



**WIRRAL  
INTELLIGENCE  
SERVICE**

# **COVID-19 Mortality in Wirral**

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# COVID-19 Mortality in Wirral

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## Introduction

This is a descriptive review of data on mortality from COVID-19 in Wirral during 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).

## Executive Summary

### *Age and sex*

- Of the 616 deaths from COVID-19 in Wirral, a larger proportion (n=330 or 53.6%) were in males; 286 or 46.4% were in females
- Age and sex standardised rates confirmed that men were at higher risk than women of dying from COVID-19 (both in Wirral and nationally in 2020)
- In Wirral, 91.6% of deaths from COVID-19 were in those aged 65+
- The average age of death in COVID-19 patients was higher than Non-COVID patients in 2020 (the average age of COVID-19 deaths was 80.9, while for Non-COVID-19 deaths it was 77.9)
- Analysis of local death rates by MSOA indicates that as the proportion of the population aged 65+ increases in an area, so does the rate of death

### *Geography*

- In 2020, Wirral ranked 18 out of 39 North-West local authorities on rate of COVID-19 deaths. Nationally, Wirral ranked 43 out of 313 authorities.
- Wirral had a higher death rate in 2020 from COVID-19 than England, the North-West, but not statistical neighbour Sefton.
- The locations within Wirral most affected in terms of COVID-19 mortality (Clatterbridge, Woodchurch/ Upton, New Brighton and Oxton areas) were all those which have large proportions of older population and/or large numbers of care homes.

### *Deprivation*

- Nationally, PHE found that people living in deprived areas had higher death rates from COVID-19 than those living in less deprived areas. Locally however, the relationship between deaths and deprivation was less clear, with rates highest in Quintile 4 (second least deprived quintile)
- A large contributory factor is likely to be the location of Care Homes in Wirral; the majority of COVID-19 deaths in Quintile 4 occurred in Care Home residents
- When deaths in non-Care Home residents were analysed separately, the pattern was much more comparable with national findings (i.e. death rates highest in Quintile 1 and lowest in Quintile 5)

### *Ethnicity*

- Nationally, ethnicity was significantly associated with higher mortality rates from COVID-19.
- The expected number of COVID-19 deaths in BAME people in Wirral was between 31-55 for 2020; there were 5 recorded deaths in people classed as BAME in Wirral in 2020 (0.8% of the total COVID-19 deaths in Wirral)
- There were however, 56 deaths where ethnicity was unrecorded. A combination of the small BAME population in Wirral, poor data quality and the relatively small number of deaths (relative to the UK overall) mean it is difficult to draw conclusions about the impact of COVID-19 on mortality in the BAME population.

## *Occupation*

- Nationally, PHE have reported 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.
- In Wirral, just 68 out of a total of 616 COVID-19 deaths (to 31/12/2020) were of working age (aged 16-67); almost one in five of those deaths (19%) 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 Health & Social Work (13%), Construction (12%) and Motor Trade, Wholesale & Retail (10%)
- The most over-represented occupational group in Wirral was Construction, which employs only 4.0% of the Wirral population, but accounted for 14.5% of deaths (caveat of small numbers)

## *Inclusion Health Groups*

- Nationally, data suggests a higher COVID-19 mortality rates among rough sleepers, people with LD and people born outside of the UK and Ireland compared to the general population; current and retrospective local data is currently unavailable which could confirm if this is the case in Wirral.

## *Location of death (including Care Homes)*

- Two in three of all those who died from COVID-19 in Wirral died in Hospital (63%)
- Just under a third (31%) of all COVID-19 deaths in Wirral occurred in Care Homes (n=190 deaths from a total of 606 COVID-19 deaths in Wirral); this is very similar to the national picture (30%)
- The largest difference was in those who died at home (30.5% for non-COVID-19 causes, versus 4.0% of COVID-19 deaths)
- The rate of care home beds in areas of Wirral significantly affected the mortality rate (higher rates in areas with higher rates of care home beds)

## *Co-morbidities*

- The vast majority of those who died from COVID-19 had at least 1 pre-existing condition (93%)
- The rate of death (from COVID-19) locally was highest in patients on the Dementia register, followed by patients recorded as being on the Palliative Care and Heart Failure registers
- The number of pre-existing conditions in those who died from non-COVID-19 causes in Wirral was on average 3.0, compared to 3.4 among those who died from COVID-19.

## *Mosaic (geodemographic analysis)*

- Mosaic analysis showed clearly that the most over-represented group was Group N – Vintage Values (9.6% of the Wirral population but 21.6% of deaths from COVID-19)
- This is a group characterised by older age, frailty, and vulnerability, so it is unsurprising that this should be the group most over-represented among COVID-19 deaths in Wirral in 2020.

## 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].

**Table 1:** Age and sex breakdown of COVID-19 deaths in Wirral (number and proportion) to 31/12/2020

Age band	Males	Females	Total	%
0 to 4	0	0	0	0.0
5 to 9	0	0	0	0.0
10 to 14	0	0	0	0.0
15 to 19	0	0	0	0.0
20 to 24	1	0	1	0.2
25 to 29	0	0	0	0.0
30 to 34	0	0	0	0.0
35 to 39	1	0	1	0.2
40 to 44	2	0	2	0.3
45 to 49	5	3	8	1.3
50 to 54	2	6	8	1.3
55 to 59	10	1	11	1.8
60 to 64	12	9	21	3.4
65 to 69	16	14	30	4.9
70 to 74	42	24	66	10.7
75 to 79	51	31	82	13.3
80 to 84	69	48	117	19.0
85 to 89	68	69	137	22.2
90 to 94	45	56	101	16.4
95 to 99	4	20	24	3.9
100+	2	5	7	1.1
<b>Total</b>	<b>330</b>	<b>286</b>	<b>616</b>	<b>100.0</b>

Source: ONS, 2021

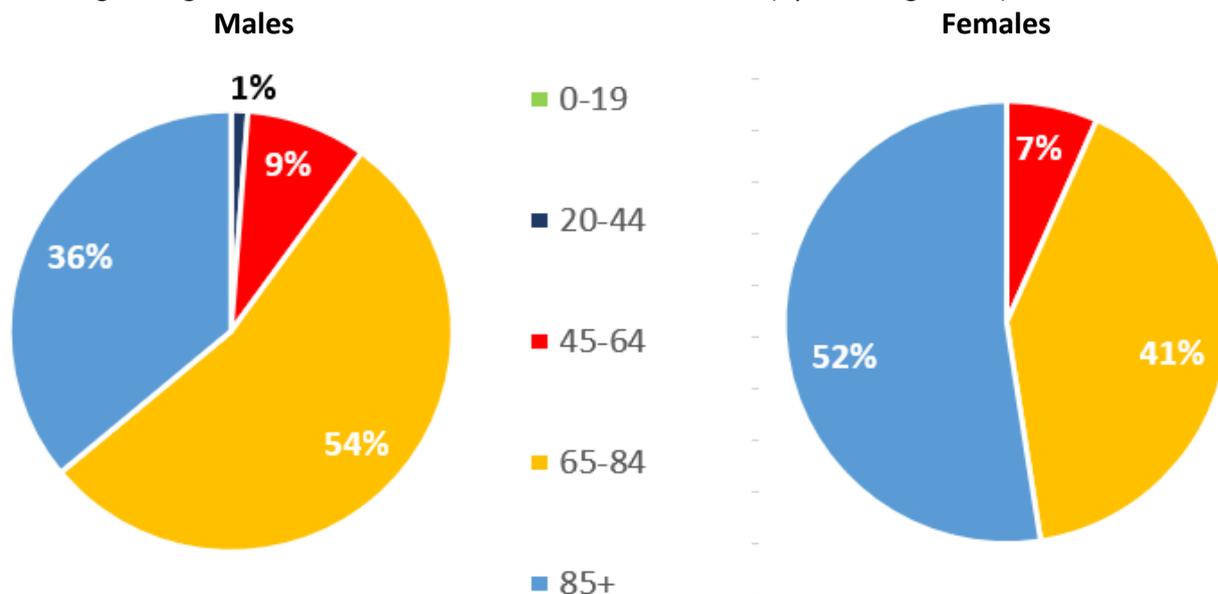
As the table shows, of the 616 deaths from COVID-19 in Wirral, a larger proportion (n=330 or 53.6%) were in males; 286 or 46.4% were in females. The largest proportion of deaths occurred in the 85-89 age band and overall, 91.6% of all deaths occurred in those aged 65 or over.

This means Wirral is in line with the national picture, where males outnumber females in deaths attributable to COVID-19 (45% female vs 55% male) [[ONS, 2020](#)].

When analysis was completed for Wirral using deaths up to June 2020, there appeared to be some difference between Wirral and England (notably, that Wirral had a larger number of deaths in women compared to men), but now that larger numbers are available, this no longer appears to be the case.

**Figure 1** below shows the proportion of COVID-19 deaths by broad age band, comparing the genders.

**Figure 1:** Age and gender breakdown of COVID-19 deaths in Wirral (by broad age band) in 2020

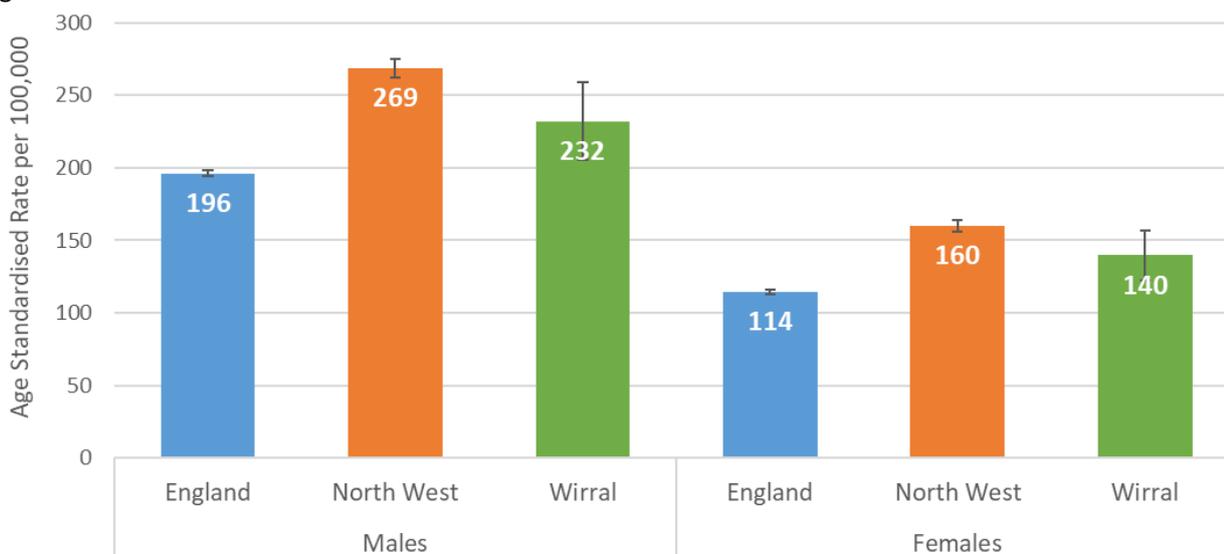


Source: ONS, 2021

As the chart above shows, there was a slightly higher proportion of deaths in the younger age groups in males compared to females (10% aged <65, versus 7% aged <65 for females). A much larger proportion of deaths occurred in the very oldest old in females also (52% of all COVID-19 deaths in females occurred in this age group, versus 36% in males). This difference is partially a product of the fact that females live longer than men of course.

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 2** below shows the rate of COVID-19 and Non-COVID death rates in Wirral, by gender, in 2020 (with confidence intervals).

**Figure 2:** Age standardised death rates (per 100,000) from COVID-19 in Wirral, North-West & England, by gender in 2020



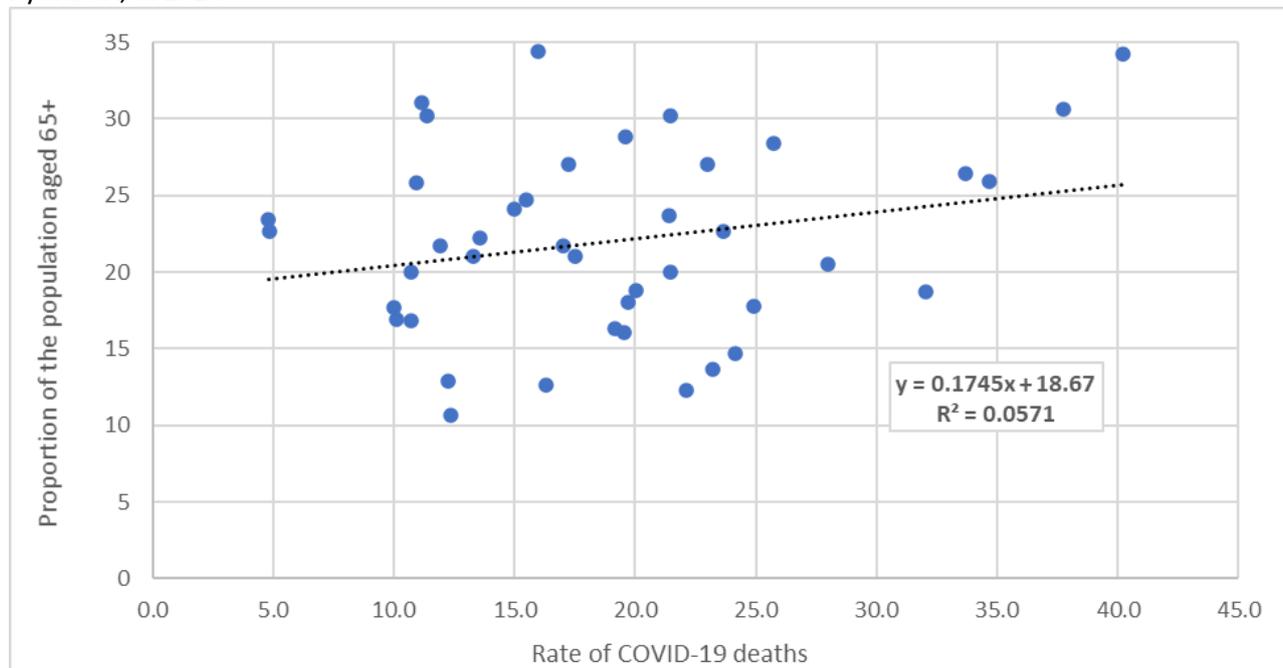
Source: ONS, 2021

**Figure 2** above shows that both men and women in Wirral had a significantly higher rate of deaths from COVID-19 than England, but was lower than the North-West overall (although not significantly).

**Figure 2** also shows that this finding was not peculiar to Wirral; males also had higher deaths rates than women in the North-West and England overall.

**Figure 3** 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 (per 10,000) in that MSOA (x axis).

**Figure 3:** Relationship between older age (proportion of the population aged 65+) and death rates in Wirral, by MSOA, in 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 3** above shows, there appear to be a relationship (a weak, positive association) between the proportion of the population aged 65+ (in each MSOA) and deaths rates by MSOA. This indicates 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.

### Main messages

- Of the 616 deaths from COVID-19 in Wirral, a larger proportion (n=330 or 53.6%) were in males; 286 or 46.4% were in females
- Age and sex standardised rates confirmed that men were at higher risk than women of dying from COVID-19 (both in Wirral and nationally in 2020)
- In Wirral, 91.6% of deaths from COVID-19 were in those aged 65+
- The average age of death in COVID-19 patients was higher than Non-COVID patients in 2020 (the average age of COVID-19 deaths was 80.9, while for Non-COVID-19 deaths it was 77.9)
- Analysis of local death rates by MSOA indicates that as the proportion of the population aged 65+ increases in an area, so does the rate of death

### Geography

The PHE Disparities in Risk and Outcomes from COVID-19 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].

### COVID-19 mortality by local authority

**Figure 4** below shows the mortality rate for COVID-19 in Wirral and other Cheshire & Merseyside local authorities between 01/03/2020 and 31/12/2020 (all persons).

**Figure 4:** Mortality rate (per 100,000) from COVID-19 in Wirral, Cheshire & Merseyside authorities, with North-West and England comparator all persons (01/03/2020 to 31/12/2020)



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

Figure 4 (above) shows that Wirral (187.0) had a higher death rate from COVID-19 than England (134.7) and the North-West (185.2) overall, but lower than geographical and near statistical neighbours Liverpool and Sefton. In fact, of all the Merseyside authorities, Sefton and Liverpool had the highest mortality rates from COVID-19.

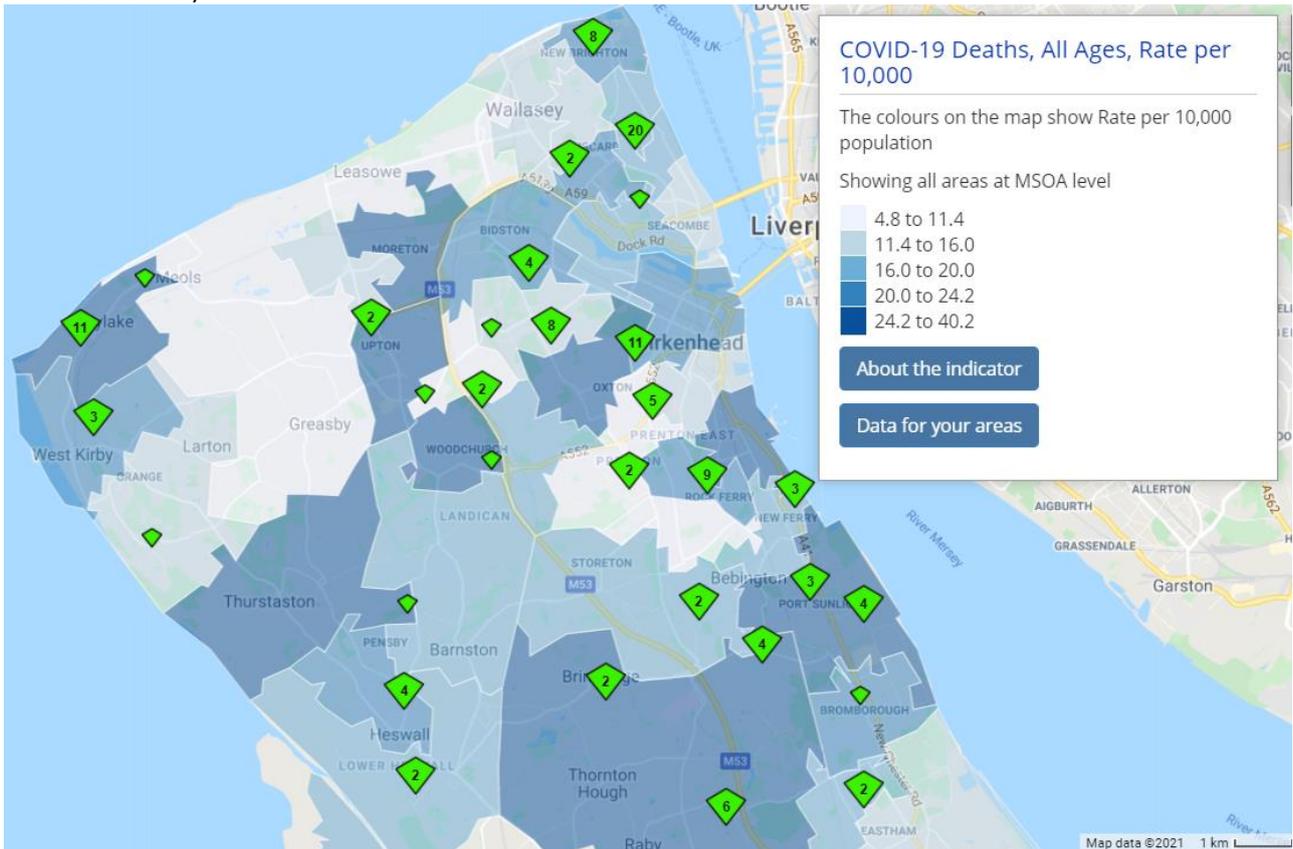
In 2020, Wirral ranked 18 out of 39 North-West local authorities on rate of COVID-19 deaths. Nationally, Wirral ranked 43 out of 313 authorities.

### COVID-19 mortality by within Wirral geography

As **Map 1** indicates, deprivation alone does not explain the pattern of COVID-19 mortality in Wirral in 2020, as there are some affluent areas of South and West Wirral with high death rates. What can be seen however, is that broadly speaking, those areas with the highest death rates per 10,000 are also areas which have 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), notably Hoylake and Clatterbridge areas.

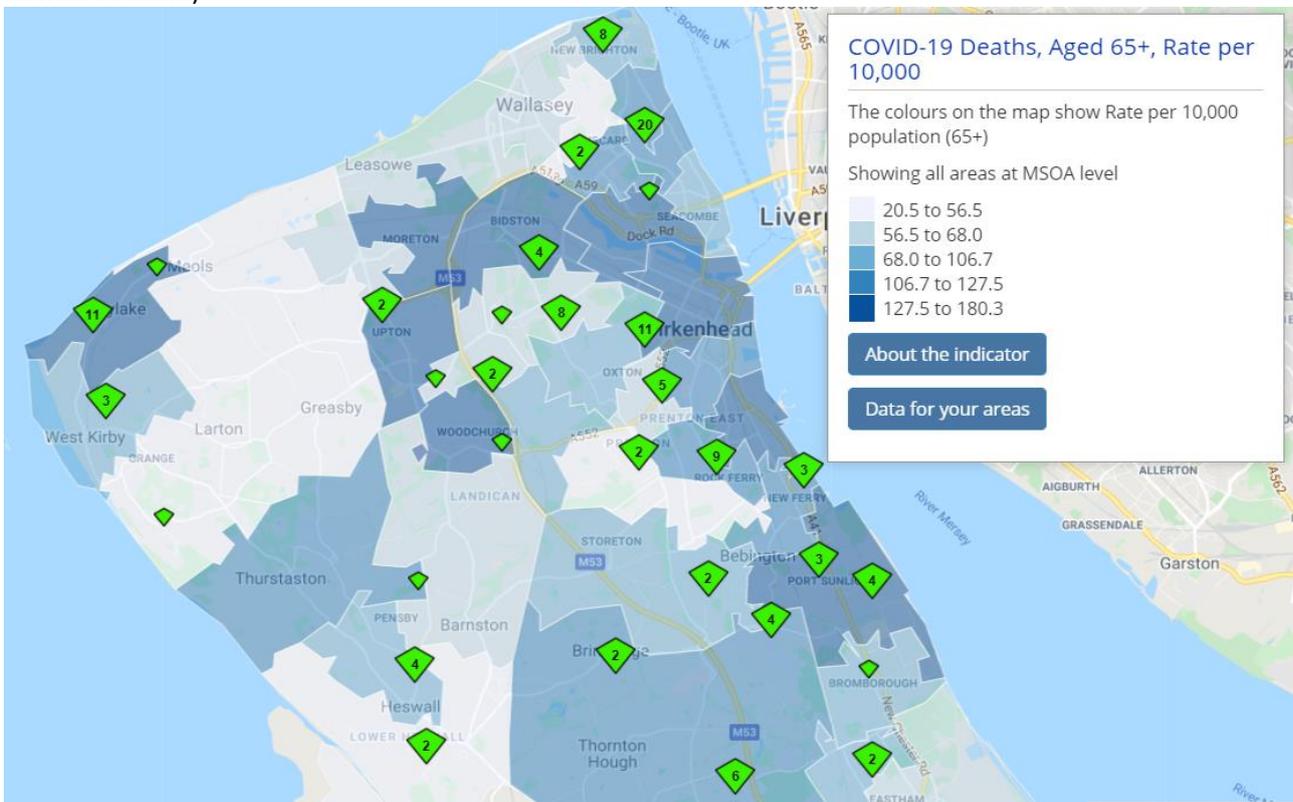
Deaths by geography (in this case, MSOA) as a rate per 10,000, all ages, are shown in **Map 1** below, while **Map 2** shows that when COVID-19 deaths are shown as a rate per 10,000 of those aged 65+, the picture changes slightly. The east of Wirral becomes more prominent (although areas with many care homes still feature heavily).

**Map 1: Mortality rate from COVID-19 (per 10,000, all ages) in 2020 by MSOA of residence in 2020 (Care Homes overlaid)**



Source: Original deaths data from ONS, shown on Local Insight Wirral: <https://wirral.communityinsight.org>

**Map 2: Mortality rate from COVID-19 (per 10,000 aged 65+), by MSOA of residence in 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.

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 **Page 16** in the 'Deprivation' section for more details. These areas are also those with large numbers of older residents, which as over 90% of COVID-19 deaths occurred in those aged 65+, is very important. Consequently, Map 2 below shows the mortality rate due to COVID-19, as a rate per 10,000 people aged 65+.

### Main messages

- In 2020, Wirral ranked 18 out of 39 North-West local authorities on rate of COVID-19 deaths. Nationally, Wirral ranked 43 out of 313 authorities.
- Wirral had a higher death rate in 2020 from COVID-19 than England, the North-West, but not statistical neighbour Sefton.
- The locations within Wirral most affected in terms of COVID-19 mortality (Clatterbridge, Woodchurch/ Upton, New Brighton and Oxton areas) were all those which have large proportions of older population and/or large numbers of care homes.

### Excess mortality

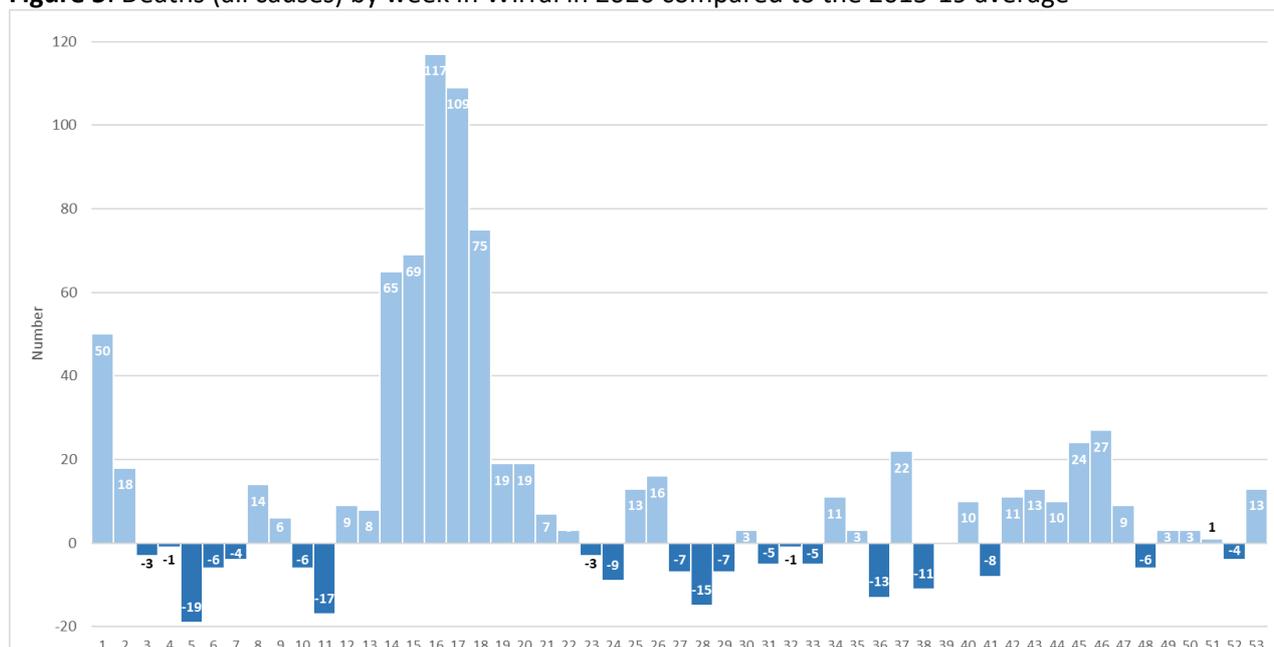
Excess mortality is calculated by comparing the number of all deaths in 2020, to a comparator period (a five year average of deaths during 2015-19 has been used by Wirral Public Health Intelligence Team throughout this report as the comparator period; this was the same methodology used by PHE).

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].

In Wirral in 2020, COVID-19 accounted for a total of 616 deaths in Wirral; as total excess deaths are calculated to be 630, this means that COVID-19 accounted for 98% of all excess deaths and that there were an additional 14 deaths in Wirral which were from non-COVID-19 causes.

Possible explanations for this could be either that COVID-19 deaths were slightly under-reported, or that the pandemic indirectly resulted in some additional deaths from other causes. **Figure 5** below shows how deaths by week in Wirral in 2020 compared to the 2015-19 average (above or below).

**Figure 5:** Deaths (all causes) by week in Wirral in 2020 compared to the 2015-19 average



Source: ONS Weekly Deaths Registrations by LA and place of occurrence, 2021

### Excess Mortality by location

Excess mortality can also be analysed by location of death. **Table 2** below shows how 2020 compared to the reference period of 2015-19 for the location of deaths.

**Table 2:** Deaths (all causes) by location in 2020 and 2015-19 (5 year average)

Location	2020	2015-19 (5 year average)	Difference
Care Home	1,047	787	+260
Home	1,165	839	+326
Hospital	1,897	1,809	+88
Other	239	283	-44
<b>Total</b>	<b>4,348</b>	<b>3,718</b>	<b>+630</b>

Source: ONS Weekly Deaths Registrations by LA and place of occurrence, 2021

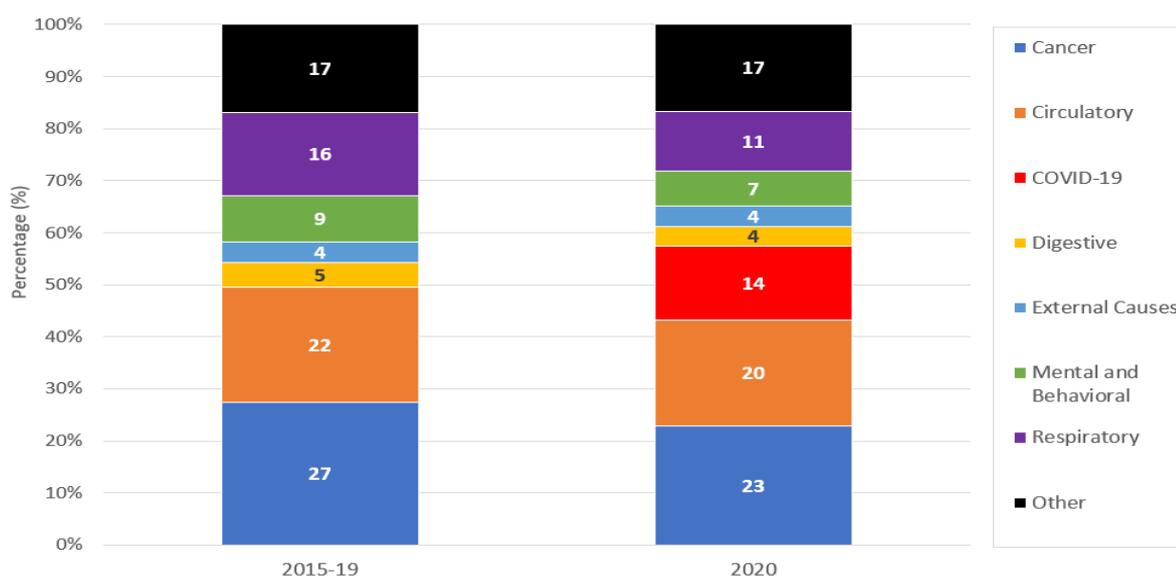
There were 630 more deaths in 2020, versus the 5 year average of 2015-19 (3,718 expected, 4,348 actual). The largest difference was in the number of deaths which occurred at home (+326 more than expected). Deaths in 'Other' locations (which is mainly Hospices) is likely to have decreased due to many Hospices spending a considerable period of 2020 closed to new admissions due to ongoing COVID-19 infections.

### Excess Mortality by cause

Mortality by cause for the last 5 years (2015-19) and for 2020 have been compared in the chart below. The categories or chapters used have been derived from PHE methodology. As **Figure 6** shows, the majority of causes have reduced as a proportion of all deaths in 2020. The exceptions are the 'Other' chapter (see note below chart for causes which fall into this category) and External Causes (includes accidental deaths, suicide etc...) where proportions have stayed the same compared to 2015-19.

The largest change is obviously the appearance of COVID-19, which has so far accounted for 14% of all deaths in Wirral during 2020. The next largest changes are the reductions in deaths with an underlying cause of Cancer and Respiratory disease in 2020 compared to 2015-19 (although both of these causes are still significant at 23% and 11% of all deaths in 2020 respectively).

**Figure 6:** Cause of death in 2020 compared to 2015-19 in Wirral (percentages)

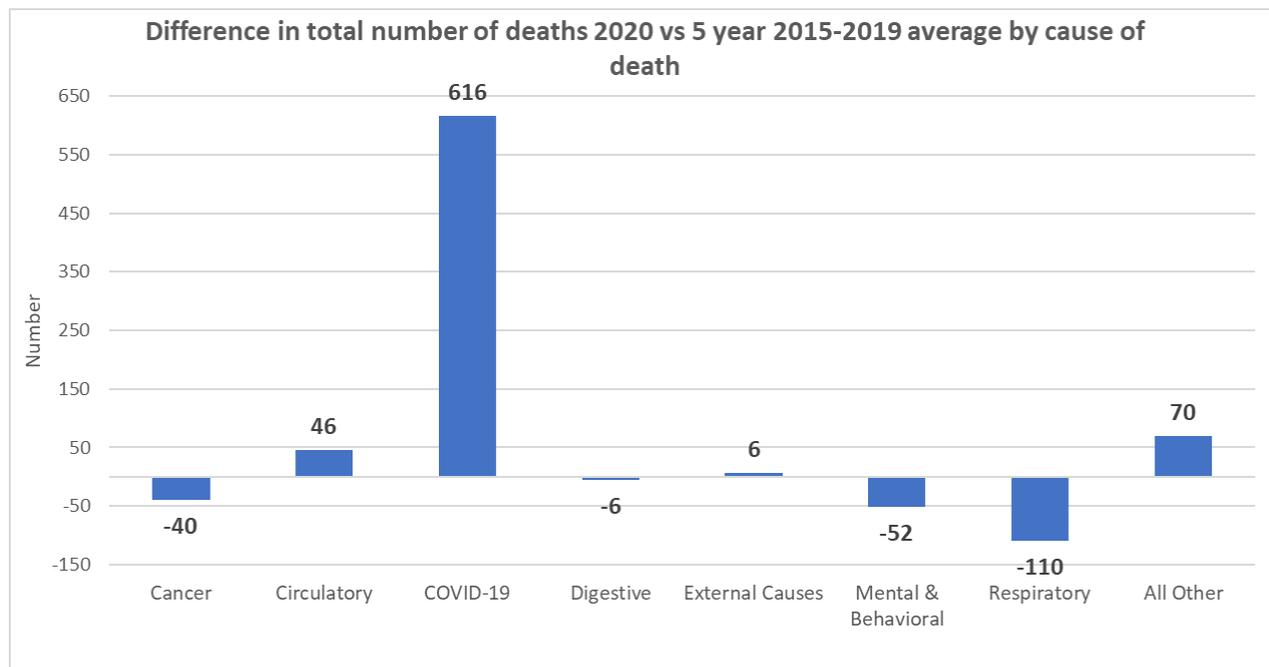


Source: PCMD (Primary Care Mortality Database)

Note: 'Other' includes all other causes not included in the Chapters above, such as diseases of the nervous system (e.g. MS, Parkinsons, MND), diseases of the genito-urinary system (e.g. renal failure, UTIs etc...)

**Figure 7** shows which disease chapters resulted in an increased *number* of deaths in 2020 compared to the same period of time in 2015-19.

**Figure 7:** Difference in number of deaths by cause (2015-19 average compared to 2020)



**Source:** PCMD (Primary Care Mortality Database)

**Note:** 'All Other' includes all other causes not included in the Chapters above, such as diseases of the nervous system (e.g. MS, Parkinsons, MND), diseases of the genito-urinary system (e.g. renal failure, UTIs etc...)

**Figure 7** shows that deaths from 'All Other', Circulatory (and of course, COVID-19) causes showed an increase in numbers in 2020 compared to the average in 2015-19. Deaths from Respiratory, Mental & Behavioural and Cancer all appear to have decreased. This is consistent with observed decreases in other communicable diseases resulting from NPIs observed in Wirral (e.g. reductions in Norovirus, Chicken Pox, Measles, Mumps and Scarlatina) and increased take up of flu vaccination this year, as a proportion of respiratory deaths are sequelae of flu for example. It should be noted that deaths from Respiratory causes still comprised a large number and proportion of deaths in 2020 – albeit just not as many as expected (597 expected, 487 actual).

It should be noted that although in **Figure 6** ('scarf' chart), the proportions of deaths stayed the same for 'Other' causes, this category or chapter showed the largest increase in 2020 in terms of actual *numbers*. This is because the total number of deaths for 2020 – the denominator – was much larger than the annual average for 2015-19. The result is that proportions remain the same, while actual numbers have increased (this is why both charts are presented, giving both proportions and numbers).

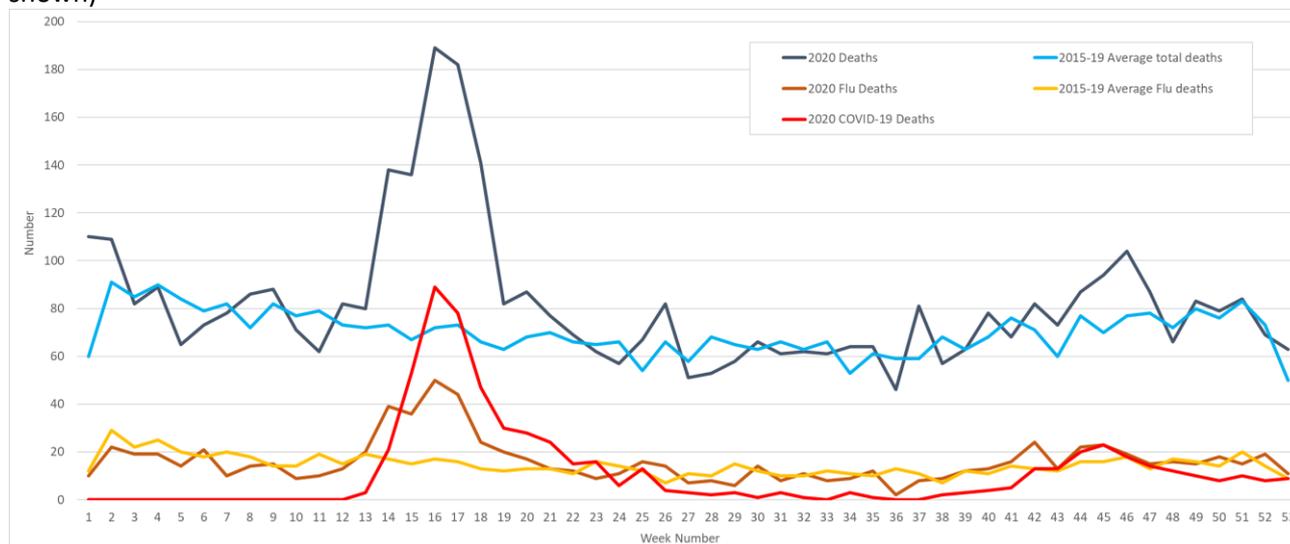
### Excess mortality by ethnicity

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.

## Flu deaths

A common query is about how flu deaths may have fluctuated during the COVID-19 pandemic. **Figure 8** below shows this information and indicates that until March, flu deaths did appear slightly lower compared to the 2015-19 average. Flu deaths then appear to peak in line with COVID-19 (both in March/April and again in October).

**Figure 8:** Comparison of flu deaths in 2020 versus 5 year average (with COVID-19 and total deaths also shown)



Source: ONS, 2021

Notes: COVID-19 deaths defined as deaths with any mention of COVID-19 on the death certification. Flu and COVID-19 deaths are a sub-set of overall deaths. Some deaths may be double counted if multiple causes of death were recorded on death certification.

## 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]. PHE also found that 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](#).

**Table 3** and **Figure 9** below show the number of deaths from COVID-19 in Wirral in 2020.

**Table 3:** Number and rate of COVID-19 deaths (rate per 100,000) in Wirral by IMD Quintile in 2020

Quintile	Number of deaths	Population	Rate per 100,000
1 Most Deprived	222	115,726	192
2	103	53,582	192
3	84	51,898	162
4	143	59,732	239
5 Least Deprived	64	42,297	151
<b>Total</b>	<b>616</b>	<b>323,235</b>	<b>191</b>

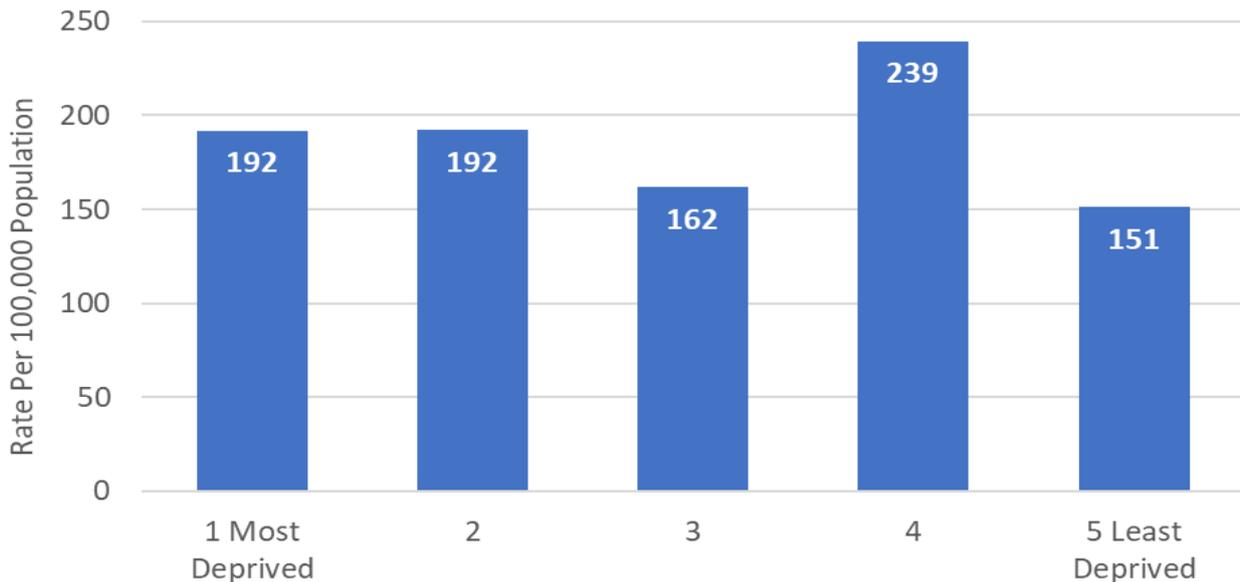
Source: Local Public Health data source (combined data - restricted)

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 Quintie 1, it should be remembered that the proportion of the local population living in each quintile varies.

So for example, in Wirral, 36% of the population live in Quintile 1 (most deprived quintile), while the smallest proportion (13%) lives in Quintile 5 (the least deprived or most affluent quintile). **Figure 9** below shows that there appears to be little or no relationship between death rates from COVID-19 per 100,000 for each quintile.

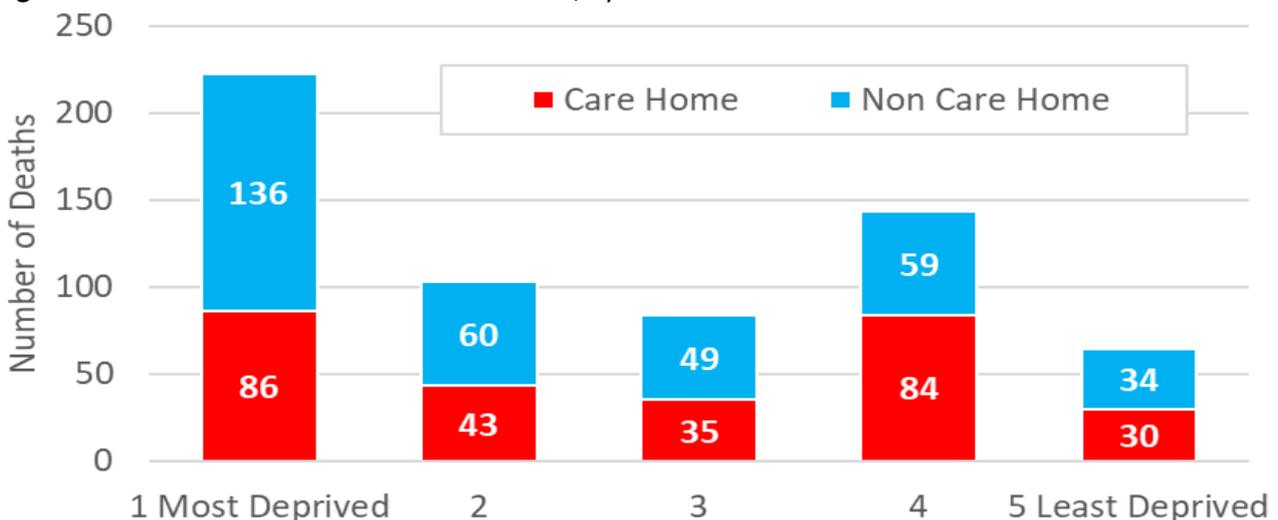
**Figure 9:** Rate of COVID-19 deaths (rate per 100,000) in Wirral by IMD Quintile, in 2020



Source: ONS (PCMD dataset), 2021

**Figure 9** shows that broadly, deaths from COVID-19 do not follow the national pattern (increasing deprivation resulting in increasing mortality). The highest rate of deaths is apparent in Quintile 4. A likely reason why Wirral diverges from national trends on deprivation is the location of care homes. See **Figure 10** below, which shows deaths split by Care Home and non-Care Home residents.

**Figure 10:** Number of COVID-19 deaths in Wirral, by Care Home residence and IMD Quintile in 2020

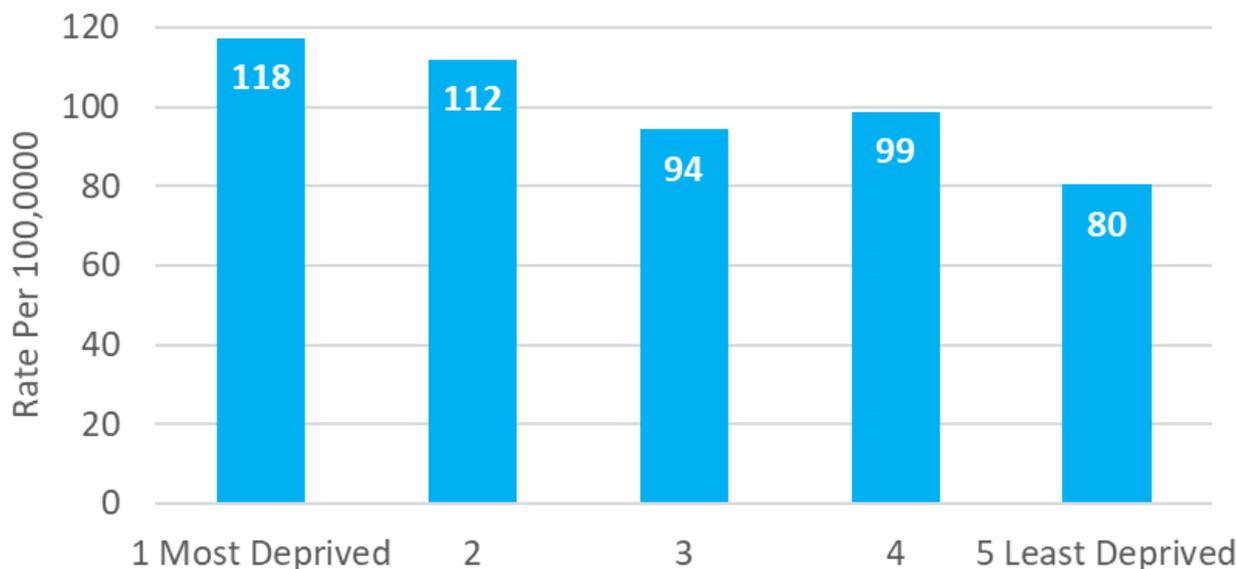


Source: ONS (PCMD dataset), 2021

As **Figure 10** above shows, in Quintile 4 (which had the highest mortality rate from COVID-19), the majority of deaths (59%) were residents of Care Homes. Overall in Wirral, 45% of all COVID-19 deaths occurred in Care Home residents and in Quintile 1 (most deprived) it was just 39% of all deaths which occurred in Care Home residents. It seems likely therefore, that the location of Care Homes in Wirral (large numbers in areas classed as Quintile 4), drove the difference 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 11** below showing rate of death per 100,000 in *non-Care Home residents only*.

**Figure 11:** Rate of COVID-19 deaths (rate per 100,000) in Wirral, in non-Care Home residents by IMD Quintile in 2020



Source: ONS (PCMD dataset), 2021

As **Figure 11** 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 more like the national trend, with the highest rates seen in Quintile 1 and the lowest seen in Quintile 5. This supports the hypothesis that the geographical location of Wirral care homes and the high number of confirmed cases and deaths in care homes has affected deprivation results.

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

- Nationally, PHE found that people living in deprived areas had higher death rates from COVID-19 than those living in less deprived areas. Locally however, the relationship between deaths and deprivation was less clear, with rates highest in Quintile 4 (second least deprived quintile)
- A large contributory factor is likely to be the location of Care Homes in Wirral; the majority of COVID-19 deaths in Quintile 4 occurred in Care Home residents
- When deaths in non-Care Home residents were analysed separately, the pattern was much more comparable with national findings (i.e. death rates highest in Quintile 1 and lowest in Quintile 5)

### Ethnicity

Nationally, evidence shows that ethnicity was significantly associated with higher mortality rates from COVID-19 compared to White ethnic groups [1]. National analysis was **not** however, able to quantify the impact of occupation or co-morbidities such as obesity on BAME groups and COVID risks and outcomes.

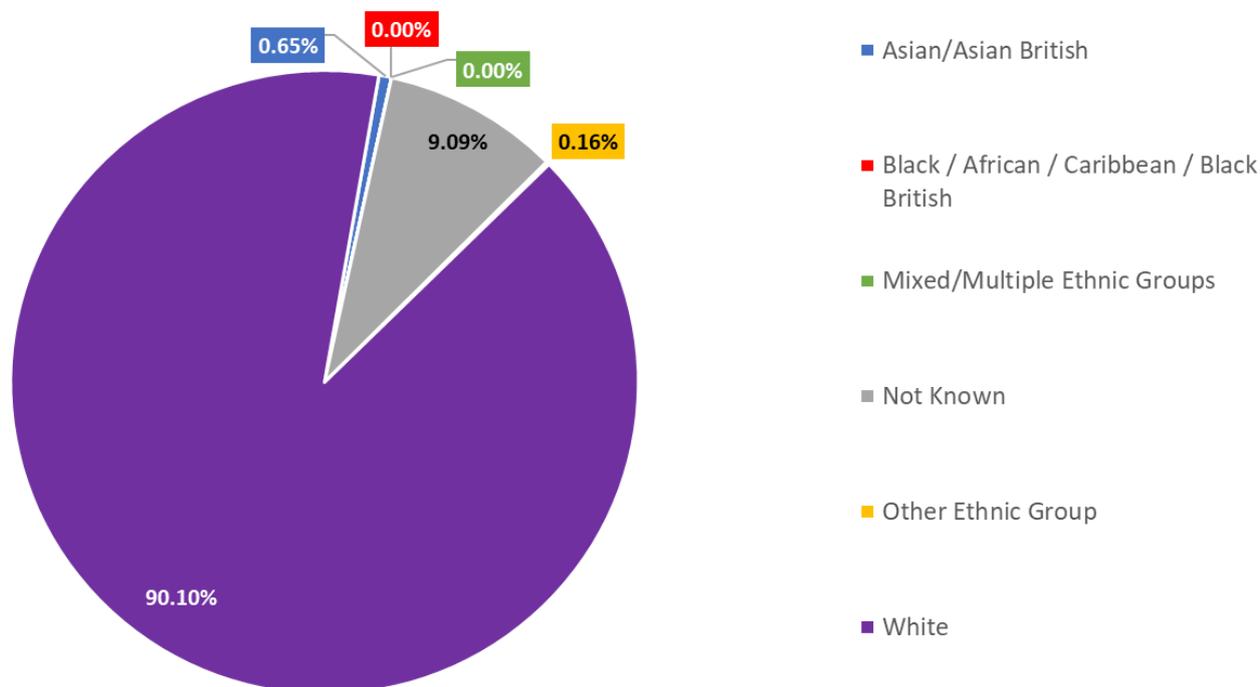
This is important, because occupation is associated with risk of being exposed to COVID-19 and some key occupations have a high proportion of workers from BAME groups. Local analysis of this kind was also unable to look at this impact, due to lack of linked and complete datasets. It is important to note that PHE have made the point that other evidence has shown that when these factors *are* included, the difference in risk of death 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. 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 transport 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 2011 Census; 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 2011 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.

Up to 31/12/2020, there were 616 deaths from COVID-19 in Wirral, with 5 deaths categorised as being in people from the BAME community. **Figure 12** below shows the breakdown.

**Figure 12:** COVID-19 mortality in Wirral by ethnicity in 2020



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

As **Figure 12** shows, the majority of COVID-19 deaths (90.1%) were in the White population. Again, this is to be expected given the structure of the Wirral population (over 90% White). Asian/Asian British was the largest BAME group among those who died from COVID-19 up to 31/12/2020, with 0.65% of deaths.

The second largest group (9.1%) 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), 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 this is '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; with this level of unavailable data, it is impossible to tell.

### Main messages

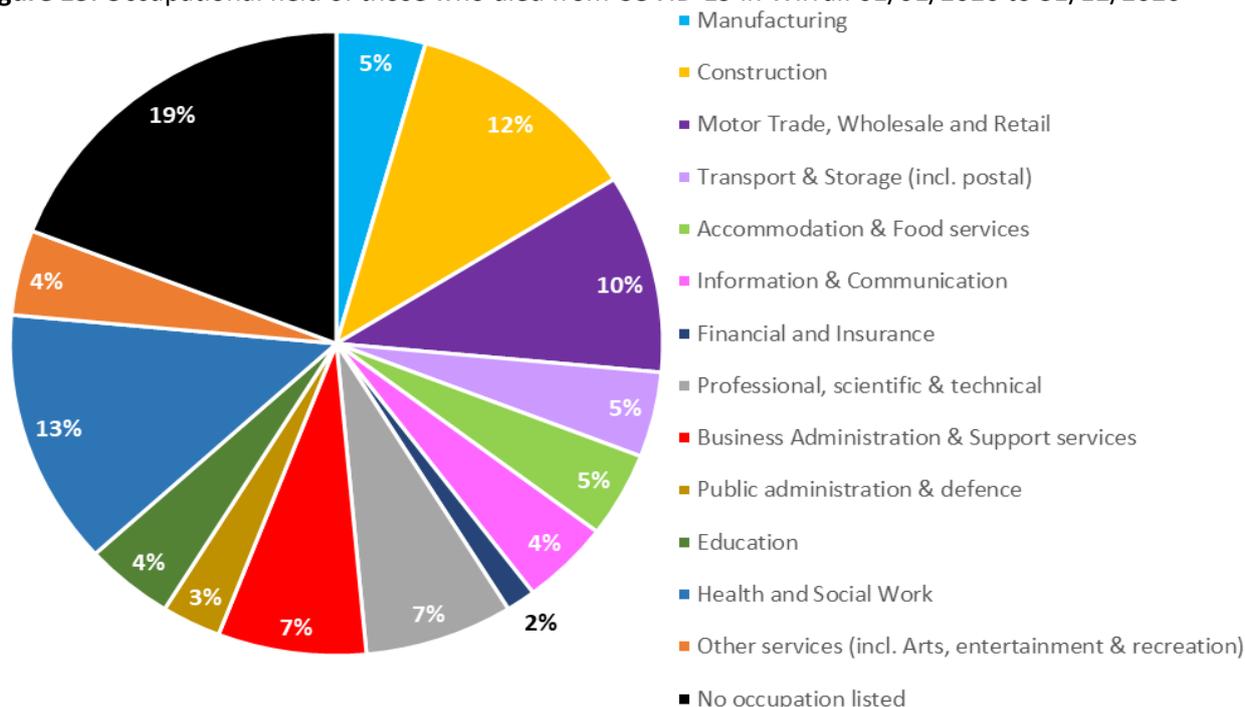
- Nationally, ethnicity was significantly associated with higher mortality rates from COVID-19.
- The BAME population in Wirral is estimated to be around 5-9% of the population; deaths from COVID-19 in BAME people in Wirral comprised 0.8% of the total COVID-19 deaths in Wirral.
- A combination of the small BAME population in Wirral, poor data quality and the relatively small number of deaths (relative to the UK overall) mean it is difficult to draw conclusions about the impact of COVID-19 on mortality in the BAME population.

### Occupation

ONS have 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].

The majority of deaths from COVID-19 both nationally and locally, were in those of retirement age. Of the 616 COVID-19 deaths registered during 2020 in Wirral, just 68 (11%) were in those of working age (aged 18-67). Care should therefore be taken due to the relatively small numbers represented in **Figure 13**, particularly as the largest category was where occupation was not listed/recorded. After the unknown category, the most common categories were Health & Social Work (13%), Construction (12%) and Motor Trade, Wholesale & Retail (10%); 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. See **Figure 13** below.

**Figure 13:** Occupational field of those who died from COVID-19 in Wirral: 01/01/2020 to 31/12/2020



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

**Table 4** 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 (or considered ‘excess’). See **Table 4** below.

**Table 4:** 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%	3	5.5	0.7
Construction	4,000	4.0%	8	14.5	3.7
Motor Trade, Wholesale and Retail	16,750	16.6%	7	12.7	0.8
Transport & Storage (incl. postal)	3,500	3.5%	3	5.5	1.6
Accommodation & Food services	7,000	6.9%	3	5.5	0.8
Information & Communication	1,500	1.5%	3	5.5	3.7
Financial and Insurance	1,000	1.0%	1	1.8	1.9
Real Estate Activities	1,500	1.5%	0	0.0	0.0
Professional, scientific & technical	8,000	7.9%	5	9.1	1.2
Business Administration & Support services	7,000	6.9%	5	9.1	1.3
Public administration & defence	5,000	5.0%	2	3.6	0.7
Education	10,000	9.9%	3	5.5	0.6
Health and Social Work	23,000	22.8%	9	16.4	0.7
Other services (incl. arts, entertainment & recreation)	5,000	5.0%	3	5.5	1.1
<b>Total</b>	<b>101,000</b>	<b>100%</b>	<b>55</b>	<b>100%</b>	

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

Notes: Numbers may not sum due to rounding. Blank occupations removed from this table.

As **Table 4** shows, when those with a blank Occupation field were removed, the 3 largest groups (in terms of number and proportion) of COVID-19 deaths in Wirral were Health & Social Work (16.4%), Construction (14.5%) and Motor Trade, Wholesale & Retail (12.7%).

The presence of Health & Social Work and Motor Trade, Wholesale & Retail in the top 3 is not 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 (16.4% of all deaths from COVID-19).

The occupational field with both one the largest proportions and ratios of deaths (number of deaths compared to number working in the field) was Construction. Construction occupations accounted for 14.5% of deaths, but only comprises 4.0% of the working population of Wirral. These professions (e.g. Plumbers, Painters, Joiners, Electricians) are over-represented in COVID-19 deaths in Wirral.

The other field which appears to be over-represented in Wirral in terms of deaths compared to the number of people who work in the field, was Information & Communication (only 1.5% of the working population of Wirral, but 5.5% of COVID-19 deaths).

This is in line with national findings by PHE that Construction workers were at higher risk; this was not initially the case when we last analysed this data (January to June 2020) data, but interestingly, has now become apparent when the whole of 2020 has been subject to analysis.

### *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.
- In Wirral, just 68 out of a total of 616 COVID-19 deaths (to 31/12/2020) were of working age (aged 16-67); almost one in five of those deaths (19%) 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 Health & Social Work (13%), Construction (12%) and Motor Trade, Wholesale & Retail (10%)
- The most over-represented occupational group in Wirral was Construction, which employs only 4.0% of the Wirral population, but accounted for 14.5% of deaths (caveat of small numbers)

## Inclusion Health Groups

### *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.

### *Rough sleepers*

ONS released information in 2020 [3] indicating that most of the COVID-19 deaths in homeless people identified in England & Wales (n=16) were in men, and the mean age at death was 58; 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*

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.

Local Information on people with LD and COVID-19 indicates that between 01/01/2020 and 31/12/2020 there were a total of **52 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 52 deaths, 8 were due to COVID-19 (15% 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 616 residents died from COVID-19 out of a total of 4,281 people who died from all causes in 2020 (14% 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:

- By gender, of the 8 deaths from COVID, 2 were female, 6 were male.
- The average age of the people with LD who died from COVID-19 was 65.8; the average age of those who died from non-COVID-19 causes was 63.7.
- The average age of the non-LD Wirral population who died from COVID-19 was 80.1; the average age of those who died from non-COVID-19 was 78.2.
- 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)
- Among people who died from *other* causes (non-COVID-19 deaths), the average number of pre-existing health conditions in people with LD (who died) was 1.7; among people who did not have a LD, the average was 2.3.
- Among people with LD who died from COVID-19, the average number of pre-existing health conditions was 3.2; among people who did **not** have LD, the average was higher at 3.4.
- The most common conditions in people with LD who died from non-COVID-19 causes were epilepsy and diabetes.
- Most common conditions in the 8 people with LD who died from COVID-19 were dementia, heart failure and diabetes.

### Main messages

- Nationally, data suggests a higher COVID-19 mortality rates among rough sleepers, people with LD and people born outside of the UK and Ireland compared to the general population; current and retrospective local data is currently unavailable which could confirm if this is the case in Wirral.

## Location of death

ONS provides regular updates on the number of COVID-19 deaths by the location in which they died. It should be noted however, that people often do not die where they are ordinarily resident, so not all care home residents die in care homes for example. 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).

**Table 5** below shows the number and proportions of deaths by the location in which they occurred (split by COVID-19 and non-COVID-19 deaths).

**Table 5:** Deaths (from COVID-19 and non-COVID-19 all causes) in Wirral by location in 2020

Location	COVID-19	Number Non COVID-19	Total 2020	% of deaths that were COVID-19	% of deaths from all causes
Care Home	190	884	1,074	31.4	23.6
Home	24	1,141	1,165	4.0	30.5
Hospital	384	1,513	1,897	63.4	40.4
Other	8	204	212	1.3	5.5
<b>Total</b>	<b>606</b>	<b>3,742</b>	<b>4,348</b>	<b>100.0</b>	<b>100.0</b>

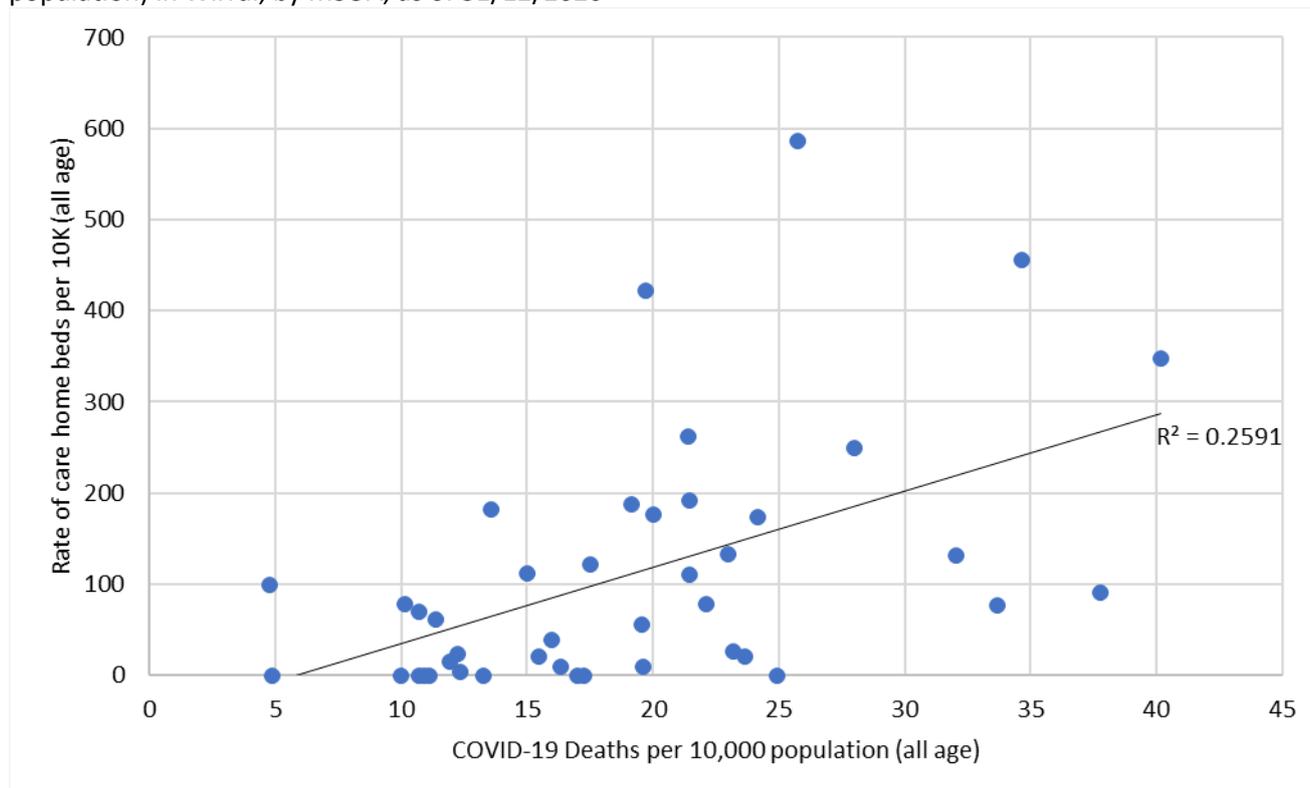
Source: ONS, 2021

Note: Due to ONS weeks, 10 registrations were omitted from the total COVID-19 deaths total listed above

**Table 5** shows that the Hospital and Care homes accounted for the majority of COVID-19 deaths (95% of all COVID-19 deaths in total). This differs slightly from deaths from other causes in 2020, where a total of 64% of deaths occurred in these two locations. In those who died from non-COVID-19 causes, the largest difference was in those who died at home (30.5% for non-COVID-19 causes, versus 4.0% of COVID-19 deaths).

As mentioned in the ‘Deprivation’ section, the location of care homes is an important determinant of deaths from COVID-19. The scatterplot below demonstrates this relationship, showing the association between the rate of care home beds in an area (MSOA) and the rate of deaths from COVID-19.

**Figure 14:** Association between rate of Care Home beds and death rate from COVID-19 (per 10,000 MSOA population) in Wirral, by MSOA, as of 31/12/2020



Source: ONS and CQC (2020)

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

**Figure 14** 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 evidence presented in the earlier

'Deprivation' section showing that the location of care homes (in Quintile 4) had impacted the results of deprivation analysis on COVID-19 deaths in Wirral.

### Main Messages

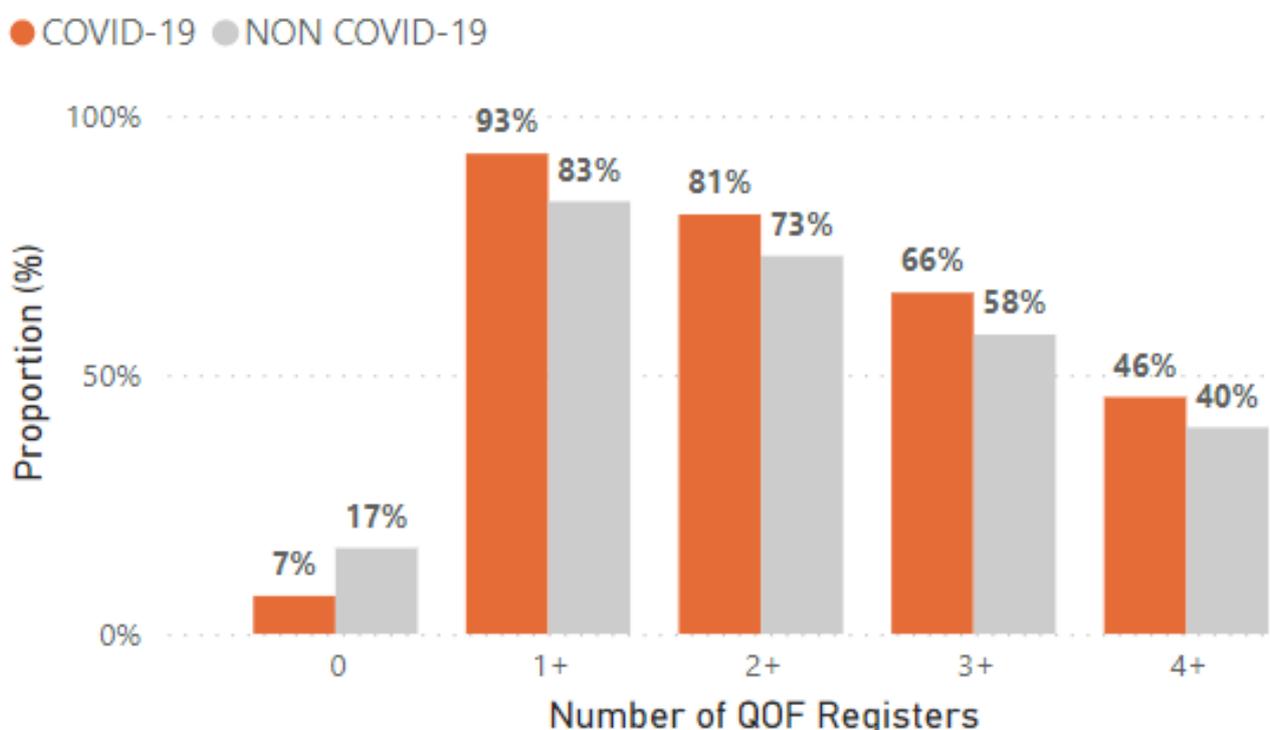
- Two in three of all those who died from COVID-19 in Wirral died in Hospital (63%)
- Just under a third (31%) of all COVID-19 deaths in Wirral occurred in Care Homes (n=190 deaths from a total of 606 COVID-19 deaths in Wirral); this is very similar to the national picture (30%)
- The largest difference was in those who died at home (30.5% for non-COVID-19 causes, versus 4.0% of COVID-19 deaths)
- The rate of care home beds in areas of Wirral significantly affected the mortality rate (higher rates in areas with higher rates of care home beds)

### Co-morbidities

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

Analysis shows that among those who died from COVID-19, just 7% had no pre-existing conditions at all. Among those who died from other (non-COVID-19) causes, the same figure was almost triple that – with 17% having no pre-existing conditions. See **Figure 15** below.

**Figure 15:** Number of pre-existing conditions in those who died from COVID-19 and non-COVID-19 causes, Wirral, 01/03/2020 to 31/12/2020



Source: Healtheintent (2020)

Many patients have multiple pre-existing conditions; in 2020, those who died from non-COVID-19 causes in Wirral had on average, 3.0 pre-existing conditions. In those who died from COVID-19 however, that figure was 3.4 pre-existing conditions.

**Table 6** below shows the number and rate (per 10,000 patients on relevant disease register) of death in patients, by all of the QOF 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.

(Please note that list sizes here may not match published list sizes, as deceased patients have been included in the data below for methodological reasons).

**Table 6:** 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 31/12/2020

Disease Register	QOF List Size	Deaths	Rate per 10,000
Dementia	3,413	114	334.0
Palliative Care	2,913	73	250.6
Heart Failure	4,713	86	182.5
Stroke/TIA	6,274	91	145.0
Peripheral Arterial Disease (PAD)	2,912	37	127.1
Atrial Fibrillation (AF)	11,036	140	126.9
Chronic Kidney Disease (CKD)	14,477	165	114.0
Chronic Obstructive Pulmonary Disease (COPD)	9,225	71	77.0
Coronary Heart Disease (CHD)	14,095	99	70.2
Rheumatoid Arthritis	2,126	14	65.9
Diabetes	22,267	138	62.0
Cancer	14,299	78	54.5
Mental Health	2,797	15	53.6
Hypertension	56,003	272	48.6
Obesity	28,983	133	45.9
Epilepsy	3,953	17	43.0
Learning Disability	2,552	9	35.3
Asthma	24,162	50	20.7

**Source:** Healtheintert (2020)

**Notes:** Deaths in this table should not be totalled, as individuals have multiple pre-existing condition and so will appear in this table in more than one QOF register. 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, who are routinely removed from published lists.

The highest rates of death (from COVID-19) were in patients on the Dementia register, followed by patients on the Palliative Care and Heart Failure registers. The largest *number* of deaths (from COVID-19) was in patients recorded as having Hypertension, followed by Chronic Kidney Disease and Atrial Fibrillation. This is mainly reflective of the number of people on these registers, hence the calculation of rates (relative to disease list registers).

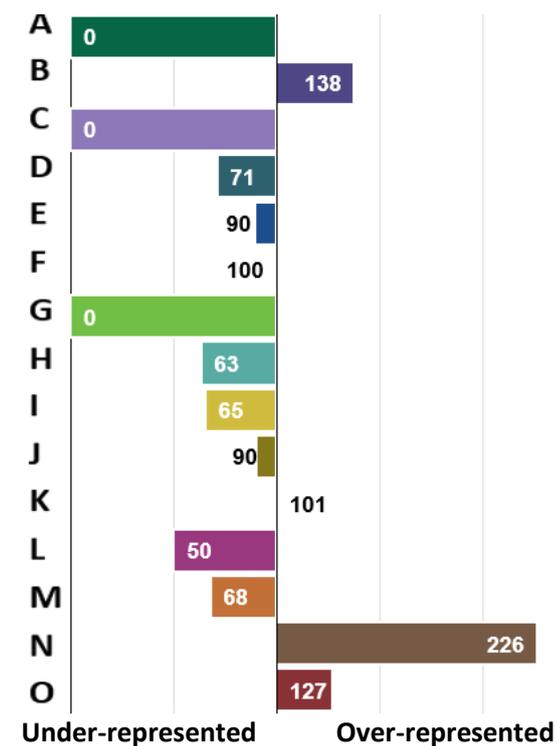
### Main messages

- The vast majority of those who died from COVID-19 had at least 1 pre-existing condition (93%)
- The rate of death (from COVID-19) locally was highest in patients on the Dementia register, followed by patients recorded as being on the Palliative Care and Heart Failure registers
- The number of pre-existing conditions in those who died from non-COVID-19 causes in Wirral was on average 3.0, compared to 3.4 among those who died from COVID-19.

## Mosaic (geodemographic analysis)

Mosaic is a geo-demographic population classification tool used to segment the population according to the type of neighbourhood in which they live (the tool uses postcode). It is constructed from a range of data sources including the Census, consumer behaviour and lifestyle factors and is a useful tool for gaining more in-depth population insight. It has been used here to analyse the 616 deaths from COVID-19 in Wirral in 2020 to see if any trends or patterns emerge. Mosaic segments the population into 15 Groups (labelled A through to O) and **Figure 16** shows how analysis of COVID-19 deaths looked when compared to the Wirral population by Mosaic Group.

**Figure 16:** Mortality rate by Mosaic Group (comparison with Wirral population)



The numbers shown are ratios – so for example, Group K with a ratio of 101 means that given their numbers in the Wirral population, the number of deaths in this group was almost exactly what would be expected (Group K made up 7.5% of the population of Wirral, 7.6% of deaths). Large over-representations however, mean that relative to the proportion of that group in the Wirral population, more people than expected died from COVID-19. As the chart shows, the most over-represented group is clearly Group N – Vintage Values (9.6% of the Wirral population but 21.6% of deaths from COVID-19). This is a group characterised by older age, frailty, and vulnerability, so it is unsurprising that this should be the group most over-represented among COVID-19 deaths. Two other over-represented groups were Group B – Prestige Positions and Group O – Municipal Tenants. Group B is surprising, as this group is characterised by high incomes and although approaching retirement are not as old as say, Group F – Senior Security. It may however be the case, that the large number of care homes in areas classified as Group B

(Around Hoylake and Clatterbridge areas) is affecting these results. Group O – Municipal Tenants are a group, like Group N, who are characterised by older age, deprivation, low-incomes and poor health, so again, it is perhaps unsurprising that they are also over-represented among COVID-19 deaths.

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## Methodology

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

### 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>