Risk & Outcomes of COVID-19 in Wirral: Update to June 2021

December 2021

Wirral Public Health Intelligence Team (Wirral Intelligence Service)

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Acknowledgements

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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 01/03/2020 to 30/06/2021 (first 18 months of the pandemic). It updates a previous version of this report which examined the first period of the pandemic in Wirral and covered 01/03/2020 to 30/06/2020 (first 3 months of the pandemic).

There was also a subsequent report which focused solely on mortality from COVID-19 in Wirral, which covered 2020 (calendar year) and which is available on the Wirral Intelligence Service website.

This review presents findings based on surveillance data available to 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 takes a population health approach and covers testing, cases, hospitalisations, deaths, and vaccination. Please see Appendix for a timeline of when various data sources became available to the Public Health Information Teams in England (including Wirral).

Overview of first 18 months of the pandemic

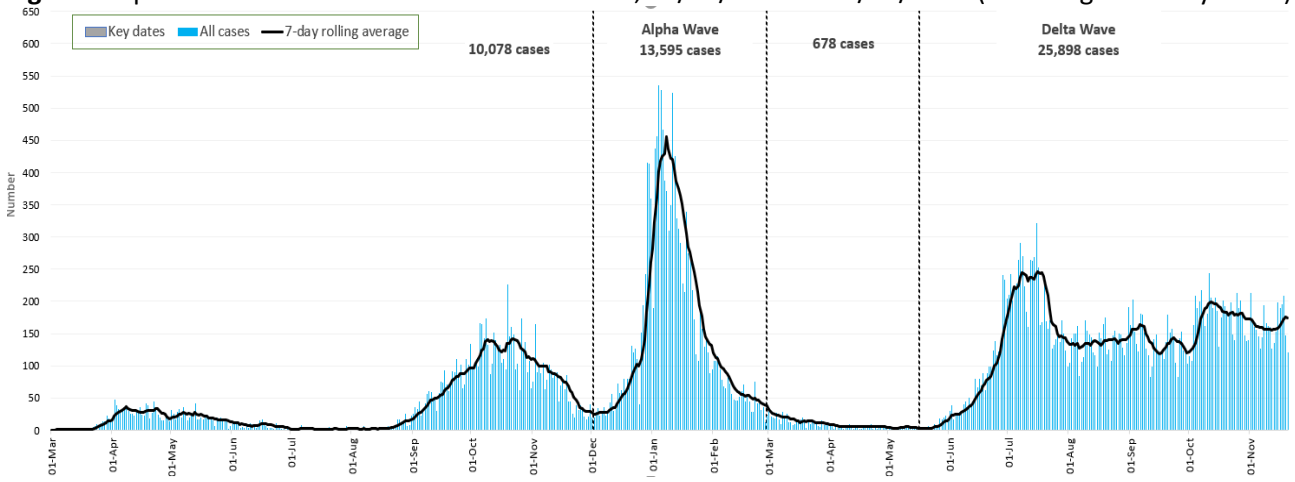
Over the course of the pandemic in England, there were two main peaks in monthly COVID-19 mortality and hospital admission rates, in April 2020 and January 2021. For England overall, monthly COVID-19 mortality and hospital admission rates at the peak of the second wave were higher than the first wave. The trend for confirmed case rates was different, as this was affected by the availability of testing in the early months of the pandemic. Specifically, testing was only available upon admission to hospital until August 2020 when the rollout of community testing commenced.

Swab testing for the wider population (as part of the UK government testing programme) did not begin in England until July 2020 and confirmed cases peaked in January 2021 (this was true in both England overall and Wirral).

England (and Wirral) saw a further wave of the pandemic in June and July 2021 driven by the emergence of the Delta variant; this wave did not see the same rates of mortality and hospitalisations (although these did both still increase during this wave).

As **Figure 1** shows, Wirral appears to have had four distinct peaks in COVID-19 cases since March 2020. Since the peak of the 4th wave subsided (August 2021), there has continued to be a sustained, high number of cases, which does not appear to have yet subsided (as of October 2021).

Figure 1: Epidemic curve of COVID-19 cases in Wirral, 01/03/2020 to 30/06/2021 (including wave key dates)



Source: PHE Situational Explorer - restricted data source)

There had been a total of 1.27 million tests carried out in Wirral as of 30/06/2021. Of these tests, just over 1 million (79% of all tests) had an NHS number recorded which showed over 186,000 individuals have had at least one test since the start of the pandemic. This means that roughly, we know that at least 60% of the Wirral population have had a test at some point between March 2020 and the end of June 2021.
In total, there were just under 27,000 positive cases of COVID-19 in Wirral between March 2020 and June 2021. Females, those aged 20-29 and those living in deprivation were the most likely to have a positive diagnosis of COVID-19 over the course of the pandemic in Wirral.

Between March 2020 and June 2021, there were 5,318 people who were either admitted to hospital or attended Emergency Department within 21 days (either prior or post) diagnosis with COVID-19 (as recorded by the HealtheIntent platform). These people generated a total of 7,553 inpatient admissions and 5,743 Emergency Department attendances.

As of 30/06/2021, there were a total of 992 deaths from COVID-19 in Wirral (using the ONS data definition, where death certification includes COVID-19, rather than the alternative definition of within 28 days of a COVID-19 positive test).

Key Messages

Age and gender

- Nearly 2 in 3 of all tests carried out have been by females; females aged 40-59 have had more than double the number of tests compared to males of the same age (likely due to occupational factors)
- The 20-29 age band (and specifically, females) comprised the largest number and rate of cases between March 2020 and June 2021 (17.8% or almost 1 in every 5 cases); this is in contrast to early in the pandemic, when the 80+ age group comprised 24% (or 1 in 4) of all diagnosed cases
- The largest number of inpatient admissions were in the 70-79 age group, while the highest rate of admissions was in those aged 90+
- Both the number and rate of COVID-19 mortality in Wirral was slightly higher in males compared to females and this was similar to the national picture
- Within the total of 992 COVID-19 deaths in Wirral, 893 (90%) occurred in those aged 65 plus and the average age of death in COVID-19 patients was over 2 years higher than non-COVID-19 patients to 30/06/2021 (average age of COVID-19 deaths was 80.5, while for non-COVID-19 deaths it was 78.3)
- A greater proportion of older people had received their 1st dose of a COVID-19 vaccine than the younger population. Furthermore, within each age band, a greater proportion of females had received their 1st dose than their male counterparts. This was also true for 2nd doses

Geography

- The North-West was the region (along with London), most impacted by COVID-19 cases in England
- Hoylake and Meols had the highest testing rate of any Wirral ward, Birkenhead & Tranmere ward had the lowest testing rate
- Wirral had the 3rd lowest rate of positive COVID-19 cases of the nine authorities in Cheshire & Merseyside (but was still higher than England overall rate) for the time period covered
- Wards in the more deprived east of the borough such as Claughton, Upton, Bidston & St. James had both higher numbers and rates of COVID-19 cases, compared to wards in the west of the borough
- The areas of Wirral most affected in terms of admissions to hospital were Clatterbridge, Claughton Upton; all have large proportions of older population and/or large care home populations
- Wirral had a higher COVID-19 death rate per 100,000 in those aged >65 than England and some neighbouring Cheshire authorities, but lower than the North-West overall and the other Merseyside authorities

- The 4 most deprived Wards in Wirral (Birkenhead and Tranmere, Bidston and St James, Seacombe and Rock Ferry) had the lowest 1st and 2nd dose uptake rates, whereas the 4 least deprived Wards (Heswall, Greasby, Frankby and Irby, Clatterbridge and West Kirby and Thurstaston) had some of the highest 1st and 2nd dose uptake rates

Deprivation

- Nationally, PHE found that people living in deprived areas had higher case rates, hospital admissions and mortality from COVID-19 than those living in less deprived areas
- Locally, Quintile 2 (second least deprived Quintile) had the highest testing rate in Wirral, while Quintile 5 (least deprived Quintile) had the lowest rate of testing between 01/03/2020 to 30/06/2021
- In terms of numbers and rates, the two most deprived Quintiles had the highest rates of positive cases in Wirral, while the two least deprived Quintiles had the lowest rates, with Quintile 5 showing the lowest rate of all five Quintiles
- The greatest number and rates of admissions for COVID-19 were for those living in the most deprived areas of Wirral
- Those living in the most deprived areas of Wirral experienced a significantly higher rate of COVID-19 deaths compared to Wirral overall and all other IMD Quintiles in Wirral
- Uptake rates of 1st and 2nd doses follows the pattern of IMD. Quintile 1, the most deprived Quintile in Wirral, had the lowest vaccination uptake rates (for both 1st and 2nd doses), whereas the least deprived Quintile in Wirral, Quintile 5, had the highest vaccination uptake rates (for both 1st and 2nd doses)

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, 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 30/06/2021, n=992), it might be expected that between 70-75 of those deaths would be from the BAME population; in fact, as of 30/06/2021, there had been 8 recorded deaths in people classed as BAME in Wirral
- Locally, due to the large number of ethnicities that are 'unknown' within both the vaccination data, and the population data, it is difficult to produce accurate analysis of vaccinations by ethnicity for Wirral. However, almost three quarters of all individuals who had a 1st dose were of White ethnicity, whilst almost a quarter had no ethnicity recorded. The remaining BAME population made up 1.5% of all 1st doses

Occupation

- Nationally, occupations requiring higher qualifications and more experience were more likely to provide homeworking opportunities than elementary and manual occupations; mortality rates reflected these differences
- Information about the occupation/field of occupation was unavailable for the majority (70%) of positive cases of COVID-19 in Wirral (due to data not being collected at source); among the 30% of positive cases for whom occupational field was recorded, the largest groups were 'Caring Personal Service Occupations, 'Health Professionals' and Teaching and Other Educational Professionals

- In Wirral, just 126 out of a total of 992 COVID-19 deaths (to 30/06/2020) were of working age (aged 16-67); with the caveat of very small number, the largest categories of occupational field for deaths from COVID-19 in Wirral were Science, Research, Engineering & Technology Professionals (13.3%), Administrative Occupations (12.2%) and Health & Social Care Associate Professionals (11.1%)
- Occupation is not a recorded field within the vaccination data. Local vaccination data of Wirral residents who also work for the NHS is available, however, and shows a much higher 1st dose uptake rate compared to the general population (87.0% compared to 81.6%)

Care Homes

- Almost one in five of all tests carried out in Wirral, have been in a care home setting; testing in care homes increased significantly from September 2020 onwards and continues as per the national guidance on regularly testing of care sector workers
- Data suggests that around 1 in 17 (6%) of all positive cases in Wirral were linked to Care Homes (compared to around 10% of all cases linked to Care Homes earlier in the pandemic); the majority of Care Home linked cases were female (73%)
- The rate of admission for COVID-19 among Care Home residents was 15 times higher than the rate in the general Wirral population (for COVID-19) between 01/03/2020 to 30/06/2021
- The rate of care home beds in areas of Wirral appears to impact the mortality rate (higher rate of care home beds, is correlated with higher mortality rate)
- Just over one in four (27%) of all COVID-19 deaths in Wirral occurred in Care Homes (n=267 deaths from a total of 992 COVID-19 deaths in Wirral); nationally, the same figure was 23%
- 88.3% of residents in Wirral local authority funded care homes had received a 1st dose by the 30/06/2021. This was much higher than the Wirral rate as of the same time period (81.6%). However, as those living in care homes are an older population, this difference is to be expected
- 84.8% of care home workers had received their 1st dose, whilst 75.6% had received their 2nd dose by the 30/06/21; both these proportions are greater than that of the general population (81.6% and 64.7%)

Co-morbidities

- The diseases which appeared to confer the highest risk of testing positive for COVID-19 in Wirral were Dementia, conditions which result in patients being added to the Palliative Care register and Obesity
- 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
- Relative to list size, the rate of death (from COVID-19) locally was highest in patients on the Dementia register, with 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
- All people with conditions on the Quality Outcomes Framework (QOF) register had a higher 1st dose uptake compared to the overall Wirral rate, except those on the Palliative Care register (69.1%) and those on the Mental Health register (77.5%)
- Compared to the general population, those on the Learning Disability Quality Outcome Framework (QOF) register had a higher 1st dose uptake rate (84.9% compared to 81.6%).

Shielding list/Vulnerable list

- Nationally, a significantly higher proportion of CEV people reported feeling lonely often or always, compared with the general adult population of England (13% and 6% respectively).

- The CEV population appear less likely to have had at least one COVID-19 test than the overall population (70% of the total Wirral population have had at least one test, vs 55% of the CEV population)
- The rates of positive cases of COVID-19 in Wirral between 01/03/2020 and 30/06/2021 was lower for the CEV (Clinically Extremely Vulnerable) population than that for the non-CEV population
- Despite lower rates of COVID-19 cases, rates of hospitalisation and attendance at the ED were higher among the CEV population in the time period covered
- Analysis for death rates on the CEV list is difficult as many of the patients on the CEV list have multiple severe health conditions including people who are awaiting organ transplants, people who are currently diagnosed with cancer and people who are receiving palliative care, which is an end-of-life care plan, this will make any meaningful comparison to the non-CEV population skewed and may cause false conclusions to be made.
- For all age groups, those on the shielding list had a greater 1st dose uptake, especially within the 18-29 (80.4% vs 56.1%) and 30-39 age group (83.8% vs 68.9%), compared to general population. Those with more severe conditions that meant they had to shield, had a greater 1st dose uptake rate than those with fewer conditions.
- Despite 1st dose vaccination uptake rates continuing to follow the trend of IMD Quintile in the shielding population, there was a greater uptake of 1st doses in the Shielding List population compared to the Total Population in all Quintiles, most notably in Quintile 1 – those most deprived Quintile (88.1% vs 72.7%)

Age and gender

Across the course of the pandemic in England, cumulative hospital admission and COVID-19 mortality rates were higher for males than females. In the pandemic period presented to date, the mortality rate in males was 1.7 times higher than the rate for females and the hospital admission rate was 1.5 times higher [20].

In contrast, across the course of the pandemic the confirmed case rate to July 2021 was higher for females, but the difference between the genders was not as great as for deaths and admissions, with the rate for females 1.1 times that for males [20].

In England overall, hospital admission and COVID-19 mortality rates increased with age, with the highest rates in those aged 85 and over. The mortality rate for people in this age group across the pandemic to date was 3.2 times higher than the next oldest group (people aged 75-84) and 10.6 times higher than people aged 65-74. The increase in mortality rates with age was steeper than that seen for hospital admissions [20].

The pattern in mortality by age group was not the same for confirmed cases, however. The cumulative rate up to July 2021 was highest for those aged 25-49 (prior to this, those aged 85+ had the highest cumulative rate). The lowest rate was for those aged 65-74. As noted above, the cumulative confirmed case rates were influenced by the availability of testing in the early months of the pandemic [20].

Main messages

- Nearly 2 in 3 of all tests carried out have been by females; females aged 40-59 have had more than double the number of tests compared to males of the same age age (likely due to occupational factors)
- The 20-29 age band (and specifically, females) comprised the largest number and rate of cases between March 2020 and June 2021 (17.8% or almost 1 in every 5 cases); this is in contrast to early in the pandemic, when the 80+ age group comprised 24% (or 1 in 4) of all diagnosed cases

- The largest *number* of inpatient admissions were in the 70-79 age group, while the highest *rate* of admissions was in those aged 90+
- Both the number and rate of COVID-19 mortality in Wirral was slightly higher in males compared to females (similar to the national picture)
- Within the total of 992 COVID-19 deaths in Wirral, 893 (90%) occurred in those aged 65 plus and the average age of death in COVID-19 patients was over 2 years higher than Non-COVID-19 patients to 30/06/2021 (average age of COVID-19 deaths was 80.5, while for Non-COVID-19 deaths it was 78.3)
- A greater proportion of older people had received their 1st dose of a COVID-19 vaccine than the younger population. Furthermore, within each age band, a greater proportion of females had received their 1st dose than their male counterparts. This was also true for 2nd doses

Age and gender: Testing

Table 1 below shows the number of confirmed COVID-19 positive tests in Wirral by age and gender, during the period covered by this report, 01/03/2020 to 30/06/2021.

Table 1: Number of confirmed COVID-19 positive tests in Wirral by age and gender, 01/03/2020 to 30/06/2021

Age band	Female	Male	Unknown	Total	%
0-9	14,615	16,061	189	30,865	2.4
10-19	119,185	105,791	473	225,449	17.7
20-29	92,181	52,495	742	145,418	11.4
30-39	116,368	62,344	910	179,622	14.1
40-49	131,607	59,453	764	191,824	15.1
50-59	160,941	72,761	790	234,492	18.4
60-69	85,266	51,278	435	136,979	10.8
70-79	32,968	30,385	177	63,530	5.0
80+	36,364	20,583	59	57,006	4.5
Unknown	2,206	1,814	1,948	5,968	0.5
Total	**791,701**	**472,965**	**6,487**	**1,271,153**	**100**
Percentage	**62.3**	**37.2**	**0.5**	**100**	

Source: Wirral Intelligence Service COVID-19 PBI App (with data from PHE Situational Explorer - restricted data source)

As **Table 1** above shows, the 50-59 age band comprised the largest percentage of tests between March 2020 and June 2021 (18.4% or almost 1 in every 5 cases), closely followed by those aged 10-19.

Females comprised 62.3% of tests, males 37.2% of tests and in 0.5% of tests, gender was unknown or unrecorded.

Table 2: Rate per 1,000 of confirmed COVID-19 tests by age and gender, Wirral, 01/03/2020 to 30/06/2021

Age band	Female	Male	Persons
0-9	810	832	826
10-19	6,694	5,652	6,173
20-29	5,485	3,008	4,245
30-39	5,912	3,419	4,737
40-49	6,402	3,176	4,884
50-59	6,564	3,212	4,971
60-69	4,120	2,662	3,428
70-79	1,929	2,021	1,978
80+	3,064	2,722	2,934
Total	**4,739**	**3,014**	**3,923**

Source: Wirral Intelligence Service COVID-19 PBI App (with data from PHE Situational Explorer - restricted data source

As **Table 2** shows, only in those aged 0-9 and 70-79 does the rate of testing in males exceed that of females; in all other age bands, rates of testing in females exceeded that of males. Overall, testing in females was almost 60% higher than in males in Wirral during this period. The testing rate in those aged 40-59s was almost twice as high (almost 100% higher) in females vs males, but this may be reflective of occupational factors (e.g., the majority of care workers who are subject to twice week mandatory testing, are female).

Age and gender: Cases

Table 3 shows the number of confirmed COVID-19 positive cases in Wirral by age and gender, during the period covered by this report, 01/03/2020 to 30/06/2021

Table 3: Number of confirmed COVID-19 cases by age and gender, Wirral, 01/03/2020 to 30/06/2021

Age band	Female	Male	Unknown	Total	%
0-9	491	539	14	1,044	3.9
10-19	1,566	1,357	19	2,942	11.0
20-29	2,557	2,153	75	4,785	17.9
30-39	2,340	1,903	51	4,294	16.1
40-49	2,119	1,735	46	3,900	14.6
50-59	2,330	1,964	17	4,311	16.1
60-69	1,253	1,196	3	2,452	9.2
70-79	658	653	3	1,314	4.9
80+	1,035	608	1	1,644	6.2
Unknown	7	9	7	23	0.1
Total	**14,356**	**12,117**	**236**	**26,709**	**100.0**
Percentage	**53.7**	**45.4**	**0.9**	**100.0**	

Source: Wirral Intelligence Service COVID-19 PBI App (with data from PHE Situational Explorer - restricted data source)

As **Table 3** above shows, females, with 53.5% of positive cases in women in Wirral during this period, were slightly more likely to test positive compared to males. It is likely that this is because more females present for testing compared to males (see previous section showing that 62% of all tests were taken by females in the same time period), possibly due to factors such as caring roles and occupation. Males comprised 45.4% of cases and in 0.9% of cases, gender was unknown or unrecorded.

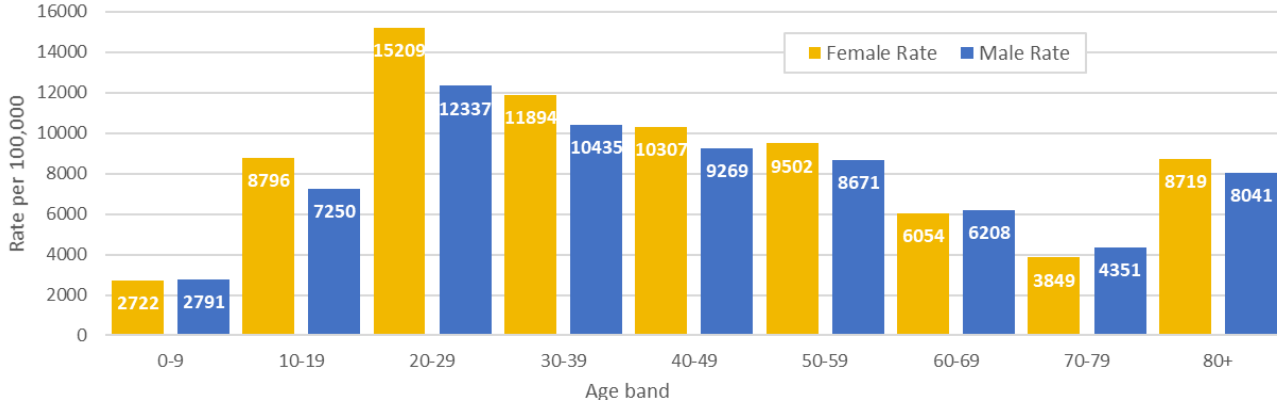
Table 3 also shows that the 20-29 age band comprised the largest percentage of cases between March 2020 and June 2021 (17.8% or almost 1 in every 5 cases), closely followed by other working age groups. This is in complete contrast to early in the pandemic, when the 80+ age group comprised 24% (or 1 in 4) of all diagnosed cases as of 30/06/2020.

This is because early in the pandemic, only those in hospital were able to be tested for COVID-19, whereas testing is much more readily available now, so community infection is better understood and diagnosed. As the number of people in each 10 year age band in Wirral differs considerably (e.g. large number of people in the 50-59 age band), **Figure 2** and **Table 4** below, both show the rate of positive cases (per 100,000) by age and gender.

As **Figure 2** above shows, the highest rates of positive cases were in females aged 20-29, followed by females aged 30-39; males followed the same pattern. Only in the youngest (0-9s) and older age bands (60-69s and 70-79s) did the rate of positive cases in males exceed that of females.

The lowest rates of positive cases were in those aged 0-9 (in all likelihood, due to an extremely low rate of testing, see Tests section for more details) and the 70-79s.

Figure 2: Rate per 100,000 of confirmed COVID-19 cases by age and gender, Wirral, 01/03/2020 to 30/06/2021



Source: Wirral Intelligence Service COVID-19 PBI App (with data from PHE Situational Explorer - restricted data source)

Table 4 below shows the same information as **Figure 2** above, but in table format and with total overall Male/Female rates, plus for all 'Persons' shown.

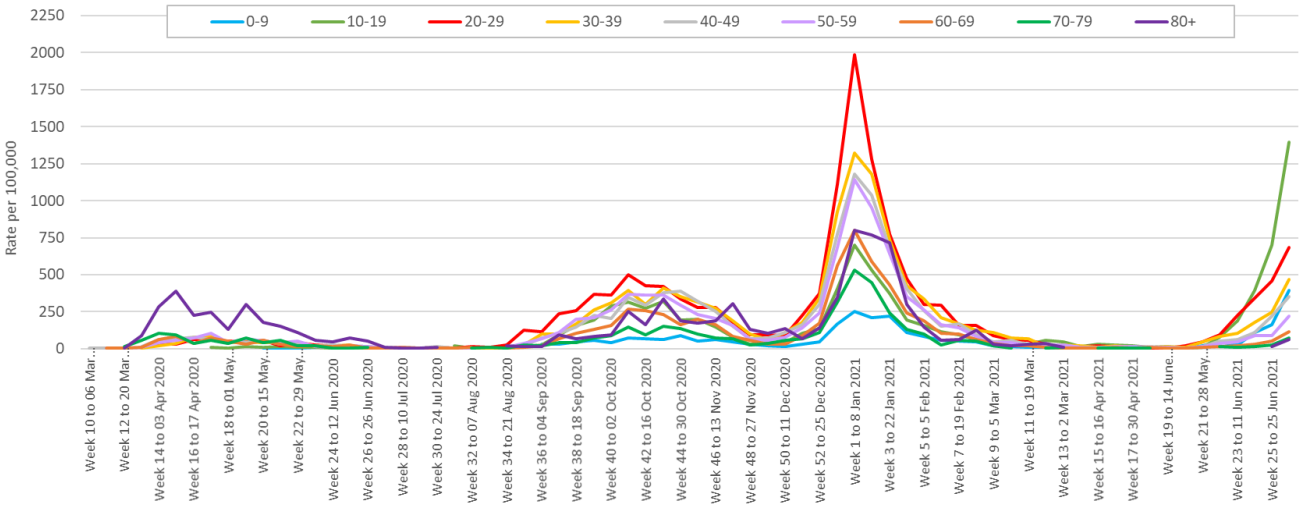
Table 4: Rate per 100,000 of confirmed Wirral COVID-19 cases by age and gender, 01/03/2020 to 30/06/2021

Age band	Female	Male	Persons
0-9	2,722	2,791	2,766
10-19	8,796	7,250	8,050
20-29	15,209	12,337	13,822
30-39	11,894	10,435	11,277
40-49	10,307	9,269	9,909
50-59	9,502	8,671	9,186
60-69	6,054	6,208	6,194
70-79	3,849	4,351	4,096
80+	8,719	8,041	8,471
Total	**8,589**	**7,716**	**8,224**

Source: Wirral Intelligence Service COVID-19 PBI App (with data from PHE Situational Explorer - restricted data source)

As **Table 4** shows, rates of COVID-19 in the entire first 18 months of the pandemic peaked in the younger, working age populations aged 20-29, followed by those aged 30-39 and were lowest in those aged 0-9 and those aged 70-79. This has varied at different times however, **Figure 3** below shows how different age bands have peaked at different times over the course of the pandemic (01/03/2020 to 30/06/2021).

Figure 3: Trend in COVID-19 rates by age band in Wirral, 01/03/2020 to 30/06/2021



Source: PHE Situational Explorer (restricted data source)

As **Figure 3** shows, in the early months of the pandemic, the highest rates of positive COVID-19 cases were seen in the 80+ age band, primarily because there was no testing in the community and only those admitted to hospital were being tested. In the second wave, those aged 20-29 were the first age band to show a rise in rates (closely followed by other working aged groups), and this was also the case in the 3rd wave.

Age & Gender: Hospitalisations

Early in the pandemic (up to June 2020), PHE found that the age profile of those in critical care came from age groups between 50 and 70 for both males and females, with only small numbers aged over 80 [1].

Locally, data on hospitalisations as seen in **Table 5** (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 30/06/2021, there were 7,553 admissions by a total of 5,307 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).

This is still likely to be an underestimate, as there will be a number of people who attended Emergency Department within 21 days of having COVID, for whom no diagnosis was recorded as that data may have been unavailable to the HealtheIntent platform (which hosts the data for the Wirral Shared Care Record).

Table 5: Numbers and rate of admission/attendance in Wirral COVID-19 patients, by 10 year age band, 01/03/2020 to 30/06/2021

Age (10-year band)	Number		Rate per 100k	
	Admissions	ED Attends	Admissions	ED Attends
0-9	133	143	387.1	416.2
10-19	91	126	237.1	328.3
20-29	482	296	1,323.1	812.5
30-39	644	473	1,475.9	1,084.0
40-49	626	554	1,540.2	1,363.1
50-59	931	696	1,898.6	1,419.4
60-69	1,177	866	2,750.4	2,023.6
70-79	1,437	1,019	4,124.3	2,924.6
80-89	1,403	1,062	7,910.0	5,987.5
90+	629	508	12,776.8	10,318.9
Total	**7,553**	**5,743**	**2,203.5**	**1,675.4**

Source: HealtheIntent, 2021 (restricted data source)
Note: Table shows admissions and attendances, **not** persons. Age and Gender table overall rates vary marginally, due to small amounts of missing data on either age or gender

Overall, the largest *number* of admissions was in the 70-79 age group with 19% (1,437 admissions) of the total. The age group with the largest *rate* of admissions, however, were those aged 90+ category. Although those aged 90+ accounted for just 8% of admissions, the admission rate was 12,777 admissions per 100k population (compared to an overall Wirral rate of 2,203.5 per 100,000, so almost 6 times higher than the overall rate).

Table 6: Numbers and rates of admission/attendance in Wirral COVID-19 patients, by gender, 01/03/2020 to 30/06/2021

Gender	Number		Rate per 100k	
	Admissions	ED Attends	Admissions	ED Attends
Female	3,930	2,929	1,693.7	2,272.5
Male	3,600	2,799	1,656.0	2,129.9
Total	**7,530**	**5,728**	**1,675.1**	**2,202.0**

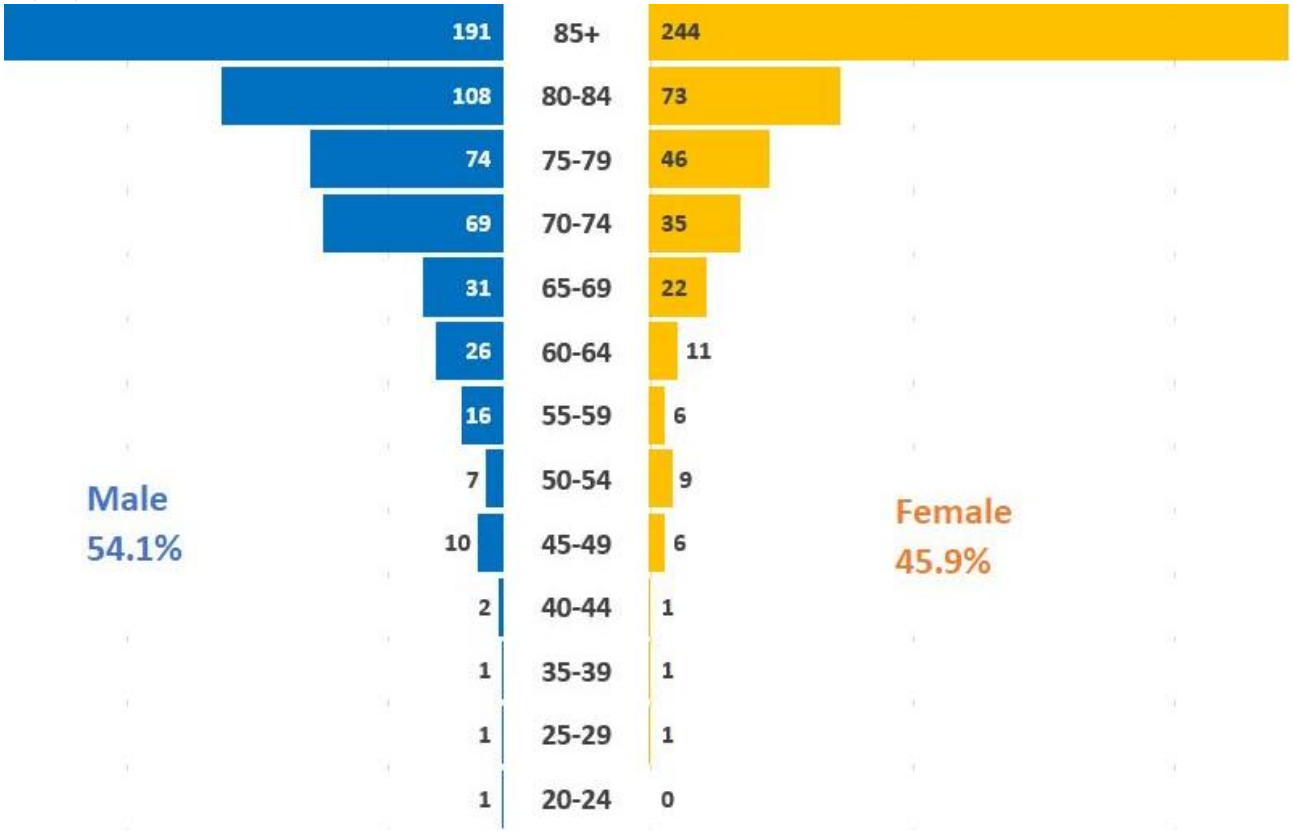
Source: HealtheIntent, 2021 (restricted data source)
Note: Table shows admissions and attendances, not persons. Age and Gender table overall rates vary marginally, due to small amounts of missing data on either age or gender

Of the 5,307 patients admitted, 52% were in females, 48% were in males. As **table 6** highlights, the proportions were very similar for admission encounters (7,530 total encounters, just over half were female, n=3,930 or 52%, while 3,600 or 48%, were male). This was also very similar to the overall breakdown of positive COVID-19 cases (53% female, 47% male).

Age & Gender: Mortality

Figure 4 below shows the number of COVID-19 deaths by age and gender.

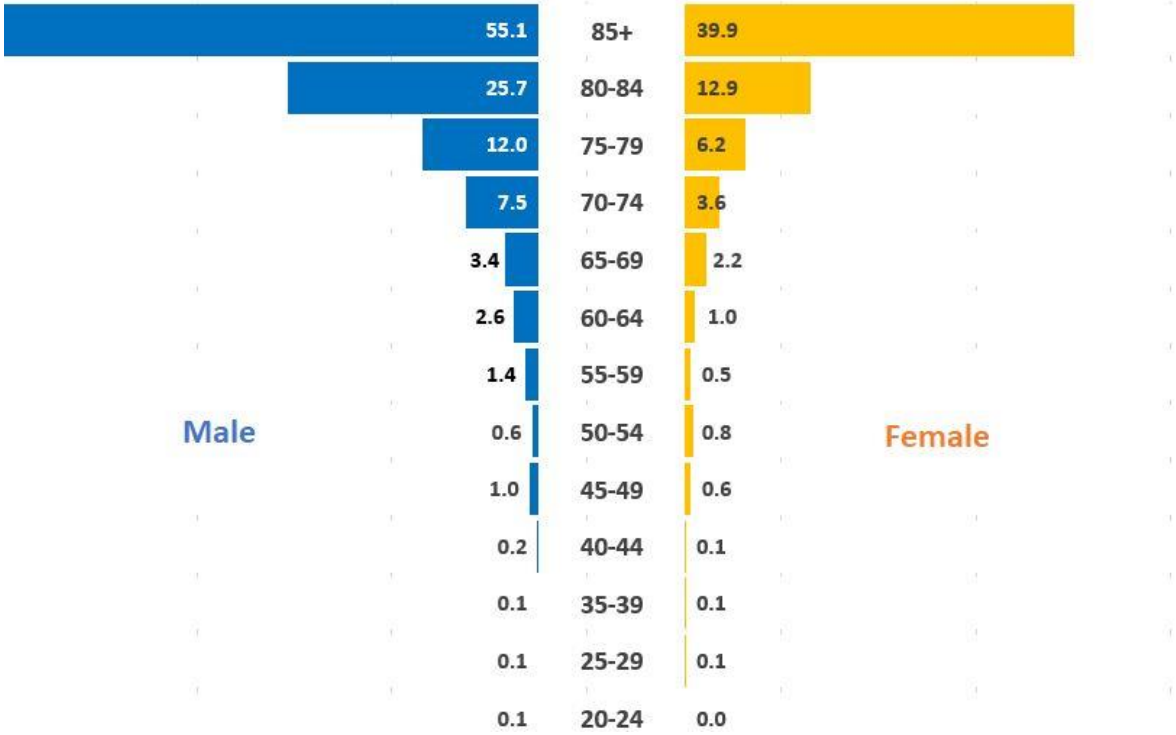
Figure 4: Age and gender breakdown (Number and proportion) of COVID-19 deaths in Wirral 01/03/2020 to 02/07/2021



Source: Primary Care Mortality Database (PCMD) June 2021
Note: Previous version used measure of died within 28 days of positive COVID-19 test, above chart is based on actual COVID-19 cause of death recorded on death registration

As **Figure 4** above shows, the ratio of COVID-19 mortality between the genders in Wirral is slightly higher in males (45.9% female vs 54.1% male). This is similar to the national picture, where males outnumbered females in deaths attributable to COVID-19 (45.5% female vs 54.5% male) [ONS, 2020].

Figure 5: Rates of COVID-19 Deaths per 1,000 by 5 year ageband and gender, 01/03/2020 to 02/07/2021



Source: Primary Care Mortality Database (PCMD) June 2021

As **Figure 5** above shows, COVID-19 death rates in Wirral were higher in males overall (4.9 per 1,000 all ages vs 3.7 for females) and much higher in the older agebands particularly in those aged 80-84 (males 25.7, females 12.9) and 85+ (males 55.1, females 39.9).

Out of the total 992 COVID-19 deaths 893 (90%) occurred in those aged 65 plus, in Wirral the 65 plus population consists of more females than males (males 45%, females 55% mid 2020 population estimates) and significantly more females in those aged 85 plus (males 36%, females 64%) so although the numbers of COVID-19 deaths are relatively similar when we factor in age rates per 1,000 population the COVID-19 death rate is much higher for older males.

Age & Gender: Vaccinations

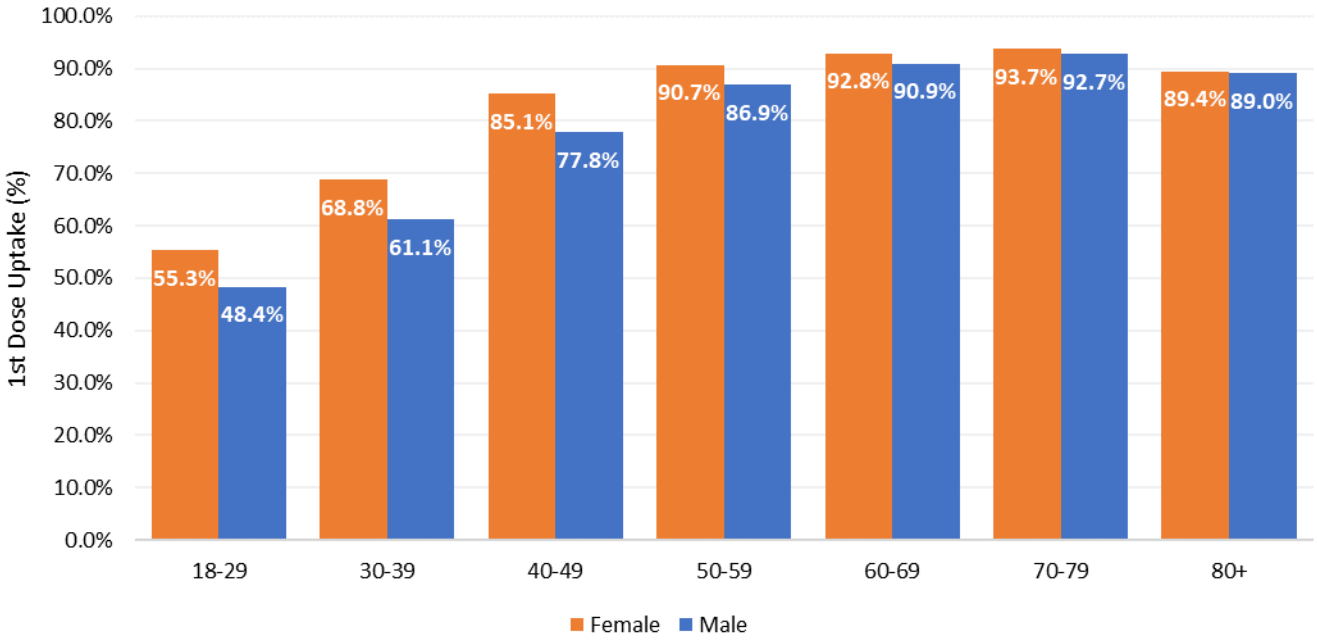
As of the 18th of June 2021, all adults (18+) were eligible to book a COVID-19 vaccine in England. As the recommended time between 1st and 2nd doses is between 8 and 12 weeks, however, many of those aged under 40 will not have yet been eligible to receive their 2nd dose before 30th June.

The total number of people aged 18+ and therefore eligible for a 1st dose in Wirral was approximately 270,000. Of those, over 80% had had at least 1 dose.

There were an additional 739 people who were aged under 18 who had had at least 1 dose by 30th June 2021. This will be due to these individuals having a pre-existing condition that meant they were more vulnerable, and at-risk, to the effects of COVID-19. Those aged under 18 have not been included in the following analysis.

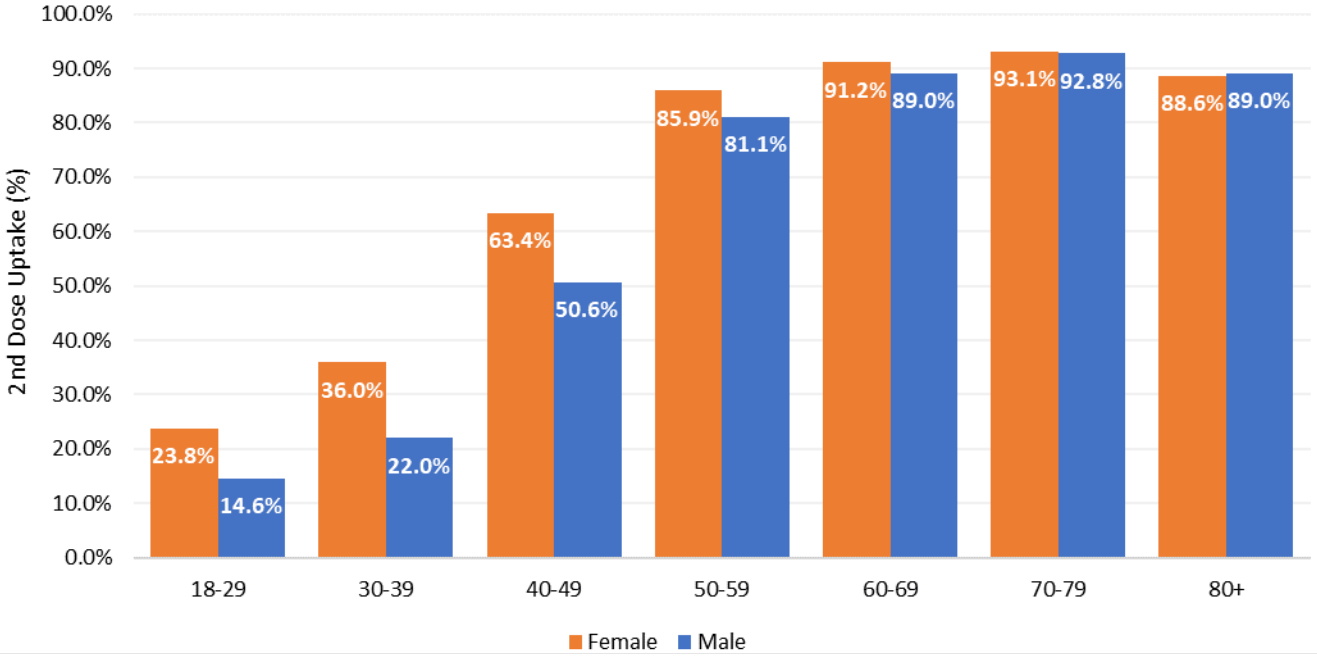
As **Figure 6** shows, as of the 30/06/2021, a greater proportion of older people had received their 1st dose of a COVID-19 vaccine than the younger population. Furthermore, within each age band, a greater proportion of females had received their 1st dose than their male counterparts. In the oldest 80+ age group, however, a slightly greater proportion of males had received the 2nd dose than females.

Figure 6: Percentage (%) of 1st Dose of COVID-19 vaccination uptake by Age Band and Gender, up to 30/06/2021



Source: CIPHA Vaccination Data, 2021 - restricted data source

Figure 7: Percentage (%) of 2nd Dose uptake by Age Band and Gender, up to 30/06/2021



Source: CIPHA Vaccination Data, 2021 - restricted data source

Geography

Across the pandemic period to date, the impact, in terms of hospital admissions and COVID-19 deaths, was greatest in London and lowest in the South-West. In terms of confirmed cases, the impact was greatest in the North-West and lowest in the South-West [20].

In England overall, the monthly COVID-19 mortality and hospital admission rates at the peak of the second wave were higher than the first wave, although for mortality specifically, the picture did vary slightly by region; London and the northern regions had a higher monthly mortality rate at the peak of the first wave compared to the second. All other regions had higher mortality at the peak of the second wave [20].

Main messages

- The North-West was the regions (along with London), most impacted by COVID-19 cases in England
- Hoylake and Meols had the highest testing rate of any Wirral ward, Birkenhead & Tranmere ward had the lowest testing rate
- Wirral had the 3rd lowest rate of positive COVID-19 cases of the nine authorities in Cheshire & Merseyside (but was still higher than England overall rate)
- Wards in the more affluent west of the borough had both lower numbers and rates of COVID-19, compared to wards in the east of the borough such as Claughton, Upton, Bidston & St. James
- The areas of Wirral most affected in terms of admissions to hospital were Clatterbridge, Claughton Upton; all have large proportions of older population and/or large numbers of care homes
- Wirral had a higher COVID-19 death rate per 100,000 in those aged >65 than England and some neighbouring Cheshire authorities, but lower than the North-West overall and the other Merseyside authorities
- The 4 most deprived Wards in Wirral (Birkenhead and Tranmere, Bidston and St James, Seacombe and Rock Ferry) had the lowest 1st and 2nd dose uptake rates, whereas the 4 least deprived Wards (Heswall, Greasby, Frankby and Irby, Clatterbridge and West Kirby and Thurstaston) had some of the highest 1st and 2nd dose uptake rates

Geography: Testing

Table 7 below shows the number and rate (per 1,000) of tests carried out by Wirral between 01/03/2020 and 30/06/2021.

Table 7: Number and rate (per 1,000) of tests carried out by Wirral between 01/03/2020 and 30/06/2021

Wirral Ward	Total Count of All Tests	Wirral Ward Testing Rate
Hoylake and Meols	60,791	4,561.5
Claughton	62,872	4,351.6
Clatterbridge	60,244	4,247.3
New Brighton	63,192	4,176.3
Liscard	66,421	4,120.9
Rock Ferry	59,799	4,078.5
Greasby, Frankby and Irby	55,154	4,026.4
Bebington	62,737	3,994.2
West Kirby and Thurstaston	50,018	3,958.7
Pensby and Thingwall	50,331	3,850.0
Eastham	54,398	3,846.6
Bromborough	61,719	3,806.3
Wallasey	55,758	3,796.2
Moreton West and Saughall Massie	53,004	3,762.7
Heswall	49,212	3,760.9
Upton	62,912	3,729.4
Oxton	51,569	3,709.5
Bidston and St. James	59,746	3,696.5
Seacombe	56,588	3,662.9
Leasowe and Moreton East	54,671	3,656.2
Prenton	53,438	3,618.3
Birkenhead and Tranmere	52,443	3,139.2
Unknown	14,136	N/A
Wirral Total	**1,271,153**	**3,923.2**

Source: Wirral Intelligence Service COVID-19 PBI App (with data from PHE Situational Explorer - restricted data source)

Table 7 above shows that the ward with the highest uptake of testing per 1,000 population was Hoylake and Meols ward (4,561.5 per 1,000 popuation) followed by Claughton (4351.6 per 1,000 popuation). The ward with the lowest rate of testing (per 1,000 population) was Birkenhead and Tranmere (3139.2 per 1,000 population) followed by Prenton (3618.3 per 1,000 population)

Geography: Cases

Table 8 and **Figure 8** below compares the rate of positive cases in Wirral to other Cheshire and Merseyside local authorities, plus Cheshire overall, Merseyside overall, the North-West and England overall (as rates per 100,000 population).

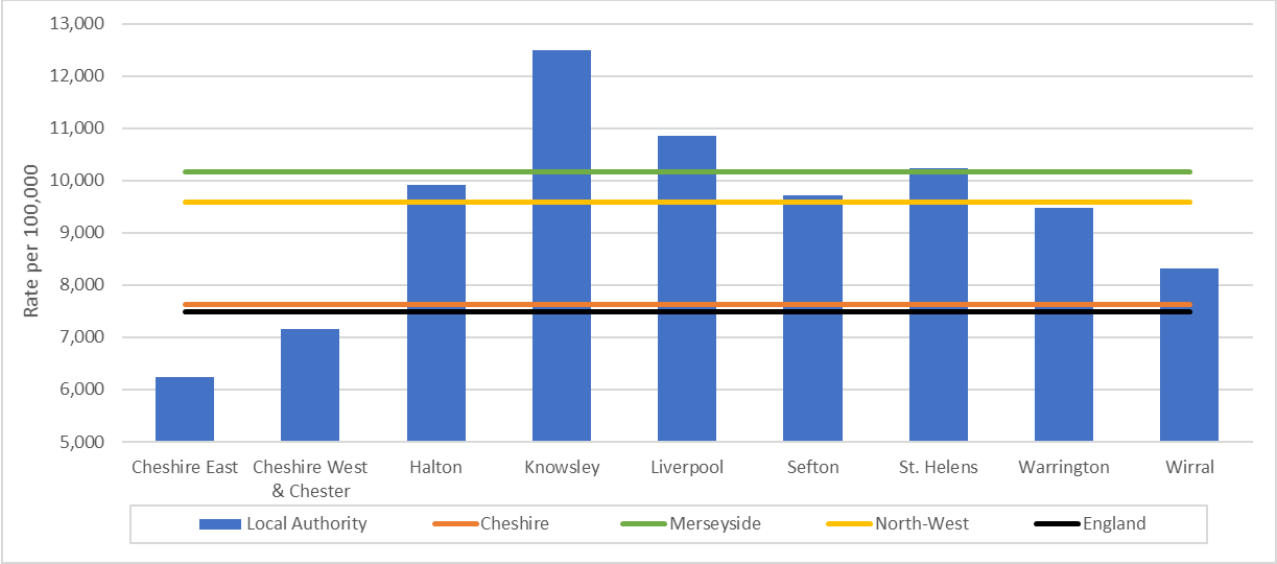
Table 8: Rate of confirmed COVID-19 cases (per 100,000) 01/03/2020 to 30/06/2021 by local authorities in Merseyside (Merseyside overall, Cheshire overall, North-West and England also shown for comparison)

Area	Rate (per 100,000)
Cheshire East	6,237
Cheshire West & Chester	7,164
Halton	9,914
Knowsley	12,501
Sefton	9,717
St. Helens	10,237
Warrington	9,480
Wirral	8,320
Cheshire	**7,620**
Merseyside	**10,160**
North-West	**9,591**
England	**7,487**

Source: CIPHA (Combined Intelligence for Population Health Action, 2021 - restricted data source)

As **Table 8** shows, Knowsley, followed by Sefton had the highest rate of confirmed COVID-19 cases in Cheshire & Merseyside during the first 18 months of the pandemic. The lowest rates were seen in Cheshire East and Cheshire West and Chester local authorities. The Wirral rate of 8,320 per 100,000 was lower than the overall rate for Merseyside overall, but higher than that for Cheshire and England.

Figure 8: Rate of confirmed COVID-19 cases (per 100,000) 01/03/2020 to 30/06/2021 by local authorities in Merseyside (Merseyside overall, Cheshire overall, North-West and England also shown for comparison)

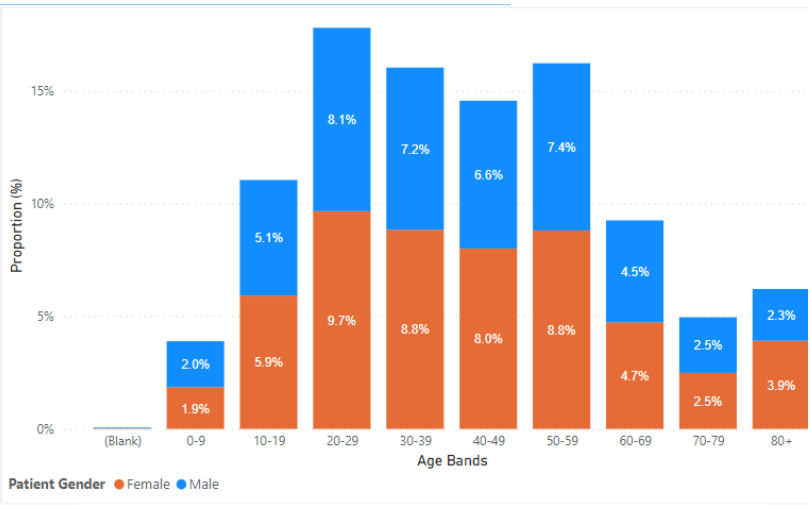


Source: CIPHA (Combined Intelligence for Population Health Action, 2021 - restricted data source)

As **Table 8** and **Figure 8** shows, only the two Cheshire authorities had rates of COVID-19 lower than England overall. Wirral had the 3rd lowest rate of the nine authorities in Cheshire & Merseyside and had rates lower than the North-West and Merseyside average for the period.

Figure 9: Proportion of COVID-19 positive cases in Wirral by age, gender, and ward of residence, 01/03/2020 to 30/06/2021

Ward (where known)	Cases	Males	Females	Unknown
Upton	1,570	682	861	27
Claughton	1,538	673	859	6
Bidston and St James	1,459	632	815	12
Rock Ferry	1,346	592	746	8
Liscard	1,310	598	706	6
Prenton	1,301	598	690	13
Birkenhead and Tranmere	1,296	598	686	12
Bebington	1,271	589	676	6
Bromborough	1,262	594	663	5
Leasowe and Moreton East	1,254	595	647	12
Wallasey	1,249	579	668	2
Oxton	1,242	550	638	54
Seacombe	1,226	552	671	3
New Brighton	1,203	545	651	7
Moreton West and Saughall Massie	1,184	567	608	9
Clatterbridge	1,110	489	615	6
Eastham	1,018	501	512	5
Pensby and Thingwall	1,011	454	546	11
Hoylake and Meols	970	432	533	5
Greasby Frankby and Irby	921	430	479	12
West Kirby and Thurstaston	879	400	472	7
Heswall	867	376	486	5
Total	26,709	12117	14,356	236



27K
Number of cases

Overall age band proportion

0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	80+	Total
0.06%	3.89%	11.04%	17.79%	16.03%	14.56%	16.22%	9.25%	4.95%	6.21%	**100.00%**

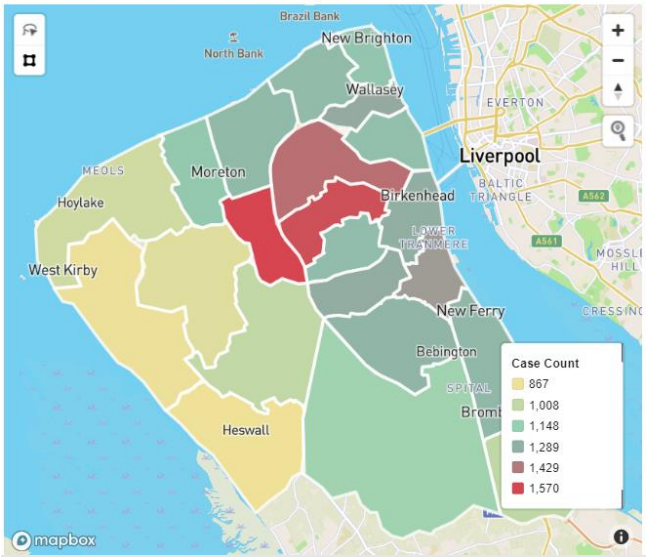
Source: Wirral Intelligence Service COVID-19 PBI App (with data from PHE Situational Explorer - restricted data source)

Figure 9 above shows that there were over 26,700 cases of confirmed COVID-19 between 01/03/2020 and 30/06/2021. The wards with the highest number of cases were Upton and Claughton wards, while West Kirby & Thurstaston and Heswall wards had the lowest numbers.

Map 1 and Map 2 show the number (Map 1) and rate (Map 2) of COVID-19 cases by ward of residence in Wirral between 01/03/2020 to 30/06/2021.

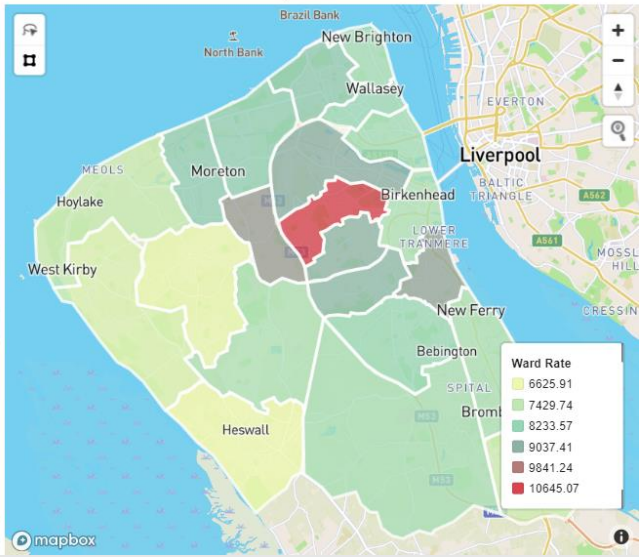
Map 1: Number of COVID-19 cases by Wirral ward

Number of Confirmed COVID-19 Cases by Wirral Ward



Map 2: Rate of COVID-19 cases by Wirral ward

Rate of Confirmed COVID-19 Cases by Wirral Ward



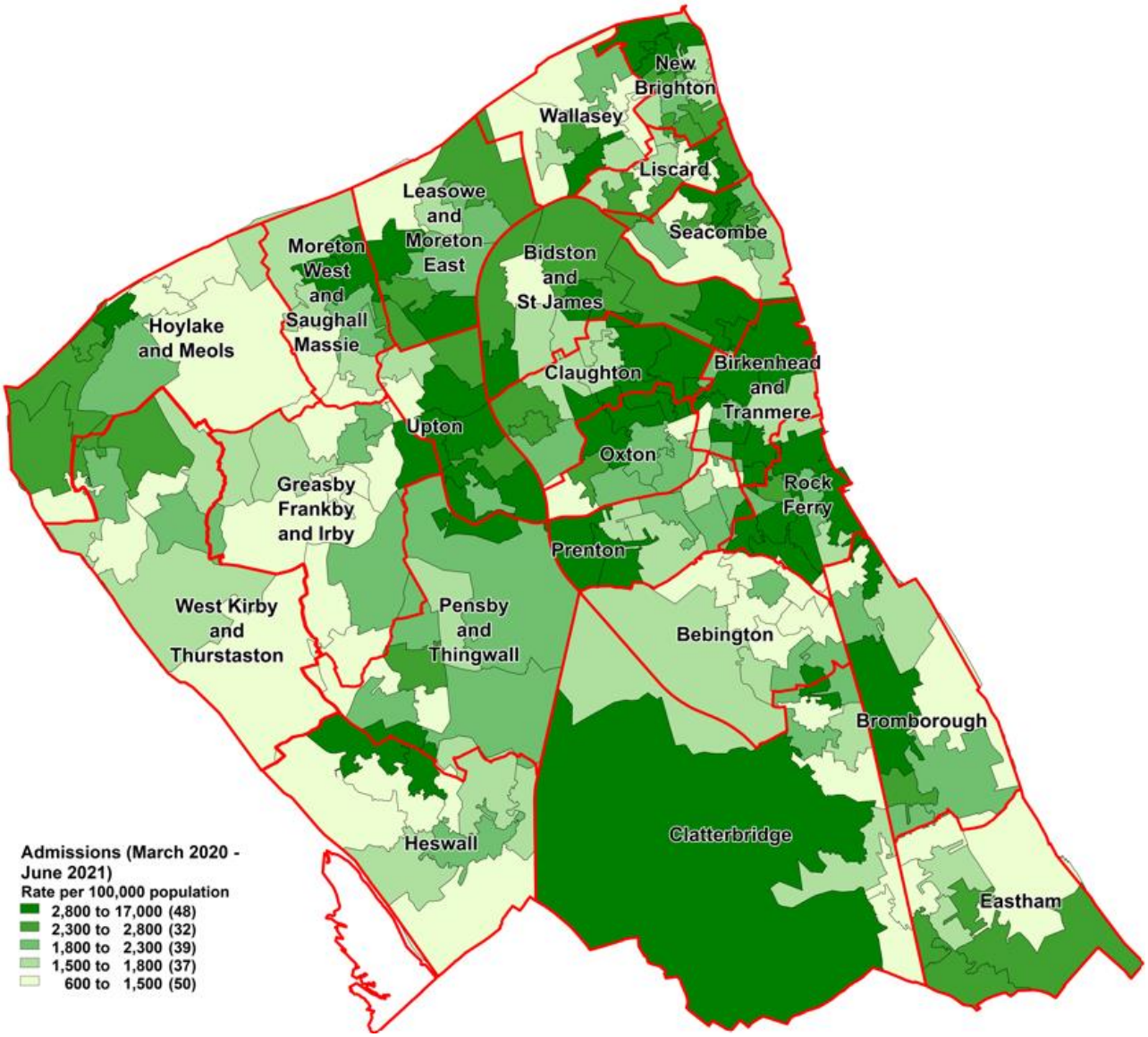
Source: Wirral Intelligence Service COVID-19 PBI App (with data from PHE Situational Explorer - restricted data source)

As the maps above show, wards in the more affluent west of the borough had both lower numbers and rates of COVID-19, compared to wards in the east of the borough such as Claughton, Upton, Bidston & St. James. The ward with the highest rate of positive COVID-19 cases in Wirral was Claughton, followed by Upton.

Geography: Hospitalisations

The data shown in **Map 3** below shows the rate (per 100,000) admissions in those with a confirmed positive diagnosis of COVID-19 in the 21 days prior to, or following their admission, where the admission was between 01/03/2020 and 30/06/2021. There were 7,553 admissions by a total of 5,307 people (meaning some patients were admitted on more than one occasion).

Map 3: Rate of admissions (per 100,000) in COVID-19 positive individuals, by LSOA (with Ward boundaries overlaid), 01/03/2020 to 30/06/2021



Source: HealtheIntent, 2021 (restricted data source)
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.

Map 3 shows that the rate of hospital admissions in those with confirmed COVID-19, were highest in the Clatterbridge, Upton, Claughton Birkenhead & Tranmere areas.

Claughton and Upton also had high rates of confirmed COVID-19 cases (as shown in the previous section), and Clatterbridge had high mortality rates, so there is some degree of symmetry between positive cases, admissions and mortality.

Geography: Mortality

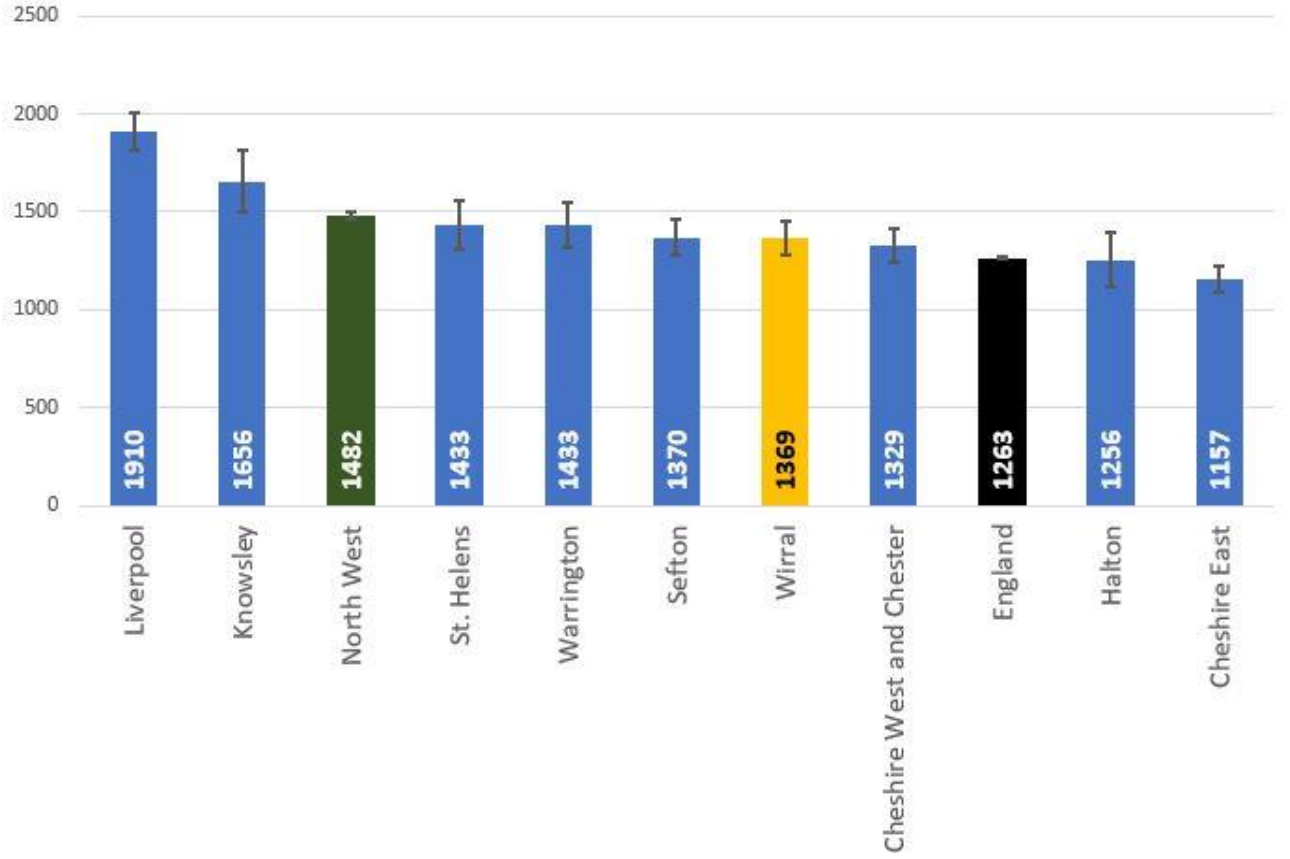
COVID-19 mortality by local authority

As **Figure 10** below shows, Wirral had a higher COVID-19 death rate per 100,000 in those aged >65 than England and some neighbouring Cheshire authorities, but lower than the North-West overall and the other Merseyside authorities.

Of all the Cheshire and Merseyside authorities, Liverpool had the highest rate. This may be due in the fact that it is the most urbanised area in Cheshire and 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.

Figure 10 below shows the COVID-19 death rate per 100,000 in those aged >65 in Wirral and other Cheshire and Merseyside authorities between 01/03/2020 and 30/06/2021.

Figure 10: COVID-19 death rate per 100,000 in those aged >65 in Wirral and other Cheshire and Merseyside authorities (01/03/2020 to 30/06/2021)

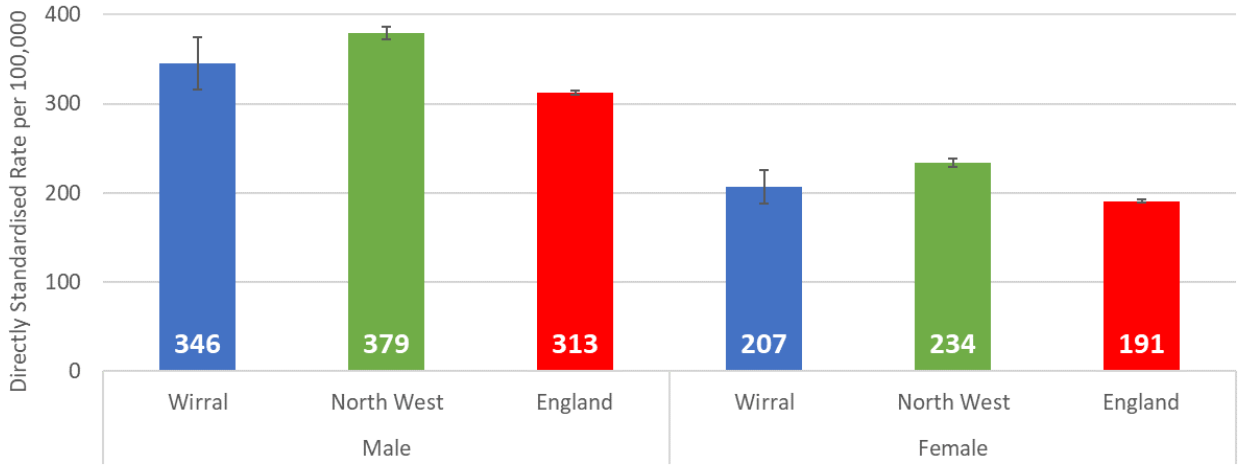


Source: ONS weekly deaths registrations

Although it is useful to look at the raw number of deaths from COVID-19 by age and gender, it is also informative to look at age standardised rates, in order to ensure that demographic differences in population are taken into account.

Figure 11 shows, the age standardised COVID-19 and Non-COVID-19 death rates in Wirral, by gender, between March and 30/06/2021 (with confidence intervals).

Figure 11: Age standardised death rates (per 100,000) from COVID-19 in Wirral, North-West & England, by gender (as of 30/06/2021)



Source: ONS (2021) [14]

Figure 11 above shows that both men and women in Wirral had a higher rate of deaths from COVID-19 than England but lower than the North West. The error (or confidence interval) bars show that deaths for males in Wirral are significantly higher than England, with females not being significantly different, deaths are not significantly different to the North-West for both genders.

Figure 11 further highlights that when the structure of the Wirral population is taken into account (by using an age standardised rate), males had a significantly 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 11 in turn describes that this finding was not peculiar to Wirral; males also had significantly higher death rates than women in the North-West and England overall.

In Wirral, the difference between the genders was slightly higher to that in England and the North-West overall. In England, the ASR for males was 46% higher than that of females, in the North-West it was 48% higher. In Wirral, the ASR was 50% higher for men compared to women.

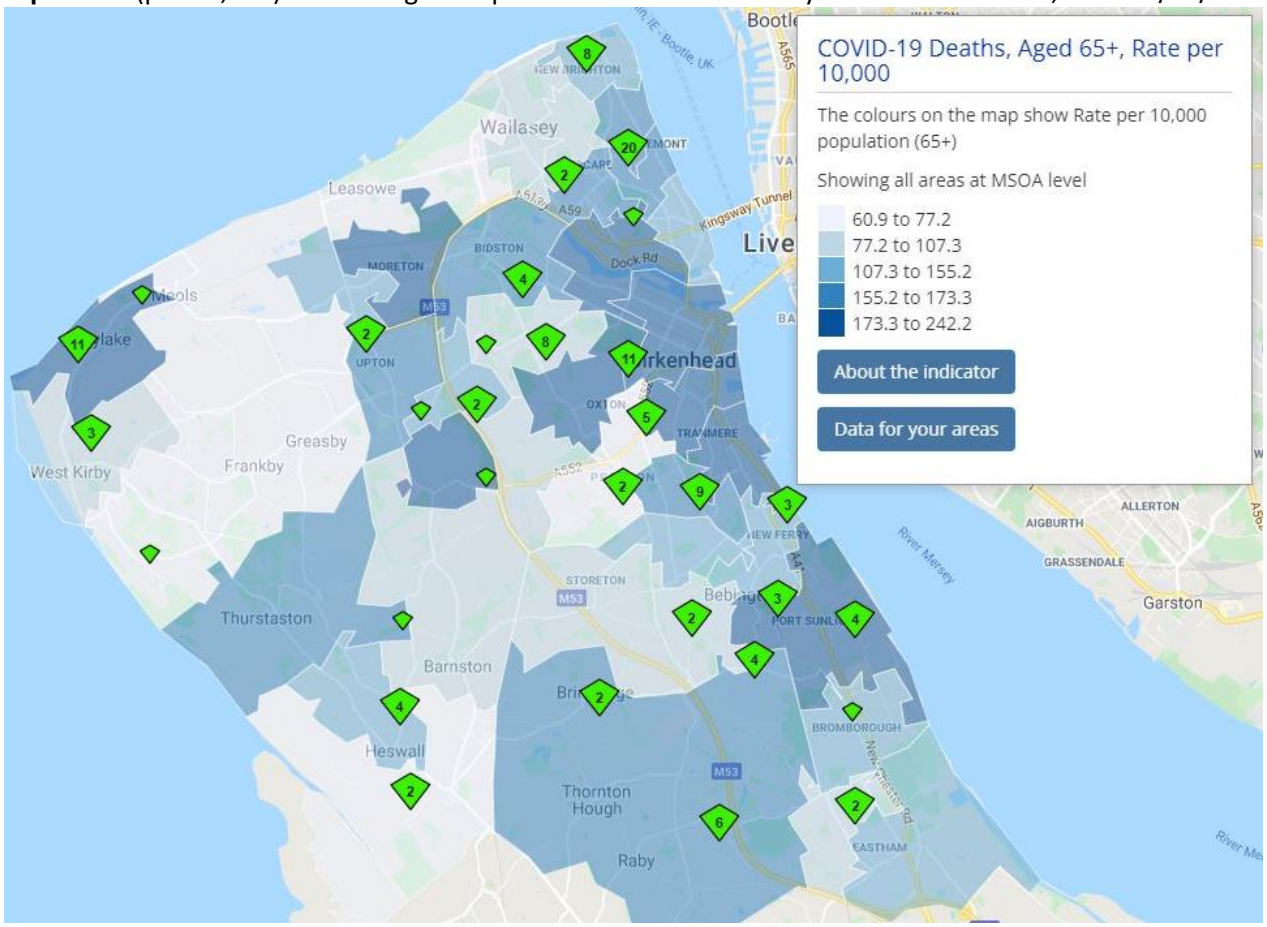
COVID-19 mortality by within Wirral geography

Deaths in those aged 65 plus by geographical location (as a rate per 10,000) is shown in **Map 4** below.

Map 4 indicates that deprivation alone does not explain the pattern of COVID-19 mortality in Wirral as of 30/06/2021. Although there are some areas of deprivation (Birkenhead, Rock Ferry, Liscard), with high death rates, the areas with the highest rates (Hoylake and Bebington which both have death rates of over 200 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 Transfer to Assess (T2A) beds in Wirral at the beginning of the pandemic. See Care Homes section on page 39 for more details.

Map 4 Rate (per 10,000) in those aged 65 plus of COVID-19 deaths by MSOA of residence, as of 30/06/2021

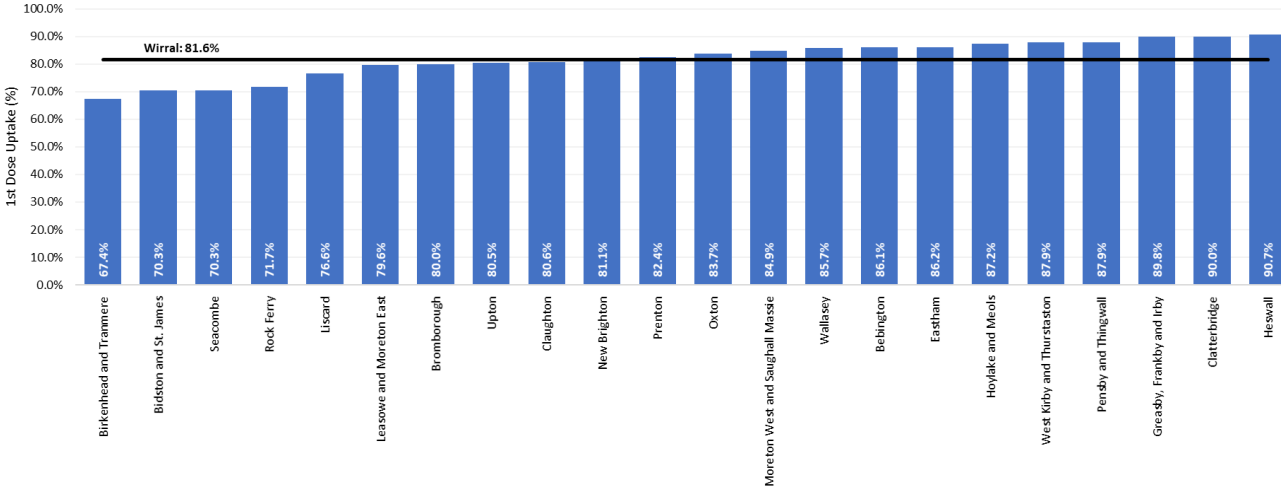


Source: Local Insight, 2021, Primary Care Mortality Database (PCMD) June 2021
Note: Green diamonds indicate Care Homes. Number inside some triangles denotes the number of Care Homes in that vicinity.

Geography: Vaccinations

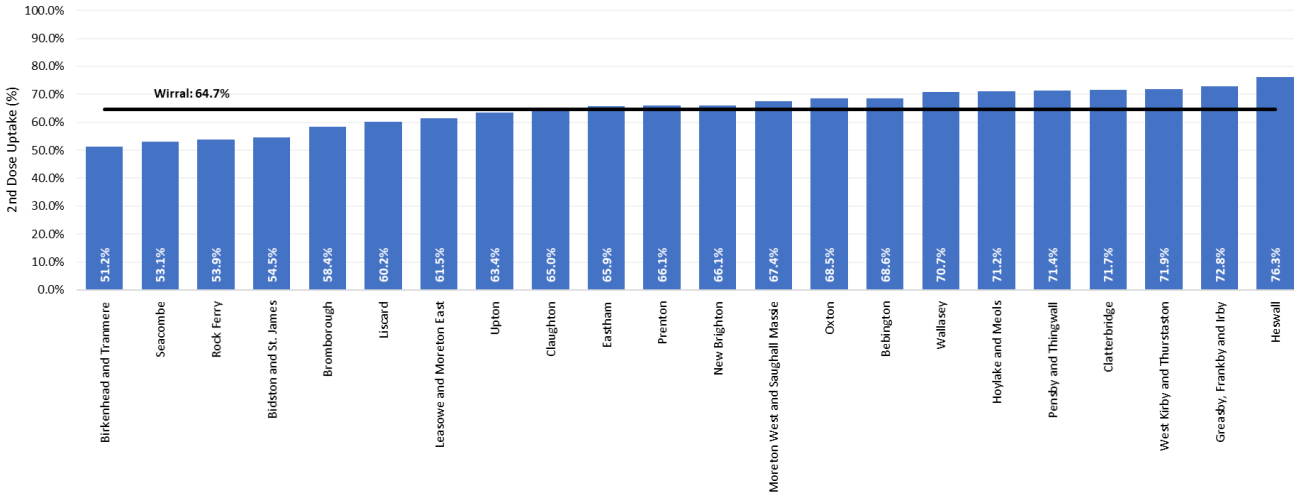
The following charts (**Figure 11** and **Figure 12**) show the uptake of 1st and 2nd doses by Ward, compared to the overall Wirral rate, as of the 30/06/21. Both these charts show that the 4 most deprived Wards in Wirral (Birkenhead and Tranmere, Bidston and St James, Seacombe and Rock Ferry) had the lowest 1st and 2nd dose uptake rates, whereas the 4 least deprived Wards (Heswall, Greasby, Frankby and Irby, Clatterbridge and West Kirby and Thurstaston) had some of the highest 1st and 2nd dose uptake rates.

Figure 11: Percentage (%) of 1st Dose uptake by Ward, up to 30/06/2021



Source: CIPHA Vaccination Data, 2021 - restricted data source

Figure 12: Percentage (%) of 2nd Dose uptake by Ward, up to 30/06/2021



Source: CIPHA Vaccination Data, 2021 - restricted data source

Deprivation

In England overall, there was a deprivation gradient apparent in confirmed case rates, hospital admissions and COVID-19 mortality and the impact of the pandemic (to date) increased with each increase in level of deprivation [20].

During the course of the pandemic to July 2021, the cumulative admission rate for people living in the most deprived areas in England was 3.0 times the rate for those living in the least deprived areas.

The mortality rate over this period was 2.4 times higher. The level of inequality was narrower for confirmed cases, but the rate for the most deprived was still 1.5 times that for the least deprived [20].

Main Messages

- Nationally, PHE found that people living in deprived areas had higher case rates, hospital admissions and mortality from COVID-19 than those living in less deprived areas
- Locally, Quintile 2 (second least deprived Quintile) had the highest testing rate in Wirral, while Quintile 5 (least deprived Quintile) had the lowest rate of testing between 01/03/2020 and 30/06/2021
- In terms of numbers and rates, the two most deprived Quintiles had the highest rates of positive cases in Wirral, while the two least deprived Quintiles had the lowest rates, with Quintile 5 showing the lowest rate of all five Quintiles
- The greatest number and rates of admissions for COVID-19 were for those living in the most deprived areas of Wirral
- Those living in the most deprived areas of Wirral experienced a significantly higher rate of COVID-19 deaths compared to Wirral overall and all other IMD Quintiles in Wirral
- Uptake rates of 1st and 2nd doses follows the pattern of IMD. Quintile 1, the most deprived Quintile in Wirral had the lowest vaccination uptake rates (for both 1st and 2nd doses); the least deprived Quintile in Wirral, Quintile 5, had the highest vaccination uptake rates (for both 1st and 2nd doses)

Deprivation: Tests

Table 9 and **Figure 13** below show the number and rate of tests of COVID-19 in Wirral, by IMD (Index of Multiple Deprivation 2019) Quintile.

Table 9: Number and rate of tests of COVID-19 in Wirral by deprivation Quintile, 01/03/2020 to 30/06/2021

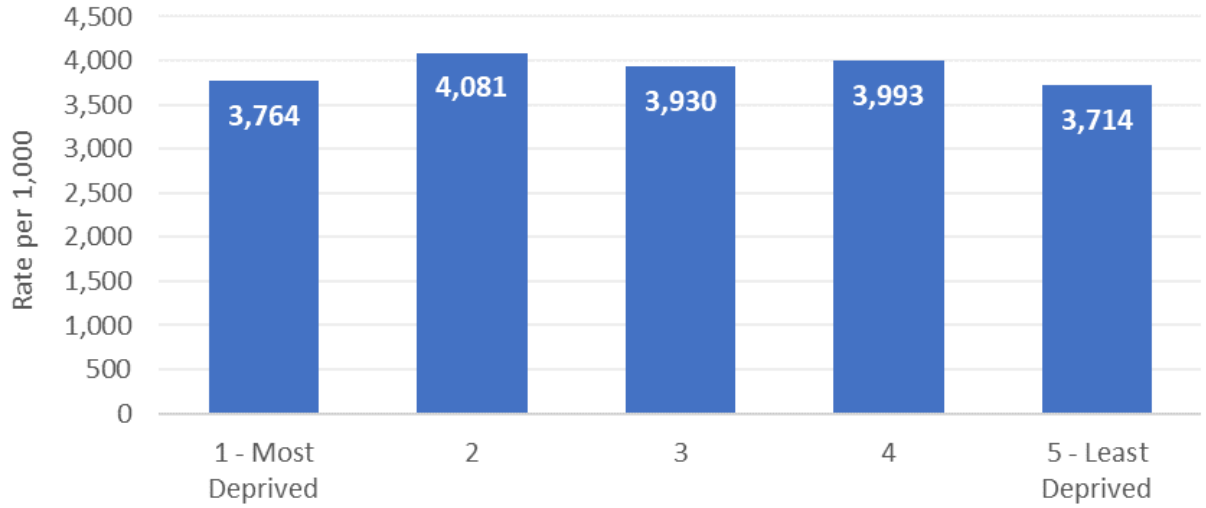
Quintile	Total Tests (number)	Population	Rate per 1,000
1 Most Deprived	436,673	115,999	3,764
2	220,997	54,149	4,081
3	205,377	52,255	3,930
4	237,912	59,586	3,993
5 Least Deprived	156,058	42,022	3,714
Unknown	14,136	0	n/a
Total	**1,271,153**	**324,011**	**3,923**

Source: PHE Situational Explorer (restricted site)
Note: Cases missing a valid Wirral postcode excluded, as IMD Quintile cannot not be assigned without a postcode.

As **Table 9** above shows, although Quintile 1 had the highest number of tests, this is not suprising, as this is the largest Quintile in Wirral, with nearly one-third of the population classified as living in Quintile 1.

In terms of rates (which of course, take into account the larger population in Quintile 1), the least deprived Quintile had the lowest rates of tests in Wirral between 01/03/2020 to 30/06/2021 (3,714 per 1,000 population). Quintile 2 had the highest rate (4,081 per 1,000 population). See **Figure 13** below.

Figure 13: Rate of tests of COVID-19 (rate per 100,000) in Wirral by IMD Quintile, 01/03/2020 to 30/06/2021



Source: PHE Situational Explorer (restricted site)
Note: Cases missing a valid Wirral postcode excluded, as IMD Quintile cannot not be assigned without a postcode.

Deprivation: Cases

Table 10 and **Figure 14** show the number and rate of positive cases of COVID-19 in Wirral, by IMD (Index of Multiple Deprivation 2019) Quintile.

Table 10: Number and rate of positive Wirral COVID-19 cases by IMD quintile, 01/03/2020 to 30/06/2021

Quintile	Positive Cases (number)	Rate per 100,000
1 Most Deprived	9,924	8555.2
2	4,719	8714.8
3	4,368	8359.0
4	4,750	7971.7
5 Least Deprived	2,733	6503.7
Unknown	223	n/a
Total	**26,717**	**8245.7**

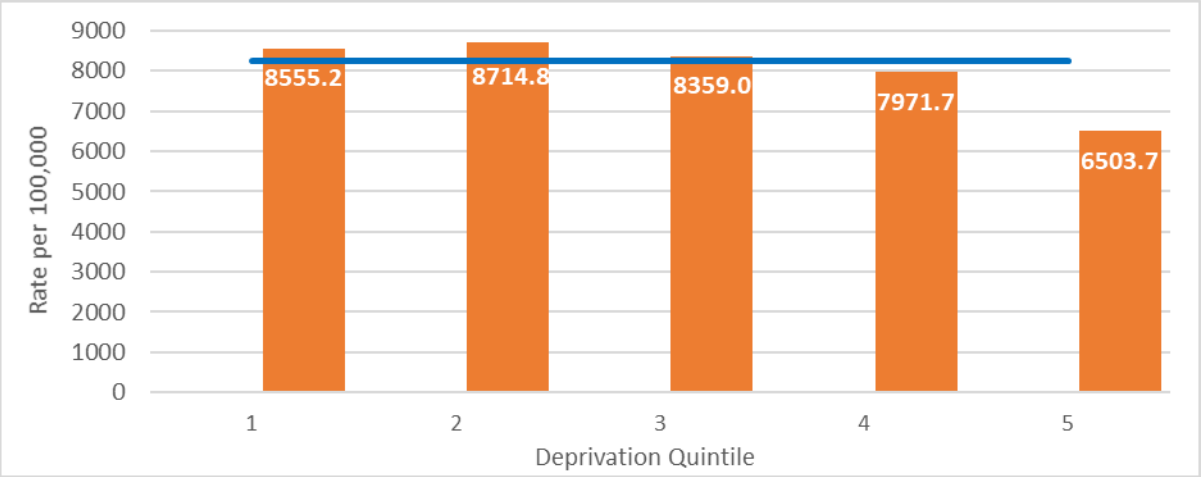
Source: PHE Situational Explorer (restricted site)
Note: Cases missing a valid Wirral postcode excluded, as IMD quintile cannot not be assigned without a postcode.

As **Table 10** and **Figure 14** show, both in terms of numbers and rate (even taking into account the larger population in Quintile 1), the two most deprived quintiles had the highest rates of positive cases in Wirral over the course of the pandemic to 30/06/2021.

Quintile 2 actually had a slightly higher rate of positive cases than Quintile 1. Reasons for this are unclear. The two least deprived quintiles had the lowest rates, with Quintile 5 showing the lowest rate of all five Quintiles.

Figure 14 below shows the rates per 100,000 in each deprivation quintile visually.

Figure 14: Rate of positive cases of COVID-19 (rate per 100,000) in Wirral by IMD quintile, 01/03/2020 to 30/06/2021 (overall Wirral rate shown by blue line)



Source: PHE Situational Explorer (restricted site)
Note: Cases missing a valid Wirral postcode excluded, as IMD quintile cannot not be assigned without a postcode.

Deprivation: Hospitalisations

Table 11 and **Figure 15** below showing admissions/hospitalisations by deprivation quintile relates to 7,526 admission encounters in people who tested COVID-19 in the 21 days prior to or following their admission; rates shown are per 100,000 population.

Table 11: Number and rate of 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 30/06/2021

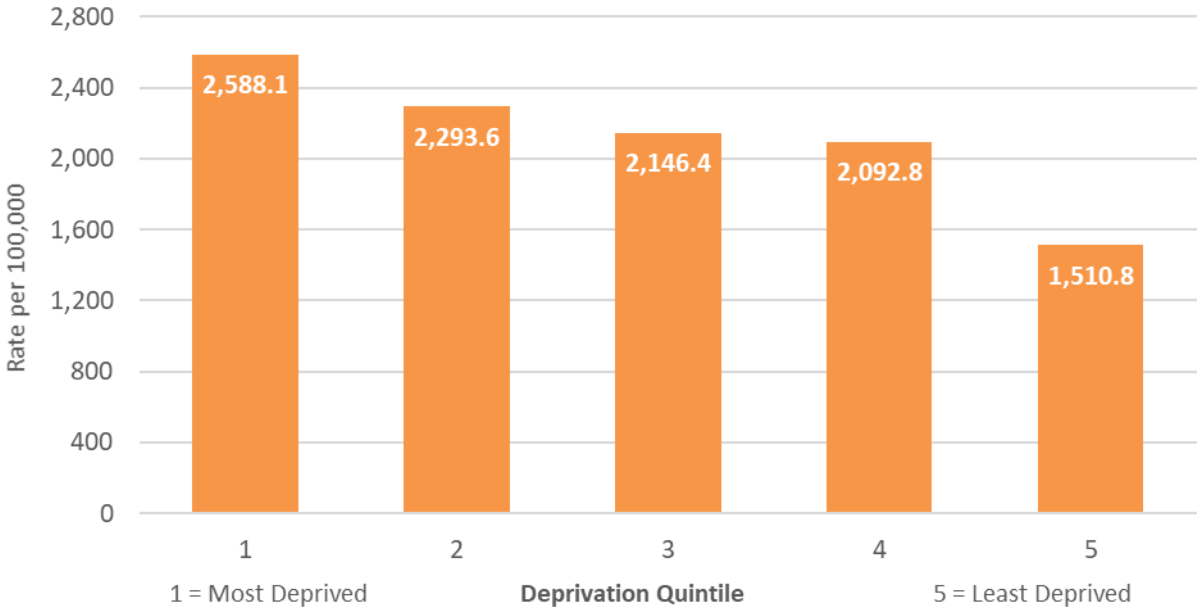
Quintile	Number		Rate per 100k	
	Admissions	ED Attends	Admissions	ED Attends
1	2,837	2,177	2,588.1	1,986.0
2	1,419	1,076	2,293.6	1,739.2
3	970	701	2,146.4	1,551.2
4	1,496	1,168	2,092.8	1,634.0
5	804	603	1,510.8	1,133.1
Total	**7,526**	**5,725**		

Source: HealtheIntent, 2021 (restricted data source)
Notes: Local data on hospitalisations produced using the HealtheIntent platform (underpins the Wirral Care Record). Numbers shown are encounters, not persons.

As **Table 11** shows that by far the greatest *number* of admissions were for those living in the most deprived area, with Quintile 1 having nearly twice the number of the next nearest cohort (Quintile 4). However, the population of this Quintile also has the largest population of all 5 Quintiles in Wirral, so rates per 100k population are also shown for valid comparison. As **Table 11** and **Figure 15** show, Quintile 1 still has the

highest rate of admissions, followed by Quintile 2, with further reductions broadly in line with deprivation. Quintile 4 is a slight exception, as it had slightly higher ED attendance rate than the Quintile 3. The higher rate of admissions in Quintile 4 is partially explained by admissions from Care Homes as 17.5% of admissions in people from this Quintile were from Care Homes, compared to 12.4% on average in other quintiles.

Figure 15: Rate of 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 30/06/2021



Source: HealtheIntent, 2021 (restricted data source)
Notes: Local data on hospitalisations produced using the HealtheIntent platform (which underpins the Wirral Care Record). Numbers shown are encounters, not persons.

Deprivation: Mortality

Table 12 and **Figure 16** below show the number and directly standardised rates (DSR) of deaths from COVID-19 in Wirral as of 30/06/2021, DSRs have been used to take into account the different age profiles that exist in each IMD quintile. For example, areas classified as Quintile 5 have higher proportions of older persons compared to areas in Quintile 1. Directly standardising these differences allows comparison of each quintile on a more equal population base and allows for more valid statistical comparison.

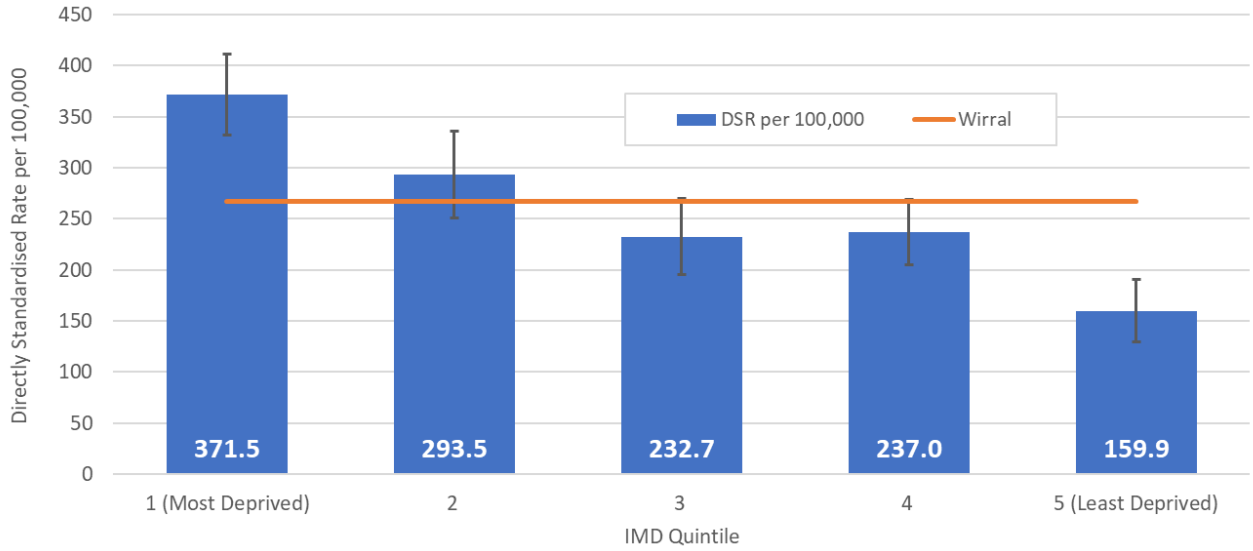
Table 12: Number and directly standardised rate (DSR) per 100,000 of COVID-19 deaths in Wirral by IMD quintile, to 30/06/2021

Quintile	Number of deaths	Population	DSR per 100,000
1 Most Deprived	341	115,999	371.5
2	180	54,149	293.5
3	153	52,255	232.7
4	213	59,586	237.0
5 Least Deprived	105	42,022	159.9
Total	**992**	**324,011**	**267.2**

Source: Primary Care Mortality Database (PCMD) June 2021

When looking at death rates by IMD quintile, those in Quintile 1 (the most deprived quintile) of Wirral have experienced a significantly higher rate of COVID-19 deaths compared to Wirral overall and all other quintiles in Wirral (except for Quintile 2 – see **Figure 16** for confidence intervals). Those living in the least deprived Quintile (Quintile 5) of Wirral have experienced significantly lower rates of COVID-19 deaths compared to Wirral and all other IMD quintiles within Wirral.

Figure 16: Rate (DSR per 100,000) of COVID-19 deaths in Wirral by IMD quintile, to 30/06/2021



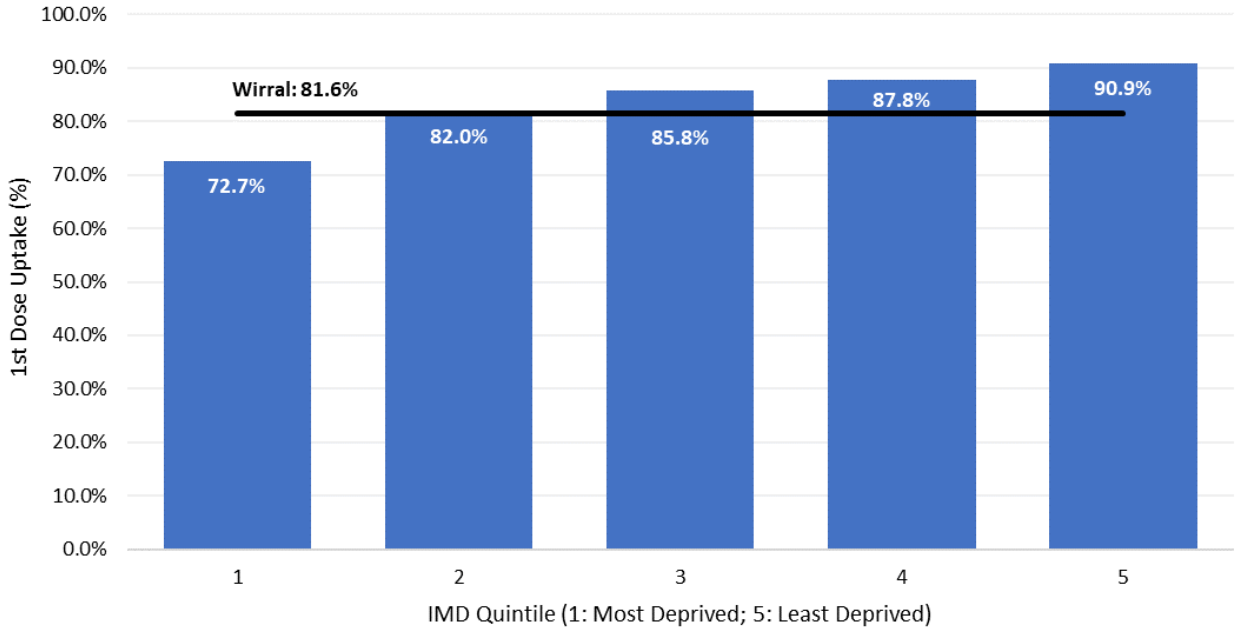
Source: Primary Care Mortality Database (PCMD) June 2021

Deprivation: Vaccinations

The CHIME Tool [20], indicates that nationally, the proportion of over 50s who had been double vaccinated increased with each decrease in level of deprivation. In the most deprived quintile 88.4% had received two doses of the vaccine compared with 95.6% in the least deprived quintile.

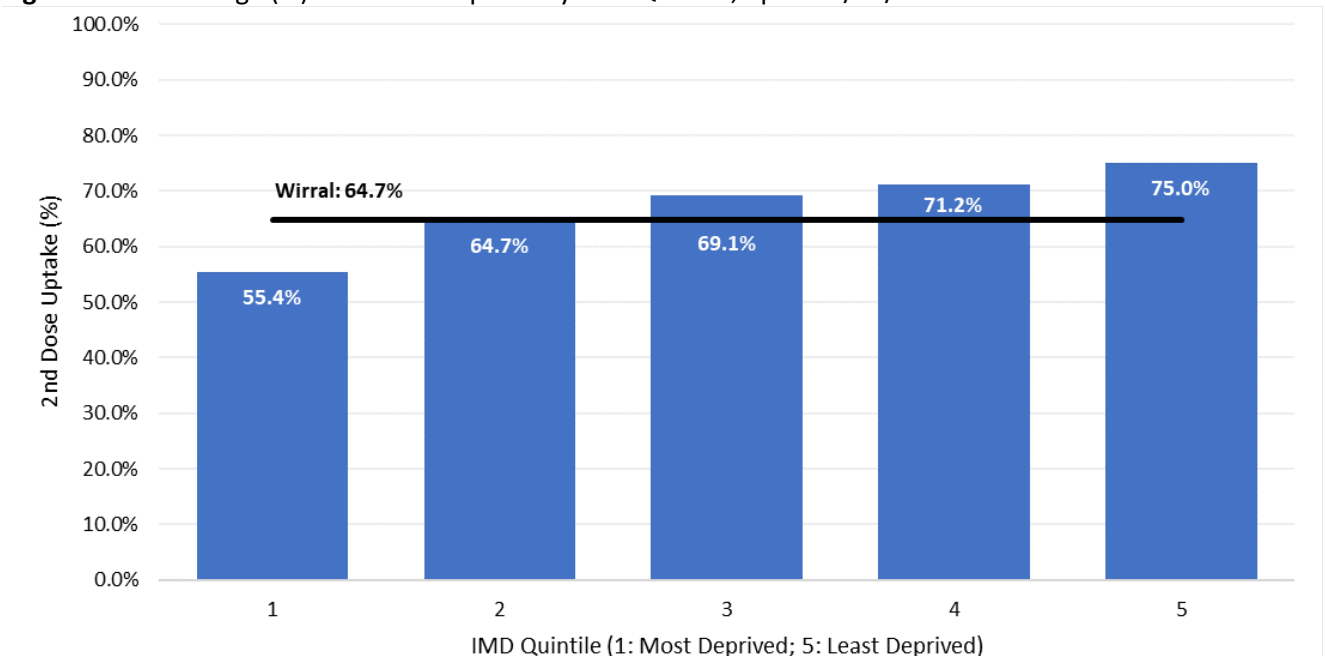
The following charts (**Figure 17** and **Figure 18**) show the uptake of 1st and 2nd doses by Indices of Multiple Deprivation (IMD) quintile, compared to the overall Wirral uptake rate, as of the 30/06/21. Both these charts show that increased uptake rates of 1st and 2nd doses follows the pattern of IMD. Quintile 1, the most deprived quintile in Wirral, had the lowest vaccination uptake rates (for both 1st and 2nd doses) as of the 30/06/21, whereas the least deprived quintile in Wirral, Quintile 5, had the highest vaccination uptake rates (for both 1st and 2nd doses).

Figure 17: Percentage (%) of 1st Dose uptake by IMD Quintile, up to 30/06/2021



Source: CIPHA Vaccination Data, 2021 - restricted data source

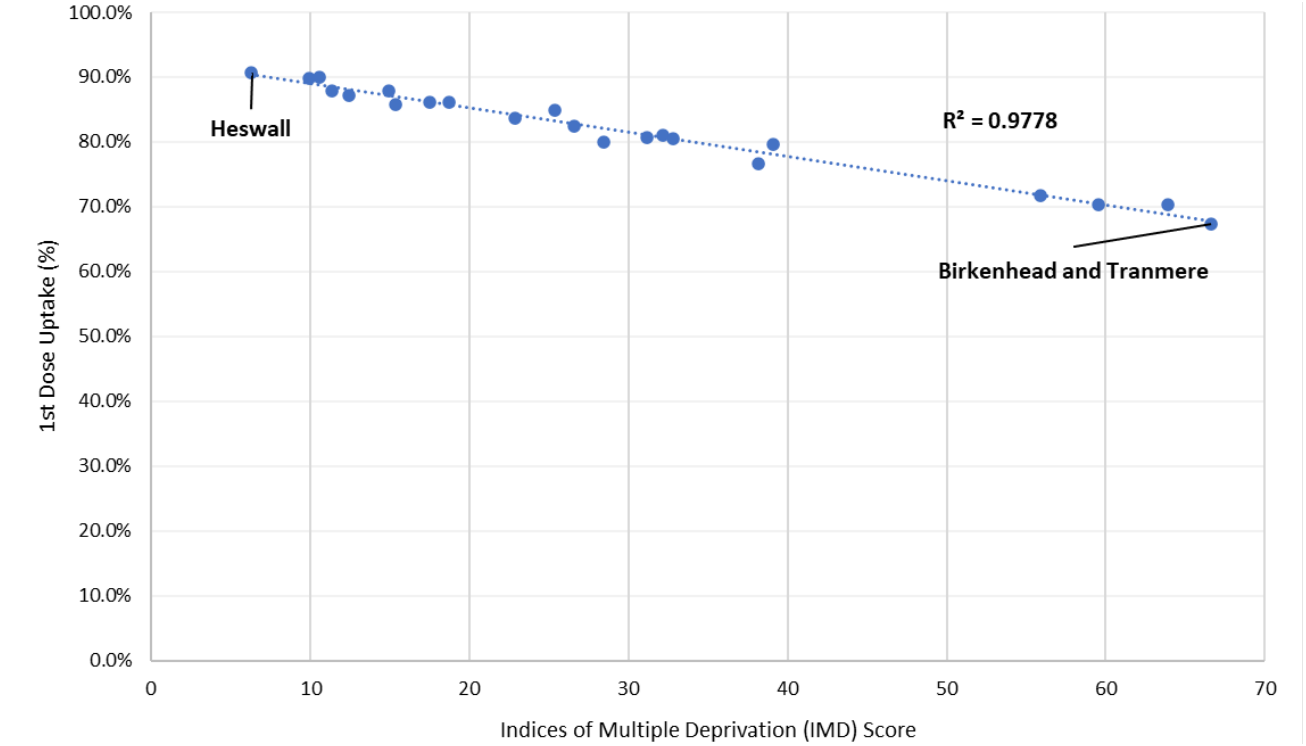
Figure 18: Percentage (%) of 2nd Dose uptake by IMD Quintile, up to 30/06/2021



Source: CIPHA Vaccination Data, 2021 - restricted data source

As the correlation chart below in **Figure 19** shows, there is a very strong relationship between Indices of Multiple Deprivation (IMD) score, with 1st dose uptake rates, by Ward. It shows that as the IMD score increases (i.e. as a Ward becomes more deprived) the uptake of 1st doses decreases. Both the most and least deprived Wards in Wirral (Birkenhead and Tranmere and Heswall) have been labelled for reference.

Figure 19: Correlation between 1st dose uptake and IMD Quintile, by Wirral Ward, up to 30/06/2020



Source: CIPHA Vaccination Data, 2021 - restricted data source

Ethnicity

Over the course of the pandemic (to July 2021) in England overall, the Asian ethnic group had the highest confirmed case rate, 1.5 times the rate for the Mixed ethnic group, which had the lowest rate of all BAME groups [20].

The highest cumulative admission rates and COVID-19 mortality rates were observed in the Asian and Black groups and hospital admission rates for the Asian and Black groups were three times higher than the rate for the White group. The mortality rate for Black and Asian group was also two times higher than the White group. Among the Black and Asian groups, the Other Black, Bangladeshi, and Pakistani groups had the highest COVID-19 mortality and admissions rates [20].

This pattern in confirmed case rates, mortality and hospital admissions by ethnicity varied considerably across regions of England. The numbers in each group are small in some regions which makes comparison difficult [20] (this was particularly true in Wirral, as there is a small BAME population).

In England as a whole, the Black group had the highest monthly COVID-19 mortality rate at the peak of the first wave, whereas the Asian group had the highest rate at the peak of the second wave [20]. This is also true for hospital admissions.

Inequality in COVID-19 mortality and hospital admissions between the Black and White groups was greater at the peak of the first wave. At the peak of the first wave the admission rate in the Black group was 4.0 times higher than the White group but was 3.2 times higher at the peak of the second wave. For mortality the rate in the Black group was 2.9 times higher in the peak of the first wave and 2.1 times in the second [20].

However, *inequality* in COVID-19 mortality and hospital admissions between the Asian and White groups was greater at the peak of the second wave. The admission rate in the Asian group was 2.9 times higher than the White group at the peak of the first wave and increased to 3.3 times higher. The mortality rate was 2.1 times higher at the peak of the first wave and 2.3 times higher in the second [20]

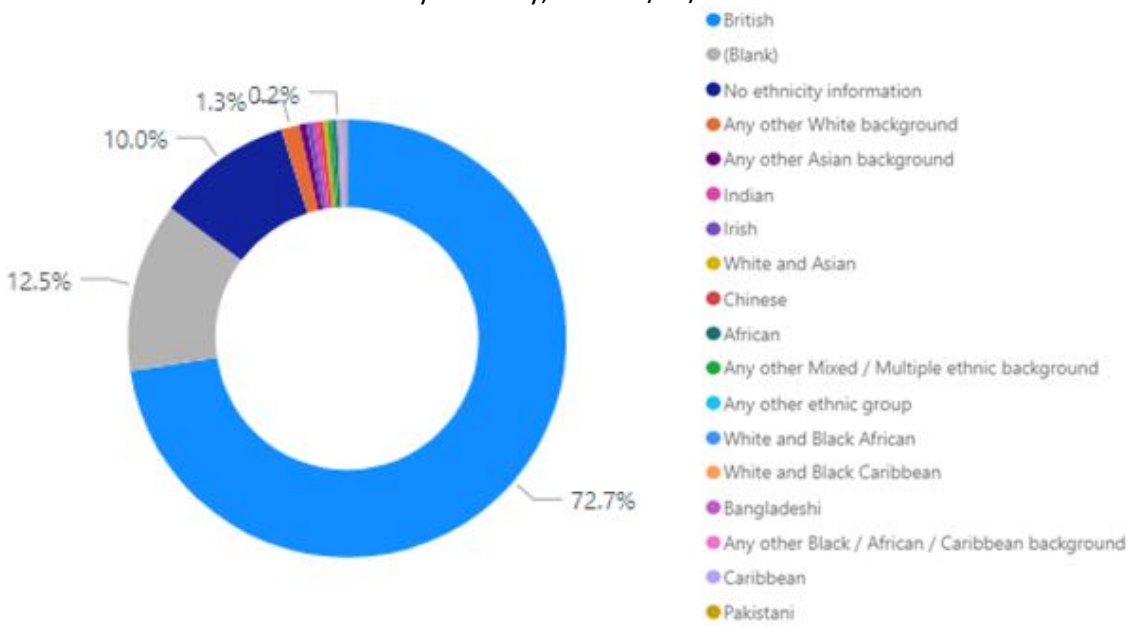
Main messages

- 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 30/06/2021, n=992), it might be expected that between 70-75 of those deaths would be from the BAME population; in fact, as of 30/06/2021, there had been 8 recorded deaths in people classed as BAME in Wirral
- Locally, due to the large number of ethnicities that are 'unknown' within both the vaccination data, and the population data, it is difficult to produce accurate analysis of vaccinations by ethnicity for Wirral. However, almost three quarters of all individuals who had a 1st dose were of White ethnicity, whilst almost a quarter had no ethnicity recorded. The remaining BAME population made up 1.5% of all 1st doses

Ethnicity: Tests

Up to 30/06/2021, there were just over 1.27 million tests of COVID-19 in Wirral. **Figure 20** below shows the breakdown of these cases by ethncity.

Figure 20: Total COVID-19 tests in Wirral by ethnicity, as at 30/06/2021



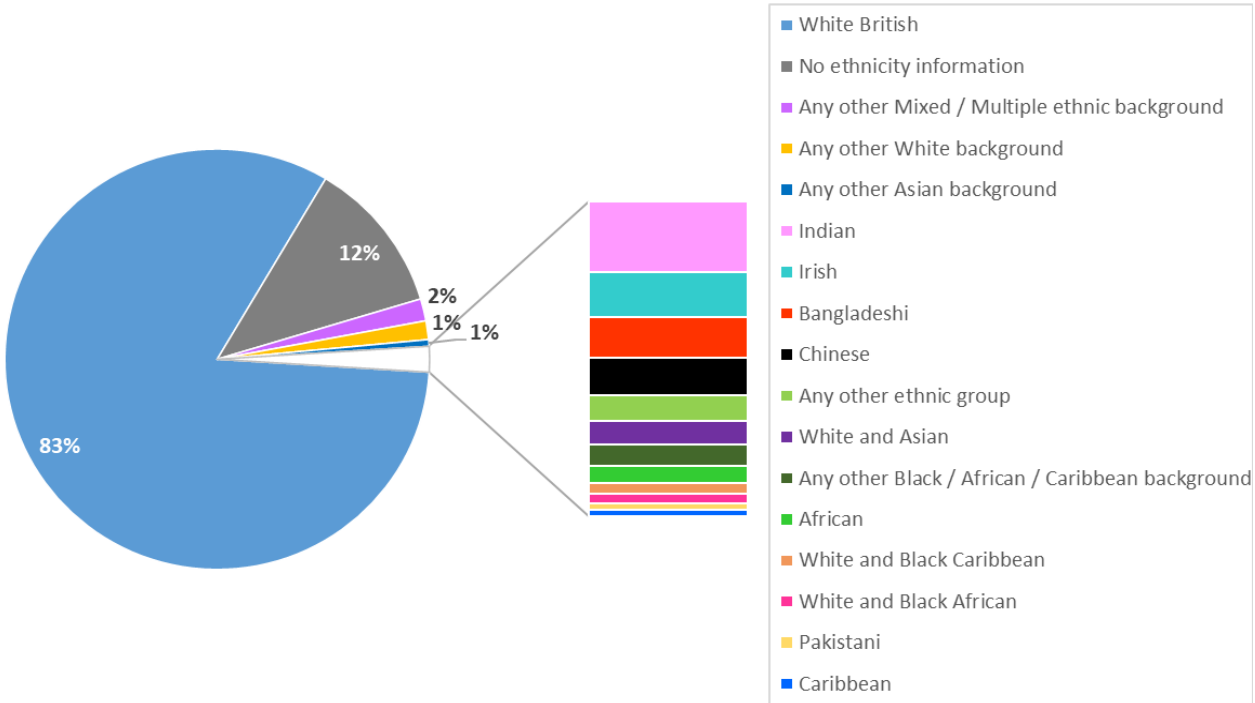
Source: Situational Explorer PowerBI Profile (PHE, restricted site)

Figure 20 shows that the majority of confirmed positive cases (72.7%) were in the White population; the Wirral population is over 90% White, so this is unsurprising. The next largest grouping were those tests where ethnicity was unrecorded either blank records or no ethicity information (285,798 tests or 22.5% of all tests during this period). The 'Any other white background' group was the largest BAME group represented in the test data (1.3% of cases). All other groups comprised less than 1% of cases. The number of tests with an unknown ethnicity unfortunately prevents definitive conclusions being drawn about testing in BAME groups locally.

Ethnicity: Cases

Up to 30/06/2021, there were just over 26,900 cases of confirmed COVID-19 in Wirral. **Figure 21** below shows the breakdown of these cases by ethncity.

Figure 21: Positive cases of COVID-19 in Wirral by ethnicity, as at 30/06/2021



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

Figure 21 shows that the majority of confirmed positive cases (83%) were in the White population; the Wirral population is over 90% White, so this is unsurprising. The next largest grouping were those cases where ethnicity was unrecorded (3,187 cases or 12% of all cases during this period).

The 'Any other Mixed/Multiple' group was the largest BAME group represented in the postive cases data (2% of cases), followed by 'Any Other White' (1%) and 'Any Other Asian' (1%).

All other groups comprised less than 1% of cases (and have been included in a 'pop-out' chart so they are easier to see). Poor data quality (the large proportion of cases with an unknown ethnicity) prevents definitive conclusions being drawn about the impact of ethnicity locally.

Ethnicity: Hospitalisations

Table 13 shows the number and rate of admissions in patients confirmed as being COVID-19 positive in the 21 days prior to or following their admission, by ethnicity, between 01/03/2020 and 30/06/2021.

The same information is shown visually (for rates only), in **Figure 22** below **Table 13**.

Table 13: Number and rate of admissions in patients confirmed as being COVID-19 positive in the 21 days prior to or following their admission, by ethnicity, 01/03/2020 to 30/06/2021

Ethnicity	Number		Rate per 100k	
	Admissions	ED Attends	Admissions	ED Attends
Asian/Asian British	77	61	2,222.2	1,760.5
Black/African/Caribbean/Black British	20	9	2,262.4	1,018.1
Mixed/Multiple Ethnic Groups	57	43	1,080.0	814.7
Not Known/Stated	268	180	458.6	308.0
Other Ethnic Group	48	34	1,987.6	1,407.9
White	7,083	5,416	2,601.3	1,989.1
Total	7,553	5,743	2,203.5	1,675.4

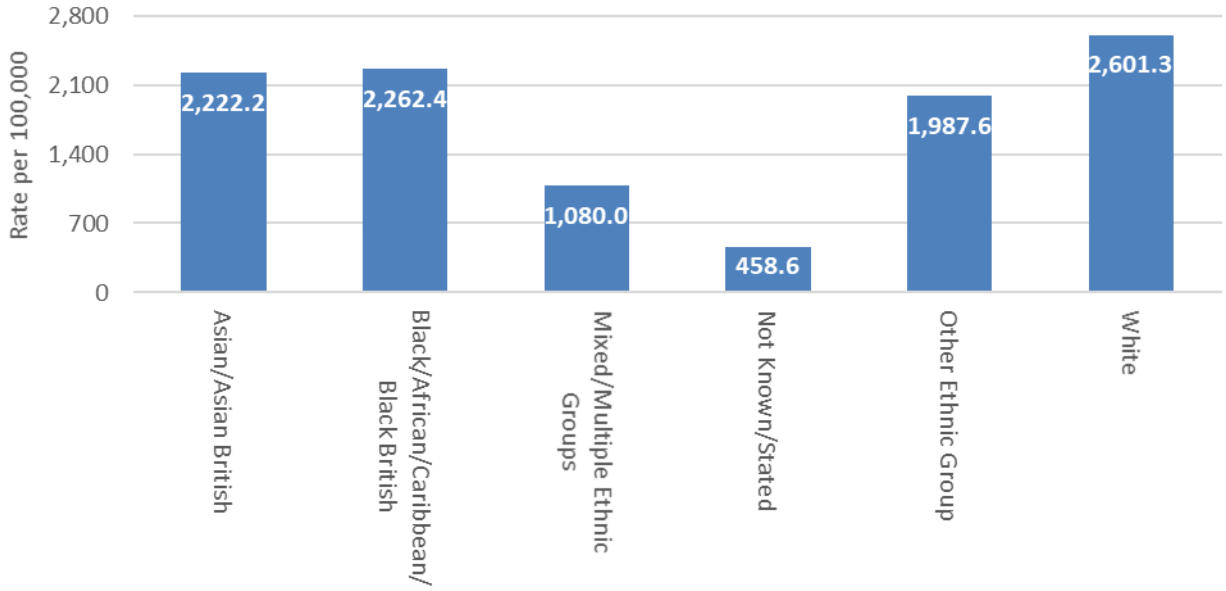
Source: HealtheIntent, 2021 (restricted data source)

As **Table 13** shows, 2.7% of admissions in patients confirmed as having tested positive for COVID-19 in the 21 days prior to or following their admission, were in patients from non-White groups. The largest group after White (93.8%) was Not Known (3.5%).

The combination of such a small overall cohort of known non-white persons (n=422) along with a large number of admissions among those with no recorded ethnicity (n=268), mean it is very difficult to draw any firm conclusions about the impact of COVID on hospital admissions in BAME groups locally at this time.

A comparison of admission rates by ethnic grouping is shown in **Figure 22** below (which shows the same rate information from Table 13 visually) and it appears as though the White population had the highest rate of admissions, but this picture may of course, be skewed by the 'Not Known' category.

Figure 22: Rate of admissions in patients confirmed as being COVID-19 positive in the 21 days prior to or following their admission, by main ethnic grouping, 01/03/2020 to 30/06/2021

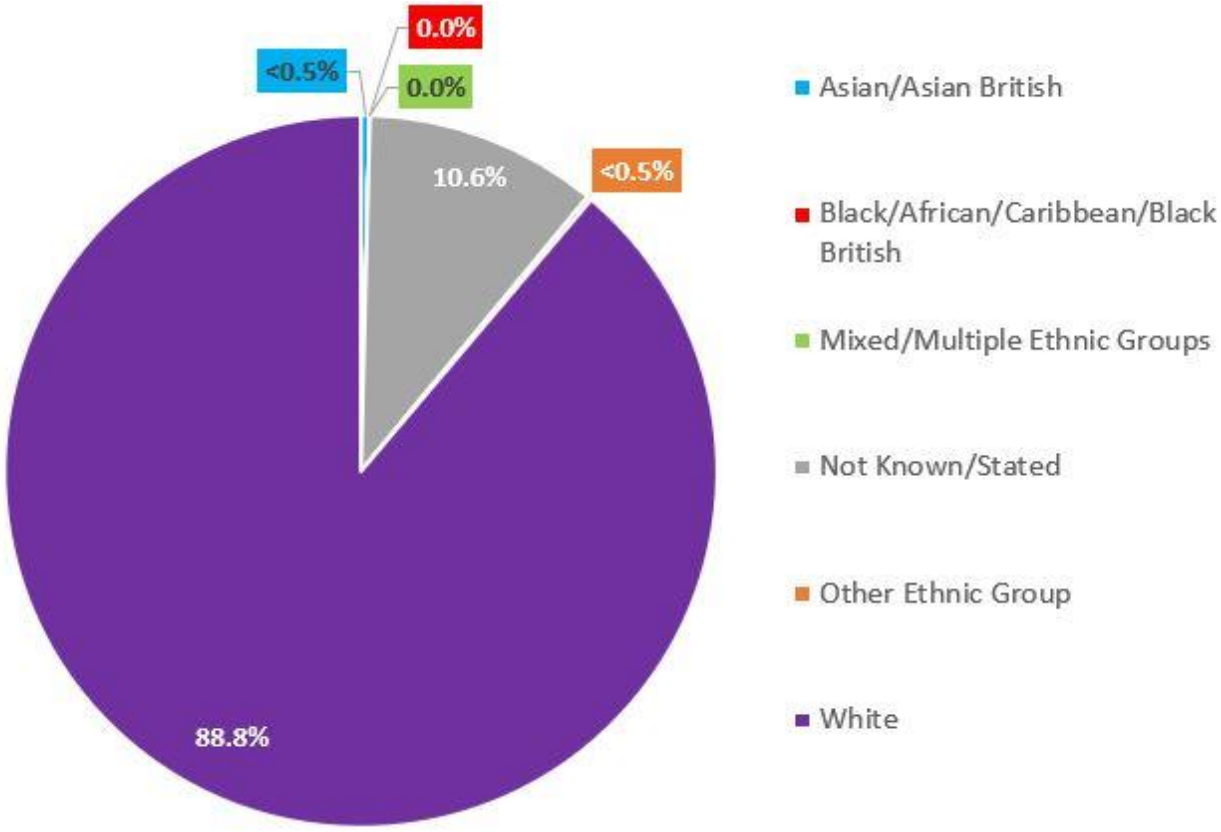


Source: HealtheIntent, 2021 (restricted data source)

Ethnicity: Mortality

Up to 30/06/2021, there were over 992 deaths from COVID-19 in Wirral. Unfortunately, ethnicity is unrecorded in a considerable proportion of COVID-19 deaths (10.6%) which makes drawing conclusions locally about the impact of COVID-19 on BAME groups impossible. **Figure 23** below shows the breakdown.

Figure 23: COVID-19 mortality in Wirral by ethnicity, as at 30/06/2021



Source: PCMD (Primary Care Mortality Dataset) for 2015-19 data (restricted dataset). Local Public Health data (combined data sources) for 2021

As **Figure 23** 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 30/06/2021, but even this group comprised <0.5% of cases. The second largest group (10.6%) 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.

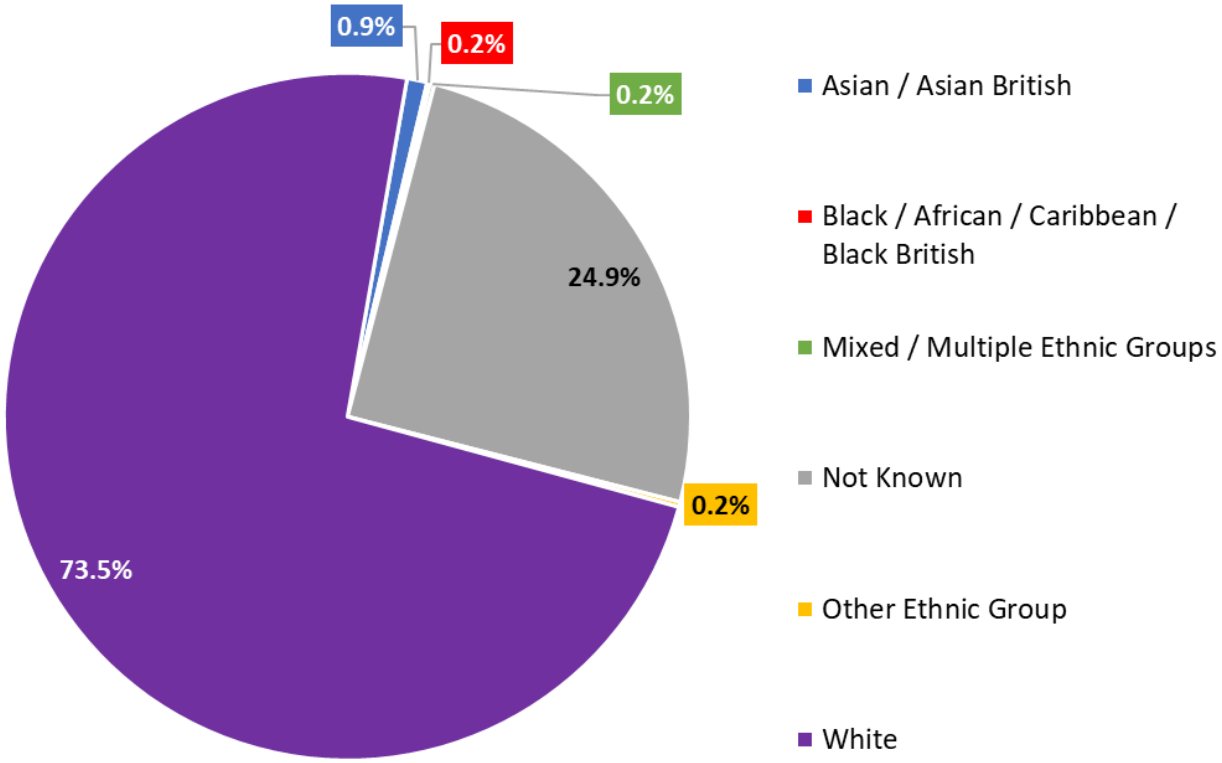
Ethnicity: Vaccinations

In England overall, the CHIME Tool [20], shows that as of July 2021, among over 50s, the Black Caribbean ethnic group had the lowest proportion of its population to have been fully vaccinated, followed by the Black African and Pakistani groups. Only 67.4% of the Black Caribbean group had received two doses, compared with 94.6% of White British (the group with the highest rates).

Locally, due to the large number of ethnicities that are 'unknown' within both the vaccination data, and the population data, it is difficult to produce accurate analysis of vaccinations by ethnicity for Wirral.

Figure 24 below shows the breakdown of ethnicity of individuals who had received their 1st dose of a COVID-19 vaccine by 30/06/21 in Wirral. Almost three quarters of all individuals were of White ethnicity, whilst almost a quarter had no ethnicity recorded. The remaining BAME population made up 1.5% of all 1st doses. The findings of the breakdown of ethnicity in 1st doses is also true of 2nd doses.

Figure 24: Uptake of 1st Dose in Wirral by ethnicity, as at 30/06/2021



Source: CIPHA Vaccination Data, 2021 - restricted data source

Occupation

A person's occupation has an important impact on the likelihood that they will be exposed to COVID-19 and become infected and occupational risks were also reflected in variations in hospitalisation and mortality rates in different occupations [23]. The EMG Transmission Group paper on occupational risk to COVID-19 published in February 2021 [23], found that:

- Different occupations had differing ability to work from home. People aged 16 to 24 years were less likely to do any work from home, while occupations requiring higher qualifications and more experience were more likely to provide homeworking opportunities than elementary and manual occupations. There were large differentials in the proportion working from home in different occupational categories [23]
- Occupations that were less likely to be able to work from home had higher COVID-19 mortality rates than those able to work from home. Occupational categories with high rates of home working (managers, directors and senior officials, professional occupations, associate professional and technical occupations) had lower age standardised mortality rates than occupations that rarely worked from home (process plant and machine operatives, sales, and customer services occupations, caring, leisure and other services occupations and skilled trade operations). The group with the highest age standardised mortality rates were low skilled manual labour occupations that were unable to be conducted from home [23]
- Occupations which involve a higher degree of physical proximity to others had higher COVID-19 mortality rates, with relative risks dependent on the type of contact (colleagues/public), the frequency of contact, the duration of contact, and the likelihood that the contact is infected [23]

Main messages

- Nationally, occupations requiring higher qualifications and more experience were more likely to provide homeworking opportunities than elementary and manual occupations; mortality rates reflected these differences
- Information about the occupation/field of occupation was unavailable for the majority (70%) of positive cases of COVID-19 in Wirral (due to data not being collected at source); among the 30% of positive cases for whom occupational field was recorded, the largest groups were 'Caring Personal Service Occupations', 'Health Professionals' and 'Teaching and Other Educational Professionals'
- In Wirral, just 126 out of a total of 992 COVID-19 deaths (to 30/06/2020) were of working age (aged 16-67); with the caveat of very small number, the largest categories of occupational field for deaths from COVID-19 in Wirral were Science, Research, Engineering & Technology Professionals (13.3%), Administrative Occupations (12.2%) and Health & Social Care Associate Professionals (11.1%)
- Occupation is not a recorded field within the vaccination data. Local vaccination data of Wirral residents who also work for the NHS is available, however, and shows a much higher 1st dose uptake rate compared to the general population (87.0% compared to 81.6%)

Occupation: Tests

Data on occupation of tests is poorly recorded. For example, of 294,882 tests of working age (aged 18-67), just 31% contained an occupation, while 68% were blank (n=630,072).

Where the data was recorded, the largest occupational fields were 'Caring Personal Service Occupations (91,323 or 9.9% of all tests), Teaching and Other Educational Professionals (43,329 or 4.7% of all tests) and 'Health Professionals' (25,737 or 2.8% of tests). See **Table 14** below.

Table 14: Total tests of COVID-19 (number & proportion) by occupational field, 01/03/2020 to 30/06/2021

Professional Grouping	Number	%
Unknown	630,072	68.1
Caring Personal Service Occupations	91,323	9.9
Teaching & Other Educational Professionals	43,329	4.7
Health Professionals	25,737	2.8
Elementary Administration & Service Occupations	17,427	1.9
Other Managers & Proprietors	16,611	1.8
Corporate Managers & Directors	12,559	1.4
Administrative Occupations	11,575	1.3
Science, Research, Engineering & Technology Professionals	9,894	1.1
Business, Media & Public Service Professionals	9,590	1.0
Sales Occupations	7,050	0.8
Secretarial & Related Occupations	6,008	0.7
Leisure, Travel & Related Personal Service Occupations	5,388	0.6
Health & Social Care Associate Professionals	4,862	0.5
Business & Public Service Associate Professionals	4,786	0.5
Textiles, Printing & Other Skilled Trades	4,535	0.5
Science, Engineering & Technology Associate Professionals	4,351	0.5
Skilled Construction & Building Trades	3,844	0.4
Customer Service Occupations	3,566	0.4
Skilled Metal, Electrical & Electronic Trades	3,503	0.4
Transport & Mobile Machine Drivers & Operatives	3,459	0.4
Process, Plant & Machine Operatives	2,374	0.2
Culture, Media & Sports Occupations	1,422	0.2
Skilled Agricultural & Related Trades	652	0.1
Protective Service Occupations	647	0.1
Elementary Trades & Related Occupations	333	0.0
Community & Civil Enforcement Occupations	57	0.0
Grand Total	**924,954**	**100**

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

As **Table 14** above shows, poor data quality (7 out of 10 tests had no occupational information recorded), while the groupings with the largest number and proportion of cases are those where regular testing was (and is) mandatory. These occupations (e.g., workers in care homes) where testing was mandatory were more likely to have their place of work and occupation recorded, so this factor, combined with the large number of unknowns, makes drawing conclusions about occupational groups most at risk difficult to draw.

Occupation: Cases

Data on occupation of positive cases is poorly recorded. For example, of 20,636 positive cases of working age (aged 18-67), just 30% contained an occupation, while 70% were blank (n=14,463).

Where the data was recorded, the largest occupational fields were 'Caring Personal Service Occupations (907 or 4.4% of all cases), 'Health Professionals' (508 or 2.5% of positive cases) and Teaching and Other Educational Professionals (459 or 2.2% of all cases).

Table 15: Positive cases of COVID-19 (number & proportion) by occupational field, 01/03/2020 to 30/06/2021

Professional Grouping	Number	%
Blank	14,463	70.1
Caring Personal Service Occupations	907	4.4
Health Professionals	508	2.5
Teaching & Other Educational Professionals	459	2.2
Elementary Administration & Service Occupations	435	2.1
Sales Occupations	425	2.1
Science, Research, Engineering & Technology Professionals	359	1.7
Corporate Managers & Directors	325	1.6
Business, Media & Public Service Professionals	303	1.5
Administrative Occupations	298	1.4
Other Managers & Proprietors	276	1.3
Skilled Construction & Building Trades	240	1.2
Transport & Mobile Machine Drivers & Operatives	221	1.1
Customer Service Occupations	204	1.0
Skilled Metal, Electrical & Electronic Trades	204	1.0
Process, Plant & Machine Operatives	171	0.8
Business & Public Service Associate Professionals	161	0.8
Leisure, Travel & Related Personal Service Occupations	136	0.7
Secretarial & Related Occupations	128	0.6
Textiles, Printing & Other Skilled Trades	115	0.6
Science, Engineering & Technology Associate Professionals	100	0.5
Health & Social Care Associate Professionals	77	0.4
Culture, Media & Sports Occupations	46	0.2
Protective Service Occupations	35	0.2
Skilled Agricultural & Related Trades	23	0.1
Elementary Trades & Related Occupations	15	0.1
Community & Civil Enforcement Occupations	<5	0.0
Total	**20,636**	**100**

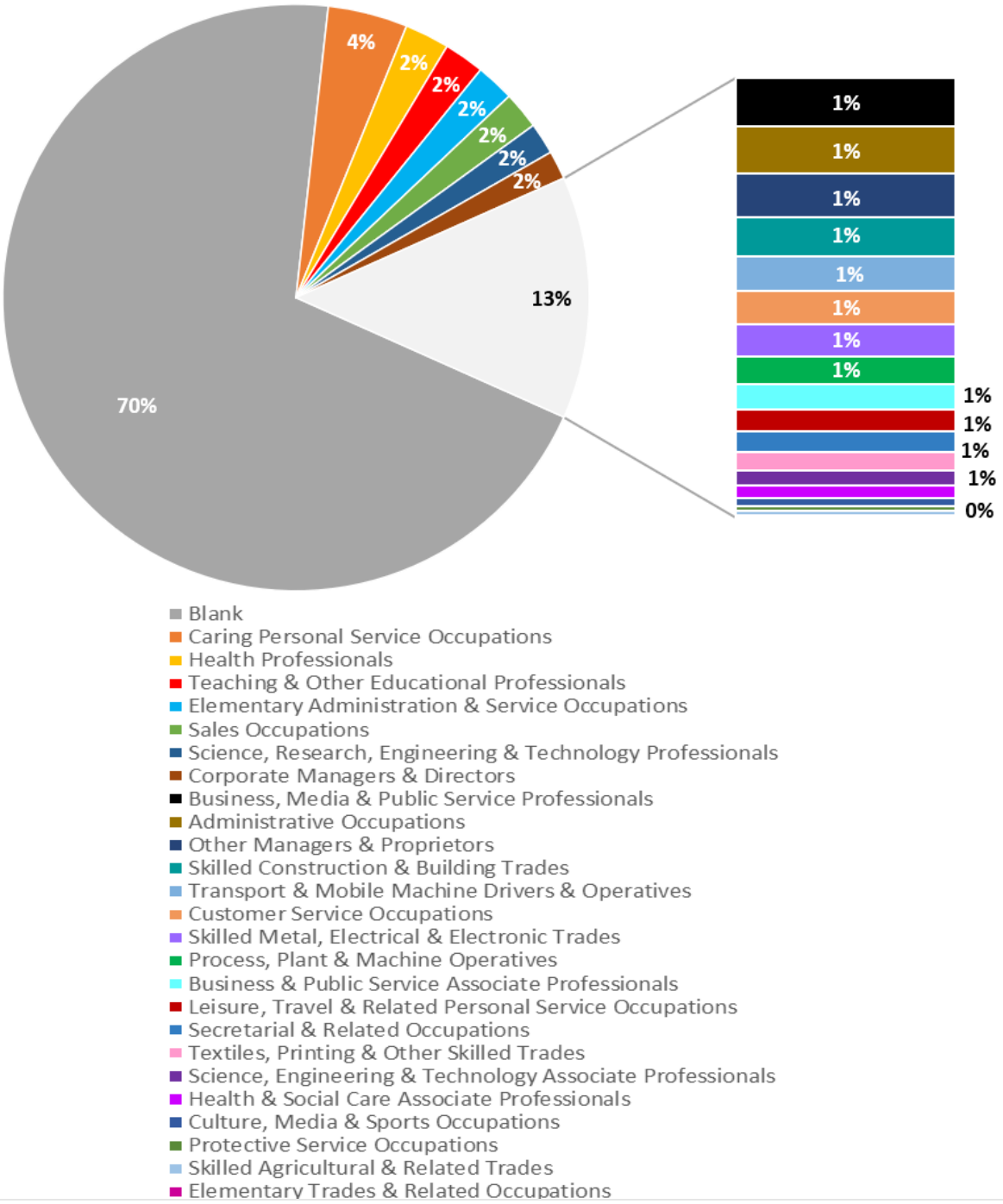
Source: Situational Explorer PowerBI Profile (PHE, restricted site). Categories from the Business Register and Employment Survey, (2018) Sub-major categories used

As **Table 15** above shows, poor data quality (7 out of 10 positive cases had no occupational information recorded), while the groupings with the largest number and proportion of cases are those where regular testing was (and is) mandatory, meaning their place of work and occupations are being recorded.

This makes drawing conclusions about occupational groups most at risk difficult to draw as the majority of workplaces do not have mandatory testing and so lack important detail in the majority of cases.

The same information shown in Table 15 is shown visually in **Figure 25** below.

Figure 25: Positive cases of COVID-19 by occupational field, 01/03/2020 to 30/06/2021



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

Occupation: Hospitalisations

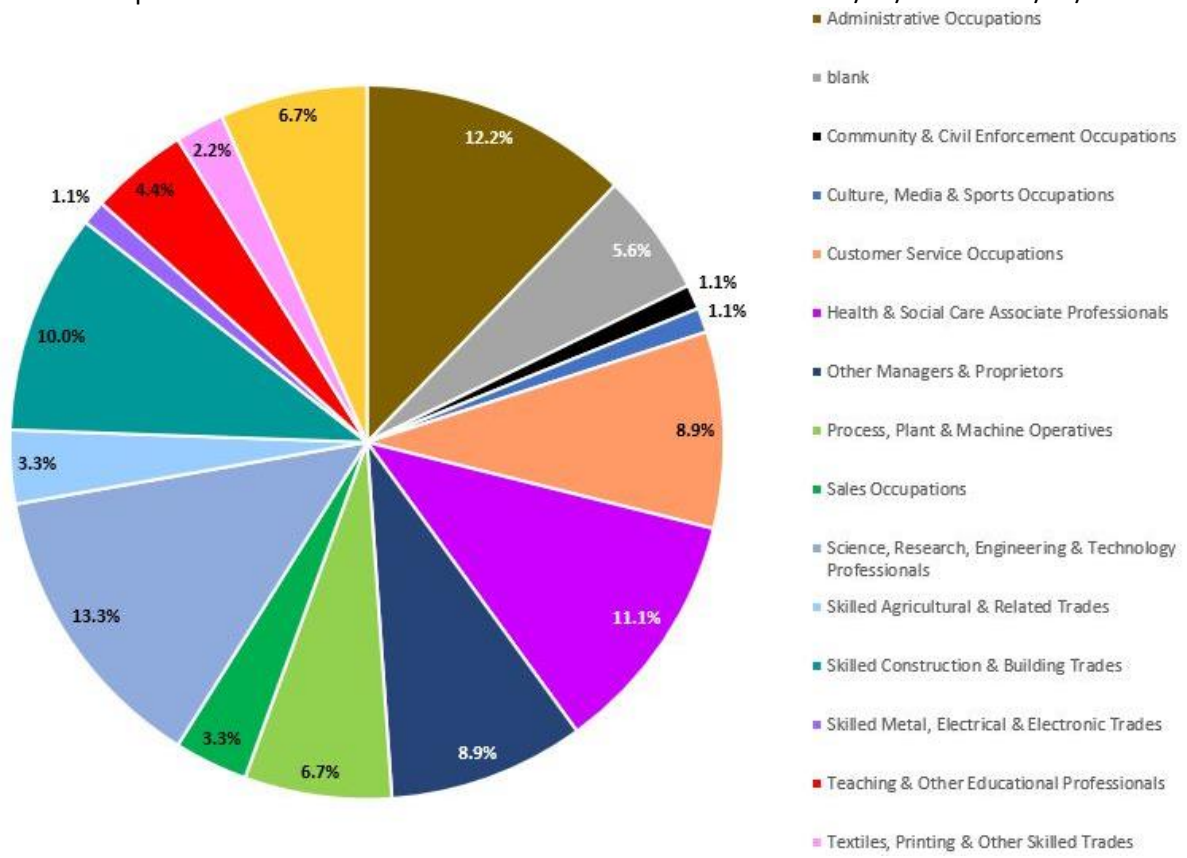
Occupation of patients is not recorded in their Care Record, so there is no way of providing this information.

Occupation: Mortality

The majority of deaths from COVID-19 both nationally and locally, were in those of retirement age. Of the 992 COVID-19 deaths registered up to 30/06/2021, just 126 were in those of working age (aged 18-67). Care should therefore be taken due to the relatively small numbers represented in **Figure 26**.

The largest occupational category was Science, Research, Engineering & Technology Professionals (13.3%), Administrative Occupations (12.2%) and Health & Social Care Associate Professionals (11.1%); 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. See **Figure 26** below.

Figure 26: Occupational field of those who died from COVID-19 in Wirral: 01/03/2020 to 30/06/2021



Source: PHE Situational Explorer and PCMD (2021) (both restricted data sources)

Occupation: Vaccinations

Occupation is not recorded within the vaccination data. However, local data is available for the vaccination status of Wirral residents that work within the NHS (excluding GPs and pharmacies). This data shows that, compared to Wirral overall (1st dose uptake rate as of the 30/06/21 of 81.6%), those working in the NHS had a significantly higher 1st dose uptake rate (87.0%).

Care Homes

Early in the pandemic, deaths in care homes accounted for 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. As of June 2021, 23% of deaths from COVID-19 had occurred in Care Homes (the same figure in Wirral was 27%).

Main Messages

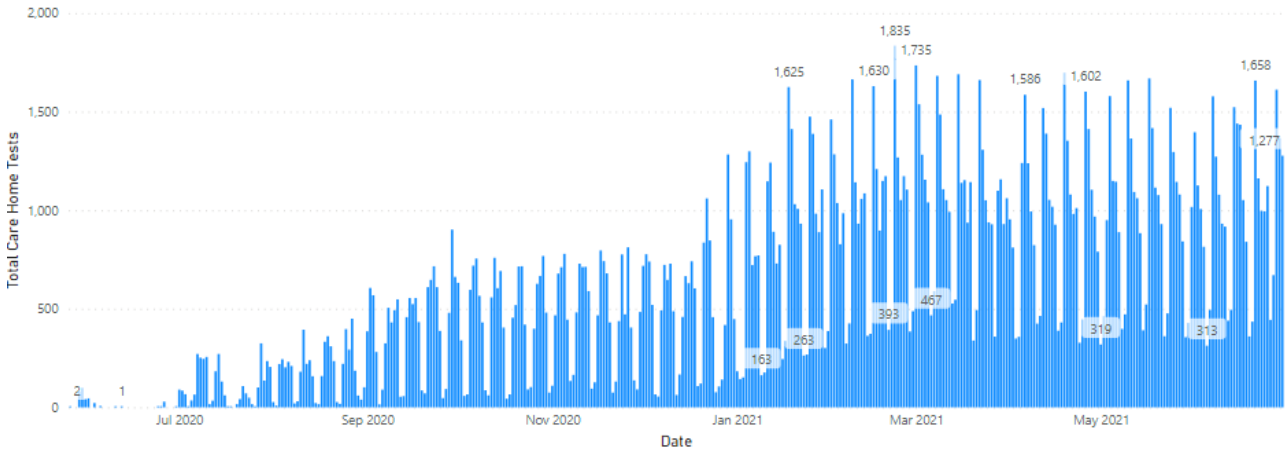
- Almost one in five of all tests carried out in Wirral, have been in a care home setting; testing in care homes increased significantly from September 2020 onwards and continues as per the national guidance on regularly testing of care sector workers
- Data suggests that around 1 in 17 (6%) of all positive cases in Wirral were linked to Care Homes (compared to around 10% of all cases linked to Care Homes earlier in the pandemic); the majority of Care Home linked cases were female (73%)
- The rate of admission for COVID-19 among Care Home residents was 15 times higher than the rate in the general Wirral population (for COVID-19) between 01/03/2020 to 30/06/2021
- The rate of care home beds in areas of Wirral appears to impact the mortality rate (higher rate of care home beds, is correlated with higher mortality rate)
- Just over one in four (27%) of all COVID-19 deaths in Wirral occurred in Care Homes (n=267 deaths from a total of 992 COVID-19 deaths in Wirral); nationally, the same figure was 23%
- 88.3% of residents in Wirral local authority funded care homes had received a 1st dose by the 30/06/2021. This was much higher than the Wirral rate as of the same time period (81.6%). However, as those living in care homes are an older population, this difference is to be expected
- 84.8% of care home workers had received their 1st dose, whilst 75.6% had received their 2nd dose by the 30/06/21; both these proportions are greater than that of the general population (81.6% and 64.7%)

Care Homes: Tests

Of the 1.2 million tests carried out up to the 30/06/2021 almost one in five (236,953 or 18.6%) of all tests carried out have been in a care home setting.

Figure 27 below shows that testing in care homes increased significantly from September 2020 onwards (to date). The drops in the table below are for tests carried out at weekends

Figure 27: Trend in number of tests carried out in care homes between 01/03/2020 to 30/06/2021



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

Care Homes: Cases

As mentioned earlier in this report, there were 1,641 positive cases of COVID-19 which were linked to a Care Home recorded in Wirral between 01/03/2020 and 30/06/2021. This number is likely to be an underestimate, due to Care Home status or link to a Care Home field being incomplete in positive case data. Proportions above should therefore be taken as indicative, rather than definitive. See **Table 16**.

Table 16: Number of Care Home linked cases* testing positive for COVID-19 between 01/03/2020 to 30/06/2021

Age band	Female	Male	Total	%
0-9	0	6	6	0.5%
10-19	30	4	34	2.1%
20-29	127	25	152	9.3%
30-39	146	45	191	11.6%
40-49	111	43	154	9.4%
50-59	171	52	223	13.6%
60-69	95	40	135	8.2%
70-79	85	60	145	8.8%
80+	430	169	599	36.5%
Total	**1,196**	**445**	**1,641**	**100.0%**
%	**72.9%**	**27.1%**	**100%**	

Source: HealtheIntent (restricted data source) and Department for Adult Social Care, Wirral Council (2020)
Note: Data includes all those with case details linked to Care Home, this includes staff who work in care homes, family of staff or residents or visitors if these cases have been linked to Care Home cases. Above numbers are likely to be an underestimate, due to Care Home details often remaining unrecorded on positive case records.

The data in **Table 16** suggests that around 1 in 17 (6%) of all positive cases in Wirral were linked to Care Homes (earlier in the pandemic, as of June 2020, this figure was much higher and was 1 in 10 or 10% of all cases which were linked to Care Homes).

As **Table 16** also shows, the majority (72.9%) of those who tested positive were female, which is unsurprising, given that females make up a larger percentage of both residents of Care Home and Care Home staff, compared to males.

Care Homes: Hospitalisations

Recording of a patients Care Home status is incomplete within the Wirral Care Record, so the figures represented here are likely to be an underestimate of the impact of Care Home residents on admissions and ED attendances. To mitigate this, the record of Care Home residency has been supplemented with the Adult Social Care record (but again, the local authority does not record all residents, those with privately funded arrangements may not be included in those records for example). Overall, just under 3,500 people were recorded as living in a Care Home in Wirral, around 1% of the overall Wirral population.

Table 17 below shows the number and rate (per 100,000) of ED attendances and inpatient admissions, by Care Home status. Care Home residents comprised 12% of inpatient admissions and 13% of ED attendances during this period, despite making up just 1% of the population of Wirral. They are often however, an extremely frail and vulnerable cohort, so this is not perhaps too surprising.

Table 17: Number and rate of admissions and ED attendances (in those with a confirmed positive diagnosis of COVID-19 in the 21 days prior to, or following their admission/attendance) among the Care Home and non-Care Home population, between 01/03/2020 to 30/06/2021

	Number		Rate per 100k population	
Living in Care Home	**Admissions**	**ED Attends**	**Admissions**	**ED Attends**
No	6,637	4,967	1,956.2	1,464.0
Yes	916	776	26,231.4	22,222.2
Total	**7,553**	**5,743**	**2,203.5**	**1,675.4**

Source: HealtheIntent, 2021 (restricted data source)

Table 17 clearly shows that although the number of admissions recorded for patients living in a Care Home is much lower than the wider population, the rate per 100k population is much higher (15 times higher). Of the total of 916 admissions among Care Home patients, 546 (59.6%) were in females. The Care Home population is comprised of 53.8% females, so the number of admissions was slightly higher than might be expected.

Care Homes: Mortality

The second wave of the pandemic saw deaths from COVID-19 across the country and although care home residents were not fully protected from this, there was not the same disproportionate toll among care home residents that occurred during the first wave.

As of 02/07/2021 (slightly different time scale to the rest of this report, as COVID-19 deaths are reported weekly by ONS), the total number of deaths in Wirral was 970. This was 15% of all the deaths which occurred in Wirral in this 18-month period. See **Table 18** below for a breakdown of where those deaths occurred.

Table 18: Death registrations by location of occurrence as of Week 26 (up to 02/07/2021) of 2021

Cause	Care home	Elsewhere	Home	Hospital	Hospices & Other communal establishments	Total
COVID-19	267	4	50	637	12	970
Non-COVID	1,283	119	1,698	2,255	1,75	5,530
Total	**1,550**	**123**	**1,748**	**2,892**	**1,87**	**6,500**

Source: ONS, Weekly Death registrations by local authority and place of death, 2021

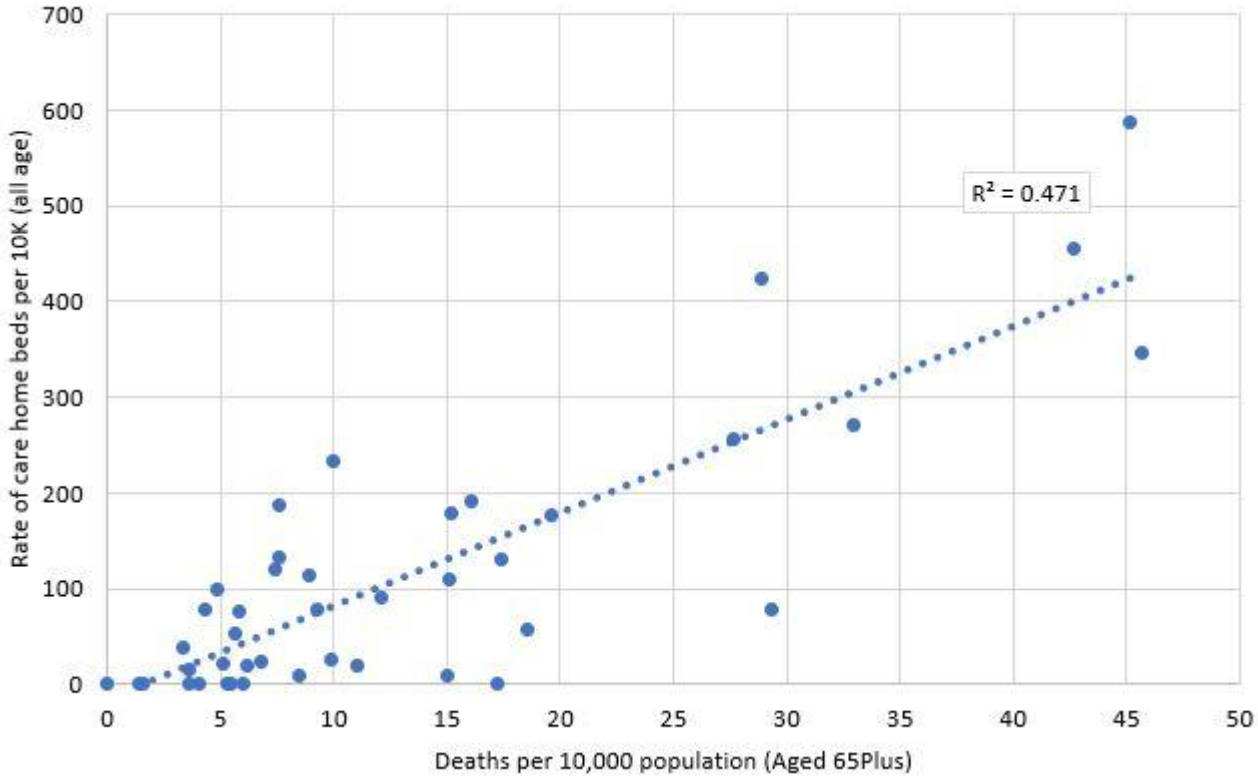
Table 18 shows that after Hospital, Care Homes were the location which accounted for the next largest proportion of COVID-19 deaths (26% of all COVID-19 deaths, with 66% occurring in the hospital). This is a similar percentage to what was seen nationally, with the Office for National Statistics (ONS) data showing that nationally, COVID-19 deaths in care homes accounted for 23% of all deaths from COVID-19 (up to the 2nd of July 2021, or ONS Week 26).

It was suggested in previous analysis carried out on the impact of COVID-19 in Wirral, that the location of Care Homes had an impact on mortality in Wirral. The scatterplot below (**Figure 28**) therefore, updates previous analysis, and shows the relationship between the rate of Care Homes beds in Wirral by area (using MSOAs or Middle Super Output Areas) and deaths in the population aged 65+ (as the majority of deaths were in this age group).

Figure 28 shows that as the rate of care home beds per MSOA increases, so does the death rate in that MSOA. This is a moderate positive correlation (R^2=<0.471), which indicates that the rate of care home beds in areas of Wirral has affected the mortality rate. This supports evidence presented in the earlier 'Geography' section showing that the location of care homes appears to impact levels of COVID-19 mortality in Wirral. The three data points with the highest rate of deaths (in excess of 225 per 10,000 aged 65 plus) were the MSOAs of Claughton South & Oxton North (an MSOA which falls into two different wards - Oxton and Claughton), Woodchurch (in Upton ward) and Hoylake (in Hoylake ward). Two of 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 or Transfer to Assist* beds).

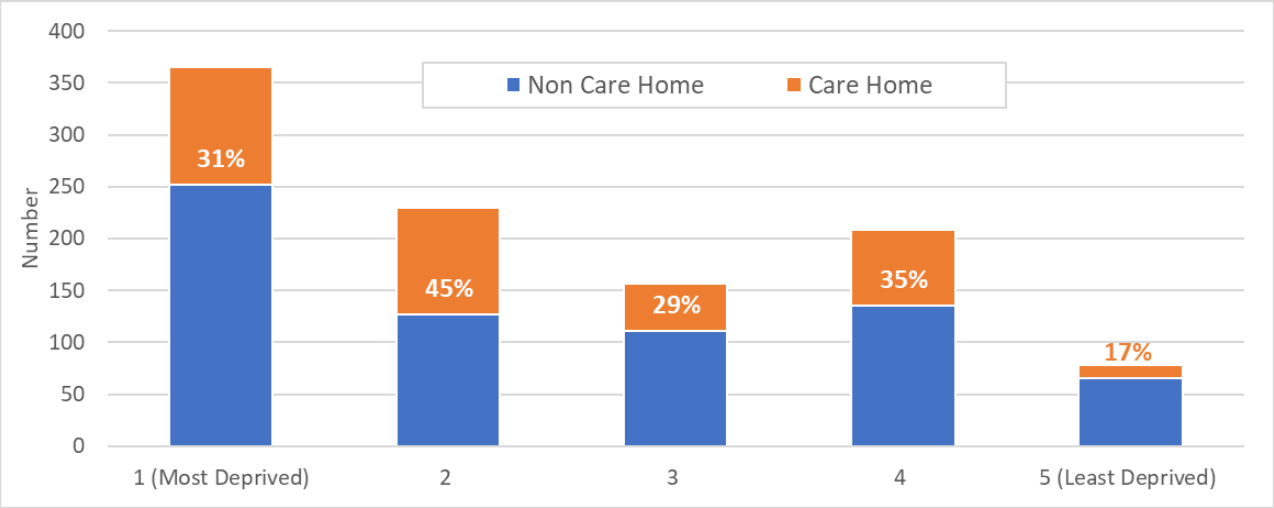
*Transfer to assist beds provide assessment and therapy services for those patients who may require longer term support upon leaving hospital but are a step up from community provision or patients returning to their own homes. The aim of these beds is to avoid future unnecessary hospital admissions; in Wirral these beds are located on the Clatterbridge Hospital site (and so fall into the Clatterbridge ward and MSOA, and Quintile 4 in terms of deprivation).

Figure 28: Association between rate of Care Home beds and death rate (per 10,000 MSOA population) in Wirral, by MSOA, as of 30/06/2021



Source: ONS, Weekly Death registrations by local authority and place of death, 2021and CQC (2021)
Notes: Points indicate the 42 MSOAs (Middle Super Output Areas) in Wirral. See Glossary for explanation of MSOAs.

Figure 29: Number (and proportion) of people who died within 28 days of a positive COVID-19 test in Wirral, by Care Home residence and IMD Quintile, to 30/06/2021



Source: Combined local Public Health data source (deaths - restricted) and IMD 2019 (deprivation)
Note: National NHS indicator of persons who died within 28 days of a positive COVID-19 test used to calculate above chart

As **Figure 29** above shows, although Quintile 1 had the highest *number* of deaths which took place in a Care Home (n=113), Quintiles 2 and 4 had the highest proportion of deaths from COVID-19 which took place in Care Homes.

In Quintile 2, almost half of all the deaths occurred in Care Homes, compared to just 17% of deaths from COVID-19 in those living in Quintile 5. This supports the likelihood that the location of Care Homes in Wirral (large numbers in areas classed as Quintiles 2 and 4) impact mortality in those Quintiles.

Care Homes: Vaccinations

Vaccination data sourced from CIPHA shows that 88.3% of residents in Wirral local authority funded care homes (i.e., not private care homes) had received a 1st dose by the 30/06/2021. This is much greater than the Wirral rate as of the same time period (81.6%). However, as those living in care homes are of an older population, this difference is to be expected.

As previously mentioned within the Occupation section, occupation data is not a recorded field within the vaccination data. Adult Social Care, however, keep their own record of the number and proportion of vaccinated care home workers via the NHS Capacity Tracker. This shows that, as of the 30/06/21, 84.8% of care home workers had received their 1st dose, whilst 75.6% had received their 2nd dose (both proportions are greater than that of the general population).

The government have recently produce national operational guidance on COVID-19 vaccinations for people working or deployed within care homes. It states that, by 11/11/21, all care home workers, unless medically exempt, must be fully vaccinated against COVID-19, or risk losing their job. For this to occur before the regulations come into force, all care home workers must have received at least their first dose by 22/07/21, to allow for the 8-week wait between their 2nd dose and then for the 8-week wait after their 2nd dose to be fully immune. A diagram of this timeline is shown below in **Figure 30**.

Figure 30: Timeline for care home workers to be vaccinated as per new regulations coming into force

Source: Department of Health and Social Care, 2021

Co-morbidities

PHE reported early in the pandemic, that nationally, people with underlying health conditions (or co-morbidities), appeared 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 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].

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

- The diseases which appeared to confer the highest risk of testing positive for COVID-19 in Wirral were Dementia, the Palliative Care conditions and Obesity
- 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 on the Palliative Care register
- Relative to list size, the rate of death (from COVID-19) locally was highest in patients on the Dementia register, with patients recorded as being on the Palliative Care register had the second highest rates of death during this period
- All people with conditions on the Quality Outcomes Framework (QOF) register had a higher 1st dose uptake compared to the overall Wirral rate, except those on the Palliative Care register (69.1%) and those on the Mental Health register (77.5%)

Co-morbidities: Testing

Unable to apply morbidity registers to testing data because positive tests cannot be totalled, as individuals may have multiple pre-existing conditions and so will appear in the data on more than one occasion.

Co-morbidities: Cases

Table 19 below shows the proportion of people on each QOF disease register in Wirral, who tested positive for COVID-19 between 01/03/2020 and 30/06/2021. The QOF (Quality & Outcomes Framework) register is kept by GPs and lists the total number of patients in Wirral recorded as having particular conditions.

Table 19: Number and rate (per 100,000) of positive COVID-19 cases by QOF condition, 01/03/2020 to 30/06/2021

QOF Register	Positive COVID-19 cases	QOF list size	Rate
Dementia	647	3,720	17,392.5
Palliative Supportive Care	587	4,463	13,152.6
Obesity	4,208	32,434	12,974.0
Asthma	2,095	16,184	12,944.9
Learning Disability	252	2,063	12,215.2
Epilepsy	551	5,203	10,590.0
Heart Failure	514	5,253	9,784.9
Stroke/TIA	722	7,896	9,143.9
Diabetes	2,133	23,385	9,121.2
Atrial Fibrillation (AF)	1,003	11,161	8,986.6
Coronary Heart Disease (CHD)	1,175	13,896	8,455.7
Rheumatoid Arthritis	171	2,040	8,382.4
Mental Health	225	2,697	8,342.6
Peripheral Arterial Disease	217	2,676	8,109.1
Cancer	1,175	14,504	8,101.2
Hypertension	4,149	52,433	7,913.0
Chronic Kidney Disease (CKD)	1,056	13,721	7,696.2
Chronic Obstructive Pulmonary Disease (COPD)	601	8,069	7,448.3

Source: HealtheIntent (2021) (restricted data source)
Notes: Positive tests cannot 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.

As **Table 19** shows, the largest *number* of positive cases in patients (with a health condition defined by QOF) diagnosed were in patients recorded as having Obesity, followed by Hypertension and Diabetes. This is partially reflective of the large number of people on these disease registers (these are the 3 largest registers in Wirral).

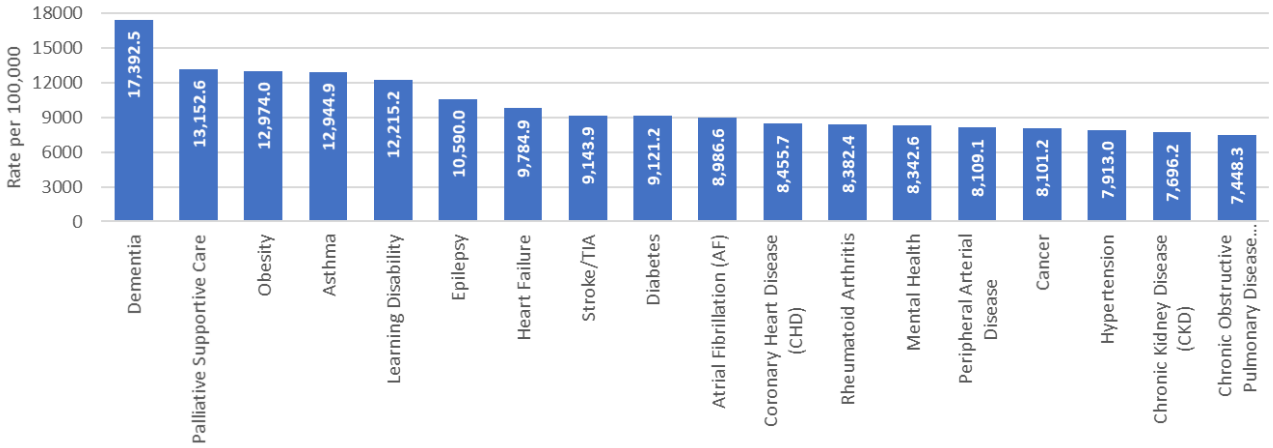
To enable a more appropriate assessment of risk of testing positive for COVID-19 by condition, the proportion of confirmed positive cases of COVID-19 *relative to the total QOF register* is also shown in the table. In Wirral, the diseases which appears to confer the highest risk of testing positive for COVID-19 were Dementia, conditions which result in patients being added to the Palliative Care register and Obesity.

Although 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) and would have been expected to be shielding, they will also have been those most likely to come into contact with health care workers, health settings and many will have been unable to be vaccinated due to current chemotherapy treatment, for example.

This may explain why 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 31 below shows the same information shown in part of the table above (rates per 10,000 list size), but displays it graphically

Figure 31: Rate (per 100,000 list size) of individuals testing positive for COVID-19 in Wirral, by pre-existing condition (QOF defined)



Source: HealtheIntent (2021) (restricted data source)
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)

Care Homes: 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 by their GP.

Table 20 below shows the number and rate (per 10,000 patients on relevant disease register) of admission encounters and Emergency Department (ED) attendances in patients with a positive COVID-19 diagnosis (in the 21 days prior or following an admission), by key QOF disease groups.

Table 20: Number and rate (per 10,000 list size) of admissions and attendances at ED within 21 days of a positive COVID-19 test in Wirral, by pre-existing condition (QOF defined), between 01/03/2021 and 30/06/2021

QOF Register	Number		Rate per 100k population	
	Admissions	ED Attends	Admissions	ED Attends
Palliative Supportive Care	1,083	770	24,206.5	17,210.5
Heart Failure	922	687	17,518.5	13,053.4
Dementia	633	532	17,016.1	14,301.1
Peripheral Artery Disease	311	212	11,617.5	7,919.3
Atrial Fibrillation	1,193	933	10,687.1	8,358.0
COPD	836	644	10,335.0	7,961.4
Stroke	791	596	10,006.3	7,539.5
CKD	1,327	878	9,670.6	6,398.5
Coronary Heart Disease	1,239	964	8,913.7	6,935.3
Cancer	1,212	753	8,319.6	5,168.9
Obesity	2,551	1,739	7,862.8	5,360.0
Diabetes	1,745	1,244	7,452.2	5,312.6
Epilepsy	354	273	6,789.4	5,235.9
Mental Health	180	157	6,666.7	5,814.8
Rheumatoid Arthritis	115	94	5,637.3	4,607.8
Hypertension	2,842	2,105	5,416.8	4,012.1
Learning Disability	118	97	4,642.0	3,815.9
Asthma	762	604	4,270.6	3,385.1

Source: HealtheIntent (2021) (restricted data source)
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 used in above analysts includes deceased patients for methodological reasons

Table 20 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 Diabetes and Chronic Kidney Disease. This is mainly a function of the number of people on both of these registers, hence rates (relative to disease list registers have also been calculated).

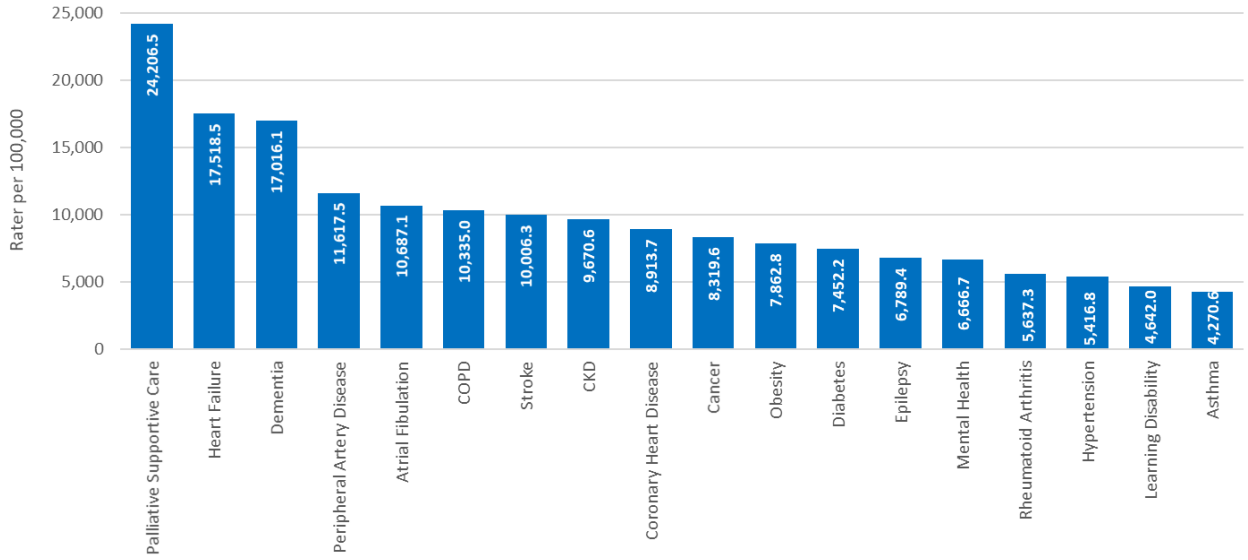
The *rate* of admissions in patients diagnosed with COVID-19 (within 21 days of their admission) was highest in patients recorded as being on the Palliative Care register, by a considerable margin. This group of patients also had the second highest rate of positive COVID-19 cases and mortality, so perhaps having the highest rate of admissions is not surprising, as this is a cohort of patients who were by definition, already extremely unwell and approaching 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 Dementia and Peripheral Arterial Disease, perhaps underlining COVID-19 impact on patients with vascular conditions; a factor which has also been noted nationally.

There were some marginal differences in rate of attendance at the Emergency Department, with patients with Dementia being the second highest cohort of attendees (after those on the Palliative Care Register), followed by those Heart Failure.

Figure 32 below shows the same information on rates as in the table above, but graphically.

Figure 32: Number and rate (per 10,000 list size) of admissions within 21 days of a positive COVID-19 test in Wirral, by pre-existing condition (QOF defined), between 01/03/2021 and 30/06/2021



Source: HealtheIntent (2021) (restricted data source)
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 used in above analysts includes deceased patients for methodological reasons

Co-morbidities: Mortality

Table 21 below shows the number and rate (per 10,000 patients on the register) of death in patients, by key disease groups. The groups are the QOF (Quality & Outcomes Framework) registers, which list the total number of patients in Wirral recorded as having particular conditions.

Table 21: 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 30/06/2021

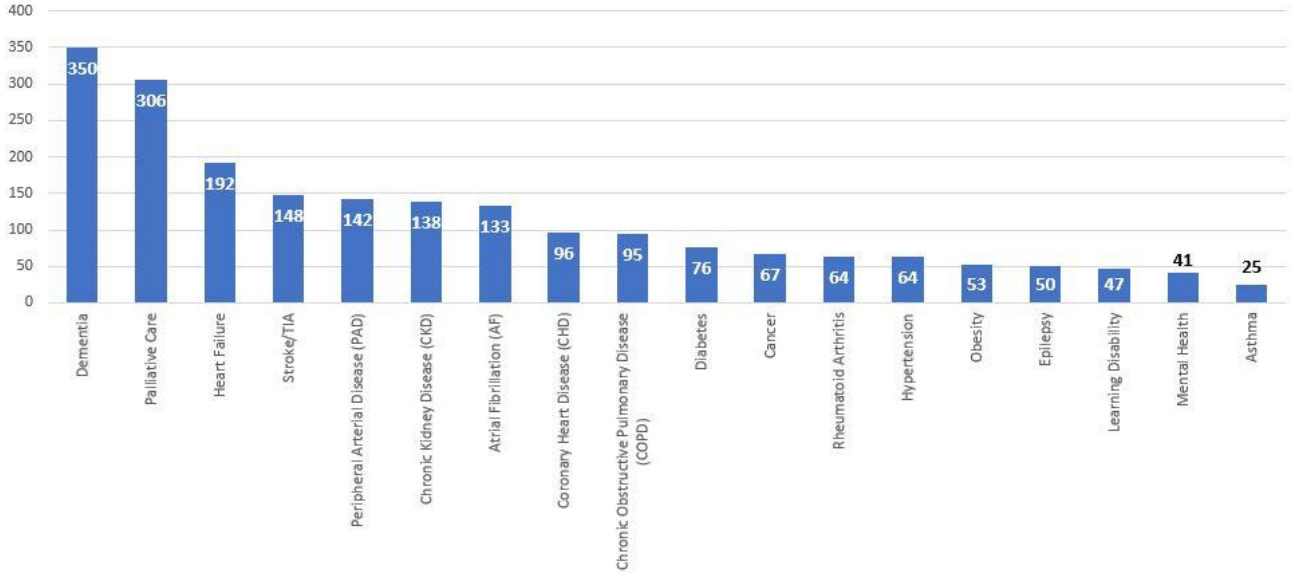
Disease Register	QOF List Size	Deaths	Rate per 10,000
Dementia	3,720	130	349.5
Palliative Care	4,474	137	306.2
Heart Failure	5,263	101	191.9
Stroke/TIA	7,905	117	148.0
Peripheral Arterial Disease (PAD)	2,677	38	141.9
Chronic Kidney Disease (CKD)	13,722	189	137.7
Atrial Fibrillation (AF)	11,163	148	132.6
Coronary Heart Disease (CHD)	13,900	134	96.4
Chronic Obstructive Pulmonary Disease (COPD)	8,089	77	95.2
Diabetes	23,416	179	76.4
Cancer	14,568	97	66.6
Rheumatoid Arthritis	2,040	13	63.7
Hypertension	52,466	333	63.5
Obesity	32,444	172	53.0
Epilepsy	5,214	26	49.9
Learning Disability	2,542	12	47.2
Mental Health	2,700	11	40.7
Asthma	17,843	45	25.2

Source: HealtheIntent (2021) and Primary Care Mortality Database (PCMD, 2021) (both restricted data sources)
Notes: Deaths in this table should not be totalled as many individuals have multiple pre-existing conditions and appear in several categories. List size above may not match published QOF registers, as data includes deceased patients for methodological reasons.

The largest *number* of deaths (from COVID-19) was in patients recorded as having Hypertension, followed by Chronic Kidney Disease and Diabetes. This is mainly 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, with 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 33** below shows the same information as in the table above (rates per 10,000 list size), but graphically.

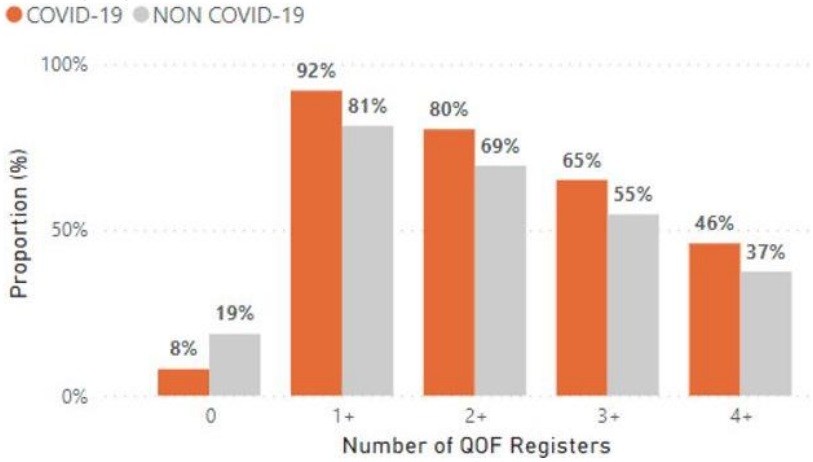
Figure 33: Rate (per 10,000 list size) of individuals who died from COVID-19 in Wirral, by pre-existing condition (QOF defined), 01/03/2020 to 30/06/2021



Source: HealtheIntent (2021) and Primary Care Mortality Database (PCMD, 2021) (both restricted data sources)
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 34** below.

Figure 34: Number of pre-existing conditions in those who died from COVID-19 and Non-COVID-19 causes, Wirral, 01/03/2020 to 30/06/2021



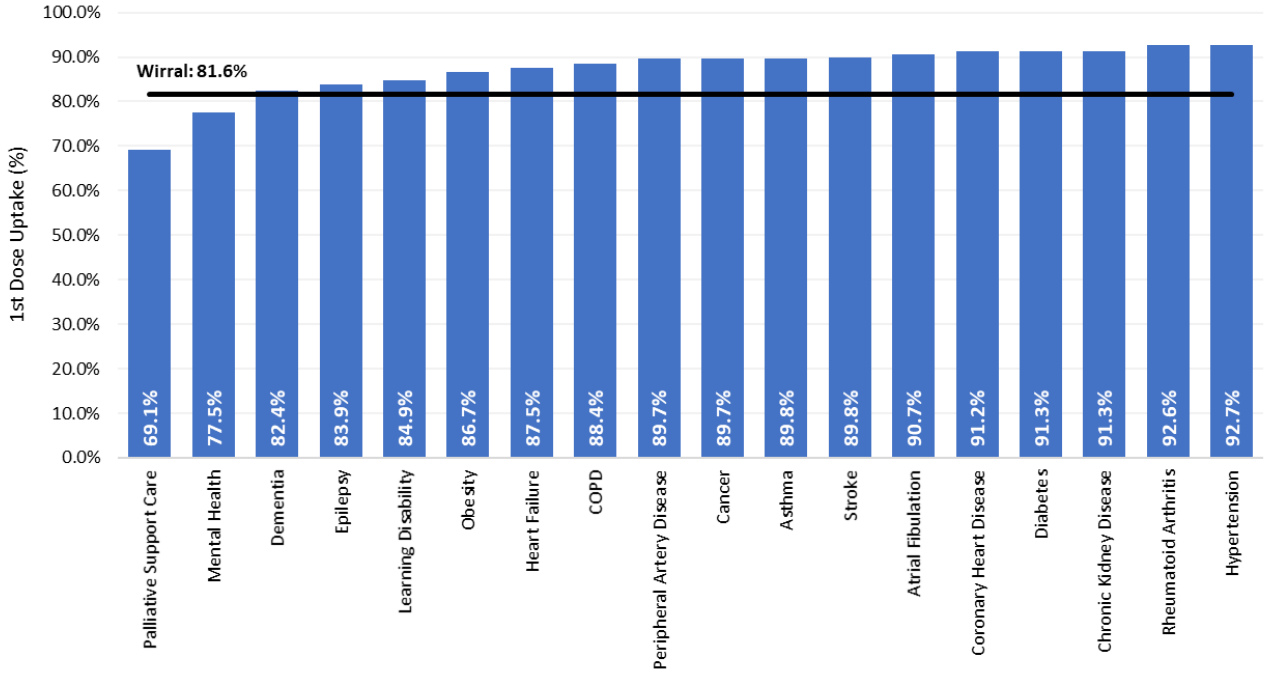
Source: HealtheIntent (2021) (restricted data source)

Many patients have multiple pre-existing conditions; as of 30/06/2021, those who died from Non-COVID-19 causes in Wirral had on average, 2.2 pre-existing conditions. In those who died from COVID-19 however, that figure was 2.7 pre-existing conditions.

Co-morbidities: Vaccinations

Figure 35 below shows the 1st dose uptake of a COVID-19 vaccine by individuals on each Quality Outcome Framework (QOF) register compared to the overall Wirral rate, as of 30/06/2021. It shows that all the QOF registers had a higher 1st dose uptake compared to the overall Wirral rate, except those on the Palliative Care register (69.1%) and those on the Mental Health register (77.5%). As many people on these registers will be of older age (with the exception of Asthma and Mental Health), it follows the trend that older people were more likely to have received their 1st dose by the 30/06/2021. Hypertension, Rheumatoid Arthritis and Chronic Kidney Disease (CKD) were the 3 QOF register conditions with the highest 1st dose uptake rates.

Figure 35: Percentage (%) of 1st Dose uptake by Patients on Various Quality Outcome Framework (QOF) Register, up to 30/06/2021



Source: CIPHA Vaccination Data, 2021 - restricted data source
Note: The same person may be on multiple different QOF registers

People with a Learning Disability

Learning disability is recorded on the QOF (Quality & Outcomes Framework) register maintained by GPs. It is likely that many people with LD are not recorded as such on the QOF register, so any information below (and in the main 'Co-morbidities' section), is likely to be an underestimate. As such, information on those with LD should be taken as an indicative, rather than definitive picture.

Local information on people with LD and COVID-19 indicates that between 01/01/2020 and 30/06/2021 there were a total of **44 deaths** (from all causes) in people flagged as having a Learning Disability (although as per the caveat above, not all people with LD will be recorded on their medical records as such).

Of these 44 deaths, 15 were due to COVID-19 (35% 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 922 residents of Wirral died from COVID-19 out of a total of 5,687 people who died from all causes (17% of all deaths).

It would therefore appear, that just over double the proportion of deaths in the LD compared to the 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:

- 11 COVID-19 deaths were males, with 4 females; among the 29 Non-COVID-19 deaths, the genders had a similar gender ratio, with 18 males and 11 females
- The average age of people with LD who died from COVID-19 was 67, older than those who died from Non-COVID-19 causes (average of 65). A difference of the same magnitude was also apparent in the age difference of COVID-19/Non COVID-19 deaths in the 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 2.3 per-existing health conditions, compared to an average of 1.9 conditions in those people with LD who died from Non-COVID-19 causes
- Most common conditions in the 21 people who died from Non-COVID-19 causes were Epilepsy (n=11) and Diabetes (n=8)
- Most common conditions in the 11 people who died from COVID-19 were Epilepsy, Dementia and Diabetes (all <5)

As Learning Disability has its own register within the Quality Outcomes Framework (QOF), it is possible to produce an analysis of vaccination uptake rates with those on this register. Compared to the general population, those on the Learning Disability QOF register had a higher 1st dose uptake rate (84.9% compared to 81.6%). For comparisons with other conditions that have their own QOF registers, please see main "Co-morbidities" section of the report.

CEV (Clinically Extremely Vulnerable) or Shielded population

This is not a section which appeared in the original 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 locally wished to explore in more detail.

In March 2020, following the recognition that some people would be extremely vulnerable to COVID-19; the CEV (Clinically Extremely Vulnerable) group was rapidly identified, advised of the risk posed to them by the virus, and provided with additional support to enable them to isolate at home. Ultimately, there were several periods lasting over 10 months in total when over 3 million people identified as clinically extremely vulnerable (CEV) in the UK were advised to stay at home and not take part in usual activities, such as shopping for food, exercise or seeing friends and family.

This group was among the first to be offered a vaccine and will also be offered a booster vaccination. However, infection from the virus still poses a risk to their health, and many of these people have not yet fully resumed their usual way of life [22]. The Networked Data Lab partners showed that the clinically extremely vulnerable population experienced worsening mental health during the pandemic. In Liverpool and Wirral, they found that compared with the general population, rates of antidepressant prescriptions were approximately 50% higher for the clinically extremely vulnerable cohort and that the increases in prescribing rates were also steeper [22].

ONS periodically publish information and analysis on the CEV (Clinically Extremely Vulnerable or 'Shielding' population) in England, including their behaviours and mental and physical well-being. In June 2020, this analysis reported:

- Just over half (58%) of CEV people reported completely following shielding guidance by the end of June 2020; this was a statistically significant decrease compared with earlier in the pandemic
- CEV people were more likely to be aged 50+ (78% of the CEV population, vs 37% for England), but approximately one-third of CEV people identified between March and August 2020 were of working age and shielding had a significant impact on this age group and their ability to work
- Likelihood of following shielding guidance declined with age; the older the CEV age group, the higher the percentage of people completely following guidance
- CEV people aged between 50 and 59 years were most likely to report lower life satisfaction, a worsening in their physical health or mental health and being furloughed
- One in five NHS Shielded patients felt that their condition had deteriorated during lockdown; equivalent local figures are not available

In July 2021, an update on this dataset/analysis [21] found that:

- Most clinically extremely vulnerable (CEV) people were continuing to take precautions to protect themselves; 29% reported continuing to shield and 65% were no longer shielding but were following the precautionary guidance
- Of CEV people who had left their home in the last seven days, a statistically significantly higher proportion of CEV people had gone out to socialise (33%, 21 to 26 June) in comparison with previous waves (22%, 17 to 22 May and 21%, 26 April to 1 May)
- CEV people reported feeling comfortable or very comfortable going to hospital or GP settings (70%), compared with 37% who felt comfortable or very comfortable going to hospitality, cultural or educational settings
- A significantly higher proportion of CEV people reported feeling lonely often or always, compared with the general adult population of England (13% and 6% respectively).

Main Messages

- Nationally, A significantly higher proportion of CEV people reported feeling lonely often or always, compared with the general adult population of England (13% and 6% respectively).
- 55% of the CEV population have had at least one test whereas 70% of the total Wirral population have had at least one test
- The rates of positive cases of COVID-19 in Wirral between 01/03/2020 and 30/06/2021 was lower for the CEV (Clinically Extremely Vulnerable) population than that for the non-CEV population
- Despite lower rates of COVID-19 cases, rates of hospitalisation and attendance at the emergency department were higher among the CEV population in the time period covered.
- Analysis for death rates on the CEV list is difficult as many of the patients on the CEV list have multiple severe health conditions including people who are awaiting organ transplants, people who are currently diagnosed with cancer and people who are receiving palliative care, which is an end of life care plan, this will make any meaningful comparison to the non-CEV population skewed and may cause false conclusions to be made.
- For all age groups, those on the shielding list had a greater 1st dose uptake, especially within the 18-29 (80.4% vs 56.1%) and 30-39 age group (83.8% vs 68.9%), compared to general population. Those with more severe conditions that meant they had to shield, had a greater 1st dose uptake rate than those with fewer conditions.
- Despite 1st dose vaccination uptake rates continuing to follow the trend of IMD quintile in the shielding population, there was a greater uptake of 1st doses in the Shielding List population compared to the Total Population in all quintiles, most notably in Quintile 1 – those most deprived quintile (88.1% vs 72.7%)

Clinically Extremely Vulnerable (or Shielded population): Testing

Just over half (55%) of the CEV population have had at least one COVID-19 test as of 30/06/2021, compared to 70% of the total Wirral population who had had at least one test by the same point in time.

Clinically Extremely Vulnerable (or Shielded population): Cases

Local analysis shows that the rates of positive cases of COVID-19 between 01/03/2020 and 30/06/2021 was lower for the CEV (Clinically Extremely Vulnerable) population than that for the non-CEV population. See **Table 22** below.

Table 22: Number and rate of confirmed positive diagnosis of COVID-19 in the CEV and non-CEV population in Wirral between 01/03/2020 to 30/06/2021

On CEV List	Number of Cases	Rate of Cases per 100,000
No	26,391	8,214.4
Yes	1,164	6,177.4
Total	**27,555**	**8,101.5**

Source: HealtheIntent, 2021 (restricted data source)

The number of cases in the CEV population indicates that around one in every 16 patients on the list, contracted COVID-19 at some point between 01/03/2020 to 30/06/2021. In the non-CEV population however, that figure is one in every 12. This would indicate that the CEV population, were, to some extent, more shielded from the impact of COVID-19 than the general population.

Clinically Extremely Vulnerable (or Shielded population): Hospitalisations

As is the case for Care Home residents, the rate per 100k population for inpatient admissions and emergency department attendances was much higher for patients classed as Clinically Extremely Vulnerable (CEV) than for the wider population. There were also slightly more admissions in females (52.5%) compared to the number of persons recorded as being on the CEV list and female. **Table 23** below shows the breakdown between persons classified as CEV list and the wider population.

Table 23: Number and rate of admissions (in those with a confirmed positive diagnosis of COVID-19 in the 21 days prior to, or following their admission/attendance) in the CEV and non-CEV population in Wirral between 01/03/2020 to 30/06/2021

On CEV List	Number		Rate per 100k population	
	Admissions	ED Attends	ED Attends	Admissions
No	5,418	4,250	1,697.1	1,331.2
Yes	2,135	1,493	9,078.5	6,348.6
Total	**7,553**	**5,743**	**2,203.5**	**1,675.4**

Source: HealtheIntent, 2021 (restricted data source)

Clinically Extremely Vulnerable (or Shielded population): Mortality

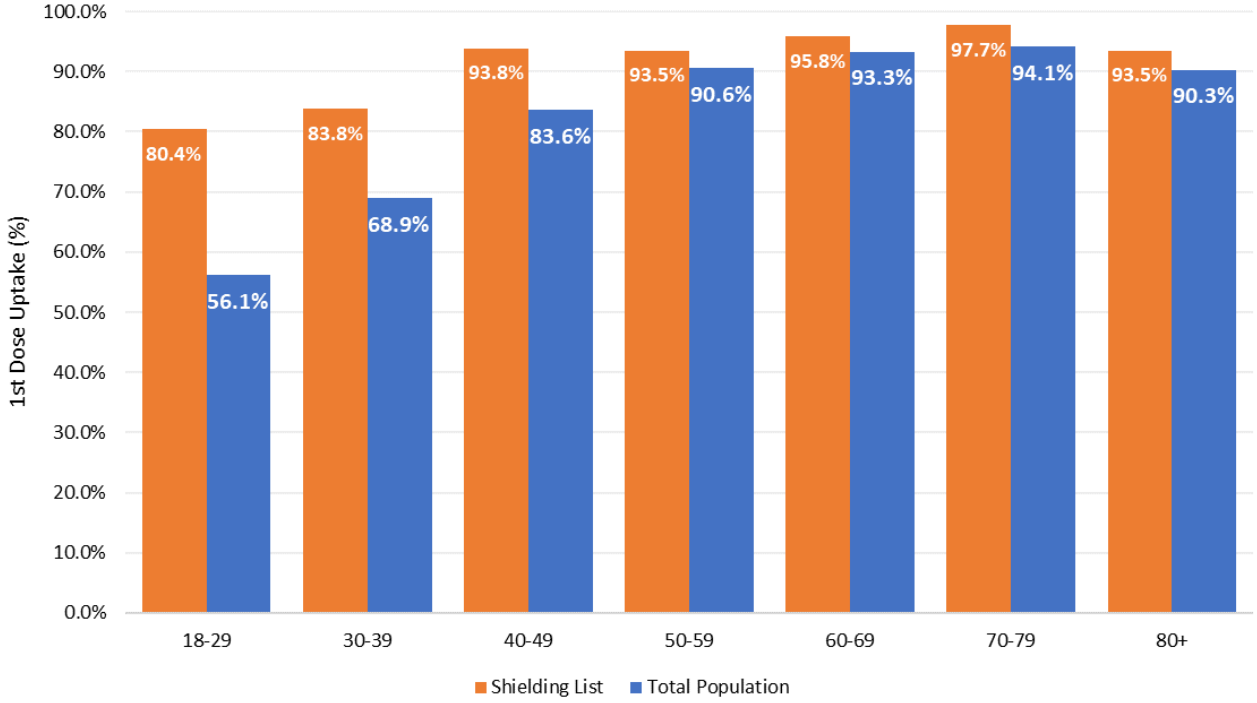
During the first wave of the pandemic in April, the all-cause mortality rate among the clinically extremely vulnerable population was 1 in 2,500 (0.039%) [22]. Due to the way that the clinically extremely vulnerable population was defined, this rate of mortality cannot be robustly compared to the period before the pandemic, but The Health Foundation have noted that the peak age-matched mortality rate in the general population was comparatively lower at 1 in 7,000 (0.014%) [22].

Clinically Extremely Vulnerable (or Shielded population): Vaccinations

As of the 30/06/2021, 91.4% of those on the shielding list had received a 1st dose of a COVID-19 vaccine, compared to 81.6% of the general population. The breakdown of this 1st dose uptake by age, compared to the general population, can be found in **Figure 36** below.

It shows that for all age groups, those on the shielding list had a greater uptake, especially within the 18-29 (80.4% vs 56.1%) and 30-39 age group (83.8% vs 68.9%), compared to general population.

Figure 36: Comparison of Shielding List and General Population 1st Dose Uptake Rate by Age, as of 30/06/2021



Source: CIPHA Vaccination Data, 2021 - restricted data source
Note: See *Glossary* for how the Shielding List has been defined

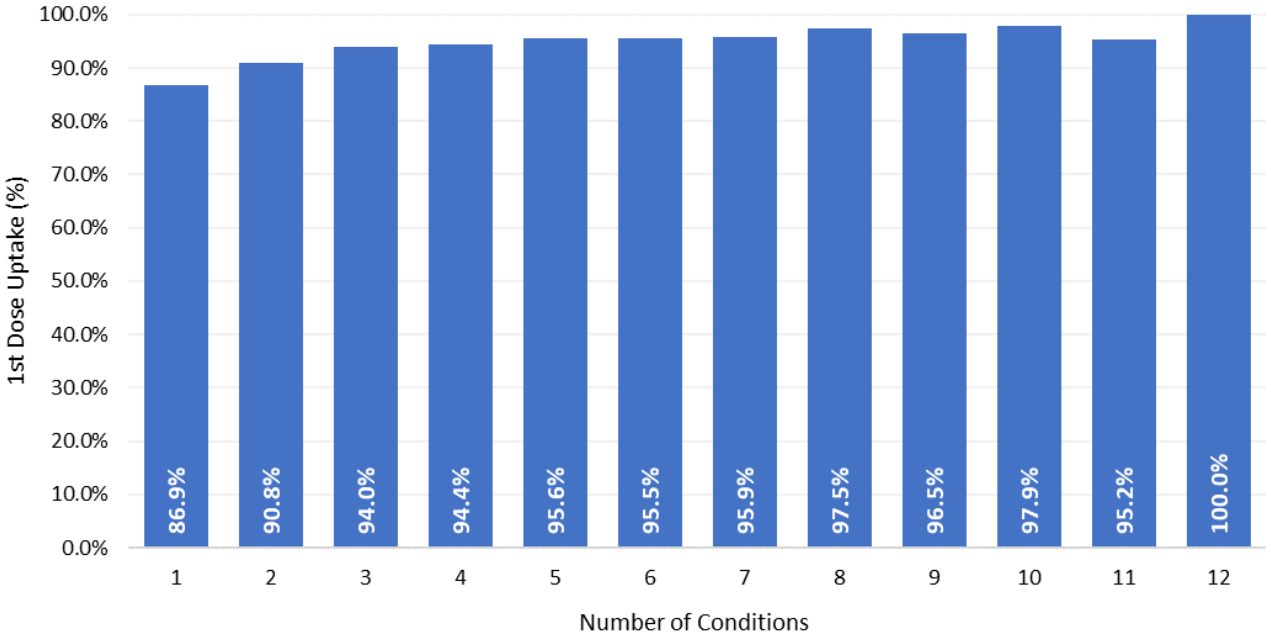
When looking at 1st dose vaccination uptake rate by condition that individuals had to be on the shielding list, all conditions had a much higher vaccination rate than the general population.

The conditions which had the lowest 1st dose uptake rates by 30/06/21 were pregnant women with a congenital heart defect (85.4%), and those with rare diseases (e.g., sickle cell anaemia and SCID) (87.3%).

Furthermore, those individuals with more severe conditions that meant they had to shield, had a greater 1st dose uptake rate. For example, those with just 1 condition identified had a 1st dose uptake rate of 86.9%, whereas those with the maximum of 12 conditions had 100.0% uptake rate.

This is shown in **Figure 37** below. As mentioned earlier, those on the shielding list had a greater 1st dose uptake than the general population, and this is also true regardless of the number of conditions these individuals had.

Figure 37: Uptake of 1st Dose in Wirral by Number of Conditions of People on the Shielding List, as at 30/06/2021



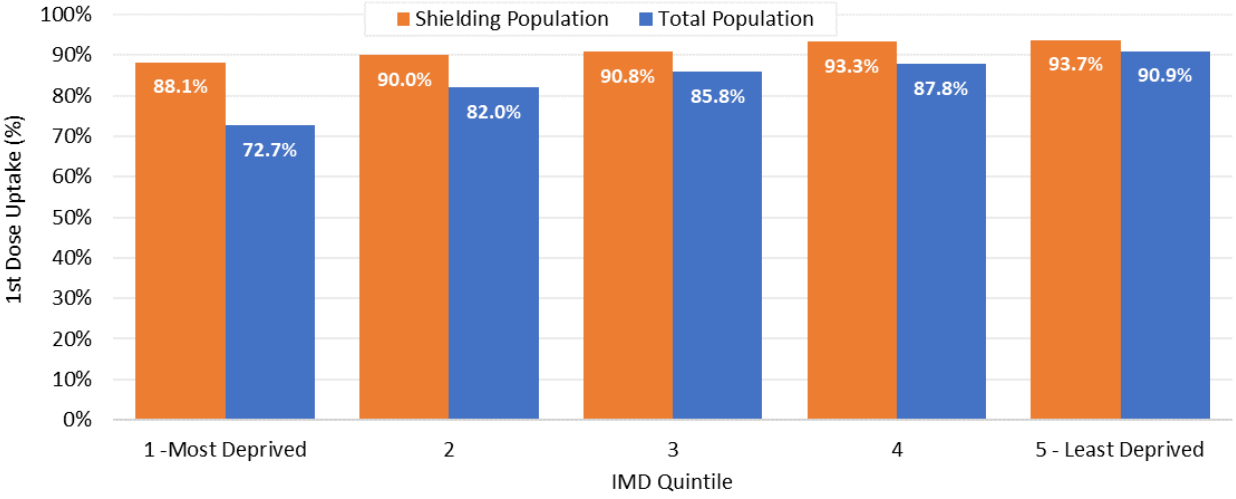
Source: CIPHA Vaccination Data, 2021 - restricted data source
Note: See *Glossary* for how Shielding List was defined

The following chart (**Figure 38**) shows the comparison of 1st dose uptake rates by those on the Shielding List compared to the Total Population, by Indices of Multiple Deprivation (IMD Quintile), as of the 30/06/21.

Figure 38 shows that for each IMD Quintile, there was a greater uptake of 1st doses in the Shielding List population compared to the Total Population, most notably in Quintile 1 – those most deprived quintiles (88.1% vs 72.7%).

When looking at the Shielding List population alone however, there is still a trend of 1st dose uptake rates being associated with deprivation – i.e., the more deprived quintiles have the lowest 1st dose uptake rate.

Figure 38: Comparison of Shielding List and General Population 1st Dose Uptake Rate by IMD Quintile, as of 30/06/2021



Source: CIPHA Vaccination Data, 2021 - restricted data source
Note: See *Glossary* for definition of the CEV/Shielding List

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Methodology and definitions

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 the Public Health England Situational Explorer (non-publicly available information), 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 Public Health England Situational Awareness Tool, both developed and updated by Public Health England. Suspected cases are 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.

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 (Index of): 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

HealtheIntent: Data warehouse that holds multi-organisational health and social care data from adult social care, GP practices, Wirral Community Trust (WCT), Wirral University Teaching Hospital (WUTH) and Cheshire and Wirral Partnership (CWP), data from these sources are merged to form a dataset referred to as the Wirral care record.

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 https://www.ons.gov.uk

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 are then split into five 'quintiles' according to their level of 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. Please note that Wirral has an unequal distribution of people living in each quintile (e.g., 35% of the population of Wirral live in Quintile 1, the 20% of English LSOAs classified as being the most deprived). For more information, please see: https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019

Clinically Extremely Vulnerable or Shielding list: Defined as those on the CEV list as of the 30/06/2021, who were registered resident with Wirral CCG. The government is no longer classifying people as CEV, but as high risk. For a list of those conditions which put people at high risk if they contract COVID-19, see: Who is at high risk from coronavirus (COVID-19) - NHS (www.nhs.uk)

Appendix

Robust and complete data on COVID-19 cases, testing, morbidity, and mortality was not readily available during the first months of the pandemic. In addition, when it did start to become available, there were considerable data quality and completeness issues (some of which still are an issue, e.g., the completeness of data on occupation and ethnicity to name but two).

Date available	Source	Notes
April 2020	ONS	Weekly deaths data (registrations, delay of 10-14 days) by local authority made available (showing raw numbers by place of death e.g., hospital, care home etc…and 2 causes – COVID-19 and All Causes)
May 2020	PHE	R values for the UK and regions published (weekly)
June 2020	PHE	Access to SharePoint site which contained Covid-19 Positive Test data documents (initially, this was a line list of HPZone care home outbreaks)
June 2020	Kings College/ZOE	ZOE app launched which contained number of people reporting COVID-19 symptoms by local authority, plus self-reported positive cases
July 2020	NHS Digital	Access to NHS digital Local Authority Covid-19 Containment Dashboard (containing cases and tests by Pillar)

July 2020	PHE	Access to new Situational Awareness Portal for accessing PHE COVID-19. Data quality was initially poor, but is now much improved
August 2020	PHE	Local Authority RED reports became available on SharePoint
August 2020	PHE	Negative & Void Tests added to the Situational Awareness Portal
September 2020	CIPHA	Access to first CIPHA COVID-19 dashboard
September 2020	PHE	Additional fields added to positive test and case data (address, postcode, employer, occupation, test centre information, care home location ID's harmonised with CQC records)
October 2020	PHE	Enhanced Contact Tracing dashboard made available
November 2020	CIPHA	Flu and COVID vaccination dashboard made available
December 2020	PHE	Situational Awareness report added to Situational Awareness Portal
January 2021	PHE	Schools added as a field in testing data
February 2021	NHS Digital	Part of the NHS digital Local Authority Covid-19 Containment Dashboard (a new vaccination dashboard provided the vaccine uptake of shielded patients)
February 2021	PHE	Wastewater reports added
February 2021	PHE	Postcode Co-incidence reports and Common Exposures reports added to Contact Tracing module
April 2021	PHE	iCERT reports (for contact tracing) added replacing above reports
May 2021	PHE	CNAP and Venue Alerts added
May 2021	PHE	New Variants data added to Situational Awareness Portal
November 2021	CIPHA	PBi access to CIPHA Nimms Flu uptake

The above table is not an exhaustive list but aims to show when some of the more notable additions in terms of data and intelligence were made available to Public Health Information Teams. There is a more complete list on the PHE Situational Explorer portal (in 'Introduction' and 'Data Changes' section, which contains 119 lines of additions dating back to July 2020 specifically to that portal, CIPHA have not made a similar document available, but they now too have a large number of PowerBI reports which have undergone significant changes since their introduction).