Article

Coronavirus (COVID-19) Infection Survey: characteristics of people testing positive for COVID-19 in England, 27 January 2021

Characteristics of 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 and Wellcome Trust.

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1 . Main points

- In recent weeks, there is evidence that the percentage testing positive for the coronavirus (COVID-19) has decreased in non-patient facing job roles but increased amongst those in patient-facing roles in England.

- The largest differences in reported symptoms between the new variant compatible positives and those not compatible with the new UK variant were found in cough, sore throat, fatigue and myalgia.

- The number of socially distanced and physical contacts that adults and school age children had with people outside their household decreased in January 2021.

- Of those in school Year 12 to 24 years old, the highest percentage testing positive was among those who are employed.

2 . Overview

In this article, we refer to the number of coronavirus (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 in England.

This article presents analysis on the characteristics of those testing positive for SARS-CoV-2 – the coronavirus causing the COVID-19 disease in England. 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 information on our headline estimates of the overall number of positive cases in England, Wales, Northern Ireland and Scotland are available in our latest bulletin. It should be noted that the analysis on the characteristics and behaviours of those testing positive in this article is for an older time period than the headline figures presented in the most recent bulletin. The reference periods for the various analyses are clearly stated at the start of each section.

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.

Further information on what the analysis covers is provided at the start of each section.

3 . Percentage testing positive for COVID-19 by patient-facing and non-patient-facing job roles by age

About this analysis

The estimated percentage of people in England who have had coronavirus (COVID-19) since May 2020 is published in our weekly bulletin. The latest bulletin reports that the percentage testing positive remained at high levels in England but decreased slightly in the week ending 16 January 2021 (between 10 and 16 January).

This section provides the modelled estimates on positivity rates by patient-facing and non-patient-facing job roles by age; with the two occupational groups split between those aged under 35 years and those 35 years and above. The modelling used is similar to that used to produce national trend modelling of COVID-19 infections in our weekly bulletin. More information about the methods used in the model is available in our methodology article.

The models used to produce positivity rates for patient-facing and non-patient-facing roles include only swab test results from individuals aged 16 to 74 years. This analysis covers the time period between 1 September 2020 and 9 January 2021.

In recent weeks, there is evidence that the percentage testing positive has decreased in non-patient facing job roles but increased amongst those in patient-facing roles

In the week ending 9 January 2021, the percentage of those testing positive for the coronavirus (COVID-19) increased in both those aged under 35 years, and 35 years and above, who work in a patient-facing role. The percentage testing positive recently decreased in both age groups in a non-patient-facing role. However, overall there is no statistical evidence of difference in levels of positivity between patient-facing and non-patient facing, except those over 35 years old and in a non-patient-facing role.

This contrasts with analysis in our previous article published in December, where the proportion of those testing positive had decreased in all groups apart from those in a patient-facing role aged 35 years and over, where there was less certainty in the direction of the trend.

Figure 1: In recent weeks, there is evidence that the percentage testing positive has increased amongst those in a patient-facing role

Estimated percentage of the population testing positive for COVID-19 on nose and throat swabs by patient-facing role and age from 1 September 2020 to 9 January 2021

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. There are fewer people in patient facing roles in our sample than those in non-patient facing roles. Therefore the estimates for patient facing roles have a larger degree of uncertainty, represented by wider credible intervals.

Download the data

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4 . Symptoms profile by cases compatible with the new UK variant and other positive cases

About this analysis

Swabs are tested for three genes present in the coronavirus: N protein, S protein and ORF1ab. Each swab can have any one, any two or all three genes detected. Positives are those where one or more of these genes is detected in the swab other than tests that are only positive on the S-gene, which is not considered a reliable indicator of the virus if found on its own.

The new UK variant of COVID-19 has genetic changes in the S-gene. This means the S-gene is no longer detected in the current test, and cases that would have previously been positive on all three genes are now positive only on the ORF1ab and the N-gene (not the S-gene). More information on the new variant can be found in Section 10 in our latest bulletin.

The analysis in this section looks at each person who tests positive for COVID-19 who had a strong positive test. 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. Positive results with a high Ct value could 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.

This analysis considers cases that had a Ct value less than 30, between 15 November 2020 and 16 January 2021, split by whether this is compatible with the new UK variant (positive only on two of the genes in the test, the N-gene and ORF1ab) or positive on all three genes (the N-gene, the S-gene and ORF1ab), and considers what percentage of these individuals reported symptoms. You can find more information on Ct values in a paper written by academic partners at the University of Oxford.

Individuals taking part in the survey were asked 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 COVID-19 infection in the last seven days.

In Figure 2 we have categorised reported symptoms into the following:

- any: all reported symptoms, including reporting symptoms compatible with COVID-19 whilst not naming specific symptoms

- classic: cough, fever, shortness of breath, loss of taste or loss of smell

- gastrointestinal (GI): abdominal pain, nausea, vomiting or diarrhoea

- loss of taste or smell only

People testing positive compatible with the new UK variant were more likely to report any symptoms and the classic symptoms, but were less likely to report loss of taste and smell. There was no evidence of difference in the percentages reporting gastrointestinal symptoms.

Figure 2: People testing positive compatible with the new UK variant were more likely to report any symptoms and the classic symptoms

Percentage of people with symptoms by variant, including only those who have strong positive tests (Ct less than 30), from 15 November 2020 to 16 January 2021, in England

Notes:

1. These 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 or other institutional settings.

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

4. This analysis covers the time period between 15 November 2020 to 16 January 2021.

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Figure 3 indicates that loss of taste and loss of smell were significantly less common in new variant compatible positives than triple positives; whereas other symptoms were more common in new variant compatible positives, with the largest differences for cough, sore throat, fatigue, myalgia and fever. There is no evidence of difference in the gastrointestinal symptoms, shortness of breath or headaches.

Figure 3: The largest differences in reported symptoms between the new variant positive and triple positives were found in cough, sore throat, fatigue and myalgia

Percentage of people with symptoms by variant, including only those who have a strong positive test (Ct less than 30), from 15 November 2020 to 16 January 2021, in England

Notes:

1. These 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 or other institutional settings.

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

4. This analysis covers the time period between 15 November 2020 to 16 January 2021.

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Additional analysis has been conducted on the estimated percentage of self-reported gastrointestinal symptoms over time in England and by CIS area, by our academic partners at the University of Oxford.

Notes for: Symptoms profile by cases compatible with the new UK variant and cases positive on all three genes.

1. 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 . Number and age of people individuals had contact with

About this analysis

This section looks at how often individuals are reporting social contact (either socially distanced or physical contact) with other people outside their own household. We asked individuals how many people aged 17 years and under, 18 to 69 years, and 70 years and over, outside their household, they have had contact with up to seven days prior to each 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 PPE

This analysis covers the time period between 27 July 2020 and 11 January 2021. We have produced estimates that have been weighted to be representative of the total population in England. Analysis includes all people taking part in the survey, and is presented for school age children (age 2 years to school Year 11) and adults (school Year 12 and above). We report the number of contacts in the following groups:

- 0 (no reported contact)

- 1 to 5 (reported contacts)

- 6 to 10 (reported contacts)

- 11 to 20 (reported contacts)

- 21 or more (reported contacts)

The number of socially distanced contacts with people under the age of 70 years was higher during term-time for school age children

We present the proportion of school age children by each category of socially distanced contact in Figure 4. Our analysis suggests that there was an increase in "21 or more" socially distanced contacts with people aged 17 years and under from September 2020 onwards, corresponding to school age individuals returning to school and coming into contact with their peers. In early January 2021, socially distanced contacts decreased as schools closed in lockdown.

There was a decrease in the number of socially distanced contacts with people aged 17 years and under in late October to early November 2020 and in late December, corresponding to the half term and Christmas breaks from school. In November, the proportion of socially distanced contacts returned to a similar number of contacts seen before half-term, but this did not happen in January as schools remained closed.

There is a similar pattern of increased socially distanced contacts with people aged 18 to 69 years from September 2020 onwards, which is likely to relate to the increased contact with teachers and parents. In early January, the number of socially distanced contacts decreased as schools closed.

Over time, the number of socially distanced contacts with people who are over 70 years has decreased. There was some evidence of a slight rise in those reporting 1 to 5 contacts in late December, potentially because of some rules relaxing at Christmas.

Figure 4: In school age children, the number of socially distanced contacts with people under the age of 70 years has decreased in January

Proportion of school age children by number of socially distanced contacts with different age groups, from 27 July 2020 to 11 January 2021

Notes:

1. These 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 or other institutional settings.

3. This analysis includes all participants between 27 July 2020 and 11 January 2021, regardless of whether they tested positive or negative for COVID-19.

Download the data

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Among adults, the number of socially distanced contacts of all ages has decreased over time since September to October 2020. In December, socially distanced contacts may have risen slightly as the November lockdown ended. The number of socially distanced contacts has decreased again in January.

Figure 5: In adults, the number of socially distanced contacts has decreased across all ages and numbers of contacts

Proportion of adults by number of socially distanced contacts with different age groups, from 27 July 2020 to 11 January 2021

Notes:

1. These 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 or other institutional settings.

3. This analysis includes all participants between 27 July 2020 and 11 January 2021, regardless of whether they tested positive or negative for COVID-19.

Download the data

The number of physical contacts with people aged 17 years and under and with people aged 18 to 69 years decreased in January with the reintroduction of lockdown for school age children in England

The trends in physical contacts among school age children are very similar to socially distanced contacts trends, aligning to schools returning in September 2020.

The proportion of physical contact increased from September, however, this increase was proportionally less than the increase in socially distanced contact seen in Figure 3. In January 2021, the proportion of physical contact across ages decreased as the country went into lockdown and schools were closed.

Trends in physical contacts over time in adults are very similar to socially distanced contact trends, but there are more respondents that have had contact with zero individuals. Across all ages of physical contacts, in adults the number of physical contacts has decreased over time from September and October.

Additional information on the proportions of physical contacts by school age children and adults can be found in the accompanying dataset.

The number of social and physical contacts with people by region of England

Regionally there is little variation in the number of socially distanced contacts. In all regions there is a clear decrease in socially distanced contact with six or more people in the most recent 14-day period because of the national lockdown restrictions.

There is also low variation by region in the number of physical contacts people have reported. In all regions there is a clear decrease in the number of physical contacts in the most recent 14-day period because of national lockdown restrictions. Additional information on regional differences between socially distanced and physical contacts can be found in the accompanying dataset.

More information on socially-distanced and physical contact is also available in the Opinions and Lifestyle Survey, which examines the impact of coronavirus (COVID-19) pandemic on people, households and communities in Great Britain.

6 . Percentage of Year 12 to age 24 years with COVID-19 by employment status

The analysis in this section looks at the percentage of people aged 16 and 17 years (school Year 12) to age 24 years who tested positive for the coronavirus (COVID-19), between 1 September 2020 and 9 January 2021, split by employment status. The modelling used is similar to that used to produce national trend modelling of COVID-19 infections in our weekly bulletin. More information about the methods used in the model is available in our methodology article.

For this analysis, we have split employment status into three categories:

- employed: includes everyone in full-time and part-time employment and those who are self-employed

- student: includes anyone who is in full-time education

- other: includes people who are furloughed or not working, such as those who are unemployed and long-term sick

In this age group, the percentage testing positive is currently highest for people who are employed. However, this has varied over time and the percentage testing positive was highest for students during October 2020.

In recent weeks, the percentage testing positive has been increasing among both employed individuals and students in this age group.

Caution should be taken in over-interpreting the trend in the "Other" category because of wide credible intervals.

As this analysis only includes people in school Year 12 to 24 years, sample sizes are smaller and modelling is therefore more challenging. This can lead to a higher level of uncertainty around the modelled trends.

Figure 6: The percentage testing positive for COVID-19 was highest among those aged from School Year 12 to 24 years who are employed

Percentage of people in school Year 12 to age 24 years testing positive for COVID-19 by employment status, between 1 September 2020 and 9 January 2021

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. 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.

Download the data

.xlsx

7 . Coronavirus (COVID-19) Infection Survey data

Coronavirus (COVID-19) infections in the community in England
Dataset | Released 27 January 2021
Characteristics of people testing positive for the coronavirus (COVID-19) in England taken from the COVID-19 Infection Survey.

8 . Collaboration

The Coronavirus (COVID-19) Infection Survey analysis was produced by the Office for National Statistics (ONS) in partnership with the University of Oxford, the University of Manchester, Public Health England 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

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ONS COVID-19 Infection Survey dissemination team – Alice McTiernan, Kyle Knights, George Feldman, Emma Nash

9 . 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.

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.

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 University of Oxford, University of Manchester, Public Health England and Wellcome Trust.

[Coronavirus (COVID-19) weekly insights: latest health indicators in England](#)
Article | Updated weekly
Brings together latest coronavirus (COVID-19) data in England. Exploring how these measures interact with each other can improve understanding of the severity and spread of the pandemic. This weekly summary gives an overview of the current situation and explores variations for different age groups and regions.

[COVID-19 Infection Survey (Pilot): methods and further information](#)
Methods article | Updated 21 September 2020
Information on the methods used to collect the data, process it, and calculate the statistics produced from the COVID-19 Infection Survey pilot.

[COVID-19 Infection Survey (CIS)](#)
Article | Updated 14 May 2020
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 (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.