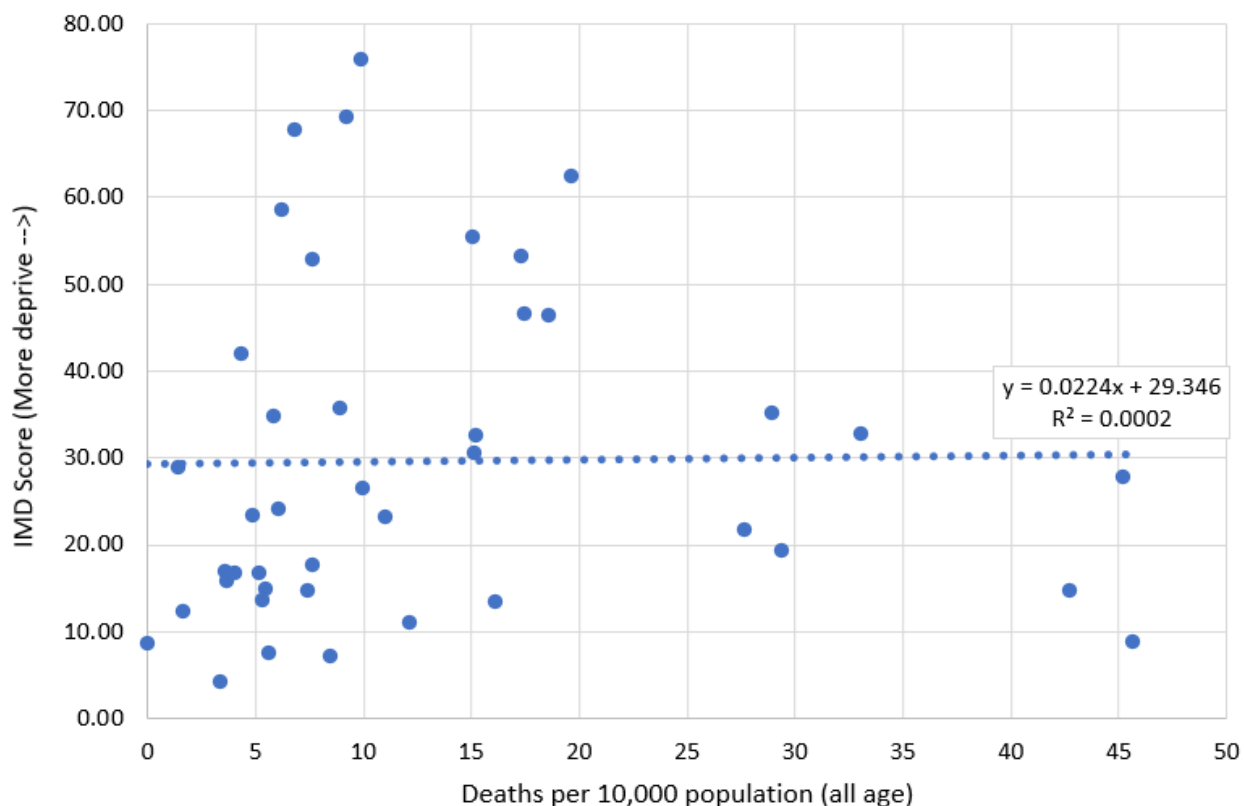
Quintile	Number of deaths	Population	Rate per 100,000
1 Most Deprived	143	115,726	124
2	107	53,582	200
3	45	51,898	87
4	125	59,732	209
5 Least Deprived	22	42,297	52
Total	442	323,235	137

Source: Local Public Health data source (combined data - restricted)

Notes: Totals in this table will not match ONS totals for same period, as a different (local) dataset has been used in order to derive postcode, required for deprivation analysis

When looking at deaths by IMD quintile, although the largest number are in Quintile 1, it should be remembered that the proportion of the local population living in each quintile varies. So for example, in Wirral, 37% of the population live in Quintile 1 (most deprived quintile), while the smallest proportion (13.1%) lives in Quintile 5 (the least deprived or most affluent quintile). Figures 9 and 10 below show that there appears to be little or no relationship between death rates from COVID-19 per 100,000 for each quintile and MSOA (so taking into account the proportion of the population who live in that quintile) and deprivation.

Figure 9: Correlation between COVID-19 deaths (rate per 100,000) and IMD Quintile, by Wirral MSOA, to 30/06/2020

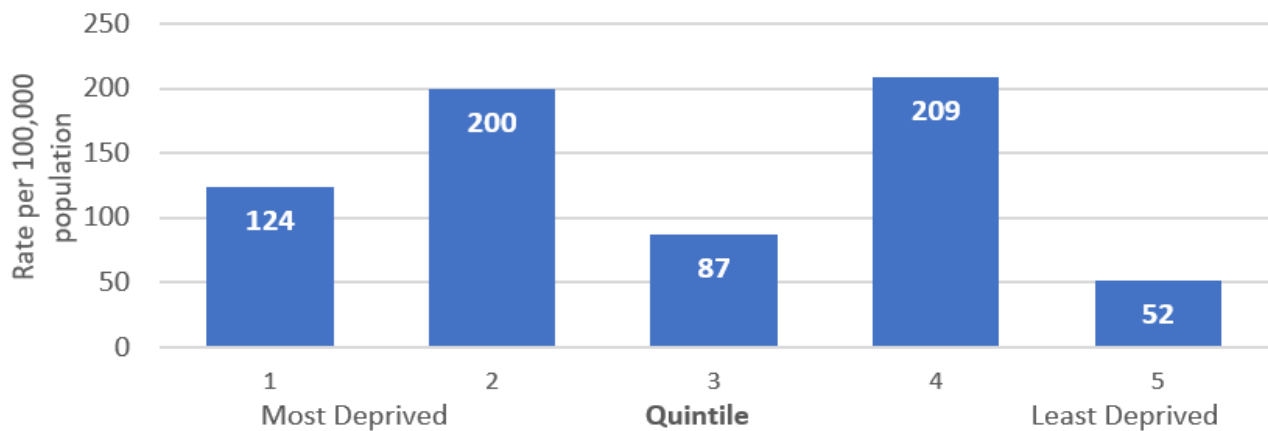


Source: Combined local Public Health data source (deaths - restricted) and IMD, 2019 (MSOA deprivation)

Note: Deaths missing a valid or full Wirral postcode excluded, as MSOA and IMD quintile cannot not be assigned without this information

As the correlation line in **Figure 9** above shows, there is little or no relationship between the 2 variables (in this case, death rate and deprivation in each Wirral MSOA). The death rate (per 100,000) for each quintile in Wirral is shown in **Figure 10** below.

Figure 10: Rate of COVID-19 deaths (rate per 100,000) in Wirral by IMD Quintile, to 30/06/2020

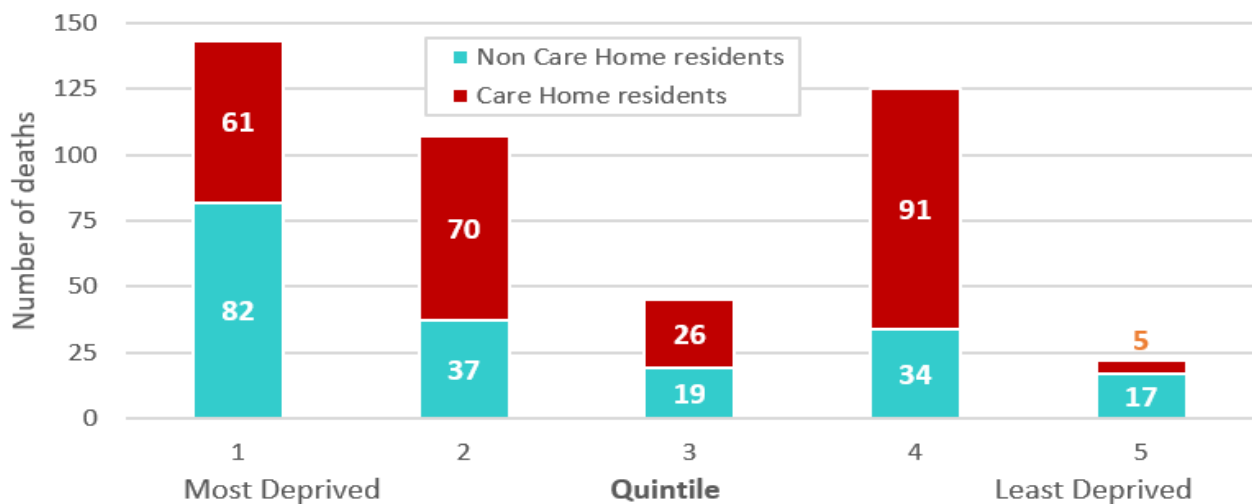


Source: Combined local Public Health data source (deaths - restricted) and IMD, 2019 (deprivation)

Note: Deaths missing a valid or full Wirral postcode excluded, as IMD quintile cannot not be assigned without this information

Figure 10 shows that broadly, deaths from COVID-19 do not appear to follow the national pattern (increasing deprivation resulting in increasing mortality), but they *do* follow the same pattern as positive diagnosis rates and hospitalisations in Wirral. That is, the highest rate of deaths is apparent in Quintile 2 followed by Quintile 4, with Quintile 5 showing the lowest rate. Reasons for why Wirral diverges from national trends on deprivation are unclear, but may be influenced by locations of care homes. See **Figure 11** below.

Figure 11: Number of COVID-19 deaths in Wirral, by Care Home residence and IMD Quintile, to 30/06/2020

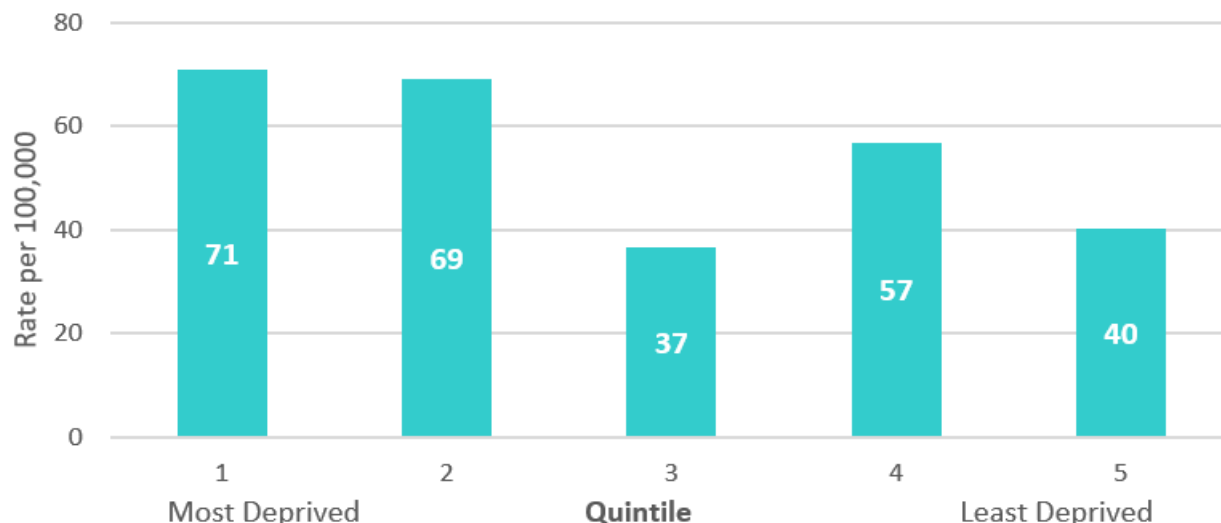


Source: Combined local Public Health data source (deaths - restricted) and IMD, 2019 (deprivation)

As **Figure 11** above shows, in Quintiles 2 and 4 (which have the highest mortality rates from COVID-19), it is apparent that the majority of deaths in both of these quintiles is in residents of Care Homes. Three-quarters of deaths in Quintile 4 were in Care Home residents, while in Quintile 2 more than half of all the deaths occurred in Care Homes. It seems likely that the location of Care Homes in Wirral (large numbers in areas classed as Quintiles 2 and 4), are driving a pattern which marks Wirral out as differing from the national trend.

If just the non-Care Home deaths are considered, the pattern is much more along the lines of national findings which indicated that deprivation conferred poorer outcomes from COVID-19. See **Figure 12** below showing rate of death per 100,000 in non-Care Home residents only.

Figure 12: Rate of COVID-19 deaths (rate per 100,000) in Wirral, in non-Care Home residents and IMD Quintile, to 30/06/2020



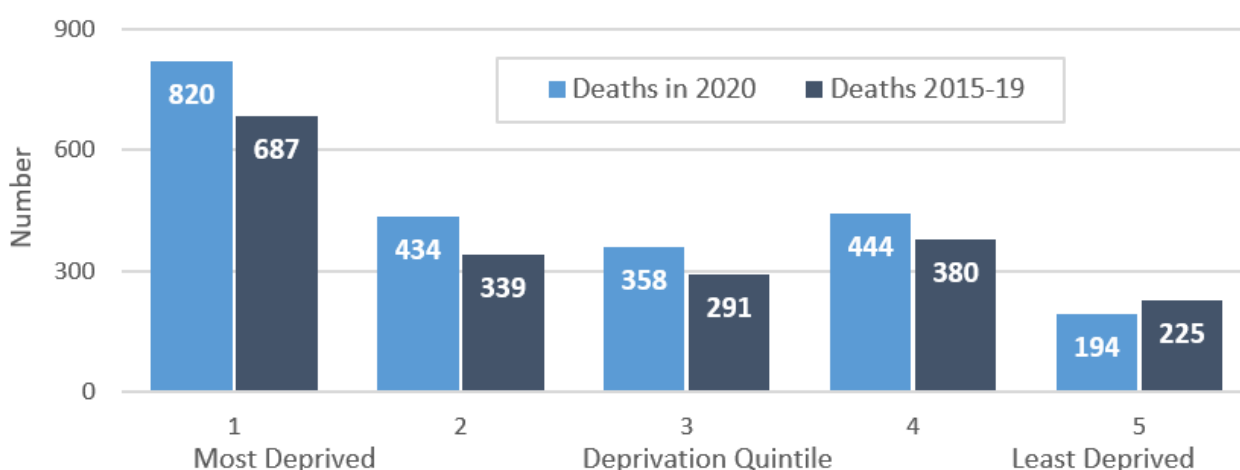
Source: Combined local Public Health data source (deaths - restricted) and IMD, 2019 (deprivation)

As **Figure 12** above shows, when deaths which occurred outside of care homes are calculated separately as a rate per 10,000 deaths (for each quintile), the pattern looks a little more like the national trend, with the highest rates seen in Quintile 1, and the lowest seen in Quintile 5. This lends weight to the hypothesis that the geographical location of Wirral care homes and the high number of confirmed cases and deaths in care homes has introduced a level of bias which has affected deprivation results.

Excess mortality

Excess mortality (number of deaths) by deprivation quintile is shown in **Figure 13** below.

Figure 13: Excess mortality (number) in Wirral from all causes: 2020 (01/01/2020 to 30/06/2020 compared to 2015-19 (5 years pooled, 01/01/2015 to 30/06/2019), by deprivation Quintile



Source: PCMD (Primary Care Mortality Dataset) for 2015-19 data. Local Public Health data (combined data sources) for 2020

As **Figure 13** shows, Quintiles 1, 2, 3 and 4 all experienced more deaths between 01/01/2020 to 30/06/2020, in comparison with the same months in 2015-19. The exception was Quintile 5, which has actually experienced fewer deaths than the 5 year average, by quite a considerable margin. Nationally, evidence indicates that COVID-19 has had a disproportionate impact on mortality in the most deprived groups [1].

It appears in Wirral however, that all of the Quintiles (except the least deprived, Quintile 5) experienced higher mortality. Reasons for this are unclear, but may reflect more flexibility to work from home and/or self-isolate during the lockdown period, a lower prevalence of pre-existing poor health and as previously mentioned, the location of Care Homes.

Ethnicity

Nationally, evidence shows that ethnicity was significantly associated with higher diagnosis, hospitalisation, and mortality rates from COVID-19 [1]. PHE found the highest diagnosis rates of COVID-19 per 100,000 population (age standardised) were in Black ethnic groups, with the lowest in White ethnic groups [1].

PHE also found that death rates from COVID-19 were higher for Black and Asian ethnic groups compared to White ethnic groups [1]. In comparison with previous years, all-cause mortality was almost 4 times higher than expected among Black males for this period, almost 3 times higher in Asian males and almost 2 times higher in White males. Among females, deaths were almost 3 times higher in this period in Black, Mixed and Other females, and 2.4 times higher in Asian females compared with 1.6 times in White females [1].

National analysis was **not** able to quantify the impact of occupation or co-morbidities such as obesity on BAME groups and COVID risks and outcomes. This is important, because occupation is associated with risk of being exposed to COVID-19 and some key occupations have a high proportion of workers from BAME groups. Local analysis of this kind was also unable to look at this impact, due to lack of linked and complete datasets. It is important to note that PHE have made the point that other evidence has shown that when these factors *are* included, the difference in risk of death among hospitalised patients is greatly reduced.

A literature review and stakeholder feedback undertaken by PHE on the impact of COVID-19 on BAME communities [9] indicated that risks associated with COVID-19 transmission, morbidity, and mortality can be exacerbated by the housing challenges faced by some members of BAME groups. The most recent research from the UK suggests that both ethnicity and income inequality are independently associated with COVID-19 mortality [9]. Individuals from BAME groups are more likely to work in occupations with a higher risk of COVID-19 exposure. They are more likely to use public transportation to travel to their essential work. Historic racism and poorer experiences of healthcare or at work may mean that individuals in BAME groups are less likely to seek care when needed or as NHS staff are less likely to speak up when they have concerns about Personal Protective Equipment (PPE) or risk [9].

Locally, the BAME population in Wirral is around 5% of the population according to the last Census in 2011; other more recent sources, including the Wirral School Census indicate that this figure may now be around 8%-9%. The largest BAME group in Wirral according to the last Census was 'Other White'; within this group, Polish was the largest grouping. Birkenhead & Tranmere ward and Birkenhead Constituency in general, were the areas with the largest BAME populations in Wirral. The small size of the Wirral BAME population, combined with data quality issues, makes drawing conclusions about the impact of COVID-19 challenging.

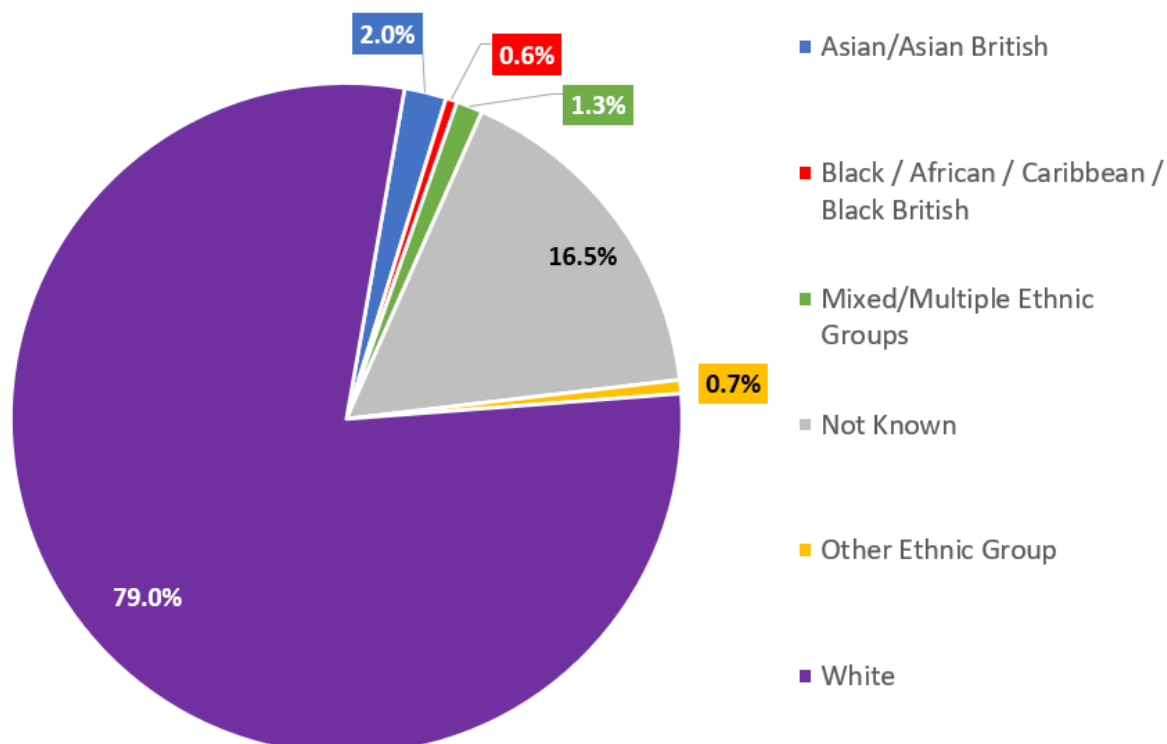
Main messages

- Nationally, ethnicity was significantly associated with higher diagnosis, hospitalisation, and mortality rates from COVID-19
- Locally, a combination of the small BAME population in Wirral, poor data quality and the relatively small number of positive tests, hospitalisations and deaths (relative to the UK overall) mean it is difficult to draw conclusions about the impact of COVID-19 on BAME population
- Given the total number of deaths from COVID-19 in Wirral (as of 30/06/2020, n=425), it might be expected that between 34-38 of those deaths would be from the BAME population; in fact, as of 30/06/20, there had been less than 5 recorded deaths in people classed as BAME in Wirral

Cases

Up to 30/06/2020, there were just under 2,000 cases of confirmed COVID-19 in Wirral. **Figure 14** below shows the breakdown of these cases by ethnicity.

Figure 14: Positive cases of COVID-19 in Wirral by ethnicity, as at 30/06/2020



Source: Situational Explorer PowerBI Profile (PHE, restricted site).

Figure 14 shows that the majority of confirmed positive cases were in the White population; the Wirral population is over 90% White, so this is unsurprising. Asian/Asian British was the largest BAME group in those testing positive up to 30/06/2020, but this was only 2% of cases. The second largest group (16.5% or 1 in 6 records) was 'Not Known'. Poor data quality prevents definitive conclusions being drawn about the impact of ethnicity locally.

Nationally, the REACT-2 surveillance study in England (examining the prevalence of COVID-19 antibodies in the community), found that BAME groups had a higher prevalence of antibodies at 17.3%, 11.9% and 12.3% respectively compared with White ethnicity, where prevalence was 5.0% [15].

Hospitalisations

The following table indicates the number of COVID-19 positive individuals hospitalised, by ethnicity.

Table 8: Admissions in patients confirmed as being COVID-19 positive in the 21 days prior to or following their admission, by ethnicity, to 30/06/2020

Ethnicity	Percentage of admission encounters
Asian/Asian British	1.0%
Black/African/Caribbean/Black British	0.2%
Mixed/Multiple Ethnic Groups	0.7%
Not Known/Stated	3.9%
Other Ethnic Group	0.6%
White	93.7%
Total	100.0%

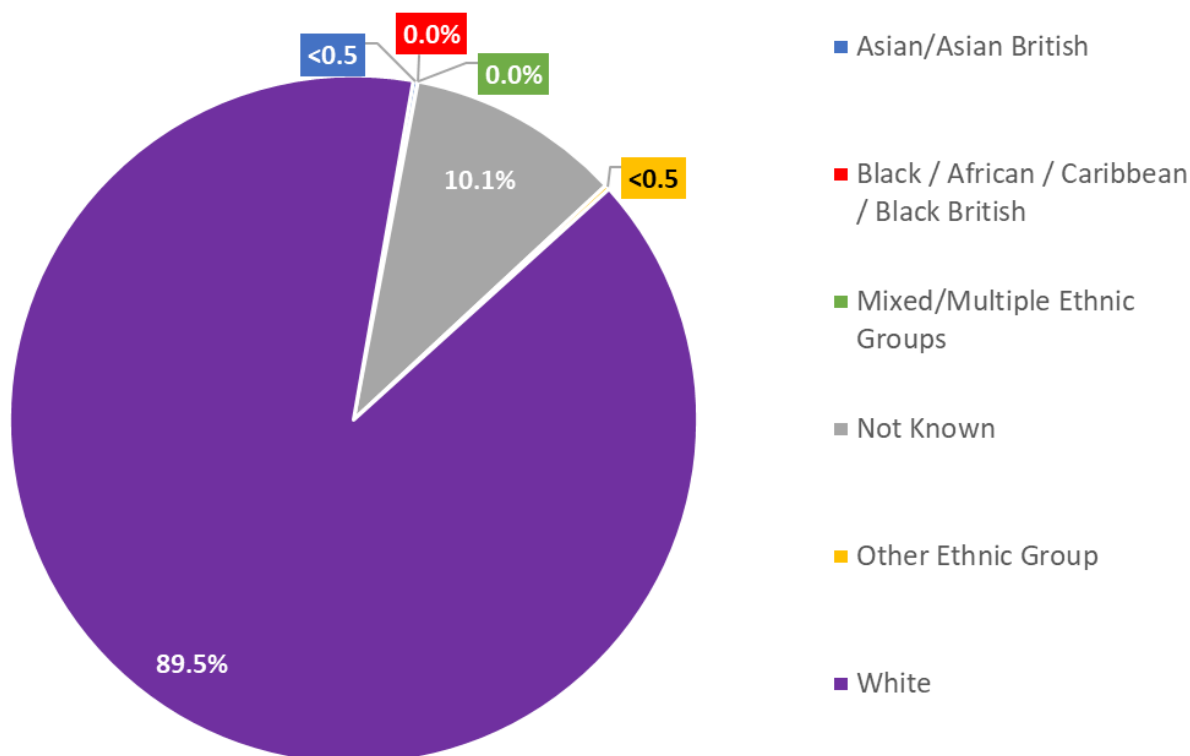
Source: Healtheintent (2020)

As **Table 8** above shows, less than 3% of admissions in patients confirmed as having tested positive for COVID-19 in the 21 days prior to or following their admission, are in patients from non-White groups. The largest group after White was Not Known (3.9%). It is therefore impossible to draw any conclusions from such a miniscule number of admissions (<60 in total out of a total of 2,442 admissions/encounters).

Mortality

Up to 30/06/2020, there were over 400 deaths from COVID-19 in Wirral, with <5 deaths categorised as being in people from the BAME community. **Figure 15** below shows the breakdown.

Figure 15: COVID-19 mortality in Wirral by ethnicity, as at 30/06/2020



Source: PCMD (Primary Care Mortality Dataset) for 2015-19 data. Local Public Health data (combined data sources) for 2020

As **Figure 15** shows (and in common with the data on positive cases of COVID-19), the majority of COVID-19 deaths were in the White population. Again, this is to be expected given the structure of the Wirral population, which is over 90% White. Asian/Asian British was the largest BAME group represented in those who died from COVID-19 up to 30/06/2020, with 0.2% of cases.

The second largest group (10.1%) after White, was 'Not Known' (meaning this field was left blank in the data).

The relatively small number of deaths in Wirral (as compared to the large amount of data available nationally from over 45,000 deaths), combined with data quality issues (1 in 10 records with a blank/not known ethnicity field locally), makes drawing conclusions about the impact of ethnicity on COVID-19 mortality in Wirral difficult.

It may be the case for example, that some of those deaths which currently have a blank field are in BAME people and the blank data fields are 'hiding' the impact on this population. Alternatively, it could be the case that Wirral is dissimilar to the national picture with regard to impact of COVID-19 on BAME populations. At this stage and with this level of unavailable data, it is impossible to tell.

Excess mortality

Excess Mortality is calculated by comparing mortality in 2020, to mortality in a comparator period, usually the average of the previous 5 years. In other sections of this report, our benchmark for determining excess mortality in 2020, has been to use mortality data for the years 2015-19. Unfortunately, the data source for historical mortality data (PCMD or the Primary Care Mortality Dataset), does not contain a field for ethnicity for these years. Therefore, we are unable to determine whether the national findings highlighted by PHE (lower mortality in previous years in BAME groups compared to the White population, followed by a higher rate mortality in 2020 from COVID) is also true locally.

Occupation

NHS England in conjunction with Imperial College, produced a review highlighting occupational risk factors in susceptibility and exposure to COVID-19; namely that roles with high exposure were more likely to be diagnosed [7].

ONS reported that specifically, men working as security guards, taxi drivers and chauffeurs, bus and coach drivers, chefs, sales and retail assistants, lower skilled workers in construction and processing plants, and men and women working in social care had significantly high rates of death from COVID-19 [13].

PHE analysis expanded on the ONS work and showed that nursing auxiliaries and assistants had also seen an increase in all cause deaths since 2014 to 2018 and so were also at risk. PHE did make the point however, that for many occupations, the number of deaths is too small to draw meaningful conclusions [1] and this is certainly true when looking at one local authority such as Wirral.

Results from the REACT-2 study on antibody prevalence (indicating previous infection), have been published by Imperial College for June 2020 and show that prevalence of antibodies in the community in England overall was 6.0% (95% CI, 5.8, 6.1) [15]. Prevalence was however, higher in certain occupations. For example, people who worked in care homes had an adjusted prevalence of 16.5% compared with 11.7% for healthcare workers with direct patient contact and 5.3% for workers who were not key workers [15].

This report has however, despite small numbers, attempted to highlight some local findings with regard to occupation and COVID-19 risk and outcomes.

Main messages

- Nationally, PHE report that men working as security guards, transport workers, chefs, sales/retail assistants, lower skilled workers in construction and processing plants and social care workers of both genders had significantly high rates of death from COVID-19
- Locally, information about the occupation/field of occupation was unavailable for the majority of positive cases of COVID-19 in Wirral (due to data not being collected at source); among the tiny proportion of positive cases for whom occupational field was recorded, the largest group was 'Health & Social Care' (4% of positive cases)
- In Wirral, just 57 out of a total of 425 COVID-19 deaths (to 30/06/2020) were of working age (aged 16-67); almost one in four of those deaths (23%) had a blank field for occupation
- With the caveat that numbers locally are small, the largest categories of occupational field for deaths from COVID-19 in Wirral were Professional, Scientific & Technical (12%), Health & Social Work (11%) and Motor Trade, Wholesale & Retail (9%)
- Reasons why Professional, scientific & technical were over-represented among COVID-19 deaths locally are unclear, but as previously stated, may be due to a relatively small numbers
- The most over-represented occupational group in Wirral was Transport & Storage (incl. postal), which employs only 3.5% of the Wirral population, but accounted for 9.1% of deaths (caveat of small numbers); this is in line with national findings identifying Transport workers however

Cases

Data on occupation of positive cases is at present, very poorly coded. For example, of 1,327 positive cases of working age (aged 18-67), just 9% contained an occupation. In 1,208 cases, the occupation field was either blank, or had been filled in with free text (such as 'I was referred by 111' with no indication of occupation). The largest occupational field amongst the coded fields, was 'Health & Social Care', with 6% of positive cases.

Table 9: Positive cases of COVID-19 (number & proportion) by occupational field, 01/03/2020 to 30/06/2020

Industry	Number	%
Health and Social Work	75	6%
Mining, Quarrying & Utilities	<10	<1%
Accommodation & Food services	20	2%
Education	10	1%
Public administration & defence	<10	1%
Transport & Storage (incl. postal)	<10	<1%
Information & Communication	<10	<1%
Financial and Insurance	0	0%
Real Estate Activities	0	0%
Professional, scientific & technical	0	0%
Business Administration & Support Services	0	0%
Construction	0	0%
Motor Trade, Wholesale and Retail	0	0%
Manufacturing	0	0%
Arts, entertainment, recreation & other services	0	0%
Agriculture, forestry & fishing	0	0%
Unknown	1,208	91%
Total	1,327	100%

Source: Situational Explorer PowerBI Profile (PHE, restricted site). Categories from the Business Register and Employment Survey, (2018)

Note: Number may not sum due to rounding. There were in total 2,055 positive cases as of 30/06/2020 (all ages), but those aged <16 or >67 or over (not of working age) were excluded.

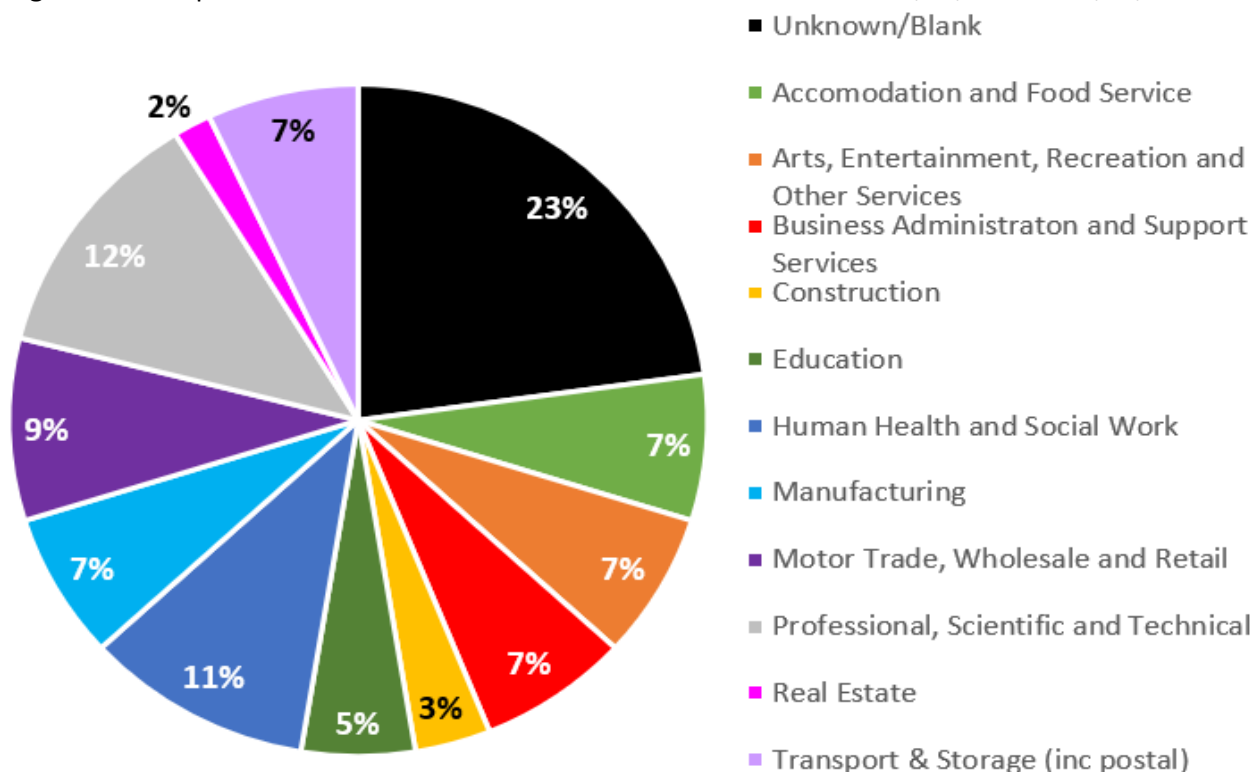
As **Table 9** above shows, extremely poor data quality (9 out of 10 positive cases had no occupational information recorded), make drawing conclusions about occupational groups most at risk locally very difficult to draw.

Mortality by occupation

The majority of deaths from COVID-19 both nationally and locally, were in those of retirement age. Of the 425 COVID-19 deaths registered up to the end of Week 27 (3rd July 2020), just 57 were in those of working age (aged 18-67). Care should therefore be taken due to the relatively small numbers represented in **Figure 16**, particularly as of those, the largest proportion (almost one in four, or 23%) had a blank field for occupation.

The next most common categories were Professional, Scientific & Technical (12%), Health & Social Work (11%) and Motor Trade, Wholesale & Retail (9%); Some of these occupational fields involve close and/or frequent contact with large numbers of the general public leading to an increased risk of COVID-19 infection and these fields have also been noted nationally by PHE (e.g. Retail, Health & Social Care). See **Figure 16** below.

Figure 16: Occupational field of those who died from COVID-19 in Wirral: 01/03/2020 to 30/06/2020



Source: Business Register and Employment Survey, NOMIS and PCMD (2020)

Table 10 below shows the number and proportion of the population of Wirral who currently work in these fields (according to NOMIS), compared to the number and proportion of deaths for comparison. The ratio of COVID-19 deaths to the number employed in each occupational field is also included, to give an indication of those fields for which deaths may be over-represented. See Table x below.

Table 10: Comparison of number and proportion of employees and COVID-19 deaths in Wirral by industry, plus ratio of deaths to percentage of those employed in Wirral

Industry	Employment		Deaths		Ratio
	Number	%	Number	%	
Agriculture, forestry & fishing	175	0.2%	0	0.0%	0.0
Mining, Quarrying & Utilities	1,250	1.2%	0	0.0%	0.0
Manufacturing	8,000	7.9%	<5	<10%	115.1
Construction	4,000	4.0%	<5	<10%	113.6
Motor Trade, Wholesale and Retail	16,750	16.6%	5	11.4%	68.5
Transport & Storage (incl. postal)	3,500	3.5%	<5	<10%	259.7
Accommodation & Food services	7,000	6.9%	<5	<10%	131.8
Information & Communication	1,500	1.5%	0	0.0%	0.0
Financial and Insurance	1,000	1.0%	0	0.0%	0.0
Real Estate Activities	1,500	1.5%	<5	<10%	151.5
Professional, scientific & technical	8,000	7.9%	7	15.9%	201.4
Business Administration & Support services	7,000	6.9%	<5	<10%	131.8
Public administration & defence	5,000	5.0%	0	0.0%	0.0
Education	10,000	9.9%	<5	<10%	68.9
Health and Social Work	23,000	22.8%	6	13.6%	59.8
Other services (incl. arts, entertainment & recreation)	5,000	5.0%	<5	<10%	181.8
Total	101,000	100%	44	100%	

Source: Business Register and Employment Survey, NOMIS and PCMD (2020)

Notes: Numbers may not sum due to rounding. The 13 deaths with no occupational field have been excluded from the table (resulting in slightly different %'s than in **Figure 16**). Numbers less than 5 (and 10%) have been suppressed for reasons of confidentiality

As **Table 10** shows, the 3 largest groups (in terms of number and proportion) of COVID-19 deaths in Wirral were Professional, Scientific & Technical (15.9%), Health & Social Work (13.6%) and Motor Trade, Wholesale & Retail (11.4%).

The field Professional, Scientific & Technical employs just 7.9% of the working population of Wirral yet has the highest proportion of any of the occupational groups (15.9%). Reasons for this are unclear, do not replicate national findings and may be an artifact of small numbers; they are nevertheless surprising.

The presence of Health & Social Work and Motor Trade, Wholesale & Retail in the top 3 is less surprising, as they are the two largest employment fields in Wirral, employing respectively, 16.6% and 22.8% (almost 40% in total) of the total working population of Wirral.

In fact, given that 22.8% of Wirral work in Health & Social Work, plus a potential level of exposure to COVID-19 which is higher than the public at large, it is perhaps surprising that the number of deaths is not larger in this group (13.6% of all deaths from COVID-19).

The occupational field with the largest ratio of deaths to number working in the field was Transport & Storage, which employs only 3.5% of the Wirral population, but accounted for just under 10% of deaths. The other categories with large deaths to employment number ratios were Professional, Scientific & Technical and Other Services (which includes roles such as cleaners). As mentioned above, care should be taken as absolute numbers are small.

Inclusion Health Groups

Main messages

- Nationally, data suggests a much higher COVID-19 diagnoses and mortality rates among rough sleepers, people with LD and people born outside of the UK and Ireland compared to the general population; local data is currently unavailable which could confirm if this is the case in Wirral, suggesting improvements to data quality are necessary before conclusions can be drawn locally

Mortality in Migrants

PHE's 'Disparities' report states that compared to previous years, there has been a larger increase in deaths among people born outside the UK and Ireland [1]. The biggest relative increase was for people born in Central and Western Africa, the Caribbean, South East Asia, the Middle East and South and Eastern Africa. They hypothesise that this may be one of the drivers behind the differences in mortality rates seen between ethnic groups [1]. Locally, although health records do not currently distinguish those born outside the UK from the UK born population, meaning local analysis based on this factor is not possible, it may be reasonable to assume that if this group have been found to be at risk nationally, the same will also be true locally. It may be possible in the future, when Wirral Public Health Analysts are once again able to visit the Merseyside Coroner's office in Liverpool, to complete a retrospective analysis of place of birth, as Coroners records usually contain this information. At the time of writing however, this information is not available locally.

Rough sleepers

Nationally, data suggests a much higher diagnoses rate among rough sleepers compared to the general population [1]. ONS released information on 10th July [3] indicating that most of the deaths in homeless people identified in England & Wales (n=16) were in men, and the mean age at death was 58; this is much lower than the mean age of death in COVID-19 patients who were not homeless. Locally, it was not possible to assess whether the national findings were also true in Wirral as neither testing nor mortality data identifies people with no fixed abode.

People with a Learning Disability

In June 2020, the [Care Quality Commission \(CQC\) published data](#) on deaths in people with a learning disability [11]. The figures included deaths reported by services in England who provide care for people with a learning disability and/or autism. This includes adult social care, independent hospitals, and community care.

Table 11: Notifications of deaths of people with LD and/or ASD, by age and COVID-19 status; 2019 versus 2020 in England

Year	Age	<25	25-34	35-44	45-54	55-64	65-74	75-84	85+
2019		*	10	8	22	46	40	21	14
2020 (Suspected & Confirmed COVID-19)		*	6	14	26	67	54	28	10
2020 (non-COVID-19)		*	6	8	26	60	38	26	14
Additional deaths in 2020 (compared to 2019)			2	14	30	81	52	33	10

Source: Care Quality Commission [11]

Notes: Notifications in those aged <25 suppressed due to small numbers

Table 11 above shows that between 10 April and 15 May 2020, a total of 386 people who were receiving care from learning disability and/or autism services died. This was more than double (134% increase) the figure during the same period in 2019. Of the 386 people who died in 2020, 206 were from suspected or confirmed COVID-19, but Non-COVID-19 deaths also increased (by 10% in 2020 compared to 2019).

It is not currently possible to calculate excess mortality in people with LD locally, as in order to do so, mortality in a comparator period, usually the average of the previous 5 years must be used as a benchmark. In other sections of this report, our benchmark for determining excess mortality in 2020, has been to use mortality data for the years 2015-19. Unfortunately, the data source for historical mortality data (PCMD or the Primary Care Mortality Dataset), does not contain a field for Learning Disability for these years. Therefore, we are unable to determine whether the national findings highlighted by the CQC above is also true locally.

Local Information on people with LD and COVID-19 indicates that between 01/01/2020 and 30/06/2020 there were a total of **26 deaths** (from all causes) of people flagged as having a Learning Disability (although it should be noted that not all people with LD are noted on their medical records as having a LD, so this is likely to be an under-estimate of actual numbers).

Of these 26 deaths, 5 were due to COVID-19 (19% of all deaths in people with a known LD in Wirral). In comparison with the non-LD population, over the same period, a total of 425 died from COVID-19 out of a total of 2,495 people who died from all causes (17% of all deaths). It would appear then, that a very similar proportion of deaths in the LD and non-LD populations have died from COVID-19 in Wirral during this period, although caution should be applied due to the small number of deaths in those recorded as having a LD. Some other facts about deaths in people with LD and COVID-19 in Wirral in 2020 are presented below:

- All 5 COVID-19 deaths were males; among the 21 Non-COVID-19 deaths, the genders were more evenly split, with 11 males and 10 females
- The average age of the people with LD who died from COVID-19 was 66, older than those who died from Non-COVID-19 causes (average of 63). A difference of the same magnitude was also apparent in the age difference of COVID-19/non COVID-19 deaths in the general non-LD Wirral population

- Deaths in people with LD (from both COVID-19 and non-COVID-19 causes) occurred at a considerably younger average age compared to deaths in non-LD people (this is a long standing finding, not confined to COVID-19)
- Those with LD who died from COVID-19 had an average of 2.2 per-existing health conditions, compared to an average of 1.8 conditions in those people with LD who died from Non-COVID causes
- Most common conditions in the 21 people who died from Non-COVID-19 causes were Epilepsy (n=6) and Diabetes (n=5)
- Most common conditions in the 5 people who died from COVID-19 were Epilepsy, Dementia and Heart Failure (all <5)

Care Homes

Early in the pandemic, deaths in care homes accounted for just 10% of all deaths from COVID-19 in England. However, this percentage increased over time and by the beginning of May 2020, care homes accounted for a much greater proportion (43%) of COVID-19 deaths in England [1]. Overall, during the whole period of March to end of May 2020, 27% of all COVID-19 deaths in England occurred in Care Homes.

Excess mortality calculations for England produced by PHE suggest that there were 2.3 times the number of deaths in care homes than expected between 20 March and 7 May and that COVID-19 deaths over this period comprised 46% of the total excess deaths. This suggests either a large proportion of excess deaths were from other causes or an under-reporting of deaths from COVID-19 (or a combination of both) [1].

The capacity of care homes in Wirral was 3,229 as of 30/06/2020. Of those, 2,644 beds were occupied (82% capacity) [16]. This represented a considerable change compared to March 2020, before the peak of the COVID-19 outbreak, when capacity was higher at 88%, but was based on a lower number of beds (2,248 beds occupied out of a total of 2,544 bed capacity) [16].

It should be noted that additional T2A (or Transfer to Assess) beds specifically to assist with the COVID-19 pandemic, were put into use in Wirral during this period. The purpose of T2A beds is to provide assessment and therapy services for those patients who may require longer term support upon leaving hospital. The beds are also a step-up provision from community care to help avoid unnecessary hospital admissions. In Wirral, a large number of T2A beds were on the Clatterbridge Hospital site (and so fall into the Clatterbridge ward and MSOA, and Quintile 4 in terms of deprivation).

Main Messages

- A minimum of 189 residents of Care Homes in Wirral tested positive for COVID-19 during this period, this was at least 10% of all Care Home residents (this is likely to be a considerably under-estimate and does not include suspected cases or those unknown to the local authority)
- This means around one in 12 of all Care Home residents tested positive during this period, compared to 1 in 167 of the Wirral population overall
- Just over one in three (36%) of all COVID-19 deaths in Wirral occurred in Care Homes (n=153 deaths from a total of 425 COVID-19 deaths in Wirral); nationally, the same figure was 30%
- Nationally, deaths in care homes peaked slightly later than other deaths; the same pattern was also observed in Wirral
- PHE analyses showed that nationally, there were 2.3 times the number of deaths in care homes compared to the previous 5 year average; in Wirral, this figure was 1.6 times
- There were 258 excess deaths in care homes in Wirral to 30/60/2020, of which 59% were due to COVID-19; this suggests a considerable number of excess deaths were from other causes or that COVID-19 deaths were under-reported

The fact that there are more excess deaths than there are COVID-19 deaths in care homes indicates that either that some deaths from COVID-19 have not been recorded as such, or that the impacts of the COVID-19 pandemic has meant people in care homes have experienced higher deaths rates

The Vivaldi study is a large-scale survey which is examining COVID-19 infections in 9,081 care homes (there was a 56% response rate) providing care for dementia patients and the elderly in England [6]. It was commissioned by the Department of Health and Social Care in order to:

- Measure the prevalence of COVID-19 in care homes
- Examine the use of disease control measures in care settings
- Inform future decisions on the best approaches to dealing with COVID-19 and care homes (e.g. by providing information on the use of disease control measures which in turn may help local public health teams provide effective guidance to care homes)

Emerging findings from the Vivaldi study reveal some common factors in care homes with higher levels of infections amongst residents. These include prevalence of infection in staff, some care home practices such as more frequent use of bank or agency nurses or carers and some regional differences (such as higher infection levels within care homes in London and the West Midlands). Regional differences may, however, be affected by different patterns of testing in staff and residents over time [6]. There is also some evidence that in care homes where staff receive sick pay, there were lower levels of infection in residents [6].

Cases

At the time of writing, although testing data received from PHE has a field for 'Care Home', of the 1,866 positive cases as of 30/06/2020, just 5 contained a record of a care home. For the purposes of this report and in order to provide some intelligence around the prevalence of positive COVID-19 case in the Wirral Care Home population, the Wirral Care Record has been used to derive Care Home status as an interim measure. This is not a full or complete record however, there are occasions where people may be living in a care home but are not recorded as such and this should be borne in mind.

Table 12: Number of care home residents testing positive for COVID-19 between 01/03/2020 to 30/06/2020

Age band	Female	Male	Total
<60	<20	<20	<20
60-69	<20	<20	<20
70-79	23	<20	41
80-89	58	23	81
90+	35	<20	45
Total	128	61	189

Source: Healthintert and Department for Adult Social Care, Wirral Council (2020)

Note: Data includes only those recorded by Wirral Council Department for Adult Social Care as being resident in a Care Home. Private patients for example, will not be included in the above figures, as they will be unknown to the local authority.

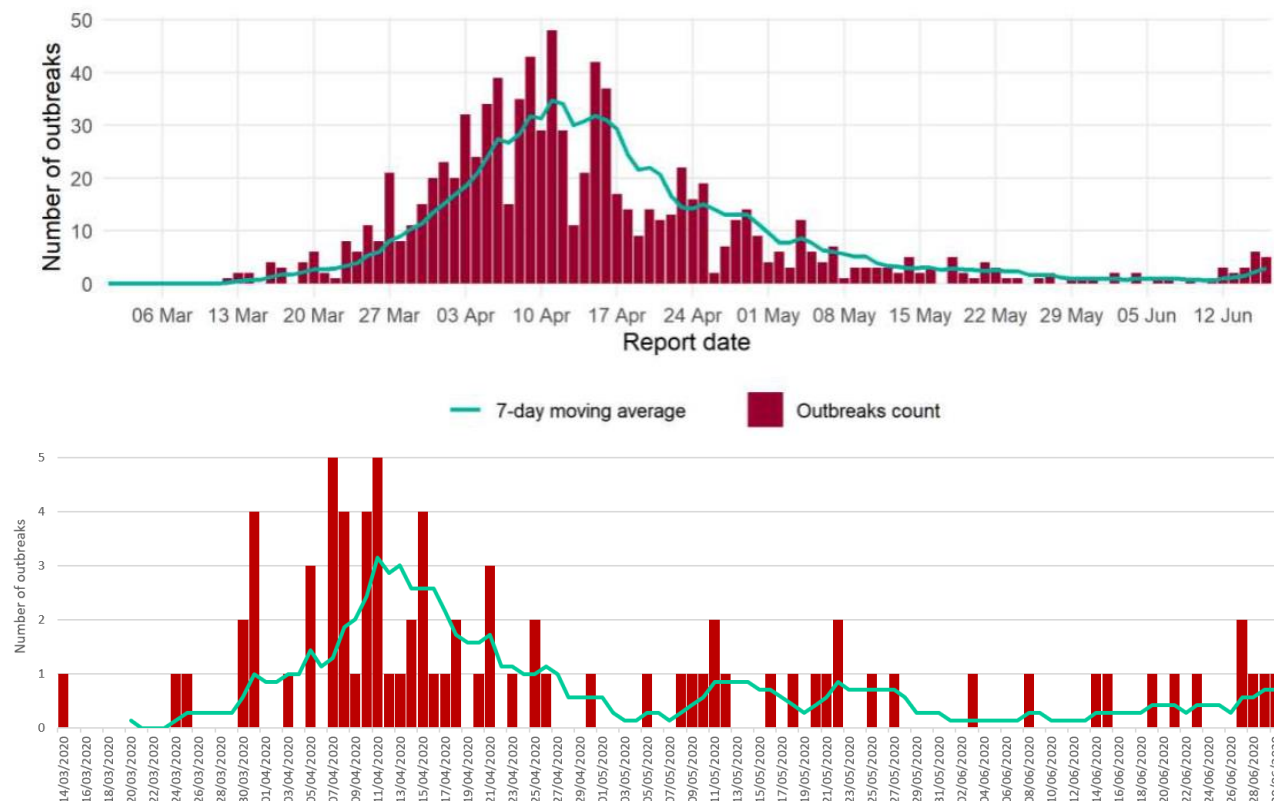
As mentioned earlier in this report, there were 1,866 positive cases of COVID-19 recorded in Wirral as of 30/06/2020. The data above suggests that around 1 in 10 (10%) of all positive cases in Wirral were in Care Home residents. As **Table 12** also shows, the majority (68%) of those who tested positive were female, which is to unsurprising, given that females make up a larger percentage of residents of older Care Home residents in Wirral than males. The peak age group were the 80-89s.

As a proportion of all Care Home residents, as mentioned above, as of 30/06/2020, there were 2,248 Care Home residents in Wirral. A figure of 189 positive COVID-19 cases means that around 8% of the Care Home population at that time tested positive.

To put this in perspective, in the Wirral population overall, 0.6% of the population had tested positive as of the same period. To put it another way, around one in 12 of all Care Home residents tested positive during this period, compared to 1 in 167 of the Wirral population overall.

The number of reported outbreaks in Wirral Care Homes between 14/03/2020 and 30/06/2020 was 80; the timeline is shown below compared to the North-West outbreaks timeline for the same period.

Figure 17 and 18: Outbreaks of COVID-19 in care homes in the North West (top) and Wirral (bottom) by date, 01/03/2020 to 30/06/2020



Source: Public Health England, 2020

Hospitalisations

As mentioned above, the recording of patients’ resident in a care home in the Wirral Care Record is incomplete, therefore the figures presented here are likely to be a considerable underestimate. During the period between 01/03/2020 to 30/06/2020, there were a total of 355 admission encounters in people recorded as being Care Home residents in Wirral (of these, a slightly higher percentage were women, 199 or 56%, compared to 156 or 44% who were male). Further work to explore hospitalisations from care homes and the recovery pathway is currently being explored.

Mortality

Table 13: Death registrations by location of occurrence as of Week 27 (03/07/2020)

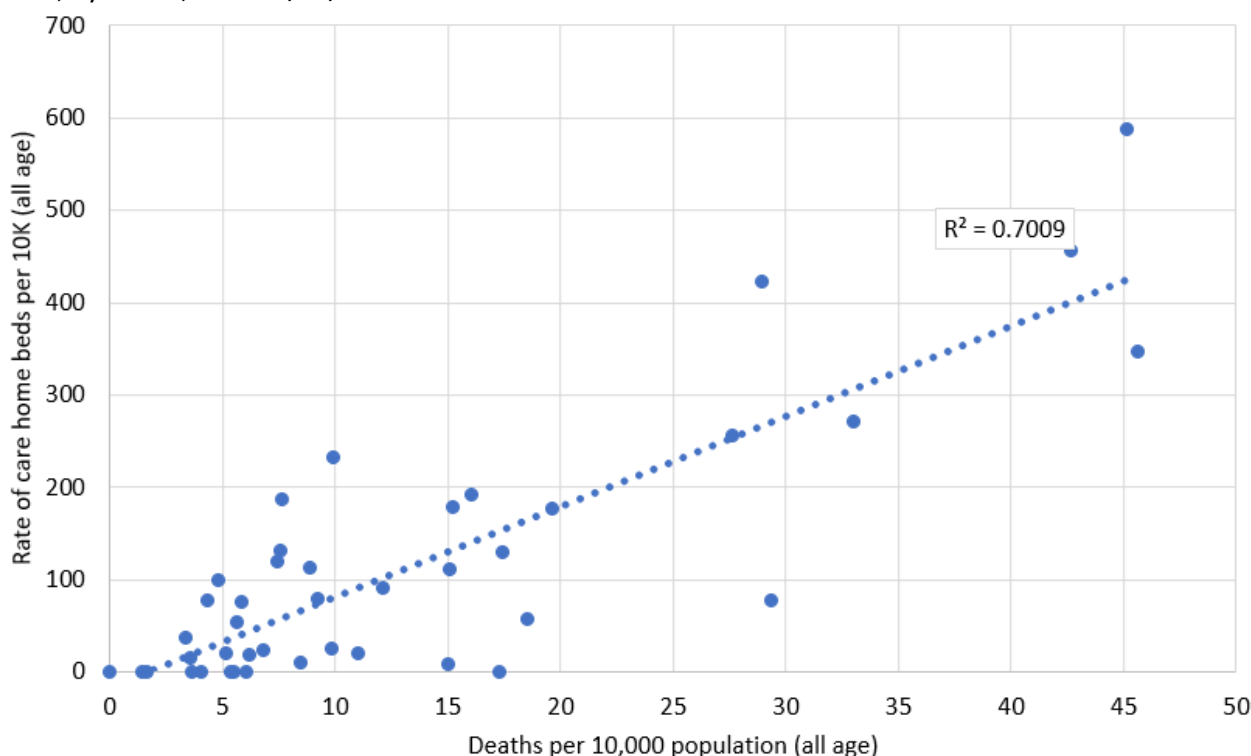
Cause	Care home	Elsewhere	Home	Hospital	Hospices & Other communal establishments	Total
COVID-19	153	0	15	251	6	425
Non-COVID	525	42	578	850	585	2,055
Total	678	42	593	1101	81	2,495

Source: ONS, 2020

Table 13 shows that after Hospital, Care Homes were the location which accounted for the next largest proportion of COVID-19 deaths (36% of all COVID-19 deaths, with 59% occurring in the hospital). This is a slightly higher percentage than was the case nationally, with the Office for National Statistics (ONS) data showing that nationally, COVID-19 deaths in care homes accounted for 30% of all deaths from COVID-19 (up to the 3rd of July, or ONS Week 27).

It should be noted that not all care home residents die in care homes. According to ONS data, 13% of all deaths of care home residents took place in hospitals (28% of residents whose deaths were linked to COVID died in hospitals, although of course, the reverse may also be true and many people admitted from their own homes were discharged to care homes who later died there).

Figure 19: Association between rate of Care Home beds and death rate (per 10,000 MSOA population) in Wirral, by MSOA, as of 30/06/2020



Source: ONS and CQC (2020)

Notes: Points indicate the 42 MSOAs (Middle Super Output Areas) in Wirral. See Glossary for explanation of MSOAs.

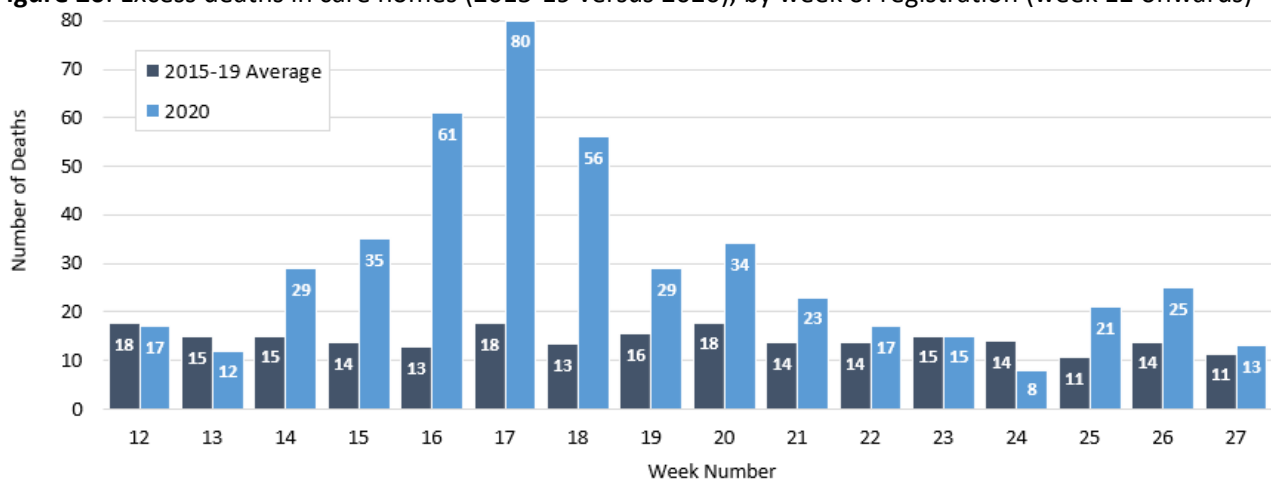
Figure 19 shows that as the rate of care home beds per MSOA increases, so does the death rate in that MSOA. This is a significant association ($p < 0.05$), which indicates that the rate of care home beds in areas of Wirral has significantly affected the mortality rate and supports the evidence presented in the earlier ‘Deprivation’ section showing that the location of care homes (in Quintile’s 2 and 4) had impacted the results of deprivation analysis on COVID-19 deaths in Wirral. The three data points with the highest rate of deaths (in excess of 40 per 10,000) were the MSOAs of Cloughton South & Oxtan North (an MSOA which falls into two different wards - Oxtan and Cloughton), Poulton, Raby Mere & Thornton Hough (in Clatterbridge ward) and Hoylake (in Hoylake ward). These three areas also had three of the four highest rates of care home beds in Wirral (with one including a home with a number of T2A beds).

Excess mortality

Analysis of excess mortality specifically in care homes is important as research indicates that quantifying only COVID-19 mortality underestimates the impact on care home residents, as it does not take account of indirect mortality effects of the pandemic and/or because of problems with the identification of the disease as the cause of death [12].

In addition, not all care home residents die in care homes. According to ONS data, 13% of all deaths of care home residents took place in hospitals (28% of residents whose deaths were linked to COVID died in hospitals, although of course, the reverse may also be true and many people admitted from their own homes were discharged to care homes who later died there).

Figure 20: Excess deaths in care homes (2015-19 versus 2020), by week of registration (week 12 onwards)



Source: ONS, 2020

As of Week, 27, there were a total of 258 Excess deaths which occurred in Wirral Care Homes. As only 153 of these were classified as COVID-19, this means there have been an additional 105 deaths from Non-COVID-19 causes. Possible explanations for this could be either that COVID-19 deaths have been under-reported, or that the pandemic has indirectly resulted in additional deaths from other causes.

Co-morbidities

PHE have reported that nationally, people with underlying health conditions appear to be at a higher risk of poor outcomes from COVID-19 than people without these conditions, with the most commonly reported conditions associated with poor outcomes being diabetes, chronic lung diseases and cardiovascular disease [1].

PHE has also articulated the need to better understand the association between obesity and COVID-19, particularly as almost one in three adults (32%) in England in 2018 were obese and several studies have reported an increased risk of adverse outcomes in obese or morbidly obese people [1].

PHE is therefore seeking to obtain and link additional datasets that measure body mass index (BMI), a more comprehensive range of comorbidities and other sociodemographic characteristics such as ethnicity to understand the combination of these risks further [1].

Locally, obesity data is also not robust enough to enable analysis in the same way as other conditions have been examined below. Recording of obesity is inadequate in the majority of patient records in both primary care records (QOF – the Quality & Outcomes Framework) and secondary care (Wirral Care Record) in Wirral and is therefore not included in the disease registers listed below.

The PHE report did not consider the prevalence of pre-existing conditions in individuals testing positive or those hospitalised for COVID-19. As testing data has now improved since the PHE report was produced, it has been included in this report, but there is no national comparator for Wirral when considering the impact pre-existing conditions may have on risk of testing positive of COVID-19.

Main messages

- Among confirmed positive cases of COVID-19 in Wirral, those with Dementia and conditions which placed them on the Palliative Care register (taking register size into account) were most likely to test positive for COVID-19
- Local hospitalisation analysis indicated the rate of admission encounters in patients diagnosed with COVID-19 (within 21 days of their admission) was highest in patients recorded as being on the Palliative Care register, followed by patients recorded as having Heart Failure had the second highest rates of admission during this period, followed by those with Peripheral Arterial Disease and Stroke, perhaps underlining COVID-19 impact on patients with vascular conditions
- Relative to list size, the rate of death (from COVID-19) locally was highest in patients on the Dementia register. Patients recorded as being on the Palliative Care register had the second highest rates of death during this period, followed by those with Heart Failure and Stroke, perhaps again underlining the impact of COVID-19 on patients with vascular conditions

Cases

Table 14 below shows the number and rate (per 10,000 patients on relevant disease register) of positive COVID-19 cases by a number of key disease groups. The groupings are defined using the QOF (Quality & Outcomes Framework) registers, which list the total number of patients in Wirral recorded as having particular conditions.

Table 14: Number and rate (per 10,000 list size) of individuals testing positive for COVID-19 in Wirral, by pre-existing condition (QOF defined)

Disease Register	QOF List Size	Positive Test	Rate per 10,000
Dementia	3,413	216	633
Palliative Care	2,913	135	463
Heart Failure	4,713	141	299
Atrial Fibrillation (AF)	11,036	236	214
Stroke/TIA	6,274	131	209
Peripheral Arterial Disease	2,912	56	192
Chronic Kidney Disease (CKD)	14,477	262	181
Mental Health	2,797	49	175
Chronic Obstructive Pulmonary Disease (COPD)	9,225	137	149
Coronary Heart Disease (CHD)	14,095	191	136
Epilepsy	3,953	53	134
Diabetes	22,267	267	120
Cancer	14,299	156	109
Hypertension	56,003	582	104
Rheumatoid Arthritis	2,126	21	99
Asthma	24,162	170	70
Learning Disability	2,552	13	51

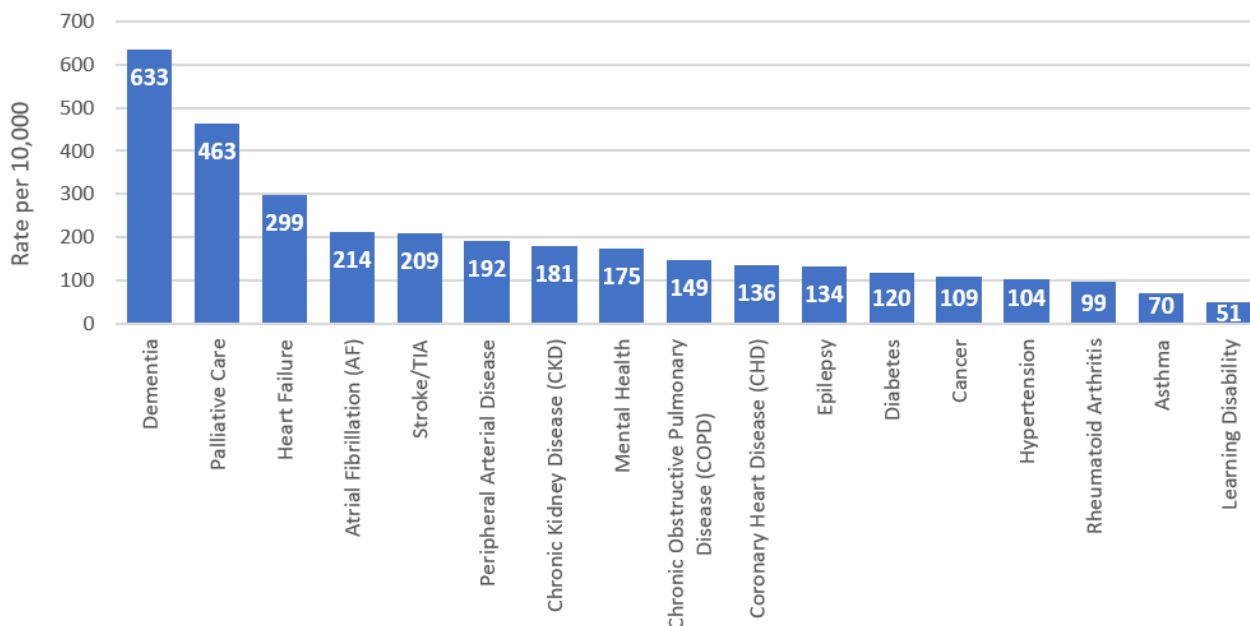
Source: Healtheintent (2020)

Notes: Positive tests should not be added, as individuals may have multiple pre-existing condition and so will appear in this table on more than one occasion. Disease groupings used are from QOF Registers (Quality & Outcomes Framework). List size above may not match published QOF registers, as data above includes deceased patients.

The largest number of positive cases in patients diagnosed with COVID-19 (within 21 days of their admission) was in patients recorded as having Hypertension, followed by Diabetes and Chronic Kidney Disease. This is partially reflective of the number of people on both of these registers, hence rates (relative to disease list registers have also been calculated) have been used to enable a more appropriate comparison.

Relative to list size, the rate of confirmed positive cases of COVID-19 in Wirral was highest in those with Dementia and conditions which placed them on the Palliative Care register (taking size of registers into account). This is of concern, as many of those on Palliative Care registers are likely to have been on the NHS Shielding List having been classed as CEV (Clinically Extremely Vulnerable), so it is perhaps surprising that so many (relative to list size) have tested positive for COVID-19 during this period. Dementia is perhaps less surprising as the condition which appears to confer the highest risk of testing positive, given the high prevalence of dementia in Care Home settings and the high toll COVID-19 is evidenced to have taken on Care Home residents nationally and locally. **Figure 21** below shows the same information shown in part of the table above (rates per 10,000 list size), but displays it graphically

Figure 21: Rate (per 10,000 list size) of individuals testing positive for COVID-19 in Wirral, by pre-existing condition (QOF defined)



Source: Healthintert (2020)

Notes: Positive tests should not be added, as individuals may have multiple pre-existing condition and so will appear in this table on more than one occasion. Disease groupings used are from QOF Registers (Quality & Outcomes Framework)

Hospitalisations

The groupings used in this section were defined using the QOF (Quality & Outcomes Framework) registers, which list the total number of patients in Wirral recorded as having particular conditions. List sizes here may not match published list sizes, as deceased patients have been included in the data below for methodological reasons.

Table 15 below shows the number and rate (per 10,000 patients on relevant disease register) of admission encounters in patients with a positive COVID-19 diagnosis (in the 21 days prior or following an admission), by key QOF disease groups.

Table 15: Number and rate (per 10,000 list size) of those admitted within 21 days of a positive COVID-19 test in Wirral, by pre-existing condition (QOF defined)

Disease Register	QOF List Size	Admissions	Rate per 10,000
Palliative Care	2,913	329	1,129
Heart Failure	4,713	525	1,114
Peripheral Artery Disease	2,912	212	728
Stroke	6,274	425	677
Dementia	3,413	226	662
Chronic Kidney Disease (CKD)	14,477	907	627
Chronic Obstructive Pulmonary Disease (COPD)	9,225	546	592
Mental Health	2,797	159	568
Epilepsy	3,953	208	526
Atrial Fibrillation (AF)	11,036	580	526
Coronary Heart Disease	14,095	720	511
Diabetes	22,267	877	394
Cancer	14,299	494	345
Asthma	24,162	819	339
Hypertension	56,003	1,502	268
Learning Disability	2,552	62	243
Rheumatoid Arthritis	2,126	43	202

Source: Healthintertent (2020)

Notes: Admissions in this table should not be totalled, as individuals may have multiple pre-existing condition and so will appear in this table on more than one occasion. Disease groupings used are from QOF Registers (Quality & Outcomes Framework). List size above may not match published QOF registers, as data above includes deceased patients.

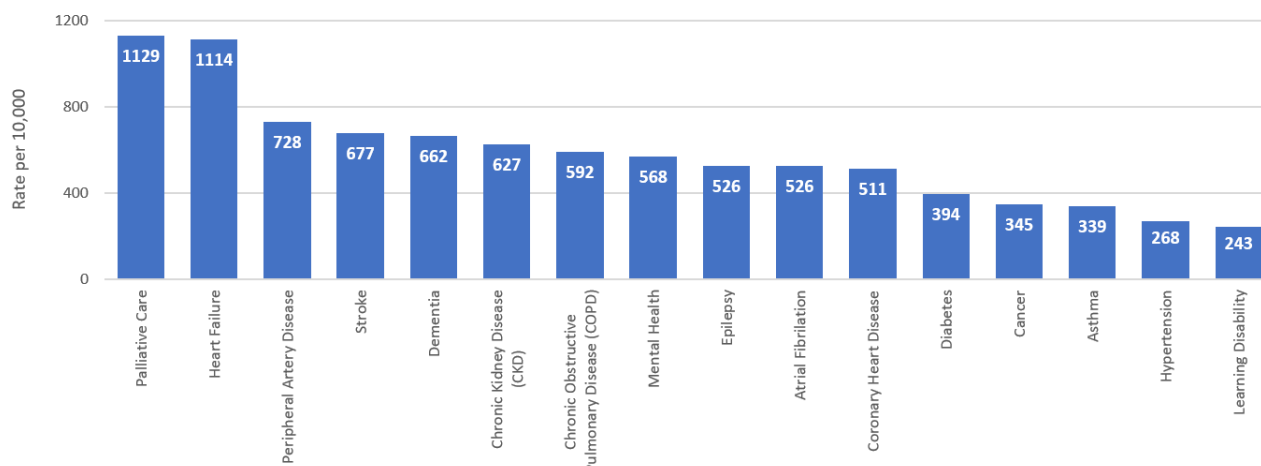
Table 15 shows the largest number of admission encounters in patients diagnosed with COVID-19 (within 21 days of their admission) was in patients recorded as having Hypertension, followed by Chronic Kidney Disease. This is partially reflective of the number of people on both of these registers, hence rates (relative to disease list registers have also been calculated).

Relative to list size, the rate of admission encounters in patients diagnosed with COVID-19 (within 21 days of their admission) was highest in patients recorded as being on the Palliative Care register. This group of patients also had the second highest rate of positive COVID-19 tests, so perhaps having the highest rate of admissions is not surprising, as this is a cohort of patients who were by definition, already extremely unwell and at the end of their life before they contracted COVID-19.

Patients recorded as having Heart Failure had the second highest rates of admission during this period, followed by those with Peripheral Arterial Disease and Stroke, perhaps underlining COVID-19 impact on patients with vascular conditions; a factor which has also been noted nationally.

Figure 22 below shows the same information as in the table above, but graphically.

Figure 22: Rate (per 10,000 list size) of those admitted within 21 days of a positive COVID-19 test in Wirral, by pre-existing condition (QOF defined), 01/03/2020 to 30/06/2020



Source: Healtheintent (2020)

Notes: Admissions in this table should not be totalled, as individuals may have multiple pre-existing condition and so will appear in this table on more than one occasion. Disease groupings used are from QOF Registers (Quality & Outcomes Framework). List size above may not match published QOF registers, as data above includes deceased patients.

Mortality

Table 16 below shows the number and rate (per 10,000 patients on relevant disease register) of death in patients, by a number of key disease groups. The groupings are defined using the QOF (Quality & Outcomes Framework) registers, which list the total number of patients in Wirral recorded as having particular conditions (although list sizes here may not match published list sizes, as deceased patients have been included in the data below for methodological reasons).

Table 16: Number and rate of death (per 10,000 list size) of those who died from COVID-19 in Wirral, by pre-existing condition (QOF defined) between 01/03/2020 to 30/06/2020

Disease Register	QOF List Size	Deaths	Rate per 10,000
Dementia	3,413	136	398
Palliative Care	2,913	80	275
Heart Failure	4,713	62	132
Stroke/TIA	6,274	69	110
Peripheral Arterial Disease (PAD)	2,912	29	100
Atrial Fibrillation (AF)	11,036	109	99
Chronic Kidney Disease (CKD)	14,477	139	96
Mental Health	2,797	19	68
Chronic Obstructive Pulmonary Disease (COPD)	9,225	54	59
Rheumatoid Arthritis	2,126	12	56
Coronary Heart Disease (CHD)	14,095	73	52
Cancer	14,299	73	51
Diabetes	22,267	104	47
Epilepsy	3,953	18	46
Hypertension	56,003	233	42
Learning Disability	2,552	5	16
Asthma	24,162	35	14

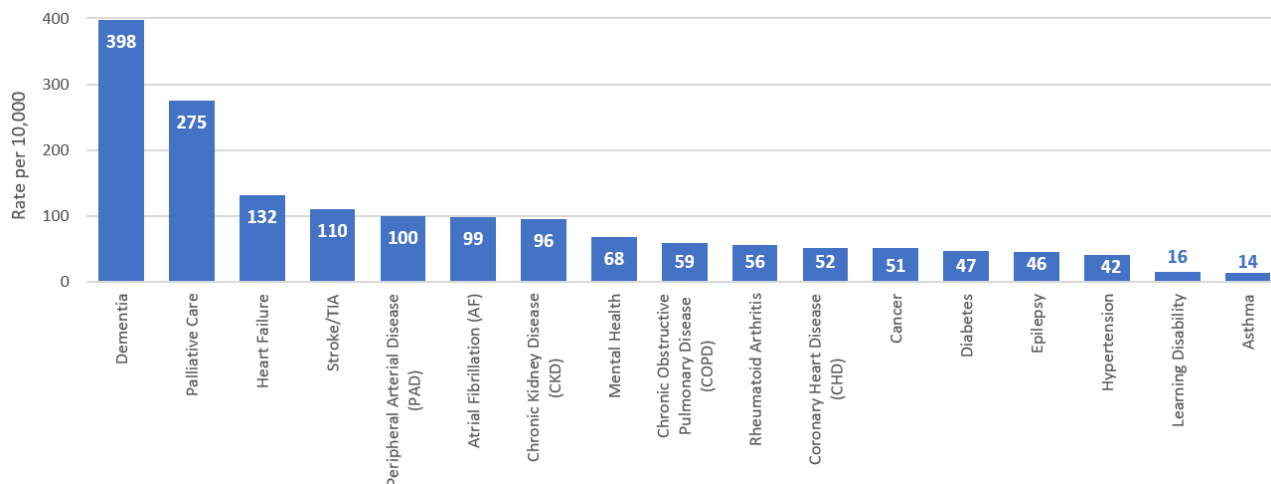
Source: Healtheintent (2020)

Notes: Deaths in this table should not be totalled, as individuals may have had multiple pre-existing condition and so will appear in this table on more than one occasion. Disease groupings used are from QOF Registers (Quality & Outcomes Framework). List size above may not match published QOF registers, as data above includes deceased patients.

The largest number of deaths (from COVID-19) was in patients recorded as having Hypertension, followed by Chronic Kidney Disease and Dementia. This is partially reflective of the number of people on both of these registers, hence rates (relative to disease list registers have also been calculated).

Relative to list size, the rate of death (from COVID-19) was highest in patients recorded as being on the Dementia register. This group of patients also had the highest rate of positive COVID-19 tests. Patients recorded as being on the Palliative Care register had the second highest rates of death during this period, followed by those with Heart Failure and Stroke, perhaps again underlining the impact of COVID-19 on patients with vascular conditions; a factor which has also been noted nationally. **Figure 23** below shows the same information as in the table above (rates per 10,000 list size), but graphically.

Figure 23: Rate (per 10,000 list size) of individuals who died from COVID-19 in Wirral, by pre-existing condition (QOF defined), 01/03/2020 to 30/06/2020

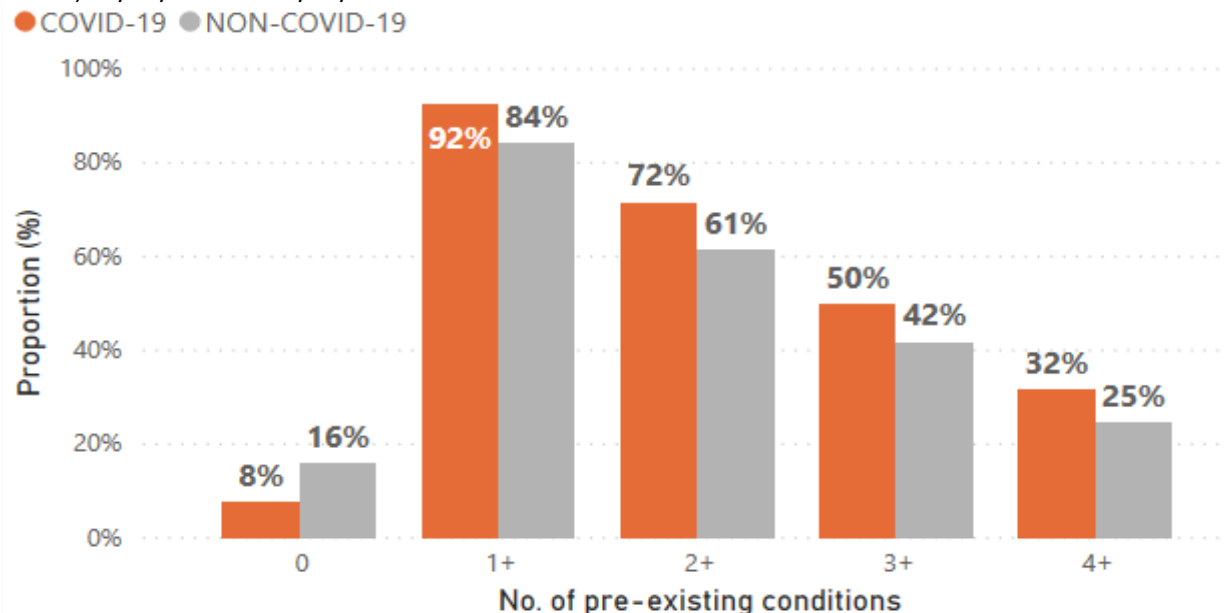


Source: Healthteintent (2020)

Notes: Deaths in this table cannot be totalled, as individuals with multiple pre-existing condition will appear more than once. Disease groupings used are from QOF Registers (Quality & Outcomes Framework). List size above may not match published QOF registers, as data above includes deceased patients.

Analysis also shows that among those who died from COVID-19, just 8% had no pre-existing conditions at all. Among those who died from other (non-COVID-19) causes, the same figure was double that – with 16% having no pre-existing conditions. See **Figure 24** below.

Figure 24: Number of pre-existing conditions in those who died from COVID-19 and Non-COVID-19 causes, Wirral, 01/03/2020 to 30/06/2020



Source: Healthteintent (2020)

Many patients have multiple pre-existing conditions; as of 30/06/2020, those who died from Non-COVID-19 causes in Wirral had on average, 2.4 pre-existing conditions. In those who died from COVID-19 however, that figure was 2.8 pre-existing conditions.

Shielding list/Vulnerable list

This is not a section which appears in the PHE Disparities in the risk and outcomes of COVID-19 report [1] on which this local report is based. It is however, an area that Public Health wished to explore in more detail. Consequently, some epidemiological information about the 'Vulnerable' List – is included below. The Wirral 'Vulnerable' list is defined as the combination of all of the below groups:

- NHS Shielded List: Patients identified by NHS Digital who were requested to shield at home and received a letter advising them to do so
- Additional Clinical: Additional patients who were identified by local NHS organisations/clinicians as having a clinical need, but who had not previously been identified by NHS Digital
- Additional Vulnerable: Additional people who self-identified as needing assistance during the COVID-19 pandemic, but who had not been identified by either NHS Digital or local NHS clinicians previously

Main Messages

- Wirral was very similar to England overall in terms of the age/gender breakdown of people on the NHS Shielding List
- Of all those on the NHS Shielding List, 0.8% had tested positive for COVID-19 as of 30/06/20. This compares to 0.6% in the general population and 8.4% of the Care Home population
- Nationally, one in five NHS Shielded patients felt that their condition had deteriorated during lockdown; equivalent local figures are not available

In July 2020, ONS released the [Coronavirus and shielding of clinically extremely vulnerable people in England](#) data set. The publication included data on clinically extremely vulnerable people in England during the COVID-19 pandemic from the Shielding Behavioural Survey and featured information on behaviours and well-being since receiving shielding guidance. Of concern, is that it highlighted that almost 1 in 5 Shielded Patients felt that their condition had deteriorated during lockdown (19%).

Nationally, 52% of NHS shielded (CEV) patients were women, in Wirral this figure was 53%. Wirral was also very similar to the national cohort in terms of age, see Table x below.

Table 17: Number and Percentage (%) of Clinically Extremely Vulnerable people (CEV) advised by the NHS to shield by age in England and Wirral, as of 30/06/2020

Age band	England Number	England %	Wirral Number	Wirral %
Under 20	101,000	4%	443	3%
20 to 29	80,000	4%	406	3%
30 to 39	123,000	5%	613	4%
40 to 49	182,000	8%	1,103	8%
50 to 59	338,000	15%	2,297	16%
60 to 69	445,000	20%	3,194	22%
70 to 74	296,000	13%	2,108	14%
75+	666,000	30%	4,470	31%
Total	2,245,000	100%	14,634	100%

Source: ONS Shielding Behaviour Survey [8] and HealthIntent (2020)

As **Table 17** shows, the age breakdown of the CEV population advised to shield by the NHS was almost identical to that of England overall. Almost one in three of all those advised to shield in England were aged 75 and above and this was also true of Wirral (30% and 31% respectively).

Local analysis has shown that 0.8% of these patients tested positive for COVID-19 at some point during 01/03/2020 to 30/06/2020. This compares to 0.6% of the overall population of Wirral and 8.4% of all Care Home residents in Wirral.

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Methodology

Format

This report replicates the format and scope of the Public Health England (PHE) review [COVID-19: review of disparities in risks and outcomes \(rapid review\)](#) [1] into how different factors have affected COVID-19 risk and outcomes. The PHE report confirmed that COVID-19 had replicated existing health inequalities and, in some cases, exacerbated them.

Data used in this report is primarily sourced from ONS, NHS Digital, Public Health England and Healtheintent (Wirral Care Record).

Testing and confirmed cases

Cases confirmed as being COVID-19 were taken from the Second Generation Surveillance System and Situational Awareness Tool, both developed and updated by Public Health England. Suspected cases were not included, confirmed diagnosis only are shown.

Hospitalised cases

Hospitalisations data was defined as the number of ED and Inpatient encounters recorded by WUTH where a person is recorded as COVID positive during the encounter, in the 21 days prior to admission/attendance or in the 21 days following discharge/attendance at ED. All persons recorded with COVID-19 flags are identified from:

- Identified all persons in Healtheintent with COVID flag
- Pulled all encounters for those persons
- Flagged them as (in order)
 - Encounters with a COVID flag within them
 - Encounters with COVID flag recorded within 21 days prior to admission
 - Encounters with COVID flag recorded within 21 days post discharge.
- Each encounter represented once.
- COVID flags derived from diagnostic flags attached to each patient – multiple flags in most cases.
- Other demographic information extracted from Healtheintent platform.

Mortality

Mortality data used is that published by ONS. For years prior to 2020 (used to calculate excess deaths) the PCMD (Primary Care Mortality Dataset) was used; this is also supplied by ONS.

Assigning deprivation quintiles and deciles

Analysis using deprivation quintiles was carried out using nationally assigned deprivation scores and methodologies to allocate LSOAs (Lower Super Output Areas) to particular quintiles. See <https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019> for more details.

Glossary

ASR or Age Standardised Rate: An age-standardised rate (ASR) is a summary measure of the rate that a population would have if it had a standard age structure. Standardisation is necessary when comparing populations that may differ with respect to their age structure, because age is an important determinant of morbidity (including COVID-19)

Deprivation: Deprivation in England is measured and classified using the Indices of Multiple Deprivation (IMD), also sometimes referred to as the IoD (Indices of Deprivation). The IMD is a measure of relative deprivation at a small local area level across England and has been produced since 2000. The IMD (or IoD) 2019 is the most recent release. For more information, please see:

<https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019>

Index of Multiple Deprivation: See Deprivation.

LSOA or Lower Super Output Area: Small area geographies, smaller than both MSOAs and wards. Each has an average population of 1,500 (in England). There are 206 MSOAs in Wirral and 32,844 in England.

MSOA or Middle Super Output Area: Small area geographies, smaller than wards. Each has an average population of 7,500 (in England), in Wirral the average population of MSOAs is slightly higher than this (7,700). There are 42 MSOAs in Wirral.

ONS: Office for National Statistics. See end of this section for a table showing ONS week number explainer.

Quintile: Quintile is used to describe a fifth (20%) of the population, usually on measures of deprivation. The IMD ranks all small areas (LSOAs) in England by deprivation. Areas can then be split into five equal 'quintiles' according to their level of relative deprivation. So, Quintile 1 for example, describes the 20% of small areas (LSOAs) which are the most deprived in England. Quintile 5 are those areas which are the least deprived (or most affluent) areas in England. For more information, please see:

<https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019>

Pillars 1 and Pillar 2: See Testing.

Testing: COVID-19 Tests in the UK are carried out through a number of different routes, called 'pillars':

- **Pillar 1:** swab testing in Public Health England (PHE) labs and NHS hospitals for those with a clinical need, and health and care workers. Pillar 1 data for England is provided by the NHS and Public Health England
- **Pillar 2:** swab testing for the wider population, as set out in government guidance. Pillar 2 data for the UK (excluding Wales) is collected by commercial partners
- **Pillar 3:** serology testing to show if people have antibodies from having had COVID-19. Pillar 3 data is provided for England by NHS England and Improvement (NHSEI).
- **Pillar 4:** serology and swab testing for national surveillance supported by PHE, ONS, Biobank, universities and other partners to learn more about the prevalence and spread of the virus and for other testing research purposes, for example on the accuracy and ease of use of home testing. Pillar 4 data is collected by the NHS, PHE, and individual research study leads for the UK.

Table 18: Dates of ONS Week Numbers

ONS Week number	Week ending Friday
Week 11	13th Mar
Week 12	20th Mar
Week 13	27th Mar
Week 14	3rd Apr
Week 15	10th Apr
Week 16	17th Apr
Week 17	24th Apr
Week 18	1st May
Week 19	8th May
Week 20	15th May
Week 21	22nd May
Week 22	29th May
Week 23	5th Jun
Week 24	12th Jun
Week 25	19th Jun
Week 26	26th Jun
Week 27	3rd Jul
Week 28	10th Jul
Week 29	17th Jul
Week 30	24th July
Week 31	31st July