

Statistical bulletin

# Coronavirus (COVID-19) Infection Survey, UK: 1 April 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.

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## Table of contents

1. [Main points](#)
2. [Number of people who had COVID-19 in England, Wales, Northern Ireland and Scotland](#)
3. [Sub-national analysis of the number of people who had COVID-19](#)
4. [Age analysis of the number of people who had COVID-19](#)
5. [Number of new COVID-19 infections in England, Wales, Northern Ireland and Scotland](#)
6. [Percentage of those testing positive compatible with the UK variant](#)
7. [Test sensitivity and specificity](#)
8. [COVID-19 Infection Survey data](#)
9. [Collaboration](#)
10. [Glossary](#)
11. [Measuring the data](#)
12. [Strengths and limitations](#)
13. [Related links](#)

# 1 . Main points

- In England, the percentage of people testing positive for the coronavirus (COVID-19) has decreased in the week ending 27 March 2021; we estimate that 148,100 people within the community population in England had COVID-19 (95% credible interval: 129,700 to 167,400), equating to around 1 in 370 people.
- In Wales, the trend in the percentage of people testing positive is uncertain in the week ending 27 March 2021; we estimate that 5,300 people in Wales had COVID-19 (95% credible interval: 2,900 to 8,700), equating to around 1 in 570 people.
- In Northern Ireland, there are early signs of an increase in the percentage of people testing positive in the week ending 27 March 2021; we estimate that 8,200 people in Northern Ireland had COVID-19 (95% credible interval: 4,600 to 12,900), equating to around 1 in 220 people.
- In Scotland, the percentage of people testing positive has likely decreased in the week ending 27 March 2021; we estimate that 16,600 people in Scotland had COVID-19 (95% credible interval: 11,100 to 23,400) equating to around 1 in 320 people.

## About this bulletin

In this bulletin, we refer to the number of current COVID-19 infections within the community population; community in this instance refers to private residential households and it excludes those in hospitals, care homes and/or other institutional settings.

The positivity rate is the percentage of people who have tested positive for COVID-19 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 polymerase chain reaction (PCR)-positive cases in a given time period.

All analysis was produced with our research partners at the University of Oxford.

Early management information from the Coronavirus (COVID-19) Infection Survey 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 possible. These will include supporting information where possible to aid user understanding. This is consistent with guidance from the Office for Statistics Regulation.

### Have you been asked to take part in our survey?

- For more information, please visit the [CIS participant guidance](#) page.
- If you have any further questions, please email the CIS operations team: [COVID-19@ons.gov.uk](mailto:COVID-19@ons.gov.uk).

## How the data in this bulletin can be used

The data can be used for:

- estimating the number of current positive cases in the community, including cases where people do not report having any symptoms
- identifying differences in numbers of positive cases between different regions
- estimating the number of new cases and change over time in positive cases

The data cannot be used for:

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

## 2 . Number of people who had COVID-19 in England, Wales, Northern Ireland and Scotland

During the most recent week of the study<sup>1</sup>, we estimate that 148,100 people in England had the coronavirus (COVID-19) (95% credible interval: 129,700 to 167,400). This equates to 0.27% (95% credible interval: 0.24% to 0.31%) of the community population in England or around 1 in 370 people (95% credible interval: 1 in 420 to 1 in 330). Our modelling suggests that the percentage of people testing positive in England has decreased in the week ending 27 March 2021.

In Wales, we estimate that 5,300 people had COVID-19 over the same period (95% credible interval: 2,900 to 8,700). This equates to 0.18% (95% credible interval: 0.09% to 0.29%) of the community population in Wales or around 1 in 570 people (95% credible interval: 1 in 1,050 to 1 in 350). In Wales, the trend is uncertain in the percentage of those testing positive in the week ending 27 March 2021.

In Northern Ireland, we estimate that 8,200 people had COVID-19 (95% credible interval: 4,600 to 12,900). This equates to 0.45% (95% credible interval: 0.25% to 0.70%) of the population in Northern Ireland or around 1 in 220 people (95% credible interval: 1 in 400 to 1 in 140). Our modelling suggests that there are early signs of an increase in the percentage of people testing positive in Northern Ireland in the week ending 27 March 2021.

In Scotland, we estimate that 16,600 people had COVID-19 (95% credible interval: 11,100 to 23,400). This equates to 0.32% (95% credible interval: 0.21% to 0.45%) of the population in Scotland or around 1 in 320 people (95% credible interval: 1 in 480 to 1 in 220). Our modelling suggests that the percentage of people testing positive in Scotland has likely decreased in the week ending 27 March 2021.

### **Figure 1: The trend in the percentage of people testing positive was varied across the four countries of the UK in the week ending 27 March 2021**

**Estimated percentage of the population testing positive for the coronavirus (COVID-19) on nose and throat swabs from 3 May 2020**

[Download the data](#)

## Notes

1. All estimates are subject to uncertainty, given that a sample is only part of the wider population. The model used to provide these estimates is a Bayesian model: these provide 95% credible intervals. A credible interval gives an indication of the uncertainty of an estimate from data analysis. 95% credible intervals are calculated so that there is a 95% probability of the true value lying in the interval.
2. Official reported estimates are plotted at a reference point believed to be most representative of the given week.
3. The official estimate presents the best estimate at that point in time. Modelled estimates are used to calculate the official reported estimate. The model smooths the series to understand the trend and is revised each week to incorporate new test results, providing the best indication of trend over time.
4. 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.

## About this data

These estimates are based on statistical modelling of the trend in rates of positive nose and throat swab results. The ratios presented are rounded to the nearest five.

Because of the relatively small number of tests and a low number of positives in Wales and Northern Ireland in our sample, credible intervals are wide and therefore results should be interpreted with caution. These wide credible intervals mean that differences between the central estimates within and between nations may appear smaller or more exaggerated than they really are.

As this is a household survey, our figures do not include people staying in hospitals, care homes and/or other institutional settings. In these settings, rates of COVID-19 infection are likely to be different. More information about rates of COVID-19 in care homes can be found in [Impact of coronavirus in care homes in England: 26 May to 19 June 2020](#).

## 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. We include different measures to support our estimation and this section outlines the appropriate uses of all the approaches.

Official estimates should be used to understand the positivity rate for a single point in time. This is based on the modelled estimate for the latest week and is our best and most stable estimate and is used in all previous outputs. The modelled estimate is more suited to understand the recent trend. This is because the model is regularly updated to include new test results and smooths the trend over time. These modelled estimates can be found in the [dataset](#) that accompanies this bulletin.

The estimates for non-overlapping 14-day periods (which underpin our modelled official estimates) and the unweighted sample counts are included in the [dataset](#) that accompanies this bulletin. These estimates are produced using a different method of weighting to the model and are available for people who wish to compare infection levels over time in this way.

Information about how the modelled and 14-day non-overlapping estimates are calculated can be found in our [methods article](#).

We are continuously refining and looking to improve our modelling and presentations. We would welcome any feedback via email: [infection.survey.analysis@ons.gov.uk](mailto:infection.survey.analysis@ons.gov.uk).

For information about the potential impact of false-positive and false-negative test results, see our [methods article](#).

#### More about coronavirus

- Find the latest on [coronavirus \(COVID-19\) in the UK](#).
- [Explore the latest coronavirus data](#) from the ONS and other sources.
- All ONS analysis, summarised in our [coronavirus roundup](#).
- View [all coronavirus data](#).
- Find out how we are [working safely in our studies and surveys](#).

#### Notes for: Number of people in the UK who had COVID-19

1. This is based on model estimates from the reference point of the most recent week (21 to 27 March 2021), Wednesday 24 March 2021. More information on reference dates can be found in [Section 11: Measuring the data](#).

## 3 . Sub-national analysis of the number of people who had COVID-19

### Regional analysis for England

The overall national picture for England, which shows a decrease, is a result of different trends across regions. During the week ending 27 March 2021, the highest percentage of people testing positive was observed in the North East and Yorkshire and The Humber.

In the data used to produce these estimates, the number of people sampled in each region who tested positive for the coronavirus (COVID-19) was low relative to England overall. This means there is a higher degree of uncertainty in the regional estimates for this period, as indicated by larger credible intervals.

In the week ending 27 March 2021, the percentage of people testing positive increased in the East of England and decreased in the South East and South West. The trend was uncertain for all other regions. Caution should be taken in over-interpreting any small movements in the latest trend.

#### Figure 2: The percentage of people testing positive increased in the East of England in the week ending 27 March 2021

Estimated percentage of the population testing positive for the coronavirus (COVID-19) on nose and throat swabs, daily, by region since 14 February 2021, England

[Download the data](#)

#### Notes

1. All results are provisional and subject to revision.
2. These statistics refer to infections reported in the community, by which we mean private households. These figures exclude infections reported in hospitals, care homes and/or other institutional settings.

The percentage of people testing positive by region was calculated using a similar modelling approach to the national daily estimates in [Section 2: Number of people in England, Wales, Northern Ireland and Scotland who had COVID-19](#).

The analysis is conducted over a six-week period, which means specific positive cases move into and then out of the sample. This causes variability between estimates over time, which is expected given the lower number of positive tests within each region, compared with England as a whole.

Estimates for non-overlapping 14-day periods (which underpin our modelled estimates) for regions in England are available in our [dataset](#) and provide an alternative measure over time for context.

## 4 . Age analysis of the number of people who had COVID-19

### Age analysis by category for England

Our age categories separate children and young people by school age:

- "age two years to school Year 6" includes those children in primary school and below
- "school Year 7 to school Year 11" includes those children in secondary school
- "school Year 12 to age 24 years" includes those young adults who may be in further or higher education

This means that 11- to 12-year-olds have been split between the youngest age categories depending on whether they are in school Year 6 or 7 (birthday before or after 1 September).

Similarly, 16- to 17-year-olds are split depending on whether they are in school Years 11 or 12 (birthday before or after 1 September).

Estimates are based on smaller sample sizes within each age group relative to England overall. There is a higher degree of uncertainty as indicated by larger credible intervals. These can be found in our [dataset](#) that accompanies this bulletin.

The percentage of people testing positive in England decreased in those aged 50 to 69 years in the week ending 27 March 2021. Trends are uncertain in all other age groups. Caution should be taken in over-interpreting small movements in the latest trend.

### Figure 3: The percentage testing positive in England decreased in those aged 50 to 69 years in the week ending 27 March 2021

**Estimated percentage of the population testing positive for the coronavirus (COVID-19) on nose and throat swabs, daily, by age group since 14 February 2021, England**

[Download the data](#)

## Notes

1. All results are provisional and subject to revision.
2. These statistics refer to infections reported in the community, by which we mean private households. These figures exclude infections reported in hospitals, care homes and/or other institutional settings.

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. We are able to produce estimates on positivity by single year of age for Wales, Northern Ireland and Scotland using a different model. These can be found in the following section and in the [dataset](#) that accompanies this bulletin. This uses a different method to the grouped age analysis presented previously for England and are therefore not comparable.

Estimates for non-overlapping 14-day periods (which underpin our modelled estimates) by age group are available in our [dataset](#), and are provided as an alternative measure over time for context.

Further analysis on age for Wales, [Northern Ireland](#) and [Scotland](#) is produced by their respective statistical agencies. Analysis for Wales is published in [English](#) and [Welsh](#).

## Age analysis by single year of age over time by country

In this section we present modelled daily estimates of the percentage of people testing positive for COVID-19 by single year of age over time for all four UK countries (England, Wales, Northern Ireland and Scotland) from 14 February 2021. These estimates use a different method to the grouped age analysis presented previously in this section and estimates are therefore not comparable.

Estimates are based on smaller sample sizes within the different ages relative to their respective national sample. There is a higher degree of uncertainty as indicated by larger confidence intervals. These can be found in our [dataset](#) that accompanies this bulletin.

Figure 4 shows the percentage of people testing positive for COVID-19 by single year of age from 14 February 2021 to 27 March 2021, for each of the four UK countries.

### Figure 4: The percentage of people testing positive for COVID-19 by single year of age over time for the four UK countries

**Estimated percentage of the population testing positive for the coronavirus (COVID-19) on nose and throat swabs, daily, by single year of age since 14 February 2021, UK**

[Download the data](#)

## Notes

1. All results are provisional and subject to revision.
2. These statistics refer to infections reported in the community, by which we mean private households. These figures exclude infections reported in hospitals, care homes and/or other institutional settings.
3. These estimates use a different method to previous modelled daily estimates of the percentage testing positive by age group for England and are therefore not comparable.

Estimates for non-overlapping 14-day periods (which underpin our modelled estimates) by age group are available in our [dataset](#), and are provided as an alternative measure over time for context.

## 5 . Number of new COVID-19 infections in England, Wales, Northern Ireland and Scotland

This week we continue to present estimates of incidence of polymerase chain reaction (PCR)-positive cases using a new method based on our positivity estimate. This gives the rate at which new positives occur, and subsequently become detectable, within the population.

Our incidence estimates for 13 July to 28 November 2020 considered new infections identified by new positive tests during the study compared with the number of days participants were "at risk". This new method accounts for the increasing proportion of survey participants providing monthly (rather than weekly) swabs.

The new incidence method uses an estimate of the length of time for which an individual will test positive, based on modelling the time from first positive to first subsequent negative test in the survey. This estimate is used alongside the positivity model to produce an estimate. This method is robust to participants having monthly swabs. For more information on the new method of incidence, see our updated [methods article](#).

The reference date used for our official estimates of incidence of PCR-positive cases is 10 days prior to the end of the positivity reference week. This is necessary as estimates later than this date are more likely to change as we receive additional data.

Estimates are included for England, Wales, Northern Ireland and Scotland.

In England, during the week ending 20 March 2021, we estimate that there were 2.29 new PCR-positive coronavirus (COVID-19) cases per 10,000 people per day (95% credible interval: 1.76 to 2.68). This equates to 12,500 new positive cases in England per day (95% credible interval: 9,600 to 14,600). There are early signs of an increase in the incidence of new PCR-positive COVID-19 cases over the fortnight up to 20 March 2021 in England.

For estimates of incidence in Wales, Northern Ireland and Scotland, credible intervals are wide because of relatively small sample sizes, and care should be taken in interpreting results. In particular, when prevalence is very low it may not be possible to produce a reliable estimate. In these instances, we will still provide the upper bound of the credible interval.

In Wales, during the week ending 20 March 2021, we estimate that there were 1.42 new PCR-positive coronavirus cases per 10,000 people per day (95% credible interval: 0.32 to 2.78). This equates to 430 new positive cases in Wales per day (95% credible interval: 100 to 840). Incidence of new PCR-positive COVID-19 cases appears to have been level in recent weeks up to 20 March 2021 in Wales, although credible intervals are wide because of the smaller sample size.



In Northern Ireland, during the week ending 20 March 2021, we estimate that there were 4.02 new PCR-positive coronavirus cases per 10,000 people per day (95% credible interval: 1.60 to 7.03). This equates to 740 new positive cases in Northern Ireland per day (95% credible interval: 290 to 1,300). Incidence of new PCR-positive COVID-19 cases appears to be increasing in the fortnight up to 20 March 2021 in Northern Ireland, although credible intervals are wide because of the smaller sample size.

In Scotland, during the week ending 20 March 2021, we estimate that there were 3.46 new PCR-positive coronavirus cases per 10,000 people per day (95% credible interval: 1.84 to 5.28). This equates to 1,800 new positive cases in Scotland per day (95% credible interval: 970 to 2,800). Incidence of new PCR-positive COVID-19 cases decreased in the week up to 20 March 2021 in Scotland, although credible intervals are wide because of the smaller sample size.

Figure 5 presents the official incidence estimates for England, Wales, Northern Ireland and Scotland for the week ending 20 March 2021. Modelled estimates for the most recent five weeks are also provided for each of the four countries.

For England, estimates between 29 November 2020 and the 6 March 2021 have also been provided as indicative estimates. For Wales, Northern Ireland and Scotland, indicative estimates are provided between 25 October 2020 and 6 March 2021. These indicative estimates are based on our new model and are presented on the official estimates chart. Figure 5 also shows previously published official estimates of incidence for England using our old model.

## **Figure 5: The incidence rate was varied across the four countries of the UK in recent weeks**

**Estimated numbers of new PCR-positive COVID-19 cases in the UK, based on nose and throat swabs with modelled estimates from 14 February 2021**

[Download the data](#)

### **Notes**

1. All results are provisional and subject to revision.
2. Official reported estimates are plotted at a reference point believed to be most representative of the given week. The reference date is 17 March 2021. Estimates following this point are more likely to be revised when additional data are available, and therefore should be treated with caution.
3. The official estimate presents the best estimate at that point in time. Modelled estimates are used to calculate the official reported estimate. The model smooths the series to understand the trend and is revised each week to incorporate new test results, providing the best indication of trend over time.
4. For England, indicative estimates are provided between 29 November 2020 and 6 March 2021. For Wales, Northern Ireland and Scotland indicative estimates are provided between 25 October 2020 and 6 March 2021. These indicative estimates were produced using our new positivity-based incidence method, and are presented on the official estimates charts, but were not previously published.

The incidence rate measures the occurrence of new PCR-positive cases of COVID-19, and the calculation of this is defined in [Section 10: Glossary](#). The incidence rate is not the same as the reproduction rate (R), which is the average number of secondary infections produced by one infected person.

To calculate the estimated average number of people becoming PCR-positive per day, we multiply the daily incidence rate by the community population (see Coverage in [Section 11: Measuring the data](#)). We use the unrounded incidence rate to do this, so results will differ if calculated using the rounded estimates from the dataset.

## Notes for: Number of new COVID-19 infections in England, Wales, Northern Ireland and Scotland

1. This is based on model estimates from the reference point of the most recent week (14 to 20 March 2021), Wednesday 17 March 2021. More information on reference dates can be found in [Section 11: Measuring the data](#).

## 6 . Percentage of those testing positive compatible with the UK variant

A new variant of the coronavirus (COVID-19) was identified in the UK in mid-November 2020. The UK variant of COVID-19 has changes in one of the three genes that coronavirus swab tests detect, known as the S-gene. This means in cases compatible with the UK variant, the S-gene is not detected by the current test.

When there is a high viral load (for example, when a person is most infectious) absence of the S-gene in combination with the presence of the other two genes (ORF1ab and N genes) is a reliable indicator of the UK variant in COVID-19. However, as the viral load decreases (for example, if someone is near the end of their recovery from the infection), the absence of the S-gene is a less reliable indicator of the UK variant.

In contrast, the South African and Brazilian variants have an S-gene that is detectable with the current test and will therefore be included in the "not compatible with UK variant" group of COVID-19 where the virus level is high enough to identify this. Which of these types of COVID-19 are compatible with these variants cannot be identified from the swab polymerase chain reaction (PCR) test alone. You can [read more about the UK variant](#) in our recent blog.

Since 24 December 2020, we have reported on the percentage of people testing positive compatible with the UK variant that was identified in mid-November 2020. The percentage of people testing positive compatible with the UK variant by UK country and regions of England are provided in the accompanying [dataset](#).

We will continue to monitor the trends in different variants over the coming weeks and will reintroduce charts into the bulletin if there is a variant that we can identify using our test that appears to be affecting the trends in the percentage of people testing positive for COVID-19.

The percentage of people testing positive compatible with the UK variant has likely levelled off in England, likely decreased in Wales and likely increased in Northern Ireland in the week ending 27 March 2021. In Scotland, the trend in the percentage of people testing positive compatible with the UK variant is uncertain in the week ending 27 March 2021.

Each test goes through a number of cycles before a positive result is detectable. If there is a high quantity of the virus present, a positive result will be identified after a low number of cycles. However, if there is only a small amount of the virus present, then it will take more cycles to detect it.

The number of cycles is measured as a "Cycle threshold", known as a Ct value. These values are used as a proxy for the quantity of the virus, also known as the viral load. The higher the viral load, the lower the Ct value. These values are helpful for monitoring the strength of the virus and for identifying patterns that could suggest changes in the way the virus is transmitting. The Ct values of COVID-19 positive tests are provided in the [dataset](#) that accompanies this bulletin.

## 7 . Test sensitivity and specificity

The estimates provided in Sections 2 to 6 are for the percentage of the private-residential population testing positive for the 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 methods article](#). 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.

## 8 . COVID-19 Infection Survey data

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

Dataset | Released 1 April 2021

Findings from the Coronavirus (COVID-19) Infection Survey, UK.

## 9 . 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, Public Health England (PHE) 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

## 10 . Glossary

### Community

In this bulletin, we refer to the number of coronavirus (COVID-19) infections within the community. Community in this instance refers to private households, and it excludes those in hospitals, care homes and/or other institutional settings.

## 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. 95% credible intervals are calculated so that there is a 95% probability of the true value lying in the interval.

## 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 our [methods article](#).

## Incidence rate

The estimates of incidence of polymerase chain reaction (PCR)-positive cases use a new method based on our positivity estimate. This gives the rate at which new positives occur, and subsequently become detectable, within the population. The new incidence method uses an estimate of the length of time for which an individual will test positive, based on modelling the time from first positive to first subsequent negative test in the survey. This estimate is used alongside the positivity model to produce an incidence estimate. For more information on this method of incidence please see our [methods article](#).

# 11 . Measuring the data

Data presented in this bulletin come from the Coronavirus (COVID-19) Infection Survey, which looks to identify the percentage of the population testing positive for COVID-19 and whether they have symptoms or not. The survey helps track the current extent of infection and transmission of COVID-19 among the population as a whole. This section of the bulletin provides a short summary of the study data and data collection methods. Our [methodology article](#) provides further information around the survey design, how we process data and how data are analysed. The [study protocol](#) specifies the research for the study.

## Analysing the data

All estimates presented in this bulletin are provisional results. 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. Estimates may therefore be revised as more test results are included.

We continue to develop our analysis methods, and these quality enhancements may lead to minor changes in estimates, for example, the positive test counts across the study period.

## Reference dates

We aim to provide the estimates of positivity rate (the percentage of those who test positive) and incidence that are most timely and most representative of each week. We decide the most recent week we can report on based on the availability of test results for visits that have already happened, accounting for the fact that swabs have to be couriered to the labs, tested and results returned. On most occasions, the reference data align perfectly, but sometimes this is not feasible. This week, the reference week is 21 to 27 March 2021.

Within the most recent week, we provide an official estimate for positivity rate based on a reference point from the modelled trends. For positivity rates, we can include all swab test results, even from the most recent visits. Therefore, although we are still expecting further swab test results from the labs, there was sufficient data for the official estimate for infection to be based on a reference point after the start of the reference week. To improve stability in our modelling while maintaining relative timeliness of our estimates, we are reporting our official estimates based on the midpoint of the reference week. This week, the reference day for positivity rates is Wednesday 24 March 2021.

The reference date used for our official estimates of incidence of polymerase chain reaction (PCR)-positive cases is 10 days prior to the end of the positivity reference week. This is necessary as estimates later than this date are more likely to change as we receive additional data. This week, the reference week for incidence is 14 to 20 March 2021 and the reference day is Wednesday 17 March 2021.

## Response rates

At the beginning of the survey, our sample was largely made up of people in England who have taken part in previous Office for National Statistics (ONS) surveys and had agreed to future contact regarding research. The likelihood of enrolment decreases over time and response rate information for those initially asked to take part in these first two phases can be considered as relatively final.

In England, we expanded our sampling at the end of July 2020 to invite a random sample of households from a list of addresses. Response rates for the expansion period cannot be regarded as final response rates to the survey since those who are invited are not given a time limit in which to respond; and should not be compared with response rates for those that have taken part in a previous survey, as this is a different mode of sampling.

Fieldwork began in Wales on 29 June 2020, and the initial sample was made up of people who had taken part in previous ONS surveys and had agreed to future contact regarding research. At the beginning of October 2020, the survey in Wales was expanded to invite a random sample of households from a list of addresses.

Fieldwork began in Northern Ireland on 26 July 2020, and the initial sample was made up of people who had taken part in previous ONS and NISRA surveys and had agreed to future contact regarding research.

In Scotland, fieldwork began on 21 September 2020 and the initial sample was taken from a random sample of households from a list of addresses.

Response rates for Wales, Northern Ireland and Scotland cannot be regarded as final response rates to the survey since those who are invited are not given a time limit in which to respond; and different modes of sampling are not comparable.

Response rates for each nation are found in the [dataset](#) that accompanies this bulletin. We provide response rates separately for the different sampling phases of the study.

## Other Coronavirus Infection Survey (CIS) analysis

Our recent release, [Coronavirus \(COVID-19\) Infection Survey: antibody data for the UK](#), includes analysis on the likelihood of testing positive for COVID-19 antibodies in England, Wales, Northern Ireland and Scotland.

We have also provided more detailed analysis on the characteristics and behaviours of those with COVID-19 in our recent article, [Coronavirus \(COVID-19\) Infection Survey: characteristics of people testing positive for COVID-19 in England](#), including patient-facing and non-patient-facing job roles, school-aged children, and disabled and non-disabled people.

## Laboratory-confirmed cases in the UK

Public Health England (PHE) presents data on the total number of [laboratory-confirmed cases in the UK](#), which capture the cumulative number of people in the UK who have tested positive for COVID-19. These statistics present all known cases of COVID-19, both current and historical, for the UK, and by nation, by regions of England, and because of the large sample size, by local authority. Further information can be found on the [Coronavirus Dashboard](#). A summary for each nation: [England](#), [Wales](#), [Northern Ireland](#) and [Scotland](#) is also available.

## Testing and tracing systems

Each nation of the UK has a testing and tracing system: for [England](#), [Wales](#), [Northern Ireland](#) and [Scotland](#). These ensure that anyone who develops symptoms of COVID-19 can quickly be tested to find out if they have the virus. Some nations also include targeted asymptomatic testing of NHS and social care staff and care home residents. Additionally, it helps trace close recent contacts of anyone who tests positive for COVID-19 and, if necessary, notify them that they must self-isolate. We have recently published an [article that compares the methods used in the COVID-19 Infection Survey and NHS Test and Trace in England](#).

In comparison with Public Health data and Testing and Tracing data, the statistics presented in this bulletin take a representative sample of the community population (those in private residential households), including people who are not otherwise prioritised for testing. This means that we can estimate the number of people in the community population with COVID-19 who do not report any evidence of symptoms.

## Other studies

This study is one of a number of studies that look to provide information around the coronavirus pandemic within the UK.

## COVID Symptom Study (ZOE app and King's College London), UK

The [COVID Symptom Study app](#) allows users to log their health each day, including whether or not they have symptoms of COVID-19. The study aims to predict which combination of symptoms indicate that someone is likely to test positive for COVID-19. The app was developed by the health science company ZOE with data analysis conducted by King's College London. Anyone over the age of 18 years can download the app and take part in the study. Respondents can report symptoms of children.

The study estimates the total number of people with symptomatic COVID-19 and the daily number of new cases of COVID-19 based on app data and swab tests taken in conjunction with the Department of Health and Social Care (DHSC). The study investigates the "predictive power of symptoms", and so the data do not capture people who are infected with COVID-19 but who do not display symptoms.

Unlike the data presented in this bulletin, the COVID Symptom Study is not a representative sample of the population. It is reliant on app users and so captures only some cases in hospitals, care homes and other communities where few people use the app. To account for this, the model adjusts for age and deprivation when producing UK estimates. The larger sample size allows for [detailed geographic breakdown](#).

## Real-time Assessment of Community Transmission-1 and -2 (REACT-1 and -2), England

Like our study, the [Real-time Assessment of Community Transmission-1 REACT-1 survey](#), led by Imperial College London, involves taking swab samples to test for COVID-19 antigens to estimate the prevalence and transmission of the virus that causes COVID-19 in the community. Each round of the study currently involves around 160,000 participants aged five years and over, selected from a random cross-section sample of the general public from GP registration data. Trends in infection by characteristics, such as age, sex, ethnicity, symptoms and key worker status, are also possible through the study. Here are the [latest REACT findings from 4 March 2021 \(PDF, 2.81MB\)](#).

One of the main differences from our COVID-19 Infection Survey is that the REACT surveys do not require follow-up visits, as the study is interested primarily in prevalence at a given time point. Consequently, the incidence rate cannot be calculated from the REACT studies.

In addition, the [REACT-2 study](#) uses antibody finger-prick tests to track past infections and monitor the progress of the pandemic. Estimates in this bulletin and the REACT study use different tests and different methods, for example, the REACT estimates are based on self-administered and self-read finger-prick tests, whereas tests in this survey are carried out by a trained nurse, phlebotomist or healthcare assistant.

## Public Health England (PHE) surveillance

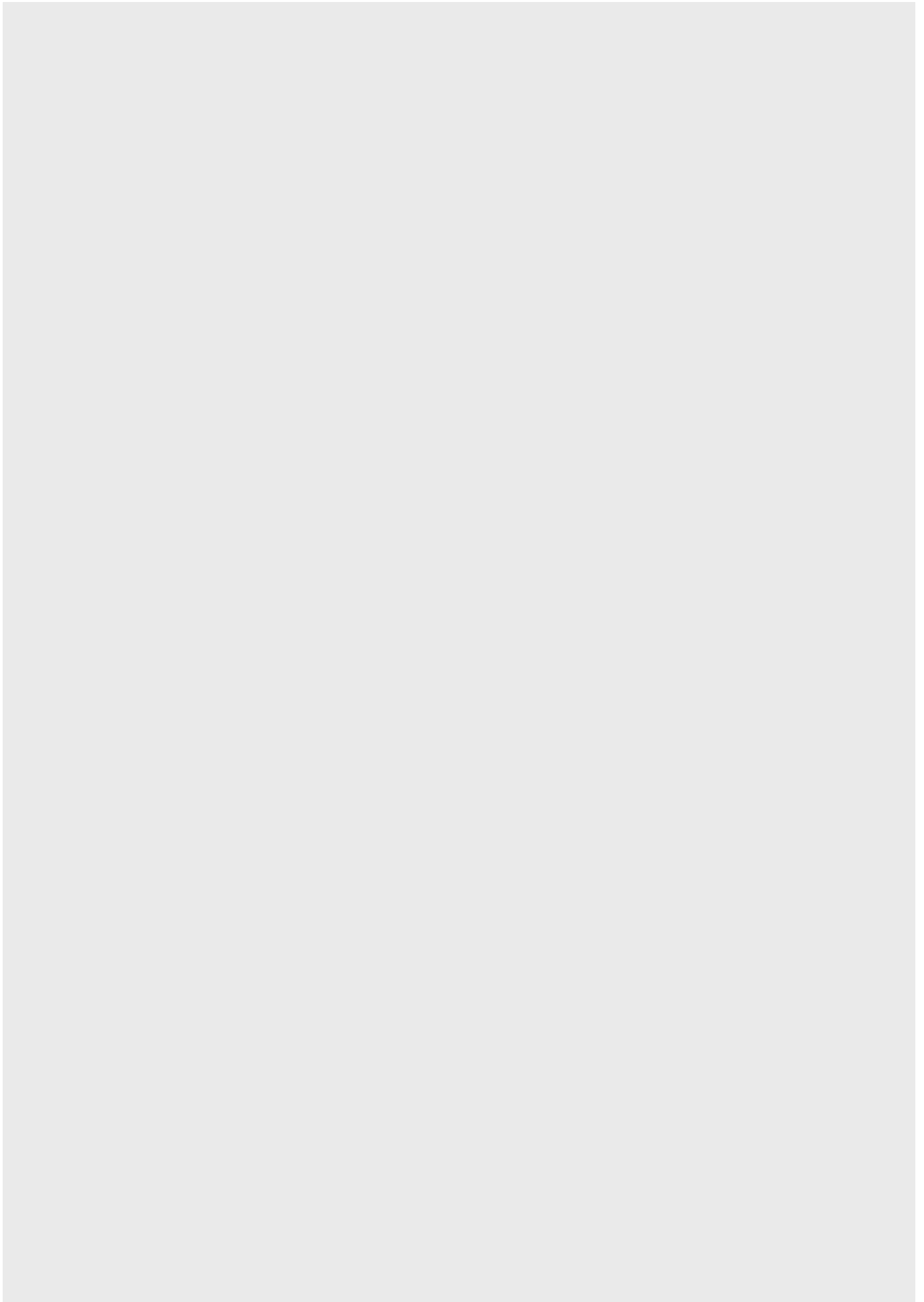
PHE also publish an estimate of the [prevalence of antibodies in the blood](#) in England using blood samples from healthy adult blood donors. PHE provide estimates by region and currently do not scale up to England. Estimates in this bulletin and those published by PHE are based on different tests; PHE estimates are based on testing using the Euroimmun assay method, while blood samples in our survey are tested for antibodies by research staff at the University of Oxford using a novel ELISA. For more information about the antibody test used in this bulletin, see the [COVID-19 Infection Survey protocol](#).

## 12 . Strengths and limitations

These statistics have been produced quickly in response to developing world events. The [Office for Statistics Regulation](#), on behalf of the UK Statistics Authority, has [reviewed them](#) 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 are presented in [our methodology article](#).

## 13 . Related links





### [COVID-19 Infection Survey: methods and further information](#)

Methodology article | Updated 26 March 2021

Information on the methods used to collect the data, process it, and calculate the statistics produced from the Coronavirus (COVID-19) Infection Survey.

### [Coronavirus \(COVID-19\) Infection Survey: characteristics of people testing positive for COVID-19 in England](#)

Article | Updated fortnightly

Characteristics of people testing positive for the coronavirus (COVID-19) including patient-facing and non-patient-facing job roles, school-aged children, and disabled and non-disabled people.

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

Article | Updated fortnightly

Antibody data by UK country and English regions from the Coronavirus (COVID-19) Infection Survey. 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 as and when data become available

Explore the latest data and trends about the coronavirus (COVID-19) pandemic from the ONS and other official sources.

### [Coronavirus \(COVID-19\) latest data and analysis](#)

Web page | Updated as and when data become available

Latest data and analysis on the coronavirus pandemic in the UK and its effect on the economy and society.

### [Coronavirus \(COVID-19\) roundup](#)

Web page | Updated as and when data become available

Catch up on the latest data and analysis related to the coronavirus pandemic and its impact on our economy and society.

### [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.

### [Comparing methods used in the Coronavirus \(COVID-19\) Infection Survey and NHS Test and Trace, England: October 2020](#)

Article | Released 6 October 2020

The methods used in the COVID-19 Infection Survey and NHS Test and Trace in England and why the data cannot be directly compared.

### [COVID-19 Schools Infection Survey Round 2, England: December 2020](#)

Bulletin | 1 March 2021

Initial estimates of staff and pupils testing positive for coronavirus (COVID-19) from the COVID-19 Schools Infection Survey across a sample of schools, within selected local authority areas in England.

### [New survey results provide first snapshot of the current number of COVID-19 infections in England](#)

Blog | Released 14 May 2020

A large study jointly led by the Office for National Statistics (ONS), in partnership with the Universities of Oxford and Manchester, Public Health England (PHE), and Wellcome Trust, is tracking infections within a representative sample of people of all ages across England. This blog explains what these mean, why they are important and how to compare this survey with other COVID-19 estimates.

### [COVID-19 Infection Survey](#)

Article | Updated regularly

Whether you have been invited to take part, or are just curious, find out more about our COVID-19 Infection Survey and what is involved.

### [Coronavirus and higher education students: England](#)

Bulletin | Updated weekly

Experimental statistics from a pilot of the Student COVID-19 Insights Survey in England. Includes information on the behaviours, plans, opinions and well-being of higher education students in the context of guidance on the coronavirus (COVID-19) pandemic.

[The prevalence of long COVID symptoms and COVID-19 complications](#)

Article | Released 1 April 2021

Estimates of the prevalence of self-reported "long COVID", and the duration of ongoing symptoms following confirmed coronavirus infection, using UK Coronavirus (COVID-19) Infection Survey data to 6 March 2021.