Office for National Statistics

Article

Coronavirus (COVID-19) Infection Survey: antibody data for the UK, January 2021

Antibody data by UK country and English regions from the Coronavirus (COVID-19) Infection Survey. This survey is being delivered in partnership with University of Oxford, University of Manchester, Public Health England and Wellcome Trust.

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1 . Main points

- In England, an estimated 1 in 8 people (95% confidence interval: 1 in 9 to 1 in 8) would have tested positive for antibodies against SARS-CoV-2 on a blood test in December, suggesting they had the infection in the past.
- In Wales, an estimated 1 in 10 people (95% confidence interval: 1 in 14 to 1 in 8) would have tested positive for antibodies against SARS-CoV-2 on a blood test in December, suggesting they had the infection in the past.
- In Northern Ireland, an estimated 1 in 13 people (95% confidence interval: 1 in 28 to 1 in 7) would have tested positive for antibodies against SARS-CoV-2 on a blood test in December, suggesting they had the infection in the past.
- In Scotland, an estimated 1 in 11 people (95% confidence interval: 1 in 14 to 1 in 9) would have tested positive for antibodies against SARS-CoV-2 on a blood test in December, suggesting they had the infection in the past.

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 past infections, which we define as testing positive for antibodies to SARS-CoV-2 for England, Wales, Northern Ireland and Scotland - based on findings from the COVID-19 Infection Survey in the UK. SARS-CoV-2 is the scientific name given to the specific virus that causes COVID-19. 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.

Our methodology article provides further information around the survey design, how we process data, and how data are analysed. The study protocol specifies the research for the study. Further information on what the analysis covers is provided 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.

3 . Likelihood of testing positive for COVID-19 antibodies in England, Wales, Northern Ireland and Scotland

About this analysis

The analysis in this section of the article is based on blood test results taken from a randomly selected subsample of individuals aged 16 years and over, which are used to test for antibodies against SARS-CoV-2. This can be used to identify individuals who have had the infection in the past.

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, although these levels can decline over time to the point that tests can no longer detect them. Having antibodies can help to prevent individuals from getting the same infection again.

We measure the presence of antibodies to understand who has had coronavirus (COVID-19) in the past, although the length of time antibodies remain at detectable levels in the blood is not fully known. It is also not yet known how having detectable antibodies, now or at some time in the past, affects the chance of getting COVID-19 again.

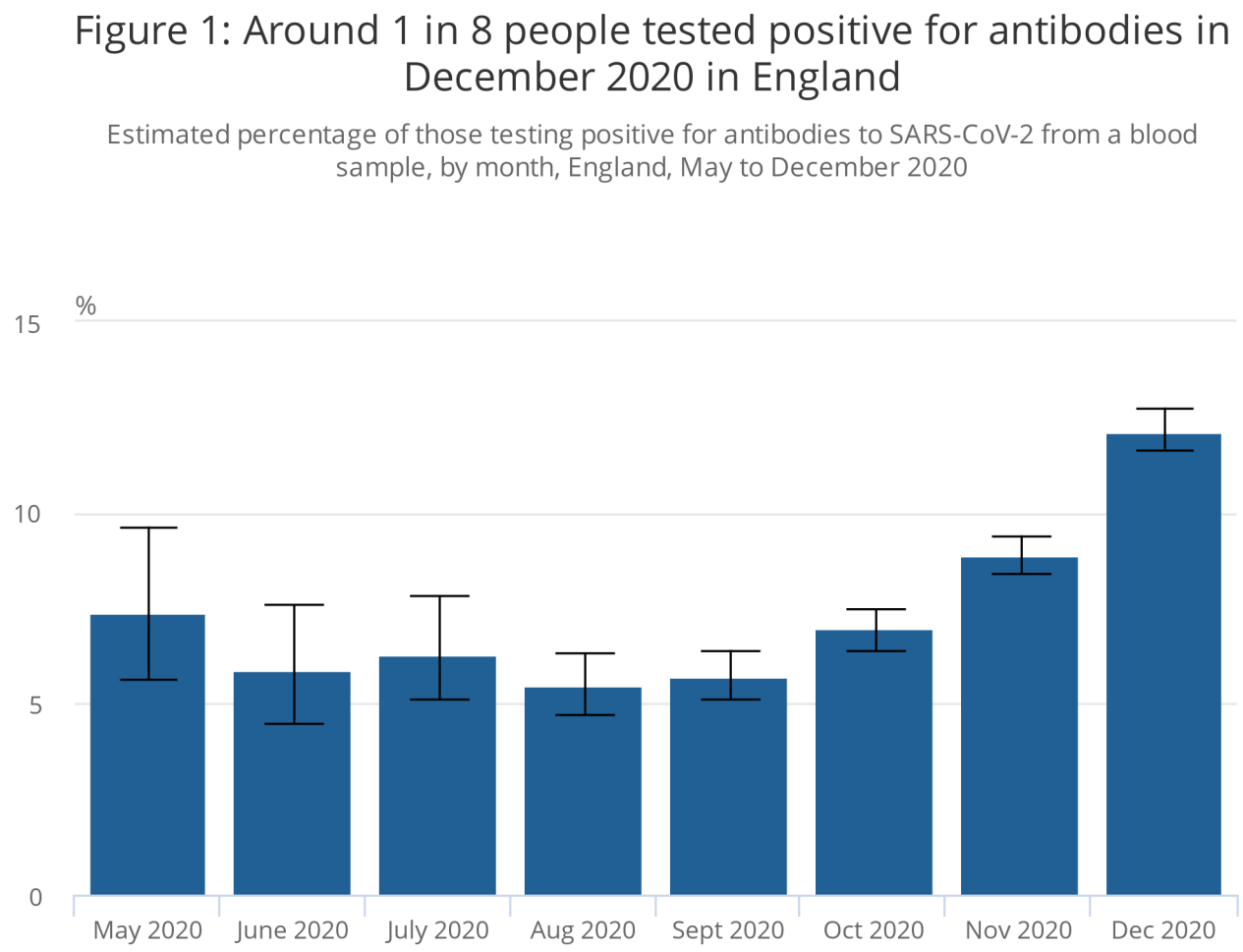
We present weighted monthly estimates of antibody positivity for England, Wales, Northern Ireland and Scotland. We also present the weighted estimates of antibody positivity for regions of England.

Antibody data for England

In December 2020, an estimated 12.1% (95% confidence interval: 11.6% to 12.7%) of the population in England would have tested positive for antibodies to SARS-CoV-2 from a blood sample. The estimate is weighted to be representative of the overall population and suggests that an average of 5.4 million people aged 16 years and over in England would have tested positive for antibodies to SARS-CoV-2 during this time (95% confidence interval: 5.2 million to 5.7 million). This equates to 1 in 8 people aged 16 years and over (95% confidence interval: 1 in 9 to 1 in 8). Weighted estimates of the percentage of people testing positive for SARS-CoV-2 antibodies by month in England are presented in Figure 1; the estimates suggest there has been an increase in antibody positivity in the most recent month.

Figure 1: Around 1 in 8 people tested positive for antibodies in December 2020 in England

Estimated percentage of those testing positive for antibodies to SARS-CoV-2 from a blood sample, by month, England, May to December 2020



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

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.

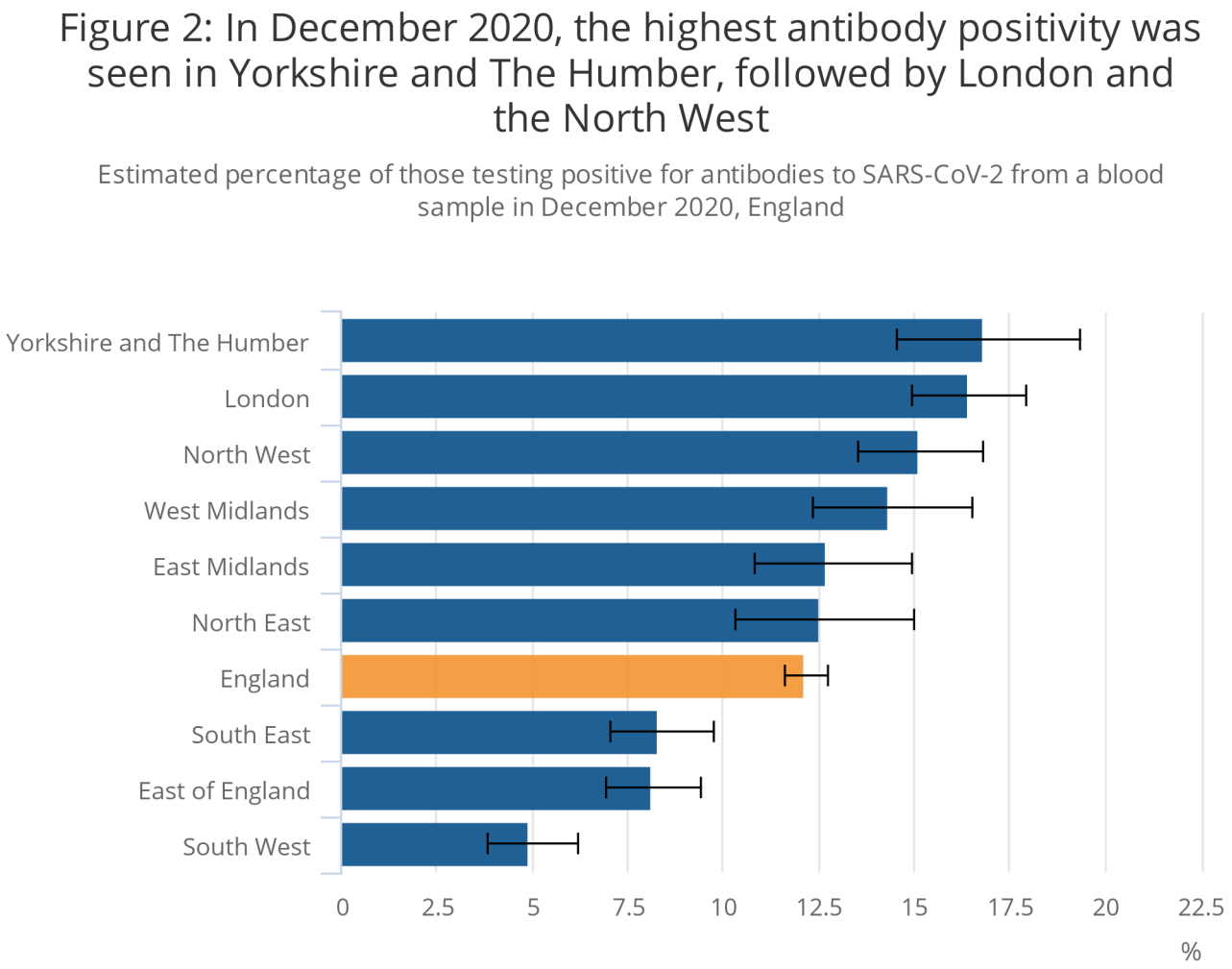
Regional analysis of antibody data for England

The analysis in this section uses data taken from December 2020 to produce weighted antibodies estimates. There is substantial variation in antibody positivity between regions, from 16.8% (95% confidence interval: 14.5% to 19.3%) in Yorkshire and The Humber compared with 4.9% (95% confidence interval: 3.8% to 6.2%) in the South West. The populations in the South and East of England have positivity rates below the England national average.

Confidence intervals are large for some regions indicating high uncertainty in those estimates but there is still evidence of differences in the percentage of people testing positive for antibodies between regions.

Figure 2: In December 2020, the highest antibody positivity was seen in Yorkshire and The Humber, followed by London and the North West

Estimated percentage of those testing positive for antibodies to SARS-CoV-2 from a blood sample in December 2020, England



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

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.

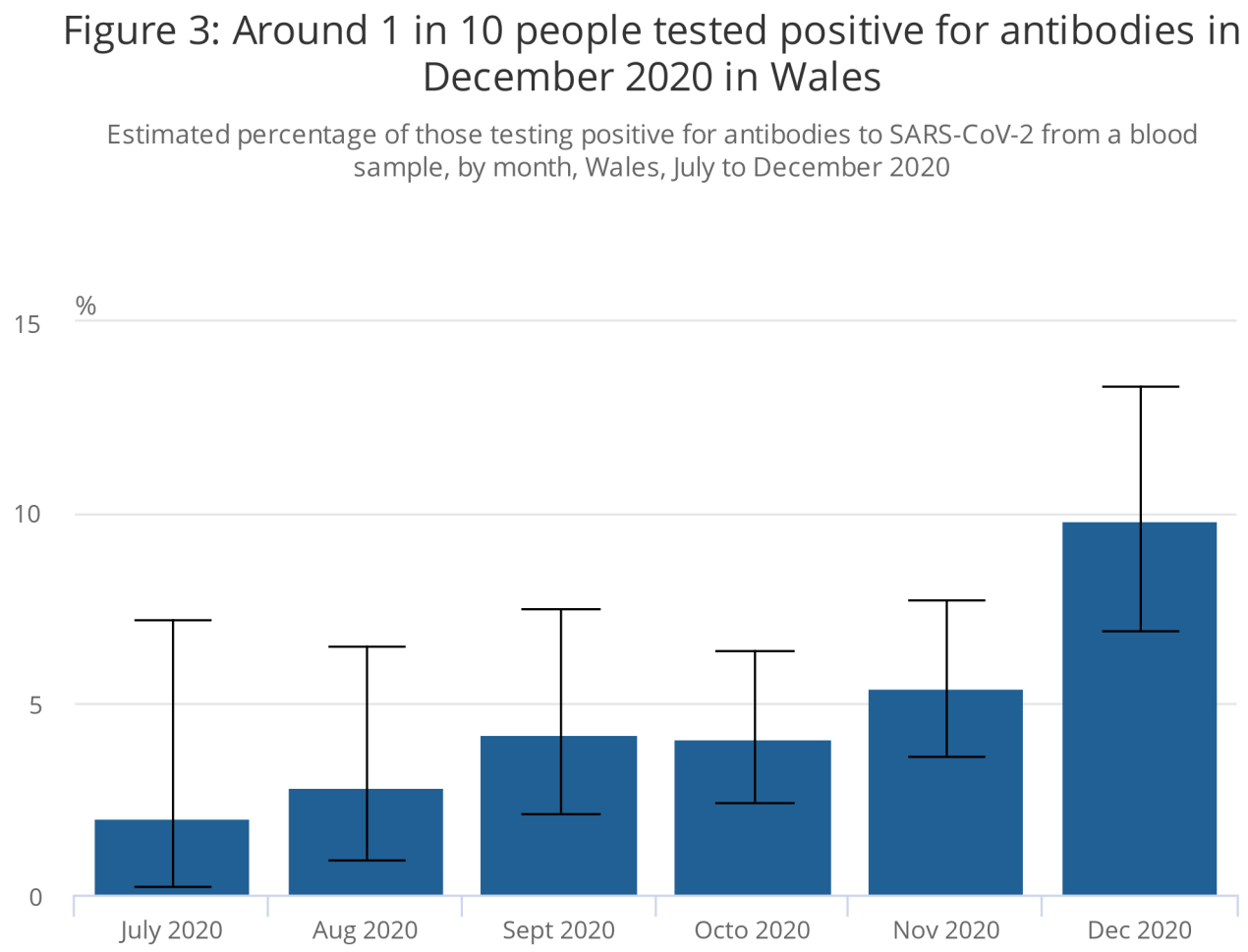
Antibody data for Wales

In December 2020, an estimated 9.8% of the population in Wales would have tested positive for antibodies to SARS-CoV-2 from a blood sample (95% confidence interval: 6.9% to 13.3%). It is estimated that an average of 247,000 people aged over 16 years in Wales would have tested positive for antibodies during this time (95% confidence interval: 175,000 to 337,000). This equates to 1 in 10 people aged 16 years and over (95% confidence interval: 1 in 14 to 1 in 8).

In the data used to produce these estimates, the number of people sampled in Wales who tested positive for antibodies to SARS-CoV-2 is low compared to England. This means there is a higher degree of uncertainty in the regional estimates for this period, as indicated by larger confidence intervals.

Figure 3: Around 1 in 10 people tested positive for antibodies in December 2020 in Wales

Estimated percentage of those testing positive for antibodies to SARS-CoV-2 from a blood sample, by month, Wales, July to December 2020



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

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.

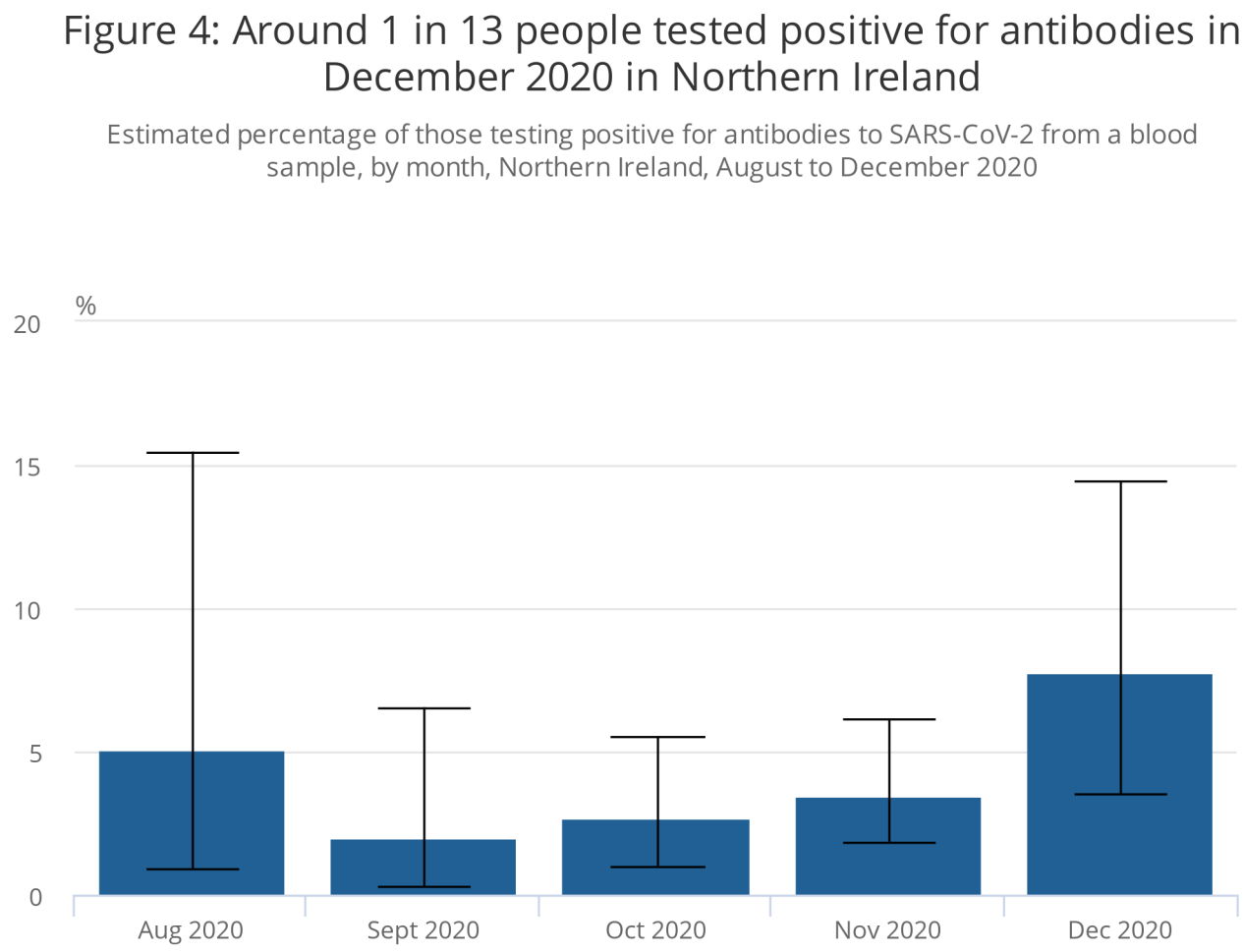
Antibody data for Northern Ireland

In December 2020, an estimated 7.8% of the population in Northern Ireland would have tested positive for SARS-CoV-2 from a blood sample (95% confidence interval: 3.5% to 14.4%). It is estimated that an average of 115,000 people aged over 16 years in Northern Ireland would have tested positive for antibodies during this time (95% confidence interval: 52,000 to 214,000). This equates to 1 in 13 people aged 16 years and over (95% confidence interval: 1 in 28 to 1 in 7).

In the data used to produce these estimates, the number of people sampled in Northern Ireland who tested positive for antibodies to SARS-CoV-2 is low compared to England. This means there is a higher degree of uncertainty in the regional estimates for this period, as indicated by larger confidence intervals.

Figure 4: Around 1 in 13 people tested positive for antibodies in December 2020 in Northern Ireland

Estimated percentage of those testing positive for antibodies to SARS-CoV-2 from a blood sample, by month, Northern Ireland, August to December 2020



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

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.

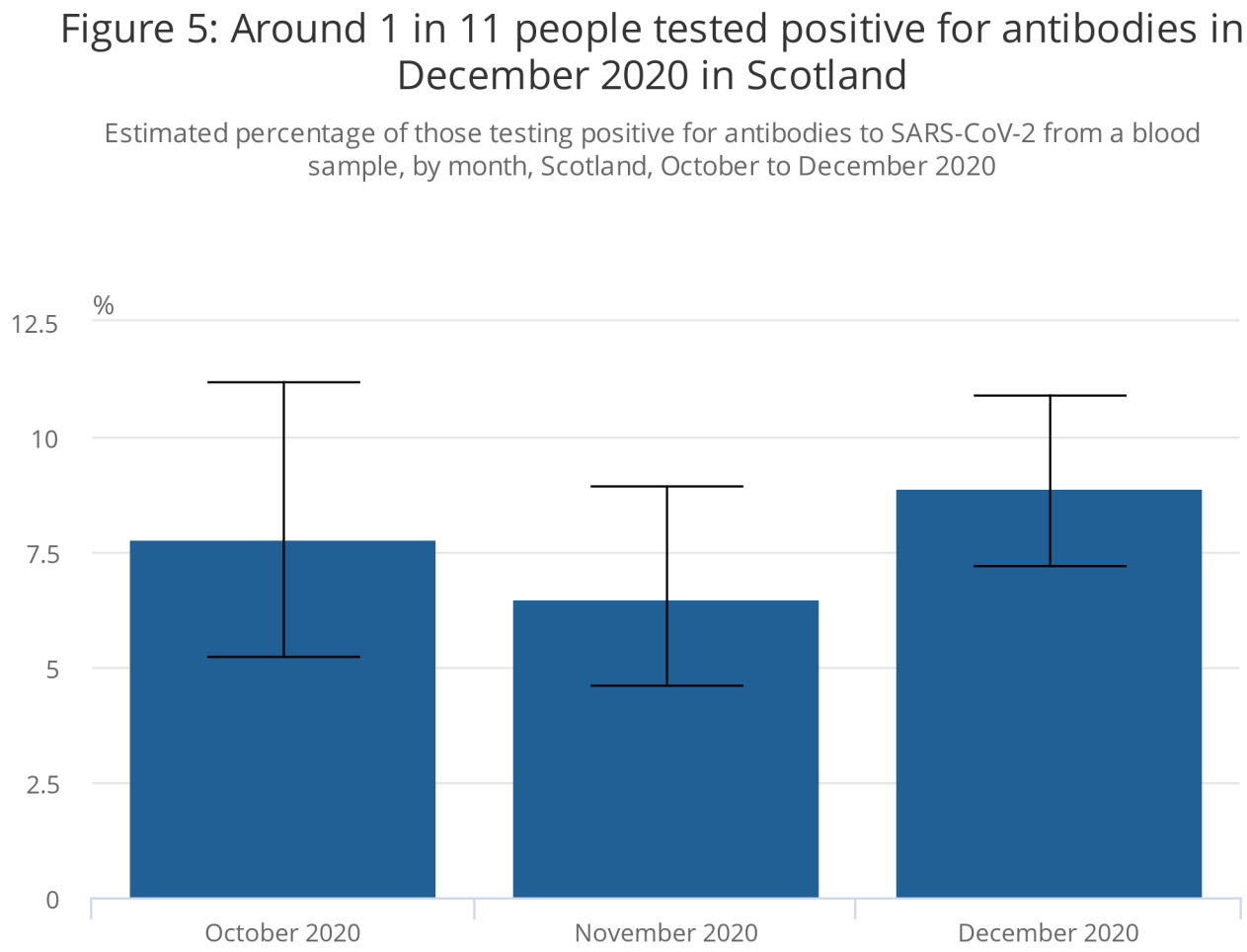
Antibody data for Scotland

In December 2020, an estimated 8.9% of the population in Scotland would have tested positive for antibodies to SARS-CoV-2 from a blood sample (95% confidence interval: 7.2% to 10.9%). It is estimated that an average of 398,000 people aged over 16 years in Scotland would have tested positive for antibodies during this time (95% confidence interval: 322,000 to 485,000). This equates to 1 in 11 people aged 16 years and over (95% confidence interval: 1 in 14 to 1 in 9).

In the data used to produce these estimates, the number of people sampled in Scotland who tested positive for antibodies to SARS-CoV-2 is low compared to England. This means there is a higher degree of uncertainty in the regional estimates for this period, as indicated by larger confidence intervals.

Figure 5: Around 1 in 11 people tested positive for antibodies in December 2020 in Scotland

Estimated percentage of those testing positive for antibodies to SARS-CoV-2 from a blood sample, by month, Scotland, October to December 2020



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

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. Estimates for Scotland do not include data for Orkney, Shetland or the Western Isles due to operational issues. We are working to resolve these issues as soon as possible.

4 . Coronavirus (COVID-19) Infection Survey data

Coronavirus (COVID-19) infections in the community in England
Dataset | Released 19 January 2020
Characteristics of people testing positive for the coronavirus (COVID-19) in England taken from the COVID-19 Infection Survey.

5 . 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 – Eleanor Fordham, Byron Davies, Zoe Willis, Sarah Proud, Kyle Knights, Alice McTiernan, George Feldman

6 . 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.

7 . 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 data about the coronavirus (COVID-19) pandemic in England and explores how these measures interact with each other can improve understanding of the severity and spread of the pandemic.

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.