Office for National Statistics

Statistical bulletin

Coronavirus (COVID-19) Infection Survey, UK: 30 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.

Contact:
Kara Steel and Zoë Willis
infection.survey.analysis@ons.gov.uk
+44 (0)1633 651689

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1 . Main points

- In England, the percentage of people testing positive for the coronavirus (COVID-19) has continued to decrease in the week ending 24 April 2021; we estimate that 54,200 people within the community population in England had COVID-19 (95% credible interval: 43,700 to 66,100), equating to around 1 in 1,010 people.
- In Wales, the percentage of people testing positive has decreased in the week ending 24 April 2021; we estimate that 1,900 people in Wales had COVID-19 (95% credible interval: 700 to 4,100), equating to around 1 in 1,570 people.
- In Northern Ireland, the percentage of people testing positive has decreased in the two weeks up to 24 April 2021; we estimate that 1,900 people in Northern Ireland had COVID-19 (95% credible interval: 600 to 4,100), equating to around 1 in 940 people.
- In Scotland, the percentage of people testing positive has continued to decrease in the week ending 24 April 2021; we estimate that 8,200 people in Scotland had COVID-19 (95% credible interval: 4,500 to 13,200) equating to around 1 in 640 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.

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[1], we estimate that 54,200 people in England had the coronavirus (COVID-19) (95% credible interval: 43,700 to 66,100). This equates to 0.10% (95% credible interval: 0.08% to 0.12%) of the community population in England or around 1 in 1,010 people (95% credible interval: 1 in 1,250 to 1 in 820). Our modelling suggests that the percentage of people testing positive in England has continued to decrease in the week ending 24 April 2021.

In Wales, we estimate that 1,900 people had COVID-19 over the same period (95% credible interval: 700 to 4,100). This equates to 0.06% (95% credible interval: 0.02% to 0.14%) of the community population in Wales or around 1 in 1,570 people (95% credible interval: 1 in 4,610 to 1 in 740). Our modelling suggests that the percentage of people testing positive in Wales has decreased in the week ending 24 April 2021.

In Northern Ireland, we estimate that 1,900 people had COVID-19 (95% credible interval: 600 to 4,100). This equates to 0.11% (95% credible interval: 0.03% to 0.22%) of the population in Northern Ireland or around 1 in 940 people (95% credible interval: 1 in 2,870 to 1 in 440). Our modelling suggests that the percentage of people testing positive in Northern Ireland has decreased in the two weeks up to 24 April 2021, however the trend is less certain in the week up to 24 April 2021.

In Scotland, we estimate that 8,200 people had COVID-19 (95% credible interval: 4,500 to 13,200). This equates to 0.16% (95% credible interval: 0.09% to 0.25%) of the population in Scotland or around 1 in 640 people (95% credible interval: 1 in 1,170 to 1 in 400). Our modelling suggests that the percentage of people testing positive in Scotland has continued to decrease in the week ending 24 April 2021.

Because of lower positivity rates caution should be taken in over-interpreting any small movements in the latest trends.

Figure 1: The percentage of people testing positive decreased in England, Wales, Northern Ireland and Scotland in the weeks up to 24 April 2021

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

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.

Download the data

About the 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 10.

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, 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 accompanying datasets.

The estimates for non-overlapping 14-day periods (which underpin our modelled official estimates) and the unweighted sample counts are included in the accompanying datasets. 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.

For information about the potential impact of false-positive and false-negative test results, see our methods article and our blog.

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 (18 to 24 April 2021), Wednesday 21 April 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 is a result of the trends across regions. During the week ending 24 April 2021, the highest percentage of people testing positive was observed in Yorkshire and The Humber, although rates were low in all regions and credible intervals are wide.

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 24 April 2021, the percentage of people testing positive decreased in all regions except in Yorkshire and The Humber and the East of England where the trends are uncertain. Caution should be taken in over-interpreting any small movements in the latest trend.

Figure 2: The percentage of people testing positive decreased in all regions except in Yorkshire and The Humber and the East of England where the trends are uncertain in the week ending 24 April 2021

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

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.

Download the data

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 England dataset and provide an alternative measure over time for context.

Sub-regional analysis for the UK

When infections are low, it becomes more difficult to break the estimates down into smaller geographic areas. Because of this low positivity, we are not providing sub-regional positivity estimates for the four countries.

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 the accompanying dataset.

In the week ending 24 April 2021, the percentage of people testing positive in England has decreased in those aged two years to school Year 11 and those aged 35 years and over. For those in school Year 12 to aged 34 years, the trend is uncertain in the week ending 24 April 2021. Caution should be taken in over-interpreting small movements in the latest trend.

Figure 3: The percentage testing positive in England decreased in people aged two years to school Year 11, and those aged 35 years and over in the week ending 24 April 2021

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

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.

Download the data

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.

Age analysis by single year of age over time by country

Because of low positivity rates, we are reviewing whether we can continue to produce age over time analysis by single year of age for all four UK countries. As a result, we have not produced these data this week.

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

This week we continue to present estimates of the 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.

This 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 incidence method, see our 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 17 April 2021[1], we estimate that there were 0.66 new PCR-positive coronavirus (COVID-19) cases per 10,000 people per day (95% credible interval: 0.40 to 0.93). This equates to 3,600 new positive cases in England per day (95% credible interval: 2,200 to 5,100). The incidence of new PCR-positive COVID-19 cases has decreased in the week ending 17 April 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 17 April 2021, we estimate that there were 0.56 new PCR-positive COVID-19 cases per 10,000 people per day (95% credible interval: 0.06 to 1.43). This equates to 170 new positive cases in Wales per day (95% credible interval: 20 to 430). Incidence of new PCR-positive COVID-19 cases in Wales appears to have remained level in the weeks up to 17 April 2021, but credible intervals are wide so there is high uncertainty.

In Northern Ireland, during the week ending 17 April 2021, we estimate that there were 0.81 new PCR-positive COVID-19 cases per 10,000 people per day (95% credible interval: 0 to 2.22). This equates to 150 new positive cases in Northern Ireland per day (95% credible interval: 0 to 410). The trend of incidence of new PCR-positive COVID-19 cases in Northern Ireland appears to have remained level in the weeks up to 17 April 2021, although credible intervals are wide.

In Scotland, during the week ending 17 April 2021, we estimate that there were 1.31 new PCR-positive COVID-19 cases per 10,000 people per day (95% credible interval: 0.51 to 2.37). This equates to 690 new positive cases in Scotland per day (95% credible interval: 270 to 1,200). Incidence of new PCR-positive COVID-19 cases in Scotland appears to have remained level in the weeks up to 17 April 2021, although credible intervals are wide.

Figure 4 presents the official incidence estimates for England, Wales, Northern Ireland and Scotland for the week ending 17 April 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 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 4 also shows previously published official estimates of incidence for England using our old model.

Figure 4: The incidence rate is varied across the countries of the UK in the week ending 17 April 2021

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

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 14 April 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.

Download the data

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 datasets.

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 (11 to 17 April 2021), Wednesday 14 April 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 and other variants

A new variant of the coronavirus (COVID-19) was identified in the UK in mid-November 2020. The UK variant (B.1.1.7) 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. Other variants, including B.1.525 (first identified in Nigeria), also have this same pattern of gene positivity. At present these variants are rare in the UK so we continue to describe this group as compatible with the UK variant, but we will continue to keep this under review.

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 (B.1.351) and Brazilian (P.1 and P.2) 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 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 technical dataset.

We will continue to monitor the trends in different variants over the coming weeks. We 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 that are compatible with the UK variant decreased in England and Scotland in the week ending 24 April 2021. In the same week, the trend in the percentage of people testing positive that are compatible with the UK variant was uncertain in Wales and Northern Ireland.

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 technical dataset that accompanies this bulletin.

We try to read all letters of the virus's genetic material for every positive nose and throat swab with sufficient virus to do so (Ct less than 30) - this is called whole genome sequencing. Positive samples are hand-picked at the testing centre and shipped to a sequencing lab, after which they are sequenced and the genetic data processed. Sequencing is not successful on all these samples, or only part of the genome is sequenced. This is especially so for the higher Ct values, which are common in Office for National Statistics (ONS) data as we often catch people early or late in infection when viral loads tend to be lower (and hence Ct values are higher). Where we successfully sequence over half of the genome, we use the sequence data to work out which virus is which type of variant.

These data are provided in the accompanying technical dataset using the international standard labels. For example, the UK variant is B.1.1.7, and the South African variant is B.1.351. We have not seen any of the Manaus variant to date (P.1). We also provide information on viruses where we have found a particular genetic change (mutation) called E484K. This mutation is always seen in the South African variant (B.1.351). Laboratory data suggest that this mutation might make it easier for a virus to infect someone again, or to infect someone who has been vaccinated but the importance of this is still uncertain.

This analysis was produced by research partners at the University of Oxford. Of particular note are Dr Katrina Lythgoe, Dr David Bonsall, Dr Tanya Golubchik, and Dr Helen Fryer.

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 and our recent blog. 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: England
Dataset | Released 30 April 2021
Findings from the Coronavirus (COVID-19) Infection Survey for England.

Coronavirus (COVID-19) Infection Survey: Northern Ireland
Dataset | Released 30 April 2021
Findings from the Coronavirus (COVID-19) Infection Survey for Northern Ireland.

Coronavirus (COVID-19) Infection Survey: Scotland
Dataset | Released 30 April 2021
Findings from the Coronavirus (COVID-19) Infection Survey for Scotland.

Coronavirus (COVID-19) Infection Survey: Wales
Dataset | Released 30 April 2021
Findings from the Coronavirus (COVID-19) Infection Survey for Wales.

Coronavirus (COVID-19) Infection Survey: technical data
Dataset | Released 30 April 2021
Technical and methodological data from the Coronavirus (COVID-19) Infection Survey, England, Wales, Northern Ireland and Scotland.

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 and our recent blog.

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

The Office for National Statistics (ONS) is publishing more data and analysis than ever before. We are constantly reviewing our publications based on your feedback to make sure that we continue to meet the needs of our users. As a result, future editions of this publication may focus more strongly on headline indicators and main messages. Thank you for your continued support.

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 18 to 24 April 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 21 April 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 11 to 17 April 2021 and the reference day is Wednesday 14 April 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 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 accompanying technical dataset. 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 and vaccination data for the UK, includes analysis on the likelihood of testing positive for COVID-19 antibodies in England, Wales, Northern Ireland and Scotland and vaccination data by UK country and regions in England.

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 countries of the UK, including the likelihood of testing positive in patient facing roles and analysis on the number socially and physically distanced contacts.

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 has involved around 160,000 participants aged five years and over, with the latest round involving 141,000 participants, 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. Most recently the study has looked at how the link between infections, deaths and hospitalisations has changed across previous study rounds. Here are the latest REACT findings from 8 April 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.

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 and our recent blog.

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 countries of the UK
Article | Updated fortnightly
The characteristics of people testing positive for the 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, Public Health England and Wellcome Trust.

Coronavirus (COVID-19) Infection Survey: antibody and vaccination data for the UK
Article | 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 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 | Released 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 | Released 7 April 2021
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.