Office for National Statistics

Statistical bulletin

Coronavirus (COVID-19) Infection Survey, antibody data, UK: 4 May 2022

Antibody data by UK country and regions in England from the Coronavirus (COVID-19) Infection Survey. This analysis has been produced in partnership with University of Oxford, University of Manchester, UK Health Security Agency, andWellcomeTrust. This study is jointly led by the ONS and the Department for Health and Social Care (DHSC) working with the University of Oxford andLighthouseLaboratoryto collect and test samples.

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1 . Main points

In this bulletin, we report percentages of the population that are estimated to have antibodies against SARS-CoV-2, the specific virus that causes coronavirus (COVID-19). Two levels are used: a 179 ng/ml level, which is consistent with previous publications, and a newly introduced 800 ng/ml level.

In the week beginning 11 April 2022, the percentage of people estimated to have antibodies against SARS-Cov-2:

- in England, was 98.8% of adults at or above 179 ng/ml (95% credible interval: 98.5% to 99.0%), and 95.4% of adults at or above 800 ng/ml (95% credible interval: 94.9% to 95.9%)
- in Wales, was 98.7% of adults at or above 179 ng/ml (95% credible interval: 98.2% to 99.0%), and 95.6% of adults at or above 800 ng/ml (95% credible interval: 94.8% to 96.4%)
- in Northern Ireland, was 99.0% of adults at or above 179 ng/ml (95% credible interval: 98.2% to 99.4%), and 94.4% of adults at or above 800 ng/ml (95% credible interval: 91.9% to 96.2%)
- in Scotland, was 98.9% of adults at or above 179 ng/ml (95% credible interval: 98.5% to 99.2%), and 94.7% of adults at or above 800 ng/ml (95% credible interval: 93.8% to 95.4%)
- across the UK for children at or above 179 ng/ml ranged from 96.1% to 97.2% for those aged 12 to 15 years and from 85.3% to 90.3% for those aged 8 to 11 years

About this bulletin

As the coronavirus (COVID-19) pandemic and vaccinations have evolved, we have reviewed how we present information about antibody levels. To enable enhanced monitoring of antibody levels and waning, in this release we have introduced an additional antibody series based on a higher level of 800 (ng/ml). This level is the highest level at which we can produce a historic back-series and is provided to enable enhanced monitoring of antibody levels and waning. It is not based on academic research on protection against the Omicron variant, as sufficient evidence on this is not yet available. Estimates are presented for age groups over 16 years in all UK countries, and for children aged 8 to 15 years in England.

In this release, we have removed the 42 ng/ml level from reporting, as all age groups have been at, or nearly at, 100% antibody positivity at or above 42 ng/ml for some time. Most recent data for the 42 ng/ml level (up to 3 April 2022) will continue to be included in our Coronavirus (COVID-19) antibody data for the UK dataset, for information.

Further information on antibody test level, and the link between antibodies and infections can be found in our recent blog post Relationship between COVID-19 infections and antibodies: what do the data show?

2 . Antibodies by country

In the week beginning 11 April 2022, the percentage of the adult population estimated to have antibodies against SARS-CoV-2 at or above the 179 nanograms per millilitre (ng/ml) and at or above the 800 nanograms per millilitre (ng/ml) level remained high across all UK nations.

Regional data and percentages of the population who are estimated to have antibodies at or above the previously reported antibody level of 42 ng/ml, the higher antibody level of 179 ng/ml, and the 800 ng/ml antibody level introduced in this release, can be found in our Coronavirus (COVID-19) antibody data for the UK dataset.

Figure 1: The percentage of the population who are estimated to have antibodies against SARS-CoV-2 remained high for those aged 16 years and over across the UK in the week beginning 11 April 2022

Modelled percentage of the population with levels of antibodies against SARS-CoV-2 below 179 nanograms per millilitre (ng /ml), between 179 ng/ml and 800ng/ml, and above 800 ng/ml, 7 December 2020 to 17 April 2022

Notes:

1. All results are provisional and subject to revision.
2. These statistics refer to antibody tests for individuals living in private households.
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 . Antibodies by age group

In the week beginning 11 April 2022, the percentage of the population estimated to have antibodies against SARS-CoV-2 at or above levels of 179 ng/ml and 800 ng/ml remained high for all age groups in all UK nations.

Figure 2: The percentage of the population who are estimated to have antibodies against SARS-CoV-2 remained high for those aged 8 years and over across the UK in the week beginning 11 April 2022

Modelled percentage of the 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 17 April 2022

Notes:

1. All results are provisional and subject to revision.
2. These statistics refer to antibody tests for individuals living in private households.
3. In Northern Ireland, the number of people sampled is low compared with England, Wales and Scotland; therefore, adults aged 50 to 69 years are included in the same age group, and those aged 70 years and over are included in the same age group.
4. 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.
5. 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.
6. Estimates for children aged 8 to 15 years are not available before 29 November 2021.
7. Estimates of antibodies at or above the 800 ng/ml level for children aged 8 to 15 years in Wales, Northern Ireland, and Scotland have not been produced for this release.

Download the data

.xlsx

4 . Coronavirus (COVID-19) Infection Survey data

Coronavirus (COVID-19) antibody and vaccination data for the UK
Dataset | Released 4 May 2022
Antibody data by UK country and regions in England from the Coronavirus (COVID-19) Infection Survey. This analysis has been produced in partnership with the University of Oxford, University of Manchester, UK Health Security Agency and Wellcome Trust. This study is jointly led by the Office for National Statistics (ONS) and the Department for Health and Social Care (DHSC) working with the University of Oxford and Lighthouse Laboratory to collect and test samples.

5 . 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.

6 . Measuring the data

Reference dates

The antibody estimates for the most recent week in this publication include data from 11 to 17 April 2022.

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

More information on measuring the data is available in the Coronavirus (COVID-19) Infection Survey statistical bulletin.

Survey data

The analysis on antibodies in this bulletin is based on blood test results taken from a randomly selected subsample of individuals aged 8 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, and 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. Antibody levels below this do not mean that a person has no antibodies or immune protection at all. This antibody level was identified as providing a 67% lower risk of getting a new COVID-19 infection with the Delta variant after two vaccinations with either Pfizer or AstraZeneca vaccines, compared with someone who was unvaccinated and had not had COVID-19 before. It is unlikely that this level will provide equivalent protection against the Omicron variant, and we will keep the level used in our analysis of antibodies under regular review.

To enable enhanced monitoring of antibody levels and waning, this week we have introduced an additional antibody series with a higher level of 800 ng/ml. This level is the highest level at which we can provide historic estimates. The 800 ng/ml level has been chosen solely based on the test result data to provide historic estimates and is not based on any evidence on the level of antibodies needed for protection against Omicron, as this evidence is not yet available. We may update the level used in our antibody tests if research shows that an alternative level would identify changes in antibody levels earlier (antibody levels greater than 800ng/ml are currently under investigation). In this release, the 800 ng/ml level has not been included for antibody positivity in those aged under 16 years in the UK devolved administrations, as these estimates are undergoing further quality assurance procedures.

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, and 800 ng/ml to 447 BAU/ml, using the World Health Organization's (WHO) standardised units (enabling comparison across different antibody assays).

Further information on antibody test levels, and the link between antibodies and infections can be found in our recent blog post Relationship between COVID-19 infections and antibodies: What do the data show?

7 . Related links

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 the University of Oxford, University of Manchester, UK Health Security Agency and Wellcome Trust.

Coronavirus (COVID-19) Infection Survey, characteristics of people testing positive for COVID-19, UK
Bulletin | Updated fortnightly
Characteristics of people testing positive for COVID-19 from the Coronavirus (COVID-19) Infection Survey, including antibody data by UK country, and region and occupation for England. Antibodies data published before 3 February 2021 are available in this series.

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
Technical 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: Impact of vaccination on testing positive in the UK: October 2021
Technical 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).

Coronavirus (COVID-19) Infection Survey QMI
Methodology | Last revised 16 July 2021
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.