

Statistical bulletin

Coronavirus and vaccine hesitancy, Great Britain: 13 January to 7 February 2021

Hesitancy towards the coronavirus (COVID-19) vaccine, based on the Opinions and Lifestyle Survey covering the period 13 January to 7 February 2021.

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1 . Main points

Positive vaccine sentiment has increased to 94% in the latest period (24 to 28 February), from 78% when the data were first collected (10 to 13 December 2020).

Over the period 13 January to 7 February 2021:

- around 9 in 10 (91%) adults reported positive sentiment towards the vaccine, while 9% of adults reported vaccine hesitancy
- around 1 in 6 (17%) adults aged 16 to 29 years reported vaccine hesitancy; this was the highest of all age groups
- more than 4 in 10 (44%) Black or Black British adults reported vaccine hesitancy; this was the highest of all ethnic groups
- around 1 in 6 (16%) parents living with a dependent child aged 0 to 4 years reported vaccine hesitancy, compared with 8% of non-parents or parents not living with a dependent child
- around 1 in 6 (16%) adults in the most deprived areas of England (based on Index of Multiple Deprivation) reported vaccine hesitancy, compared with 7% of adults in the least deprived areas of England
- "Side effects", "long term effects on health" and "how well the vaccine works" were the top three reasons for reporting negative sentiment towards the vaccine; this was consistent across all population groups

Statistician's quote

"Over the past three months, we've seen people become increasingly positive about the COVID-19 vaccines, with over nine in ten adults saying they would have it if offered, or having already had it. Of those who are hesitant about receiving the vaccine, it's younger and black adults who are most likely to say this, with concerns around side effects, long term effects and how well the vaccine works being the most common reasons."

Tim Vizard, Public Policy Analysis, Office for National Statistics

2 . Vaccine hesitancy by personal characteristics

This section explores the rates of vaccine hesitancy by age, sex and ethnicity, for the period 13 January to 7 February 2021. Definitions of vaccine hesitancy and positive sentiment are available in the [Glossary](#).

The estimates are from a sample of adults and may differ from the latest official data on the number of [adults who have received the COVID-19 vaccination](#). It does not include adults living in care homes or other establishments.

Age

In the first phase of the vaccine rollout in the UK, the [Joint Committee of Vaccinations and Immunization \(JCVI\)](#) advised on priority groups that included those aged 50 years and over. Our analysis of older age groups is consistent with this advice, with additional groups covering those aged 16 to 29 years and 30 to 49 years.

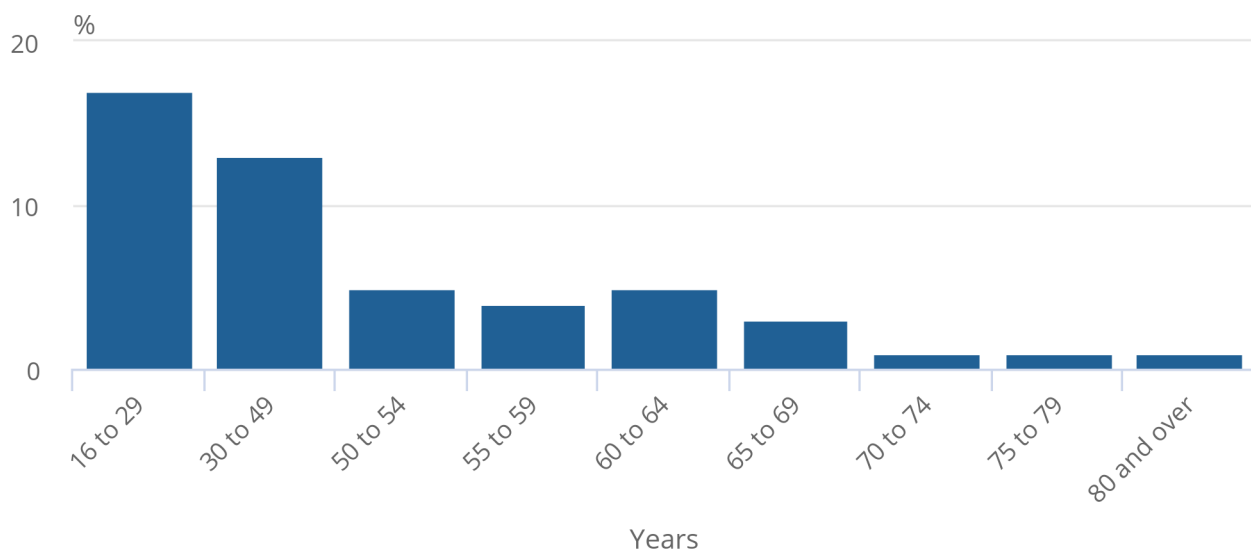
Among adults aged 16 to 29 years, 17% reported hesitancy towards the coronavirus vaccine, compared with 1% of adults aged 80 years and over. The same proportion of adults aged 70 to 74 years and those aged 75 to 79 years reported vaccine hesitancy (both 1%).

Figure 1: Adults aged 16 to 29 years were more likely to report vaccine hesitancy than those aged 80 years and over

Age groups, Great Britain, 13 January to 7 February 2021

Figure 1: Adults aged 16 to 29 years were more likely to report vaccine hesitancy than those aged 80 years and over

Age groups, Great Britain, 13 January to 7 February 2021



Source: Office for National Statistics – Opinions and Lifestyle Survey

Notes:

1. Base population: All adults in Great Britain
2. Our analysis aims to capture vaccine sentiment from all adults aged 16 years and over. Phase 2 of the JCVI COVID-19 vaccination programme covers adults aged 18 years and over at the time of publication.
3. These estimates are based on those demonstrating hesitancy towards the vaccine, and not necessarily a negative sentiment. Higher rates of hesitancy in the younger age groups could be driven by the prioritisation of older age groups in the vaccine rollout.

For further information on the over 80s, see [Coronavirus and vaccine attitudes and behaviours in England: Over 80s population](#).

Sex

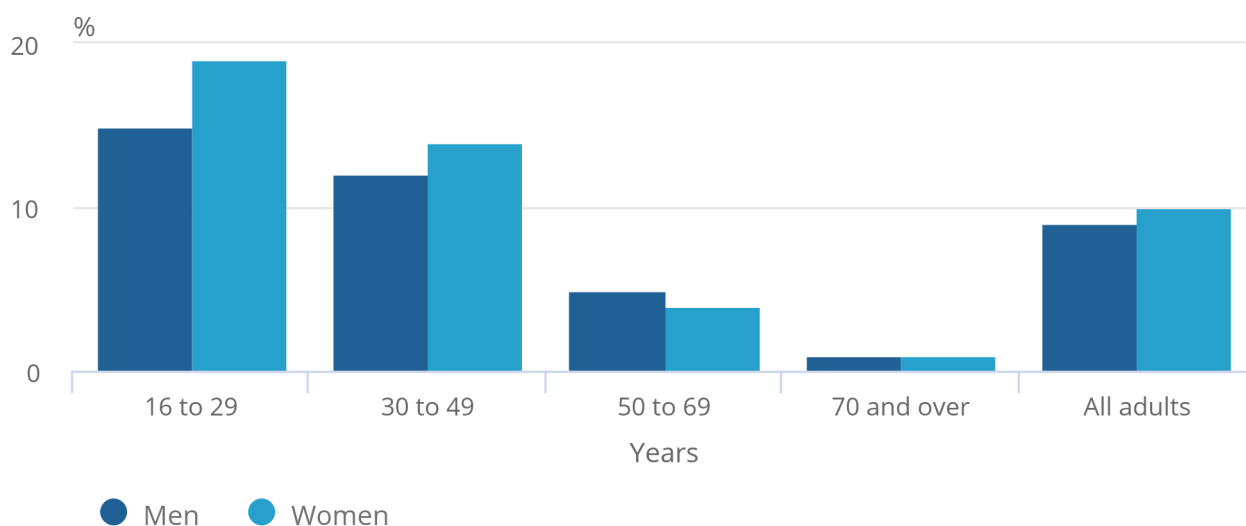
Similar proportions of men and women reported vaccine hesitancy (9% and 10% respectively). When exploring this by age, a slightly higher proportion of younger women (aged 16 to 29 years) reported vaccine hesitancy (19%) when compared with men in the same age group (15%). This gap narrowed for older age groups.

Figure 2: A slightly higher proportion of younger women (aged 16 to 29 years) reported vaccine hesitancy when compared with men in the same age group

Age and sex, Great Britain, 13 January to 7 February 2021

Figure 2: A slightly higher proportion of younger women (aged 16 to 29 years) reported vaccine hesitancy when compared with men in the same age group

Age and sex, Great Britain, 13 January to 7 February 2021



Source: Office for National Statistics – Opinions and Lifestyle Survey

Notes:

1. Base population: All adults in Great Britain.

Ethnicity

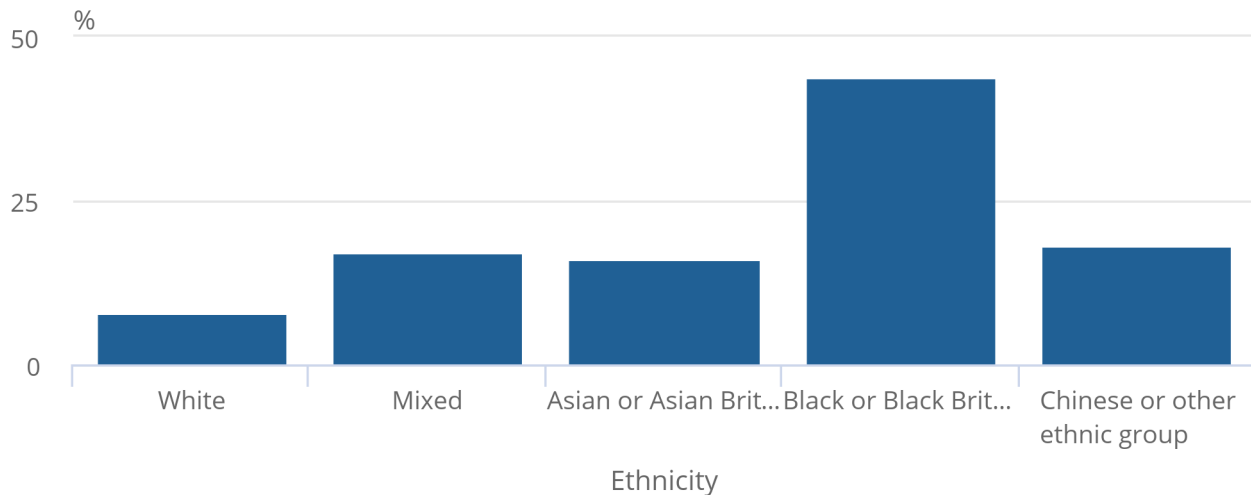
Adults of ethnic minority backgrounds were more likely to report vaccine hesitancy when compared with White adults (8%). Among adults with ethnic minority backgrounds, Black or Black British adults were most likely to report vaccine hesitancy (44%). There is a full definition of the ethnicity breakdown used in this analysis in the [Glossary](#).

Figure 3: Over 4 in 10 Black or Black British adults reported vaccine hesitancy; this was highest of all ethnic groups

Ethnicity, Great Britain, 13 January to 7 February 2021

Figure 3: Over 4 in 10 Black or Black British adults reported vaccine hesitancy; this was highest of all ethnic groups

Ethnicity, Great Britain, 13 January to 7 February 2021



Source: Office for National Statistics – Opinions and Lifestyle Survey

Notes:

1. Base population: All adults in Great Britain. Missing values were excluded from the analysis.

3 . Vaccine hesitancy by health and household characteristics

This section explores the rates of vaccine hesitancy by disability, whether a person has an underlying health condition and whether a person is considered clinically extremely vulnerable (CEV). We have also explored the rates of vaccine hesitancy by the parent status.

Health characteristics

A similar proportion of disabled and non-disabled adults reported vaccine hesitancy (8% and 9% respectively). However, adults without an underlying health condition were more likely to report vaccine hesitancy (10%) than those with an underlying health condition (6%). This pattern was also observed for non-CEV and CEV adults (9% and 4% respectively).

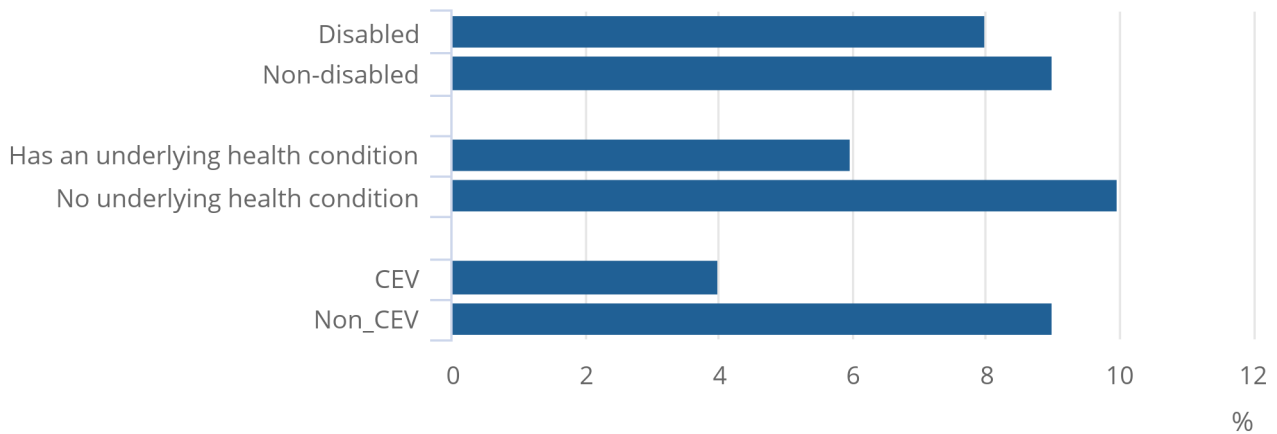
It should be noted that for these estimates, adults could be included in all three groups. For example, an adult could be disabled, have an underlying health condition and be clinically extremely vulnerable. There is information on the definitions used in the [Glossary](#).

Figure 4: A higher proportion of adults who did not report being clinically extremely vulnerable (CEV) were vaccine hesitant when compared with CEV adults

Disability, health condition and CEV, Great Britain, 13 January to 7 February 2021

Figure 4: A higher proportion of adults who did not report being clinically extremely vulnerable (CEV) were vaccine hesitant when compared with CEV adults

Disability, health condition and CEV, Great Britain, 13 January to 7 February 2021



Source: Office for National Statistics – Opinions and Lifestyle Survey

Notes:

1. Base population: All adults in Great Britain.

Parent status

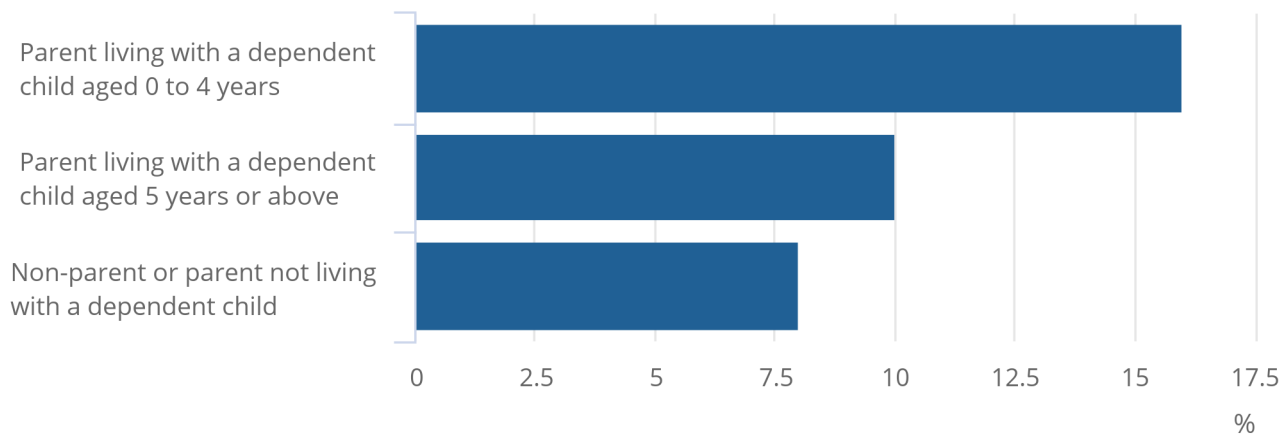
Parents living with a dependent child were more likely to report vaccine hesitancy than non-parents or parents not living with a dependent child. Among parents living with a dependent child aged 0 to 4 years, 16% reported vaccine hesitancy compared with 8% of non-parents or parents not living with a dependent child.

Figure 5: One in six parents living with a dependent child aged 0 to 4 years reported vaccine hesitancy

Parent status, Great Britain, 13 January to 7 February 2021

Figure 5: One in six parents living with a dependent child aged 0 to 4 years reported vaccine hesitancy

Parent status, Great Britain, 13 January to 7 February 2021



Source: Office for National Statistics – Opinions and Lifestyle Survey

Notes:

1. Base population: All adults in Great Britain.
2. An adult is defined as a parent if they are living with a dependent child who is their son, daughter, stepson or stepdaughter. A dependent child is any child under the age of 16 years or aged 16 to 18 years and in full-time education.

4 . Vaccine hesitancy by socio-economic characteristics

This section explores the rates of vaccine hesitancy by highest education level, housing tenure, personal annual gross income, region and Index of Multiple Deprivation (IMD) (England only).

Highest education level

One in 10 (10%) adults educated below degree level reported vaccine hesitancy. This was slightly higher than the rates of vaccine hesitancy for adults educated at degree level or equivalent, adults with "other" qualifications or no qualifications (8%, 7% and 7% respectively).

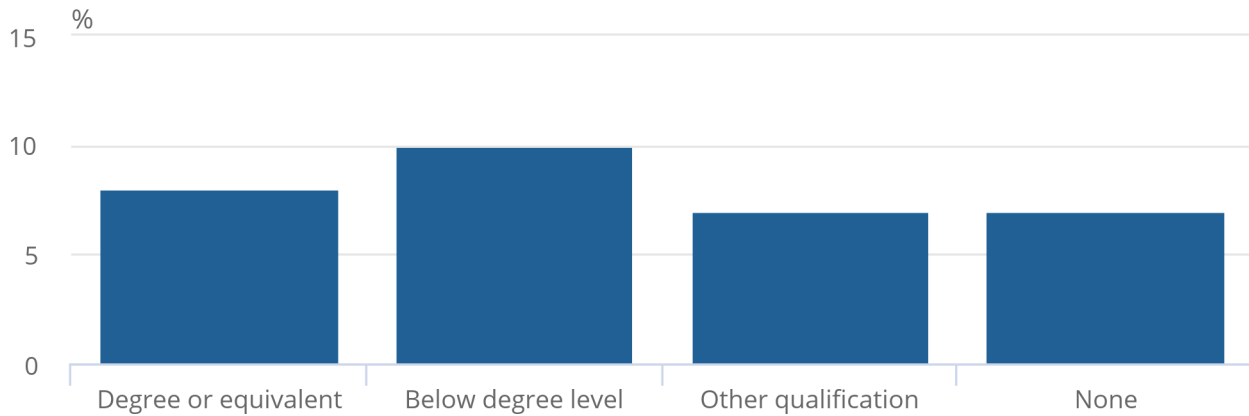
For definition of highest education level, see the [Glossary](#).

Figure 6: One in 10 adults educated “below degree level” reported vaccine hesitancy

Highest educational attainment, Great Britain, 13 January to 7 February 2021

Figure 6: One in 10 adults educated “below degree level” reported vaccine hesitancy

Highest educational attainment, Great Britain, 13 January to 7 February 2021



Source: Office for National Statistics – Opinions and Lifestyle Survey

Notes:

1. Base population: All adults in Great Britain.

Housing tenure

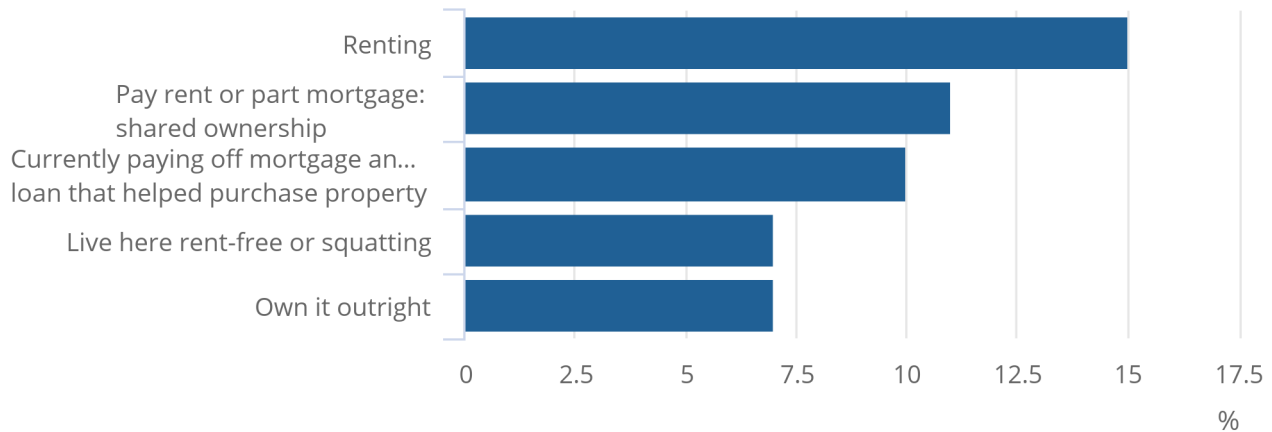
Adults renting their home were more likely to report vaccine hesitancy (15%) than adults in all groups, except those who reported they were paying “part rent/part mortgage” for their home (11%).

Figure 7: 15% of adults renting their home reported vaccine hesitancy

Housing tenure, Great Britain, 13 January to 7 February 2021

Figure 7: 15% of adults renting their home reported vaccine hesitancy

Housing tenure, Great Britain, 13 January to 7 February 2021



Source: Office for National Statistics - Opinions and Lifestyle Survey

Notes:

1. Base population: All adults in Great Britain.

Personal annual gross income of working age adults

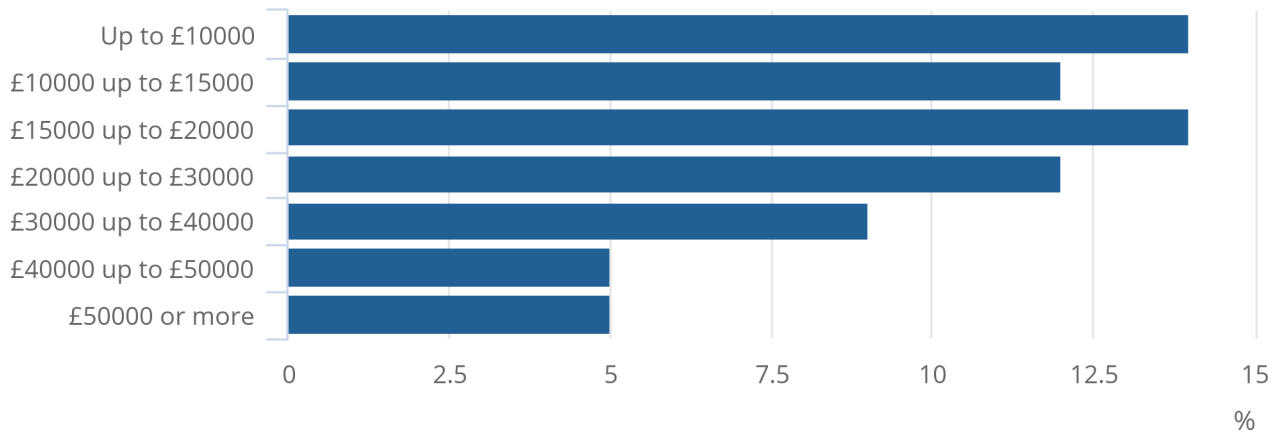
Working age adults (aged 16 to 64 years) who reported that their gross income was up to £10,000 a year were more likely to report vaccine hesitancy (14%) than those who reported earning £40,000, up to £50,000 or more than £50,000 a year (both 5%).

Figure 8: Rates of vaccine hesitancy were lowest for working age adults with higher incomes

Working age income, Great Britain, 13 January to 7 February 2021

Figure 8: Rates of vaccine hesitancy were lowest for working age adults with higher incomes

Working age income, Great Britain, 13 January to 7 February 2021



Source: Office for National Statistics – Opinions and Lifestyle Survey

Notes:

1. Base population: Working age adults (aged 16 to 64 years) in Great Britain.
2. Not all respondents reported their personal annual gross income. These respondents are not included in Figure 8, however vaccine hesitancy estimates for this group are available in the [accompanying dataset](#).
3. Personal annual gross income estimates are self-reported and should be treated with caution.
4. A respondent's income information does not represent equivalised household income, which takes into account that households with more people will need a higher income to achieve the same standard of living as households with fewer members.

Index of Multiple Deprivation (IMD), England

Adults living in the most deprived areas of England (based on the Index of Multiple Deprivation) were more likely to report vaccine hesitancy (16%) than adults in the least deprived areas (7%).

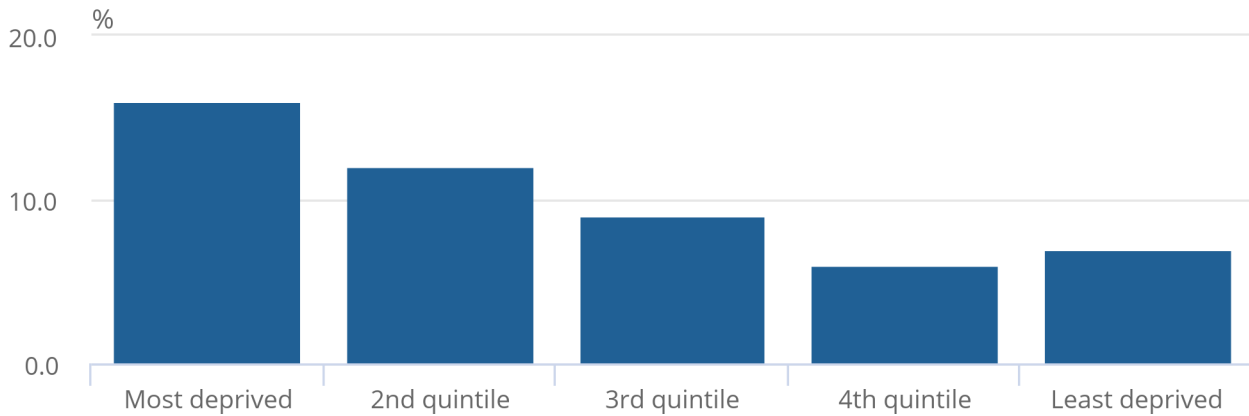
For definition of IMD, see the [Glossary](#).

Figure 9: Rates of vaccine hesitancy were highest for those in the most deprived areas of England

Index of Multiple Deprivation, England, 13 January to 7 February 2021

Figure 9: Rates of vaccine hesitancy were highest for those in the most deprived areas of England

Index of Multiple Deprivation, England, 13 January to 7 February 2021



Source: Office for National Statistics – Opinions and Lifestyle Survey Notes

Notes:

1. Base population: All adults in England. Missing values were excluded from the analysis.

Region, England

In London, 13% of adults reported vaccine hesitancy; this compared with 7% of adults in the South West. Compared with London, rates of vaccine hesitancy were also lower for the South East (8%), East of England (9%) and East Midlands (9%).

5 . Reasons for reporting negative sentiment towards the vaccine

Most common reasons for negative vaccine sentiment

Around 1 in 20 (4%) adults reported negative sentiment towards the coronavirus vaccine. This refers to adults who have been offered the vaccine and decided not to be vaccinated and those who reported being very of fairly unlikely to have the vaccine if offered.

Similar reasons were reported for negative sentiment towards the vaccine. The most common reasons were:

- I am worried about the side effects (44%)
- I am worried about the long-term effects on my health (43%)
- I would wait to see how well the vaccine works (40%)
- I do not think it will be safe (24%)

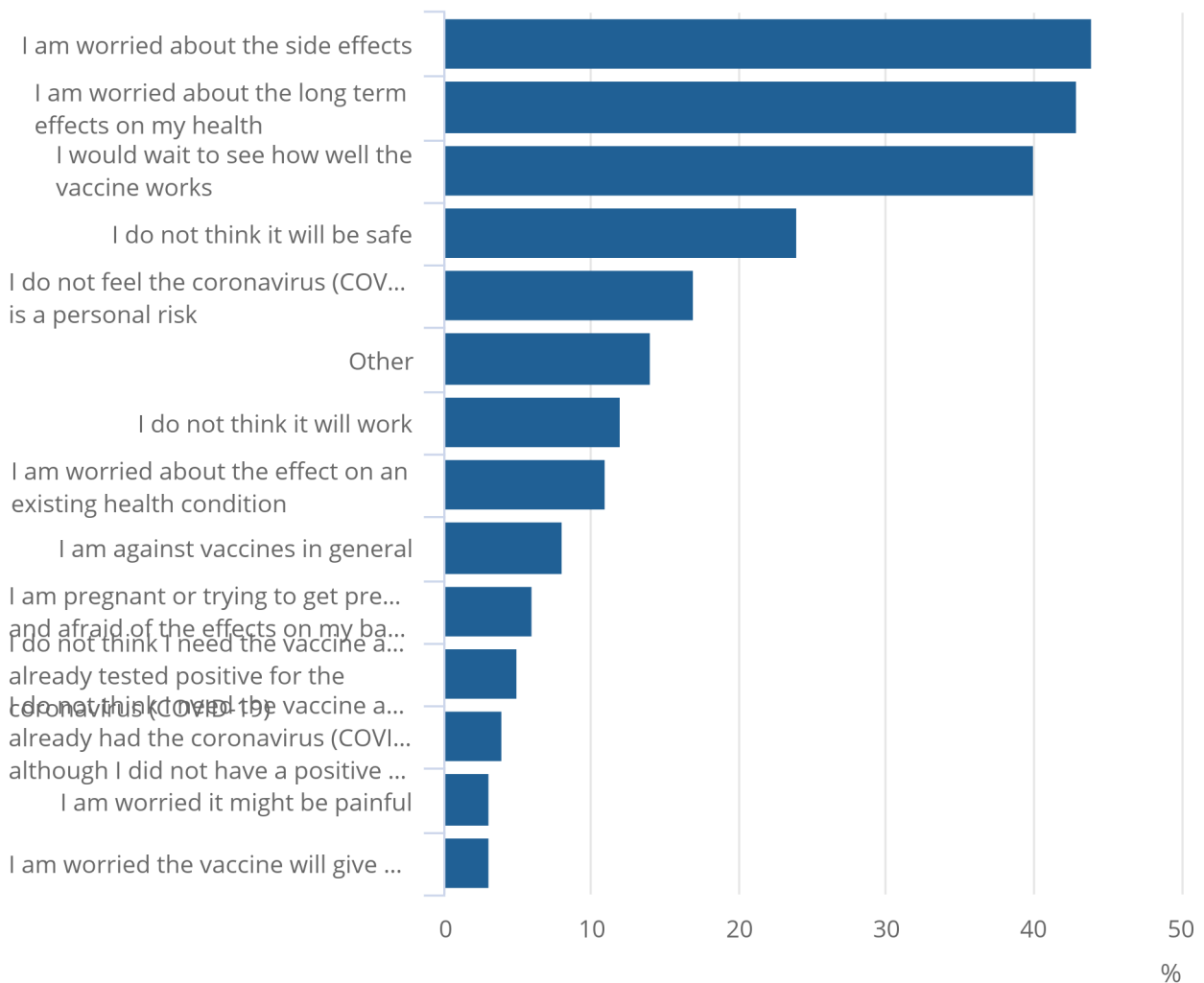
These reasons remained consistent across all population groups, however there were some differences in the other reasons reported. The full list of reasons for negative sentiment towards the coronavirus vaccine by each of the characteristics are available in the [accompanying data tables](#).

Figure 10: For adults who reported negative vaccine sentiment, common reasons were worries about side effects, long-term effects on health or how well the vaccine works

Great Britain, 13 January to 7 February 2021

Figure 10: For adults who reported negative vaccine sentiment, common reasons were worries about side effects, long-term effects on health or how well the vaccine works

Great Britain, 13 January to 7 February 2021



Source: Office for National Statistics – Opinions and Lifestyle Survey

Notes:

1. Base population: Adults who reported negative sentiment towards the vaccine.
2. "Other" includes, but is not limited to, the following reasons: "I have been advised by a health or medical professional not to get the vaccine", "I am unable to take time off work to get the vaccine", "I am unable to travel to the vaccine centre", "I am worried about catching the coronavirus (COVID-19) at a vaccination centre or GP surgery".

Other reported reasons for negative vaccine sentiment

Effect on an existing health condition

Of all adults that reported negative sentiment towards the vaccine and reported "I am worried about the effect on an existing health condition", the largest differences were found for:

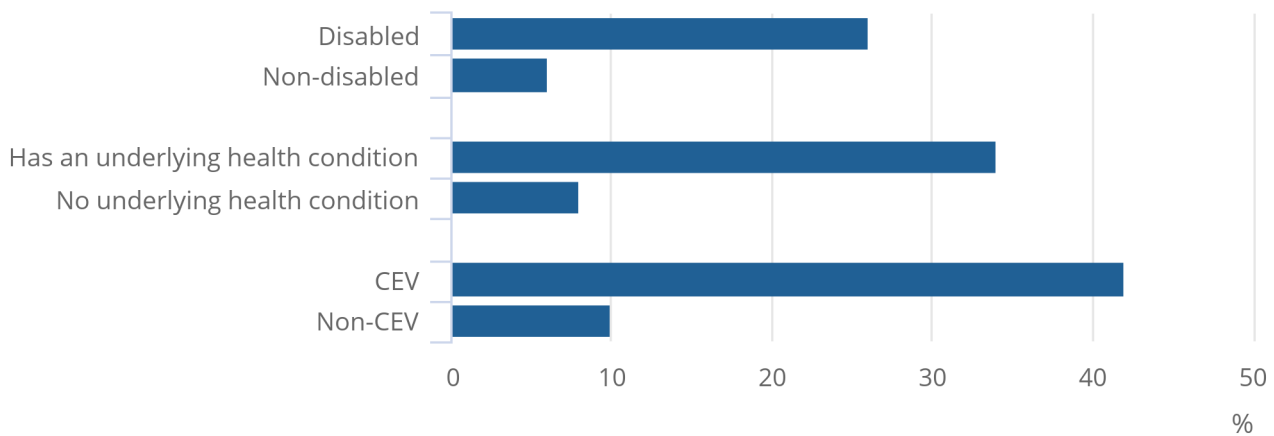
- disabled adults (26%) and non-disabled adults (6%)
- adults with an underlying health condition (34%) and those without (8%)
- clinically extremely vulnerable (CEV) adults (42%) and non-CEV adults (10%)

Figure 11: Among those reporting negative vaccine sentiment, a higher proportion of clinically extremely vulnerable adults selected “I am worried about the effect on an existing health condition”

Great Britain, 13 January to 7 February 2021

Figure 11: Among those reporting negative vaccine sentiment, a higher proportion of clinically extremely vulnerable adults selected “I am worried about the effect on an existing health condition”

Great Britain, 13 January to 7 February 2021



Source: Office for National Statistics – Opinions and Lifestyle Survey

Notes:

1. Base population: Adults who reported negative sentiment towards the vaccine.
2. Clinically extremely vulnerable (CEV) is self-reported.
3. Adults could be included in all three groups. For example, an adult could be disabled, have an underlying health condition and be clinically extremely vulnerable.
4. For more information on these groups, see the [Glossary](#).

Pregnant or trying to get pregnant and afraid of the effects on baby

Of all adults that reported negative sentiment towards the vaccine, around 1 in 10 (11%) women reported "I am pregnant or trying to get pregnant and afraid of the effects on my baby".

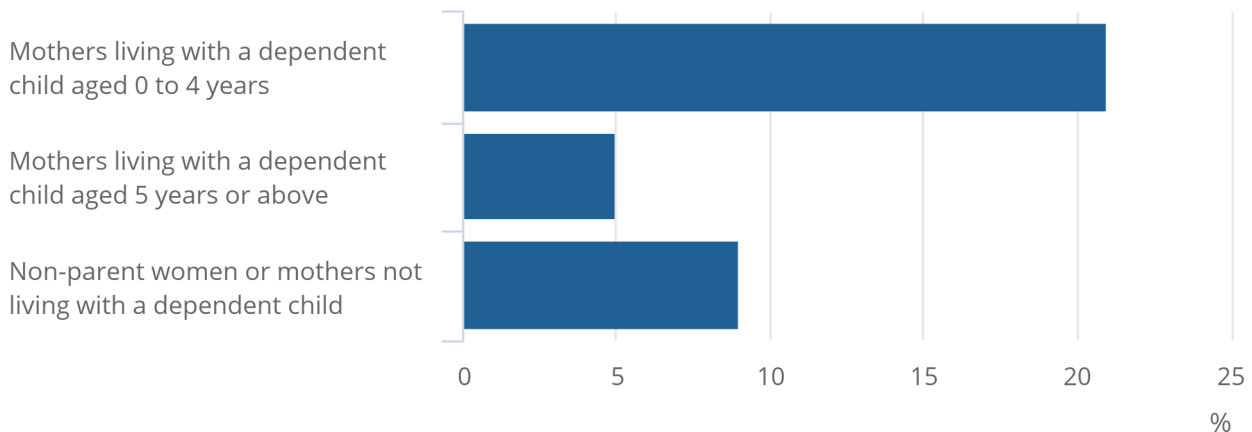
Around one in five (21%) mothers living with a dependent child aged 0 to 4 years who reported negative sentiment towards the vaccine selected this reason. This compared with 5% of mothers living with a dependent child aged five years or above. Although these differences were not statistically significant, they provide insight into potential differences between these groups.

Figure 12: Around 1 in 5 mothers living with a dependent child aged 0 to 4 years who reported negative sentiment towards the vaccine selected “I am pregnant or trying to get pregnant and afraid of the effects on my baby”

Great Britain, 13 January to 7 February 2021

Figure 12: Around 1 in 5 mothers living with a dependent child aged 0 to 4 years who reported negative sentiment towards the vaccine selected “I am pregnant or trying to get pregnant and afraid of the effects on my baby”

Great Britain, 13 January to 7 February 2021



Source: Office for National Statistics – Opinions and Lifestyle Survey

Notes:

1. Base population: Women who reported negative sentiment towards the vaccine.
2. A mother is defined as a woman living with a dependent child who is their son, daughter, stepson or stepdaughter. A dependent child is any child under the age of 16 years or aged 16 to 18 years and in full-time education.

Not a personal risk

A lower proportion of adults who own their home outright reported negative vaccine sentiment (2%) when compared with all adults (4%). However, among those, a higher proportion selected "I do not feel coronavirus is a personal risk" (27%) as a reason for this negative sentiment, compared with all adults (17%).

A higher proportion of adults aged 16 to 29 years reported negative sentiment towards the vaccine (7%) compared with all adults (4%). Among 16- to 29-year-olds reporting negative sentiment, a higher proportion also selected this reason (23%) when compared with all adults.

Although these differences were not statistically significant, they provide insight into potential differences between these groups.

Not thinking it will work

Around 1 in 30 (3%) adults with no qualifications reported negative vaccine sentiment. Among those, a higher proportion selected the reason "I do not think it will work" (22%) compared with adults educated at degree level or equivalent (6%).

A higher proportion of adults living in the most deprived areas of England reported negative vaccine sentiment (8%) compared with adults living in the least deprived areas (3%). Among those reporting negative vaccine sentiment, 19% of adults living in the most deprived areas of England selected this reason, compared with 10% of adults living in the least deprived areas.

Although these differences were not statistically significant, they provide insight into potential differences between these groups.

6 . Characteristics associated with vaccine hesitancy

We carried out a binary logistic regression analysis to identify the characteristics associated with vaccine hesitancy.

Logistic regression allows us to assess the likelihood of reporting vaccine hesitancy when controlling for a range of characteristics. We can identify someone with a particular characteristic reporting higher or lower odds of vaccine hesitancy when compared with a specified reference group, after taking other possible characteristics into account.

The analysis from the regression model presented in this section identifies differences in vaccine hesitancy within groups of the population while controlling for eight characteristics:

- age group
- sex
- ethnicity
- disability
- underlying health condition
- highest education level
- housing tenure
- parent status

There may be additional characteristics associated with vaccine hesitancy that were not available in our dataset, for example whether or not someone has had COVID-19. For variables included in our dataset, we limited the analysis to the characteristics in this article. Further information on the rationale behind the inclusion of the independent variables in the model can be found in [Measuring the data](#).

After controlling for the eight characteristics, the regression analysis changed some of the findings reported in earlier sections. There were changes in ethnicity, as well as for parent status, highest education level and housing tenure.

The regression analysis confirmed the findings in earlier sections of this report for other characteristics. We found younger age and ethnic minority groups to have some of the highest odds of vaccine hesitancy.

Age

Controlling for the eight characteristics confirmed the findings in the previous section; younger adults were more likely to report vaccine hesitancy than older adults. Age was found to have some of the highest odds of vaccine hesitancy, with adults aged 16 to 29 years having the highest odds (OR=17.68) of all age groups, when compared with adults aged 80 years and over.

Figure 13: Adults aged 16 to 29 years had the highest odds of reporting vaccine hesitancy of all age groups, when compared with those aged 80 years and over

Great Britain, 13 January to 7 February 2021

Notes

1. Base population: All adults in Great Britain. However, cases that had missing values in any variable included in the model were excluded.
2. Our analysis aims to capture vaccine sentiment from all adults aged 16 years and over. Phase 2 of the JCVI COVID-19 vaccination programme covers adults aged 18 years and over at the time of publication.
3. An “odds ratio” tells us the odds of someone with a particular characteristic reporting higher or lower odds of vaccine hesitancy when compared with a specified reference group, after taking other possible characteristics into account.

[Download the data](#)

Ethnicity

In [Section 2](#), we found that adults in all ethnic minority groups were more likely to report vaccine hesitancy than White adults. However, after controlling for the eight characteristics above, the odds of reporting vaccine hesitancy were found to be higher for adults of all ethnic minority groups, except those of Mixed ethnicity, when compared with White adults. The odds were highest for Black or Black British adults (OR=6.75).

Figure 14: Black or Black British adults had the highest odds of reporting vaccine hesitancy when compared with White adults

Great Britain, 13 January to 7 February 2021

Notes

1. Base population: All adults in Great Britain. However, cases that had missing values in any variable included in the model were excluded.
2. An "odds ratio" tells us the odds of someone with a particular characteristic reporting higher or lower odds of vaccine hesitancy when compared with a specified reference group, after taking other possible characteristics into account.

[Download the data](#)

Earlier research supports our findings that [COVID-19 vaccine hesitancy was particularly high amongst the Black ethnic group](#).

Parent status

When compared with non-parents or parents not living with a dependent child, the odds of reporting vaccine hesitancy remained significantly higher for parents living with a dependent child aged 0 to 4 years (OR=1.37). However, no significant difference was found for parents living with a dependent child aged five or above.

This differs to earlier findings in [Section 3](#), where a higher proportion of parents living with a dependent child (aged 0 to 4 years and five years and above) reported vaccine hesitancy than non-parents or parents not living with a dependent child.

Highest education level

When compared with adults educated at degree level or equivalent, higher odds of vaccine hesitancy were observed for all adults not educated at degree level or equivalent. The odds were highest for adults with no qualifications (OR=2.27).

This differs to earlier findings in [Section 4](#), where similar rates of vaccine hesitancy were found for those educated at degree level or equivalent and those with no qualifications.

Housing tenure

When compared with those owning their home outright, only adults renting their home had significantly higher odds of reporting vaccine hesitancy (OR=1.95).

This differs to earlier findings in [Section 4](#), where adults in all tenure groups, except those who reported "living rent-free/squatting" had higher rates of vaccine hesitancy compared with adults who reported owning their home outright.

It is important to note that the associations between characteristics and vaccine hesitancy in this bulletin may not necessarily reflect a causal relationship.

7 . Coronavirus and vaccine hesitancy data

[Coronavirus and vaccine hesitancy, Great Britain: 13 January to 7 February 2021](#)

Dataset | Released 8 March 2021

Estimates of vaccine sentiment with breakdowns by different population groups, and the reasons for reporting negative vaccine sentiment for these groups. Analysis based on the Opinions and Lifestyle Survey.

8 . Glossary

Age priority groups

The age priority groupings are based on advice from the Joint Committee of Vaccinations and Immunization (JCVI) in the [first phase of the vaccine rollout in the UK](#).

Clinically Extremely Vulnerable

Clinically extremely vulnerable (CEV) status is self-reported. The CEV group in this analysis includes all adults that identified as being clinically extremely vulnerable. Routing to the CEV question changed from 27 to 31 January 2021 onwards. This question was previously only asked of those with a physical or mental health condition, whereas it's now asked to all adults. Therefore prior to data collected over the period 27 to 31 January, the CEV group may be an underestimation of the proportion of adults who are clinically extremely vulnerable.

Disability

To define disability in this bulletin, we refer to the [Government Statistical Service \(GSS\) harmonised "core" definition](#): this identifies "disabled" as a person who has a physical or mental health condition or illness that has lasted or is expected to last 12 months or more that reduces their ability to carry-out day-to-day activities. The GSS definition is designed to reflect the definitions that appear in legal terms in the Disability Discrimination Act 1995 (DDA) and the subsequent Equality Act 2010. The GSS harmonised questions are asked of the respondent in the survey, meaning that disability status is self-reported.

Ethnicity

The ethnicity disaggregation used has been chosen to provide the most granular breakdown possible, whilst producing robust estimates based on sample sizes, in line with the [GSS Ethnicity Harmonised](#) standard.

The five-category ethnicity breakdown includes:

- White: White British, White Irish, Other White
- Mixed/Multiple ethnic groups: White and Black Caribbean, White and Black African, White and Asian or Any other Mixed/Multiple ethnic background
- Asian or Asian British: Indian, Pakistani, Bangladeshi, Chinese or any other Asian background
- Black or Black British: African, Caribbean or Any other Black/African/Caribbean background
- Other ethnic background group: Arab or Any other ethnic group

Highest education level

Highest education level is derived based on the highest qualification reported by the respondent. "Below degree level" includes higher educational qualifications below degree level, A-Levels or Highers, ONC / National Level BTEC, O Level or GCSE equivalent (Grade A-C) / CSE equivalent, GCSE (Grade D to G) or CSE (Grade 2 to 5) or Standard Grade (level 4 to 6). "Other qualifications" represent all other qualifications not listed, excluding degree level and equivalent.

Index of Multiple Deprivation, England

The Index of Multiple Deprivation (IMD) is the official measure of relative deprivation for small areas in England. The IMD ranks every small area in England from 1 (most deprived area) to 32,844 (least deprived area). We have grouped areas into five groups (quintiles), ranging from least deprived to most deprived areas. There is further information on this on the [government English indices of deprivation 2019 page](#).

Parent status

An adult is defined as a parent if they are living with a dependent child who is their son, daughter, stepson or stepdaughter. A dependent child is any child under the age of 16 years or aged 16 to 18 years and in full-time education.

Underlying health condition

Health condition is self-reported and refers to those with an underlying health condition, which includes those with:

- angina or long-term heart problem
- asthma
- a learning disability such as Autism spectrum disorder (ASD) or Asperger's (Asperger syndrome)
- conditions affecting the brain and nerves, such as Parkinson's disease, motor neurone disease or multiple sclerosis
- cancer
- chronic obstructive pulmonary disease (COPD)
- cystic fibrosis or long-term lung problem
- diabetes
- kidney or liver disease
- a weakened immune system as the result of conditions such as HIV and AIDS, or medicines
- problems with your spleen - for example, sickle cell disease, or if you've had your spleen removed
- being very overweight (having a BMI of 40 or above)
- given an organ transplant

Vaccine sentiment

"Vaccine hesitancy" refers to adults who:

- have been offered the vaccine and decided not to be vaccinated
- report being very or fairly unlikely to have the vaccine if offered
- responded "neither likely nor unlikely", "don't know" or "prefer not to say" to the question "if a vaccine for the coronavirus (COVID-19) was offered to you, how likely or unlikely would you be to have the vaccine?"

It should be noted that a small number of respondents reported "prefer not to say". This response is considered to represent those unsure about the vaccine.

"Positive sentiment" refers to adults who:

- have received the vaccine
- have been offered the vaccine and waiting to be vaccinated
- report being very or fairly likely to have the vaccine if offered

When considering the reasons for not having or wanting the vaccine, the base population is those who report negative sentiment.

"Negative sentiment" refers to adults who:

- have been offered the vaccine and decided not to be vaccinated
- report being very or fairly unlikely to have the vaccine if offered

9 . Measuring the data

The Opinions and Lifestyle Survey (OPN) is a monthly omnibus survey. In response to the coronavirus (COVID-19) pandemic, we have adapted the OPN to become a weekly survey used to collect data on the impact of the coronavirus on day-to-day life in Great Britain.

The survey results are weighted to be a nationally representative sample for Great Britain, and data are collected using an online self-completion questionnaire. Individuals who did not want to or were unable to complete the survey online had the opportunity to take part over the phone.

Where differences between groups are presented in this bulletin, associated confidence intervals, which are included in the associated datasets, indicate their significance.

Estimates in this bulletin are rounded to the nearest whole number. Where individual answer categories for a question have been combined to provide an estimate, this total may not appear to sum to the total of individual categories because of this rounding.

Sampling

A sample of households was randomly selected from those that had previously completed the Labour Market Survey (LMS). From each household, one adult was selected at random but with unequal probability. Younger people were given higher selection probability than other people because of under-representation in the sample available for the survey. The survey also includes a boosted sample for England, to allow more detailed analysis at a regional level, which are available in the datasets.

The pooled data comprises four waves of data collection covering the following periods: 13 to 17 January, 20 to 24 January, 27 to 31 January, 3 to 7 February 2021, and included 18,112 adults aged 16 years and over in Great Britain. Pooling four waves of data together increases sample sizes, allowing us to explore vaccine sentiment for different groups of the population.

Weighting

Survey weights were applied to make estimates representative of the population.

Weights were first adjusted for non-response and attrition. Subsequently, the weights were calibrated to satisfy population distributions considering the following factors: sex by age, region, tenure, highest qualification and employment status. For age, sex and region, population totals based on projections of mid-year population estimates for January 2021 were used. The resulting weighted sample is therefore representative of the Great Britain adult population by a number of socio-demographic factors and geography.

Non-response bias

In addition, survey estimates may be subject to non-response bias, which could result in some groups of the population being less likely to take part. Steps have been taken to minimise the impact of non-response bias, which can be found in published information about the [Quality and Methodology for the Opinions and Lifestyle Survey](#).

Regression models

Logistic regression allows us to explore the characteristics associated with vaccine hesitancy while controlling for a range of characteristics at the same time, and how the likelihood of having vaccine hesitancy differs for each level within a characteristic (indicated by odds ratios (ORs)).

Three binomial logistic regression models were produced to explain the relationships between vaccine hesitancy and a range of characteristics. These were:

1. unadjusted: these models show the relationship between the dependent variable, vaccine hesitancy, and an independent variable of interest (characteristic)
2. age and sex adjusted: these models looked at the same dependent and independent variables of interest whilst also controlling for age and sex
3. fully adjusted: this model looked at the same dependent variable and eight independent variables (characteristics) of interest whilst controlling for all variables

Dependent and independent variables

The dependent variable in this analysis was a binary variable where the outcome of interest was vaccine hesitancy.

The independent variables included in the fully adjusted regression model were: age, sex, ethnicity, disability, underlying health condition, parent status, highest education level and housing tenure. Additional characteristics were included in the descriptive analysis in this bulletin. For a full list of characteristics included, see the [accompanying data tables](#).

The selection of independent variables included in the fully adjusted regression model were based on:

- user-need and relevance: ensuring the analysis can inform policy and is based on existing evidence
- data quality: selecting variables with accurate measurement and sufficient sample size
- assessment of suitability: excluding variables with multicollinearity (where two independent variables are highly correlated with each other)

Regression sample size

Missing values were excluded from the regression analysis where a response was not provided for a question or variable included in the model. As a result, 18,037 adults were included in the regression model analysis. A full breakdown of sample sizes and population estimates for each of the characteristics include in the fully adjusted regression model is available in the [accompanying data tables](#).

Statistical significance

This bulletin presents a summary of results, with further data including [confidence intervals](#) for the estimates contained in the associated datasets. Where comparisons between groups are presented, 95% confidence intervals should be used to assess the [statistical significance](#) of the change.

For the regression analysis, characteristics were found to be significant based on the p-value associated (Wald Chi-Squared Test) with each characteristic. The odds ratios were then assessed alongside a confidence interval around each category of interest.

Causality

It is important to note that the associations between characteristics and vaccine hesitancy in this bulletin may not necessarily reflect a causal relationship.

Quality

More quality and methodology information on strengths, limitations, appropriate uses, and how the data were created is available in the [Opinions and Lifestyle Survey Quality and Methodology Information](#).

10 . Strengths and limitations

The main strengths of the Opinions and Lifestyle Survey (OPN) include:

- it allows for timely production of data and statistics that can respond quickly to changing needs
- it meets data needs: the questionnaire is developed with customer consultation, and design expertise is applied in the development stages
- robust methods are adopted for the survey's sampling and weighting strategies to limit the impact of bias
- quality assurance procedures are undertaken throughout the analysis stages to minimise the risk of error
- pooling four waves of data together increases sample sizes, allowing us to explore vaccine hesitancy for different groups of the population

The main limitations of the OPN include:

- analysis of estimates in Wales and Scotland are based on low sample sizes, and therefore caution should be used with these estimates
- comparisons between groups must be done with caution as estimates are provided from a sample survey; as such, [confidence intervals](#) are included in the datasets to present the sampling variability

11 . Related links

[Coronavirus and the social impacts on Great Britain](#)

Bulletin | Released 5 March 2021

Indicators from the Opinions and Lifestyle Survey covering the period 24 February to 28 February 2021 to understand the impact of the coronavirus (COVID-19) pandemic on people, households and communities in Great Britain.

[Coronavirus and vaccine attitudes and behaviours in England: over 80s population, 15 February to 20 February 2021](#)

Bulletin | Released 4 March 2021

Attitudes, behaviours and well-being of people aged over 80 years in England in relation to coronavirus (COVID-19) vaccination.

[Coronavirus \(COVID-19\) Infection Survey, UK: 5 March 2021](#)

Bulletin | Released 5 March 2021

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 \(COVID-19\) latest insights](#)

Interactive tool | Updated 5 March 2021

An interactive tool to explore the latest data and trends about the coronavirus (COVID-19) pandemic from the ONS and other sources.