



UK Health
Security
Agency

SARS-CoV-2 variants of concern and variants under investigation in England

**Omicron VOC-21NOV-01 (B.1.1.529)
update on cases, S gene target failure
and risk assessment**

8 December 2021

Omicron VOC-21NOV-01 (B.1.1.529)

A new variant with a novel combination of mutations was detected on GISAID on 23 November and designated B.1.1.529 on 24 November. This variant was designated VUI-21NOV-01 by the UK Health Security Agency (UKHSA) Variant Technical Group and on review re-designated as VOC-21NOV-01 on 27 November 2021.

Cases of Omicron, VOC-21NOV-01 (B.1.1.529) in England

Confirmed Omicron VOC-21NOV-01 (B.1.1.529) cases are those which have been identified by sequencing or genotyping. Additional cases are under investigation.

The Omicron VOC-21NOV-01 (B.1.1.529) genome also contains the spike deletion at position 69-70 which is associated with S gene target failure (SGTF) in some widely used polymerase chain reaction (PCR) tests. Such PCR tests evaluate the presence of 3 SARS-CoV-2 genes: Spike (S), N and ORF1ab. SGTF is defined as a PCR test where the N and ORF1ab genes are detected (with Ct values ≤ 30) but the S gene is not. SGTF patterns can be used to assess the spread of Omicron VOC-21NOV-01 (B.1.1.529).

Trends in S gene target failure

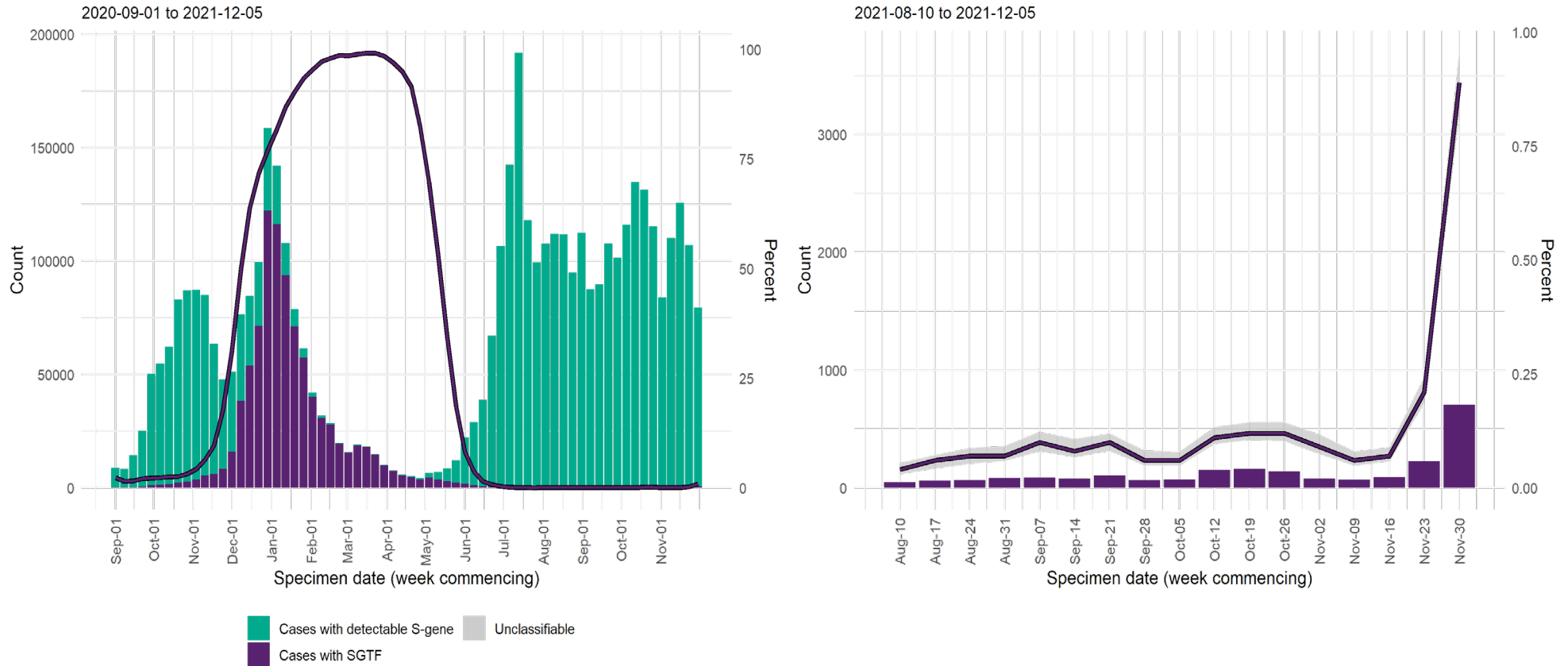
Until the week beginning 23 November 2021, the weekly count of cases with S gene target failure (SGTF) was less than 150, making up less than 0.1% of all cases. Analyses of sequenced SGTF samples has indicated that until mid-November, more than 99% of these were Delta cases.

In the most recent week of data (specimen dates from 30 November 2021 reported as of 6 December), the number of cases with SGTF has increased notably to 705 (Figure 1). The majority of these cases are located in London and the South East (Figure 2).

Trends in SGTF over space and time are however affected by the coverage of laboratories contributing to this surveillance data. Currently, SGTF monitoring is based on data submitted by 4 laboratories: Alderley Park, Glasgow, Milton Keynes, and Newcastle Lighthouse Laboratories. Coverage of these laboratories is particularly low in the South West, which is a partial explanation for the low numbers of cases with SGTF seen in this region.

Figure 1. Number of COVID-19 cases with S gene positive/SGTF and proportion SGTF among those tested in TaqPath labs by week as of 6 December 2021

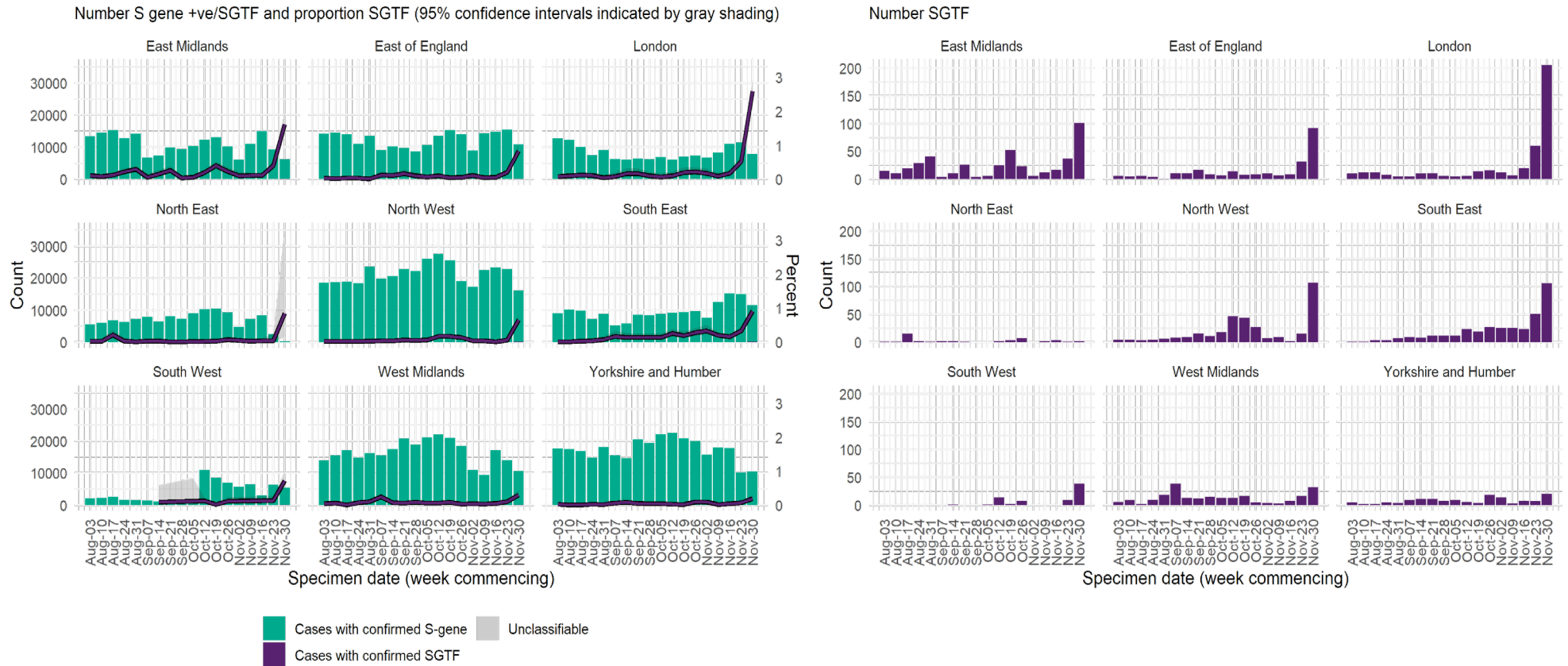
(95% confidence intervals indicated by gray shading). Data updated on 2021-12-06



A detectable S gene is a proxy for Delta since April 2021. SGTF was a surveillance proxy for VOC-20DEC-01 however has largely consisted of Delta since August 2021. Local trends in these data may be affected by decisions to direct the processing of samples via a TaqPath laboratory. Only tests carried out with the TaqPath PCR assay and with confirmed SGTF or S gene results included, from Newcastle, Alderley Park, Milton Keynes and Glasgow Lighthouse Labs. SGTF refers to non-detectable S gene and ≤ 30 CT values for N and ORF1ab genes. Detectable S-gene refers to ≤ 30 CT values for S, N, and ORF1ab genes. Produced by Outbreak Surveillance Team, UKHSA.

Figure 2. Weekly coronavirus (COVID-19) cases with detectable S gene or SGTF among those tested in TaqPath Labs, by region of residence as of 6 December 2021 (3 August 2021 to 5 December 2021)

2021-08-03 to 2021-12-05. Data updated on 2021-12-06



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Omicron cases by local authority

The number of Omicron cases confirmed through sequencing or genotyping in England as of 6 December 2021 was 333. This includes provisional sequencing results (those awaiting confirmation and addition to CLIMB). These results are used to expedite case identification for public health response purposes, but are added to United Kingdom figures only once they are confirmed.

As of 6 December, 295 confirmed cases have been identified with specimen dates in the most recent 2 weeks (22 November to 5 December). The local authorities with the highest number of cases in this time period are West Northamptonshire, Croydon, Hackney Lambeth and Newham.

Table 1. Number of confirmed* Omicron cases and SGTF cases for 10 local authorities with highest Omicron case counts in England for most recent 2 weeks (22 November to 5 December)**

Lower-tier local authority	Region	Confirmed * Omicron cases (22 November 2021 to 28 November 2021)	SGTF cases** (22 November 2021 to 28 November 2021)	Confirmed* Omicron cases (29 November 2021 to 5 December 2021)	SGTF cases** (29 November 2021 to 5 December 2021)
West Northamptonshire	East Midlands	10	1	17	55
Croydon	London	3	0	5	2
Hackney	London	3	0	5	6
Lambeth	London	3	0	5	8
Newham	London	3	0	5	14
Brent	London	5	0	2	7
Buckinghamshire	South East	2	0	5	15
Greenwich	London	2	0	5	9
Lewisham	London	4	1	3	18
Wandsworth	London	4	1	2	6

*Confirmed through sequencing, provisional sequencing, and genotyping

**SGTF cases that have been identified to be Omicron or ruled out as other variants not included

Risk assessment

An [updated risk assessment](#) for Omicron VOC-21NOV-01 has been published.

Sources and acknowledgments

Data sources

Data used in this investigation is derived from the COG-UK and UKHSA genomic programme data set, the UKHSA Second Generation Surveillance System (SGSS), the Secondary Uses Service (SUS) data set, Emergency Care Data Set (ECDS), and the UKHSA Case and Incident Management System (CIMS). Data on international cases is derived from reports in [GISAID](#).

Repository of human and machine-readable genomic case definitions

Genomic definitions for all VOC and VUI are provided in order to facilitate standardised VOC and VUI calling across sequencing sites and bioinformatics pipelines and are the same definitions used internally at UKHSA. Definition files are provided in YAML format so are compatible with a range of computational platforms. The repository will be regularly updated. The genomic and biological profiles of VOC and VUI are also detailed on first description in prior technical [briefings](#).

Variant Technical Group

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Contributions from the Variant Technical Group Members

Variant Technical Group members and contributors

The UK Health Security Agency Variant Technical Group includes members and contributors from the following organisations: UKHSA, Public Health Wales, Public Health Scotland,

Public Health Agency Northern Ireland, the Department of Health and Social Care, Imperial College London, London School of Hygiene and Tropical Medicine, University of Birmingham, University of Cambridge (including the MRC Biostatistics Unit), University of Edinburgh, University of Liverpool, the Wellcome Sanger Institute, Genotype to Phenotype Consortium, SPI-M.

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About the UK Health Security Agency

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