

Statistical bulletin

# Coronavirus (COVID-19) Infection Survey, UK: 2 September 2022

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 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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# 1 . Main points

The following points are for the week ending 23 August 2022.

- The percentage of people testing positive for coronavirus (COVID-19) continued to decrease in all UK countries except Northern Ireland, where the trend was uncertain.
- In England, the estimated number of people testing positive for COVID-19 was 893,300 (95% credible interval: 837,700 to 952,700), equating to 1.64% of the population, or around 1 in 60 people.
- In Wales, the estimated number of people testing positive for COVID-19 was 47,300 (95% credible interval: 36,200 to 60,300), equating to 1.56% of the population, or around 1 in 65 people.
- In Northern Ireland, the estimated number of people testing positive for COVID-19 was 35,800 (95% credible interval: 25,500 to 48,200), equating to 1.95% of the population, or around 1 in 50 people.
- In Scotland, the estimated number of people testing positive for COVID-19 was 96,000 (95% credible interval: 77,000 to 117,400), equating to 1.82% of the population, or around 1 in 55 people.

We have now moved to a more flexible remote data collection method. Participants can complete the survey online or by telephone, and swab and blood samples are returned through the post (or by courier for some participants).

## About this bulletin

The positivity rate is the percentage of people who would have tested positive for COVID-19 on a polymerase chain reaction (PCR) test at a point in time. We use current COVID-19 infections to mean testing positive for SARS-CoV-2, with or without having symptoms, on a swab taken from the nose and throat. This is different to the incidence rate, which is a measure of only the new PCR positive cases in a given time period. Data are based on confirmed positive COVID-19 test results from those living in private households, excluding those living in care homes or other communal establishments.

All daily modelled estimates are provisional and subject to revision. See [Section 10: Measuring the data](#) and [Section 11: Strengths and limitations](#) for more details. There is a higher degree of uncertainty for data broken down by smaller population groups compared with England as a whole.

[Early management information](#) from the Coronavirus (COVID-19) Infection Survey (CIS) is made available to government decision-makers to inform their response to COVID-19. Occasionally we may publish figures early if it is considered in the public interest. We will ensure that we pre-announce any ad hoc or early publications as soon as we can. These will include supporting information where possible to aid user understanding. This is consistent with guidance from the [Office for Statistics Regulation \(OSR\)](#).

The Office for National Statistics (ONS) Coronavirus (COVID-19) Infection Survey has moved from a study worker home visit data collection method to a more flexible approach for participants (see [Section 10: Measuring the data](#) of this release for more details).

Some of our outputs were paused throughout July and early August while we assessed results from the new data collection method, and because of reduced sample sizes. While many of our outputs are no longer paused and are included in this week's release, it is not yet possible to reintroduce our estimates of incidence and sub-regional analysis. Because of a shortened publication cycle for this release (to accommodate the August bank holiday weekend), analyses showing modelled daily estimates of the percentage testing positive for COVID-19 by single year of age have also not been updated this week. Most recent updates for these outputs are available in our [Coronavirus \(COVID-19\) Infection Survey datasets](#).

## 2 . COVID-19 by UK countries

In the week ending 23 August 2022, the percentage of people testing positive for coronavirus (COVID-19) continued to decrease in all UK countries except Northern Ireland where the trend was uncertain.

Table 1: Estimated percentage of the population testing positive for coronavirus (COVID-19) by UK country  
Official estimates of the percentage of the population testing positive for COVID-19 on nose and throat swabs, UK, 17 to 23 August 2022

Country	Estimated average % of the population testing positive for COVID-19	95% credible interval		Estimated average number of people testing positive for COVID-19	95% credible interval		Estimated average ratio of the population testing positive for COVID-19	95% credible interval	
		Lower	Upper		Lower	Upper		Lower	Upper
<b>England</b>	1.64	1.54	1.75	893,300	837,700	952,700	1 in 60	1 in 65	1 in 55
<b>Wales</b>	1.56	1.19	1.98	47,300	36,200	60,300	1 in 65	1 in 85	1 in 50
<b>Northern Ireland</b>	1.95	1.39	2.63	35,800	25,500	48,200	1 in 50	1 in 70	1 in 40
<b>Scotland</b>	1.82	1.46	2.23	96,000	77,000	117,400	1 in 55	1 in 70	1 in 45

Source: Office for National Statistics – Coronavirus (COVID-19) Infection Survey

### Notes

1. The ratios presented are rounded to the nearest 100 if over 1,000 to the nearest 10 if under 1,000, to the nearest 5 if under 100, and to the nearest 1 if under 20. This may result in credible intervals that appear to be similar to the estimated average ratio.
2. These ratios do not represent a person's risk of becoming infected, since risk of infection depends on a number of factors, including contact with others or vaccination status.

**Figure 1: The percentage of people testing positive for coronavirus (COVID-19) continued to decrease across England, Wales, and Scotland, and the trend was uncertain in Northern Ireland in the week ending 23 August 2022**

Estimated percentage of the population testing positive for COVID-19 on nose and throat swabs, UK, 21 August 2021 to 23 August 2022

### Notes:

1. Official reported estimates are plotted at a reference point believed to be most representative of the given week.
2. Official estimates are displayed over a rolling year up to the most recent week. The full time series of our official estimates from 27 April 2020 onwards are available in our [Coronavirus \(COVID-19\) Infection Survey datasets](#).
3. There is a higher degree of uncertainty in our estimates for Wales, Northern Ireland and Scotland, compared with England. This is shown by wider [credible intervals](#).

Download this chart

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## About our estimates

Our headline estimates of the percentage of people testing positive in England, Wales, Northern Ireland and Scotland are the latest official estimates.

Official estimates should be used to understand the positivity rate for a single point in time and are our best and most stable estimates, used in all previous outputs. They are based on [a reference day](#) from the statistical model of the trend in rates of positive nose and throat swab results for the latest week. All estimates are subject to uncertainty given that a sample is only part of the wider population.

The [modelled estimates](#) are more suited to understanding the recent trend. This is because the model is regularly updated to include new test results and smooths the trend over time. As swabs are not necessarily analysed in date order by the laboratory, we have not yet received test results for all swabs taken on the dates included in this analysis. Therefore, caution should be taken in over-interpreting small movements in the very latest trends. These modelled estimates can be found in our [Coronavirus \(COVID-19\) Infection Survey datasets](#).

### More about coronavirus

- Find the latest on [coronavirus \(COVID-19\) in the UK](#).
- [Explore the latest coronavirus data](#) from the ONS and other sources.
- View [all coronavirus data](#).

## 3 . COVID-19 by regions of England

In the week ending 23 August 2022, the percentage of people testing positive for coronavirus (COVID-19) continued to decrease in all regions of England except the East Midlands. In the East Midlands, the percentage of people testing positive decreased in the most recent two weeks, however, the trend was uncertain in the most recent week.

### Figure 2: The percentage of people testing positive for coronavirus (COVID-19) continued to decrease in all regions of England except the East Midlands in the week ending 23 August 2022

Modelled daily percentage of the population testing positive for COVID-19 on nose and throat swabs by region, England, 13 July to 23 August 2022

Notes:

1. [Credible intervals](#) widen slightly at the end as there is a delay between the swab being taken and reporting of results. We report latest figures based on the reference day for that week because of this greater uncertainty in the most recent days.
2. There is a higher degree of uncertainty in our estimates for English regions compared with England overall, shown by wider [credible intervals](#).
3. The percentage of people testing positive by region was calculated using a similar modelling approach to the national daily estimates in [Section 2: COVID-19 by UK countries](#).
4. We describe trends by comparing the probability that the estimate for the reference day is higher or lower than the estimate for 7 and 14 days prior.

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## 4 . COVID-19 by age

### Age group analysis for England

Our [age group](#) analysis separates children and young people by school age.

In the week ending 23 August 2022, the percentage of people testing positive for coronavirus (COVID-19) in England decreased in all age groups.

#### **Figure 3: The percentage of people testing positive for coronavirus (COVID-19) decreased in all age groups in England in the week ending 23 August 2022**

Modelled daily percentage of the population testing positive for COVID-19 on nose and throat swabs by age group, England, 13 July to 23 August 2022

##### Notes:

1. [Credible intervals](#) widen slightly at the end as there can be a delay between the swab being taken and reporting of results. We report latest figures based on the reference day for that week because of this greater uncertainty in the most recent days.
2. There is a higher degree of uncertainty in our estimates for each age group in England compared with England overall, and these results were based on the smaller sample size at the start of the six-week period when we were transitioning to a remote data collection method. This is shown by wider [credible intervals](#).

Download this chart

[.xlsx](#)

We are unable to produce the same grouped analysis as presented in Figure 3 for the devolved administrations because of smaller sample sizes within each age group. However, estimates of positivity by single year of age for Wales, Northern Ireland and Scotland using a different model are available in [accompanying datasets](#) (these refer to our previous release of 26 August 2022 and have not been updated this week because of the shortened publication cycle to accommodate the August bank holiday).

Further information on positivity by age for Northern Ireland is published by the [Northern Ireland Department for Health's Coronavirus \(COVID-19\) Infection Survey findings](#).

## 5 . Viral load and variants of COVID-19

The World Health Organization (WHO) have defined names for [variants of concern](#).

Currently, the variants under surveillance in the UK are Omicron, including sub-lineages BA.1, BA.2, BA.3, BA.4 and BA.5.

The cycle threshold (Ct) value reflects the quantity of virus (also known as viral load) found in a swab test. A lower Ct value indicates a higher viral load. The latest Ct values of coronavirus (COVID-19) positive tests, as well as analysis of the genetic lineages of COVID-19 seen in the samples we sequence, are provided in our [Coronavirus \(COVID-19\) Infection Survey: technical dataset](#).

Since the end of June 2022, the majority of COVID-19 infections in the UK have been Omicron variants BA.4 or BA.5, with BA.5 comprising 86.3% and BA.4 comprising 12.2% of all sequenced COVID-19 infections in the week ending 14 August 2022.

We last published our variant analysis by gene pattern in our [Coronavirus \(COVID-19\) Infection Survey, UK: 8 July 2022 bulletin](#). We will continue to monitor infections by variant and will reintroduce analysis by gene pattern when considered helpful. More information on how we measure variants from positive tests on the survey can be found in our [Understanding COVID-19 variants blog](#) and in our [Coronavirus \(COVID-19\) Infection Survey methods article](#).

The whole genome sequencing is produced by the Wellcome Trust Sanger Institute and analysis is produced by research partners at the University of Oxford. Of particular note are Dr Katrina Lythgoe, Dr Tanya Golubchik and Dr Helen Fryer. Genome sequencing is funded by the COVID-19 Genomics UK (COG-UK) consortium. COG-UK is supported by funding from the Medical Research Council (MRC) part of UK Research and Innovation (UKRI), the National Institute of Health Research (NIHR), and Genome Research Limited operating as the Wellcome Sanger Institute.

## 6 . Test sensitivity and specificity

The estimates provided in Sections 2 to 4 are for the percentage of the private-residential population testing positive for coronavirus (COVID-19), otherwise known as the positivity rate. We do not report the prevalence rate. To calculate the prevalence rate, we would need an accurate understanding of the swab test's sensitivity (true-positive rate) and specificity (true-negative rate).

While we do not know the true sensitivity and specificity of the test, our data and related studies provide an indication of what these are likely to be. In particular, the data suggest that the false-positive rate is very low – under 0.005%. We do not know the sensitivity of the swab test. However, other studies suggest that sensitivity (the rate of true-positive test results) may be somewhere between 85% and 98%.

You can find more information on sensitivity and specificity in our [Coronavirus \(COVID-19\) Infection Survey methods article](#) and our [blog that explains why we trust the data from the Coronavirus \(COVID-19\) Infection Survey](#). You can find more information on the data suggesting that our test's false-positive rate is very low in a [paper written by academic partners](#) at the University of Oxford.

## 7 . Coronavirus (COVID-19) Infection Survey data

### [Coronavirus \(COVID-19\) Infection Survey: England](#)

Dataset | Released 2 September 2022

Findings from the Coronavirus (COVID-19) Infection Survey for England.

### [Coronavirus \(COVID-19\) Infection Survey: Northern Ireland](#)

Dataset | Released 2 September 2022

Findings from the Coronavirus (COVID-19) Infection Survey for Northern Ireland.

### [Coronavirus \(COVID-19\) Infection Survey: Scotland](#)

Dataset | Released 2 September 2022

Findings from the Coronavirus (COVID-19) Infection Survey for Scotland.

### [Coronavirus \(COVID-19\) Infection Survey: Wales](#)

Dataset | Released 2 September 2022

Findings from the Coronavirus (COVID-19) Infection Survey for Wales.

### [Coronavirus \(COVID-19\) Infection Survey: technical data](#)

Dataset | Released 2 September 2022

Technical and methodological data from the Coronavirus (COVID-19) Infection Survey, England, Wales, Northern Ireland and Scotland.

## 8 . Collaboration



The Coronavirus (COVID-19) Infection Survey analysis was produced by the Office for National Statistics (ONS) in collaboration with our research partners at the University of Oxford, the University of Manchester, UK Health Security Agency (UK HSA) and Wellcome Trust. Of particular note are:

- Sarah Walker - University of Oxford, Nuffield Department for Medicine: Professor of Medical Statistics and Epidemiology and Study Chief Investigator
- Koen Pouwels - University of Oxford, Health Economics Research Centre, Nuffield Department of Population Health: Senior Researcher in Biostatistics and Health Economics
- Thomas House - University of Manchester, Department of Mathematics: Reader in Mathematical Statistics
- Anna Seale - University of Warwick, Warwick Medical School: Professor of Public Health; UK Health Security Agency, Data, Analytics and Surveillance: Scientific Advisor

## 9 . Glossary

### Age groups for children and young people

- “Aged 2 years to school Year 6” includes children in primary school and below
- “school Year 7 to school Year 11” includes children in secondary school
- “school Year 12 to those aged 24 years” includes young adults who may be in further or higher education

Those aged 11 to 12 years and those aged 16 to 17 years have been split between different age categories depending on whether their birthday is before or after 1 September.

### 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](#).

### Credible interval

A credible interval gives an indication of the uncertainty of an estimate from data analysis. The 95% credible intervals are calculated so that there is a 95% probability of the true value lying in the interval. A wider interval indicates more uncertainty in the estimate. Overlapping credible intervals indicate that there may not be a true difference between two estimates. For more information, see our methodology page on [statistical uncertainty](#).

### Cycle threshold (Ct) values

The strength of a positive coronavirus (COVID-19) test is determined by how quickly the virus is detected, measured by a cycle threshold (Ct) value. The lower the Ct value, the higher the viral load and stronger the positive test. Positive results with a high Ct value can be seen in the early stages of infection when virus levels are rising, or late in the infection, when the risk of transmission is low.

### False-positives and false-negatives

A false-positive result occurs when the tests suggest a person has COVID-19 when in fact they do not. By contrast, a false-negative result occurs when the tests suggest a person does not have COVID-19 when in fact they do. For more information on false-positives and false-negatives, see [Section 11: Strengths and limitations of this release](#).

### Incidence rate

The incidence rate is a measure of the estimated number of new polymerase chain reaction (PCR)-positive cases per day per 10,000 people at a given point in time. It is different to positivity, which is an estimate of all current PCR positive cases at a point in time, regardless of whether the infection is new or existing.



# 10 . Measuring the data

## Remote data collection

The Office for National Statistics (ONS) Coronavirus (COVID-19) Infection Survey (CIS) has moved from collecting data and samples through home visits by a study worker to a more flexible approach for participants. We have introduced an online questionnaire and swab and blood samples are sent through the post (or by courier for some participants). Further information on what these changes mean and how the survey will continue to be valuable can be found in our recent [blog post: The COVID-19 Infection Survey is changing](#).

Early findings from our initial pilot stage of remote data collection suggest that participants are satisfied with the new data collection method, with around 9 out of 10 participants indicating that they were either “satisfied” or “very satisfied”. There were minimal differences between estimates produced from remote data collection methods, compared with data collected by study worker home visits. As a result, data in this release combine data collected from these two methods for time points where both are in use. Further information on the effects of the change in data collection method can be found in our [Quality Report](#).

## Laboratories

The nose and throat swabs taken from participants of the Coronavirus (COVID-19) Infection Survey are sent to the Lighthouse Laboratory in Glasgow for processing. Recently, to ensure resilience for testing capacity, some of our swabs have been sent to the Rosalind Franklin Laboratory for testing. We have investigated potential impacts of using two laboratories on our positivity results and have made some minor statistical adjustments within our existing models to ensure consistency.

## Weighted estimates

In earlier publications we published weighted estimates for non-overlapping 14-day periods. These were additional to our modelled estimates, which are updated more regularly as test results are received and provide the best measure of trends. The weighted estimates were last updated in our [publication on 13 May 2022](#). For more information on our methods and quality surrounding the estimates please see our [Coronavirus \(COVID-19\) Infection Survey methods article](#) and our [Quality and Methodology Information \(QMI\) report](#).

## Reference dates

We aim to provide the estimates of positivity rate (the percentage of people who test positive) and incidence that are most timely and most representative of each week. In addition, to improve stability in our modelling while maintaining relative timeliness of our estimates, we report our official estimates based on the midpoint of the reference week. This week, the reference week is 17 to 23 August 2022 and the reference day for positivity rates is Saturday 20 August 2022 for all UK countries.

For more information on our methods surrounding the reference dates please see our [Coronavirus \(COVID-19\) Infection Survey methods article](#).

## Response rates

Enrolment for this wave of recruitment for the Coronavirus (COVID-19) Infection Survey ceased on 31 January 2022. Response rates for England, Wales, Northern Ireland and Scotland can be regarded as final response rates to the survey. Response rates for each nation are found in our [Coronavirus \(COVID-19\) Infection Survey: technical dataset](#). We provide response rates separately for the different sampling phases of the study. Additional information on response rates can be found in our [Coronavirus \(COVID-19\) Infection Survey methods article](#).

## Inconclusive and failed tests

Our estimates are based on confirmed positive test results. The remaining swabs are either negative and included in analysis, or inconclusive and not included in analysis. Some swabs are test failures, which also are not included in analysis. The impact of excluding inconclusive results from our estimates of positive infections is likely to be very small and unlikely to affect the trend.

## Survey fieldwork

Survey fieldwork for the pilot study began in England on 26 April 2020. In Wales, fieldwork began on 29 June 2020, in Northern Ireland fieldwork began on 26 July 2020 and in Scotland fieldwork began on 21 September 2020.

## Other Coronavirus Infection Survey (CIS) analysis and studies

This study provides the main measure of coronavirus infection in the UK. Other sources have provided data during previous stages of the pandemic. For information on other studies see [Section 4: Quality characteristics of the Coronavirus \(COVID-19\) Infection Survey](#) (coherence and comparability) of the [Coronavirus \(COVID-19\) Infection Survey QMI](#), revised 16 July 2021.

## 11 . Strengths and limitations

The data in this bulletin can be used for:

- estimating the number of positive cases among the population living in private households, including cases where people do not report having any symptoms
- identifying differences in numbers of positive cases between UK countries and different regions in England
- estimating the number of new cases and change in positive cases over time

The data cannot be used for:

- measuring the number of cases and infections in care homes, hospitals and/or other communal establishments
- providing information about recovery time of those infected

The results in this bulletin are:

- based on infections occurring in private households
- subject to uncertainty; a [credible or confidence interval](#) gives an indication of the uncertainty of an estimate from data analysis
- for daily modelled estimates, provisional and subject to revision

These statistics have been produced quickly in response to developing world events. The [Office for Statistics Regulation \(OSR\)](#), on behalf of the UK Statistics Authority, has reviewed them on [14 May 2020](#) and [17 March 2021](#) against several important aspects of the [Code of Practice for Statistics](#) and regards them as consistent with the Code's pillars of [trustworthiness](#), [quality](#) and [value](#).

The estimates presented in this bulletin contain [uncertainty](#). There are many sources of uncertainty, including uncertainty in the test, in the estimates and in the quality of data collected in the questionnaire. Information on the main sources of uncertainty is presented in our [Coronavirus \(COVID-19\) Infection Survey Quality and Methodology Information report](#), our [methodology article](#), and our [blog that explains why we trust the data from the Coronavirus \(COVID-19\) Infection Survey](#).

## 12 . Related links

### [Coronavirus \(COVID-19\) Infection Survey, Quality Report: August 2022](#)

Article | Released 18 August 2022

This quality report presents 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: characteristics of people testing positive for COVID-19 in countries of the UK](#)

Bulletin | Updated fortnightly

The characteristics of people testing positive for coronavirus (COVID-19) from the COVID-19 Infection Survey. This survey is being delivered in partnership with the University of Oxford, the University of Manchester, UK Health Security Agency and Wellcome Trust.

### [Coronavirus \(COVID-19\) Infection Survey: antibody and vaccination data for the UK](#)

Bulletin | Updated fortnightly

Antibody and vaccination data by UK country and English regions from the Coronavirus (COVID-19) Infection Survey. This survey is being delivered in partnership with the University of Oxford, University of Manchester, UK Health Security Agency and Wellcome Trust.

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

Interactive tool | Updated as and when data become available

The latest data and trends about the coronavirus (COVID-19) pandemic from the Office for National Statistics (ONS) and other official sources.

### [Deaths registered weekly in England and Wales, provisional](#)

Bulletin | Updated weekly

Provisional counts of the number of deaths registered in England and Wales, including deaths involving COVID-19, by age, sex and region, in the latest weeks for which data are available.

### [Coronavirus \(COVID-19\) Infection Survey technical article: Analysis of characteristics associated with third vaccination uptake](#)

Technical 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: Cumulative incidence of the number of people who have tested positive for COVID-19, UK](#)

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.

### [The relationship between COVID-19 infections and antibodies: What do the data show?](#)

Blog article | Released 6 April 2022

Information on how COVID-19 infections have recently reached their highest levels across many parts of the UK while antibody levels are high.

## 13 . Cite this statistical bulletin

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