Office for National Statistics

Statistical bulletin

Coronavirus (COVID-19) Infection Survey pilot: England, 12 June 2020

Initial data from the COVID-19 Infection Survey. This survey is being delivered in partnership with IQVIA, Oxford University and UK Biocentre.

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To be announced

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1 . Main points

- In this bulletin, we refer to the number of coronavirus (COVID-19) infections within the community population; community in this instance refers to private households, and it excludes those in hospitals, care homes or other institutional settings.
- At any given time between 25 May and 7 June 2020, we estimated that an average of 0.06% of the community population had COVID-19 (95% confidence interval: 0.02% to 0.12%); this equates to an average of 33,000 people in England (95% confidence interval: 14,000 to 68,000).
- Modelling of the trend over time shows evidence that the number of people in England testing positive has decreased.
- There were an estimated 31,600 new COVID-19 infections per week in England (95% confidence interval: 22,200 to 43,500) between 26 April and 7 June 2020, equating to an incidence rate per week of 0.06 new cases per 100 people.

2 . Number of people in England who had COVID-19

Evidence shows that the number of people in England testing positive has decreased in recent weeks

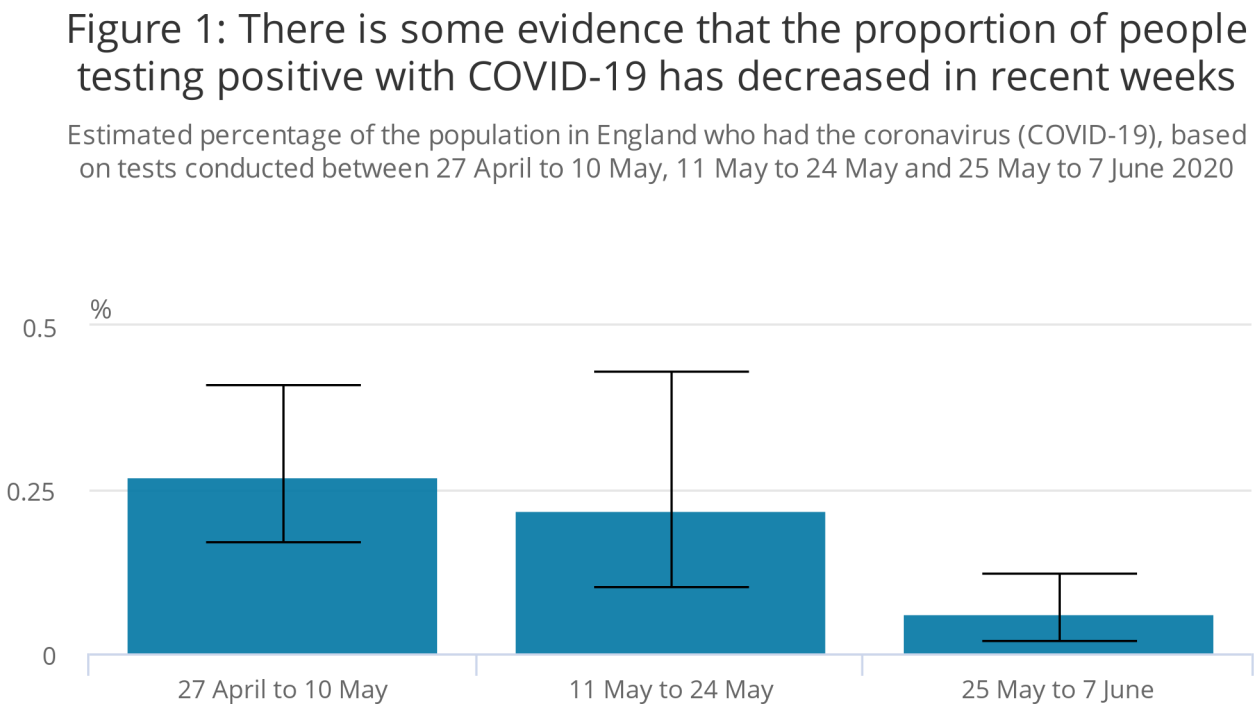
Our latest estimates indicate that at any given time during the two weeks from 25 May to 7 June 2020, an average of 33,000 people in England had the coronavirus (COVID-19) (95% confidence interval: 14,000 to 68,000). This equates to 0.06% (95% confidence interval: 0.02% to 0.12%) of the population in England or around 1 in 1,700. This estimate is based on tests performed on 19,933 people in 9,179 households.

Out of the 19,933 participants' swab tests included in this analysis, 11 individuals in 8 households tested positive for COVID-19. As this is a household survey, our figures do not include people staying in hospitals, care homes or other institutional settings. In these settings, rates of COVID-19 infection are likely to be different.

When analysing data for the three most recent non-overlapping 14-day periods, there is some evidence of a decrease in the proportion testing positive (Figure 1). Please note, the 14-day time periods presented in Figure 1 are different to those presented in our previous publication so direct comparisons should not be made.

Figure 1: There is some evidence that the proportion of people testing positive with COVID-19 has decreased in recent weeks

Estimated percentage of the population in England who had the coronavirus (COVID-19), based on tests conducted between 27 April to 10 May, 11 May to 24 May and 25 May to 7 June 2020



Source: Office for National Statistics – COVID-19 Infection Survey

Notes:

1. 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.

2. It is important to note that the results for this period are provisional as we are still receiving swab test results. This may result in further revisions to the figure.

In addition to this analysis, a more complex regression modelling approach confirms that there is a clear downward trend (Figure 2). The significance of this downward trend is shown by the credible intervals, as the lower credible interval in the first week of the study period is higher than the upper credible interval for the most recent week. This modelling is an exploratory analysis and was conducted by our research partners at the University of Oxford and the University of Manchester.

The estimates in Figure 1 are our most accurate reflection of the proportion of the population in England testing positive for COVID-19 at any given point in time. However, the modelling provides additional insight into the change over time that is not possible when comparing the 14-day estimates alone.

The modelling uses data from the whole survey period, since 26 April 2020, to inform the overall trend by controlling for age, sex and region. This is a different methodology to the weighted estimates provided in the 14-day headline and should not be compared directly.

The modelling has been developed further since the results presented in the last publication and now includes daily positivity rates over time, rather than weekly. The modelling will continue to be developed and improved in the coming weeks. More information about the methods used in the regression model is available in Section 8: Measuring the data.

Figure 2: New exploratory modelling shows the downward trend in those testing positive for COVID-19 is statistically significant

Estimated percentage of the population in England testing positive for the coronavirus (COVID-19) daily since the start of the study, 26 April 2020

Download the data

All estimates are subject to uncertainty, given that a sample is only part of the wider population. The 95% confidence intervals are calculated so that, if we were to repeat this study many times, with many different samples of households, then 95% of the time the confidence intervals would contain the true value that we are seeking to estimate.

More information on how our estimates compare with other sources is available in Section 8: Measuring the data.

3 . Number of new COVID-19 cases in England

There were an estimated average of 31,600 new COVID-19 infections per week in England

We estimate that there were 0.06 new infections per 100 people followed for one week (95% confidence interval: 0.04 to 0.08), based on results of people tested throughout the study period, which began on 26 April 2020.

This would represent an average of 31,600 new infections per week for people living in private-residential households in the community in England since the study began (95% confidence interval: 22,200 to 43,500). This equates to roughly 4,500 new infections per day. It is important to note that the analysis in this section relates to a different, albeit overlapping, time period to the analysis of the total number of people in England who have the coronavirus (COVID-19) presented in Section 2. This means the numbers cannot be directly compared.

As the proportion of those testing positive in England is decreasing over time, it is likely that the incidence rate is also decreasing. However, because of the low number of new positive cases, we cannot currently measure a statistically significant reduction. The incidence rate measures the occurrence of new cases of COVID-19.

Incidence refers to the number of individuals who have a positive test in the study divided by the time from joining the study to their last test. Individuals who are positive when they join the study are not included in this calculation. This is not the same as the reproduction rate (R). R is described in the next section.

As of 7 June 2020, 20,189 individuals who were negative on their first test in the study have had one or more follow-up swab tests. The median time between the first and latest tests was 15 days.

Unlike the analysis in Section 2: Number of people in England who had COVID-19 in this bulletin, these estimates have not been weighted to be representative of the target population in England. This is because of the relatively small numbers of positive cases in the sample. We will do more work on the potential to weight these estimates in future publications.

The reproduction rate (R) is being published by the Scientific Advisory Group for Emergencies (SAGE)

The reproduction number (R) is the average number of secondary infections produced by one infected person. The Scientific Pandemic Influenza Group on Modelling (SPI-M), a sub-group of the Scientific Advisory Group for Emergencies (SAGE), has built a consensus on the value of R based on expert scientific advice from multiple academic groups.

4 . Antibody tests for COVID-19

Around 6.78% of people who provided blood samples tested positive for antibodies to COVID-19

The estimate for those testing positive for antibodies presented in this publication has not been updated and is the same as estimates presented in our previous publication. Once we have received additional blood sample results, we will provide updated antibodies analysis.

As of 24 May 2020, 6.78% (95% confidence interval: 5.21% to 8.64%) of individuals from whom blood samples were taken tested positive for antibodies to the coronavirus (COVID-19). This is based on blood test results from 885 individuals since the start of the study on 26 April 2020.

One way the body fights infections like COVID-19 is by producing small particles in the blood called antibodies. It takes between two and three weeks for the body to make enough antibodies to fight the infection, but once a person recovers, antibodies remain in the blood at low levels. This is what helps to prevent individuals from getting the same infection again. We try to measure the presence of antibodies in order to work out who has had COVID-19 in the past.

These estimates have not been weighted to be representative of the target population in England. This is because of the relatively small numbers of positive cases in the sample. We will do more work on the potential to weight these estimates in future publications.

More information on how our estimates compare with other sources is available in Section 8: Measuring the data.

5 . Characteristics of people testing positive for COVID-19

This section looks at the potential risk factors associated with those who have ever tested positive for the coronavirus (COVID-19), even if they now test negative. It includes all individuals who have ever been tested for the coronavirus (COVID-19) as part of the study. Including all those who ever tested positive or never tested positive gives a larger dataset, enabling more accurate analysis of risk factors.

The estimates within this section should not be compared with the results in Section 2: Number of people in England who had COVID-19, as they use different time periods and this section compares unweighted estimates. Unweighted estimates may not be representative of the wider community population in England.

The estimates will always be higher than the proportion testing positive in the last 14 days of the study as everyone who has ever tested positive (including many who have now recovered) are included. Over the whole study period, an estimated 0.41% (95% confidence interval: 0.33% to 0.50%) of people have ever tested positive for COVID-19.

The Office for National Statistics (ONS) is working to develop analysis of infection rates by ethnic group within the COVID-19 Infection Survey; we will publish ethnicity estimates and additional population breakdowns when we have sufficient data to calculate good quality estimates for different groups.

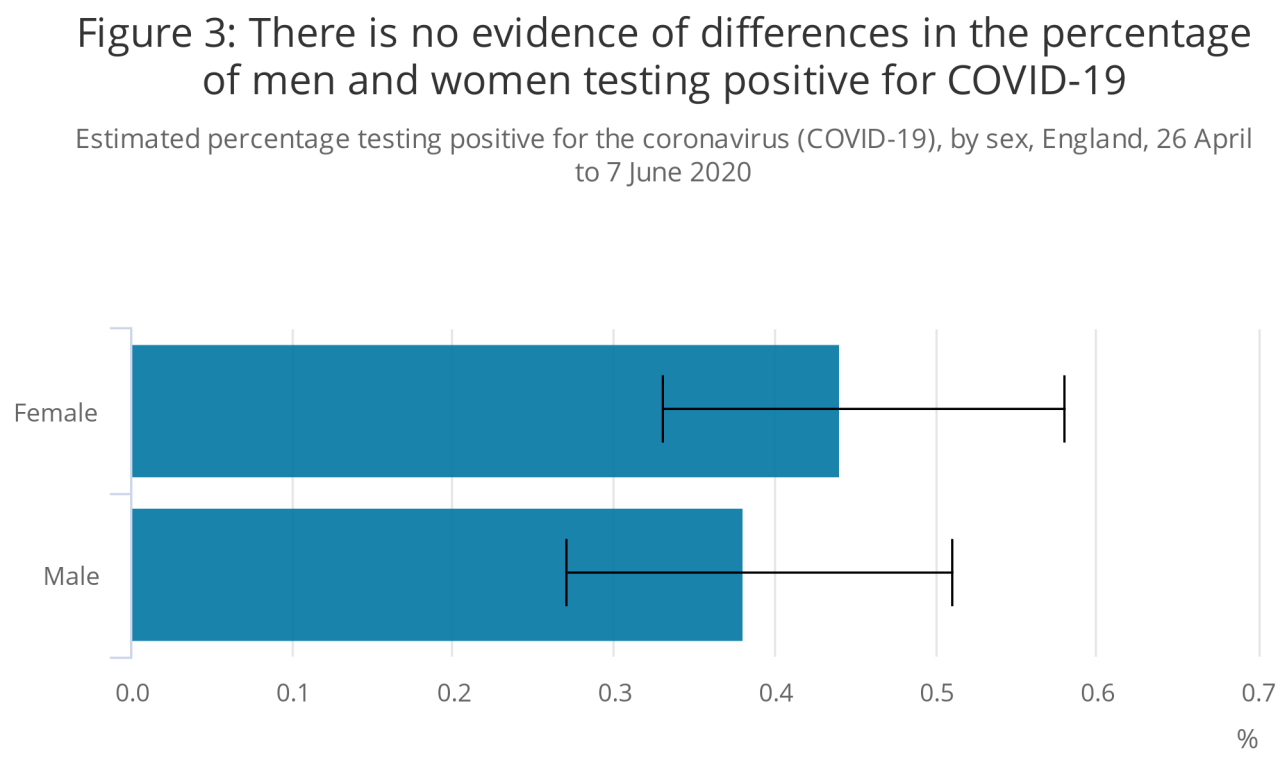
We have conducted statistical testing to indicate whether there is any evidence of differences in infection rates for each of the characteristics provided. For information on the statistical testing, see Section 8: Measuring the data.

Sex and age groups

Based on test results from those who have ever tested positive over the study period, statistical testing indicates there is no evidence of differences in the proportions of men or women testing positive for COVID-19 (Figure 3). Confidence intervals are represented by the black lines, and show that the range of values overlap substantially.

Figure 3: There is no evidence of differences in the percentage of men and women testing positive for COVID-19

Estimated percentage testing positive for the coronavirus (COVID-19), by sex, England, 26 April to 7 June 2020



Source: Office for National Statistics – COVID-19 Infection Survey

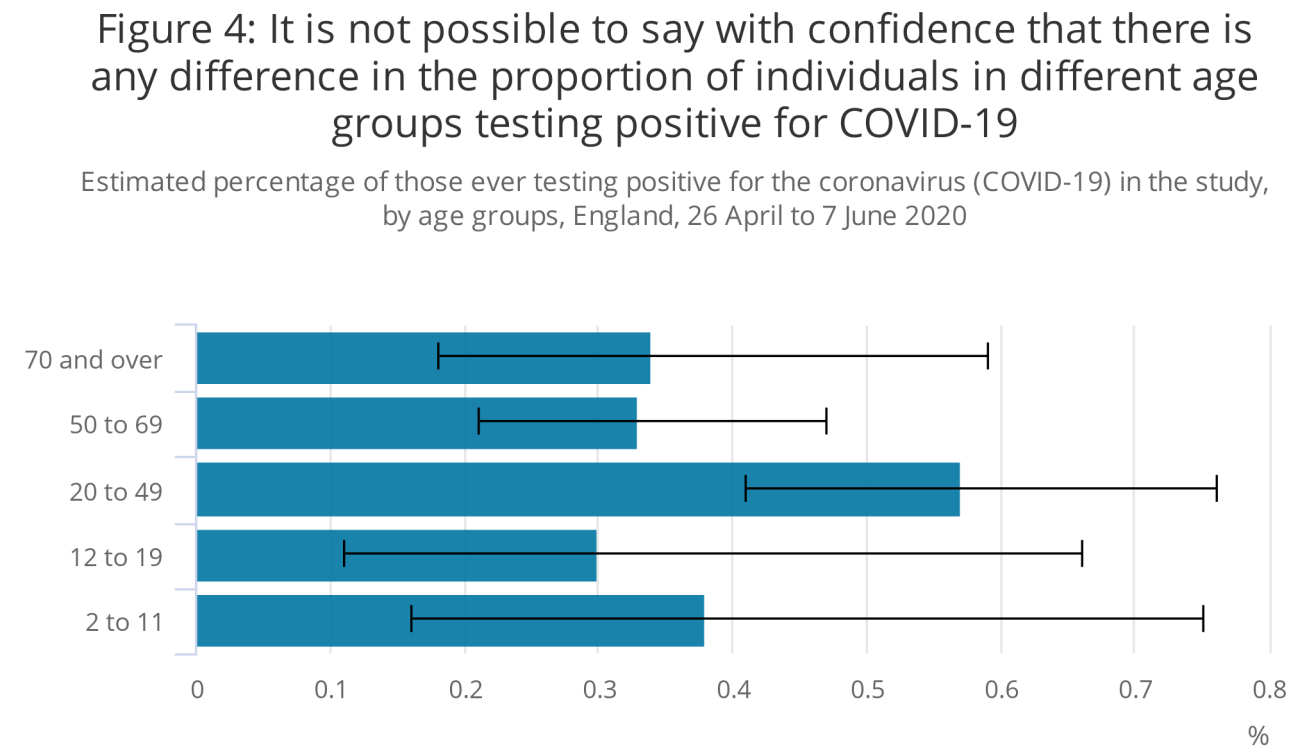
Notes:

1. 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.

Statistical testing indicates that there is not enough evidence to say with confidence that there is a difference in infection rates between age groups in the community (Figure 4). The range of values for the black lines is relatively large across most age groups, and statistical testing indicates some uncertainty in these estimates.

Figure 4: It is not possible to say with confidence that there is any difference in the proportion of individuals in different age groups testing positive for COVID-19

Estimated percentage of those ever testing positive for the coronavirus (COVID-19) in the study, by age groups, England, 26 April to 7 June 2020



Source: Office for National Statistics – COVID-19 Infection Survey

Notes:

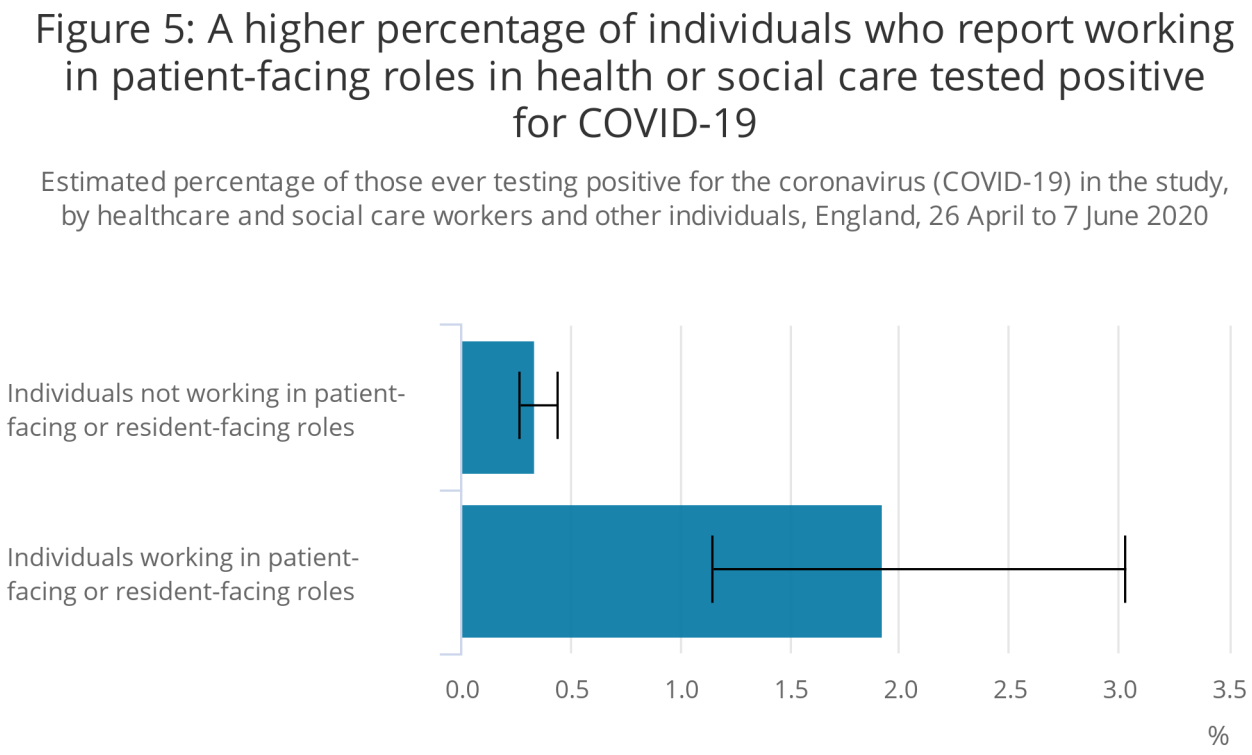
1. These statistics refer to infections reported in the community, by which we mean private households. These figures exclude infections reported in hospitals, care homes or other institutional settings.

Patient-facing healthcare or resident-facing social care workers

Of those in our study who reported working in patient-facing healthcare or resident-facing social care roles [1], a higher percentage of individuals working in patient-facing roles in health or social care tested positive for COVID-19. Those in patient-facing roles include NHS professionals, such as nurses and doctors, as well as social care workers, such as nursing home or home care workers.

Figure 5: A higher percentage of individuals who report working in patient-facing roles in health or social care tested positive for COVID-19

Estimated percentage of those ever testing positive for the coronavirus (COVID-19) in the study, by healthcare and social care workers and other individuals, England, 26 April to 7 June 2020



Source: Office for National Statistics – COVID-19 Infection Survey

Notes:

1. 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.

2. We asked individuals to self-report whether they worked in patient-facing healthcare or resident-facing social care, where that information was missing or uncertain, we used the other information they gave us about their occupation to inform this coding.

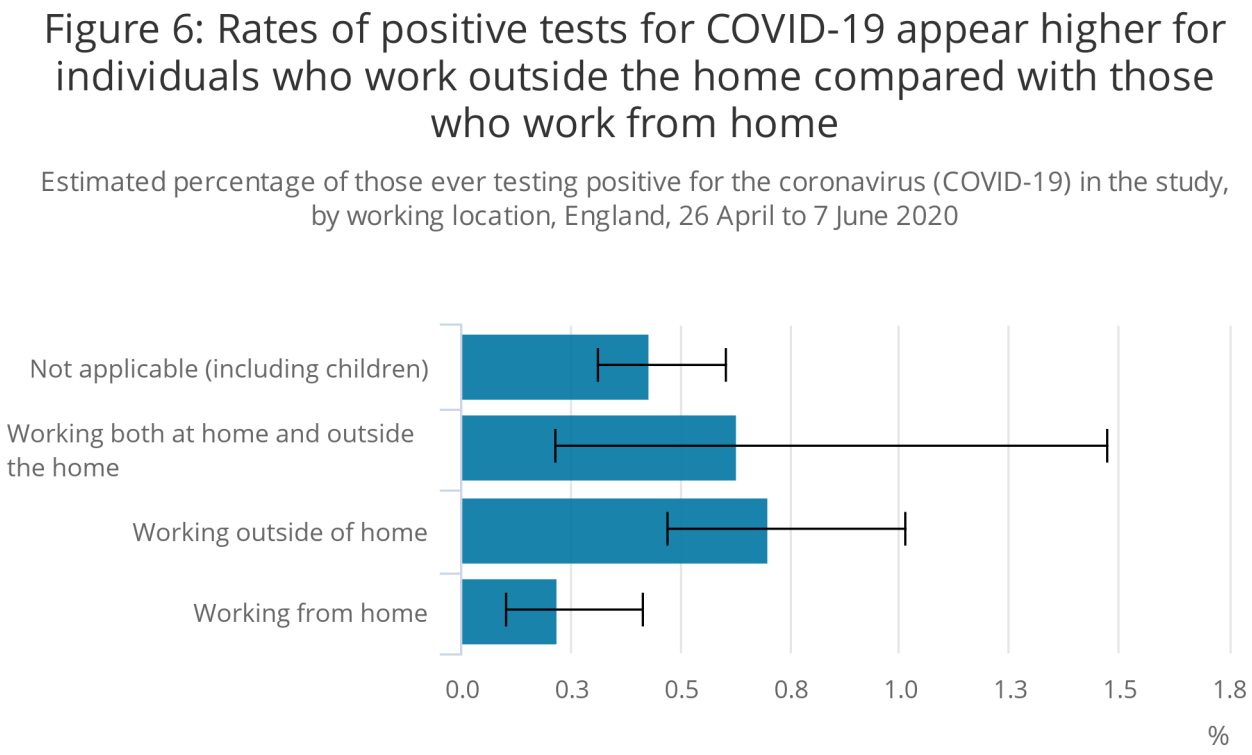
Working location

Individuals taking part in our study were asked where they are currently working. Rates of infection for COVID-19 appear higher for individuals who work outside the home compared with those who work from home.

Some individuals reported working both in the home and outside the home. The confidence interval for this group of individuals is large, and statistical testing indicates high uncertainty in these estimates.

Figure 6: Rates of positive tests for COVID-19 appear higher for individuals who work outside the home compared with those who work from home

Estimated percentage of those ever testing positive for the coronavirus (COVID-19) in the study, by working location, England, 26 April to 7 June 2020



Source: Office for National Statistics – COVID-19 Infection Survey

Notes:

1. 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.

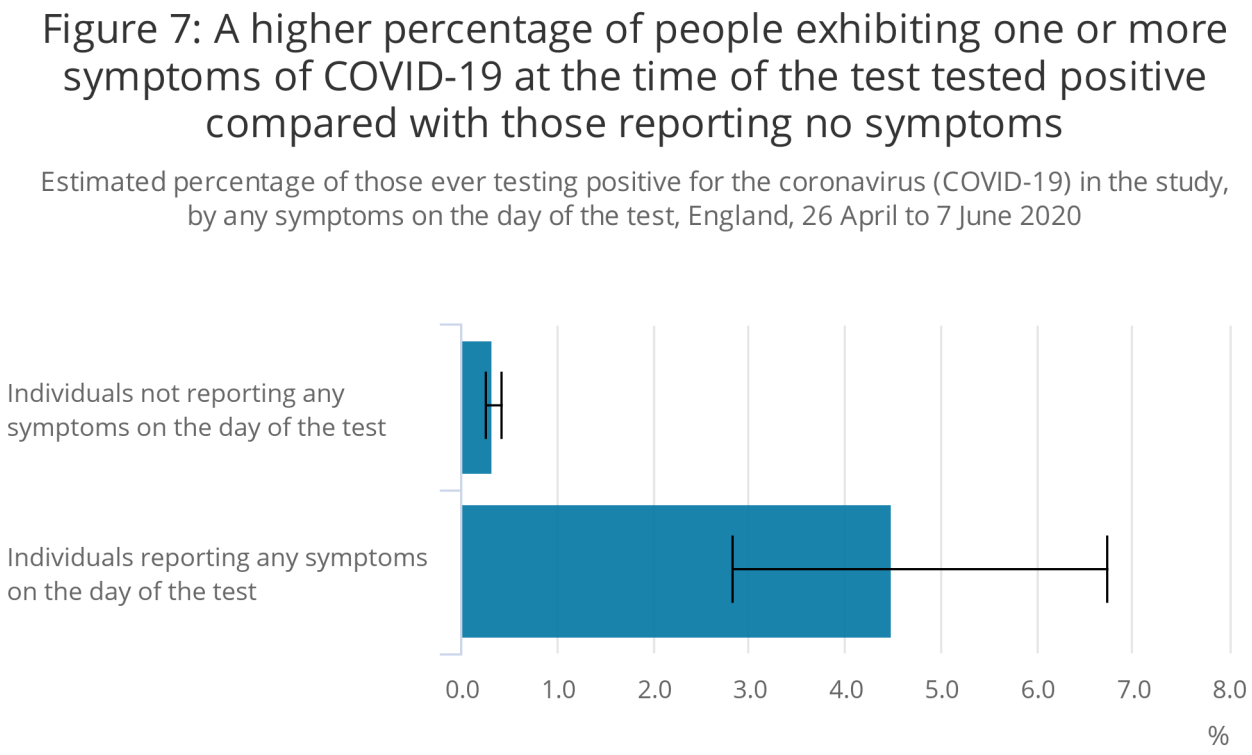
2. The "not applicable" category applied to over half the respondents, and includes children, as well as some people who are retired, furloughed, or not working for another reason.

Symptoms experienced

Individuals taking part in the COVID-19 Infection Survey were asked whether they had experienced a range of possible symptoms[1] on the day that they were tested.[2] A higher percentage of people who were experiencing one or more symptoms of COVID-19 tested positive, compared with people who were not experiencing any symptoms of COVID-19 (Figure7).

Figure 7: A higher percentage of people exhibiting one or more symptoms of COVID-19 at the time of the test tested positive compared with those reporting no symptoms

Estimated percentage of those ever testing positive for the coronavirus (COVID-19) in the study, by any symptoms on the day of the test, England, 26 April to 7 June 2020



Source: Office for National Statistics – COVID-19 Infection Survey

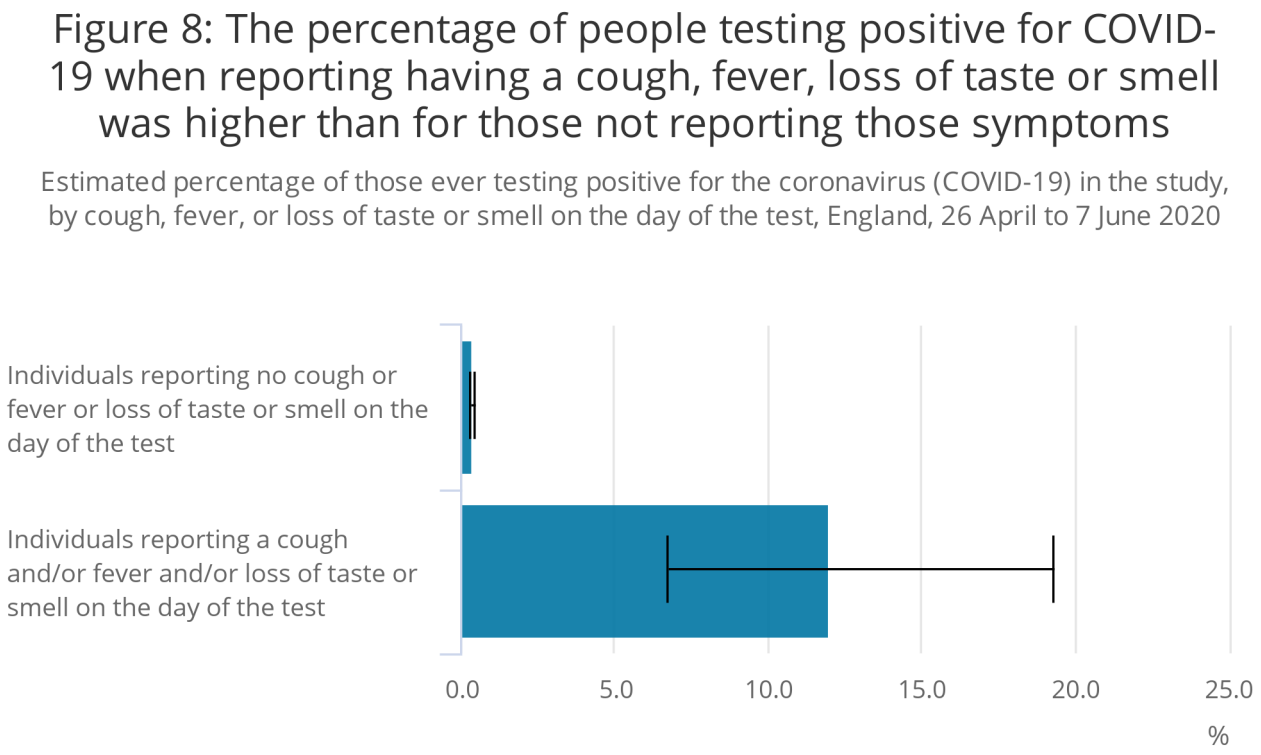
Notes:

1. 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.

The percentage of people testing positive for COVID-19 was higher for those who reported specifically having a cough or fever, or loss of taste or smell, on the day of testing than for any specific symptoms. Furthermore, there was a higher percentage of people specifically reporting having a cough or fever, or loss of taste or smell than any symptoms in general.

Figure 8: The percentage of people testing positive for COVID-19 when reporting having a cough, fever, loss of taste or smell was higher than for those not reporting those symptoms

Estimated percentage of those ever testing positive for the coronavirus (COVID-19) in the study, by cough, fever, or loss of taste or smell on the day of the test, England, 26 April to 7 June 2020



Source: Office for National Statistics – COVID-19 Infection Survey

While those with symptoms are more likely to test positive for COVID-19 than those without symptoms, out of those who have ever tested positive, the percentage who reported having symptoms at the time of the test was relatively low.

Out of those people that tested positive for COVID-19 over the study period, only 23% (95% confidence interval: 15% to 32%) reported experiencing one or more of the various symptoms at the time of their test. Out of those who reported testing positive, 33% (95% confidence interval: 23% to 44%) reported experiencing symptoms at any point in the period around testing positive. This was at the time of the visit, or at either the preceding or following visits.

This analysis is based on 97 individuals in the sample who tested positive for COVID-19. This is a very small denominator, meaning the confidence intervals are wide. Additionally, with such a small number of cases included in this analysis, if any of these are false-positives this would have a large effect on the results.

Notes for: Characteristics of people testing positive for COVID-19

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

2. Here we compare symptoms from the first time a person tested positive or, if they have never tested positive in the study, from their most recent test.

6 . COVID-19 Infection Survey data

COVID-19 Infection Survey data tables
Dataset | Released 12 June 2020
Findings from the first wave of the pilot phase of the COVID-19 Infection Survey.

7 . 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 and Wellcome Trust.

8 . Measuring the data

Data presented in this bulletin come from the Coronavirus (COVID-19) Infection Survey, which looks to identify the percentage of the population testing positive for COVID-19 and whether they have symptoms or not. The survey will help track the current extent of infection and transmission of COVID-19 among the population as a whole.

COVID-19 Infection Survey

We are initially conducting a pilot survey of households in England, working with our data collection partners at the University of Oxford, IQVIA and UK Biocentre Milton Keynes to collect and analyse the samples. All individuals aged two years and over in sampled households were invited to provide samples for testing.

At the start of the pilot study, around 20,000 households were invited to take part, with the aim of achieving data from around 10,000 households. As of 25 May 2020, an additional 5,000 households were invited to take part in the survey. This impacts the response rate as it takes time for those invited to respond and enrol.

To take part, invited households opted in to the survey by contacting a company called IQVIA, working on behalf of the Office for National Statistics (ONS), to arrange a visit. Table 1 provides information regarding responses to our survey. The fieldwork is still ongoing and these cannot be regarded as final response rates to the survey.

Table 1: Current responses to the COVID-19 Infection Survey

	Households		Individuals	
		% of total		% of total
Households invited to take part (total)	25,275	100%		
Households enrolled	12,527	50%		
Completed households (provided at least one swab)	11,067	44%		
Eligible individuals in responding households (total)			26,794	100%
Individuals who provided first swab			23,708	88%
Individuals who agreed to continue			20,152	75%

Source: Office for National Statistics

Notes

1. The set sample for this study is based on the achieved sample from a previous social survey who agreed to take part in future studies. Back to table

2. The management information above is taken on 8 June 2020 and the figures in the publication are from the households and individuals figure as at 7 June 2020. This means the management information includes a slightly larger sample than reported in the publication. Back to table

The management information in Table 1 is taken on 8 June 2020 and the figures in the publication are from the households and individuals figure as at 7 June. This means the management information includes a slightly larger sample than reported in the publication.

We intend for the full survey to expand the size of the sample over the next 12 months and look to cover people across all four UK nations.

This study addresses an important clinical priority: finding out how many people across the UK have a COVID-19 infection at a given point in time or at least test positive for it, either with or without symptoms; how many new cases have occurred in a given time period; and how many people are ever likely to have had the infection. It will also contribute to the Scientific Advisory Group for Emergencies (SAGE) estimates of the rate of transmission of the infection, often referred to as "R".

More about coronavirus

- Find the latest on coronavirus (COVID-19) in the UK.
- All ONS analysis, summarised in our coronavirus roundup.
- View all coronavirus data.
- Find out how we are working safely during the pandemic.

The data being collected

The survey involves all participants over the age of two years. We test whether they currently have the virus using self-administered throat and nose swabs, where parents or carers take swabs from younger children. Every participant is swabbed once; participants are also invited to have repeat tests every week for the first five weeks as well as monthly for a period of 12 months in total.

Adults over 15 years of age from around 2,000 households will also provide a blood sample taken by a trained nurse, phlebotomist or healthcare assistant. These tests help determine what proportion of the population has developed antibodies to COVID-19.

We collect information from each participant, including those under 16 years of age, concerning socio-demographic characteristics, symptoms, whether self-isolating or shielding, and whether the participant has come into contact with a suspected carrier of COVID-19.

The sample for this initial survey has been drawn from households in which someone has already participated in an ONS survey and has consented to be approached for future research. Households cannot request to be part of the survey; this ensures the sample is representative of the wider population.

More information on what and how data are collected is available within the COVID-19 Infection Survey protocol (PDF, 1.14MB) and our COVID-19 Infection Survey study guide.

Coverage

Only England is included in this pilot phase of the study. Discussions are under way with the devolved administrations in Scotland, Wales and Northern Ireland to include the whole of the UK in the main study.

Only private households, otherwise known as the target population in this bulletin, are included in the sample. People in care homes, other communal establishments and hospitals are not included.

Analysing the data

It is important to note that all of the 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.

It is important to note that this is a pilot study where the analysis is developed at pace and these quality enhancements may lead to minor changes in estimates, for example, the positive test counts across the study period. In this update, the total number testing positive has increased by nine, which should not be interpreted as a net change of nine.

We calculate the estimated proportion of the population testing positive for COVID-19 based on the results of swab tests. Where individuals have had more than one swab test during the period of the analysis, we have included only the latest test for each individual.

Blood samples used to test for antibodies have been collected to estimate the percentage of the adult population in England that has previously been infected with COVID-19. Samples are collected by a trained healthcare professional and tested by research staff at the University of Oxford for antibodies using a novel Enzyme-Linked Immunosorbent Assay (ELISA) that tests for immunoglobulins IgG and IgM, based on tagged and purified recombinant SARS-CoV-2 trimeric spike protein. Residual blood sera will be stored at the University of Oxford. More information on our antibody testing is available in the COVID-19 Infection Survey protocol (PDF, 1.14MB).

The estimates in Section 2: Number of people in England who had COVID-19 are based on weighted data to ensure they are representative of the target population in England. While the pilot is based on a nationally representative survey sample, some individuals in the original ONS social survey sample will have dropped out, while others will not have responded to the pilot. To address this, we apply weighting to ensure the responding sample is representative of the population in terms of age (grouped), sex, region, housing tenure and household size. Analysis in Section 3, Section 4 and Section 5 of this bulletin is unweighted.

Confidence intervals for weighted estimates are calculated using the Korn-Graubard method to take into account the expected small number of positive cases and the complex survey design. The confidence intervals are calculated so that if we were to repeat the survey many times on the same occasion and in the same conditions, in 95% of these surveys the true population value would be contained within the 95% confidence intervals. For unweighted estimates, we use the Clopper-Pearson method as the Korn-Graubard method is not appropriate for unweighted analysis.

We have conducted statistical hypothesis testing to indicate whether there is any evidence of differences in infection rates within the different breakdowns presented in the analysis. We use the results of this to inform our commentary on whether there is any evidence of differences. We will continue to present more information around the statistical testing in future publications.

Test sensitivity

The estimates provided in Section 2: Number of people in England who had COVID-19 are for the percentage of the private-residential population testing positive for COVID-19, otherwise known as the positivity rate. We do not report on the prevalence rate within the analysis sections of this bulletin. To calculate the prevalence rate, we would need to adjust for imperfect test performance, requiring assumptions about the false-positive and false-negative rates.

Using Bayesian analysis and available academic literature, we have calculated what prevalence would be in a couple of scenarios detailed later in this section; we found that even if there was a relatively high rate of false-negative results, the positivity rate of 0.06% presented in Section 2: Number of people in England who had COVID-19 would still be fairly close to the true figure.

Based on similar studies and information in the academic literature, we think the sensitivity of the test may be between 85% and 95% (with around 95% probability) and the specificity of the test above 95%. Sensitivity measures how often the test correctly identifies those who have the virus, so a test with high sensitivity will not have many false-negative results. Specificity measures how often the test correctly identifies those who do not have the virus, so a test with high specificity will not have many false-positive results. If these figures are correct, our overall estimate for COVID-19 prevalence in the community-based population would be 0.08% (credible interval: 0.03% to 0.14%), similar to our positivity rate of 0.06%.

In addition to test accuracy, we also need to consider the possibility of additional false-negative results caused by individuals incorrectly self-swabbing. We do not know how often this occurs, but to understand the potential impact we have estimated what the prevalence rate would be if the test sensitivity was much lower. Based on evidence within the academic literature, this has been estimated to be 60% (or between 45% and 75% with 95% probability) and when factored in, the overall estimate for COVID-19 prevalence in the community-based population would be 0.12% (credible interval: 0.05% to 0.23%).

Modelling methodology

Figure 2 presents additional modelling conducted by our research partners at the University of Oxford and the University of Manchester and shows that the percentage of individuals in the population that test positive for COVID-19 is decreasing over time since the first measurement on 26 April 2020.

The regression model adjusts the survey results to be more representative of the overall population in terms of age, sex and region and generates estimated rates of people testing positive for COVID-19 (known as "positivity rates") controlling for age, sex and region. To analyse the trend over time, time in days is included as a variable in the model. Given the low number of positive cases, the effect of time was not allowed to vary by other factors.

The positivity rate estimates for each different type of respondent (by age, sex and region) were then adjusted using post-stratification to each type in the actual overall population. This technique is known as dynamic Bayesian multi-level regression and post-stratification (MRP) and is used by organisations such as the Centers for Disease Control and Prevention (CDC) to provide prevalence of diseases at both a national and subnational level in the United States.

The modelled estimates in this bulletin use a non-linear function for time to better fit to the most recent data and to allow for likely departures from a linear trend in the future. To be able to do this time is measured in days, instead of weeks as in the previous bulletin. As a result this model corrects for potential non-representativeness of the sample on each day using post-stratification, while the main estimates corrects for potential non-representativeness on a two-weekly basis using a weighting approach. Therefore, the correction for potential non-representativeness in terms of age, sex and region is likely more accurate on a given day using the modelling approach, however, the 14-day estimates account for household size and tenure.

In future analyses, we plan to account for correlation within the household, which will likely increase the width of the credible intervals, and more covariates if there are a sufficient number of positive cases to fit more complex models.

Our research partners are considering the most appropriate way to publish further information on the methodology behind the modelling. Further information will be provided in due course.

Other studies

While this study looks to identify the proportion of the population testing positive for COVID-19, it is one of a number of studies that look to provide information around the coronavirus pandemic within the UK.

People testing positive for COVID-19: Public Health England (PHE) present data on the total number of laboratory-confirmed cases in England, which capture the cumulative number of people in England who have tested positive for COVID-19. Equivalent data for Wales, Scotland and Northern Ireland are also available.

These statistics present all known cases of COVID-19, both current and historical. They also only test people eligible for testing according to particular rules, for example, people in hospital with symptoms and certain at-risk groups of key workers. By comparison, the statistics presented in this bulletin take a representative sample of the whole population in England, including people who are not otherwise prioritised for testing, something that is currently missing from other studies.

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 this survey are tested by research staff at the University of Oxford for antibodies using a novel ELISA. For more information about the antibody test used in this bulletin, see the COVID-19 Infection Survey protocol (PDF, 1.14MB).

Next steps

As the study progresses, we will continue to provide greater detail into the extent of the coronavirus (COVID-19) infection, for example, by providing regional breakdowns.

9 . 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.

Timeliness

The results presented on the number of people in England infected with the coronavirus (COVID-19) in Section 2: Number of people in England who had COVID-19 of this bulletin provide users with the most timely estimates for the percentage of the target population in England testing positive for COVID-19.

Uncertainty in this data

The estimates presented in this bulletin contain uncertainty. There are many sources of uncertainty, but the main sources in the information presented include each of the following.

Uncertainty in the test (false-positives, false-negatives and timing of the infection)

These results are directly from the test, and no test is perfect. There will be false-positives and false-negatives from the test, and false-negatives could also come from the fact that participants in this study are self-swabbing. More information about the potential impact of false-positives and false-negatives is provided in Section 8: Measuring the data.

The data are based on a sample of people, so there is some uncertainty in the estimates

Any estimate based on a random sample contains some uncertainty. If we were to repeat the whole process many times, we would expect the true value to lie in the 95% confidence interval on 95% of occasions. A wider interval indicates more uncertainty in the estimate.

Quality of data collected in the questionnaire

As in any survey, some data can be incorrect or missing. For example, participants and interviewers sometimes misinterpret questions or skip them by accident. To minimise the impact of this, we clean the data, editing or removing things that are clearly incorrect. In these initial data, we identified some specific quality issues with the healthcare and social care worker question responses and have therefore applied some data editing (cleaning) to improve the quality. Cleaning will continue to take place to further improve the quality of the data on healthcare and social care workers, which may lead to small revisions in future releases.

10 . Glossary

Community

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

False-positives and false-negatives

A false-positive result occurs when the test suggests an individual has COVID-19 when in fact they do not. By contrast, a false-negative result occurs when the tests suggest an individual does not have COVID-19 when in fact they do.

Incidence rate

Incidence is the rate of occurrence of new cases of the disease over a given period of time. Incidence refers to the number of individuals who have a positive test in the study divided by the time from joining the study to their last test. Individuals who are positive when they join the study are not included in this calculation.

11 . Related links

Coronavirus (COVID-19) latest data and analysis
Web page | Updated as and when data become available
Latest data and analysis on the coronavirus (COVID-19) in the UK and its effect on the economy and society.

Coronavirus (COVID-19) round-up
Article | 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.

Deaths registered weekly in England and Wales, provisional: week ending 29 May 2020
Bulletin | Released 9 June 2020
Provisional counts of the number of deaths registered in England and Wales, including deaths involving the coronavirus (COVID-19), by age, sex and region, in the latest weeks for which data are available.

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 ONS, in partnership with the Universities of Oxford and Manchester, Public Health England 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 coronavirus (COVID-19) estimates.

Coronavirus (COVID-19) Infection Survey pilot: England, 10 May 2020
Bulletin | Released 10 May 2020
Estimates of people testing positive for the coronavirus (COVID-19) in England. Provisional results from 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.