

Statistical bulletin

Coronavirus (COVID-19) Infection Survey, antibody data, UK: 29 March 2023

Antibody data, by UK country and age, from the Coronavirus (COVID-19) Infection Survey. This survey is delivered in partnership with University of Oxford, University of Manchester, UK Health Security Agency (UKHSA) and Wellcome Trust, working with the University of Oxford and partner laboratories to collect and test samples.

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Next release:
Discontinued

Notice

29 March 2023

This is the final Coronavirus (COVID-19) Infection Survey, antibody data, release. As the UK Health Security Agency (UKHSA) works to confirm its approach to surveillance, the Office for National Statistics (ONS) plans to work with existing participants to continue gathering valuable insight into the experiences of COVID-19, long COVID and other respiratory infections, details of which will be announced in due course. We thank our participants for their continued support.

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1 . Main points

In the week beginning 13 February 2023, the percentage of people estimated to have antibodies against SARS-CoV-2 at or above 800 nanograms per millilitre (ng/ml):

- in England was 77.7% (95% credible interval: 76.8% to 78.7%) for adults aged 16 years and over
- in Wales was 79.5% (95% credible interval: 78.0% to 81.0%) for adults aged 16 years and over
- in Northern Ireland was 74.5% (95% credible interval: 71.3% to 77.6%) for adults aged 16 years and over
- in Scotland was 79.8% (95% credible interval: 78.5% to 81.2%) for adults aged 16 years and over
- in Great Britain was 20.9% (95% credible interval: 14.5% to 29.4%) for children aged 8 to 11 years and 51.3% (95% credible interval: 46.2% to 56.5%) for children aged 12 to 15 years

About this bulletin

This publication reports the percentages of the population that are estimated to have antibodies against SARS-CoV-2, the specific virus that causes coronavirus (COVID-19), at the following thresholds: 179 nanograms per millilitre (ng/ml), 800 ng/ml, 2,000 ng/ml, 4,000 ng/ml, and 6,000 ng/ml.

These estimates cannot be compared with those from previous releases because of several changes in our methods. Please see [Section 5: Measuring the data](#) for more information on these changes to estimating antibody positivity.

As part of our continuous improvement, a small percentage of samples have been retested where a conclusive result was not previously obtained. Some of these samples have now been retested, and estimates of antibody positivity have been updated accordingly, with minimal impact to results.

2 . Antibodies by age group

In the week beginning 13 February 2023, the percentage of the adult population estimated to have antibodies against SARS-CoV-2 at or above the levels of 179 nanograms per millilitre (ng/ml) and 800 ng/ml remained high across the UK.

Figure 1: The percentage of the population estimated to have antibodies against SARS-CoV-2 remained high for UK adults in the week beginning 13 February 2023

Modelled percentage of the adult population with levels of antibodies against SARS-CoV-2 at or above 179 nanograms per millilitre (ng/ml) or 800 ng/ml, by age group, UK countries, 7 December 2020 to 19 February 2023

Notes:

1. All results are provisional and subject to revision.
2. These statistics refer to antibody tests for individuals living in private households. They exclude those in hospitals, care homes or other communal establishments.
3. All estimates are subject to uncertainty, given that a sample is only part of the wider population. A [credible interval](#) gives an indication of the uncertainty of an estimate from data analysis.
4. The denominators used for antibodies are the total for each age group in the sample at that particular time point, then post-stratified by the mid-year population estimate.
5. There was an issue with antibody laboratory results over the period 10 January to 27 February 2022, which primarily affected 800 ng/ml estimates. As a result, 800 ng/ml level estimates are not available for this period.
6. In Northern Ireland, the number of people sampled is low compared with those for England, Wales and Scotland, therefore some age groups have been combined.

Download the data

[.xlsx](#)

In the week beginning 13 February 2023, the percentage of children across Great Britain estimated to have antibodies against SARS-CoV-2 at the 179 ng/ml level remained high for those aged 12 to 15 years.

Figure 2: The percentage of children aged 12 to 15 years estimated to have antibodies against SARS-CoV-2 at the 179 ng/ml level remained high in the week beginning 13 February 2023

Modelled percentage of children with levels of antibodies against SARS-CoV-2 at or above 179 nanograms per millilitre (ng/ml) or 800 ng/ml, by age group, Great Britain, 29 November 2021 to 19 February 2023

Notes:

1. All results are provisional and subject to revision.
2. These statistics refer to antibody tests for individuals living in private households. They exclude those in hospitals, care homes or other communal establishments.
3. All estimates are subject to uncertainty, given that a sample is only part of the wider population. A [credible interval](#) gives an indication of the uncertainty of an estimate from data analysis.
4. The denominators used for antibody age groups are the total children aged 8 to 11 years and 12 to 15 years, respectively, in the sample at that particular time point, who are then post-stratified by the mid-year population estimate.
5. Estimates show the percentages of children in age groups 8 to 11 years and 12 to 15 years in Great Britain as a whole (England, Wales and Scotland) who would have tested positive for antibodies against SARS-CoV-2 at or above the antibody levels of 179 ng/ml and 800 ng/ml.
6. There was an issue with antibody laboratory results over the period 10 January to 27 February 2022, which primarily affected 800 ng/ml estimates. As a result, 800 ng/ml level estimates are not available for this period.
7. Estimates for children in age groups 8 to 11 years and 12 to 15 years are not available before 29 November 2021.

Download the data

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Figure 3 shows the proportion of the adult population estimated to have antibodies to SARS-CoV-2 between the following ranges:

- less than 179 ng/ml (including those with low or no antibodies to SARS-CoV-2)
- from 179 ng/ml to less than 800 ng/ml
- from 800 ng/ml to less than 2,000 ng/ml
- from 2,000 ng/ml to less than 4,000 ng/ml
- from 4,000 ng/ml to less than 6,000 ng/ml
- 6,000 ng/ml and above

Each of these ranges is represented by a shaded area. The larger the area, the greater the proportion of people who have antibody levels within this range. This information is shown by age group and country.

Since January 2023, across most age groups and most UK countries, there has been a decrease in the proportion of those estimated to have antibodies to SARS-CoV-2 in the 4,000 ng/ml and above range. The highest antibody levels were seen among those aged 65 years and over across the UK.

Results at the 2,000ng/ml level and above, for children aged 8 to 15 years in Great Britain, can be found in our [Coronavirus \(COVID-19\) Infection Survey, antibody data, UK: dataset](#).

Figure 3: The highest antibody levels were seen among those aged 65 years and above across the UK, in the week beginning 13 February 2023

Modelled percentage of the population with levels of antibodies across varying levels from less than 179 nanograms per millilitre (ng/ml) to 6,000 ng/ml or above, 2 May 2022 to 19 February 2023

Notes:

1. All results are provisional and subject to revision.
2. These statistics refer to antibody tests for individuals living in private households. They exclude those in hospitals, care homes or other communal establishments.
3. All estimates are subject to uncertainty, given that a sample is only part of the wider population. A [credible interval](#) gives an indication of the uncertainty of an estimate from data analysis.
4. The denominators used for antibodies are the total for each age group in the sample at that particular time point, then post-stratified by the mid-year population estimate.

Download the data

[.xlsx](#)

3 . Coronavirus (COVID-19) Infection Survey data

[Coronavirus \(COVID-19\) antibody data for the UK](#) Dataset | Released 29 March 2023 Antibody data by UK country and regions in England from the Coronavirus (COVID-19) Infection Survey.

4 . Glossary

Antibodies

We measure the levels of antibodies in people who live in private households to understand who has had coronavirus (COVID-19) in the past and the impact of vaccinations. It takes between two and three weeks after infection or vaccination for the body to make enough antibodies to fight the infection. Antibodies can help prevent individuals from getting the same infection again. Once infected or vaccinated, antibodies remain in the blood at low levels and can decline over time.

SARS-CoV-2

This is the scientific name given to the specific virus that causes COVID-19.

Credible interval

A credible interval gives an indication of the uncertainty of an estimate from data analysis. A 95% credible interval is calculated so that there is a 95% probability of the true value lying in the interval.

5 . Measuring the data

Changes to estimating antibody positivity

Our most recent [Coronavirus \(COVID-19\) antibody and vaccination data for the UK dataset](#) contains our most accurate and up-to-date estimates of antibody positivity. These estimates cannot be compared with those from previous releases in this bulletin series for several reasons, which are:

- we have improved our antibody modelling, so estimates are now adjusted by vaccination status to account for the overrepresentation of vaccinated individuals in the survey relative to the general population; as a result, these estimates are lower than previously reported, but the trends remain the same
- we have updated the population totals we use to estimate antibody positivity using the Census 2021 population totals for England and Wales, March 2021 projections for Northern Ireland, and October 2020 projections for Scotland
- we have revised previous estimates because of an issue being identified with laboratory results from 24 October 2022 to 10 February 2023

Reference dates

The antibody positivity estimates for the most recent week in this publication include data from 13 to 19 February 2023.

Our [Coronavirus \(COVID-19\) Infection Survey: methods and further information article](#) provides further information around the survey design, how we process data, and how data are analysed. Our [Coronavirus \(COVID-19\) Infection Survey: quality and methodology information \(QMI\)](#) explains the strengths and limitations of the data, methods used, and data uses and users.

More information on measuring the data is available in [Section 4 of our Coronavirus \(COVID-19\) Infection Survey statistical bulletin](#).

Change in data collection method

Following our change to a remote data collection method in summer 2022, we published results comparing estimates produced by study worker home visit data collection only, with those produced by remote data collection only. The 179 nanograms per millilitre (ng/ml) and 800 ng/ml levels were used for this analysis. Between 10 and 29 July 2022, there was no statistical evidence of a difference between estimates of the percentage of the population of Great Britain testing positive for antibodies against SARS-CoV-2 at the 179 ng/ml level produced by remote data collection or study worker home visit data collection. Between 10 and 29 July 2022, there was statistical evidence of a small difference at the 800 ng/ml level, indicating that blood samples collected remotely were slightly more likely to have antibodies against SARS-CoV-2 at or above this level compared with those collected at study worker home visits, in Great Britain. Details of these results can be found in our [Coronavirus \(COVID-19\) Infection Survey quality report: September 2022](#). Results from 14 to 31 July 2022 include a combination of survey worker and remote data collection, while estimates from 1 August 2022 are based on remote data collection alone.

Survey data

The analysis on antibodies in this bulletin is based on blood test results taken from a randomly selected subsample of individuals aged eight years and over who live in private households. The survey excludes those in hospitals, care homes and other communal establishments. The blood samples are used to test for antibodies against SARS-CoV-2.

Antibodies and immunity

Antibody positivity is defined by having a fixed concentration of antibodies in the blood. A negative test result occurs if there are no antibodies, or if antibody levels are too low to reach a level at the time of testing. It does not mean that their antibody level is at zero or that a person has no protection against COVID-19. Additionally, there are other parts of the immune system that will offer protection, for example, a person's T-cell response. This will not be detected by blood tests for antibodies. A person's immune response is affected by a number of factors, including health conditions and age.

Our [blog on antibodies and immunity](#) gives further information on the link between antibodies and immunity and the vaccine programme. Our [blog on vaccine effectiveness](#) provides information on the effectiveness of vaccinations against Alpha and Delta variants, which is based on research conducted by partners from the University of Oxford.

Measuring antibody positivity

Our 179 nanograms per millilitre (ng/ml) level is based on research by our academic partners, as described in their 2021 article [Effect of Delta variant on viral burden and vaccine effectiveness against new SARS-CoV-2 infections in the UK](#). This level reflects the percentage of adults who would have been likely to have a strong enough antibody response to provide some protection from getting a new COVID-19 infection with the Delta variant. This level is higher than our previously reported standard level of 42 ng/ml, which was associated with SARS-CoV-2 infection before vaccines became available. The 800 ng/ml level is the highest level at which we can produce a historic back-series. We have also introduced estimates of antibody positivity at 2,000 ng/ml, 4,000 ng/ml, and 6,000 ng/ml. These levels have been introduced to enable enhanced monitoring of antibody levels and waning. They are not based on academic research on protection against the Omicron variant, as sufficient evidence on this is not yet available. Further details of recent method changes to incorporate these higher threshold levels can be found in [Section 2 of our Coronavirus \(COVID-19\) Infection Survey, antibody data, UK: 27 July 2022 bulletin](#).

The test used for spike antibodies measures their concentration in ng/ml. The antibody level of 179 ng/ml corresponds to 100 binding antibody units (BAU)/ml, using the World Health Organization's (WHO) standardised units (enabling comparison across different antibody assays), as explained in the 2021 article [WHO International Standard for evaluation of the antibody response to COVID-19 vaccines: call for urgent action by the scientific community](#).

Further information on antibody test levels, and the link between antibodies and infections, can be found in our recent blog post [The relationship between COVID-19 infections and antibodies: What do the data show?](#)

6 . Related links

[Coronavirus \(COVID-19\) Infection Survey, UK](#) Bulletin | Updated weekly Percentage of people testing positive for coronavirus (COVID-19) in private residential households in England, Wales, Northern Ireland and Scotland, including regional and age breakdowns. This survey is being delivered in partnership with University of Oxford, University of Manchester, UK Health Security Agency (UKHSA) and Wellcome Trust, working with the University of Oxford and partner laboratories to collect and test samples.

[Coronavirus \(COVID-19\) Infection Survey, characteristics of people testing positive for COVID-19, UK](#) Bulletin | Updated monthly Characteristics of people testing positive for COVID-19 from the Coronavirus (COVID-19) Infection Survey. This survey is delivered in partnership with University of Oxford, University of Manchester, UK Health Security Agency (UKHSA) and Wellcome Trust, working with the University of Oxford and partner laboratories to collect and test samples.

[Regional and sub-regional estimates of coronavirus \(COVID-19\) positivity over time, UK: 12 January 2023](#) Article | Released 12 January 2023 Percentage of people testing positive for coronavirus (COVID-19) in private residential households by region and sub-region, over time.

[Coronavirus \(COVID-19\) Infection Survey quality report: December 2022](#) Methodology | Last revised 21 December 2022 Information on the Coronavirus (COVID-19) Infection Survey data collection method change from study worker home visit to remote data collection.

[Coronavirus \(COVID-19\) Infection Survey: quality and methodology information \(QMI\)](#) Methodology | Last revised 20 January 2023 Quality and Methodology Information for the Coronavirus (COVID-19) Infection Survey (CIS), detailing the strengths and limitations of the data, methods used, and data uses and users.

[Coronavirus \(COVID-19\) Infection Survey technical article: Cumulative incidence of the number of people who have tested positive for COVID-19, UK: 22 April 2022](#) Article | Released 22 April 2022 Analysis of the number of people in the UK who have tested positive for COVID-19 using the Coronavirus (COVID-19) Infection Survey. This survey is being delivered in partnership with University of Oxford, University of Manchester, UK Health Security Agency and Wellcome Trust.

[Coronavirus \(COVID-19\) Infection Survey technical article: Characteristics associated with third vaccination uptake: 21 April 2022](#) Article | Released 21 April 2022 Analysis of populations in the UK by likelihood of having received a third vaccination against COVID-19 using the Coronavirus (COVID-19) Infection Survey. This survey is being delivered in partnership with University of Oxford, University of Manchester, UK Health Security Agency and Wellcome Trust.

[Coronavirus \(COVID-19\) Infection Survey technical article: Impact of vaccination on testing positive in the UK: October 2021](#) Article | Released 18 October 2021 The reduction in risk of testing positive for COVID-19 associated with vaccination overall and by different vaccine types using data from the Coronavirus (COVID-19) Infection Survey. Two time periods were analysed; when the Alpha variant was dominant in the UK (1 December 2020 to 16 May 2021), and when the Delta variant was dominant (17 May to 14 August 2021).

7 . Cite this statistical bulletin

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