



UK Health
Security
Agency

SARS-CoV-2 variant data update, England

Version 15

15 October 2021

This briefing provides an update on previous data located in technical and variant data update [briefings and updates](#) up to 1 October 2021.

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Surveillance data overview

This document includes routine data on variants of concern and under investigation. Delta (VOC-21APR-02, B.1.617.2) is detailed in the technical [briefing](#).

Table 1 and 2 show the current VOC, VUI, and variants in monitoring detected and not detected in the UK as of 13 October 21.

Table 1. SARS-CoV-2 variants of public health interest: variants detected in the UK

| WHO nomenclature | Lineage | Designation | Status |
|----------------------|----------------------------|--------------|------------|
| Alpha | B.1.1.7 | VOC-20DEC-01 | VOC |
| Beta | B.1.351 | VOC-20DEC-02 | VOC |
| Gamma | P.1 | VOC-21JAN-02 | VOC |
| Delta | B.1.617.2 and sub-lineages | VOC-21APR-02 | VOC |
| | B.1.1.318 | VUI-21FEB-04 | VUI |
| Kappa | B.1.617.1 | VUI-21APR-01 | VUI |
| Mu | B.1.621 | VUI-21JUL-01 | VUI |
| Epsilon [^] | B.1.427/B.1.429 | | Monitoring |
| | B.1.620 | | Monitoring |
| | R.1 | | Monitoring |
| | P.5 | | Monitoring |
| | C.1.2 | | Monitoring |
| | AY.4.2 | | Monitoring |

Table 2. SARS-CoV-2 variants of public health interest: variants present in GISAID but not detected in the UK

| WHO nomenclature | Lineage | Designation | Status |
|--------------------|-----------|--------------|--------|
| Eta | B.1.525 | VUI-21FEB-03 | VUI |
| Theta [^] | P.3 | VUI-21MAR-02 | VUI |
| | B.1.617.3 | VUI-21APR-03 | VUI |
| | AV.1 | VUI-21MAY-01 | VUI |
| | C.36.3 | VUI-21MAY-02 | VUI |
| Lambda | C.37 | VUI-21JUN-01 | VUI |
| Zeta | P.2 | VUI-21JAN-01 | VUI |

| WHO nomenclature | Lineage | Designation | Status |
|------------------|--------------------|-------------|------------|
| | A.27 | | Monitoring |
| Iota | B.1.526 | | Monitoring |
| | B.1.1.7 with Q677H | | Monitoring |
| | B.1 with 214insQAS | | Monitoring |
| | AT.1 | | Monitoring |
| | B.1.629 | | Monitoring |
| | B.1.619 | | Monitoring |
| | B.1.630 | | Monitoring |
| | B.1.631/B.1.628 | | Monitoring |
| | P.1.8 | | Monitoring |

Provisionally extinct variants are excluded from this table.

VOCs and VUIs are monitored weekly for observations within the last 12 weeks. If variants have not been detected in the UK within this period, they are moved to international status with continued monitoring. If a VOC or VUI has not been observed in the UK or international datasets within the preceding 12 weeks, it is designated as provisionally extinct, but monitoring remains in place.

The last documented UK cases of VUI-21JAN-01 was on 14 April 2021, VUI-21APR-03 on 17 May 2021, VUI-21FEB-03 on 19 June 2021, VUI-21MAR-02 on 25 May 2021, VUI-21MAY-01 on 21 June 2021, VUI-21MAY-02 on 26 June 2021 and are in International monitoring. Following the prior technical briefing VUI-21JUN-01 has been moved to international monitoring with last document case on 10 July 2021.

VUI-21FEB-01 (A.23.1 with E484K), VOC-21FEB-02 (B.1.1.7 with E484K), VUI-21MAR-01, (B.1.324.1 with E484K), A.30, B.1.633, B.1.214.2 and B.1.1.7 with S494P have not been observed in the UK or within the international GISAID dataset within the last 12 weeks. These variants are no longer included in the data update.

^ Zeta and Theta were de-escalated by WHO and are no longer WHO variants under monitoring. Kappa, Iota, Eta and Epsilon were de-escalated by WHO to WHO variants under monitoring.

Data on individual variants

Alpha

This variant was designated VUI 202012/01 (B.1.1.7) on detection and on review re-designated as VOC-20DEC-01 (202012/01, B.1.1.7) on 18 December 2020. This was named Alpha by the World Health Organization (WHO) on 31 May 2021.

International epidemiology

GISAID includes data on sequences available internationally. As of 12 October 2021, 843,999 sequences of Alpha are listed from 183 countries or territories on GISAID, excluding the UK.

Epidemiology

Table 3. Number of confirmed and provisional Alpha cases, by region of residence as of 11 October 2021

| Region | Confirmed case number | Provisional case number | Total case number | Case proportion |
|----------------------|-----------------------|-------------------------|-------------------|-----------------|
| East Midlands | 16,245 | 487 | 16,732 | 7.4% |
| East of England | 19,926 | 179 | 20,105 | 8.8% |
| London | 40,603 | 773 | 41,376 | 18.2% |
| North East | 14,832 | 113 | 14,945 | 6.6% |
| North West | 42,055 | 1,746 | 43,801 | 19.3% |
| South East | 24,084 | 122 | 24,206 | 10.6% |
| South West | 8,203 | 52 | 8,255 | 3.6% |
| West Midlands | 18,366 | 1,300 | 19,666 | 8.6% |
| Yorkshire and Humber | 35,996 | 886 | 36,882 | 16.2% |
| Unknown region | 1,394 | 28 | 1,422 | 0.6% |
| Total | 221,704 | 5,686 | 227,390 | - |

Figure 1. Confirmed and provisional Alpha cases by specimen date and region of residence as of 11 October 2021

(Find accessible data used in this graph in [underlying data](#).)

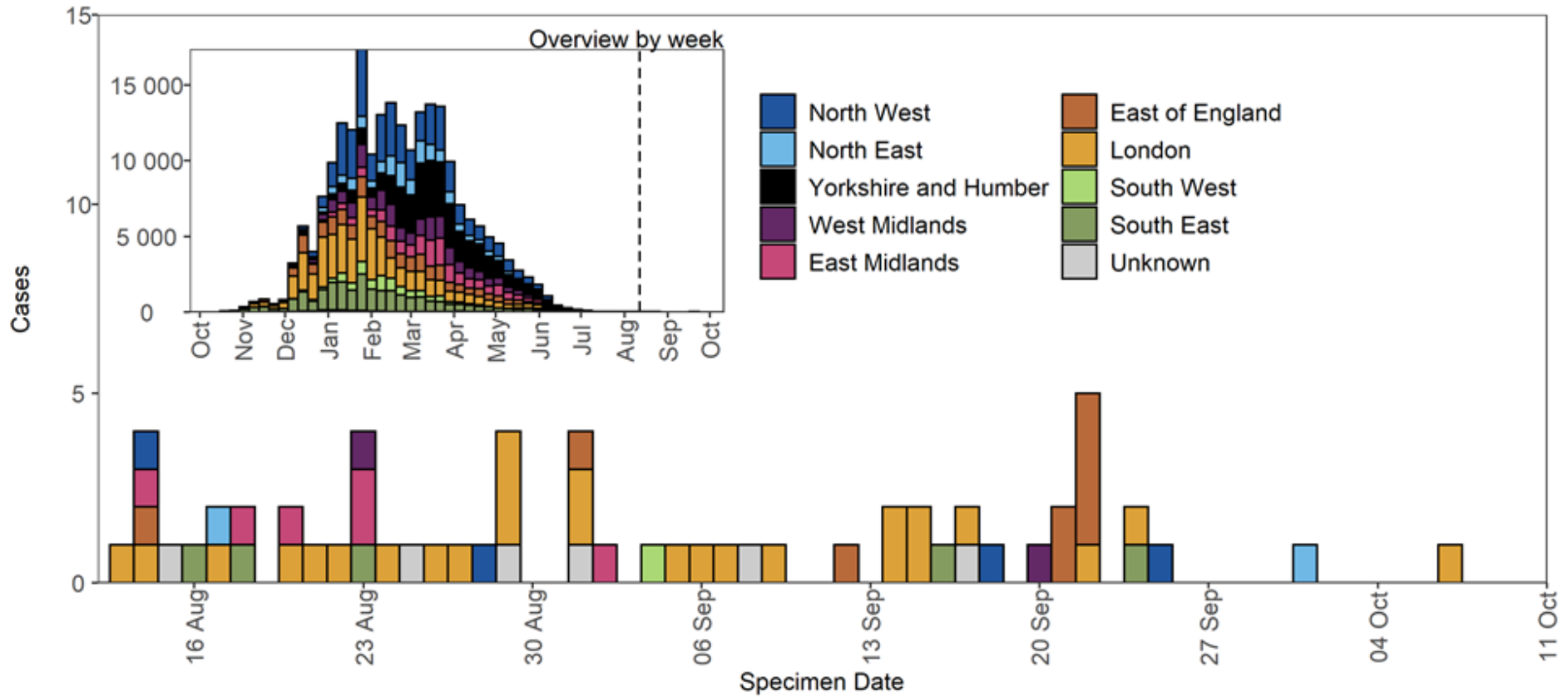


Figure 2. Confirmed and provisional Alpha cases by specimen date and detection method as of 11 October 2021

(Find accessible data used in this graph in [underlying data](#).)

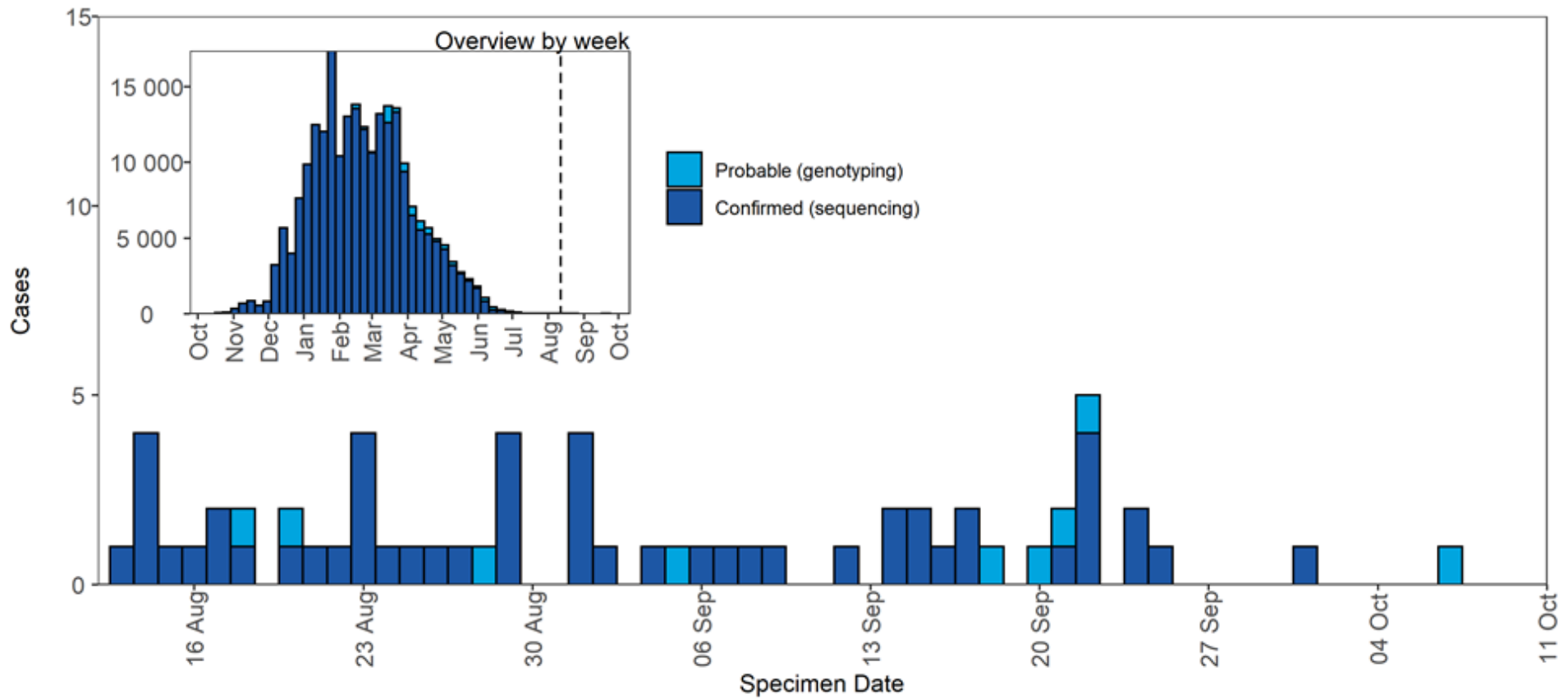
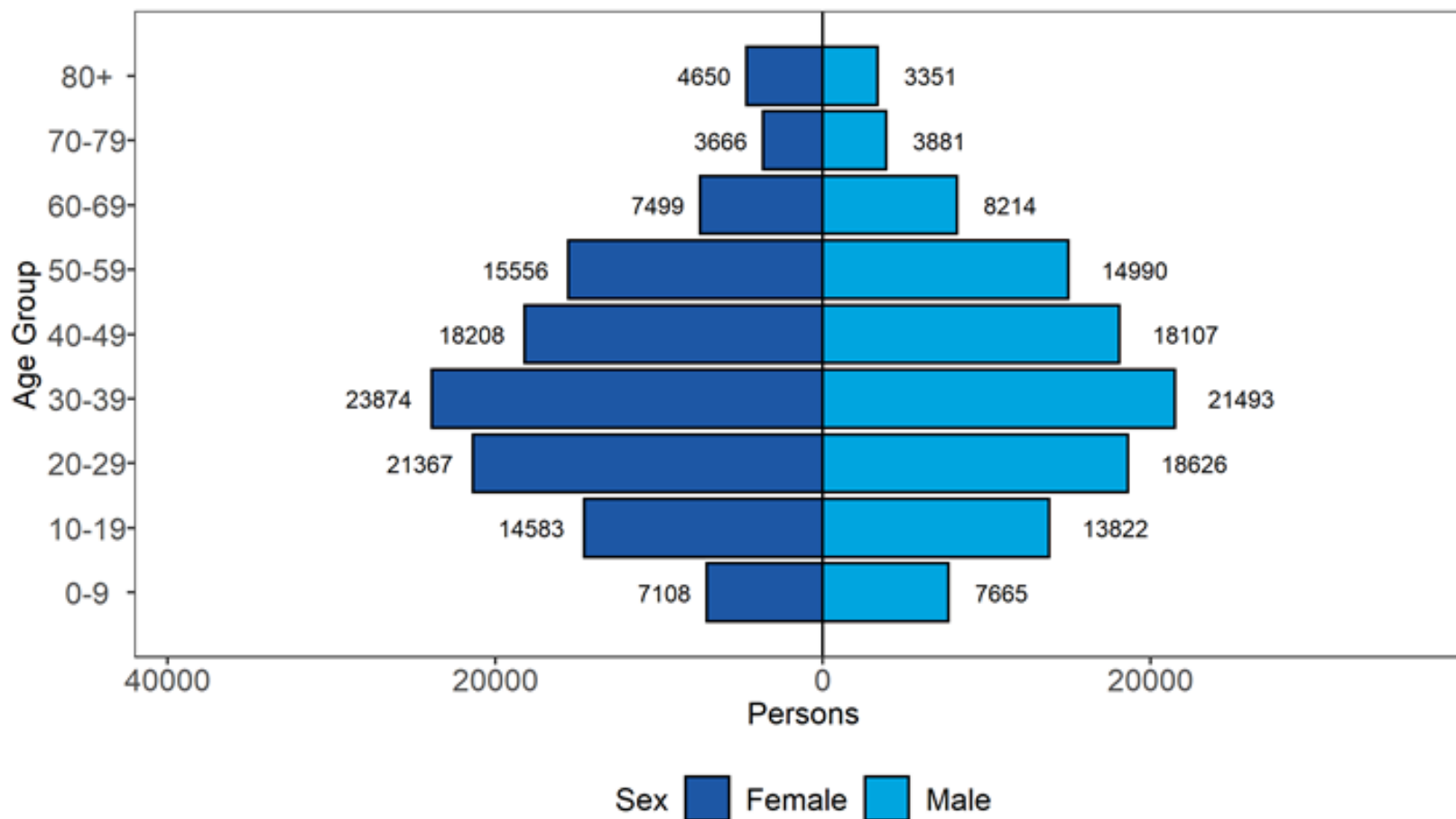


Figure 3. Age-sex pyramid of Alpha cases as of 11 October 2021

(Find accessible data used in this graph in [underlying data](#).)



730 cases excluded where sex or age not reported

Beta

B.1.351 was initially detected in South Africa. This variant was designated variant under investigation on detection and on review re-designated as VOC-20DEC-02 (B.1.351) on 24 December 2020. It was named Beta by WHO on 31 May 2021.

International epidemiology

GISAID includes data on sequences available internationally. As of 12 October 2021, 32,105 sequences of Beta, are listed from 112 countries or territories, excluding the UK

Epidemiology

Table 4. Number of confirmed and provisional 20DEC-02 (B.1.351) cases, by region of residence as of 11 October 2021

| Region | Confirmed case number | Provisional case number | Total case number | Case proportion |
|----------------------|-----------------------|-------------------------|-------------------|-----------------|
| East Midlands | 49 | 3 | 52 | 5.2% |
| East of England | 82 | 2 | 84 | 8.5% |
| London | 430 | 25 | 455 | 45.9% |
| North East | 19 | 6 | 25 | 2.5% |
| North West | 81 | 9 | 90 | 9.1% |
| South East | 118 | 4 | 122 | 12.3% |
| South West | 32 | 1 | 33 | 3.3% |
| West Midlands | 66 | 1 | 67 | 6.8% |
| Yorkshire and Humber | 32 | 6 | 38 | 3.8% |
| Unknown region | 21 | 4 | 25 | 2.5% |
| Total | 930 | 61* | 991 | - |

Figure 4. Confirmed and provisional Beta cases by specimen date and region of residence as of 11 October 2021

Larger plot includes last 60 days only. (Find accessible data used in this graph in [underlying data](#).)

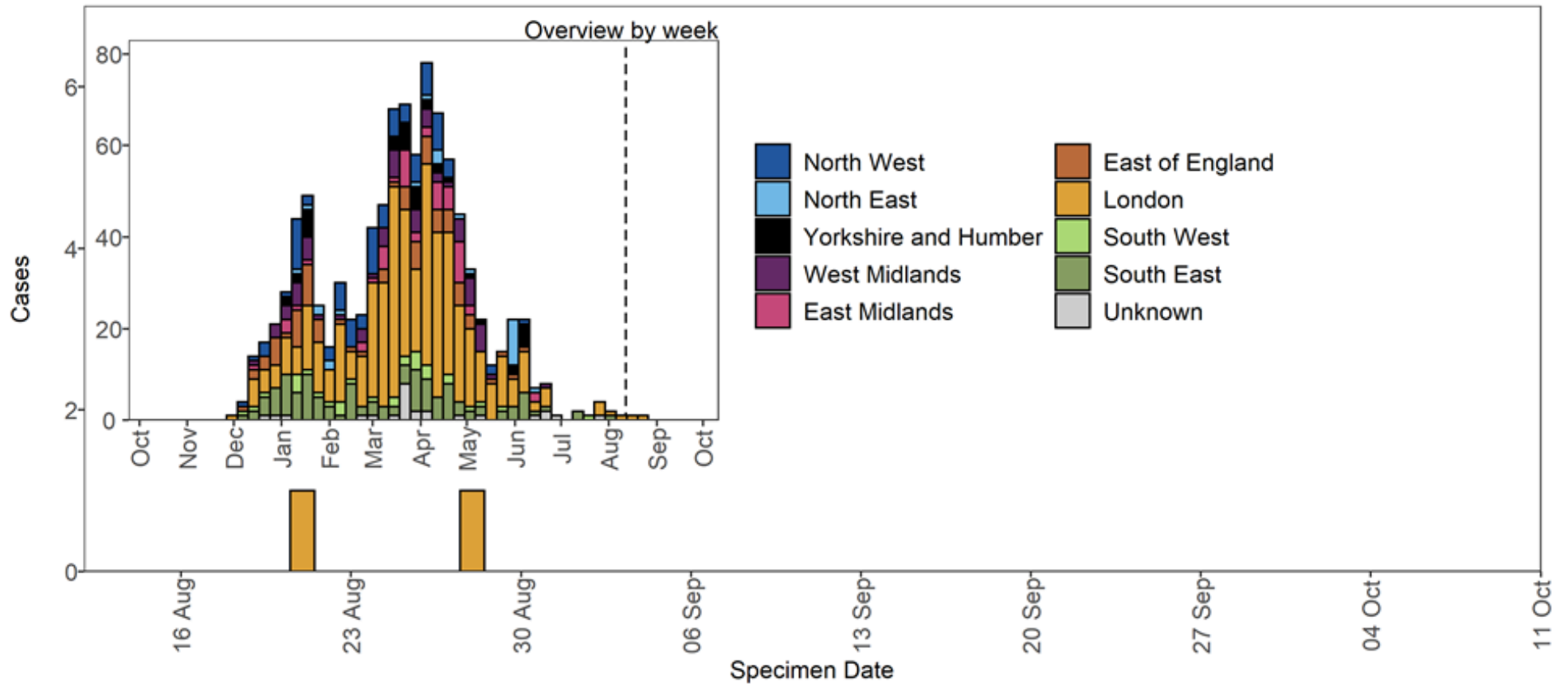


Figure 5. Confirmed and provisional Beta cases by specimen date and detection method as of 11 October 2021

Larger plot includes last 60 days only. (Find accessible data used in this graph in [underlying data](#).)

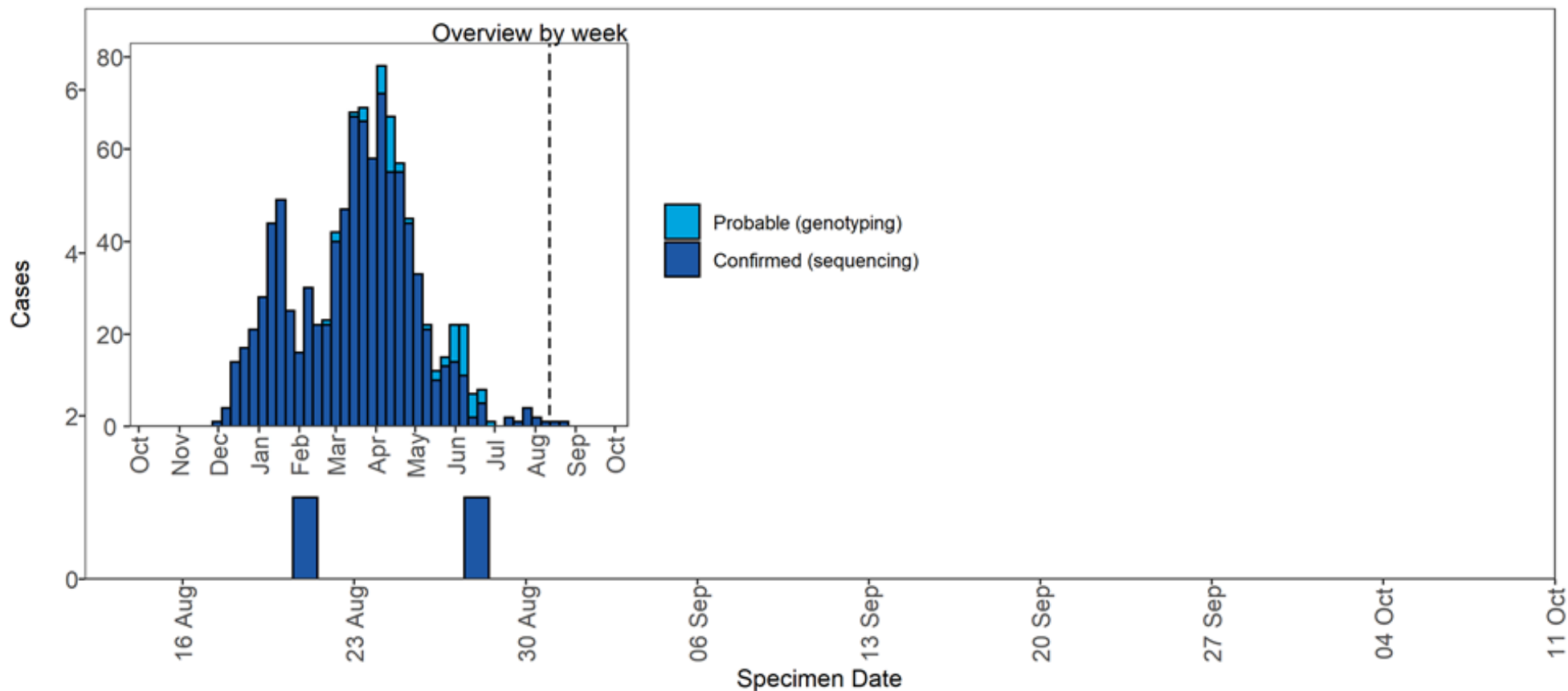
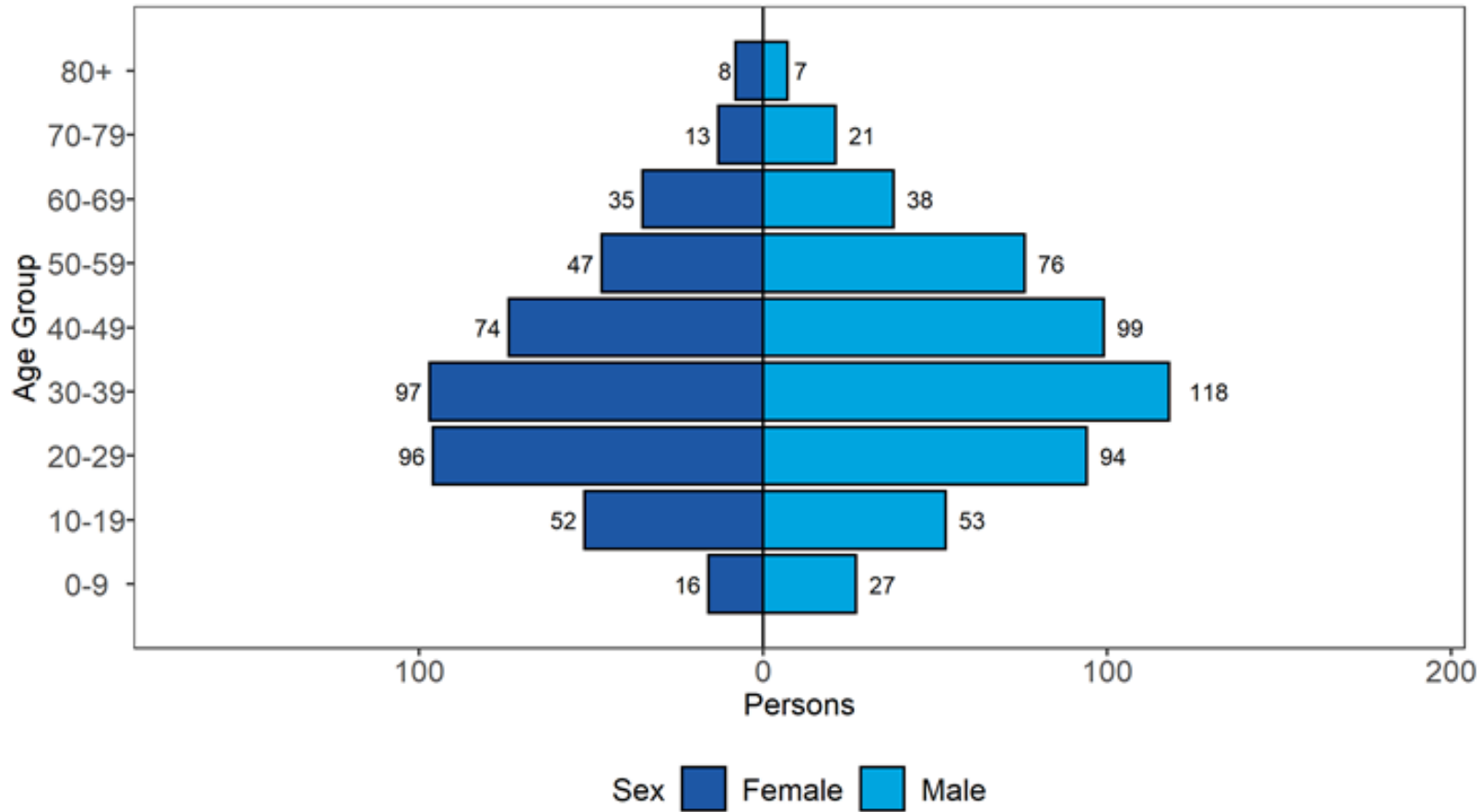


Figure 6. Age and sex pyramid of Beta cases as of 11 October 2021

(Find accessible data used in this graph in [underlying data](#).)



20 cases excluded where sex or age not reported

Gamma

First identified in Japan amongst travellers from Brazil. The P.1 lineage is a descendant of B.1.1.28. This variant was designated variant under investigation on detection and on review re-designated as VOC-21JAN-02 (P.1) on 13 January 2021. This was named Gamma by WHO on 31 May 2021.

International epidemiology

GISAID includes data on sequences available internationally. As of 12 October 2021, 87,678 sequences (excluding the UK) of Gamma from 87 countries.

Epidemiology

Table 5. Number of confirmed and provisional Gamma cases, by region of residence as of 11 October 2021

| Region | Confirmed case number | Provisional case number | Total case number | Case proportion |
|----------------------|-----------------------|-------------------------|-------------------|-----------------|
| East Midlands | 6 | 1 | 7 | 2.7% |
| East of England | 13 | 1 | 14 | 5.3% |
| London | 122 | 25 | 147 | 55.9% |
| North East | 1 | 4 | 5 | 1.9% |
| North West | 9 | 1 | 10 | 3.8% |
| South East | 29 | 7 | 36 | 13.7% |
| South West | 11 | 2 | 13 | 4.9% |
| West Midlands | 8 | 5 | 13 | 4.9% |
| Yorkshire and Humber | 2 | 8 | 10 | 3.8% |
| Unknown region | 8 | 0 | 8 | 3.0% |
| Total | 209 | 54 | 263 | - |

Figure 7. Confirmed and provisional Gamma cases by specimen date and region of residence as of 11 October 2021

Larger plot includes last 60 days only. (Find accessible data used in this graph in [underlying data.](#))

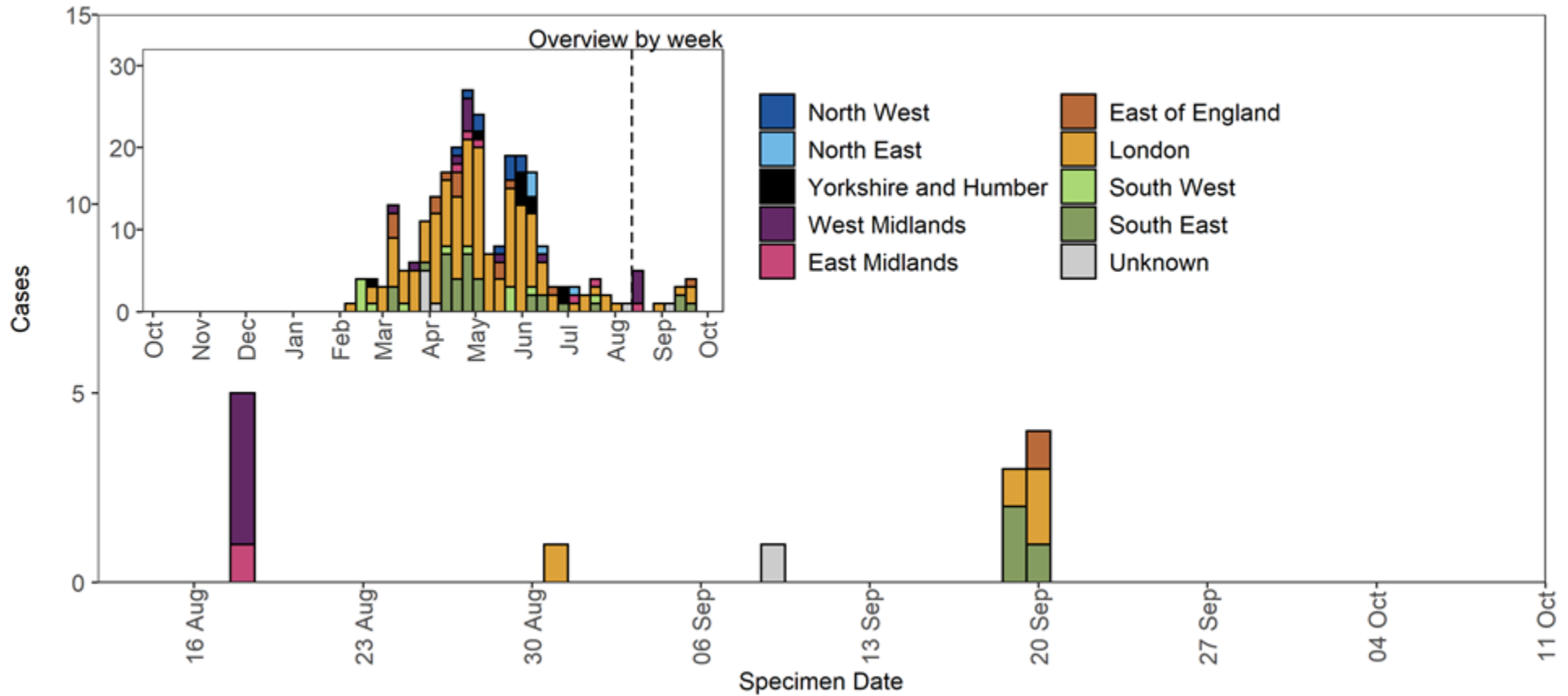


Figure 8. Confirmed and provisional Gamma cases by specimen date and detection method as of 11 October 2021

(Find accessible data used in this graph in [underlying data](#).)

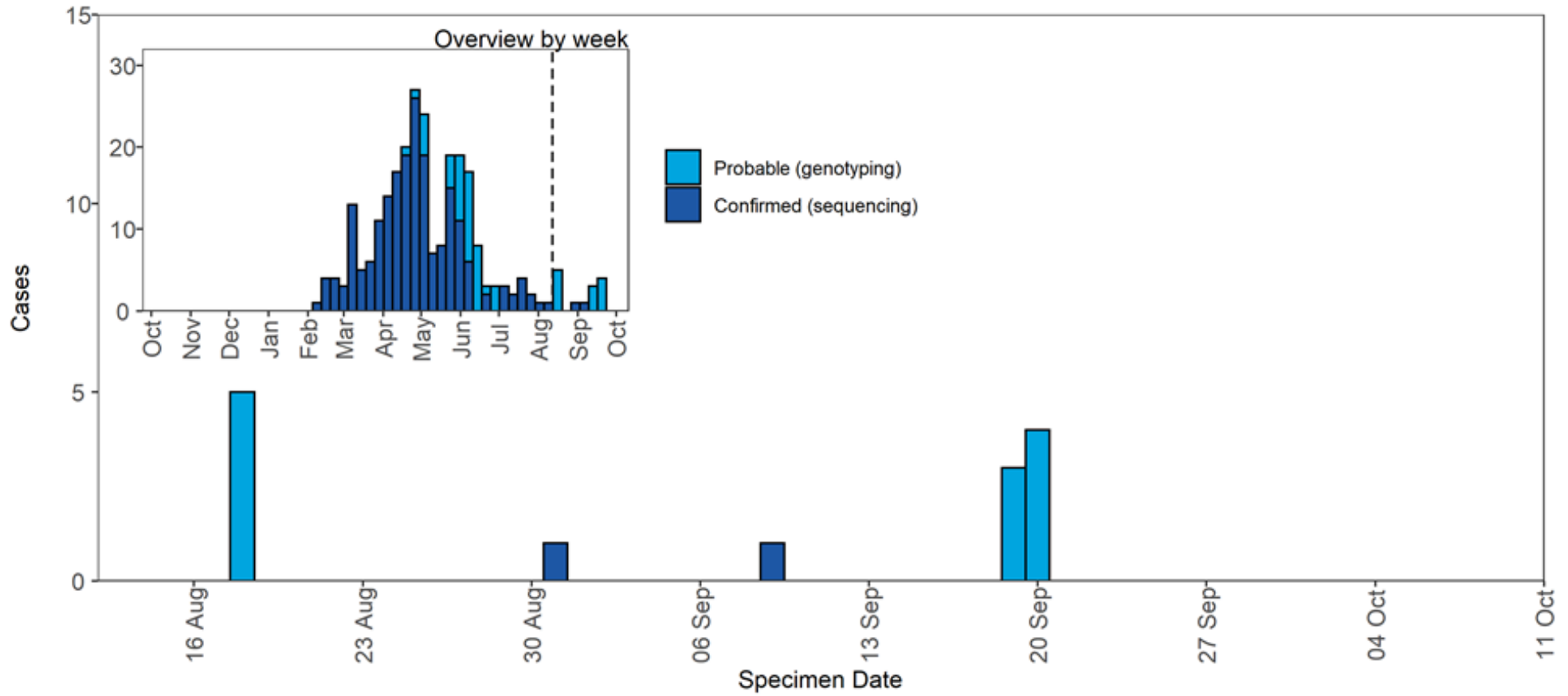
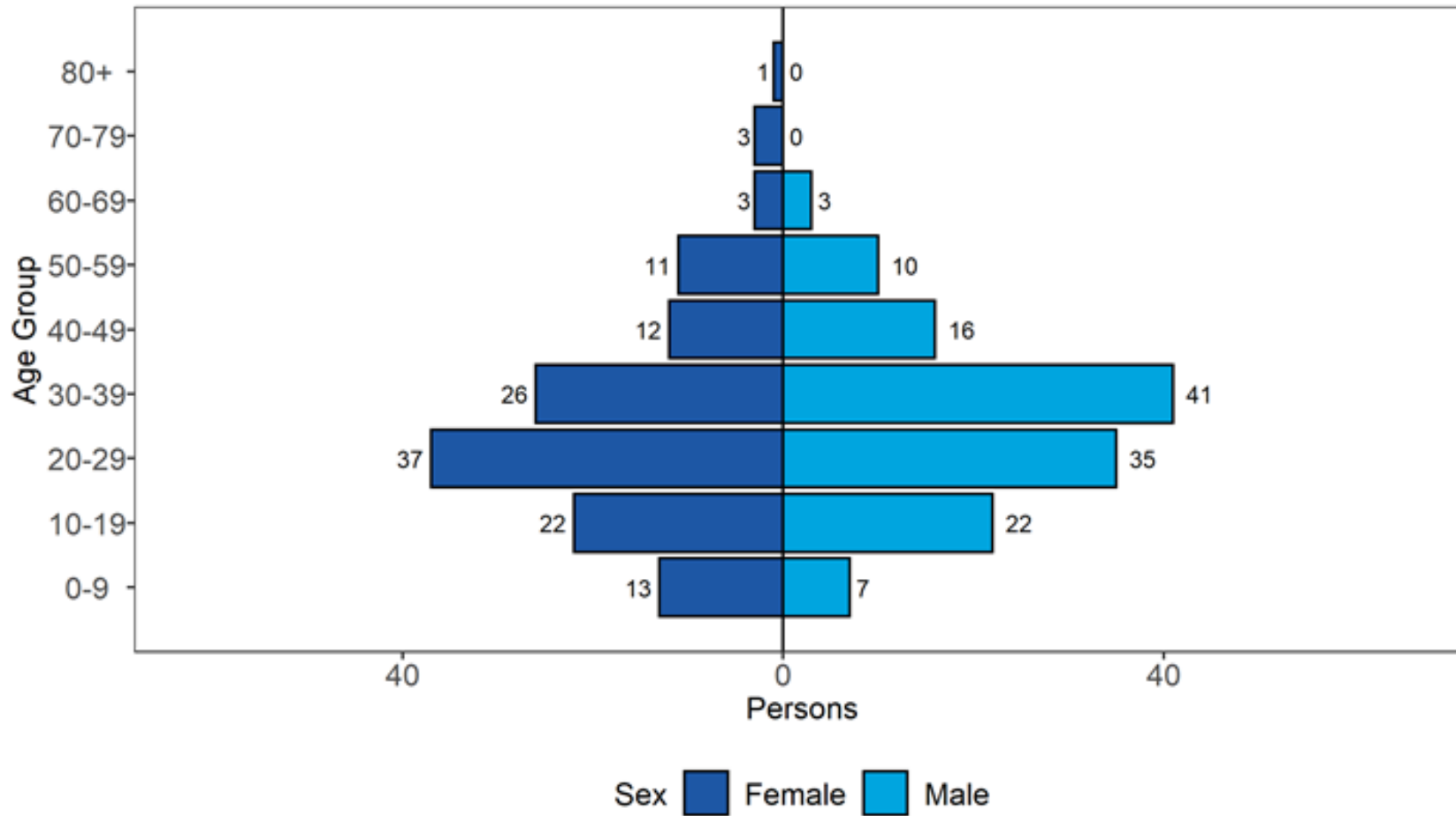


Figure 9. Age and sex pyramid of Gamma cases as of 11 October 2021

(Find accessible data used in this graph in [underlying data](#).)



1 cases excluded where sex or age not reported

Eta

B.1.525 was identified as a geographically dispersed cluster in UK on 2 February 2021. This variant was designated VUI-21FEB-03 (B.1.525) on 12 February 2021. The earliest sample date for VUI-21FEB-03 (B.1.525) in England was 15 December 2020. This was named Eta by WHO on 31 May 2021. Genotyping data is not collected for this variant.

International epidemiology

GISAID includes data on sequences available internationally. As of 12 October 2021, 7,338 sequences of Eta are listed, from 80 countries or territories, excluding the UK.

Epidemiology

Table 6. Number of confirmed and provisional 21FEB-03 (B.1.525) cases, by region of residence as of 11 October 2021

| Region | Total case number | Case proportion |
|----------------------|-------------------|-----------------|
| East Midlands | 12 | 2.6% |
| East of England | 30 | 6.5% |
| London | 166 | 36.0% |
| North East | 5 | 1.1% |
| North West | 79 | 17.1% |
| South East | 82 | 17.8% |
| South West | 18 | 3.9% |
| West Midlands | 36 | 7.8% |
| Yorkshire and Humber | 20 | 4.3% |
| Unknown region | 13 | 2.8% |
| Total | 461 | - |

Figure 10. Confirmed and provisional Eta cases by specimen date and region of residence as of 11 October 2021

Larger plot includes last 60 days only. (Find accessible data used in this graph in [underlying data](#).)

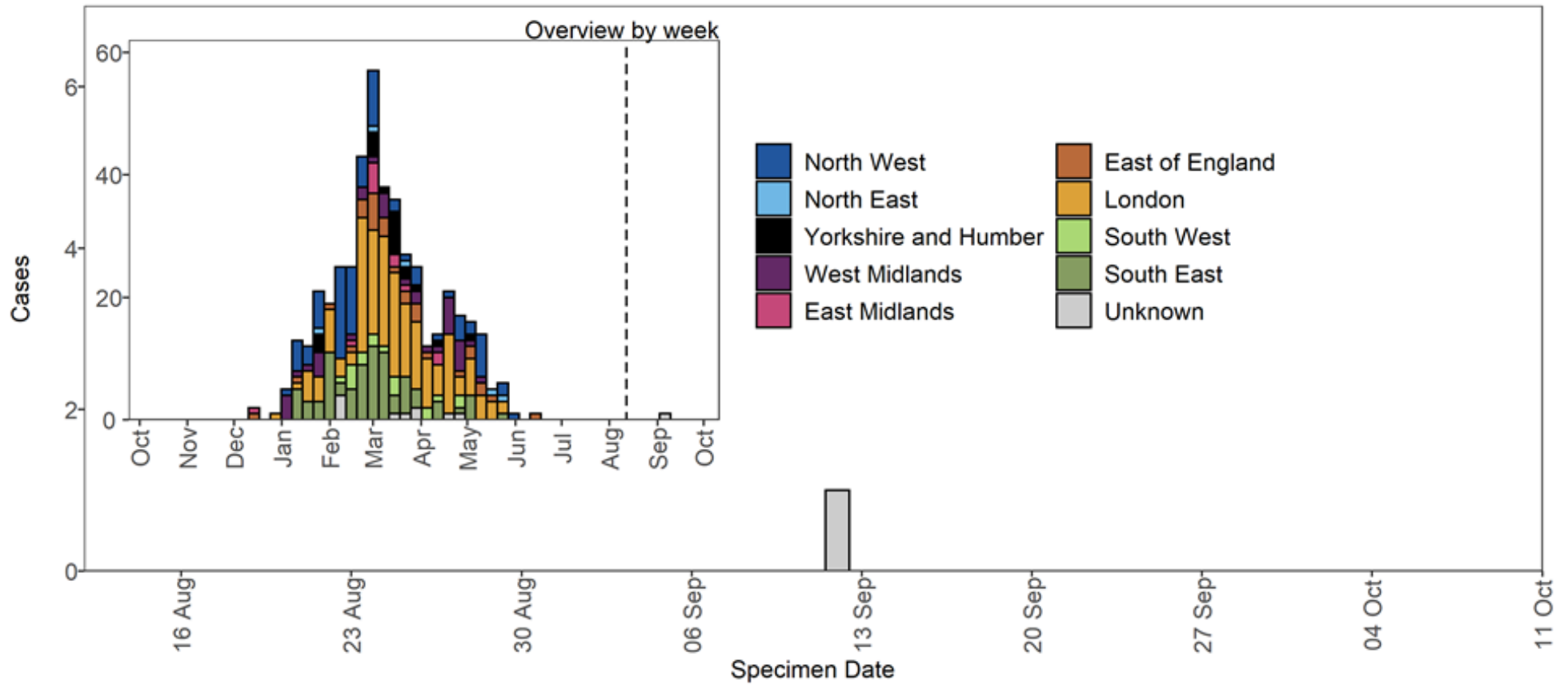
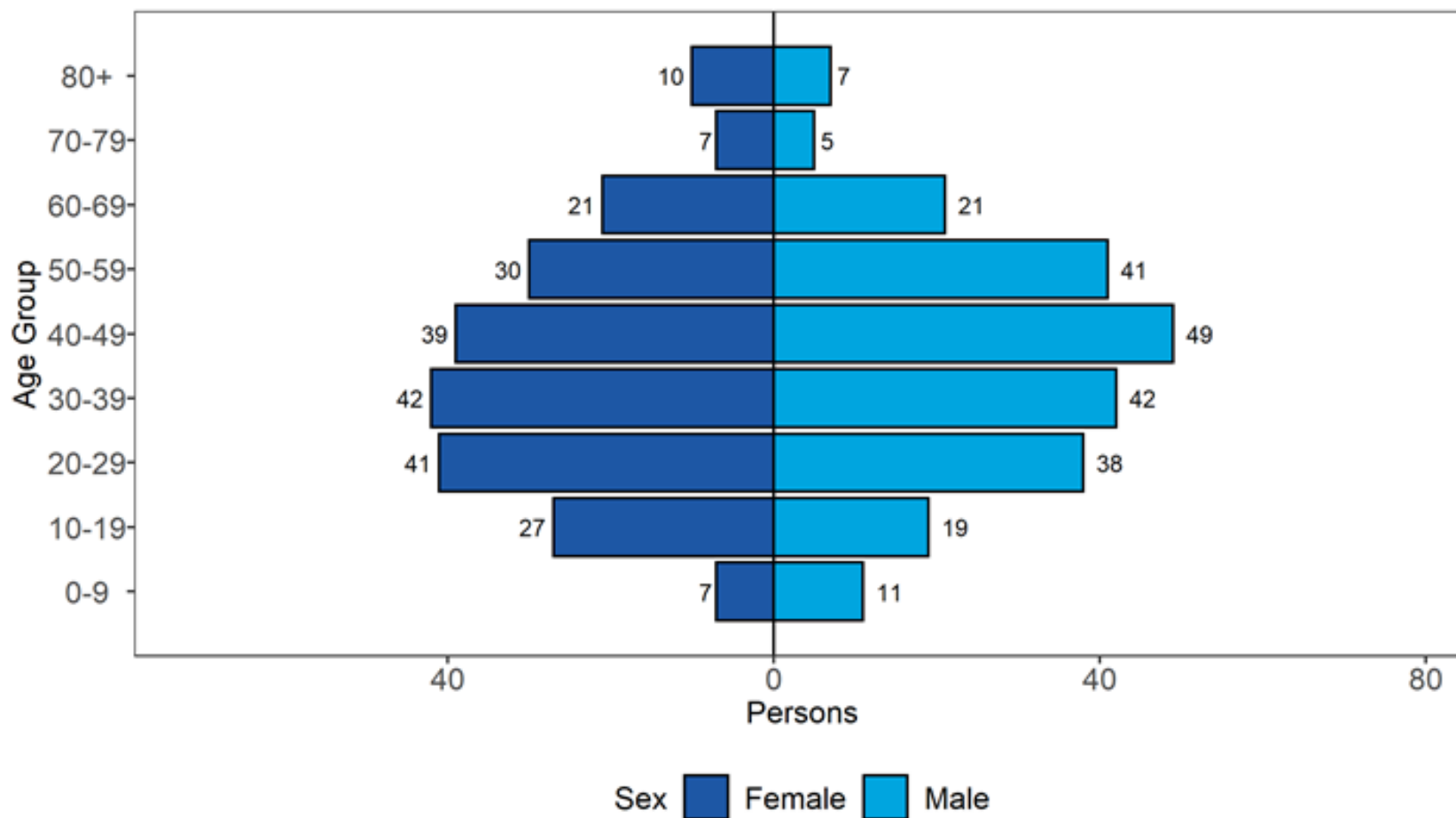


Figure 11. Age and sex pyramid of Eta cases as of 11 October 2021

(Find accessible data used in this graph in [underlying data](#).)



4 cases excluded where sex or age not reported

VUI-21FEB-04 (B.1.1.318)

B.1.1.318 was identified in England in mid-February 2021 through routine horizon scanning for the development of new clusters of genomes containing E484K. This analysis identified an initial cluster of 6 cases containing E484K and other spike mutations, designated VUI-21FEB-04 (B.1.1.318) on 23 February 2021.

International epidemiology

GISAID includes data on sequences available internationally. As of 12 October 2021, 359 international VUI-21FEB-04 sequences from 30 countries, excluding the UK have been identified on GISAID.

Epidemiology

Table 7. Number of confirmed and provisional VUI-21FEB-04 (B.1.1.318) cases, by region of residence as of 11 October 2021

| Region | Total case number | Case proportion |
|----------------------|-------------------|-----------------|
| East Midlands | 12 | 3.8% |
| East of England | 38 | 12.1% |
| London | 118 | 37.5% |
| North East | 2 | 0.6% |
| North West | 51 | 16.2% |
| South East | 54 | 17.1% |
| South West | 3 | 1.0% |
| West Midlands | 15 | 4.8% |
| Yorkshire and Humber | 13 | 4.1% |
| Unknown region | 9 | 2.9% |
| Total | 315 | - |

Figure 12. Confirmed and provisional VUI-21FEB-04 cases by specimen date and region of residence as of 11 October 2021

Larger plot includes last 60 days only. (Find accessible data used in this graph in [underlying data](#).)

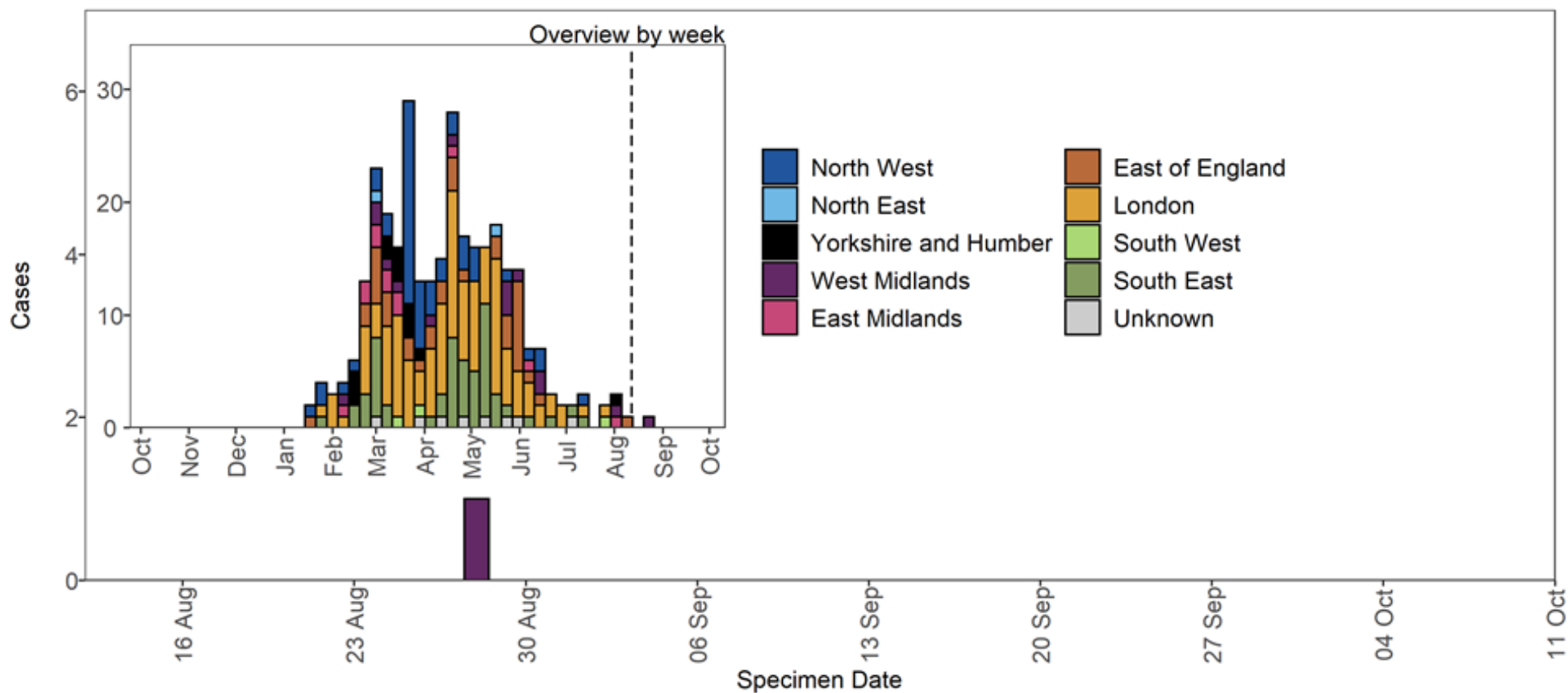
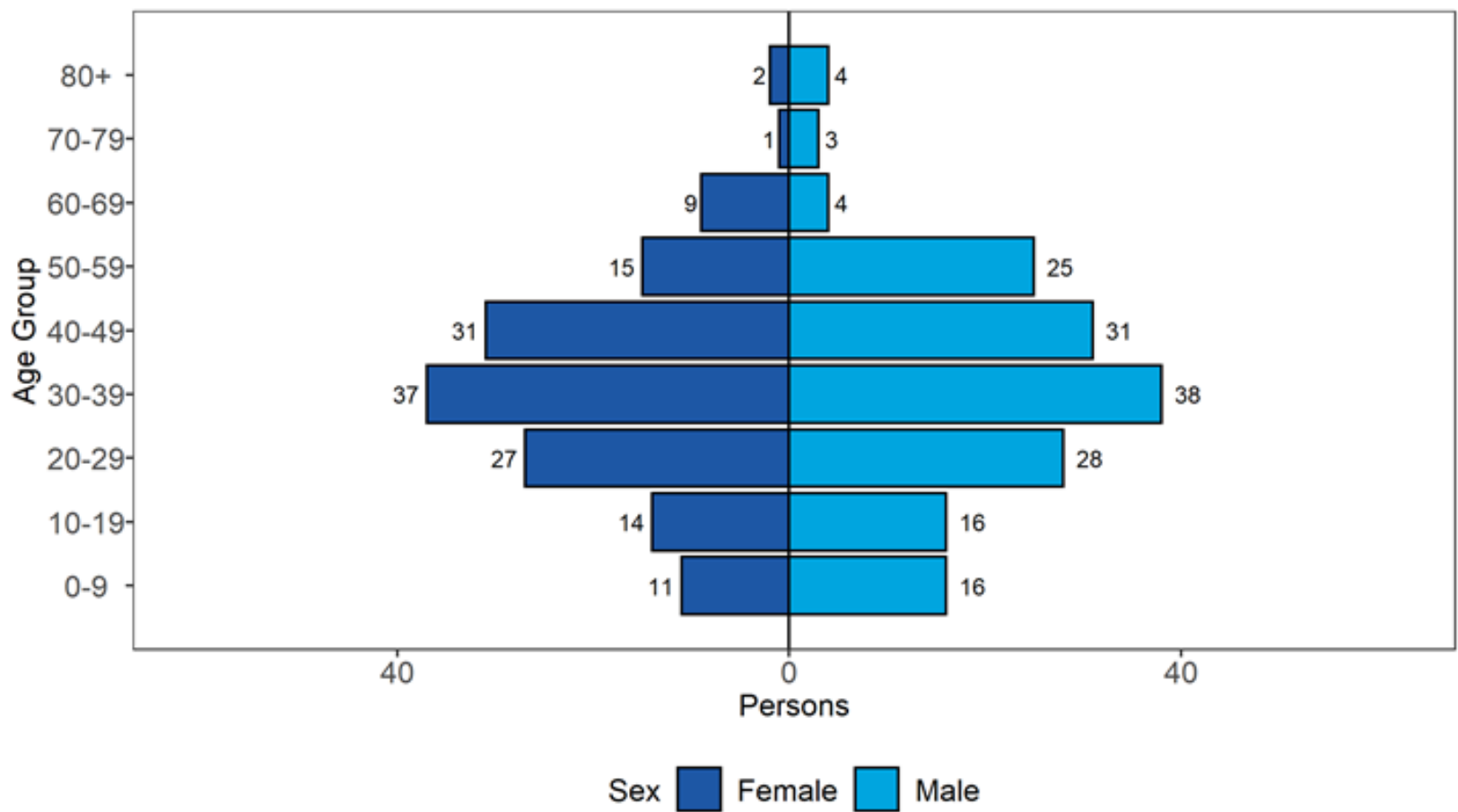


Figure 13. Age and sex pyramid of VUI-21FEB-04 cases as of 11 October 2021

(Find accessible data used in this graph in [underlying data](#).)



3 cases excluded where sex or age not reported

Theta

P.3 was identified on 9 March 2021 in a report of 33 genomes from the Philippines with 13 lineage defining mutations. This variant shares important mutations with other variants of concern, including E484K, N501Y, and P681H. Based on its genomic profile, Public Health England designated P.3 as VUI-21MAR-02 on 11 March 2021. This variant arises from B.1.1.28, which is the same parent lineage of P.1 and P.2 in Brazil. Phylogenetic analysis of P.3 shows diversity indicating circulation prior to detection. This variant was named Theta by WHO on 31 May 2021.

International epidemiology

GISAID includes data on sequences available internationally. As of 12 October 2021, 359 sequences of Theta have been identified in GISAID, excluding the UK: Angola (1), Australia (4), Canada (4), China (2), Germany (10), Hong Kong (16), Japan (8), Malaysia (9), Netherlands (7), New Zealand (3), Norway (3), Philippines (274), Singapore (3), South Korea (2), Sweden (2), USA (20).

Epidemiology

Table 8. Number of confirmed and provisional Theta cases, by region of residence as of 11 October 2021

| Region | Total case number | Case proportion |
|----------------------|-------------------|-----------------|
| East Midlands | 0 | 0.0% |
| East of England | 1 | 14.3% |
| London | 2 | 28.6% |
| North East | 0 | 0.0% |
| North West | 1 | 14.3% |
| South East | 0 | 0.0% |
| South West | 2 | 28.6% |
| West Midlands | 0 | 0.0% |
| Yorkshire and Humber | 1 | 14.3% |
| Total | 7 | - |

Figure 14. Confirmed and provisional Theta cases by specimen date and region of residence as of 11 October 2021

Larger plot includes last 60 days only. (Find accessible data used in this graph in [underlying data](#).)

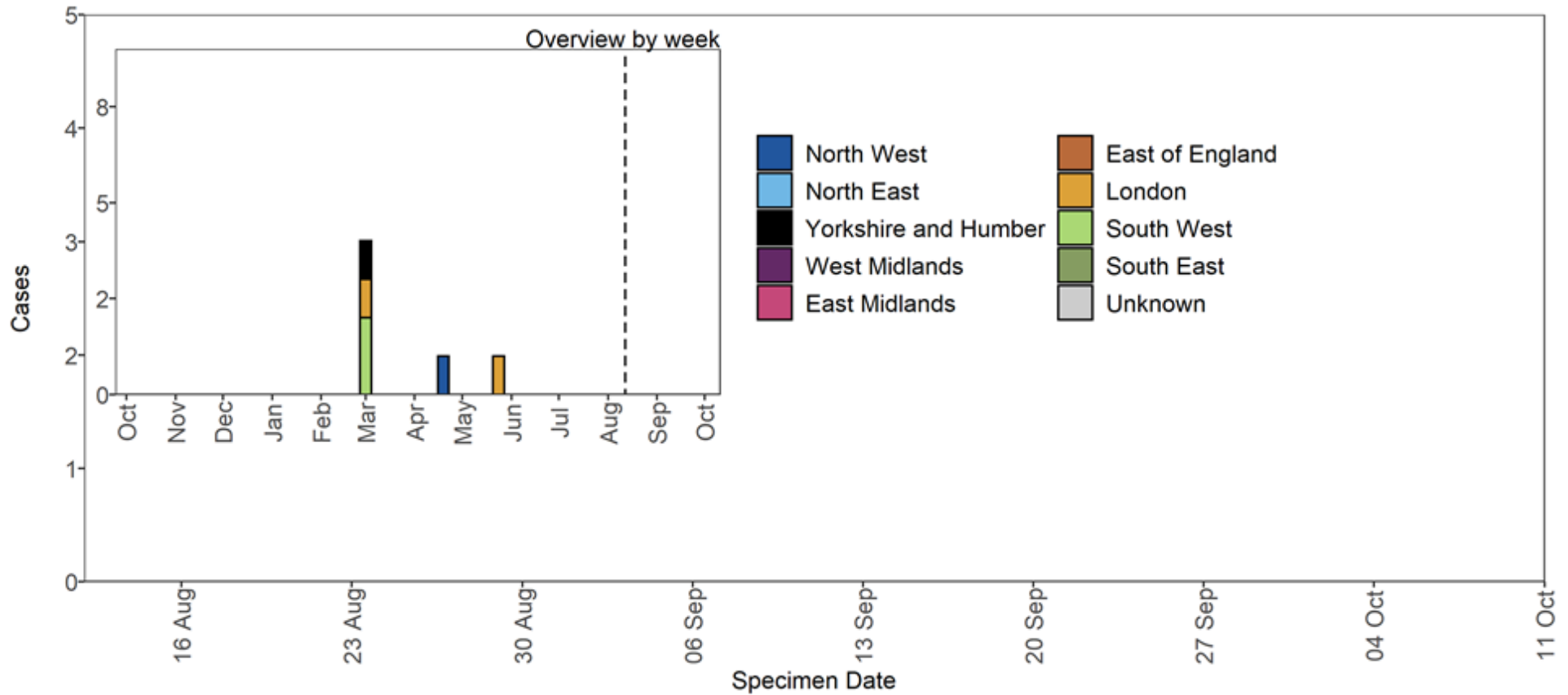
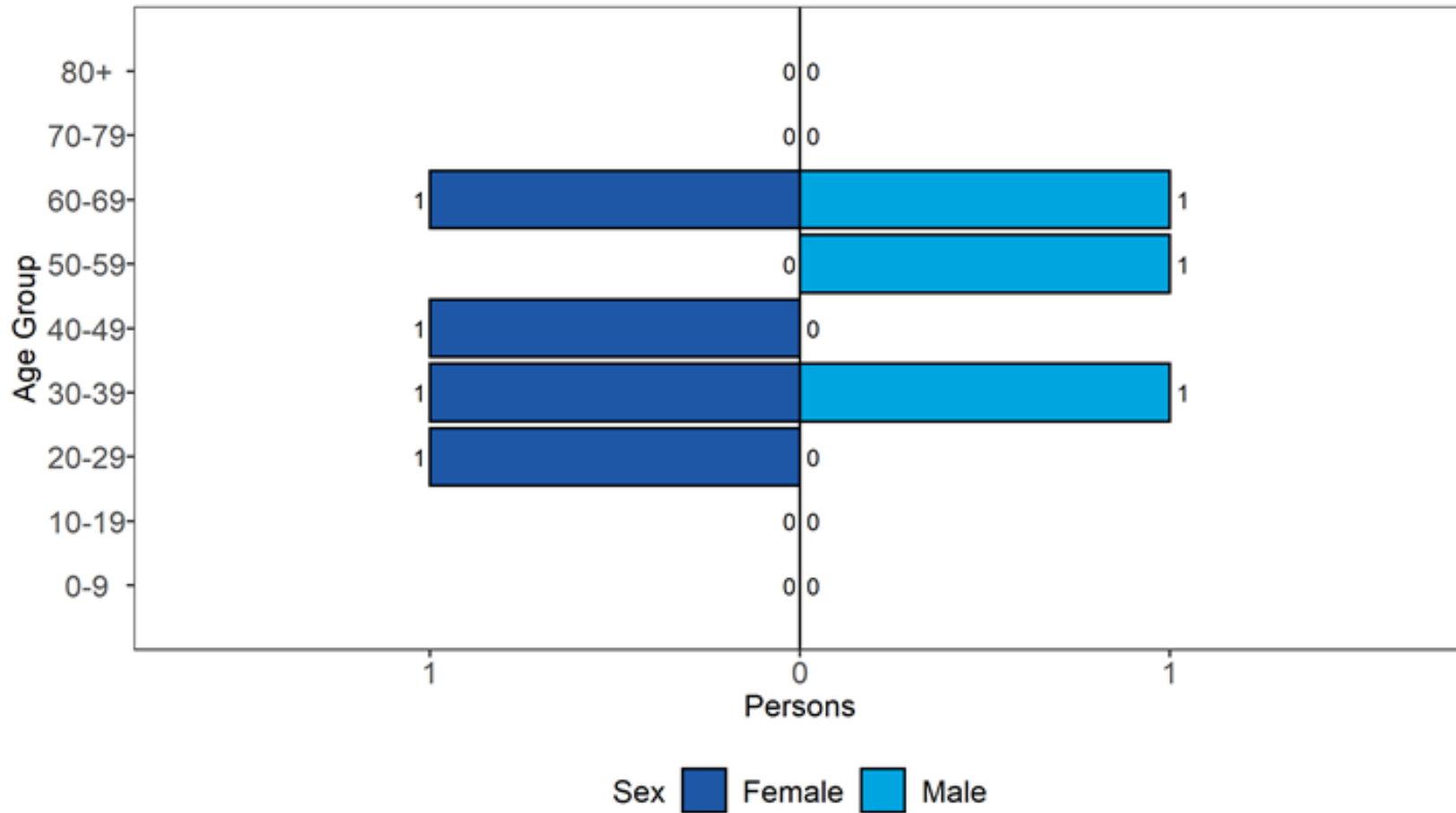


Figure 15. Age and sex pyramid of Theta cases as of 11 October 2021

(Find accessible data used in this graph in [underlying data](#).)



0 cases excluded where sex or age not reported

VUI-21APR-03 (B.1.617.3)

B.1.617 lineage was escalated to a variant under investigation on 1 April 2021.

VUI-21APR-03 (B.1.617.3) was escalated to a variant under investigation on 28 April 2021. The last documented case was on the 17 May 2021 in the UK, this variant was de-escalated to monitoring on the 16 August 2021.

International epidemiology

GISAID includes data on sequences available internationally. As of 12 October 2021, 238 sequences of VUI-21APR-03 from the following countries (excluding the UK) have been identified in GISAID: India (218), Japan (1), Malawi (7), Russia (2), Singapore (1), USA (9).

Epidemiology

Table 9. Number of confirmed and provisional VUI-21APR-03 (B.1.617.3) cases, by region of residence as of 11 October 2021

| Region | Total case number | Case proportion |
|----------------------|-------------------|-----------------|
| East Midlands | 0 | 0.0% |
| East of England | 0 | 0.0% |
| London | 6 | 40.0% |
| North East | 0 | 0.0% |
| North West | 6 | 40.0% |
| South East | 3 | 20.0% |
| South West | 0 | 0.0% |
| West Midlands | 0 | 0.0% |
| Yorkshire and Humber | 0 | 0.0% |
| Total | 15 | - |

Figure 16. Confirmed and provisional VUI-21APR-03 cases by specimen date and region of residence as of 11 October 2021

Larger plot includes last 60 days only. (Find accessible data used in this graph in [underlying data](#).)

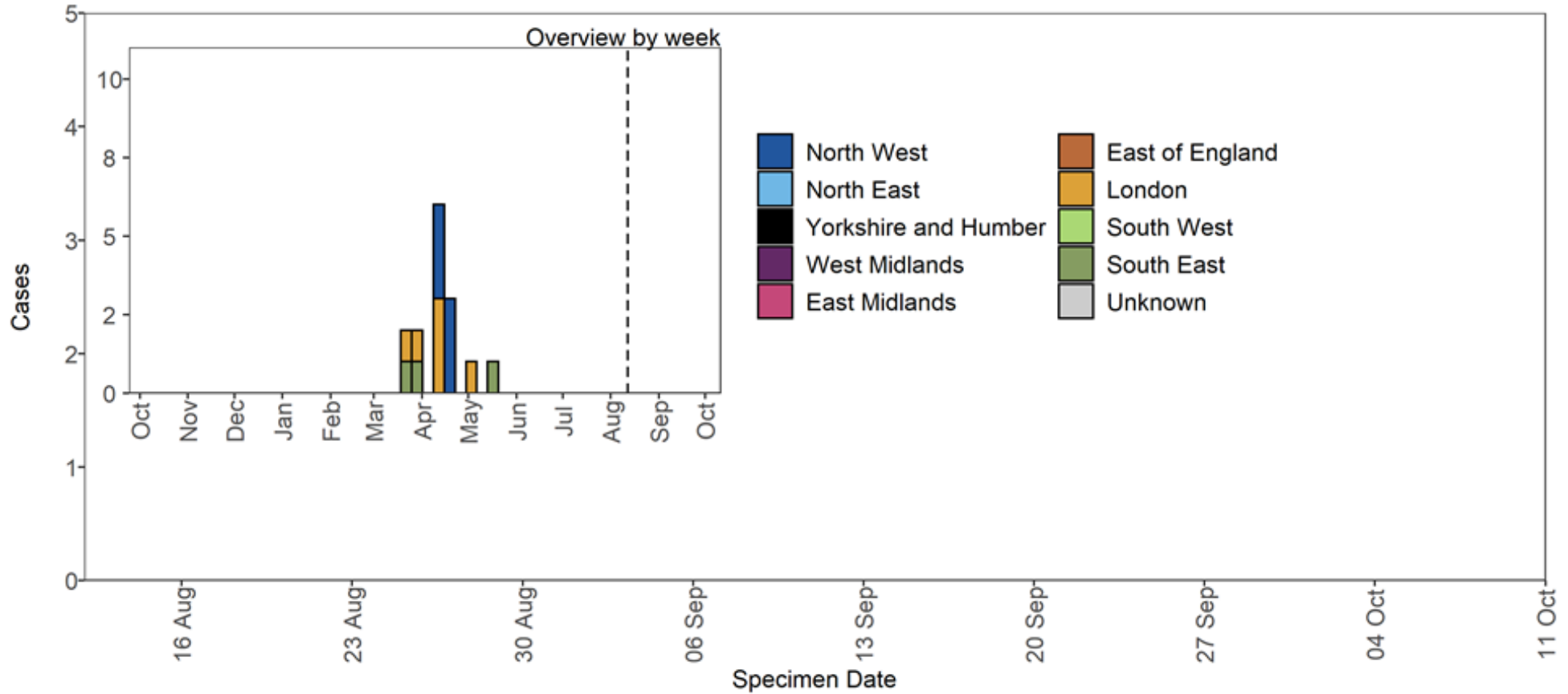
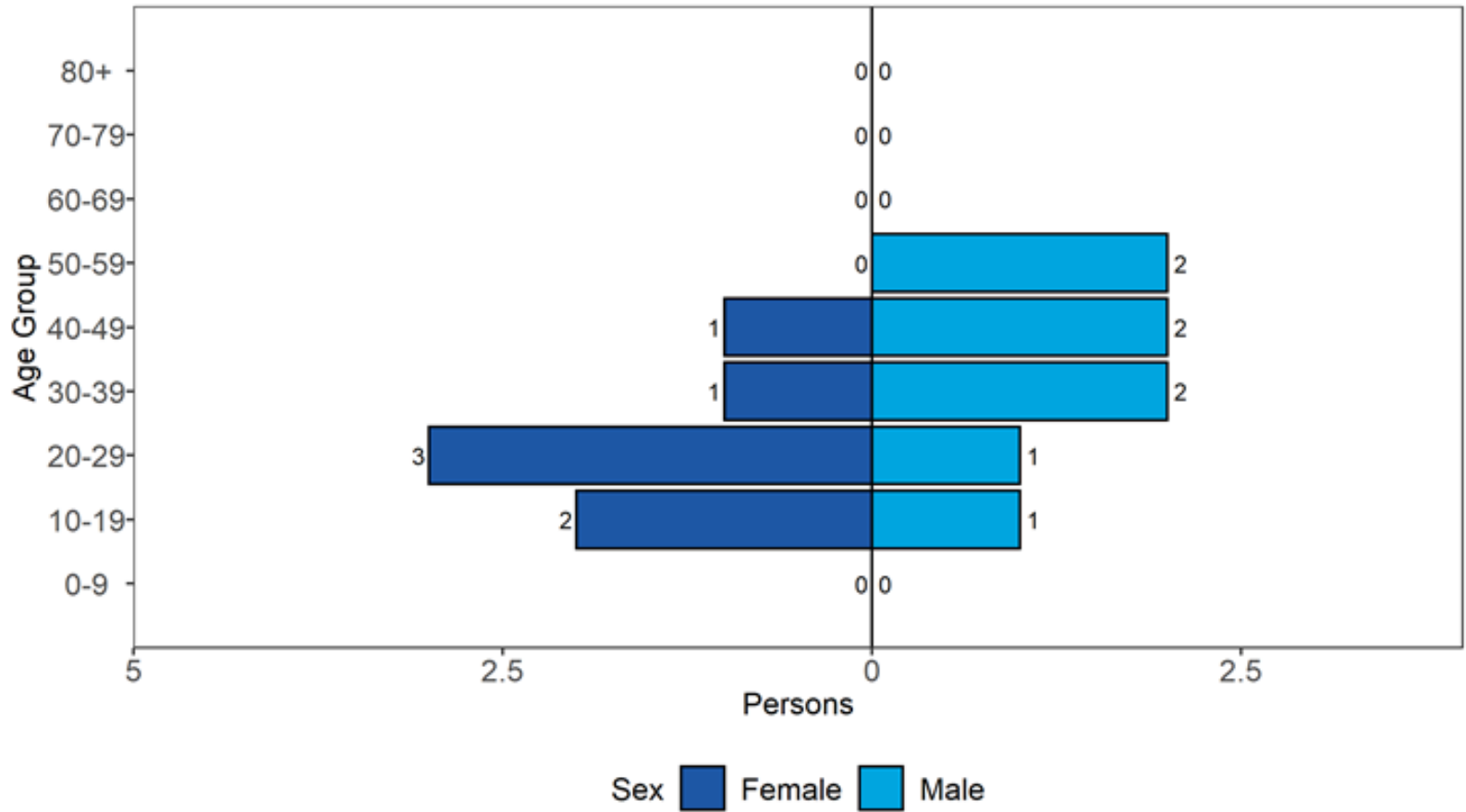


Figure 17. Age and sex pyramid of VUI-21APR-03 cases as of 11 October 2021

(Find accessible data used in this graph in [underlying data](#).)



0 cases excluded where sex or age not reported

VUI-21MAY-01 (AV.1)

AV.1 was first detected in UK sequences and designated under investigation on 14 May 2021 as VUI-21MAY-01 based on its mutation profile and apparent localised cluster in Yorkshire and Humber.

International epidemiology

GISAID includes data on sequences available internationally. Excluding the UK, as of 12 October 2021, 5 sequences of VUI-21MAY-01 from France and 1 from Benin have been identified in GISAID.

Epidemiology

Table 10. Number of confirmed and provisional VUI-21MAY-01 (AV.1) cases, by region of residence as of 11 October 2021

| Region | Total case number | Case proportion |
|----------------------|-------------------|-----------------|
| East Midlands | 7 | 3.8% |
| East of England | 11 | 6.0% |
| London | 1 | 0.5% |
| North East | 1 | 0.5% |
| North West | 7 | 3.8% |
| South East | 0 | 0.0% |
| South West | 0 | 0.0% |
| West Midlands | 4 | 2.2% |
| Yorkshire and Humber | 152 | 82.6% |
| Unknown region | 1 | 0.5% |
| Total | 184 | - |

Figure 18. Confirmed and provisional VUI-21MAY-01 cases by specimen date and region of residence as 11 October 2021

(Find accessible data used in this graph in [underlying data](#).)

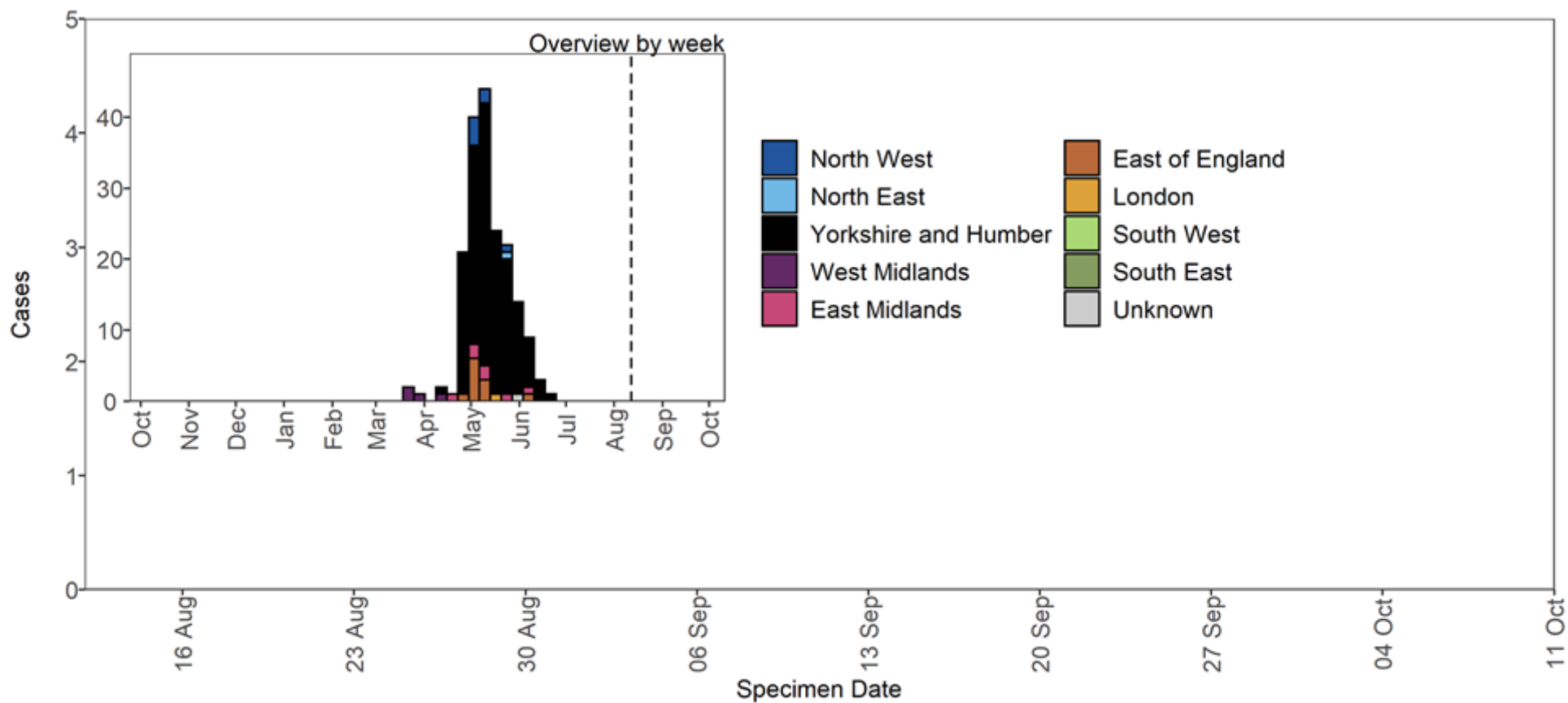
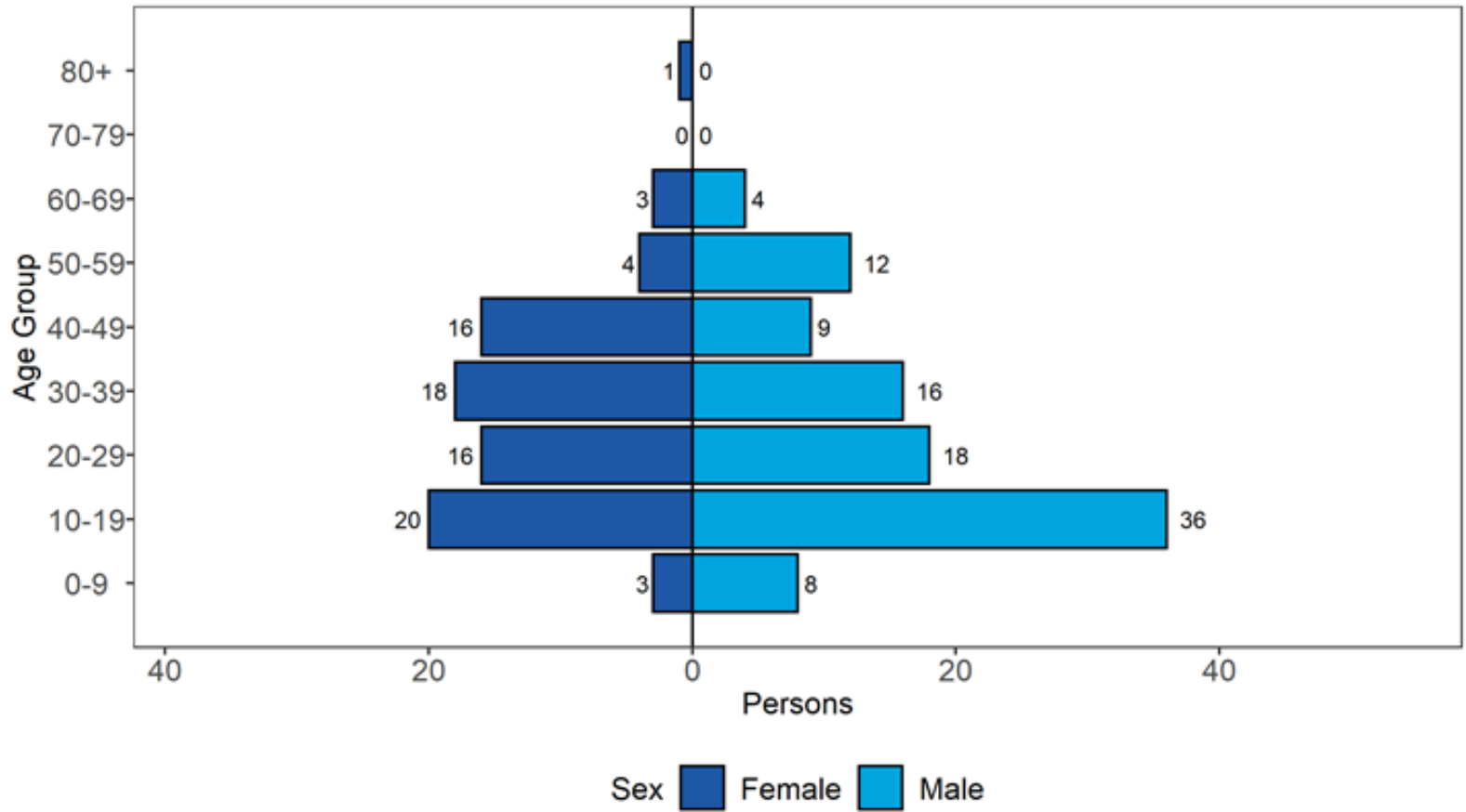


Figure 19. Age and sex pyramid of VUI-21MAY-01 cases as of 11 October 2021

(Find accessible data used in this graph in [underlying data](#).)



0 cases excluded where sex or age not reported

VUI-21MAY-02 (C.36.3)

C.36.3 was designated a variant under investigation on 24 May 2021 (VUI-21MAY-02) based on its mutation profile and increased importation from a widening international area.

International epidemiology

GISAID includes data on sequences available internationally. Excluding the UK, as of 12 October 2021, 1,853 sequences of VUI-21MAY-02 from 66 countries, excluding the UK have been on GISAID.

Epidemiology

Table 11. Number of confirmed and provisional VUI-21MAY-02 (C.36.3) cases, by region of residence as of 11 October 2021

| Region | Total case number | Case proportion |
|----------------------|-------------------|-----------------|
| East Midlands | 10 | 6.8% |
| East of England | 23 | 15.5% |
| London | 43 | 29.1% |
| North East | 1 | 0.7% |
| North West | 14 | 9.5% |
| South East | 13 | 8.8% |
| South West | 5 | 3.4% |
| West Midlands | 10 | 6.8% |
| Yorkshire and Humber | 26 | 17.6% |
| Unknown region | 3 | 2.0% |
| Total | 148 | - |

Figure 20. Confirmed and provisional VUI-21MAY-02 cases by specimen date and region of residence as of 11 October 2021. Larger plot includes last 60 days only.

(Find accessible data used in this graph in [underlying data](#).)

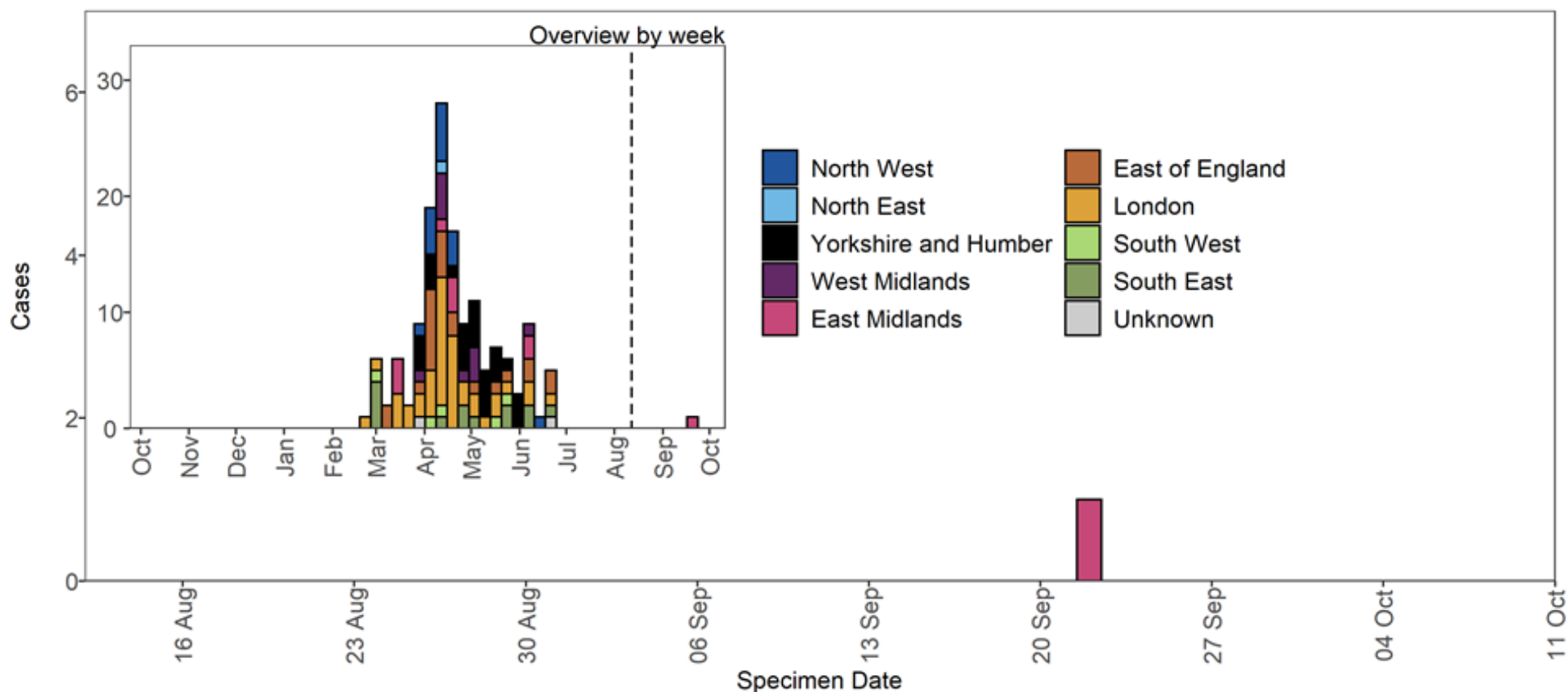
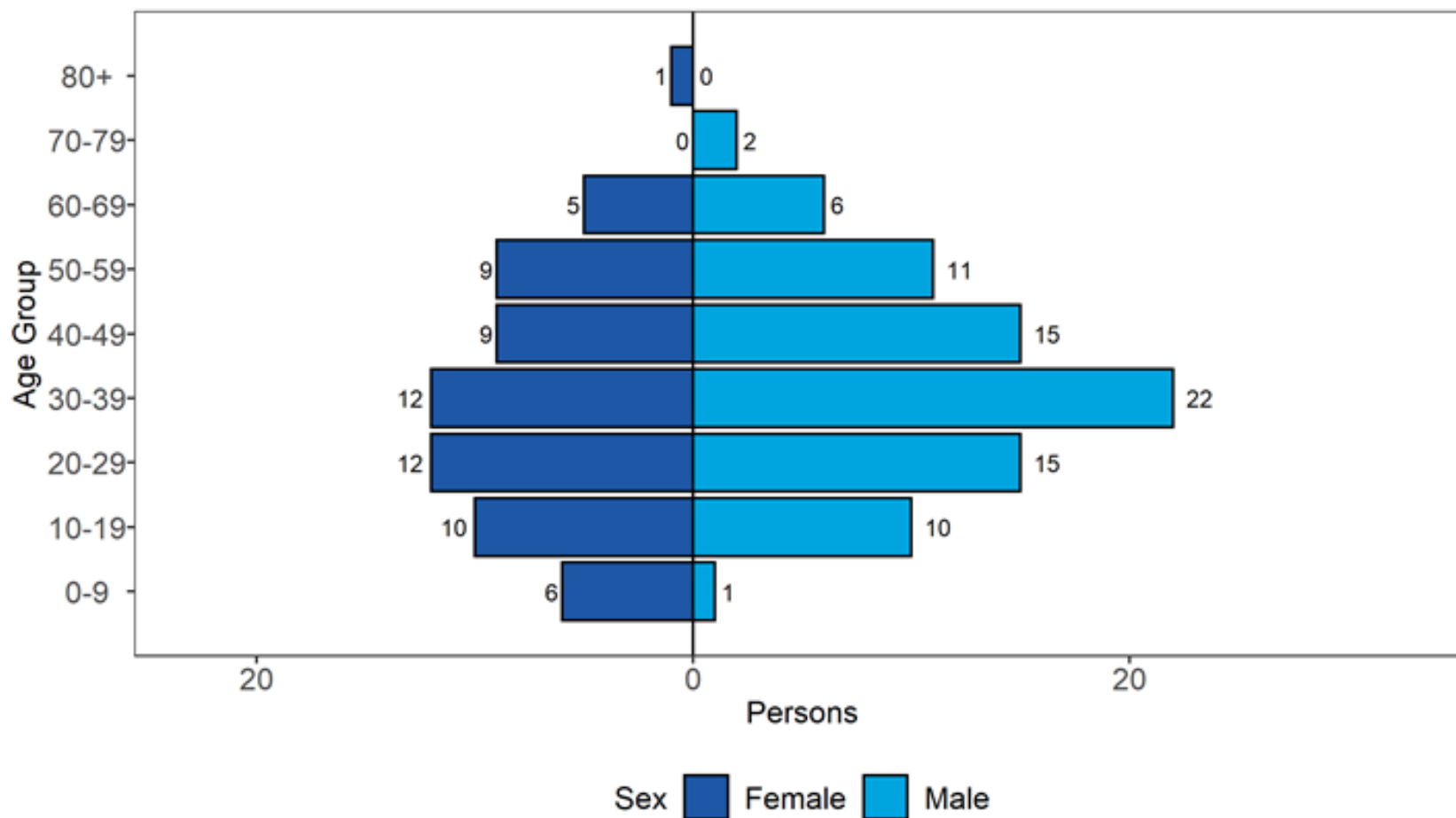


Figure 21. Age and sex pyramid of VUI-21MAY-02 cases as of 11 October 2021

(Find accessible data used in this graph in [underlying data](#).)



2 cases excluded where sex or age not reported

Lambda (C.37)

Lambda was identified through international variant horizon scanning and was made a signal in monitoring by Public Health England on 14 April 2021 (lineage B.1.1.1 at the time). On 14 June 2021, WHO designated lineage C.37 as Lambda, a new variant of interest based on evidence of continued emergence and suspected phenotypic implications. Lambda was designated a variant under investigation (VUI-21JUN-01) by Public Health England on 23 June 2021. The risk assessment for Lambda is [here](#).

International epidemiology

As of 12 October 2021, 7,349 Lambda sequences from 36 countries (excluding the UK) have been identified in GISAID.

Epidemiology

Table 12. Number of confirmed and provisional Lambda (C.37) cases, by region of residence as of 11 October 2021

| Region | Total case number | Case proportion |
|----------------------|-------------------|-----------------|
| East Midlands | 0 | 0.0% |
| East of England | 0 | 0.0% |
| London | 6 | 75.0% |
| North East | 0 | 0.0% |
| North West | 0 | 0.0% |
| South East | 0 | 0.0% |
| South West | 1 | 12.5% |
| West Midlands | 1 | 12.5% |
| Yorkshire and Humber | 0 | 0.0% |
| Total | 8 | - |

Figure 22. Confirmed and provisional Lambda cases by specimen date and region of residence as of 11 October 2021. Larger plot includes last 60 days only.

(Find accessible data used in this graph in [underlying data](#).)

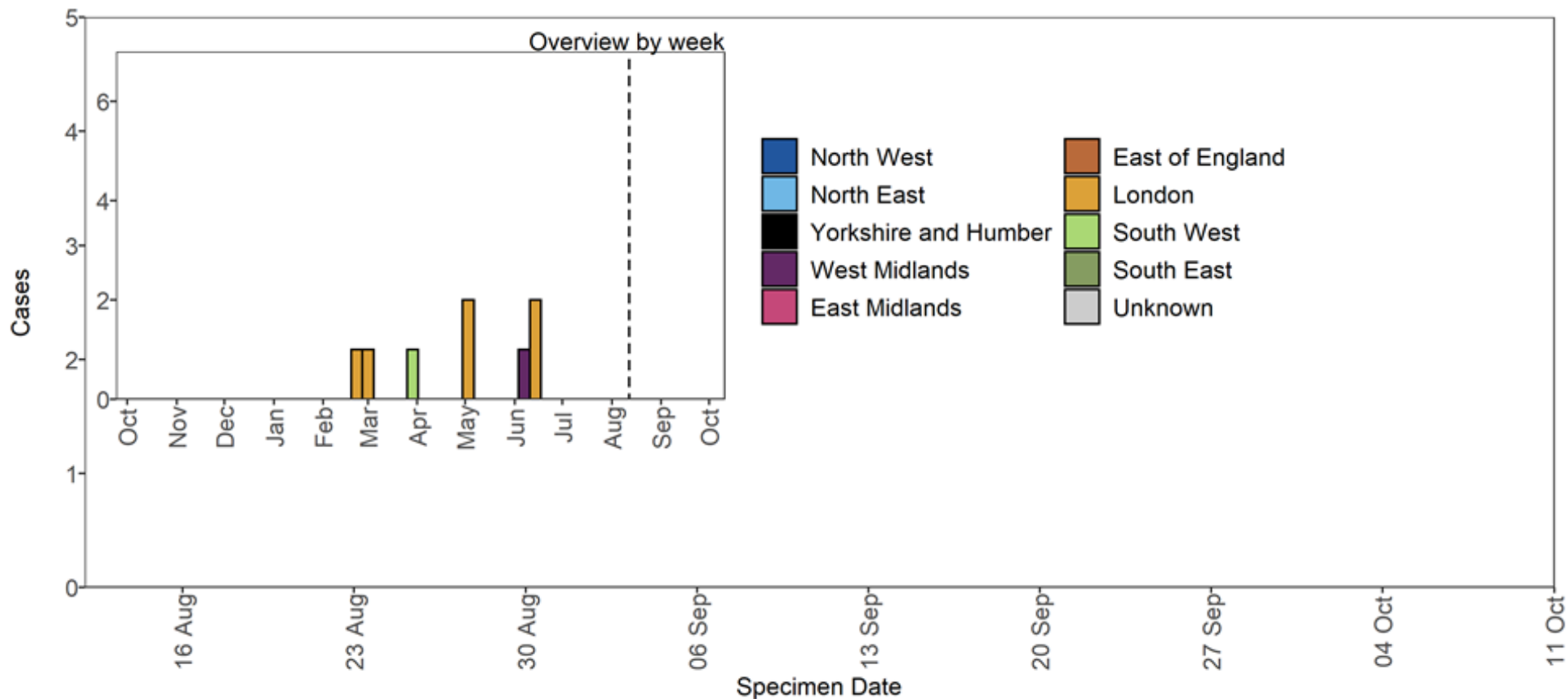
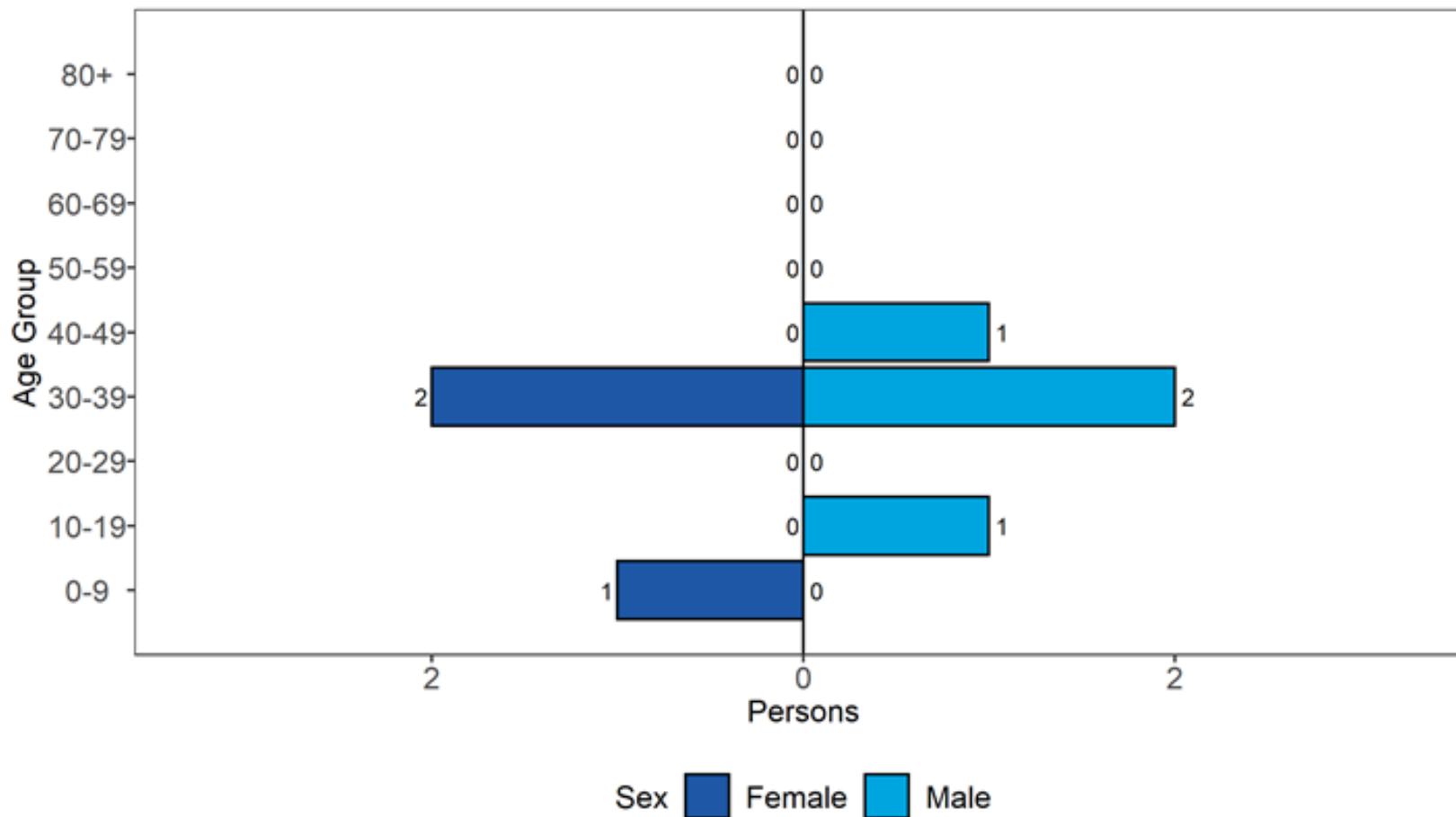


Figure 23. Age and sex pyramid of Lambda cases as of 11 October 2021.

(Find accessible data used in this graph in [underlying data](#).)



1 cases excluded where sex or age not reported

Mu (B.1.621)

VUI-21JUL-01 was identified through international variant horizon scanning and was made a signal in monitoring by PHE on 7 June 2021 (lineage B.1.621 at the time). On 21 July 2021, PHE designated lineage B.1.621 as a new variant under investigation, VUI-21JUL-01, based on apparent spread into multiple countries, importation to the UK and mutations of concern. B.1.621 was designated as Mu by WHO on the 30 August 2021.

International epidemiology

As of 12 October 2021, 9,950 Mu sequences from 51 countries (excluding the UK) have been identified in GISAID.

Epidemiology

Table 13. Confirmed and provisional Mu cases in England by region as of 11 October 2021

| Region | Total case number | Case proportion |
|----------------------|-------------------|-----------------|
| East Midlands | 3 | 6.0% |
| East of England | 7 | 14.0% |
| London | 24 | 48.0% |
| North East | 0 | 0.0% |
| North West | 4 | 8.0% |
| South East | 6 | 12.0% |
| South West | 1 | 2.0% |
| West Midlands | 0 | 0.0% |
| Yorkshire and Humber | 1 | 2.0% |
| Unknown region | 4 | 8.0% |
| Total | 50* | - |

Figure 24. Cases of Mu in England by region as of 11 October 2021

(Find accessible data used in this graph in [underlying data](#).)

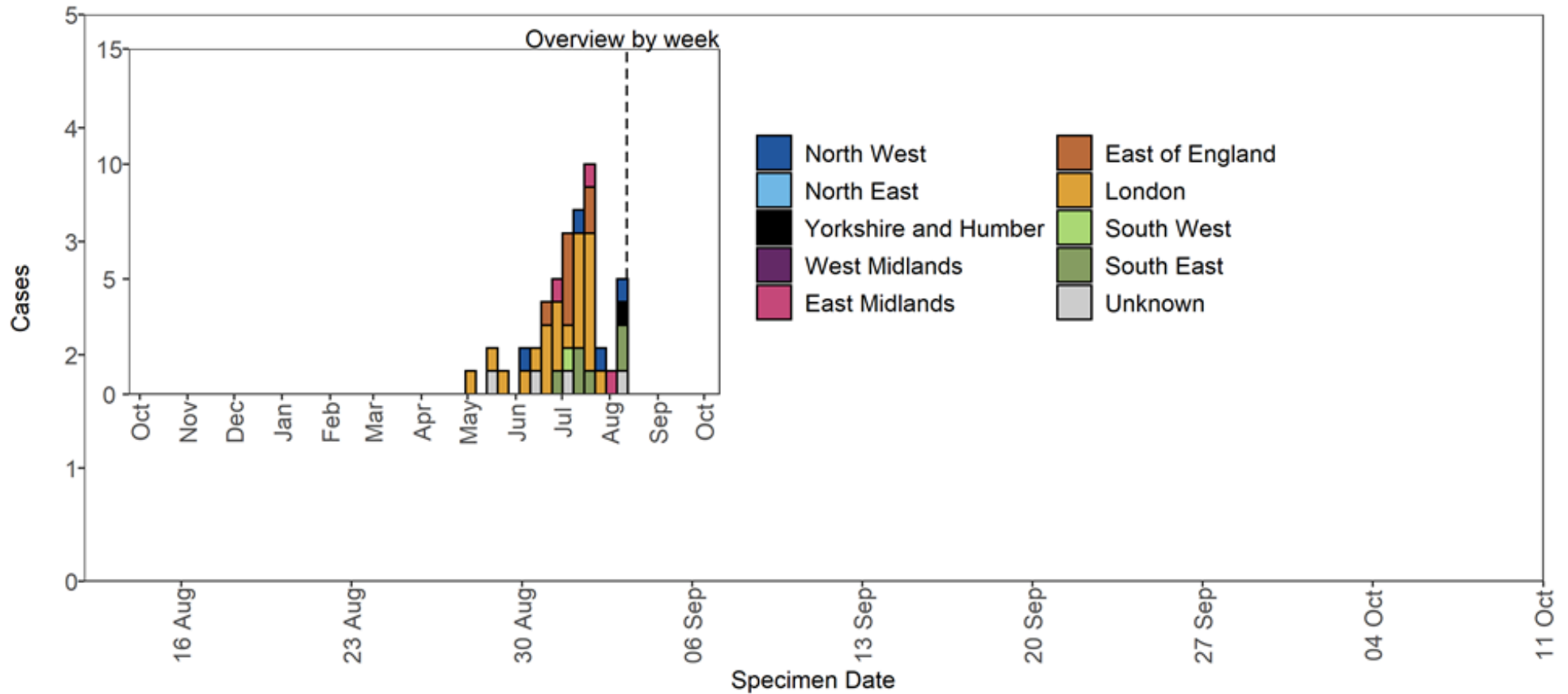
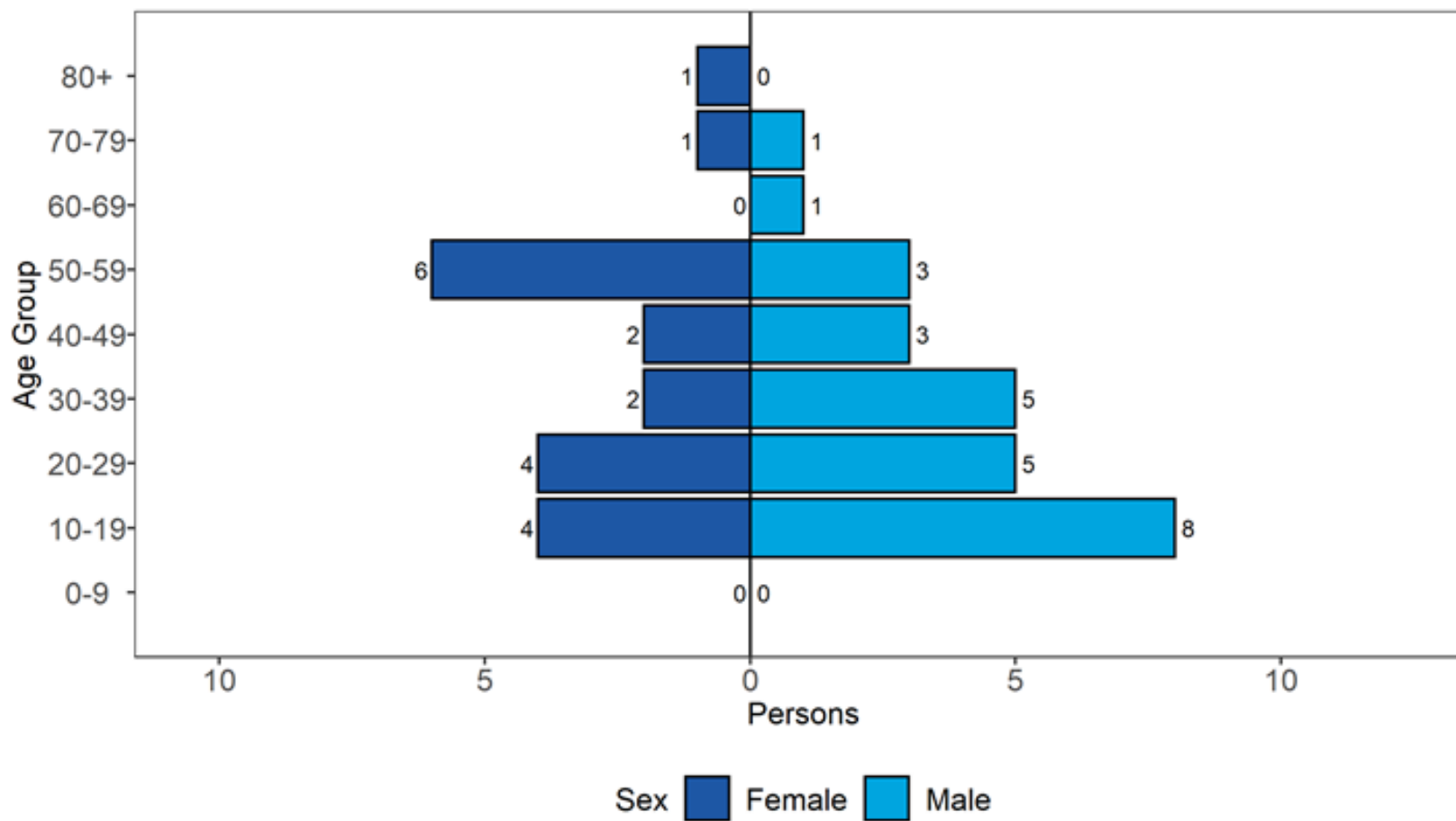


Figure 25. Age and sex pyramid of Mu cases as of 11 October 2021

(Find accessible data used in this graph in [underlying data](#).)



4 cases excluded where sex or age not reported

Sources and acknowledgments

Data sources

Data used in this investigation is derived from the COG-UK data set, the UKHSA Second Generation Surveillance System (SGSS), NHS Test and Trace, the Secondary Uses Service (SUS) data set and Emergency Care Data Set (ECDS). Data on international cases are derived from reports in GISAID, the media and information received via the International Health Regulations National Focal Point (IHRNFP) and Early Warning and Response System (EWRS).

Repository of human and machine-readable genomic case definitions

A repository containing the up-to-date genomic definitions for all VOC and VUI as curated by Public Health England was created 5 March 2021. The repository can be accessed on GitHub. They are provided to facilitate standardised VOC and VUI calling across sequencing sites and bioinformatics pipelines and are the same definitions used internally at Public Health England. 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

Authors of this report

UKHSA Genomics Cell
UKHSA Outbreak Surveillance Team
UKHSA Epidemiology Cell
UKHSA Contact Tracing Cell Data Team
UKHSA International Cell

Variant Technical Group membership

The UKHSA Variant Technical Group includes representation from the following organisations: UKHSA, DHSC, BEIS, Public Health Wales, Public Health Scotland, Public Health Agency Northern Ireland, Imperial College London, London School of Hygiene and Tropical Medicine, University of Birmingham, University of Cambridge, University of Edinburgh, University of Liverpool, the Wellcome Sanger Institute.

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About the UK Health Security Agency

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