Office for National Statistics

Statistical bulletin

Coronavirus and vaccination rates in people aged 70 years and over by socio-demographic characteristic, England: 8 December 2020 to 11 March 2021

First dose COVID-19 vaccination rates among people aged 70 years and older who live in England, both in private households and communal establishments. Includes estimates for the population as a whole by age and sex, and for ethnic minorities, religious groups, those identified as disabled and by area deprivation.

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To be announced

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1 . Main points

- Between 8 December 2020 and 11 March 2021, 90.2% of all residents in England aged 70 years and over had received at least one dose of a coronavirus (COVID-19) vaccine.
- The percentage vaccinated was lower among all ethnic minority groups compared with the White British population; the lowest vaccination rates were observed among people identifying as Black African and Black Caribbean (58.8% and 68.7% respectively), followed by people from Bangladeshi (72.7%) and Pakistani (74.0%) backgrounds.
- Vaccination rates also differed by religious affiliation, with the lowest rate being among those who identified as Muslim (72.3%), followed by Buddhist (78.1%); lower rates were also observed among those identifying as Sikh (87.0%) and Hindu (87.1%).
- Disabled people who reported being limited a lot in their day-to-day activities had lower rates of vaccination (86.6%) compared with those who were non-disabled (91.0%).
- Those living in more deprived areas were less likely to have been vaccinated than those living in less deprived areas.
- Statistical modelling suggests the lower rates of vaccination observed in ethnic minorities, certain religious groups, and disabled people are not fully explained by differences in other geographical and socio-demographic factors or underlying health conditions.

Statistician’s comment

“Vaccination rates are markedly lower amongst certain groups, in particular amongst people identifying as Black African and Black Caribbean, those identifying as Muslim, and disabled people. These differences remain after accounting for geography, underlying health conditions and certain indicators of socio-economic inequality.”

Ben Humberstone, Health Analysis & Life Events, Office for National Statistics

2 . Age and sex

Table 1: Vaccination rates of adults aged 70 years and over, by sex, age group and place of residence, 8 December 2020 to 11 March 2021, England

		Vaccination Rate (%) (95% Confidence intervals)
Overall		90.2 [90.2 - 90.3]
Sex	**Female**	90.4 [90.3 - 90.5]
	Male	90.0 [89.9 - 90.1]
Age (yrs)	**70 to 74**	88.6 [88.5 - 88.7]
	75 to 79	91.5 [91.3 - 91.6]
	80 to 84	92.6 [92.5 - 92.8]
	85 to 89	91.0 [90.8 - 91.2]
	90 to 94	88.0 [87.6 - 88.3]
	95 to 99	83.0 [82.3 - 83.7]
	100 and over	71.1 [68.7 - 73.4]
Place of residence	**Care home**	86.4 [85.9 - 87.0]
	Other	90.3 [90.3 - 90.4]

Source: Office for National Statistics - Public Health Data Asset, National Immunisation Management Service

Notes

1. Figures based on first dose vaccination administered between 8 December 2020 and 11 March 2021 for residents in England who could be linked to the 2011 Census and General Practice Extraction Service Data for Pandemic Planning and Research.

2. Care home residence was identified using data from the 2019 NHS Patient Register.

3. Figures are provisional.

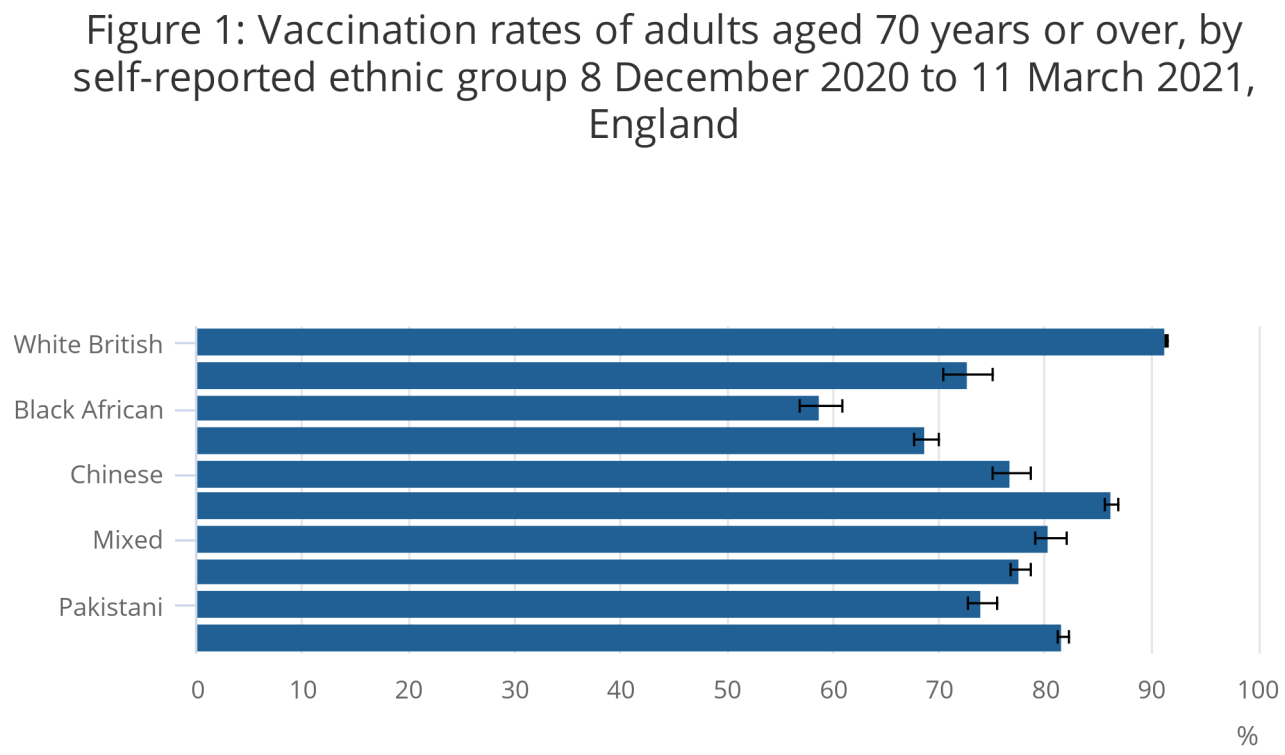
In England, between 8 December 2020 and 11 March 2021, 90.2% of adults aged 70 years and over had received the first dose of a coronavirus (COVID-19) vaccine. The vaccination rate was slightly higher for females (90.4 %) than males (90.0%).

Vaccination rates were higher for those aged 75 to 89 years than those aged 90 years and over; 92.6% of adults aged 80 to 84 years had received the first dose of a vaccine, compared with 83.0% of those aged 95 to 99 years. This age pattern holds after accounting for place of residence, underlying health conditions, geographic factors and indicators of socio-economic position.

The vaccination rate was lower for people living in a care home (86.4%) than those living in private households or other communal establishments (90.3%). Adjusting for age, sex, geography, socio-demographic characteristics and underlying health conditions reduces the estimated difference in the odds of not being vaccinated.

3 . Ethnic group

Figure 1: Vaccination rates of adults aged 70 years or over, by self-reported ethnic group 8 December 2020 to 11 March 2021, England



Source: Office for National Statistics - Public Health Data Asset, National Immunisation Management Service

Notes:

1. Figures based on first dose of a vaccine administered between 8 December 2020 and 11 March 2021 for residents in England who could be linked to the 2011 Census and General Practice Extraction Service Data for Pandemic Planning and Research.

2. Self-reported ethnic group is derived from the 2011 Census. Other ethnic group encompasses Asian other, Black other, Arab and Other ethnic group categories in the classification.

3. Horizontal lines on bars represent 95% confidence intervals.

4. Figures are provisional.

Figure 2 shows that among adults aged 70 years and over, all ethnic minority groups (self-reported ethnicity in the 2011 Census) were less likely to have received the first dose of a coronavirus (COVID-19) vaccine than people in the White British group.

The lowest rates were observed among people identifying as Black African (58.8%), Black Caribbean (68.7%), Bangladeshi (72.7%) and Pakistani (74.0 %). The vaccination rate among people from an Indian background was lower than that of the White British group but remains high at 86.2%.

Statistical modelling shows that accounting for differences in geography, socio-demographic factors and underlying health conditions does not fully explain the lower vaccination rates among ethnic minority groups (Figure 3). For example, the odds of not having received a dose of the vaccine were 7.4 times greater for people from Black African backgrounds compared with people of White British ethnicity. After adjusting for age, sex, socio-demographic characteristics and underlying health conditions, the odds were still 5.5 times greater. This indicates that the factors included in the model explained only about 30% of the unadjusted differences in the odds of not having been vaccinated.

Figure 2: Odds ratios of not having received the first dose of a vaccination for COVID-19, compared to White British - 8 December 2020 to 11 March 2021, England

Download the data

Notes:

1. Figures based on first dose of a vaccine administered between 8 December 2020 and 11 March 2021 for residents in England who could be linked to the 2011 Census and General Practice Extraction Service Data for Pandemic Planning and Research.

2. Self-reported ethnic group is derived from the 2011 Census. Other ethnic group encompasses Asian other, Black other, Arab and Other ethnic group categories in the classification.

3. The fully adjusted logistic regression model includes age, sex, region, care home residency, urban or rural area, IMD quintiles (deprivation), educational attainment, self-reported disability, BMI categories and a range of underlying health conditions.

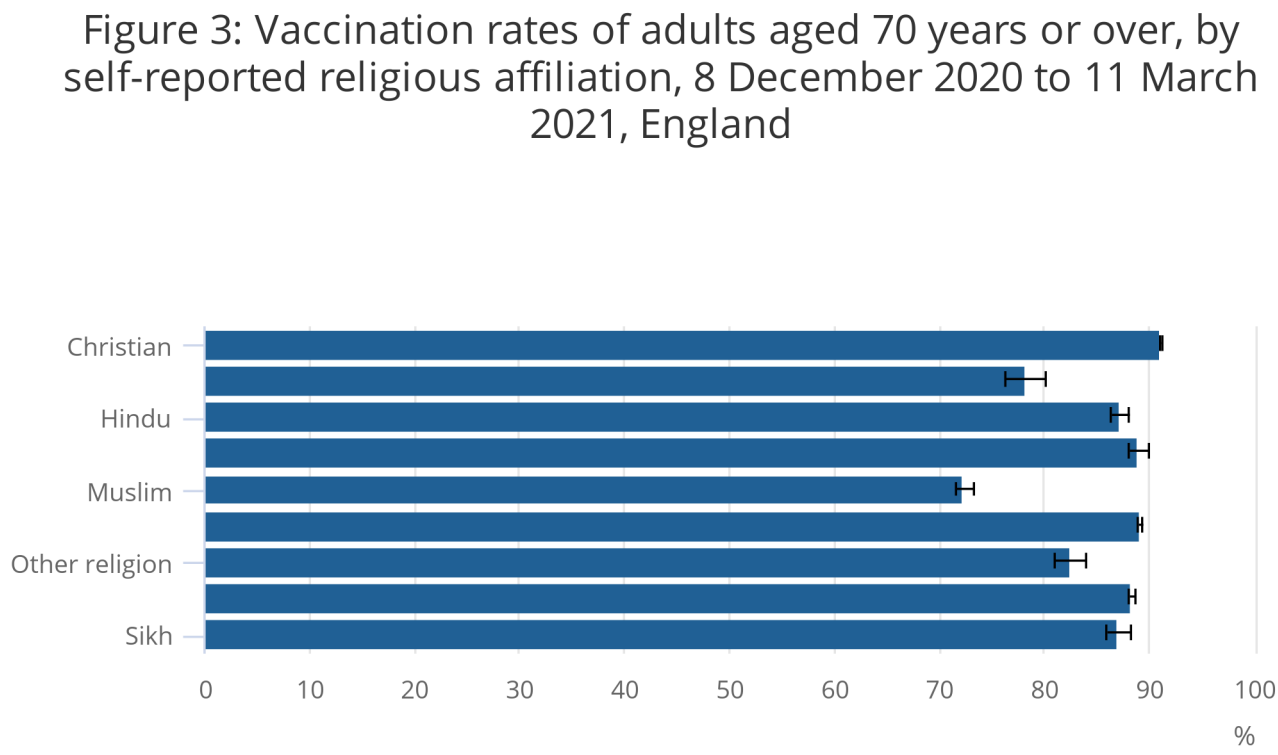
4. An error bar not crossing the x-axis at value 1.0 denotes a statistically significantly different odds of not being vaccinated compared with the reference category (White British).

5. Figures are provisional.

For people from Bangladeshi and Pakistani backgrounds, there was statistical evidence that the differences compared with White British people were more pronounced among those living in deprived areas (bottom IMD quintile) than among those living in wealthier areas (see the accompanying dataset).

4 . Religion

Figure 3: Vaccination rates of adults aged 70 years or over, by self-reported religious affiliation, 8 December 2020 to 11 March 2021, England



Source: Office for National Statistics - Public Health Data Asset, National Immunisation Management Service

Notes:

1. Figures based on first dose vaccination administered between 8 December 2020 and 11 March 2021 for residents in England who could be linked to the 2011 Census and General Practice Extraction Service Data for Pandemic Planning and Research.

2. Self-reported religious affiliation is derived from the 2011 Census.

3. Horizontal lines on bars represent 95% confidence intervals.

4. Figures are provisional.

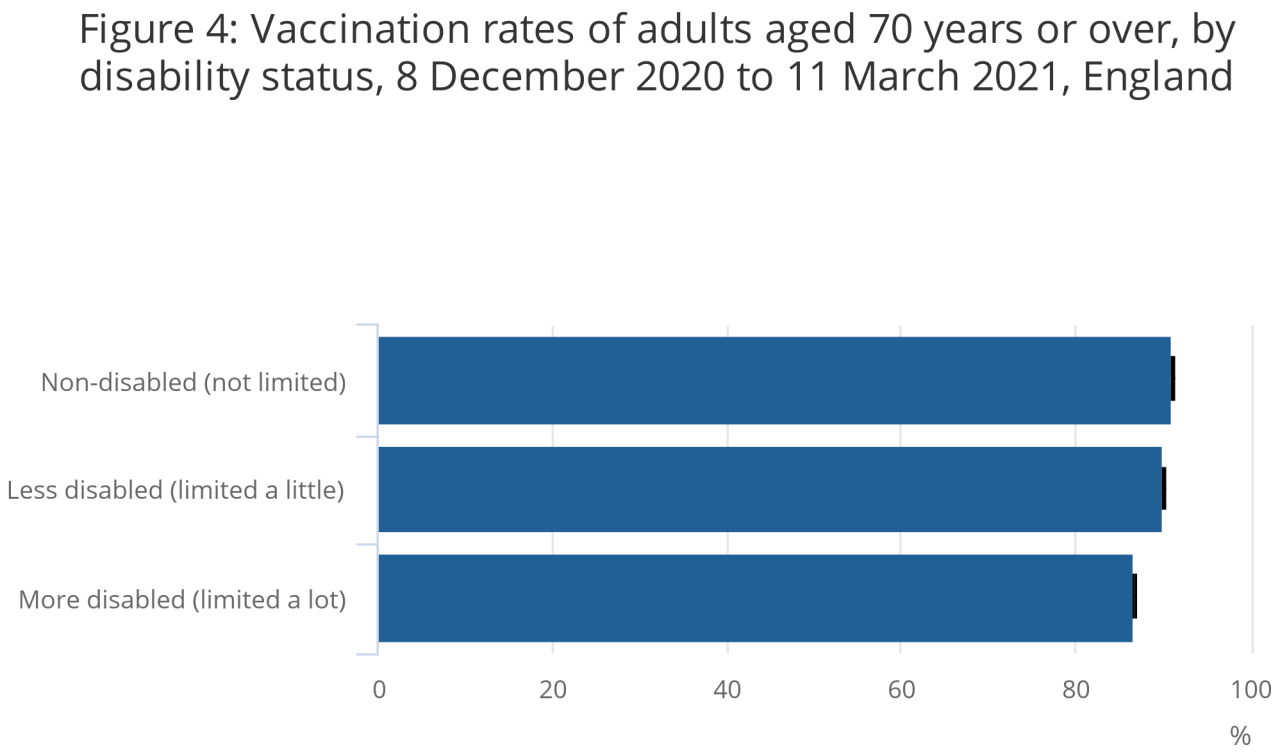
Figure 3 shows that among adults aged 70 years and over, those who identified as Christian had the highest vaccination rate (91.1%). The vaccination rate was lower for all other groups, with the lowest rates of vaccination being seen among those identifying as Muslim (72.3%) and Buddhist (78.1%).

After accounting for differences in geography, socio-demographic factors and underlying health conditions, the odds ratios of not being vaccinated for people who identified as Jewish or Sikh were not different from one, suggesting that the difference in vaccination rate between these groups and those identifying as Christian may be attributable to differences in these factors (see the accompanying dataset).

Geographical factors, socio-demographic characteristics, and underlying health conditions only partly explained the lower vaccination rates among those identifying as Muslim and Buddhist, as the odds ratios for not being vaccinated from fully adjusted models remained well above one.

5 . Disability

Figure 4: Vaccination rates of adults aged 70 years or over, by disability status, 8 December 2020 to 11 March 2021, England



Source: Office for National Statistics - Public Health Data Asset, National Immunisation Management Service

Notes:

1. Figures based on first dose vaccination administered between 8 December 2020 and 11 March 2021 for residents in England who could be linked to the 2011 Census and General Practice Extraction Service Data for Pandemic Planning and Research.

2. Disability status was defined using the self-reported answers to the 2011 Census question; “Are your day-to-day activities limited because of a health problem or disability which has lasted, or is expected to last, at least 12 months? - Include problems related to old age” (Yes, limited a lot; Yes, limited a little; and No).

3. Horizontal lines on bars represent 95% confidence intervals.

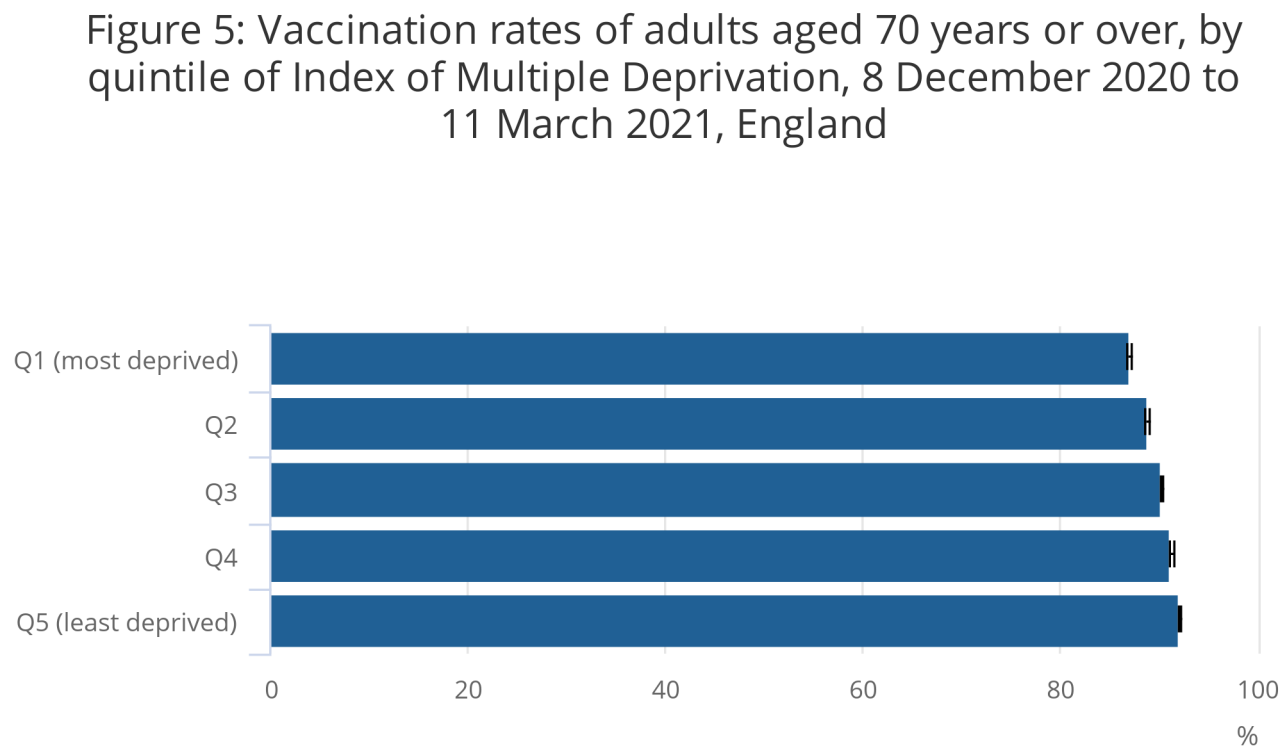
4. Figures are provisional.

Vaccination rates were lowest among those who reported being disabled at the time of the 2011 Census, compared with those who did not. Those disabled people who reported being limited a lot in their day-to-day activities had a vaccination rate of 86.6% compared with 91.0% of non-disabled people.

The lower vaccination rates among disabled people were not fully explained by geographical factors, socio-demographic characteristics and underlying health conditions (see the accompanying dataset).

6 . Area deprivation

Figure 5: Vaccination rates of adults aged 70 years or over, by quintile of Index of Multiple Deprivation, 8 December 2020 to 11 March 2021, England



Source: Office for National Statistics - Public Health Data Asset, National Immunisation Management Service

Notes:

1. Figures based on first dose vaccination administered between 8 December 2020 and 11 March 2021 for residents in England who could be linked to the 2011 Census and General Practice Extraction Service Data for Pandemic Planning and Research.

2. Deprivation Quintiles are based on the English Index of Multiple Deprivation (IMD), version 2019.

3. Horizontal lines on bars represent 95% confidence intervals.

4. Figures are provisional.

Figure 5 shows a clear relationship between area deprivation, measured as quintiles of the Index of Multiple Deprivation (IMD), and vaccination rates, with rates being higher in less deprived areas. The vaccination rate in the most deprived areas was 87.0%, compared with 92.1% in the least deprived. Adjusting for geographic factors, socio-demographic characteristics and underlying health conditions did not substantially reduce the difference in the odds of not being vaccinated for all quintiles groups compared with the least deprived one (see the accompanying dataset).

7 . Vaccination data

COVID-19 vaccination rates and odds ratios by socio-demographic group
Dataset | Released 29 March 2021
Vaccination rates and odds ratios by socio-demographic group among people aged 70 years and older who live in England.

8 . Glossary

COVID-19 vaccination

Vaccinations against the coronavirus (COVID-19) were initially introduced for the people most at risk of COVID-19, including those who are aged 70 years and over. The vaccine is given as an injection and requires two doses; the second dose is given between 3 and 12 weeks after the initial injection.

Approved vaccines in the UK are Pfizer/BioNTech, AstraZeneca (also known as the Oxford vaccine) and Moderna vaccine. For more information on vaccines see NHS information about the coronavirus (COVID-19) vaccine.

Confidence interval

A confidence interval gives an indication of the degree of uncertainty of an estimate, showing the precision of a sample estimate. The 95% confidence intervals are calculated so that if we repeated the study many times, 95% of the time the true unknown value would lie between the lower and upper confidence limits. A wider interval indicates more uncertainty in the estimate. Overlapping confidence intervals indicate that there may not be a true difference between two estimates.

For more information, see our methodology page on statistical uncertainty.

Odds ratio

An odds ratio is a measure of how likely an outcome is given a particular characteristic. In a coronavirus context, they can be used to determine whether a characteristic (for example, age) is a risk factor for testing positive for the disease. The odds ratio measures can also be compared with each other to compare the different levels of risk associated with different characteristics (for example, age groups).

9 . Measuring the data

We linked vaccination data from the National Immunisation Management Service (NIMS) to the Office for National Statistics (ONS) Public Health Data Asset (PHDA) based on NHS number. The ONS PHDA is a unique linked dataset combining the 2011 Census, the General Practice Extraction Service (GPES) and the Hospital Episode Statistics (HES) data for pandemic planning and research.

The study population consisted of people aged 70 years and over, alive on 8 December 2020 who were resident in England, registered with a general practitioner, and were enumerated at the 2011 Census. Of people aged 70 years and over who received at least one dose of a vaccine, 93.9% were linked to the ONS PHDA.

All individual level socio-demographic characteristics (ethnic group, religious affiliation, disability status, educational attainment) come from the 2011 Census. Place of residence (region, care home) and area-based deprivation were derived based on data from the 2019 Patient Register.

Body Mass Index (BMI) and comorbidities were derived based on the primary care and hospitalisation data. For BMI, we used the following categories: underweight (less than 18.5); ideal (18.5 to 25), overweight (25 to 30), obese (30 or more); Missing BMI. Comorbidities were defined as in the QCOVID risk prediction model. For each exposure, we modelled the odds of not having received a first dose of a COVID-19 vaccine using three logistic regression models:

- an unadjusted model
- a model adjusted for age and sex
- a model adjusted for age, sex, place of residence (region, care home), area-based deprivation, ethnicity, education, disability status and pre-existing conditions

The analyses presented in this release were based on a 10% random sample of the study dataset.

10 . Strengths and limitations

Strengths

One of the main strengths of the linked NIMS – PHDA is that it combines a rich set of demographic and socio-economic factors from the 2011 Census and 2019 Patient Register with pre-existing conditions based on clinical records. This unique dataset allows us to analyse how rates of vaccination differ by socio-demographic group, and examine the extent to which these differences are driven by other factors.

Another strength is the size of the dataset: it contains data on 93.9% of people aged 70 years and over who received the first dose of a COVID-19 vaccination.

Lower vaccination rates among people from ethnic minority groups are consistent with the higher vaccination hesitancy among ethnic minorities previously reported in Coronavirus and vaccine hesitancy, Great Britain.

The vaccination rates by ethnicity and IMD quintiles are generally consistent with findings based on the OpenSAFELY analytics platform, which uses data from 40% of general practices that use the Phoenix Partnership (TPP) electronic health record software.

Limitations

The dataset only contains information on people who were enumerated in the 2011 Census, and therefore excludes residents who did not take part in that census, and people who have immigrated since 2011. As a result, we excluded 6.1% of people aged 70 years and over who received the first dose of a COVID-19 vaccination. The average age of linked and unlinked individuals was similar (78.6 years compared with 78.5 years), but the proportion of women was slightly higher among those who were linked (55.2%) than those who were not linked (53.4%).

The NIMS data covered the period 8 December 2020 to 11 March 2021, however, there may be some additional lag in reporting the data so it is possible that we have not captured everyone aged 70 years and over who had a dose of a COVID-19 vaccine by 11 March 2021.

11 . Related links

Coronavirus and vaccine hesitancy, Great Britain: 13 January to 7 February 2021
Bulletin | Released 8 March 2021
Hesitancy towards the coronavirus (COVID-19) vaccine, based on the Opinions and Lifestyle Survey covering the period 13 January to 7 February 2021.

Coronavirus (COVID-19) Infection Survey, UK
Bulletin | Updated weekly
Estimates for England, Wales, Northern Ireland and Scotland. This survey is being delivered in partnership with University of Oxford, University of Manchester, Public Health England and Wellcome Trust.

Coronavirus (COVID-19) Infection Survey: characteristics of people testing positive for COVID-19 in England
Article | Released 22 February 2021
The analyses in this article compares the likelihood of testing positive for the coronavirus (COVID-19) on a swab test at any time between 1 September 2020 and 7 January 2021 between occupations.

Coronavirus (COVID-19) latest insights
Interactive tool | Updated as and when data become available
Explore the latest data and trends about the coronavirus (COVID-19) pandemic from the ONS and other official sources.

Coronavirus (COVID-19) roundup
Web page | Updated as and when data become available
Catch up on the latest data and analysis related to the coronavirus pandemic and its impact on our economy and society.