

The **Networked Data Lab**: Mental Health of Shielding Patients during COVID-19

Satellite Analysis for North West London

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Background and research question

The North West London partner of the NDL held a PPIE workshop with 50 local community members to inform the first satellite analysis priorities. Of those who filled out a survey on demographic information, 40% of attendees were from ethnic minority backgrounds.

The workshop focused on identifying key health and care research priorities for North West London citizens since the beginning of the COVID-19 pandemic that could be answered by analysing the Discover dataset, with a particular focus on aiming to reduce health inequalities. For example, areas of concern raised at the workshop included mental health, digital exclusion to health care and delays to treatment and diagnosis of other conditions. The research topics from the workshop were reviewed by an analyst to exclude any that the Discover dataset could not be used to answer.

The seven topics of interest from the workshop included in the prioritisation exercise were:

1. **Virtual consultations** - Which people might be missed in the move to “virtual” consultations (i.e. talking to your doctor on video or telephone instead of face-to-face)? For example, older people, people living in data poverty, people who aren't confident with technology and those with specific access needs e.g. language barriers.
2. **Seldom-reached communities** - What health and care services have and haven't been provided to people in need during lockdown (including people who are shielding, people on low incomes, people of colour, older people)? How have services been delivered and what impact has it had?
3. **Local availability of services** - Are there “postcode lotteries” in terms of what health and care services are available in different areas? Vulnerable people and people on low incomes are being asked to travel across London to access services during the pandemic. How does the availability of services line up with patients' needs?
4. **Diagnosis of other conditions** - What has been the impact of COVID-19 on other conditions, such as cancers? During the pandemic, are fewer people coming in with symptoms of cancer like lumps? Have there been fewer cancer diagnoses or emergency care (like people going into A&E)?
5. **Worse COVID-19 outcomes for people of colour** - Looking at links between people who are part of Black, Asian and Minority Ethnic groups and increased hospitalisations and deaths during the pandemic in North West London.
6. **Mental health** - Are any particular groups impacted the most e.g. those who are shielding or at high risk to COVID-19? What has the care and support been like for young people and people with existing mental health conditions? Has there been an increase in people having suicidal thoughts or dying by suicide?
7. **Social and community care** - Has there been less social and community care available to those in need? Have social and community care contacted those who should receive support? Has care been delivered in a different way? What impact has it had and on whom?

An online prioritisation exercise (through Qualtrics) was then sent to the workshop attendees and local community groups, including being posted on Twitter, Instagram and Facebook groups for local COVID-19 Mutual Aid Groups, in order to reach as many North West Londoners as possible.

A total of 112 community members completed the ranking survey. The team has summarised the results which can be seen in Table 1 below (with the rank of 1 being the highest ranking and 7 the lowest ranking, after summarizing the results). The demographics of the survey responders was not collected, to help ensure the survey was not discouraging and was quick to do.

Table 1: Summary of topics of interest by priority

Overall rank	Topic
1	Diagnosis of other conditions
2	Underserved communities (e.g. people on low incomes)
3	Mental health
4	Local availability of services
5	Access to video consultations
6	Social and community care
7	Worse COVID-19 outcomes for people who are part of BAME groups

The team reviewed the top three priorities from the survey for the satellite analysis and selected Mental Health as the topic of interest for the satellite analysis within the shielded patients population. Mental Health can be directly explored within the shielded patients population and will provide further insight into this cohort along with the First Central Analysis. The top two topics, Diagnosis of other conditions and Underserved communities, are also very important topics however it was decided that the scale and reach of those topics extended beyond a satellite analysis, therefore the team will bring these two topics for a wider discussion on further priorities within the Networked Data Lab.

This satellite analysis explores two topics:

1. Mental health needs of shielded patients
2. Suicide risk assessments and coding in Discover data (From the community workshop, the following question was noted: *Has there been an increase in people having suicidal thoughts or dying by suicide?*)

Aims

The satellite analysis explores the mental health needs of all shielded patients in North West London. The satellite analysis is built on the central analysis¹ with a special focus on mental health, and follows the same shielded patients definition period as the central analysis (detailed in Methods). Additionally, we explore the coding for suicide risk before and after the shielding period for the shielded patients' cohort.

Methods

Data and data linkages

In this study we use the longitudinal Discover dataset. This dataset provides linked coded primary care, acute, mental health, community health and social care record for over 2.5 million patients who live and are registered with a GP in NWL. This dataset extracts data from over 400 provider organisations including 360 GP practices, 2 mental health and 2 community trusts and all acute providers attended by NWL patients (in the form of Secondary Uses Service (SUS) data). This dataset contains linked data from primary care, secondary care, community, mental health, social care and high cost drugs.

We utilise the shielded patients list from the central analysis, along with primary care data on diagnosis, through Read Codes and Long-Term Conditions (LTC) table in the dataset and secondary care data on admissions.

Cohort: all patients on the shielded patients list (SPL) by 31st of July 2020

- The shielding cohort was defined as any patient who was on the SPL at any point in the period prior to 31 July 2020. As the shielding list was updated every Monday, the date was adjusted to follow the timelines for the First Central Analysis

Time period: 01/03/2018 to 31/12/2020

- 2 years prior to shielding (01/03/2018-29/02/2020), during shielding (01/03/2020-31/07/2020), and after shielding up to the reintroduction of shielding in 2021 (01/08/2020-31/12/2020)

Additional points of interest following a clinician's review:

- Demographics
 - Employment (coding to be clarified)
 - Deprivation (confounding)
 - Ethnicity
 - Body Mass Index (BMI)
 - Age
 - Gender
 - Electronic Frailty Index (eFI)

- Geographical location
- Mental health diagnosis
 - Anxiety
 - Depression
 - Serious Mental Health Illness

The team identified the following Read Codes of interest to explore suicide risk:

Read Code	Read Code Description
1BD..	Harmful thoughts
1BD1.	Suicidal ideation
1BD3.	Suicidal plans
1BD4.	Suicide risk
1BD5.	High suicide risk
1BD6.	Moderate suicide risk
1BD7.	Low suicide risk
1BD8.	At risk: deliberate self harm
1BS4.	No suicidal thoughts
146A.	H/O: attempted suicide

Local audience

- North West London Community
- Data Access Committee for North West London

Dissemination plan

- The Health Foundation will summarise key findings from all satellite analyses in a publication and the RMarkdown files outlining our findings will also be published online.
- We will summarise key findings and share them with the NWL community through community engagement workshops, reports to key stakeholders, and the Data Access Committee meetings.

Results

The team aimed to explore two topics:

1. Mental health needs of shielded patients
2. Suicide risk assessments and coding in Discover

This report will provide insight into the shielded cohort of interest, their demographics, mental health diagnosis during and after shielding, as well as feasibility analysis of suicide risk assessments and employment status amongst the shielded population.

Satellite analysis – Shielded patients cohort

The total number of patients on the shielded list in NWL was 99,569 patients as of 3rd March 2021. 51% of the patients are female, and 49% are male (50,947 patients and 48,622 patients, respectively). The split of patients by age groups can be seen in Figure 1. All patients on the list had age and gender recorded.

The total number of patients is lower than had been reported in Output 1 (n = 112,134), due to two main factors: changes in source data and data selection. The cohort used in the Satellite analysis is a subset of the cohort used in Output 1, excluding those subjects who did not have available data due to refreshes of source data resulting in loss of data and excluding subjects who had incomplete data and would therefore not be suitable for the current analysis.

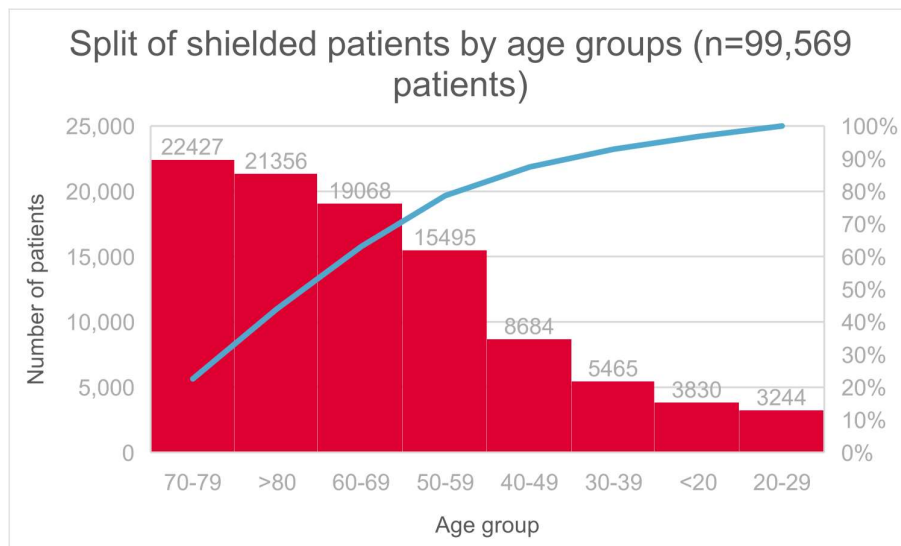


Figure 1: Distribution of shielded patients in North West London by age groups

A total of 6,684 patients (6.7%) did not have an IMD Rank recorded. The split between IMD Deciles for the remaining patients can be seen in Figure 2.

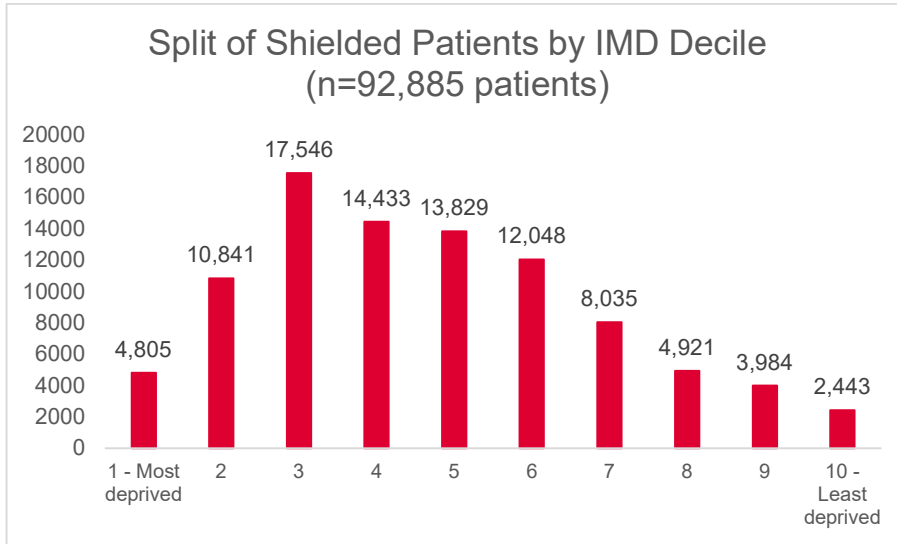


Figure 2: Distribution of shielded patients in North West London by IMD Decile

When divided by electronic frailty index categories, 34% of the cohort were classified as ‘Fit’ (33,632 patients, Figure 3). A total of 4,004 patients (4,004/99,569 patients, 4%) did not have the eFI category recorded.

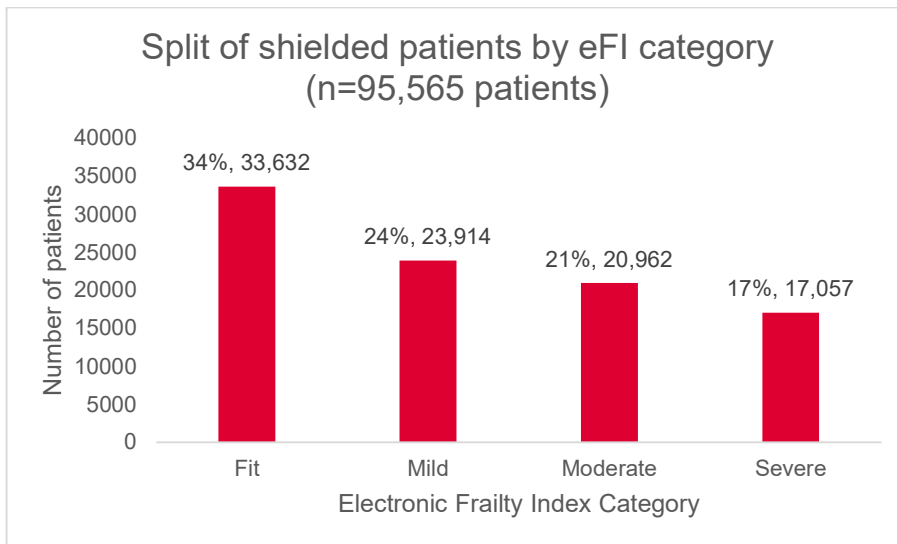


Figure 3: Shielded patients in North West London split by electronic frailty index category.

13% of the shielded cohort (13,005/99,569 patients) did not have ethnicity recorded. Of the remaining patients, the two largest groups were White (47%, 41,090 patients) and Asian or Asian British (32%, 27,589 patients) (Figure 4).

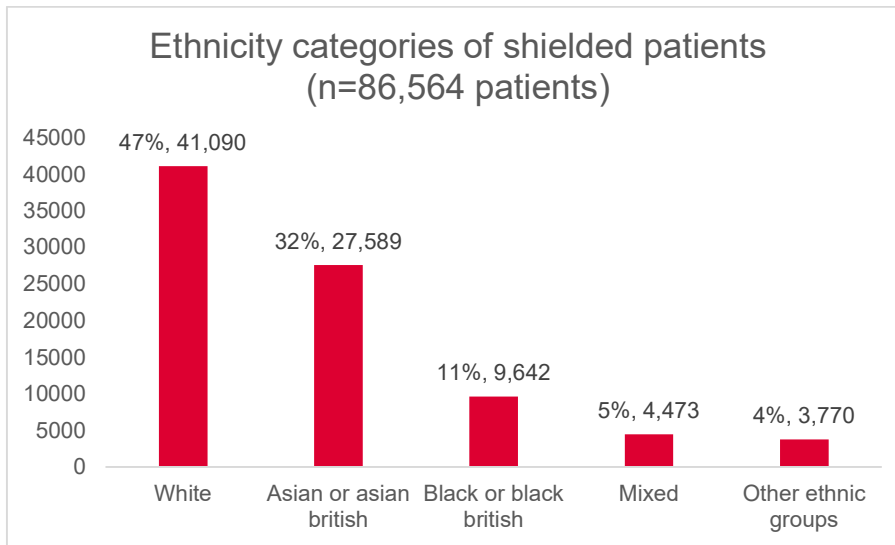


Figure 4 - Shielding patients in NWL split by ethnicity categories

Feasibility analysis – employment status and suicide risk assessments

Employment status

Employment status was identified by a clinical expert as an important variable to understand the context of shielded patients' mental health. We performed a feasibility analysis aiming to explore how well the employment status is coded among the shielded cohort. The codes covered both employed and unemployed status, two years before shielding, during shielding and after shielding up to 31st of December 2020.

Over the whole time period, a total of 5,172 patients had employment status recorded (5,172/99,569 patients, 5.2%). Table 2 provides more detail on the number of patients by time periods of interest.

Table 2: Number of patients with employment status recorded before, during and after shielding

	Whole Time Period	Before Shielding	During Shielding	After Shielding
Time period	01/03/2018-31/12/2020	01/03/2018-29/02/2020	01/03/2020-31/07/2020	01/08/2020-31/12/2020
Number of patients	5,172	4,391	914	1,101
Total cohort size	99,569	99,569	99,569	99,569
Percentage of patients with employment status recorded	5.2%	5.0%	1.0%	1.1%

With only 5.2% of the shielded cohort having employment status recorded, we have excluded this from all further analysis.

Suicide risk assessments

The suicide risk assessments were explored in primary and secondary care. In primary care records, Read Codes were used to identify suicide risk assessments (Table 4), and in secondary care, ICD-10 codes X60-X84 were used to identify intentional self-harm.

Table 3: Read codes related to suicide risk assessment

Read Code	Read Code Description	Category
1BD..	Harmful thoughts	Suicide risk
1BD1.	Suicidal ideation	Suicide risk
1BD3.	Suicidal plans	Suicide risk
1BD4.	Suicide risk	Suicide risk
1BD5.	High suicide risk	Suicide risk
1BD6.	Moderate suicide risk	Suicide risk
1BD7.	Low suicide risk	Suicide risk
1BD8.	At risk: deliberate self-harm	Suicide risk
146A.	H/O: attempted suicide	Suicide risk
1BS4.	No suicidal thoughts	No suicidal thoughts

In primary care, we explored the suicide risk before, during and after shielding.

Table 4: Suicide risk recordings for the shielded patients in North West London

Before (01/03/2018-29/02/2020)	Total number of patients	Average number of patients per month
No recording of suicide risk codes	98,135	
Recording of any codes defined as suicide risk codes	1,434	59.75
Total	99,569	
During (01/03/2020-31/07/2020)		
No recording of suicide risk codes	99,051	
Recording of any codes defined as suicide risk codes	518	103.6
Total	99,569	
After (01/08/2020-31/12/2020)		
No recording of suicide risk codes	98,899	
Recording of any codes defined as suicide risk codes	670	134.0
Total	99,569	

Key findings and interpretation: The monthly frequency of recording of suicide risk codes increased during the shielding period compared to the monthly rate before the shielding period (average of 60 monthly recordings before and 104 during shielding), and more than doubled following the shielding period (134 after shielding). This analysis should be interpreted with caution. It was performed as a feasibility piece of work to understand clinical

coding of suicide risk. Further research is needed to understand the impact of shielding on suicide risk. Data are shown in Table 4.

The recording of suicide risk codes were also compared at a patient level before, during and after shielding to understand if shielding patients who previously had no prior record of suicide risk codes during the baseline period were recorded as being evaluated for suicide risk following the introduction of shielding.

Suicide risk assessment codes were also analysed at the patient level in the shielded cohort to determine if there had been new incidences of any suicide risk code during or after the shielding period compared to the baseline time period before shielding.

Key finding and interpretation: 755 patients who were shielding (0.76%) had a new recording of a suicide risk code following the introduction of shielding, compared to 323 patients who had evidence of risk before shielding started (0.32%). The majority of shielding patients (98.92%) had no evidence of suicide risk assessment before, during or after shielding.

The coding for suicide risk assessments in the shielded population is sparse. Although there does not appear to be a large increase in suicide risk assessments after the introduction of shielding, this analysis would benefit from comparison to a matched cohort group to elucidate the exact difference in number of suicide risk assessments in the population.

Read codes referring to “No suicidal thoughts” were also counted in the shielded population before, during and after shielding to estimate the number of patients who had undergone a suicide risk assessment where the outcome was “No suicidal thoughts”.

Table 5: Recording of 'No suicidal thoughts' for the shielded patients in North West London

Before (01/03/2018-29/02/2020)	Number of patients	Average number of patients per month
Had at least one incidence of code in time period	1,003	41.79
Had no record of code in time period	98,566	
Total	99,569	
During (01/03/2020-31/07/2020)	Number of patients	
Had at least one incidence of code in time period	250	50.0
Had no record of code in time period	99,319	
Total	99,569	
After (01/08/2020-31/12/2020)	Number of patients	
Had at least one incidence of code in time period	281	56.2
Had no record of code in time period	99,288	
Total	99,569	

Key findings and interpretation: The monthly frequency of this recording, and therefore incidences of suicide assessment, increased during the shielding period compared to the monthly rate before the shielding period, and further increased following the shielding period. Data are shown in Table 5.

Similar to suicide risk assessments, the coding for 'No suicidal thoughts' in the shielded population is sparse. Although there does not appear to be a large increase in suicide risk assessments with a positive outcome after the introduction of shielding, this analysis would benefit from comparison to a matched cohort group to elucidate the exact difference in number of suicide risk assessments in the population. Considering the similarity of findings of increase in suicide risk assessments during and after the shielding period, whether with a positive or negative outcome, we can hypothesise that suicide risk assessments as a whole may have increased during and after shielding in the shielding population, although the number of patients who have a new incidence of suicide risk assessment is still small (0.76%).

By linking secondary care records for our cohort, we explored all admissions where the 'intentional self-harm' codes appeared in any diagnostic position, before, during and after shielding. Full results can be seen in Table 8.

Table 6: Admissions linked to intentional self-harm for patients on the SLP in North West London

Before, During or After	Number of patients	Number of patients standardised by month
Admission with intentional self-harm ICD-10 code in any diagnostic position	247	NA
No admissions	99322	
Total	99569	
Before (01/03/2018-29/02/2020)		
Admission with intentional self-harm ICD-10 code in any diagnostic position	194	8.08
No admissions	99375	
Total	99569	
During (01/03/2020-31/07/2020)		
Admission with intentional self harm ICD-10 code in any diagnostic position	39	7.8
No admissions	99530	
Total	99569	
After (01/08/2020-31/12/2020)		
Admission with intentional self harm ICD-10 code in any diagnostic position	34	6.8
No admissions	99535	
Total	99569	

Key findings and interpretation: The number of shielded patients with a recording of intentional self-harm during any of the shielding time periods is very low (0.24%). As it has not been compared to a control cohort we cannot report on its relative frequency in the population. Both the total number of patients and the monthly frequency of patients with recording of admission for intentional self-harm decreased during and after the shielding period. Although this data provides insight into intentional self-harm admissions, it only covers patients admitted to hospital and therefore does not cover every case of intentional self-harm. Full analysis of linked ONS data would provide more insight into intentional self-harm before, during and after shielding.

Admissions for intentional self-harm appear to have decreased during and after the shielding periods, however the sample size of patients being admitted to hospital with this code is very small ($n = 247$) and we have not compared these findings with a matched control cohort, therefore this finding should be considered with caution.

Mental health diagnosis

We utilized the Long-Term Conditions (LTC) table in Discover dataset, which identifies a total of 41 LTCs. Among these, we focused on depression, anxiety and mental health (serious mental illness). The results focus on total population with either condition and the relevant odds ratios. Where the risk factor has more than two levels, one level is selected as a standard reference group (the lowest exposure risk) to which other groups are compared. A Chi-squared test for association was conducted. P values of <0.05 were considered statistically significant and were corrected for multiple testing using the false discovery rate method.

It is important to note that Long-Term Conditions are attributed to a patient in Discover following the first incidence of a specified code related to that condition while the patient is in the system, and do not take into account previous history of these conditions from healthcare settings outside of North West London. For the calculation of Odds Ratios, shielding patients <30 years of age were grouped together as the recording of Long-Term Conditions increases with age.

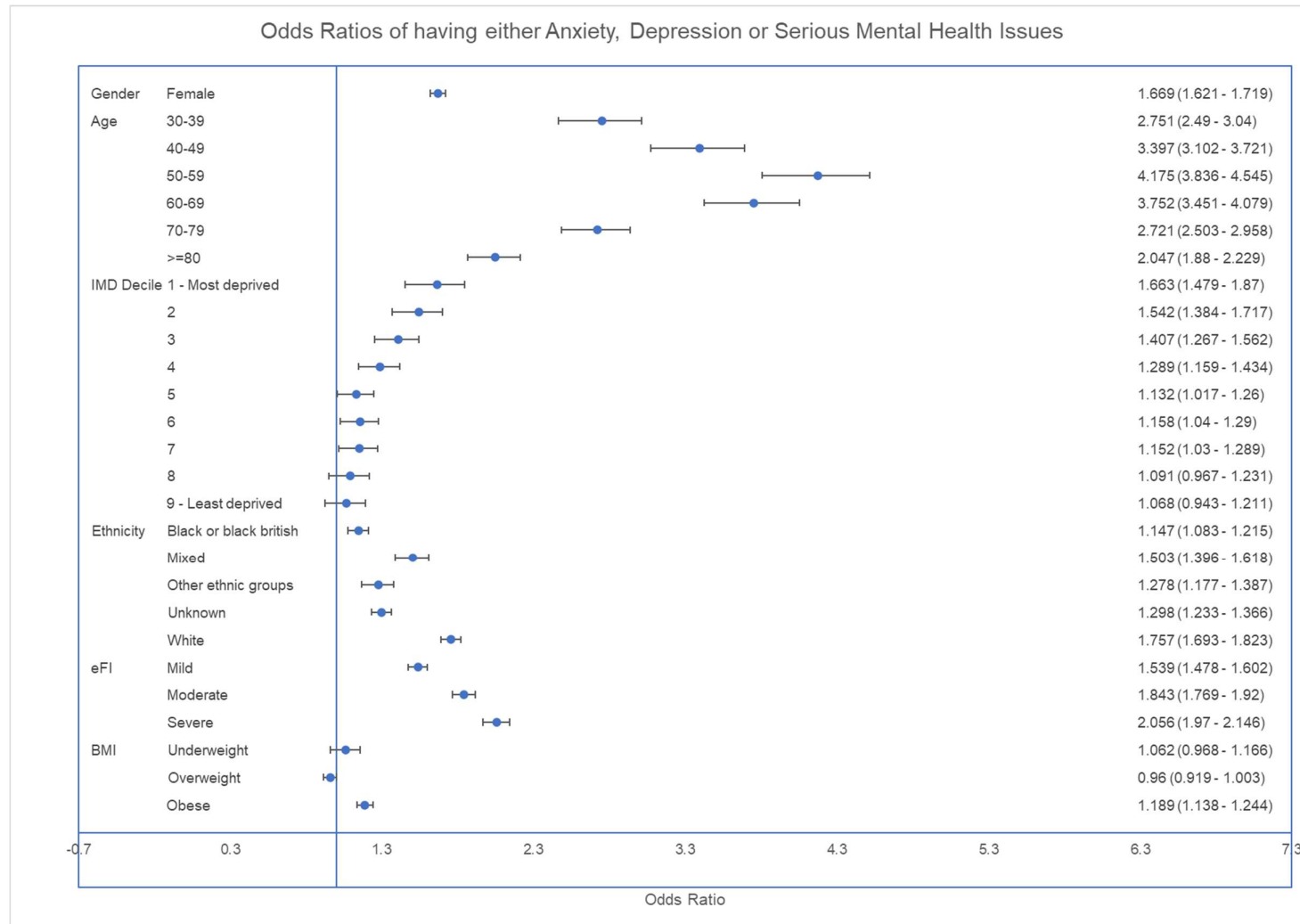


Figure 5 - Forest plot describing odds ratios of mental health related Long-Term Conditions of Anxiety, Depression or Serious Mental Health issues in the shielded population by demographic category

Table 7 - Table describing odds ratios of mental health related Long-Term Conditions of Anxiety, Depression or Serious Mental Health issues

LTC of Anxiety or Depression or Serious Mental Health Issues					
Demographic Category	Reference Group	Variable	OR	CI	p-value
Gender	Male	Female	1.67	(1.621 - 1.719)	<0.05
Age	<30	30-39	2.75	(2.49 - 3.04)	<0.05
		40-49	3.4	(3.102 - 3.721)	<0.05
		50-59	4.18	(3.836 - 4.545)	<0.05
		60-69	3.75	(3.451 - 4.079)	<0.05
		70-79	2.72	(2.503 - 2.958)	<0.05
		>=80	2.05	(1.88 - 2.229)	<0.05
IMD Decile	10	1 - Most deprived	1.66	(1.479 - 1.87)	<0.05
		2	1.54	(1.384 - 1.717)	<0.05
		3	1.41	(1.267 - 1.562)	<0.05
		4	1.29	(1.159 - 1.434)	<0.05
		5	1.13	(1.017 - 1.26)	<0.05
		6	1.16	(1.04 - 1.29)	<0.05
		7	1.15	(1.03 - 1.289)	<0.05
		8	1.09	(0.967 - 1.231)	0.155
		9 - Least deprived	1.07	(0.943 - 1.211)	0.299
Ethnicity	Asian or Asian British	Black or Black British	1.15	(1.083 - 1.215)	<0.05
		Mixed	1.5	(1.396 - 1.618)	<0.05
		Other ethnic groups	1.28	(1.177 - 1.387)	<0.05
		Unknown	1.3	(1.233 - 1.366)	<0.05
		White	1.76	(1.693 - 1.823)	<0.05
eFI	Fit	Mild	1.54	(1.478 - 1.602)	<0.05
		Moderate	1.84	(1.769 - 1.92)	<0.05
		Severe	2.06	(1.97 - 2.146)	<0.05
BMI	Healthy	Underweight	1.06	(0.968 - 1.166)	0.202
		Overweight	0.96	(0.919 - 1.003)	0.065
		Obese	1.19	(1.138 - 1.244)	<0.05

Key Findings: Age appears to play a large role in the shielding population as to whether patients have a LTC of anxiety, depression or mental health (serious mental illness), with the 50-59 year age category being most affected (OR = 4.18). Deprivation (IMD Decile) also has a step-wise impact on the mental health of the shielding population, with those in the most deprived decile having 1.66 times greater odds of having a LTC related to mental health recorded than the odds of those in least deprived areas. Frailty also has a significant impact on mental health, with those in the severely frail category having 2.06 times greater odds of having a LTC related to mental health recorded than those in the fit category. BMI results are mixed, and it would be valuable to explore impact of BMI as a binary variable (Healthy/Not healthy), as opposed to four BMI categories. Data are included in Figure 5 and Table 7.

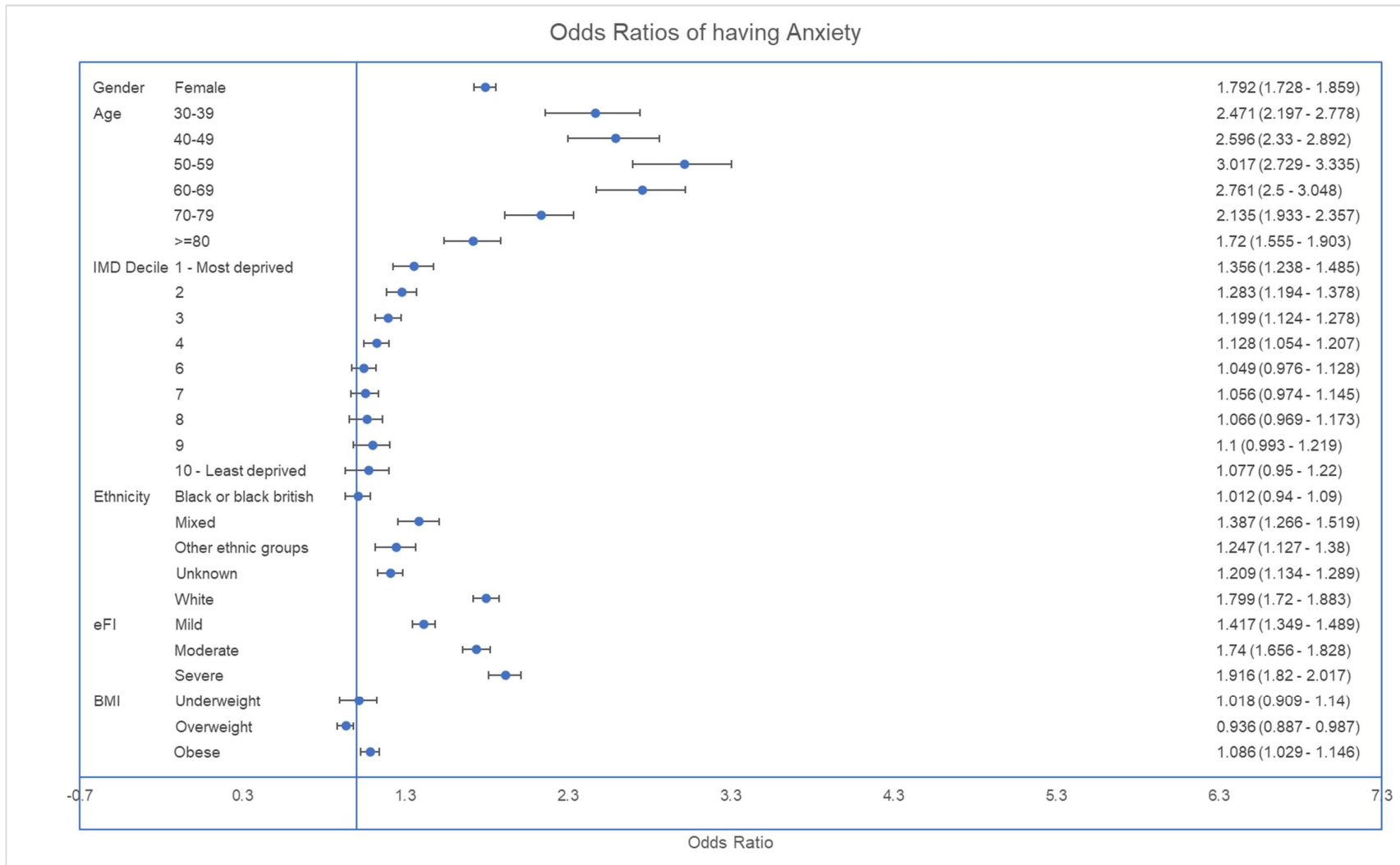


Figure 6 - Forest plot describing odds ratios of Anxiety by demographic category in the shielded population

Table 8 - Table describing odds ratios of anxiety in the shielded cohort by demographic category

		LTC of Anxiety			
Demographic Category	Reference Group	Variable	OR	CI	p-value
Gender	Male	Female	1.79	(1.728 - 1.859)	<0.05
Age	<30	30-39	2.47	(2.197 - 2.778)	<0.05
		40-49	2.6	(2.33 - 2.892)	<0.05
		50-59	3.02	(2.729 - 3.335)	<0.05
		60-69	2.76	(2.5 - 3.048)	<0.05
		70-79	2.14	(1.933 - 2.357)	<0.05
		>=80	1.72	1.555 - 1.903	<0.05
IMD Decile	5	1 - Most deprived	1.36	(1.238 - 1.485)	<0.05
		2	1.28	(1.194 - 1.378)	<0.05
		3	1.2	(1.124 - 1.278)	<0.05
		4	1.13	(1.054 - 1.207)	<0.05
		6	1.05	(0.976 - 1.128)	0.191
		7	1.06	(0.974 - 1.145)	0.191
		8	1.07	(0.969 - 1.173)	0.192
		9	1.1	(0.993 - 1.219)	0.070
Ethnicity	Asian or Asian British	10 - Least deprived	1.08	(0.95 - 1.22)	0.242
		Black or Black British	1.01	(0.94 - 1.09)	0.743
		Mixed	1.39	(1.266 - 1.519)	<0.05
		Other ethnic groups	1.25	(1.127 - 1.38)	<0.05
		Unknown	1.21	(1.134 - 1.289)	<0.05
eFI	Fit	White	1.8	(1.72 - 1.883)	<0.05
		Mild	1.42	(1.349 - 1.489)	<0.05
		Moderate	1.74	1.656 - 1.828)	<0.05
BMI	Healthy	Severe	1.92	(1.82 - 2.017)	<0.05
		Underweight	1.02	(0.909 - 1.14)	0.763
		Overweight	0.94	(0.887 - 0.987)	<0.05
		Obese	1.09	(1.029 - 1.146)	<0.05

Key findings: Similarly to the overall mental health findings, the odds of shielding patients who were 50-59 years of age to have a recording of anxiety were 3 times greater than the odds of the reference category (<30 years of age). In contrast, an IMD Decile of 5 was used in this case as the reference category and a smaller step-wise change in odds from most- to least deprived was calculated for patients with anxiety. The odds of white patients having a record of anxiety was 1.8 greater than the odds of Asian or Asian British patients. Frailty was also an important factor in the recording of anxiety, with the odds of severely frail patients suffering from anxiety being 1.9 times greater than that of fit patients. BMI results are mixed, and it would be valuable to explore impact of BMI as a binary variable (Healthy/Not healthy), as opposed to four BMI categories. Data are included in Figure 6 and Table 8.

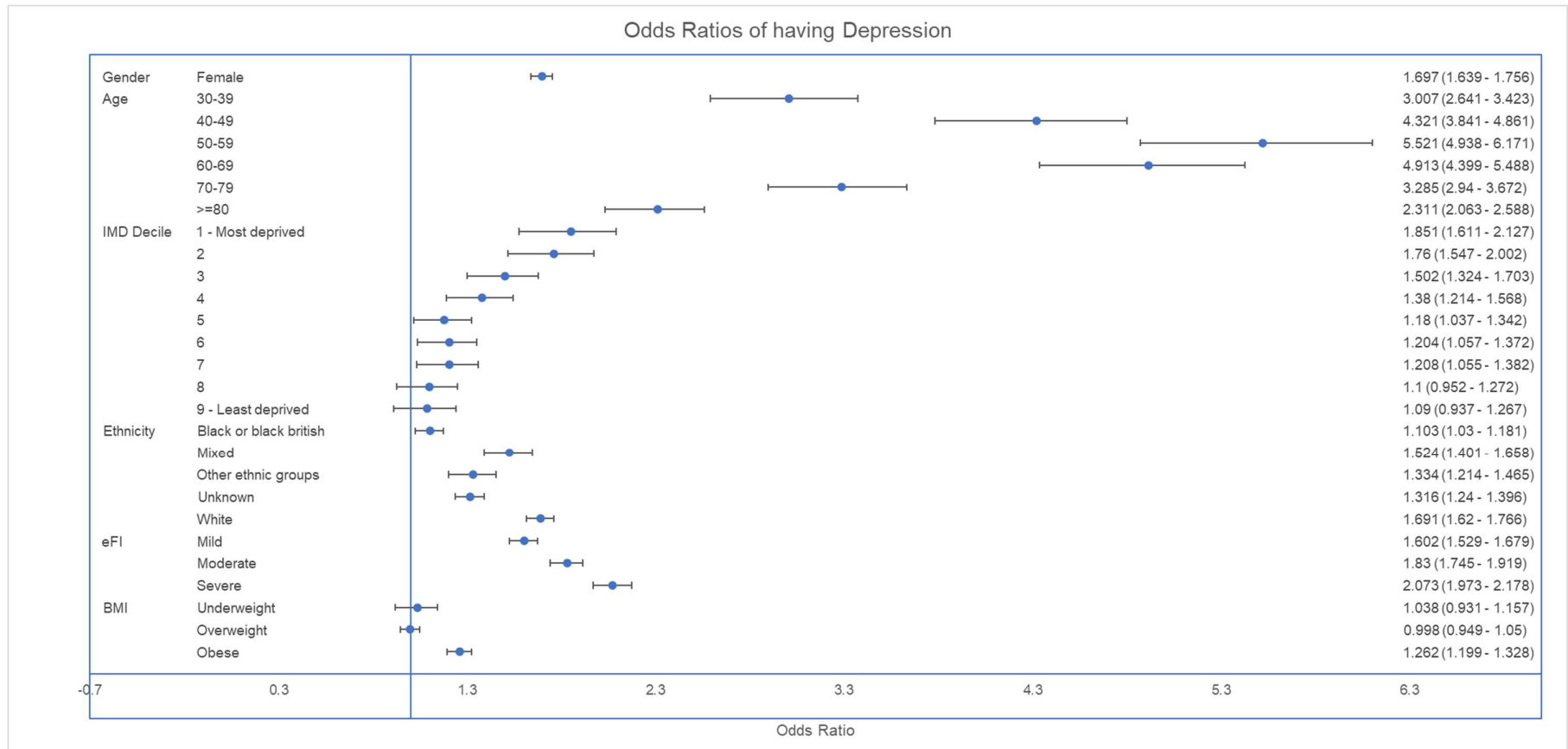


Figure 7 - Forest plot describing odds ratios of depression in the shielded population by demographic category

Table 9 - Table describing odds ratios of depression in the shielded cohort by demographic category

LTC of Depression					
Demographic Category	Reference Group	Variable	OR	CI	p-value
Gender	Male	Female	1.7	(1.639 - 1.756)	<0.05
Age	<30	30-39	3.01	(2.641 - 3.423)	<0.05
		40-49	4.32	(3.841 - 4.861)	<0.05
		50-59	5.52	(4.938 - 6.171)	<0.05
		60-69	4.91	(4.399 - 5.488)	<0.05
		70-79	3.29	(2.94 - 3.672)	<0.05
		>=80	2.31	(2.063 - 2.588)	<0.05
IMD Decile	10	1 - Most deprived	1.85	(1.611 - 2.127)	<0.05
		2	1.76	1.547 - 2.002)	<0.05
		3	1.5	(1.324 - 1.703)	<0.05
		4	1.38	1.214 - 1.568)	<0.05
		5	1.18	1.037 - 1.342)	<0.05
		6	1.2	(1.057 - 1.372)	<0.05
		7	1.21	(1.055 - 1.382)	<0.05
		8	1.1	(0.952 - 1.272)	0.196
Ethnicity	Asian or Asian British	Black or Black British	1.1	(1.03 - 1.181)	<0.05
		Mixed	1.52	(1.401 - 1.658)	<0.05
		Other ethnic groups	1.33	(1.214 - 1.465)	<0.05
		Unknown	1.32	(1.24 - 1.396)	<0.05
		White	1.69	(1.62 - 1.766)	<0.05
eFI	Fit	Mild	1.6	(1.529 - 1.679)	<0.05
		Moderate	1.83	1.745 - 1.919)	<0.05
		Severe	2.07	(1.973 - 2.178)	<0.05
BMI	Healthy	Underweight	1.04	(0.931 - 1.157)	0.505
		Overweight	1	(0.949 - 1.05)	0.936
		Obese	1.26	(1.199 - 1.328)	<0.05

Key findings: Similarly to the overall mental health findings, the odds of shielding patients who were 50-59 years of age to have a recording of depression were 5.5 times greater than the odds of the reference category (<30 years of age). Additionally, a step-wise decrease in odds from most- to least deprived was calculated for patients with depression, where in the most deprived areas (IMD Decile = 1) the odds of suffering from depression was 1.8 times that in the least deprived areas (IMD Decile = 10). The odds of white patients having a record of depression was 1.69 greater than the odds of Asian or Asian British patients. Frailty was also an important factor in the recording of depression, with the odds of severely frail patients suffering from depression being two times greater than that of fit patients. Surprisingly, the odds of a diagnosis of depression was not altered by differences in BMI, with overweight patients having equal odds as patients with a healthy BMI, contradicting previous reports (2). BMI results are mixed, and it would be valuable to explore impact of BMI as a binary variable (Healthy/Not healthy), as opposed to four BMI categories. Data are included in Figure 7 and Table 9.

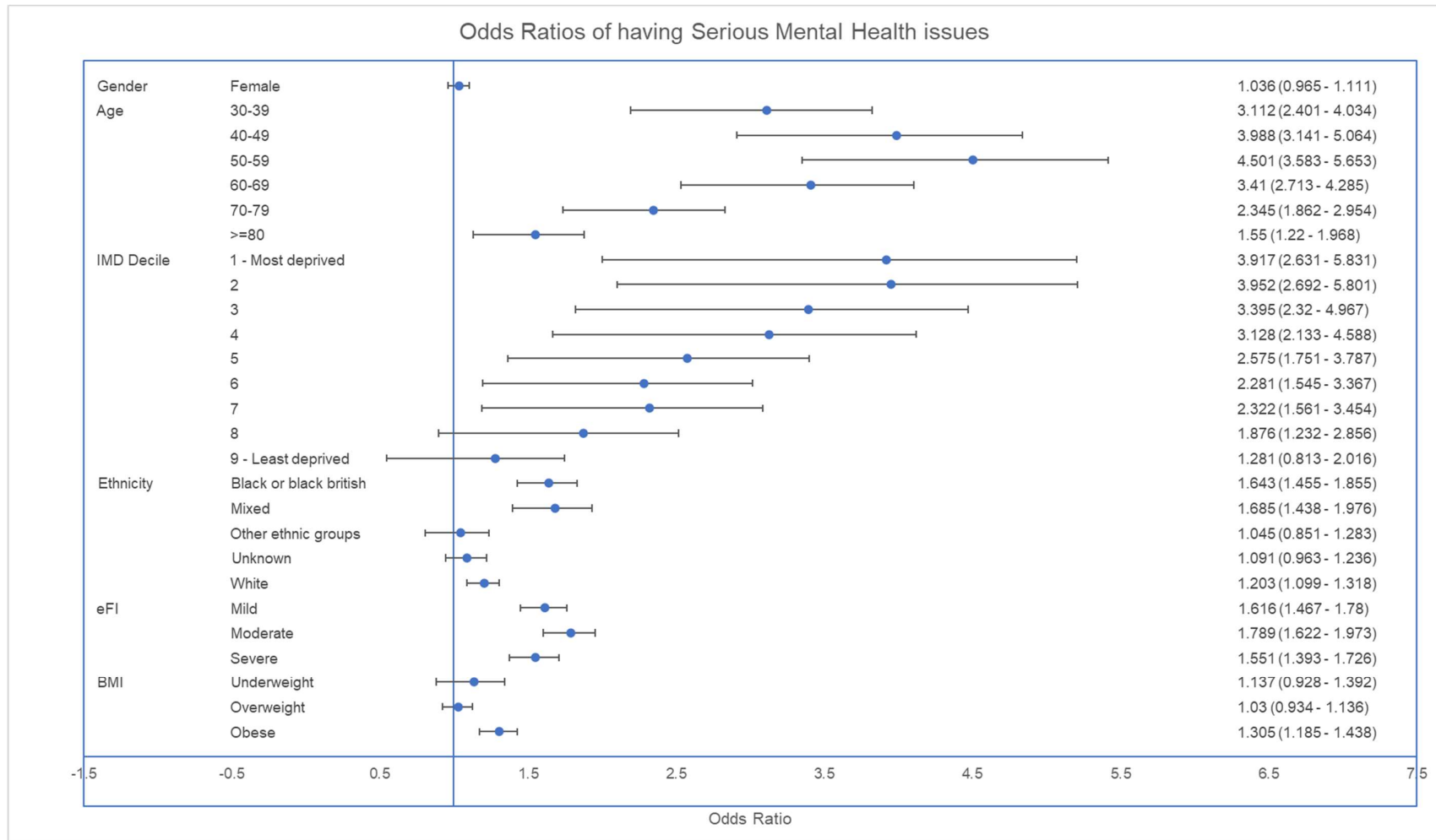


Figure 8 - Forest plot describing odds ratios of serious mental health issues in the shielded population by demographic category

Table 10 - Table describing odds ratios of serious mental health issues in the shielded cohort by demographic category

LTC of Serious Mental Health Issues					
Demographic Category	Reference Group	Variable	OR	CI	p-value
Gender	Male	Female	1.04	(0.965 - 1.111)	0.331
Age	<30	30-39	3.11	(2.401 - 4.034)	<0.05
		40-49	3.99	(3.141 - 5.064)	<0.05
		50-59	4.50	(3.583 - 5.653)	<0.05
		60-69	3.41	(2.713 - 4.285)	<0.05
		70-79	2.35	(1.862 - 2.954)	<0.05
		>=80	1.55	(1.22 - 1.968)	<0.05
IMD Decile	10	1 - Most deprived	3.92	(2.631 - 5.831)	<0.05
		2	3.95	(2.692 - 5.801)	<0.05
		3	3.40	(2.32 - 4.967)	<0.05
		4	3.13	(2.133 - 4.588)	<0.05
		5	2.58	(1.751 - 3.787)	<0.05
		6	2.28	(1.545 - 3.367)	<0.05
		7	2.32	(1.561 - 3.454)	<0.05
		8	1.88	(1.232 - 2.856)	<0.05
Ethnicity	Asian or Asian British	9 - Least deprived	1.28	(0.813 - 2.016)	0.284
		Black or Black British	1.64	(1.455 - 1.855)	<0.05
		Mixed	1.69	(1.438 - 1.976)	<0.05
		Other ethnic groups	1.05	(0.851 - 1.283)	0.676
		Unknown	1.09	(0.963 - 1.236)	0.173
eFI	Fit	White	1.20	(1.099 - 1.318)	<0.05
		Mild	1.62	(1.467 - 1.78)	<0.05
		Moderate	1.79	(1.622 - 1.973)	<0.05
BMI	Healthy	Severe	1.55	(1.393 - 1.726)	<0.05
		Underweight	1.14	(0.928 - 1.392)	0.214
		Overweight	1.03	(0.934 - 1.136)	0.551
		Obese	1.31	(1.185 - 1.438)	<0.05

Key Findings:

Mirroring our findings on all mental health LTCs, the odds of shielding patients who were 50-59 years old having serious mental illness were significantly greater, 4.5 times that of patients <30 years old. In terms of deprivation, there was a much steeper increase in the odds of developing serious mental illness in shielding patients from the most deprived group (OR = 3.9), compared to the least deprived group. In contrast to findings from anxiety and depression, the most affected ethnicity group for serious mental illness were the Black or Black British and mixed-race groups, whose odds were 1.64 times and 1.69 times greater than of Asian or Asian British patients. Data are included in Figure 8 and Table 10.

It is important to note that the sample size of patients with a record of serious mental health issues was small (n = 3,202), therefore findings should be considered with caution as the resulting confidence intervals are wide.

Table 11 - Records of mental health Long-Term Conditions (LTC) before and after the commencement of shielding

	Long-Term Condition Category		
Record of LTC Before Shielding (All records up to 29/02/2020)	Anxiety	Depression	Serious Mental Illness
Number of patients without record	83920	80969	95259
Number of patients with record	14683	17634	3344
Percentage of total	14.89%	17.88%	3.39%
New Records During and After (All records after 01/03/2020)	Anxiety	Depression	Serious Mental Illness
Number of patients with record	248	134	21
Number of patients without record prior to shielding	83920	80969	95259
Percentage of patients with no prior history of LTC	0.30%	0.17%	0.02%
Total	98603	98603	98603

Key Findings: The numbers of shielding patients with a LTC of anxiety and depression prior to the introduction of shielding were relatively high, at 17.5% and 21.78% respectively. Records of long-term conditions related to mental health (serious mental illness) are low at 3.5%. Following the introduction of shielding, there was a <1% increase in the number of shielding patients having anxiety, depression or mental health (serious mental illness) diagnosis.

Hypothesised interpretation: Long-term conditions related to mental health appear to be relatively high in the shielding population, although this cannot be confirmed without comparison to a matched control cohort. The very small percentage increases in patients with a new recording of mental health related long-term conditions is reassuring, suggesting the introduction of shielding had limited impact on patients with no previous history of mental health issues.

Conclusions

The NWL Satellite analysis provides further insight into patients on the shielding patients list. The focus on the analysis was on mental health diagnosis and intentional self-harm, along with a feasibility analysis covering employment status and suicide risk assessment clinical coding. Further research is necessary to quantify impact of shielding on patients' mental health and intentional self-harm frequency. The linked ONS data, which provides cause of death, would be a valuable asset in further research.

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