Office for National Statistics

Article

Coronavirus (COVID-19) positivity by Integrated Care Board, England: 23 January 2023

Percentage of people testing positive for coronavirus (COVID-19) by Integrated Care Board (ICB) in private residential households in England.

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1 . Main points

Between the weeks beginning 5 October 2022 and 28 December 2022, there was little variation between Integrated Care Boards (ICBs) in the percentage of people testing positive for coronavirus (COVID-19).

The most recent data for the week beginning 28 December 2022 show that:

- the percentage of people testing positive for COVID-19 was consistent across the majority of ICBs in England
- the highest percentage of people testing positive for COVID-19 was 5.02% (95% credible interval: 4.20% to 6.02%) in NHS Devon ICB
- the lowest percentage of people testing positive for COVID-19 was 3.40% (95% credible interval: 2.89% to 3.99%) in NHS Cheshire and Merseyside ICB

2 . Overview

This article presents estimates for the percentage of people testing positive for coronavirus (COVID-19) in each of the 42 Integrated Care Boards (ICBs) across England. This is the first time such estimates have been published.

The ICBs range in population from 500,000 to 3.1 million people, providing an intermediate geographical breakdown between the available regional and sub-regional estimates. ICBs are a statutory NHS organisation created under the Health and Care Act 2022 (PDF, 60.3KB). These statistics are useful for identifying how COVID-19 infection has changed by ICB and are used to inform health policy, local care boards and the public.

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 modelled estimates are provisional and subject to revision. See Section 7: Data sources and quality 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 is made available to government decision-makers to inform their response to the coronavirus pandemic. 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 possible. These will include supporting information to help user understanding. This is consistent with guidance from the Office for Statistics Regulation (OSR).

3 . COVID-19 positivity across Integrated Care Boards (ICBs) in England

In the week beginning 28 December 2022, the percentage of people testing positive for coronavirus (COVID-19) was consistent across the majority of ICBs in England. NHS Devon ICB had the highest percentage of people testing positive for COVID-19 at 5.02% (95% credible interval: 4.20% to 6.02%), and NHS Cheshire and Merseyside ICB had the lowest at 3.40% (95% credible interval: 2.89% to 3.99%).

In the 13 weeks up to and including the week beginning 28 December 2022, the percentage of people testing positive for COVID-19 remained consistent across most of the 42 ICBs. The only differences were:

- in the week beginning 19 October 2022, NHS Humber and North Yorkshire ICB (3.63%, 95% credible interval 3.04% to 4.35%) had a higher percentage of people testing positive for COVID-19 than NHS North West London ICB (2.52%, 95% credible interval 2.09% to 3.01%) and NHS North Central London ICB (2.44%, 95% credible interval 1.99% to 2.97%)

- in week beginning 7 December 2022, NHS South West London ICB (3.17%, 95% credible interval 2.7% to 3.75%) and NHS Bristol, North Somerset and South Gloucestershire ICB (3.45%, 95% credible interval 2.85% to 4.2%) had a higher percentage of people testing positive for COVID-19 than NHS Cheshire and Merseyside ICB (2.25%, 95% credible interval 1.89% to 2.69%)

- in week beginning 14 December 2022, NHS South East London ICB (4.51%, 95% credible interval 3.9% to 5.19%), NHS Devon ICB (4.63%, 95% credible interval 3.87% to 5.51%), and NHS Bristol, North Somerset and South Gloucestershire ICB (4.73%, 95% credible interval 3.91% to 5.7%) had a higher percentage of people testing positive for COVID-19 than NHS Cheshire and Merseyside ICB (3.25%, 95% credible interval 2.76% to 3.81%)

- in week beginning 21 December 2022, NHS Devon ICB (5.21%, 95% credible interval 4.27% to 6.27%) had a higher percentage of people testing positive for COVID-19 than NHS Cheshire and Merseyside ICB (3.46%, 95% credible interval 2.85% to 4.18%) and NHS North East and North Cumbria ICB (3.56%, 95% credible interval 2.96% to 4.23%)

- in week beginning 28 December 2022, NHS Devon ICB (5.02%, 95% credible interval 4.2% to 6.02%) had a higher percentage of people testing positive for COVID-19 than NHS Cheshire and Merseyside ICB (3.4%, 95% credible interval 2.89% to 3.99%) and NHS North Central London ICB (3.46%, 95% credible interval 2.87% to 4.15%)

Additional changes in the percentage of people testing positive for COVID-19 within each individual ICB in England between week beginning 5 October 2022 and week beginning 28 December 2022 are shown in Figure 1.

Figure 1: The percentage testing positive for coronavirus (COVID-19) by Integrated Care Boards in England

Modelled percentage of the population testing positive for COVID-19 on nose and throat swabs by Integrated Care Boards in England, week beginning 5 October 2022 to week beginning 28 December 2022

Notes:

1. The width of the credible intervals show the degree of uncertainty in our estimates.

2. ICB estimates are based on a different model to our headline and sub-regional estimates and are therefore not comparable.

3. ICB estimates are calculated as an average over a seven-day period and should not be compared with our headline positivity estimates, which are for a single reference date. Therefore, the ICB figures may differ from the headline estimates as they are averaged over a longer time period. If a trend is changing quickly, the figures shown in Figure 1 may not reflect the change we are seeing in our headline estimates.

4. The reference week is 28 December 2022 to 3 January 2023 for each ICB.

Download the data

.xlsx

About our estimates

ICB estimates are produced using a different method to our headline, regional and sub-regional estimates. Therefore, these estimates are not directly comparable. Our most recent estimates for the percentage of people testing positive for COVID-19 in sub-regions of the UK can be found in our Coronavirus (COVID-19) Infection Survey, UK: 13 January 2023 bulletin.

There is a higher degree of uncertainty in our ICB estimates because of a smaller sample size in each area, relative to their respective national sample. This is shown by wider credible intervals and results should be interpreted with caution.

The model used produces weekly estimates for the percentage of people testing positive for COVID-19 by ICB, while controlling for age group and sex within each area to limit the impact of confounding variables on the estimates. The model used in these estimates drew on spatial-temporal information to construct a stable estimate over the most recent 13-week period. Spatial temporal in this context meant the model borrowed strength geographically and over time, implicitly expecting rates to be more similar in neighbouring areas, and within an area over time.

Estimates by ICB use this model because of the variability in the data caused by lower sample sizes within smaller geographical areas. This is similar to the methodology used in the regular sub-regional model.

4 . COVID-19 in England by Integrated Care Boards data

Coronavirus (COVID-19) positivity by Integrated Care Board, England
Dataset | Released 23 January 2023
The modelled percentage of the population testing positive for COVID-19 on nose and throat swabs by Integrated Care Boards.

5 . 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 (UKHSA) 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

6 . 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.

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.

False-positives and false-negatives

A false-positive result occurs when a test suggests a person has coronavirus (COVID-19) when in fact they do not. By contrast, a false-negative result occurs when a test suggests a person does not have COVID-19 when in fact they do. For more information on false-positives and false-negatives, see Section 7: Data sources and quality.

7 . Data sources and quality

Remote data collection

The Office for National Statistics (ONS) Coronavirus (COVID-19) Infection Survey (CIS) collects data and samples remotely from participants. This is through an online questionnaire, and swab and blood samples which are returned through the post (or by courier for some participants).

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, some of our swabs have been sent to the Rosalind Franklin as well as Berkshire and Surrey Pathology Services laboratories for testing. This is to ensure resilience for testing capacity and to enable a small pilot community respiratory surveillance study. We have investigated potential effects of using multiple laboratories on our positivity results and, where necessary, have made 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 Coronavirus (COVID-19) Infection Survey, UK: 13 May 2022 bulletin. For more information on our methods and quality surrounding the estimates please see our Coronavirus (COVID-19) Infection Survey methods article and our Coronavirus (COVID-19) Infection Survey Quality and Methodology Information (QMI) report.

Study dates

We aim to provide the estimates of positivity rate (the percentage of people who test positive) that are most timely and most representative. For positivity across ICBs in England, the most recent week is 28 December 2022 to 3 January 2023.

For more information on our methods surrounding study 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 largely ceased on 31 January 2022. Response rates for England, Wales, Northern Ireland and Scotland can generally 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.

Test sensitivity and specificity

The estimates provided in Section 3: COVID-19 positivity across Integrated Care Boards (ICBs) in England 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.

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 COVID-19 infection in the UK. Other sources have provided data during previous stages of the coronavirus 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 8 August 2022.

8 . Strengths and limitations

The data in this article 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 Integrated Care Boards
- estimating the number of new cases and changes 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 article are:

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

On behalf of the UK Statistics Authority, the Office for Statistics Regulation (OSR) reviewed the Coronavirus (COVID-19) Infection Survey (CIS) on 14 May 2020 and the OSR reviewed CIS again on 17 March 2021 against several important aspects of the Code of Practice for Statistics. They regard them as consistent with the Code's pillars of trustworthiness, quality and value.

The estimates presented in this article 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 Coronavirus (COVID-19) Infection Survey: methods and further information article, and our blog that explains why we trust the data from the Coronavirus (COVID-19) Infection Survey.

9 . Related links

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: September 2022
Article | Released 23 September 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, 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 monthly
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 data for the UK
Bulletin | Updated monthly
Antibody 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.

10 . Cite this article

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