Office for National Statistics

Statistical bulletin

Coronavirus (COVID-19) Infection Survey, characteristics of people testing positive for COVID-19, UK: 28 July 2021

Characteristicsof people testing positive for COVID-19 from the Coronavirus (COVID-19) Infection Survey. This survey is being delivered in partnership with University of Oxford, University of Manchester, Public Health England andWellcomeTrust.This study is jointly led by the ONS and the Department for Health and Social Care (DHSC) working with the University of Oxford and Lighthouse Laboratories to collect and test samples.

Table of contents

1 . Main points

- In the weeks prior to 12 July 2021, the percentage of people testing positive for coronavirus (COVID-19) in the UK increased in both those working and not working in patient facing healthcare roles; the increase was greater in those not working in patient facing roles.

- The number of socially distanced and physical contacts that adults and school-age children reported with people outside their household increased from March 2021 up to 12 July 2021 across the UK.

- In July 2021, 61% (95% confidence interval: 57% to 64%) of people testing positive for COVID-19 in the UK with a strong positive test reported symptoms.

- In the UK, the most commonly reported symptoms have consistently been cough, fatigue and headache; the least commonly reported symptoms have consistently been abdominal pain, diarrhoea and nausea or vomiting.

- Analysis of COVID-19 reinfections between 26 April 2020 and 17 July 2021 found that, on average, the viral load is lower for the second infection compared with the first infection.

About this bulletin

This fortnightly bulletin series presents the latest analysis on the characteristics of people testing positive for SARS-CoV-2, the coronavirus causing the COVID-19 disease in the UK. Our previous articles presenting analysis on the characteristics of people testing positive for COVID-19 are still available.

In this bulletin, we refer to the number of COVID-19 infections within the community population; this refers to private residential households, and it excludes those in hospitals, care homes and/or other institutional settings in the UK. We include current COVID-19 infections, which we define as testing positive for SARS-CoV-2, with or without having symptoms, on a swab taken from the nose and throat.

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.

More information on our headline estimates of the overall number of positive cases in England, Wales, Northern Ireland and Scotland are available in our latest weekly bulletin. More information about the methods used for our models is available in our methodology article.

The analysis in this bulletin is for a different time period to the headline figures presented in the weekly COVID-19 infection survey bulletin. The reference periods for the various analyses are clearly stated at the start of each section, with more detail on what the analysis covers.

2 . Percentage testing positive for COVID-19 by adults in patient-facing and not in patient-facing healthcare job roles, UK

This section provides modelled estimates on positivity rates by adults in patient-facing and not in patient-facing healthcare job roles for the UK. The models used to produce positivity rates for adults in patient-facing and not in patient-facing job roles include only swab test results from individuals aged 16 to 74 years, and does not account for differences in age profiles between the two groups. This analysis covers the time period between 21 September 2020 and 12 July 2021.

The percentage testing positive for COVID-19 in the UK increased in both those working and not working in patient-facing healthcare roles

In the weeks prior to 12 July 2021, the percentage testing positive for coronavirus (COVID-19) in the UK increased in both those working and not working in patient-facing healthcare roles, but the increase was greater for those not working in patient-facing healthcare roles. This is after a peak in both groups in January 2021, which was more pronounced for adults in patient-facing healthcare job roles than those not in patient-facing healthcare job roles.

Patient-facing healthcare job roles include working in healthcare establishments such as hospitals, and do not include job roles in social care or care homes. People that are not working are included within the group "not in patient-facing healthcare job roles".

Figure 1: The percentage testing positive in the UK increased in both those working and not working in patient-facing healthcare roles, but the increase was greater for those not working in patient-facing healthcare roles

Estimated percentage of the adult population testing positive for COVID-19 on nose and throat swabs by those in patient-facing and not in patient-facing healthcare job roles, UK, 21 September 2020 to 12 July 2021

Notes:

1. All results are provisional and subject to revision.

2. There are fewer people in patient-facing healthcare job roles in our sample than those not in patient-facing healthcare roles (which includes those not working). Therefore, the estimates for patient-facing healthcare job roles have a larger degree of uncertainty, represented by wider confidence intervals.

3. This analysis covers the entirety of the UK and is therefore not comparable to analysis published before 20 May 2021, which includes individuals in non-patient and patient-facing job roles by age in England.

Download this chart

.xlsx

3 . Number and age of people with whom individuals had contact, in England, Wales, Northern Ireland and Scotland

This section looks at how often individuals are reporting social contact (either socially distanced or physical contact) with other people outside their own household, regardless of whether they have tested positive for coronavirus (COVID-19). We asked individuals how many people aged 17 years and under, 18 to 69 years, and 70 years and over they have had contact with outside their household up to seven days prior to each survey visit. "Contact" refers to either of the following:

- socially distanced contact - direct contact with social distancing only

- physical contact - physical contact, such as a handshake or personal care, including wearing personal protective equipment (PPE)

We report on recent trends in this section, but the full time series for this analysis, which covers the period between 12 July 2020 and 10 July 2021 for England, and 20 September 2020 to 10 July 2021 for Wales, Northern Ireland and Scotland, is available in the accompanying dataset. The analysis for Wales, Northern Ireland and Scotland starts at a later date, relating to when data collection started in these countries. Our estimates have been weighted to be representative of the total population in each of the four UK countries.

The estimated number of socially distanced and physical contacts that adults and school-age children reported with people outside their household has been increasing since March 2021 across the UK

The trends in socially distanced and physical contacts are very similar for England, Wales, Northern Ireland and Scotland.

Across all four UK nations, the number of socially distanced and physical contacts that adults and school-age children reported with people of all ages outside their household has been increasing since March 2021. Adults appear to consistently have more socially distanced and physical contacts with those aged 18 to 69 years than with those aged under 18 years or aged 70 years and over. School-age children appear to have had more socially distanced and physical contacts with those aged under 18 years since schools re-opened.

School term dates and COVID-19 related school policies vary by nation and this is reflected in the data. For example, in the 14-day period up to 10 July 2021, school age children in Northern Ireland and Scotland reported fewer contacts with those under 18 years. This corresponds to the end of school term-time and the start of the school summer holidays in Northern Ireland and Scotland during the fortnight up to 10 July 2021, while school term-time in England and Wales ends after 10 July.

Further information on the schedule for school re-openings can be viewed for England, Wales, Northern Ireland and Scotland. Information on lockdown easing can be viewed for England, Wales, Northern Ireland and Scotland.

Our findings are generally similar to those reported in the Opinions and Lifestyle Survey (OPN), which examines the impact of the coronavirus pandemic on people, households and communities in Great Britain. The most recent OPN bulletin reported that among adults in Great Britain, from 14 to 18 July 2021:

- a similar proportion of adults reported always or often maintaining social distancing (63%) up to last week (62% in the period 7 to 11 July); this was a reduction from 85% between 14 and 18 April following step two of the roadmap in England

- adults meeting up outdoors with someone not in their household, childcare or support bubble in the past seven days increased to around 6 in 10 (58% this week, 53% last week), having increased from 2 in 10 in the week ending 7 March 2021 before outdoor activity restrictions were lifted with step one of the roadmap

- around half (47%) of adults said they met up indoors (49% last week), having increased from 20% in the week ending 9 May 2021 before indoor restrictions were lifted with step three of the roadmap in England

4 . Symptoms profile of strong positive cases, UK

This section presents analysis that considers individuals with any strong positive test (including repeated positive tests) that had high viral loads (a Ct value less than 30) between 1 December 2020 and 12 July 2021 in the UK. We first present analysis for the whole of the UK split by month, and then for the whole time period split by UK country.

The analysis looks at any specific self-reported symptom, including cough, fever, shortness of breath, loss of taste, loss of smell, myalgia, fatigue, sore throat, headache, abdominal pain, diarrhoea, nausea or vomiting, or any symptom compatible with coronavirus (COVID-19). Symptoms are self-reported and were not professionally diagnosed.

To date, 99% of strong positive cases in July 2021[1], 92% in June 2021 and 46% in May 2021 were compatible with the Delta variant. Prior to this very few positive cases were identified as compatible with the Delta variant. This means that any change from May onwards when compared with previous months may be because the Delta variant has a different symptoms profile to the Alpha variant. However, other changes between May and June may also affect this analysis.

In addition, when the percentage of the population testing positive for COVID-19 is increasing, as it has been recently, the survey is likely to identify more people closer to the start of their infection with higher viral loads (lower Ct values). We have seen that the viral load of strong positive results has increased during June and July 2021, as measured by decreases in the average Cycle Threshold (Ct) value (see Section 7: Glossary, for more information on Ct values). This will also affect the prevalence of symptoms within these strong positive cases.

Across the UK, people testing positive for COVID-19 with a strong positive test were more likely to report "classic" symptoms than gastrointestinal or loss of taste or smell only

This analysis is based on all individuals who test positive for COVID-19 with a strong positive test (Ct <30) and considers what percentage of these individuals reported symptoms within 35 days of the first positive test in the episode.

In July 2021[1], 61% (95% confidence interval: 57% to 64%) of people testing positive for COVID-19 in the UK with a strong positive test reported symptoms[2], which has increased since March 2021 and is similar to levels seen in January and February 2021. This is potentially because of a higher average viral load in June and July 2021 compared with March 2021. Symptoms reported were more likely to be "classic" symptoms than gastrointestinal or loss of taste or smell only. The prevalence of "classic" and any symptoms was generally higher in June and July, and January and February, compared with March and April where prevalence was lower. This is consistent with higher average viral load in January, February, June and July 2020.

Figure 2: In the UK, people testing positive for COVID-19 with a strong positive test were more likely to report "classic" symptoms than gastrointestinal or loss of taste or smell only

Unweighted percentage of people with symptoms, including only those who have strong positive tests (Ct less than 30) by month, UK, 1 December 2020 to 12 July 2021

Notes:

1. All results are provisional and subject to revision.

2. Symptoms are self-reported and were not professionally diagnosed.

3. The data presented are unweighted percentages of people with any positive test result that had a Ct value less than 30.

4. "Classic symptoms" include any of the following: cough, fever, shortness of breath, loss of taste, loss of smell.

5. "Gastrointestinal (GI) symptoms" include any of the following: abdominal pain, nausea or vomiting, diarrhoea.

Download this chart

.xlsx

In the UK, the most commonly reported symptoms have consistently been cough, fatigue and headache. The least commonly reported symptoms have consistently been abdominal pain, diarrhoea and nausea or vomiting. The prevalence of fever, cough, fatigue and headache in those who test positive appears to have increased in June and July 2021 compared with March and April 2021. However, confidence intervals are wide and overlap with previous months' estimates.

Data on the percentage of people reporting specific symptoms by month for the UK, and by country for the total time period studied can be found in the accompanying dataset.

The percentage of strong positive cases where any symptoms were reported appears to be slightly lower in Northern Ireland. This may be driven by slightly fewer people reporting loss of taste and smell (which is a classic symptom) compared with England, Wales and Scotland.

Patterns of the prevalence of specific symptoms are similar for each UK country, and align with data for the whole of the UK.

Because of a smaller amount of underlying data for the devolved administrations in comparison to England, the confidence intervals are wider indicating higher uncertainty.

Figure 3: Patterns of the prevalence of symptoms are similar for each UK country

Unweighted percentage of people with symptoms, including only those who have strong positive tests (Ct less than 30) by country, UK, 1 December 2020 to 12 July 2021

Notes:

1. All results are provisional and subject to revision.

2. Symptoms are self-reported and were not professionally diagnosed.

3. The data presented are unweighted percentages of people with any positive test result that had a Ct value less than 30.

4. "Classic symptoms" include any of the following: cough, fever, shortness of breath, loss of taste, loss of smell.

5. "Gastrointestinal (GI) symptoms" include any of the following: abdominal pain, nausea or vomiting, diarrhoea.

Download this chart

.xlsx

About this analysis

This analysis considers all symptoms reported at survey visits within 35 days of the first positive test of the episode, and at each survey visit we ask about symptoms in the last seven days. This includes symptoms reported even when there is a negative test result within this timeframe or a positive test result with a higher Ct value. The strength of the test is determined by how quickly the virus is detected, measured by a cycle threshold (Ct) value. The lower the Ct value, the higher the viral load and stronger the positive test. We look at strong positive test results with a Ct of less than 30 to exclude the possibility that symptoms are not identified because we pick up individuals very early or later on in their infection. More details on this analysis can be found in Section 8.

Individuals taking part in the survey were asked at each visit whether they had experienced a range of possible symptoms[1] in the seven days before they were tested, and also separately whether they felt that they had symptoms compatible with a coronavirus (COVID-19) infection in the last seven days.

Notes for: Symptoms profile of strong positive cases, UK

1. Our symptoms analysis includes data from 1 December 2020 up to the most recent date available, which is 12 July 2021. This means that results for July 2021 include data from 1 to 12 July 2021.

2. The symptoms respondents were asked to report are: fever, muscle ache (myalgia), fatigue (weakness or tiredness), sore throat, cough, shortness of breath, headache, nausea or vomiting, abdominal pain, diarrhoea, loss of taste or loss of smell.

5 . Reinfections of COVID-19, UK

This section looks at the rate of coronavirus (COVID-19) reinfections in the UK between 26 April 2020 and 17 July 2021. It provides an update of previous results presented in the Coronavirus (COVID-19) Infection Survey technical article: analysis of reinfections of COVID-19: June 2021, which also gives a more detailed explanation of the methods used. An update of all of the data published in the technical article can be found in tables 4a to 4f in the accompanying dataset.

The analysis presented in this section includes individuals who have had at least one positive test recorded in the survey and meet our criteria for being "at risk" of reinfection where:

- 90 days has elapsed since an individual's first positive test in thesurveyand their most recent test result was negative

- if 90 days has not passed since their first positive test in the survey, the individual's last positive test has been followed by four consecutive negative tests

An individual being classified as "at risk" reflects that it is possible for a positive test of theirs to be considered a reinfection. The "at-risk period" refers to the period following the first time we could have defined a reinfection. A reinfection is therefore defined as when an individual who meets these criteria has a positive test.

All estimates of COVID-19 reinfections in this analysis are unweighted; the sample for this analysis includes only those who have tested positive for COVID-19 on a swab test, and as such there is no known population that estimates could be weighted to be representative of.

Ct values are significantly lower for the first episode than for the second episode, indicating a lower viral load at the second infection between 26 April 2020 and 17 July 2021

The estimated rate for all reinfections including those with lower viral load was 12.8 per 100,000 participant days at risk (95% confidence interval: 11.0 to 14.7) over the entire at-risk period. The estimated rate for reinfections with a strong positive test (with Ct less than 30) was 3.1 per 100,000 participant days at risk (95% confidence interval: 2.3 to 4.2) over the entire at-risk period. This suggests that the number of reinfections is low overall, and reinfections with a high viral load (which are more likely to cause illness) are even lower.

Analysis of Ct values (please see glossary term: Cycle threshold (Ct) values) at first and second infection found that Ct values are significantly lower for the first episode than for the second episode; this indicates that there is a lower viral load at the second infection.

Estimated rate of COVID-19 reinfection according to time at risk and additional Ct analysis can be found in the accompanying dataset for this bulletin.

Table 1: Rate of reinfections per 100,000 participant days at risk

Estimated rate of COVID-19 reinfections per 100,000 participant days at risk, averaged for entire at-risk period, 26 April 2020 to 17 July 2021, UK

Definition	Number of participants at risk	Number of identified reinfections	Estimated rate of reinfections (per 100,000 participant days at risk)	Lower 95% credible interval	Upper 95% confidence interval
All reinfections definition	19,470	195	12.8	11.0	14.7
Reinfections with Ct less than 30	19,470	48	3.1	2.3	4.2

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

Notes

1. For the purposes of this analysis, we define reinfection as a new positive test 90 days or more after an initial first positive test which was preceded by at least one negative test, or where an individual has had a subsequent positive test following four consecutive negative tests regardless of the time since the first positive.

6 . 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

7 . Glossary

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.

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.

Cycle threshold (Ct) values

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

For more information, see our methodology page on statistical uncertainty.

8 . Measuring the data

Additional information on strengths, limitations, appropriate uses, and how the data were created is available in the Coronavirus (COVID-19) Infection Survey Quality Methodology Information (QMI). Our methodology article provides further information around the survey design, how we process data and how data are analysed.

Symptoms analysis

The analysis in Section 4 looks at each person who tested positive for coronavirus (COVID-19) and had a strong positive test in the UK. Participants who only have positive tests with high Ct values (please see glossary term: Cycle threshold (Ct) values) are excluded from this analysis to exclude the possibility that symptoms are not identified because we pick up individuals either very early or later on in their infection. You can find more information on Ct values in a paper written by academic partners at the University of Oxford.

The analysis on the symptoms profile of strong positive cases in the UK considers individuals with any positive test (including repeated positive tests) that had a Ct value less than 30 between 1 December 2020 and 12 July 2021. Positive episodes are now being defined as "a new positive test 90 days or more after an initial first positive test and following a previous negative test, or, if within 90 days, a subsequent positive test following four consecutive negative tests", rather than using a 90-day threshold alone.

9 . Strengths and limitations

More quality and methodology information on strengths, limitations, appropriate uses, and how the data were created is available in the Coronavirus (COVID-19) Infection Survey QMI.

Further information on test accuracy can be found in our blog: Accuracy and confidence: why we trust the data from the COVID-19 infection survey.

10 . Related links

Coronavirus (COVID-19) Infection Survey, UK
Bulletin | Updated weekly
Estimates for England, Wales, Northern Ireland and Scotland. This survey is being delivered in partnership with the University of Oxford, the University of Manchester, Public Health England and the Wellcome Trust. This study is jointly led by the Office for National Statistics (ONS) and the Department for Health and Social Care (DHSC) working with the University of Oxford and Lighthouse laboratories to collect and test samples.

Coronavirus (COVID-19) Infection Survey, antibody and vaccination data, UK
Bulletin | Updated fortnightly
Antibody and vaccination data by UK country and regions in England from the Coronavirus (COVID-19) Infection Survey. This analysis has been produced in partnership with University of Oxford, University of Manchester, Public Health England, and Wellcome Trust. This study is jointly led by the ONS and the Department for Health and Social Care (DHSC) working with the University of Oxford and Lighthouse Laboratories to collect and test samples.

COVID-19 Infection Survey: methods and further information
Methods article | Updated 26 March 2021
Information on the methods used to collect the data, process it, and calculate the statistics produced from the COVID-19 Infection Survey pilot.

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 Office for National Statistics (ONS) and other official sources.

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 (COVID-19) pandemic and its impact on our economy and society.

COVID-19 Infection Survey (CIS)
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 vaccination rates in people aged 70 years and over by socio-demographic characteristic, England
Article | Released 29 March 2021
First dose COVID-19 vaccination rates among people aged 70 years and older who live in England, both in private households and communal establishments. Includes estimates for the population as a whole by age and sex, and for ethnic minorities, religious groups, those identified as disabled and by area deprivation.

The prevalence of long COVID symptoms and COVID-19 complications
Article | Released 4 June 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.

COVID Symptom Study - what are the new top 5 COVID symptoms?
Web page | Updated 23 June 2021
Daily reports on the ZOE COVID Study app used to identify the current top five symptoms that have emerged in recent weeks, which differ depending on if users been vaccinated, and how many doses users have had.