

# Enhanced Surveillance of COVID-19 in Scotland

## Population-based seroprevalence surveillance

A Management Information release for Scotland

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### About this release

This [dashboard](#) release by Public Health Scotland provides the latest results and methodologies of the serology surveillance programme. Tableau recommend that the dashboard is accessed using Firefox, Chrome, Safari, Microsoft Edge and Internet Explorer 11 (or newer) browsers. The serology workstream aims to estimate the proportion of people who have antibodies to coronavirus (“seroprevalence”) in the general population of Scotland and to see if this changes over time. Antibodies can be used to identify individuals who have had COVID-19 infection in the past or have developed antibodies as a result of vaccination.

### Main Points

- The proportion of people attending community healthcare settings who had antibodies is estimated to be 87.4% (95% CI: 85.7%-88.7%) across the 5-week period up to and including week beginning 13 December 2021.
  - At NHS Board level, proportions were highest in NHS Orkney (93.9%, 95% CI: 87.5%-100.0%) and lowest in NHS Highland (81.2%, 95% CI: 76.5%-87.0%).
  - By age-group, proportions were highest in those aged 60+ years (97.2%, 95% CI: 95.7%-99.4%) and lowest in those aged 0-19 years (75.5%, 95% CI: 72.2%-79.5%).
  - Proportions among males (86.8%, 95% CI: 84.8%-89.1%) were similar to females (87.9%, 95% CI: 85.4%-89.4%) in this time period.
- The proportion of blood donors who had antibodies is estimated to be 100.0% (95% CI: 99.9%-100.0%) across the 5-week period up to and including week beginning 13 December 2021.
- The proportion of women taking up screening for Down’s syndrome, Edwards’ syndrome, or Patau’s syndrome in the first trimester of pregnancy who had antibodies resulting from vaccination (only) is estimated to be 63.9% (95% CI: 62.1%-65.7%) across the 5-week period up to and including week beginning 13 December 2021. The proportion of these women who had antibodies resulting from infection (+/- vaccination) is estimated to be 25.3% (95% CI: 23.4%-27.3%) in this time period.

### Interpretation

- We suggest that, when interpreting the results, there is a focus on the confidence intervals rather than the point estimates.
- This suggests that, overall among those attending community healthcare settings, we can be reasonably confident that COVID-19 seroprevalence lies between 85.7%-88.7% during the 5-week period up to and including week beginning 13 December 2021. Our results are from a

sample of individuals attending community healthcare settings and there is uncertainty whether these individuals are representative of the general population.

- Among blood donors, we can be reasonably confident that COVID-19 seroprevalence lies between 99.9%-100.0% during the 5-week period up to and including week beginning 13 December 2021. Blood donors tend to be healthier than the general population and, additionally, there are restrictions on blood donations from individuals who have known COVID-19 infection and/or who have symptoms of COVID-19. There is therefore uncertainty with regard to the representativeness of our samples compared to the general Scottish population.
- Among women taking up screening for Down's syndrome, Edwards' syndrome, or Patau's syndrome in the first trimester of pregnancy, we can be reasonably confident that COVID-19 seroprevalence resulting from vaccination only lies between 62.1%-65.7% during the 5-week period up to and including week beginning 13 December 2021. We can also be reasonably confident that COVID-19 seroprevalence resulting from infection (+/- vaccination) in this group lies between 23.4%-27.3% during the 5-week period up to and including week beginning 13 December 2021. These samples have been obtained from a female population of childbearing age who have taken up Down's Syndrome/Edwards' syndrome/Patau's syndrome screening, which only around 60-65% of pregnant women in Scotland participate in. There is therefore uncertainty with regard to the representativeness of our samples compared to the general Scottish population.

## Background

Public Health Scotland (PHS), in partnership with NHS Boards, is leading national surveillance and research studies that include the use of serology (the study of a part of the blood called serum). COVID-19 is caused by the new coronavirus known as SARS-CoV-2. When the body is infected with coronavirus, it produces antibodies to help fight the virus, and these may be detected by blood tests. The detection of antibodies provides an indication that someone has had COVID-19 in the past or have developed antibodies as a result of vaccination, and provides a way of monitoring what proportion of people have had the virus. We use serology methods to detect these antibodies.

The PHS serology surveillance programme uses existing blood samples within community healthcare and other settings. The serology work stream aims to estimate the proportion of people who have antibodies to coronavirus ("seroprevalence") in the general population of Scotland and to see how this changes over time.

Since week commencing 20 April 2020, blood samples, originally collected for other clinical reasons in community healthcare settings, have been obtained from regional biochemistry and immunology laboratories across Scotland. Six NHS boards (NHS Grampian, NHS Greater Glasgow & Clyde, NHS Highland, NHS Lanarkshire, NHS Lothian and NHS Tayside) have provided weekly data since the beginning of the programme. An additional five NHS Boards (NHS Dumfries & Galloway, NHS Fife, NHS Forth Valley, NHS Orkney and NHS Shetland) joined the programme at later dates. Approximately 700 samples are collected each week. Laboratories select specific numbers of samples by age and sex to achieve a representative sample based on the age and sex structure of the general population in that NHS board. Samples are anonymised and sent to the Scottish Microbiology Reference Laboratory in Inverness for testing.

Seroprevalence rates have been adjusted for the accuracy of the antibody test and weighted to the population structure. The results presented here cover the phase of the project between week commencing 20 April 2020 and week commencing 13 December 2021 (i.e. up to and including 19 December 2021). Up until this point, a total of 58,723 samples had been received from the 11 participating NHS boards.

Samples originally collected from blood donors have been retrieved and tested by the Scottish National Blood Transfusion Service (SNBTS) since week commencing 29 June 2020. Approximately 500 samples are collected each week from 12 NHS Boards (excluding Shetland and Western Isles). Seroprevalence rates have been adjusted for the accuracy of the antibody test and weighted to the population structure. The results presented here cover the phase of the project between week commencing 29 June 2020 and week commencing 13 December 2021 when 38,929 samples had been collected by SNBTS.

Samples originally collected from pregnant women at their antenatal booking appointment (approximately week 12 of pregnancy) and sent for Down's Syndrome, Edwards' syndrome, or Patau's syndrome screening at the Western General Hospital, Edinburgh, have been anonymised and sent to NHS Lanarkshire for testing. Approximately 600 samples are collected each week from across Scotland. Seroprevalence rates have been adjusted for the accuracy of the antibody test and weighted to the age structure of a reference population (maternities in Scotland in 2019-20). The results presented here cover the phase of the project between week commencing 16 November 2020 and week commencing 13 December 2021 when 35,406 samples had been collected.

## Contact

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## Further Information

Data from this publication are available from the [publication page](#) on our website.

The next release of this publication will be 26 January 2022.

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## PHS and Official Statistics

Public Health Scotland (PHS) is the principal and authoritative source of statistics on health and care services in Scotland. PHS is designated by legislation as a producer of 'Official Statistics'. Our official statistics publications are produced to a high professional standard and comply with the Code of Practice for Statistics. [Further information about our statistics.](#)