



UK Health  
Security  
Agency

# **Weekly national Influenza and COVID-19 surveillance report**

Week 47 report (up to week 46 data)

24 November 2022

# Contents

Change history.....	4
Executive summary.....	4
Laboratory surveillance.....	6
Confirmed COVID-19 cases (England).....	6
Possible SARS-CoV-2 reinfection in England .....	12
Respiratory DataMart system (England).....	13
Community surveillance .....	18
Acute respiratory infection incidents .....	18
FluSurvey .....	26
Google search queries .....	29
Flu Detector .....	31
NHS 111 .....	32
Primary care surveillance .....	35
RCGP (England).....	35
UK .....	37
Sentinel swabbing scheme in England .....	38
GP In Hours, Syndromic Surveillance .....	40
GP Out of Hours, Syndromic Surveillance.....	42
Secondary care surveillance .....	43
SARI Watch.....	43
Hospitalisations, SARI Watch.....	44
ICU or HDU admissions, SARI Watch .....	48
ECMO, SARI Watch .....	52
RSV admissions, SARI Watch.....	53
Emergency Department attendances, Syndromic surveillance .....	55
Mortality surveillance .....	60
COVID-19 deaths .....	60
Daily excess all-cause mortality (England) .....	62
Microbiological surveillance .....	67
Influenza virus characterisation .....	67

Influenza antiviral susceptibility .....	68
SARS-CoV-2 variants.....	69
Antimicrobial susceptibility.....	72
COVID-19 sero-prevalence surveillance .....	73
Influenza vaccination .....	74
Influenza vaccine uptake in GP patients.....	74
Influenza vaccine uptake in school age children .....	76
Influenza vaccine uptake in healthcare workers .....	76
COVID-19 vaccination.....	77
COVID-19 vaccine uptake in England .....	77
International update .....	91
Global COVID-19 update.....	91
Global influenza update .....	91
Other respiratory viruses .....	94
Related links .....	95
About the UK Health Security Agency .....	96

For additional information including regional data on COVID-19 and other respiratory viruses, COVID-19 in educational settings, co- and secondary infections with COVID-19 and other data supplementary to this report, please refer to the [accompanying graph pack](#).

## Change history

Due to a duplication of columns, the final column of Table 8 within this report was incorrect. This has now been corrected in this revised publication issued on 25 November 2022.

## Executive summary

This report summarises the information from the surveillance systems which are used to monitor coronavirus (COVID-19), influenza, and other seasonal respiratory viruses in England. References to COVID-19 represent the disease name and SARS-CoV-2 represent the virus name. The report is based on data from week 46 (between 14 and 20 November 2022) and for some indicators daily data up to 22 November 2022.

At a national level, COVID-19 activity decreased in most indicators in week 46 of 2022. Influenza activity increased this week across surveillance indicators.

COVID-19 case rates through Pillar 1 decreased in week 46 overall, in all age groups, genders, regions and ethnic groups. Pillar 1 positivity also decreased in week 46 overall.

Through Respiratory Datamart, influenza positivity increased to 8.2% in week 46; positivity was highest in those aged 5 to 14 years at 18.0% followed by those aged 15 to 44 years at 15.8%. SARS-CoV-2 positivity increased slightly to 5.0%. Respiratory syncytial virus (RSV) positivity increased to 11.7% in week 46, with the highest positivity in those under 5 years at 33.2%. Adenovirus positivity increased to 2.6% in week 46. Rhinovirus positivity decreased to 14.2% overall. Parainfluenza positivity remained low at 1.7%. Human metapneumovirus (hMPV) positivity remained low at 2.1% in week 46.

The overall number of reported acute respiratory infection (ARI) incidents decreased compared with the previous week, with the highest number of incidents continuing to be in care homes (49 with COVID-19 detected). The number of influenza confirmed outbreaks in care homes increased to 10. Through NHS 111, calls for cold/flu and for coughs increased nationally.

Through primary care surveillance, influenza-like-illness consultations increased and remained below baseline. The lower respiratory tract infection indicator and the COVID-19 indicator increased slightly. Through sentinel GP swabbing, SARS-CoV-2 positivity remained stable while influenza positivity increased to 13.3%.

Overall, COVID-19 hospitalisations and ICU admissions decreased in week 46. Hospitalisations were highest in the 85 years and over age group. Influenza hospital admissions increased, continuing to exceed the baseline threshold. Influenza admissions were highest in those under 5 years, followed by 75 to 84 year olds and those aged 85 years and over. Influenza ICU admissions increased and is now in the medium intensity threshold. The RSV hospitalisation rate increased in the under 5 years age group. Emergency department attendances for COVID-

19-like illnesses remained stable while acute respiratory infections and influenza-like-illness increased.

Deaths with COVID-19 decreased in week 45 and no excess deaths were observed.

The COVID-19 Autumn booster vaccination campaign commenced in early September. By the end of week 46, 60.6% of all people aged over 50 years had been vaccinated with an Autumn booster dose.

Influenza vaccine uptake for the 2022 to 2023 influenza season has been reported weekly since week 41. The trend in vaccine uptake compared with the previous 2021 to 2022 season is comparable for 65 year olds and over, for those under 65 years in clinical risk groups, and for pregnant women, but lower in and 2 and 3 year olds. Monthly data is published for the second time this season.

# Laboratory surveillance

## Confirmed COVID-19 cases (England)

From 1 April 2022, the government ended provision of widespread community testing in England, as outlined in the plan for [living with COVID-19](#). From week 15 2022, confirmed COVID-19 episodes and positivity through Pillar 1 are presented in this report, with Pillar 2 data available in the accompanying graph pack. Routine asymptomatic testing through NHS settings has been paused from 31 August, this will have an effect on Pillar 1 case rates and positivity rates.

As of 9am on 22 November 2022, a total of 1,914,991 episodes have been confirmed for COVID-19 in England under Pillar 1, and 18,347,357 episodes have been confirmed for COVID-19 in England under Pillar 2, since the beginning of the pandemic.

COVID-19 case rates through Pillar 1 decreased in week 46 overall, in all age groups, genders, regions and ethnic groups. Pillar 1 positivity also decreased in week 46 overall.

### Data notes:

Changes to testing policies over time may affect positivity rates and incidence rates and should be interpreted accordingly.

From 31 January 2022, UK Health Security Agency (UKHSA) moved all COVID-19 case reporting in England to use a new episode-based definition which includes possible reinfections. Each infection episode is counted separately if there are at least 91 days between positive test results (polymerase chain reaction (PCR) or rapid lateral flow device). Each infection episode begins with the earliest positive specimen date. Further information can be found on the [UK COVID-19 dashboard](#).

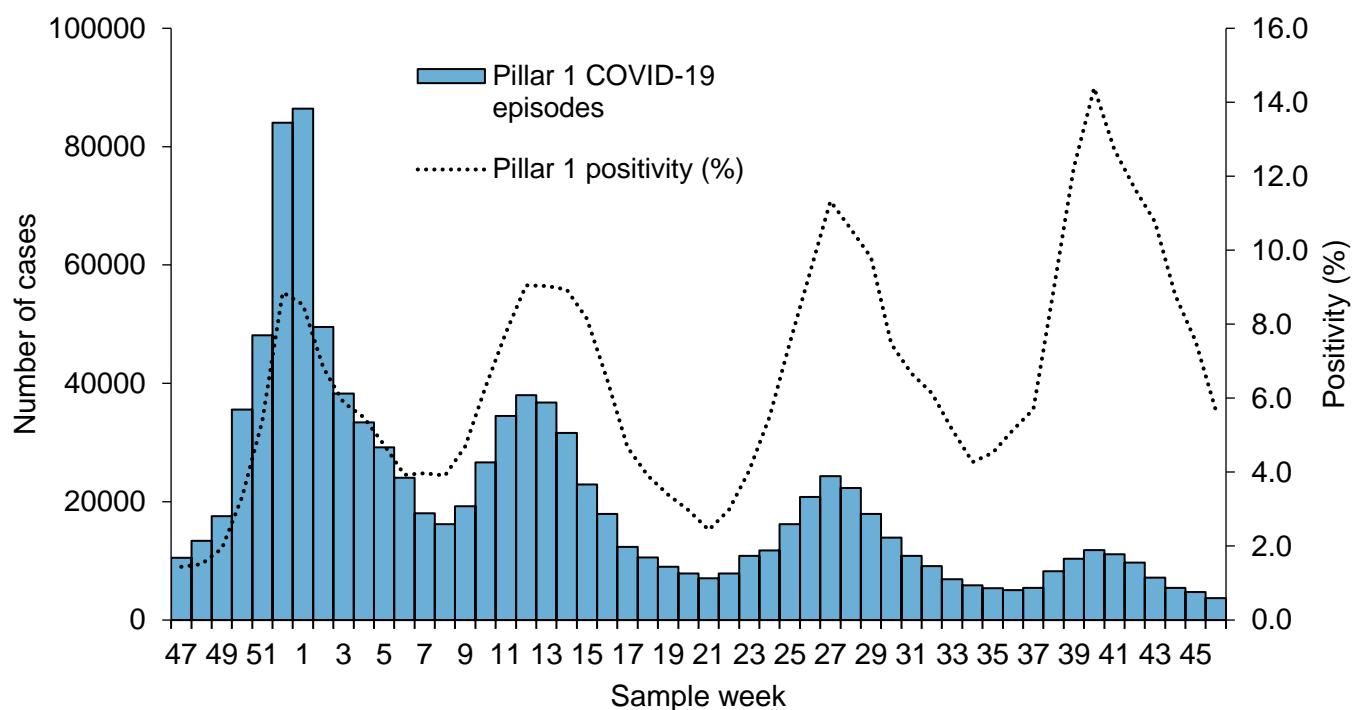
From the week 32 2021 report onwards, case rates have been updated to use the latest Office for National Statistics (ONS) population estimates for mid-2020. Previously case rates were calculated using the mid-2019 population estimates. Rates by ethnicity and Indices of Multiple Deprivation (IMD) quantile will continue to be presented using the mid-2019 estimates, until the mid-2020 estimates become available.

Please note that positivity is presented as positivity by PCR testing only. Positivity is calculated as the number of individuals testing positive during the week divided by the number of individuals tested during the week through PCR testing.

Data is shown by the week the specimen was taken from the person being tested. This gives the most accurate analysis of this time progression. However, for the most recent week results for more samples are expected therefore this should be interpreted with caution.

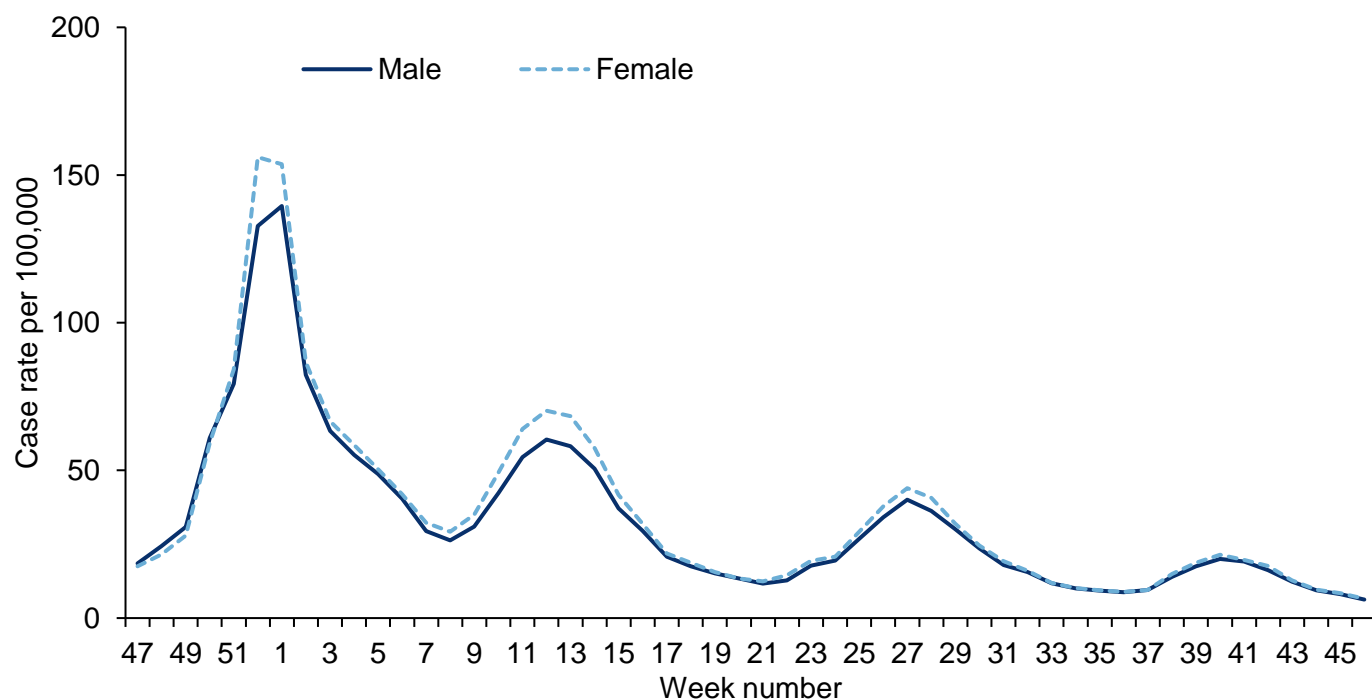
Data source: Second Generation Surveillance System (SGSS)

**Figure 1: Confirmed COVID-19 episodes tested under Pillar 1, based on sample week with overall weekly PCR positivity for Pillar 1 (%)**

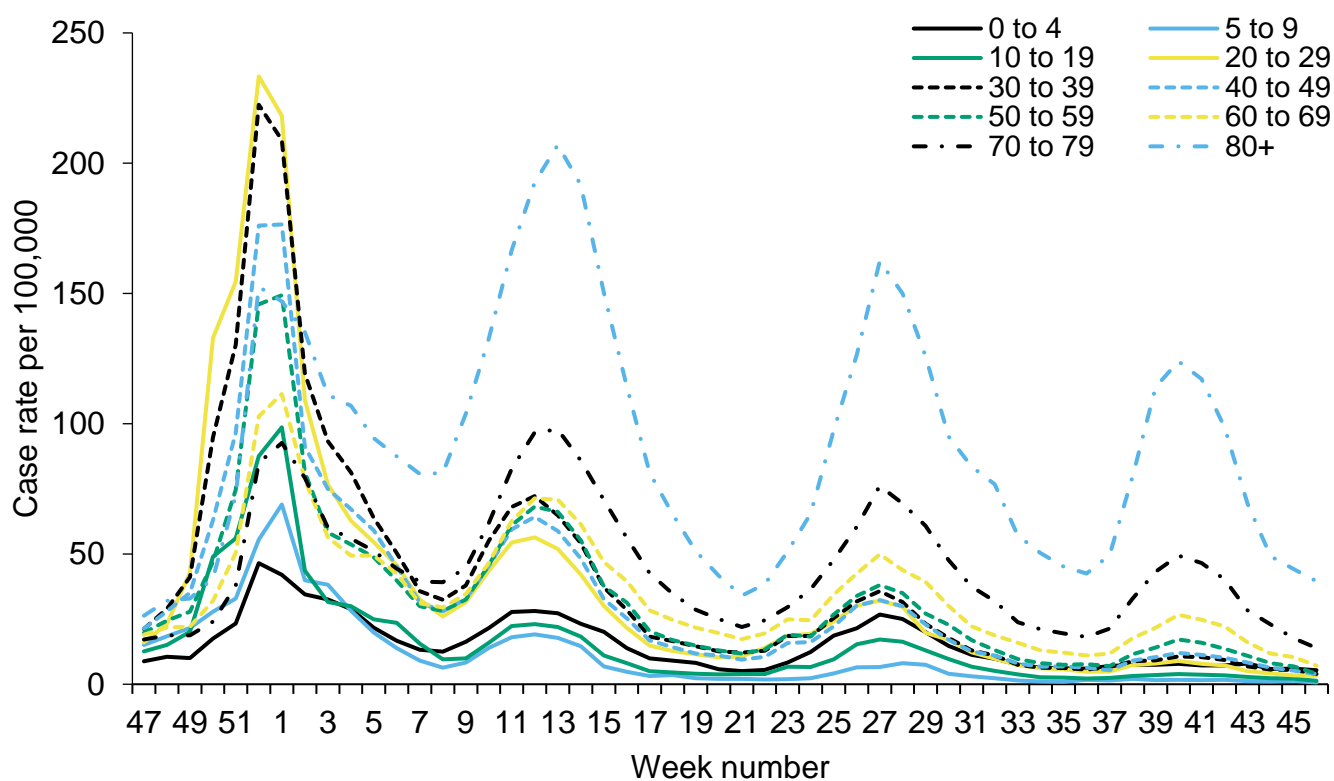


## Age and sex

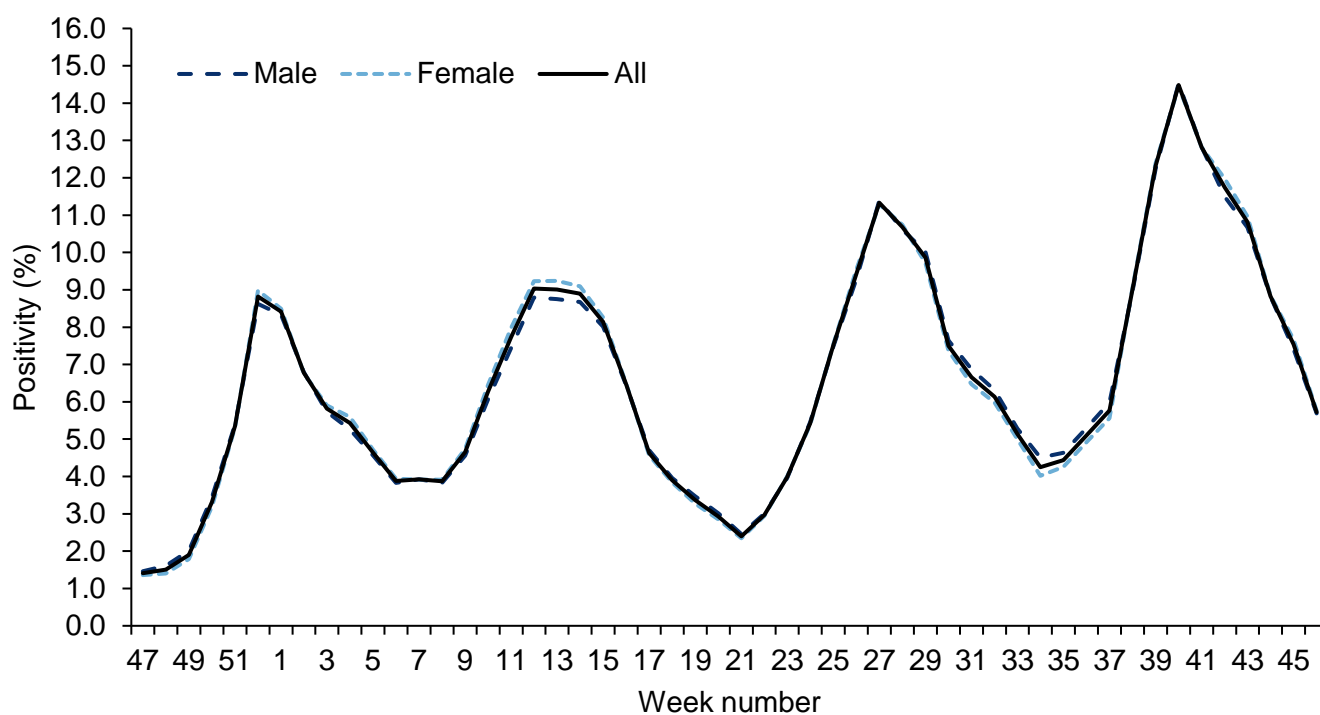
**Figure 2: Weekly confirmed COVID-19 case rates per 100,000, by episode, tested under Pillar 1, by sex**



**Figure 3: Weekly confirmed COVID-19 case rates per 100,000, by episode, tested under Pillar 1, by age group**



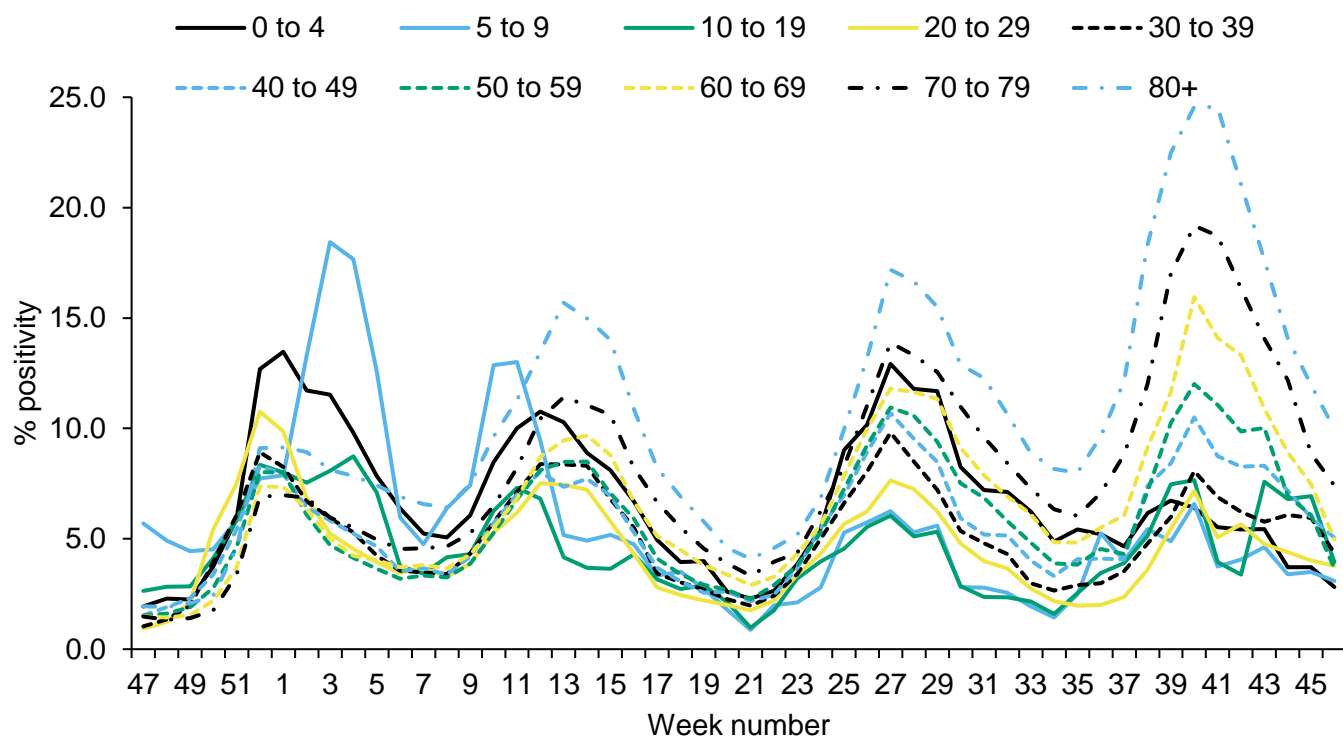
**Figure 4: Weekly PCR positivity (%) of confirmed COVID-19 cases tested overall and by sex under Pillar 1**



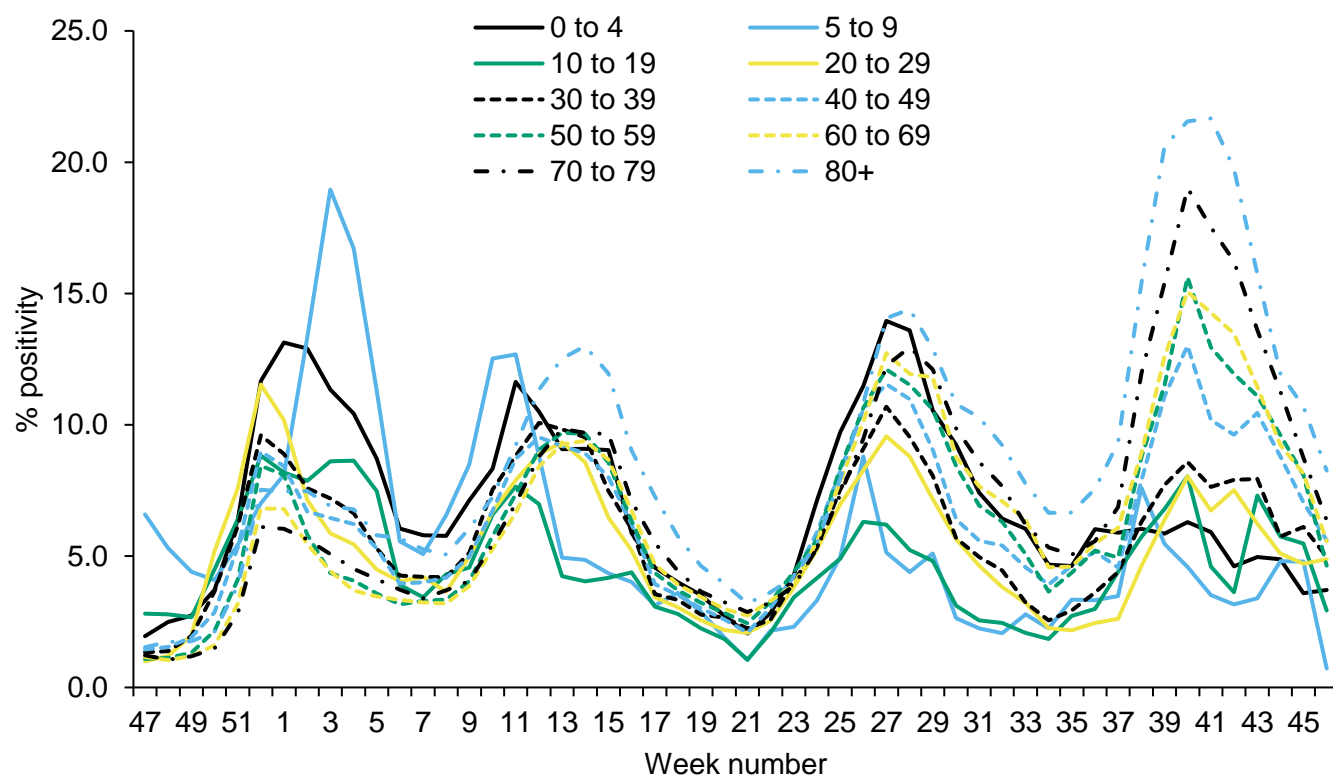


**Figure 5: Weekly PCR positivity (%) of confirmed COVID-19 cases tested under Pillar 1, (a) by male and age group and (b) by female and age group**

(a) Pillar 1 - Male

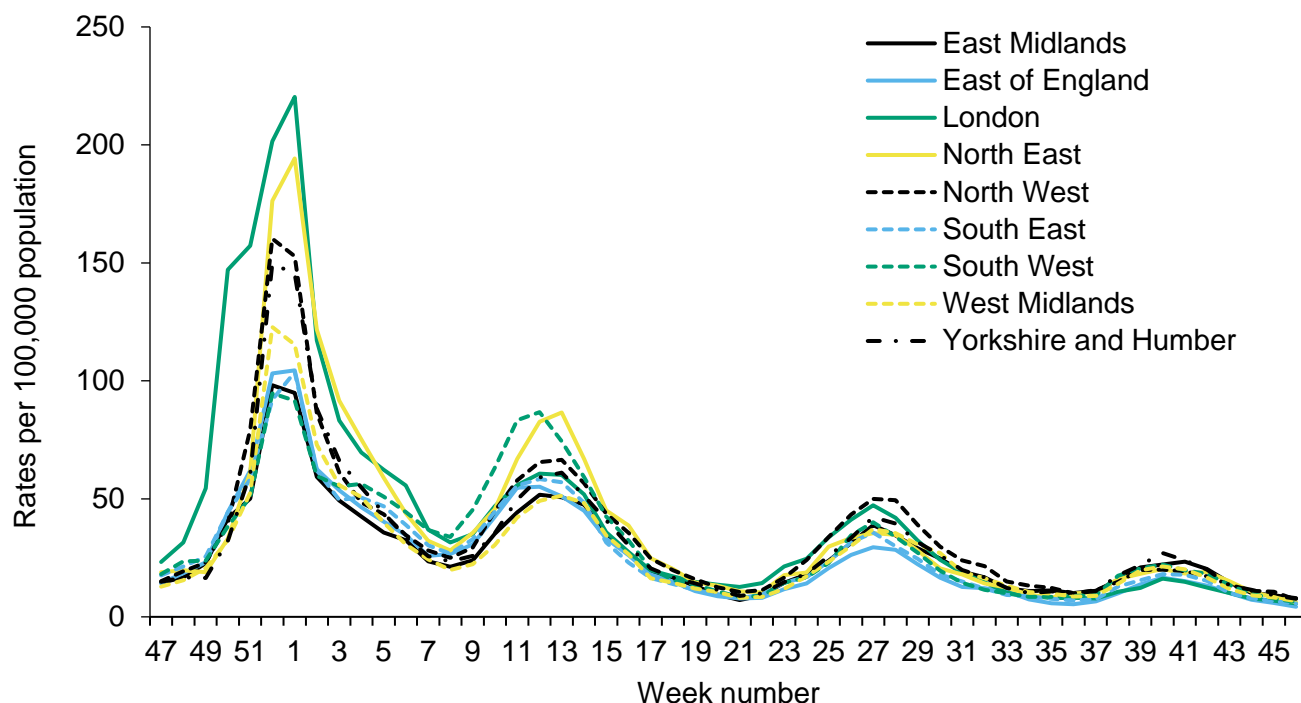


(b) Pillar 1 - Female

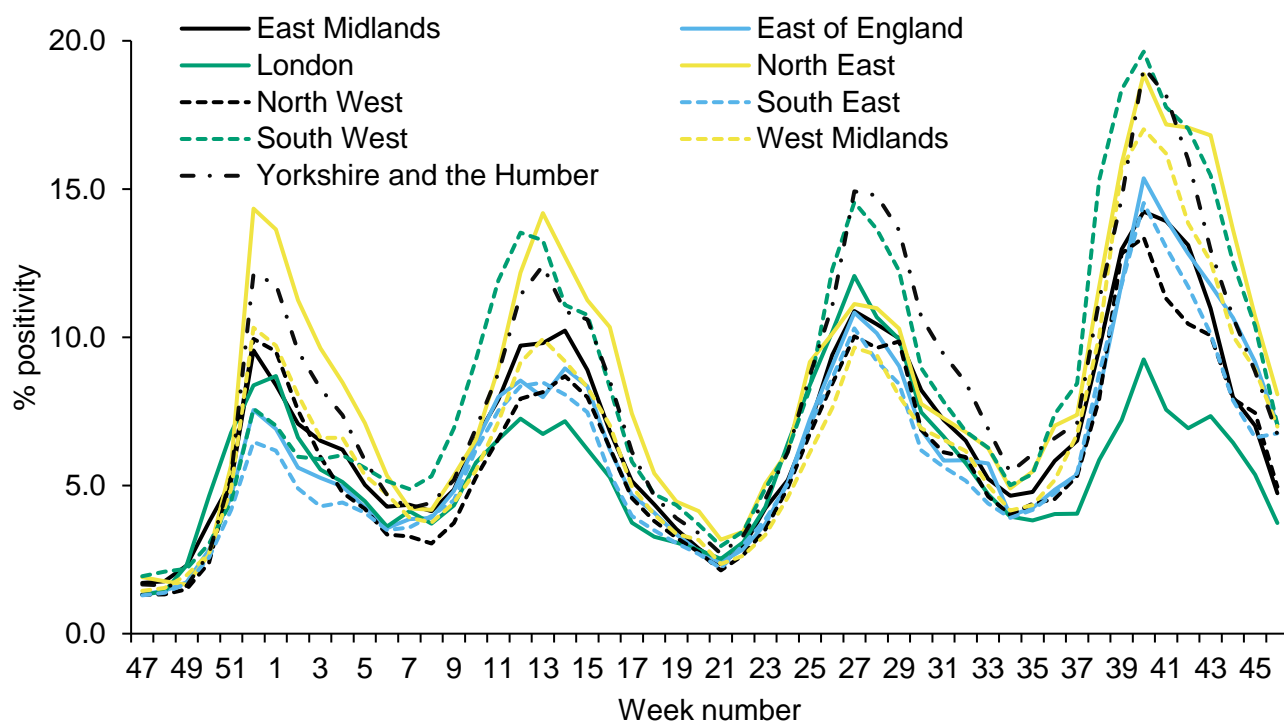


## Geography

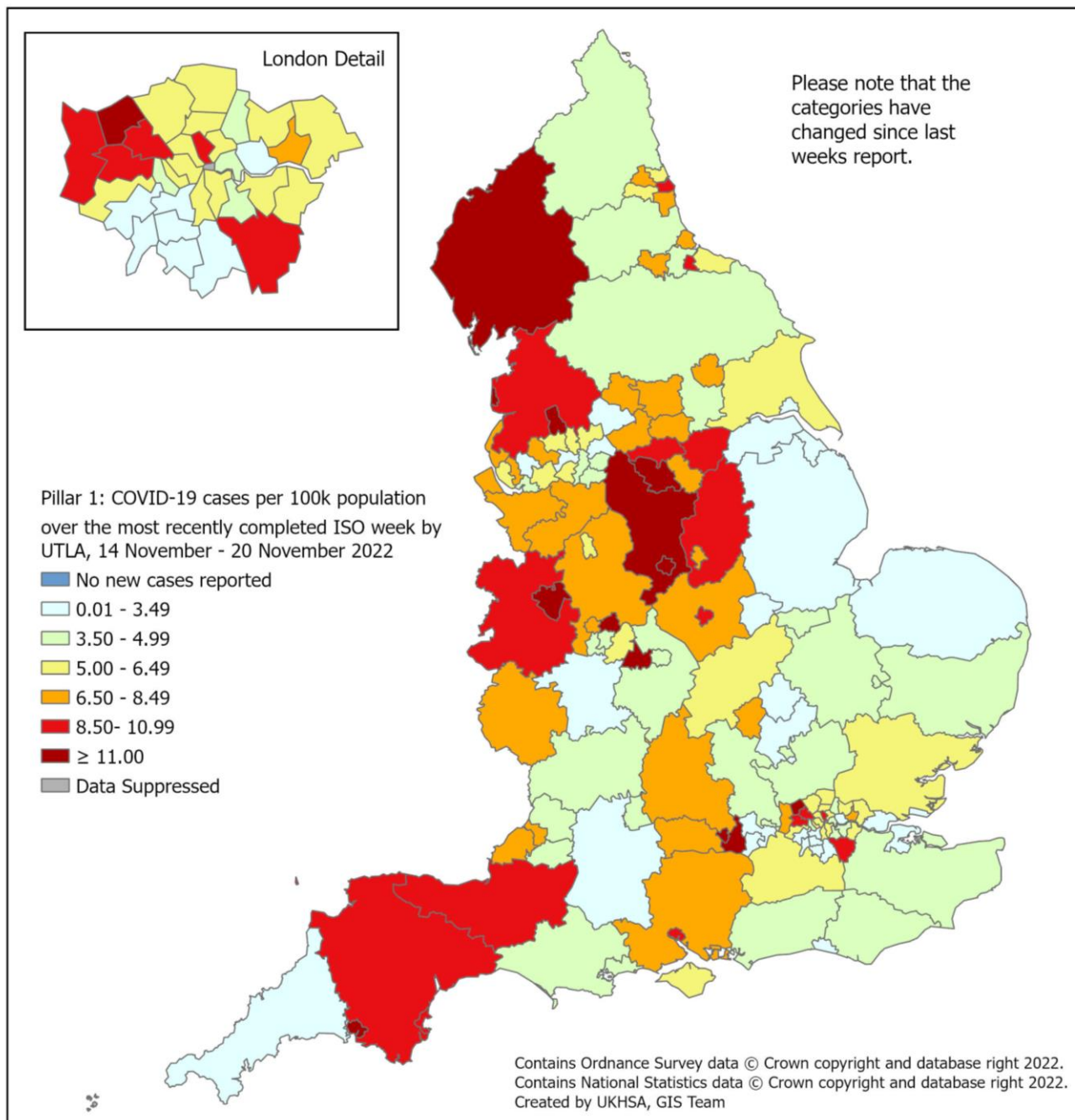
**Figure 6: Weekly confirmed COVID-19 case rates by episode, per 100,000 population (Pillar 1), by UKHSA centres and sample week**



**Figure 7: Weekly PCR positivity of confirmed COVID-19 cases tested under Pillar 1 (%) by UKHSA centres and sample week**

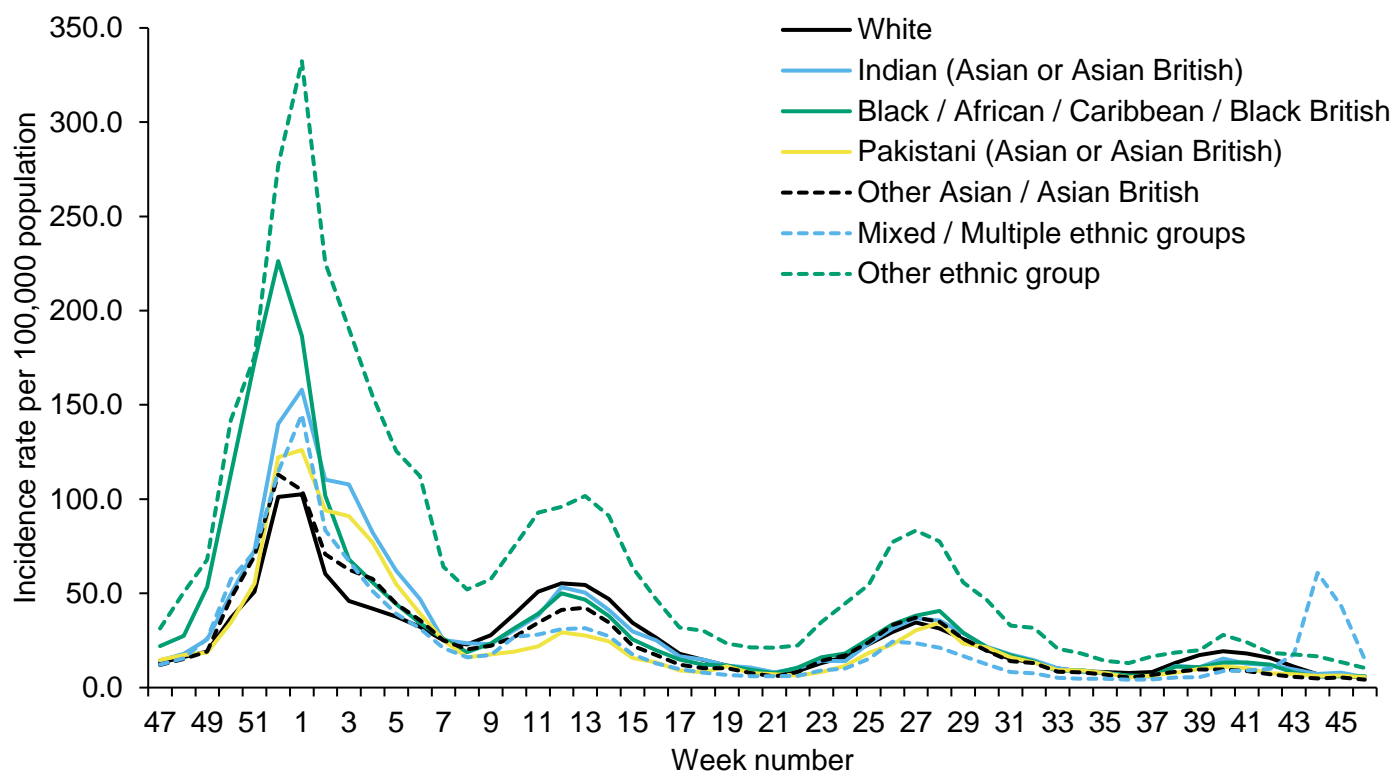


**Figure 8: Weekly rate of COVID-19 episodes per 100,000 population (Pillar 1), by upper-tier local authority (UTLA), England (box shows enlarged map of London area)**



## Ethnicity

**Figure 9: Weekly incidence per 100,000 population by ethnicity (Pillar 1), England**



\*the incidence rates on Figure 9 have been calculated using the mid-2019 ONS population estimates

## Possible SARS-CoV-2 reinfection in England

SARS-CoV-2 reinfections data is not currently being published. For previous updates please see previous editions of this report.

## Respiratory DataMart system (England)

The Respiratory Datamart system began during the 2009 influenza pandemic to collate all laboratory testing information in England. It is now used as a sentinel laboratory surveillance tool, monitoring all major respiratory viruses in England. Sixteen laboratories in England will be reporting data for this season. As this is based on a sample of labs, SARS-CoV-2 positivity figures quoted here will differ from those quoted in the Confirmed COVID-19 cases section, however, they are included to allow comparison with data on other respiratory viruses.

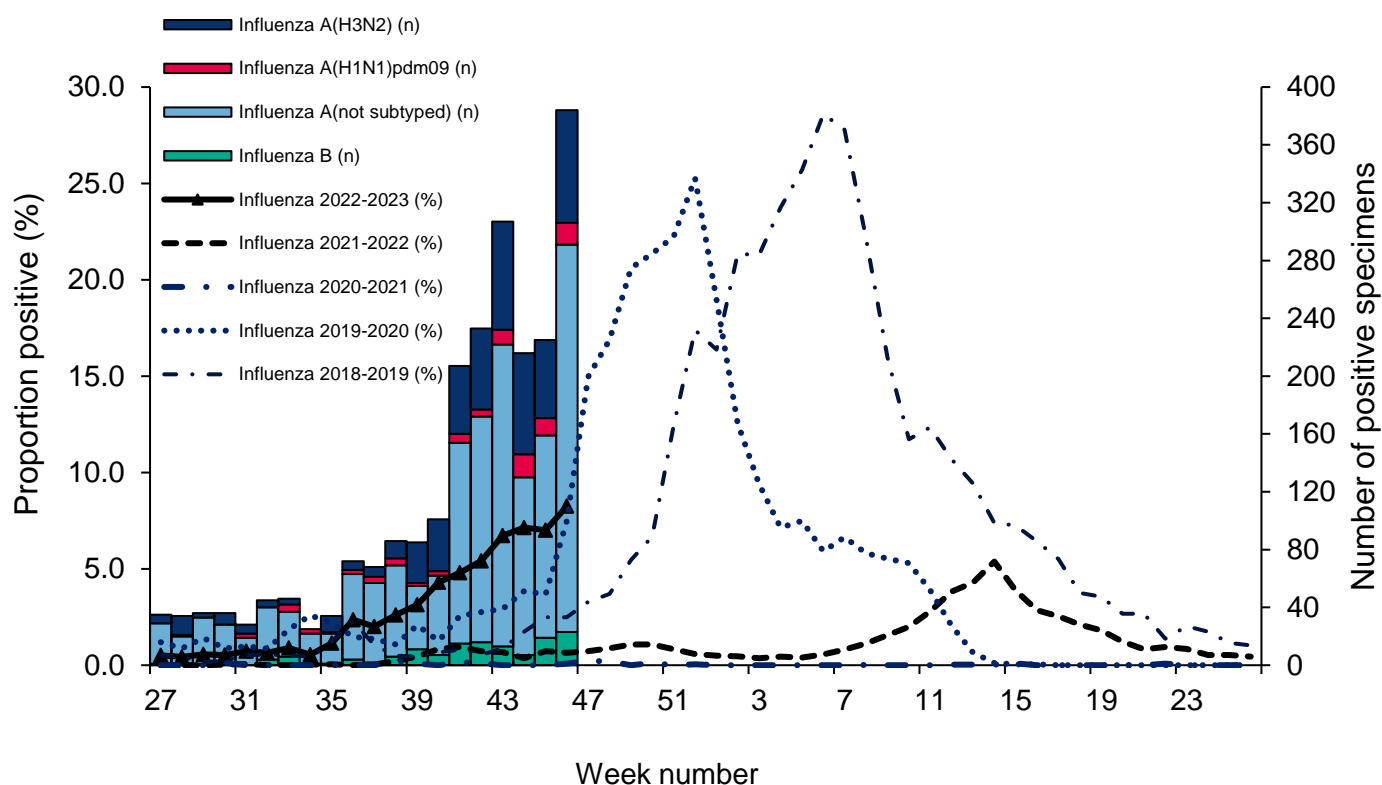
In week 46 of 2022, out of the 13,490 respiratory specimens reported through the Respiratory DataMart System (based on data received from 13 out of 16 laboratories), 672 samples were positive for SARS-CoV-2 with an overall positivity of 5.0%. The highest positivity was noted in those aged 65 years and over at 5.8%.

The overall influenza positivity remained fairly stable at 8.2% in week 46, with 361 samples testing positive for influenza (including 15 influenza A(H1N1)pdm09, 78 influenza A(H3), 268 influenza A(not subtyped) and 23 influenza B).

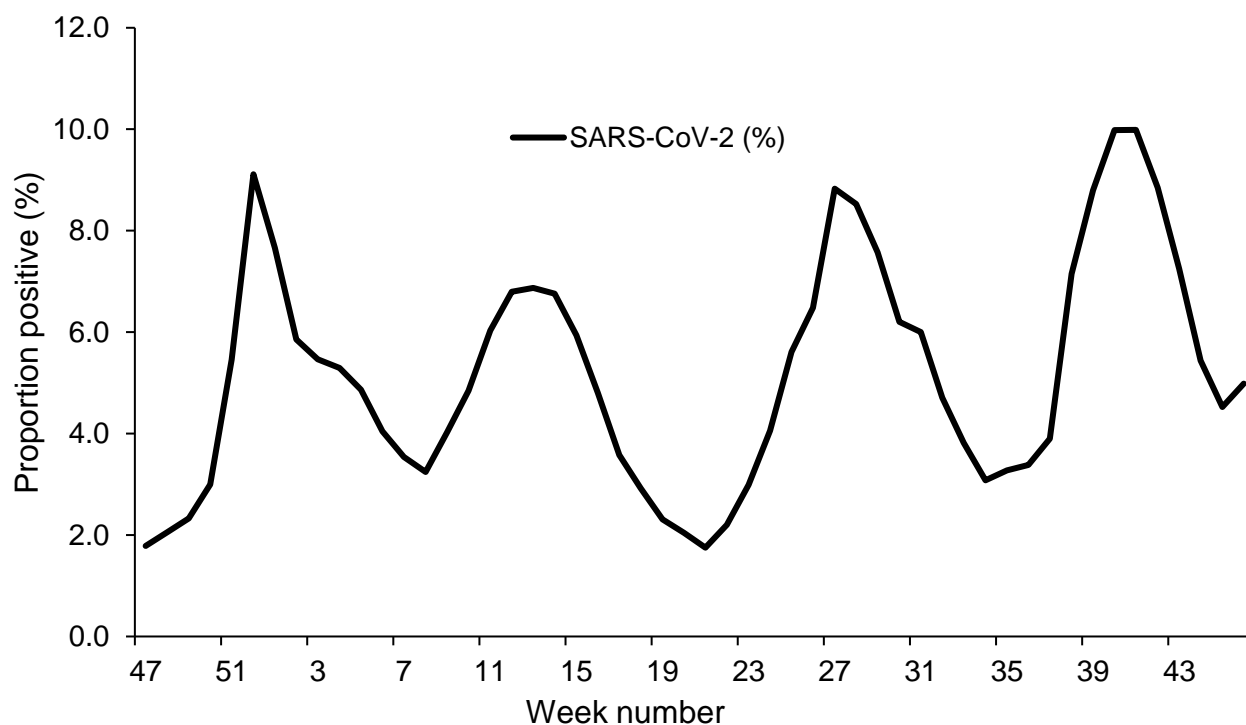
Respiratory syncytial virus (RSV) positivity increased to 11.7% in week 46, with the highest positivity in those aged under 5 years at 33.2%.

Adenovirus positivity increased to 2.6% in week 46. Rhinovirus positivity decreased to 14.2% overall. Parainfluenza positivity remained low at 1.7%. Human metapneumovirus (hMPV) positivity remained low at 2.1% in week 46 (Figure 12).

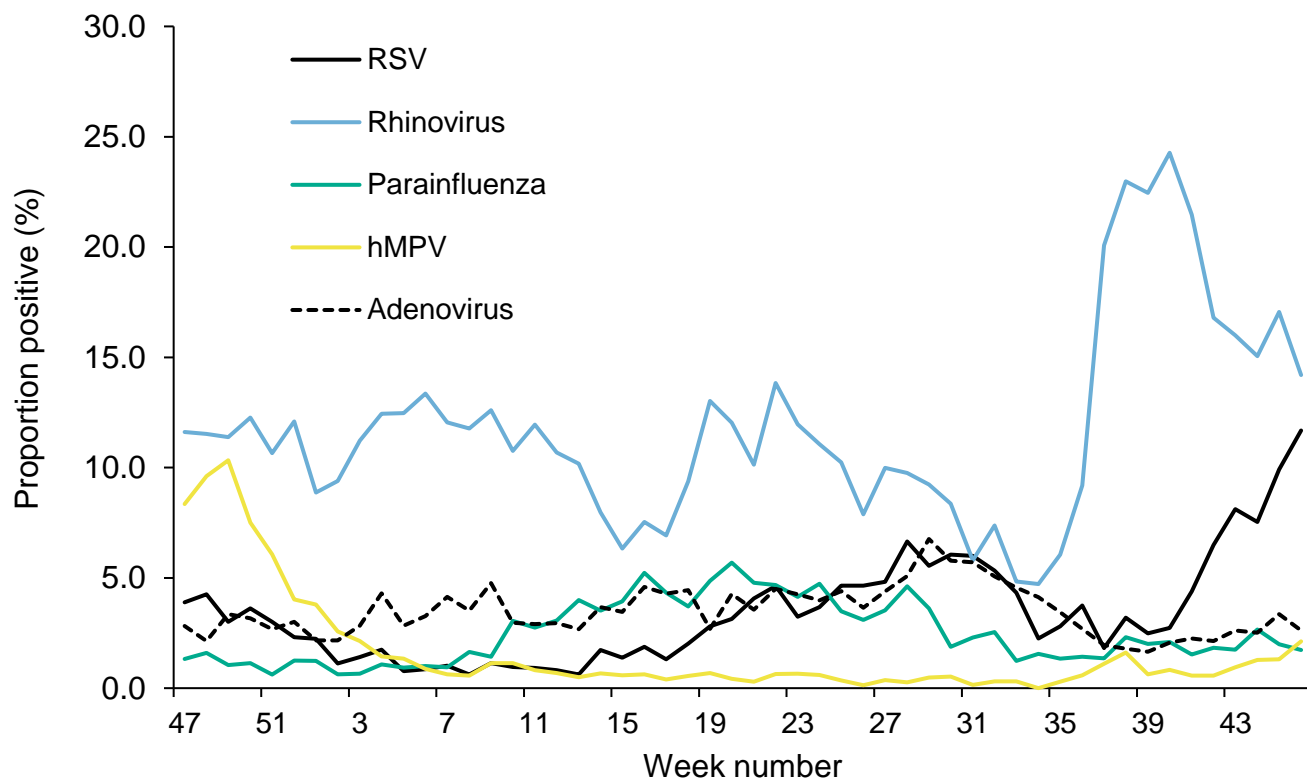
**Figure 10: Respiratory DataMart samples positive for influenza and weekly positivity (%) for influenza, England**



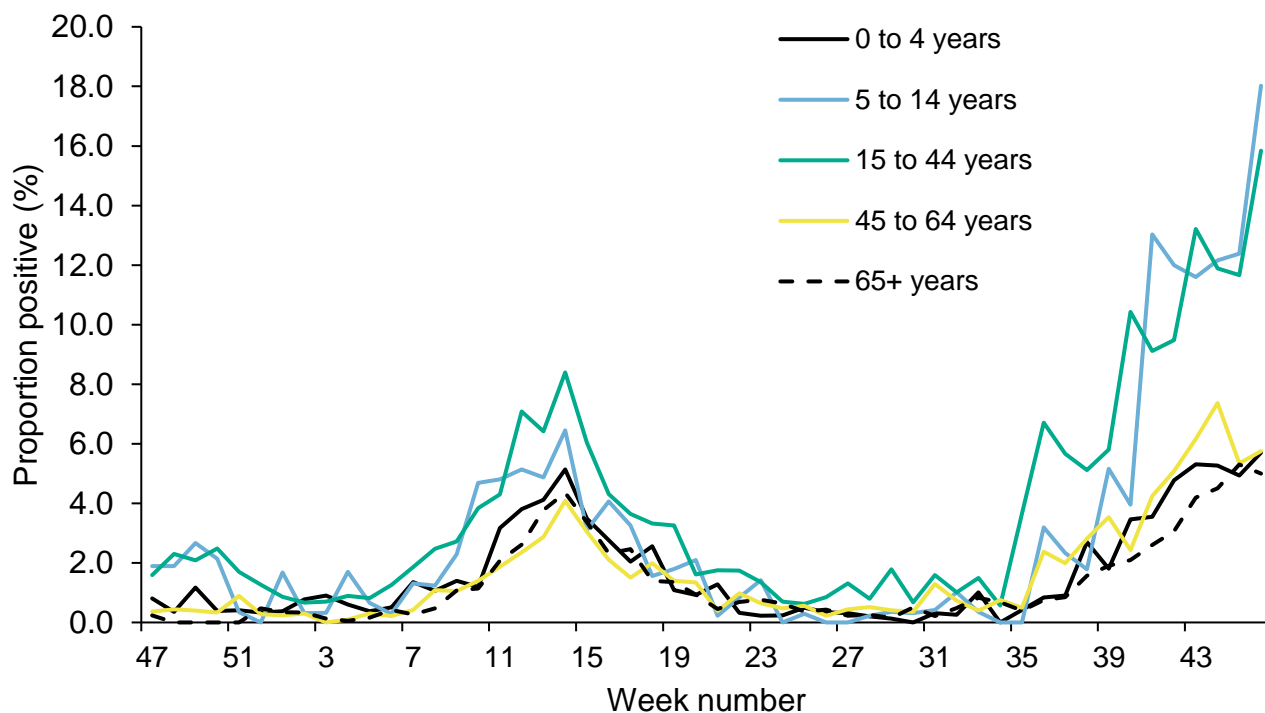
**Figure 11: Respiratory DataMart weekly positivity (%) for SARS-CoV-2, England**



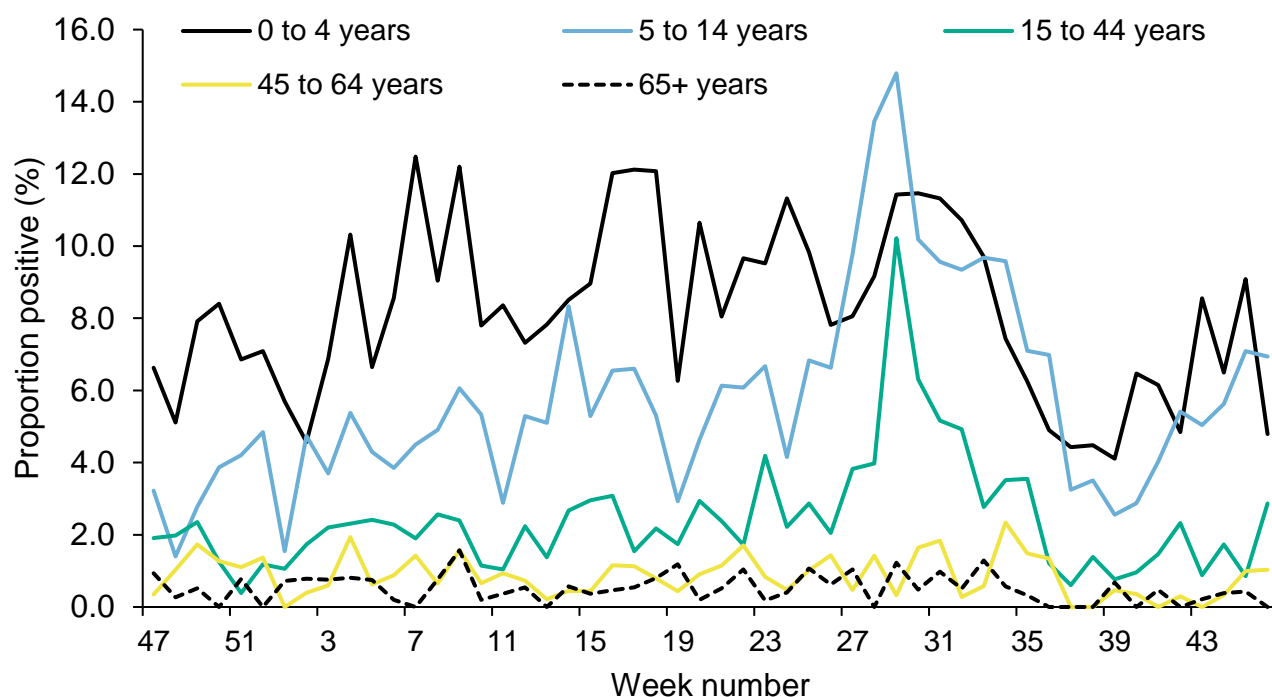
**Figure 12: Respiratory DataMart weekly positivity (%) for other respiratory viruses, England**



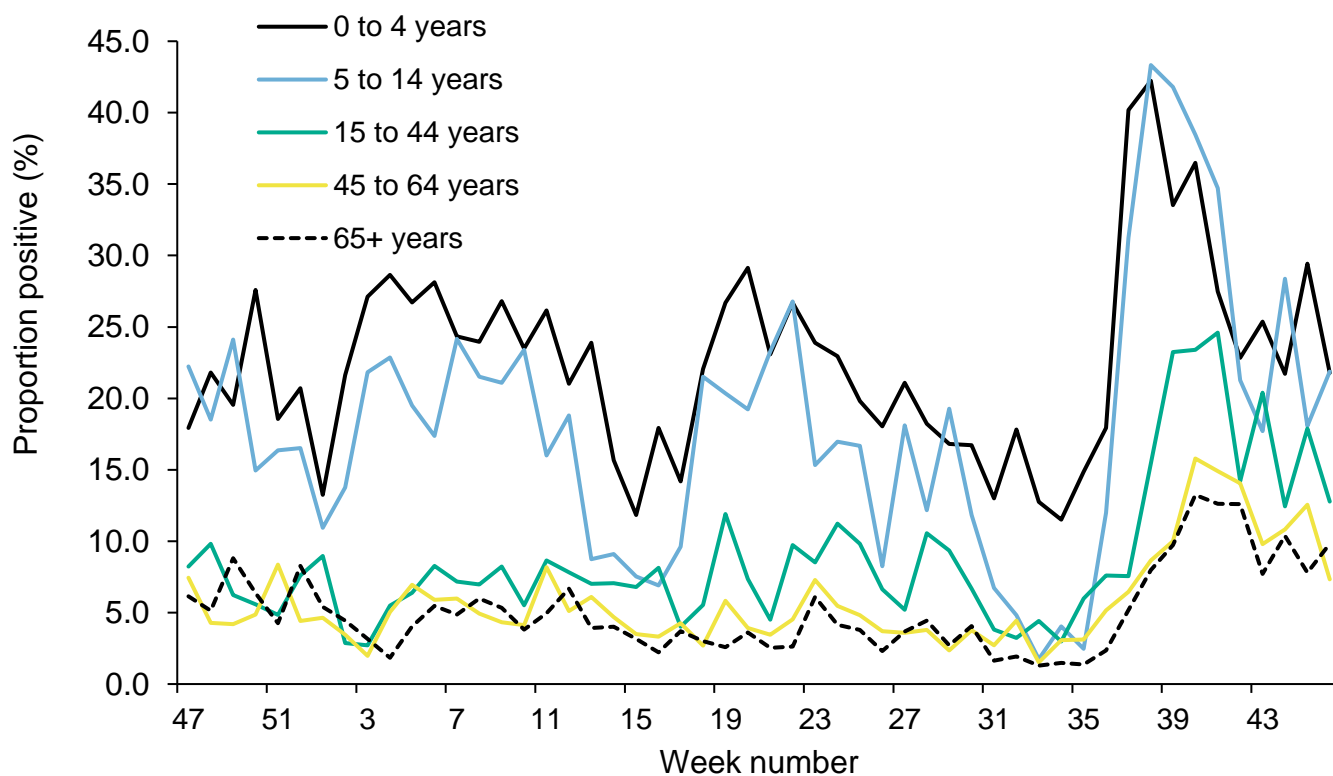
**Figure 13: Respiratory DataMart weekly positivity (%) for influenza by age, England**



**Figure 14: Respiratory DataMart weekly positivity (%) for adenovirus by age, England**

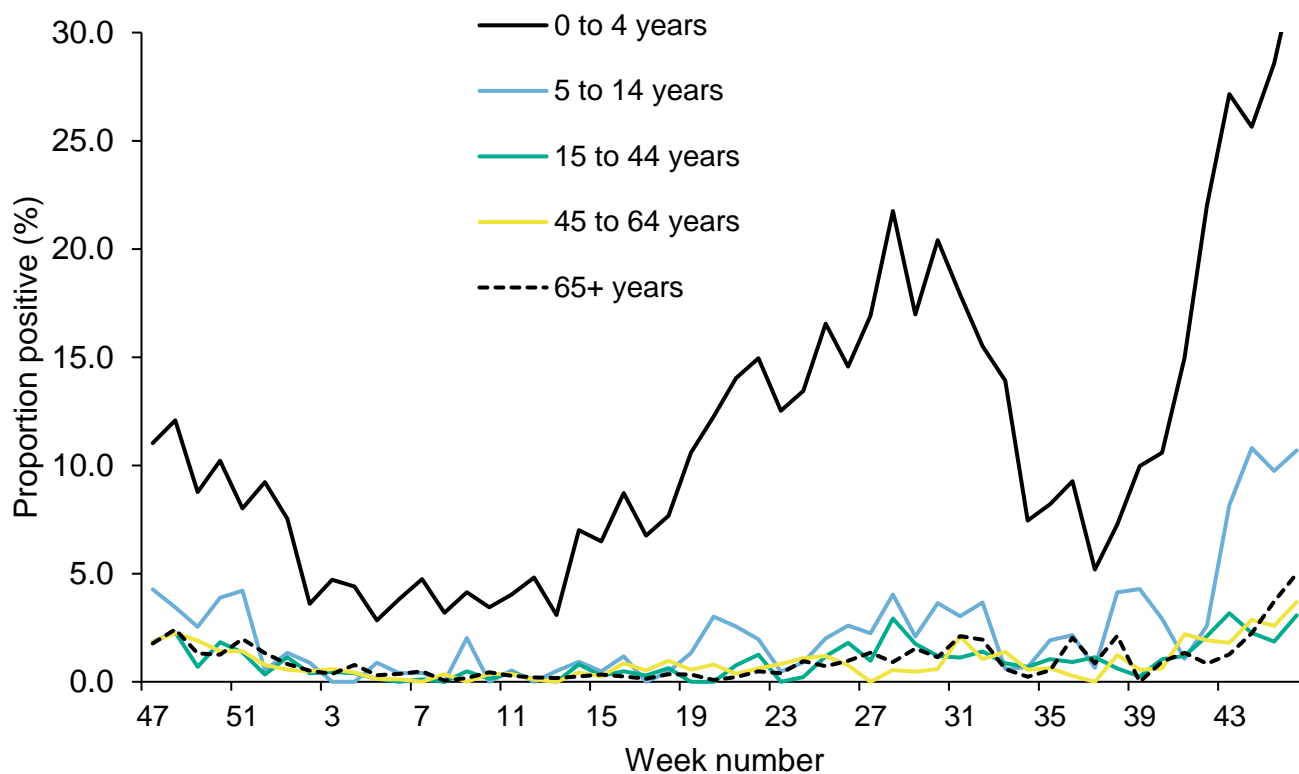


**Figure 15: Respiratory DataMart weekly positivity (%) for rhinovirus by age, England**





**Figure 16: Respiratory DataMart weekly positivity (%) for RSV by age, England**



# Community surveillance

## Acute respiratory infection incidents

Here we present data on acute respiratory infection (ARI) incidents in different settings that are reported to UKHSA Health Protection Teams (HPTs) and entered onto an online web-based platform called HPZone. Incidents are suspected outbreaks of acute respiratory infections linked to a particular setting. All suspected outbreaks are further investigated by the HPT in liaison with local partners.

The ARI definition includes presentations of both an influenza-like illness (ILI) and other acute viral respiratory infections (AVRI). Causal pathogens can include Influenza A and B, Respiratory Syncytial Virus (RSV), adenovirus, rhinovirus, parainfluenza, human metapneumovirus (hMPV) and SARS-CoV-2.

Data for England, Scotland and Northern Ireland are included in the UK figures.

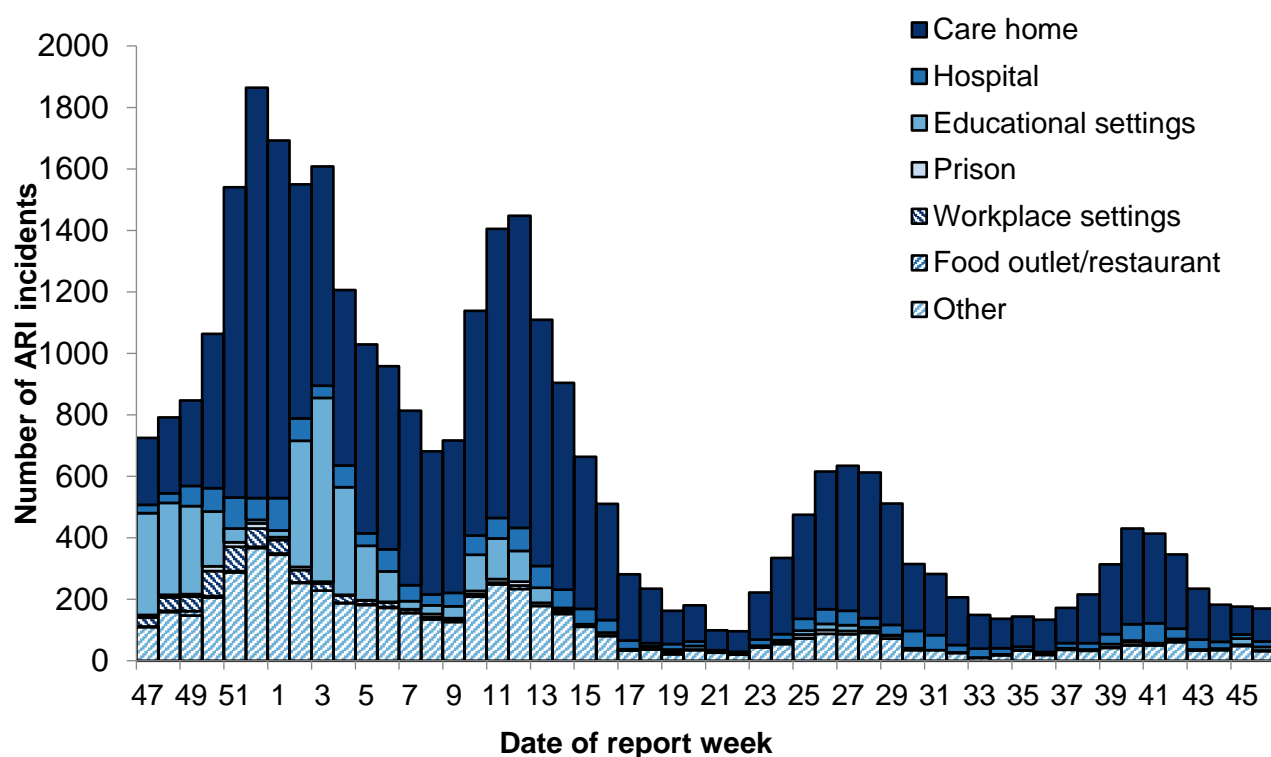
### Data caveats:

1. The incidents captured on HPZone represent a subset of all ongoing ARI clusters and outbreaks in England rather than an exhaustive listing.
2. In addition, SARS-CoV2 testing policies and public health guidance for different settings changed over time. This means that any interpretation of seasonal and temporal trends since March 2020 should take this into account.
3. It should be noted that the denominator for the different settings will vary significantly. For example, there are fewer hospitals than workplaces. In addition, the propensity to report incidents to UKHSA also varies significantly by setting. This needs to be considered when interpreting the weekly number of reported incidents by setting and caution should be used when making comparisons between settings.
4. Considering the above, comparisons between regions and settings are not advised as they may be misleading.

170 new ARI incidents have been reported in week 46 in the UK (Figure 17).

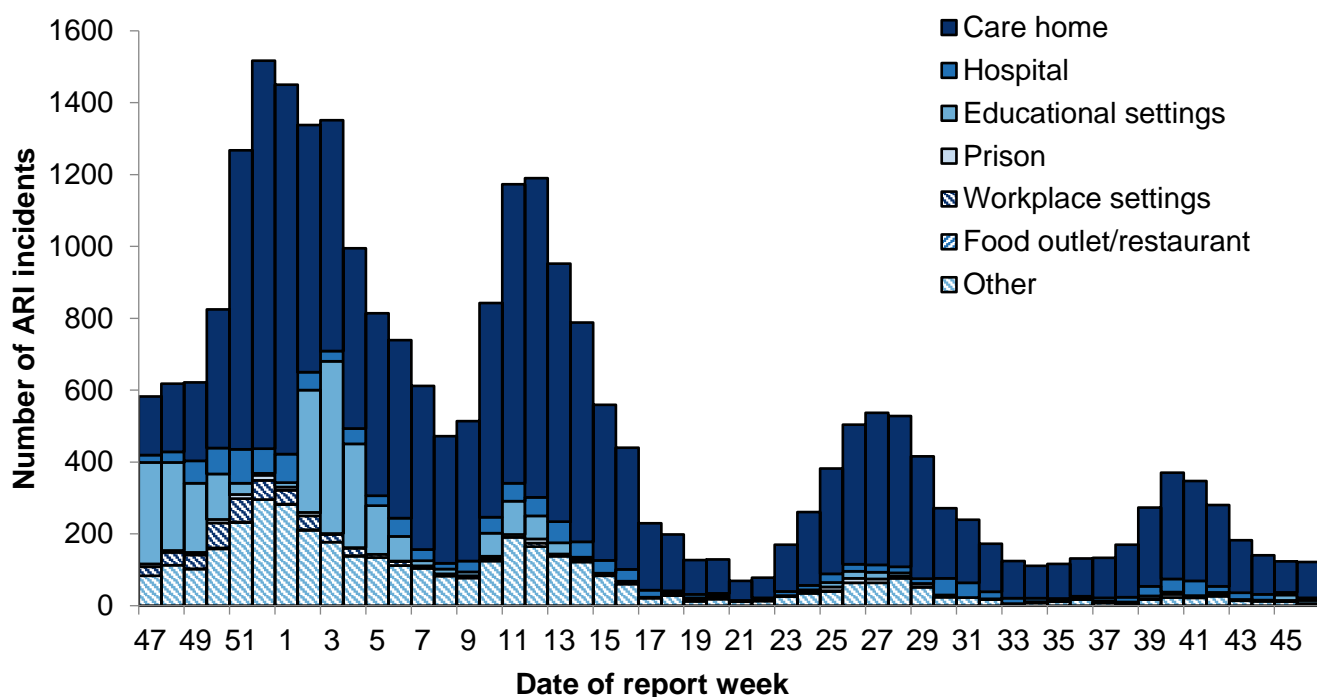
- 107 incidents were from care homes where 49 had at least one linked case that tested positive for SARS-CoV-2, 10 for influenza A(not subtyped), 2 for RSV and one for rhinovirus.
- 18 incidents were from hospitals, where 11 had at least one linked case that tested positive for SARS-CoV-2, 3 for influenza A(not subtyped) and 1 for RSV.
- 12 incidents were from educational settings, with no test result available.
- 2 incidents were from prisons, with no test results available.
- No incidents were from workplace settings.
- No incidents were from a food outlet or restaurant setting.
- 31 incidents were from other settings where 16 had at least one linked case that tested positive for SARS-CoV-2 and 1 for RSV.

**Figure 17: Number of acute respiratory infection (ARI) incidents by setting, UK**

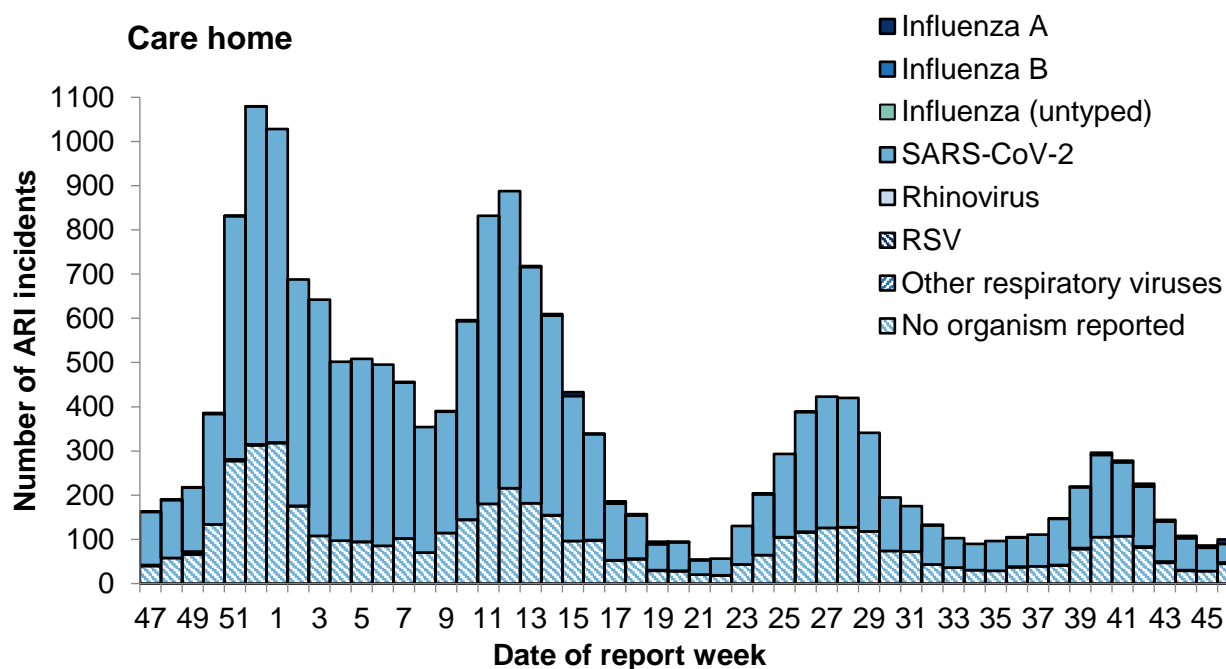


\*Excludes data from Wales

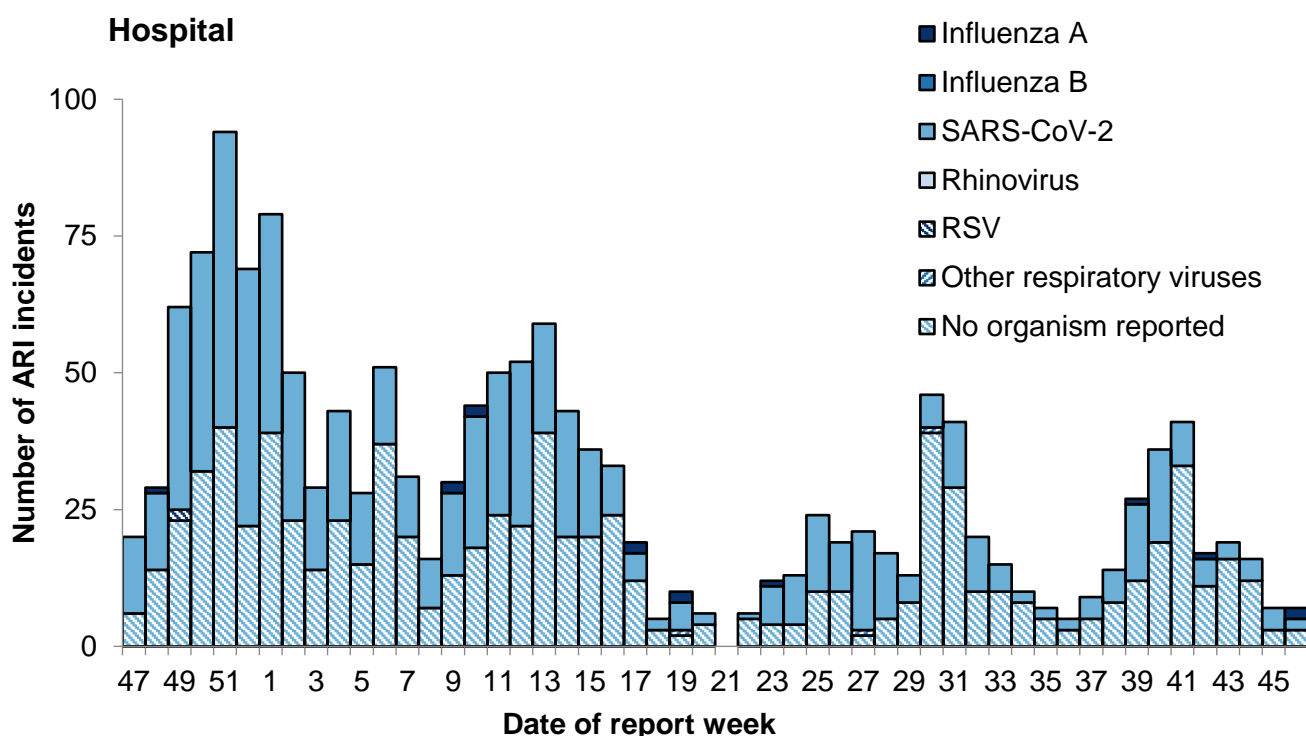
**Figure 18: Number of acute respiratory infection (ARI) incidents by setting, England**



**Figure 19: Number of acute respiratory infection (ARI) incidents in care homes by virus type, England**

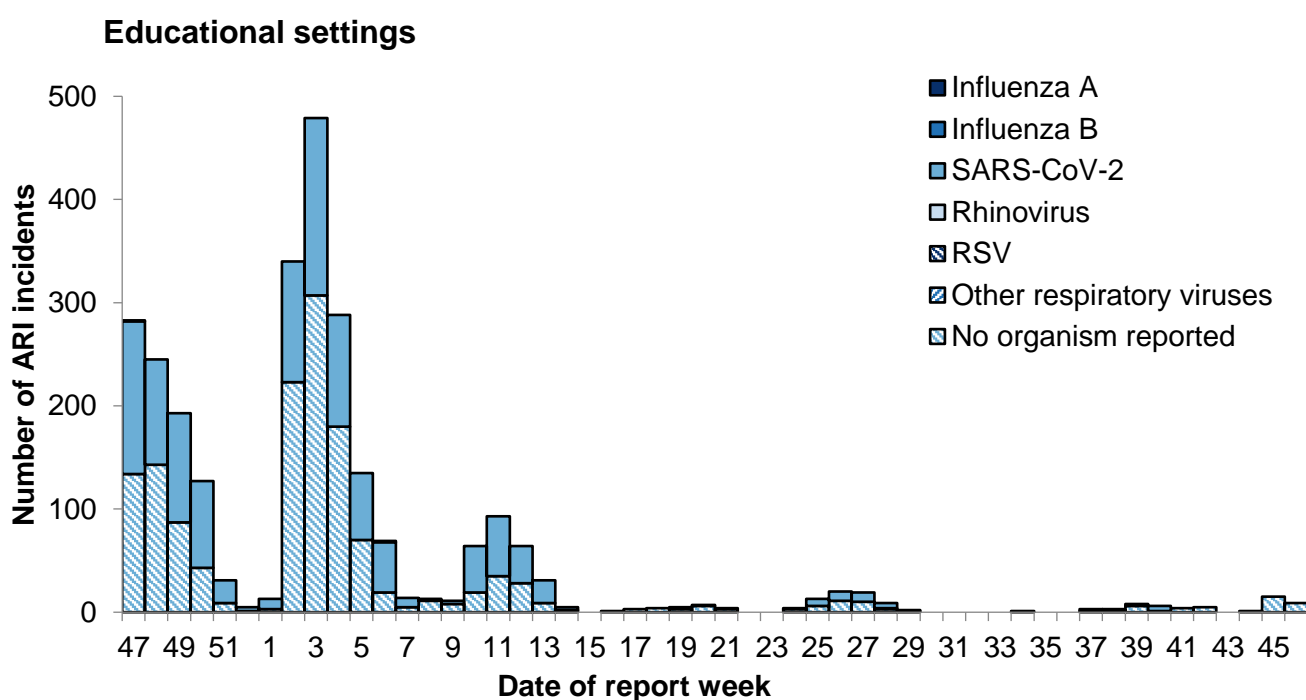


**Figure 20: Number of acute respiratory infection (ARI) incidents in hospitals by virus type, England**



**Figure 21: Number of acute respiratory infection (ARI) incidents in educational settings by virus type, England (a) for the weeks 47 2021 to 46 2022 and (b) for the 2022 to 23 academic year**

(a)



(b)

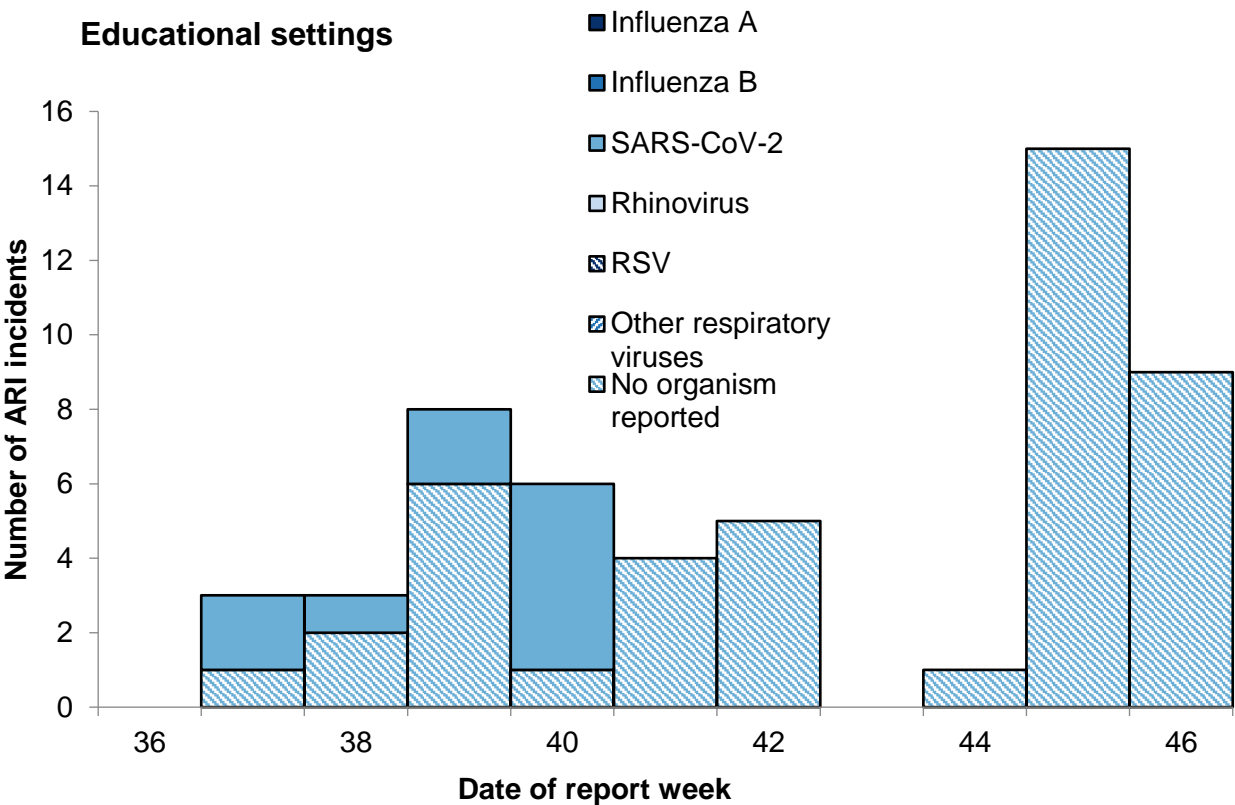


Figure 22: Number of acute respiratory infection (ARI) incidents in prisons by virus type, England

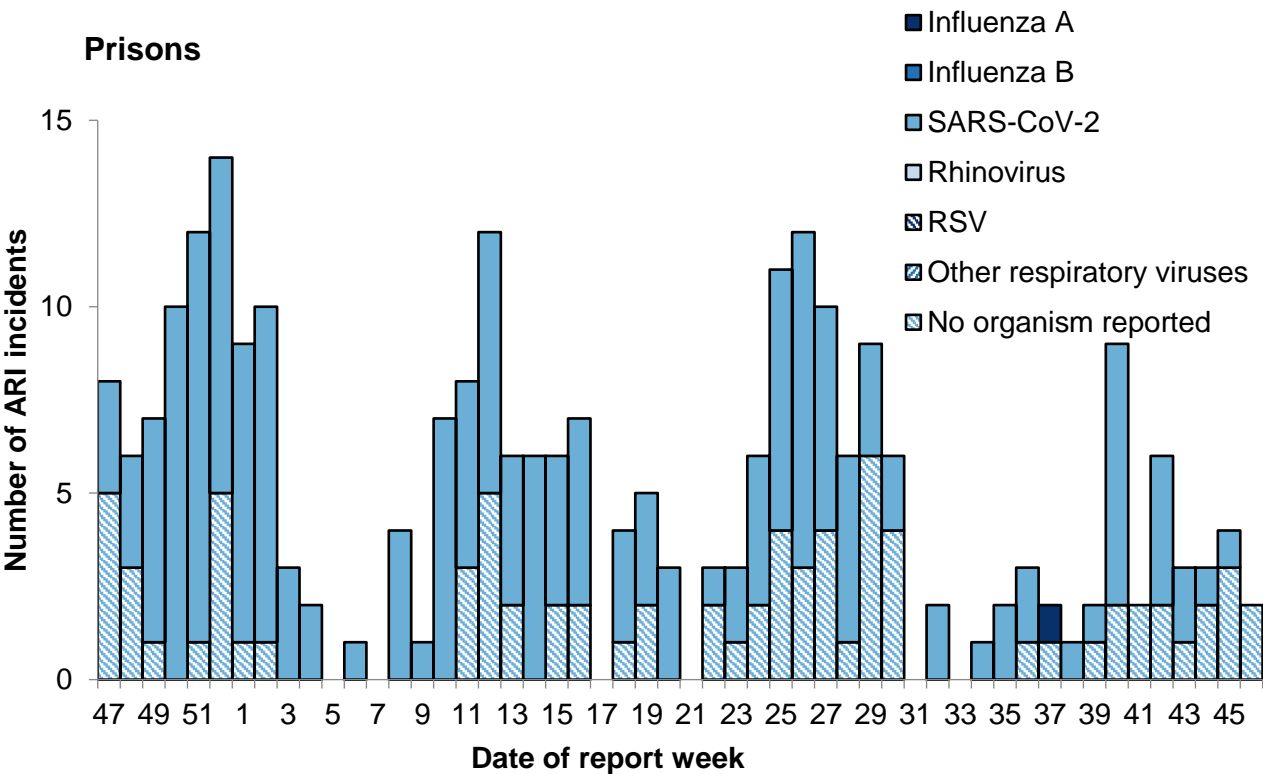


Figure 23: Number of acute respiratory infection (ARI) incidents in workplace settings by virus type, England

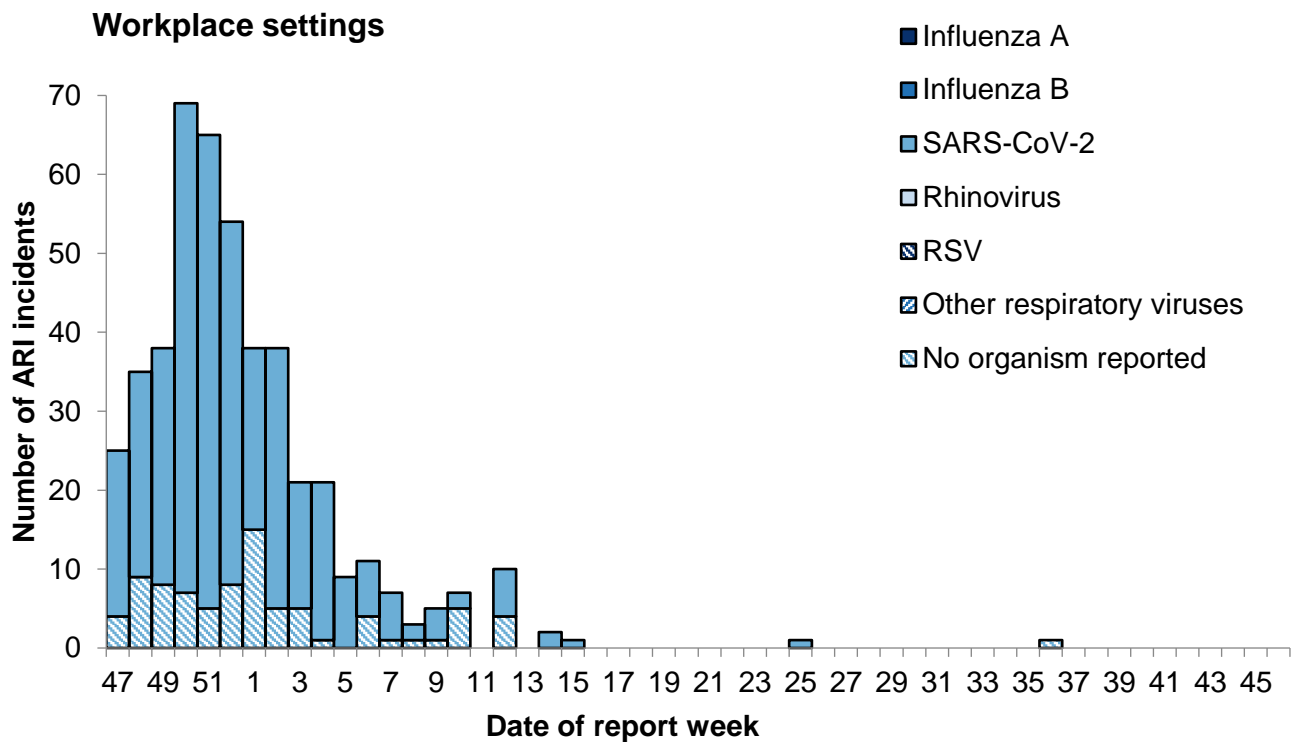
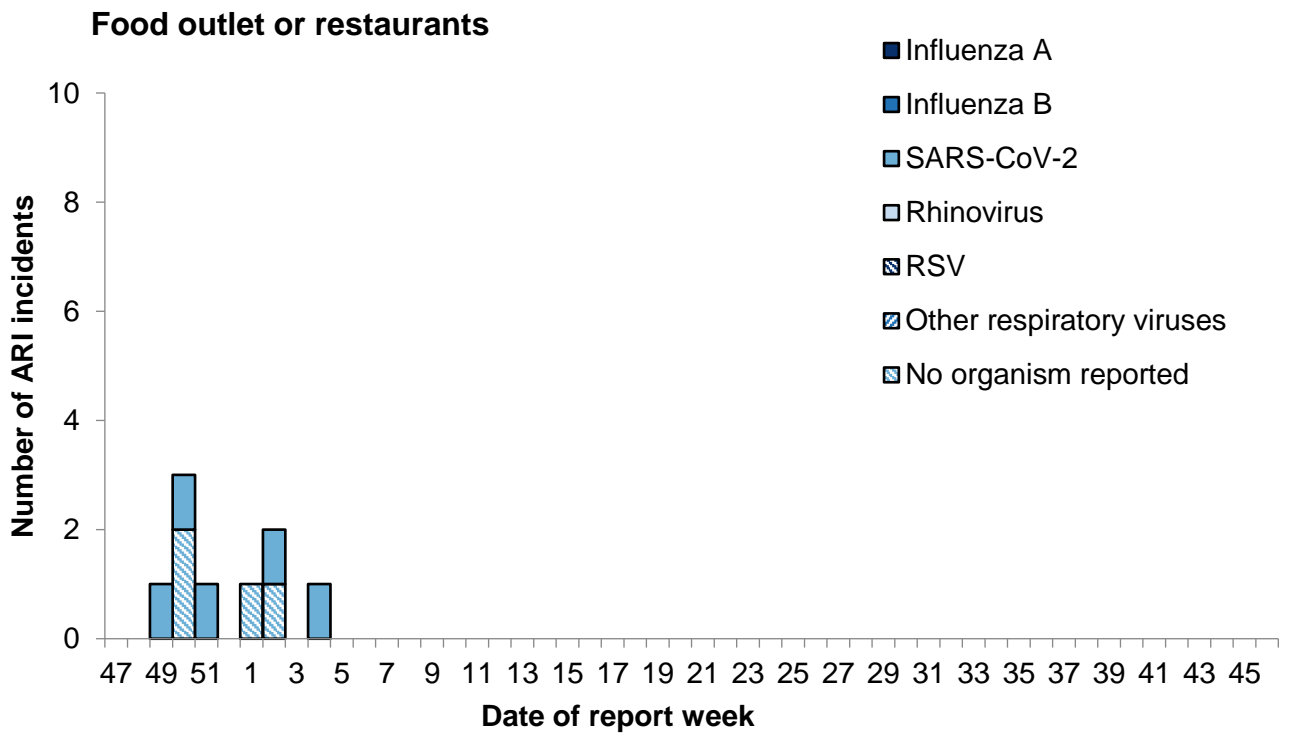
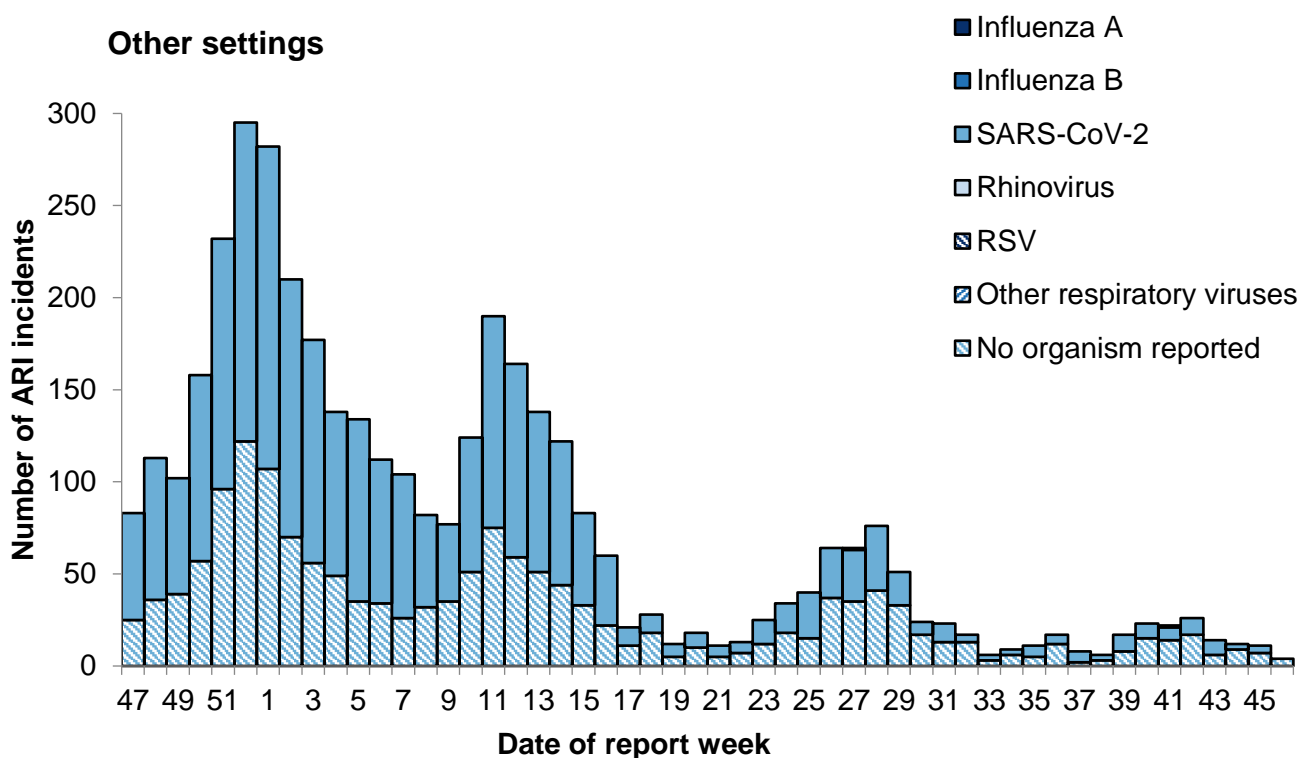


Figure 24: Number of acute respiratory infection (ARI) incidents in food outlet or restaurant settings by virus type, England



**Figure 25: Number of acute respiratory infection (ARI) incidents in other settings by virus type from, England**





**Table 1: Total number of situations and incidents by institution and UKHSA centres over the past 4 weeks with the total number in the last week in brackets**

UKHSA Centres	Care home	Hospital	Educational settings	Prisons	Workplace settings	Food outlet/ restaurant settings	Other settings	Total
East of England	60(20)	1(0)	0(0)	4(0)	0(0)	0(0)	2(0)	67(20)
East Midlands	16(5)	2(0)	1(0)	0(0)	0(0)	0(0)	1(1)	20(6)
London	60(15)	41(5)	8(4)	1(0)	0(0)	0(0)	8(0)	118(24)
North East	23(6)	0(0)	1(1)	1(0)	0(0)	0(0)	0(0)	25(7)
North West	38(11)	3(2)	2(1)	0(0)	0(0)	0(0)	11(1)	54(15)
South East	6(1)	0(0)	1(0)	4(1)	0(0)	0(0)	0(0)	11(2)
South West	172(28)	0(0)	2(0)	0(0)	0(0)	0(0)	10(0)	184(28)
West Midlands	27(4)	2(0)	4(1)	2(1)	0(0)	0(0)	3(1)	38(7)
Yorkshire and Humber	38(10)	0(0)	6(2)	0(0)	0(0)	0(0)	6(1)	50(13)
Grand Total	440(100)	49(7)	25(9)	12(2)	0(0)	0(0)	41(4)	567(122)

## FluSurvey

An internet-based surveillance system has been developed based on FluSurvey. FluSurvey is a web tool survey designed to monitor trends of influenza-like illness (ILI) in the community using self-reported respiratory symptoms from registered participants. The platform has been adapted to capture respiratory symptoms, exposure risk and healthcare seeking behaviours among registered participants to contribute to national surveillance of COVID-19 activity as well as influenza activity since week 44 2020.

Note that ILI is defined as sudden onset of symptoms with at least one of fever (chills), malaise, headache, muscle pain and at least one of cough, sore throat, shortness of breath.

During week 46, there were 2,148 participants completing the weekly symptoms questionnaire of which 169 (7.9%) reported fever or cough and 38(1.8%) reported influenza like illness (ILI). There was a slight increase in COVID-19 related symptoms and influenza like illness (ILI) amongst participants completing the weekly symptoms survey in week 46. Healthcare seeking behaviour amongst participants reporting respiratory symptoms relating to COVID-19 (cough, fever or loss of smell) showed that participants were more likely to telephone their GP provider as a result of their symptoms when compared with other healthcare services (Figure 26).

Self-reported daily social contact patterns are also reported. A contact is defined as a person outside the household who is approached at a distance of less than one metre, on the day prior to survey completion. There remains variation on social mixing patterns amongst participants as people are meeting more individuals outside of their households.

**Figure 26: FluSurvey participants self-reporting fever or cough and ILI symptoms, and trends in healthcare seeking behaviour among these participants, England**

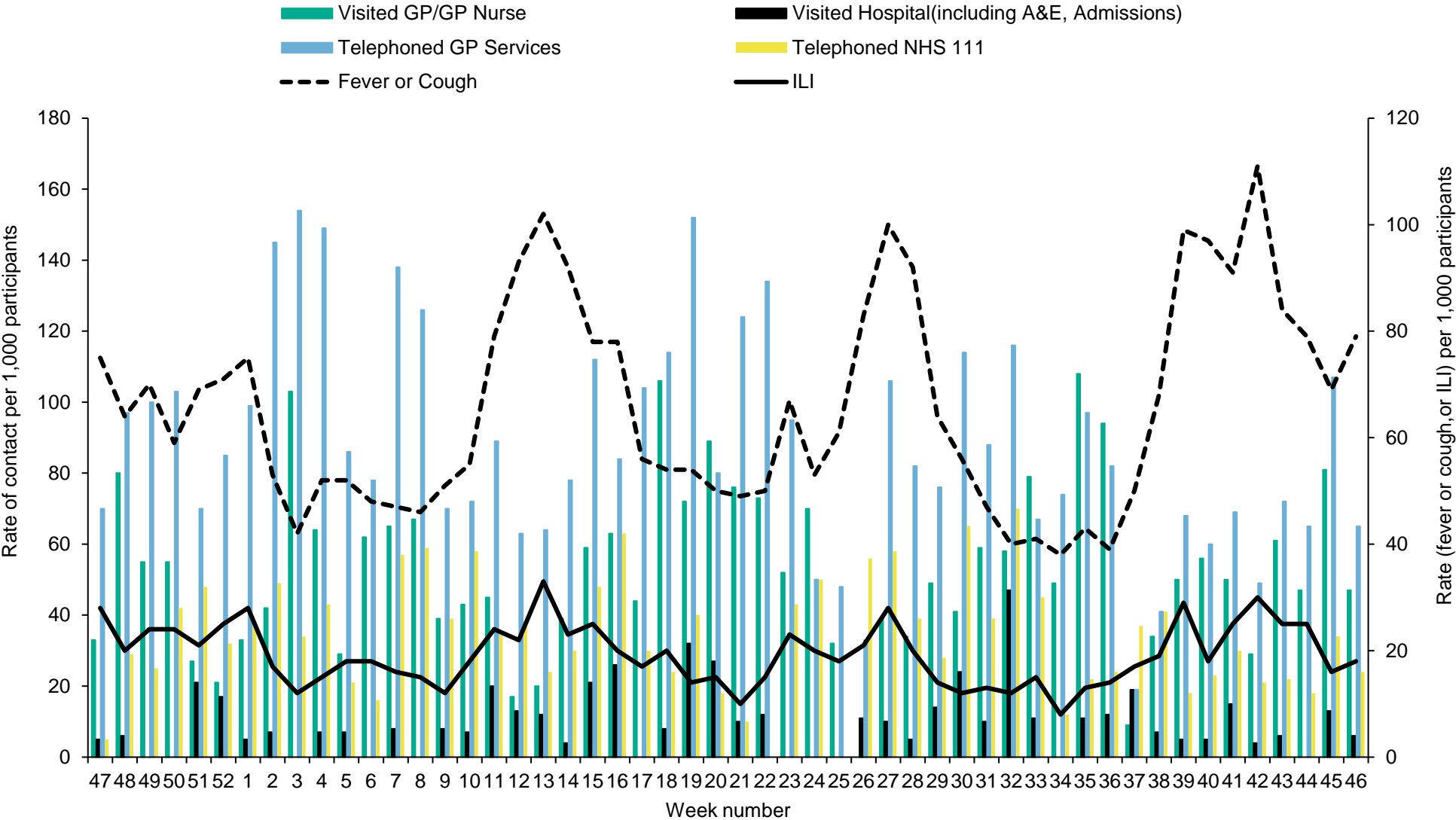
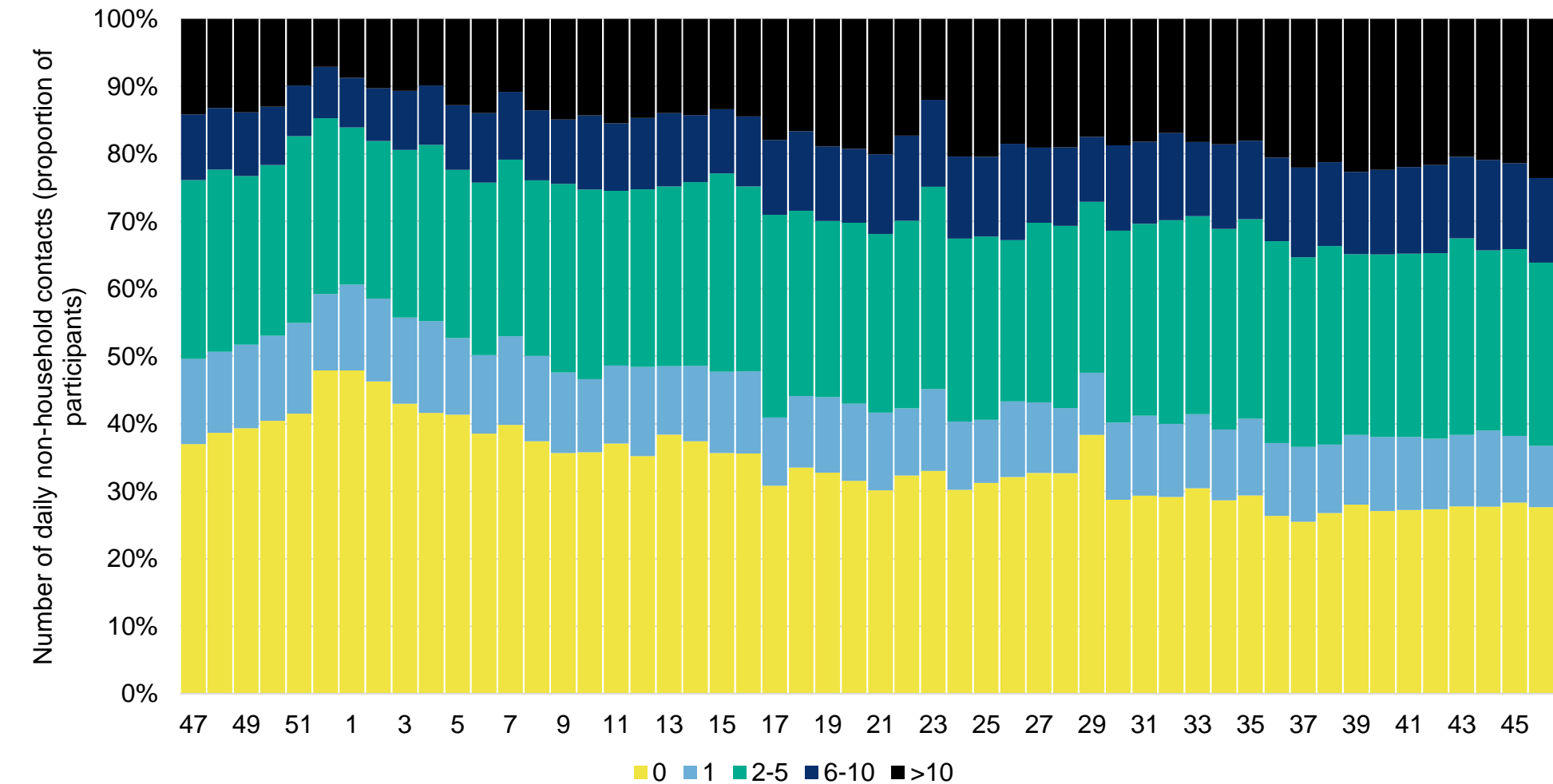


Figure 27: FluSurvey participants’ self-reported number of social contacts outside the household

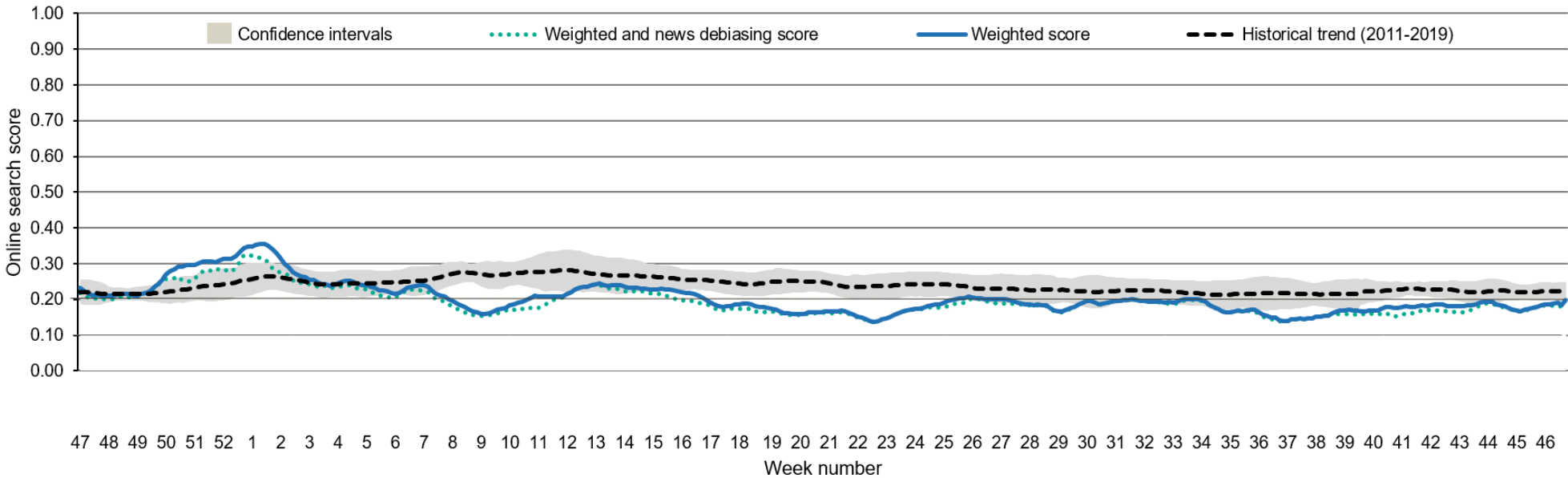


## Google search queries

This is a web-based syndromic surveillance system which uses daily search query frequency statistics obtained from the Google Health Trends API (Application Programming Interface). This model focuses on search queries about COVID-19 symptoms as well as generic queries about 'coronavirus' (for example 'COVID-19'). The search query frequency time series is weighted based on symptom frequency as reported in other data sources. Frequency of searches for symptoms is compared with a baseline calculated from historical daily data. [Further information on this model](#) is available online.

During week 46, the overall and media-debiasing weighted Google search scores slightly increased compared with the previous week (Figure 28).

**Figure 28: Normalised Google search score for COVID-19 symptoms, with weighted score for media-debiasing and historical trend, England**



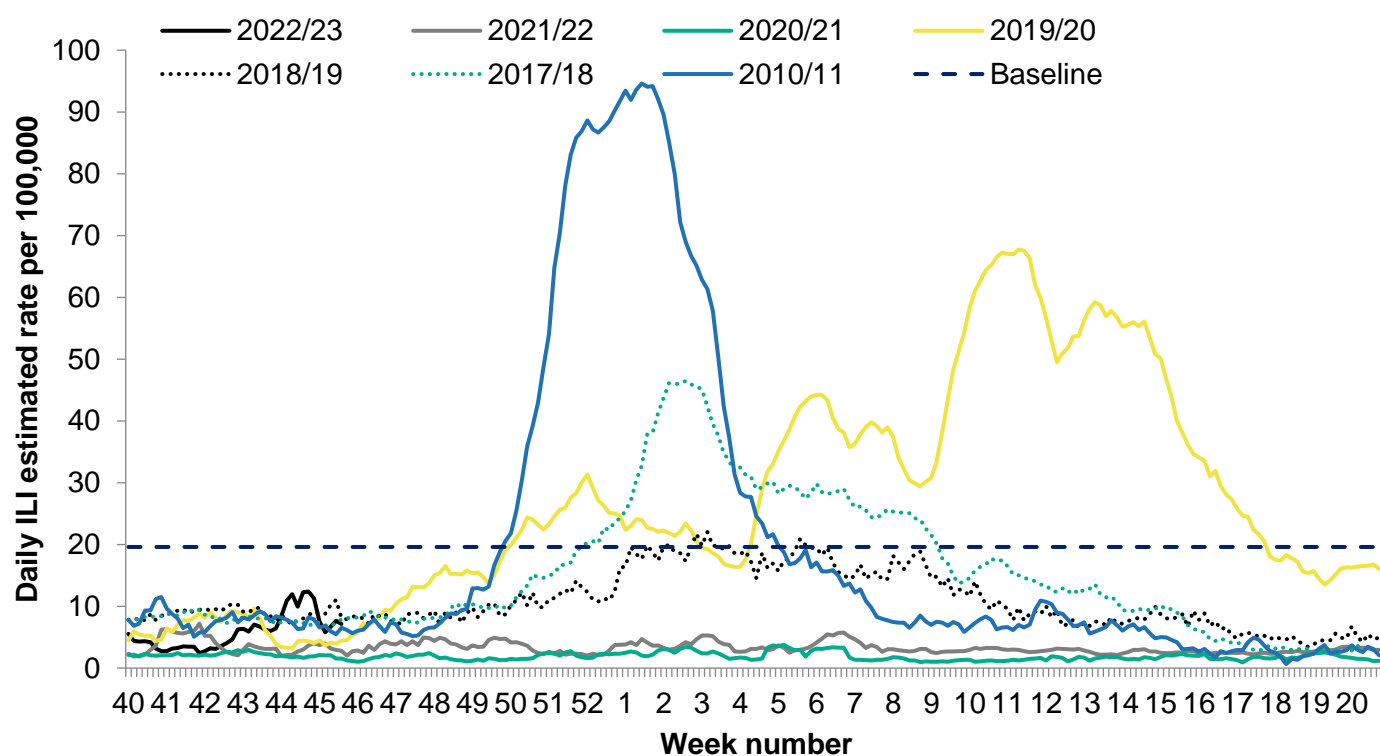
## Flu Detector

FluDetector is a web-based model which assesses internet-based search queries for ILI in the general population.

Daily ILI rate estimates are based on uniformly averaged search query frequencies for a week-long period (including the current day and the 6 days before it).

For week 45, the daily ILI rate remained low and below the baseline threshold of 19.6 per 100,000 for the 2022 to 2023 season (Figure 29).

**Figure 29: Daily estimated ILI Google search query rates per 100,000 population, England**



Data was not available from Flu Detector this week.

## NHS 111

Please note that different syndromic surveillance indicators (NHS 111, GP in hours, GP out of hours and emergency department attendances) are presented here than have been included in previous versions of this report. All indicators previously presented will continue to be published in the [Syndromic Surveillance bulletins](#).

The [NHS 111 service](#) monitors daily trends in phone calls made to the service in England, to capture trends in infectious diseases such as influenza and norovirus.

Please note that the number of NHS 111 calls are still lower than usual due to widely publicised disruption faced by a clinical software system. The NHS 111 call data presented in this report should therefore be interpreted with some caution.

Up to 20 November, the number of calls for cold/flu increased, notably in children aged 1 to 14 years. The number of calls for cough increased in those under 15 years of age (Figures 30 and 31).

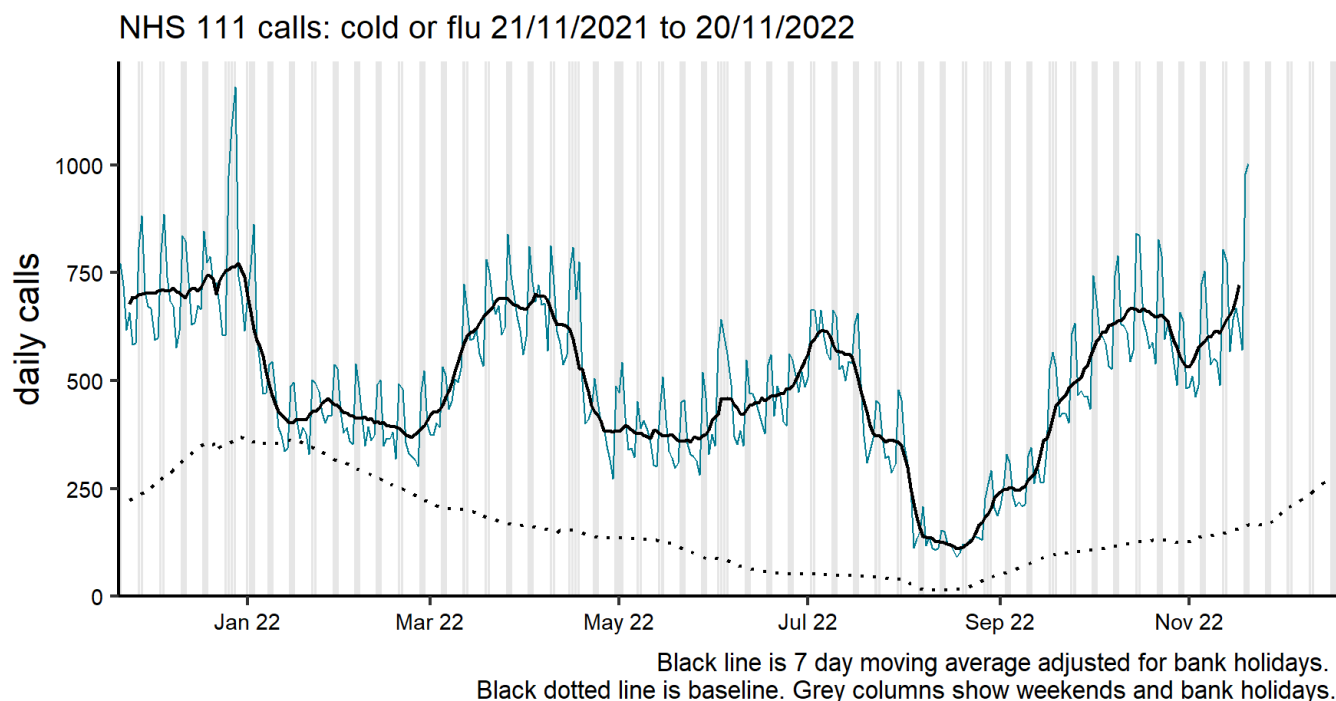
Please note that NHS 111 callers (from 11 May 2020) who are assessed as having probable COVID-19 symptoms are now triaged using symptom specific pathways such as cold or flu, which are included in routine syndromic indicators.

Further information about these caveats is available from the [Remote Health Advice Syndromic Surveillance bulletin](#).

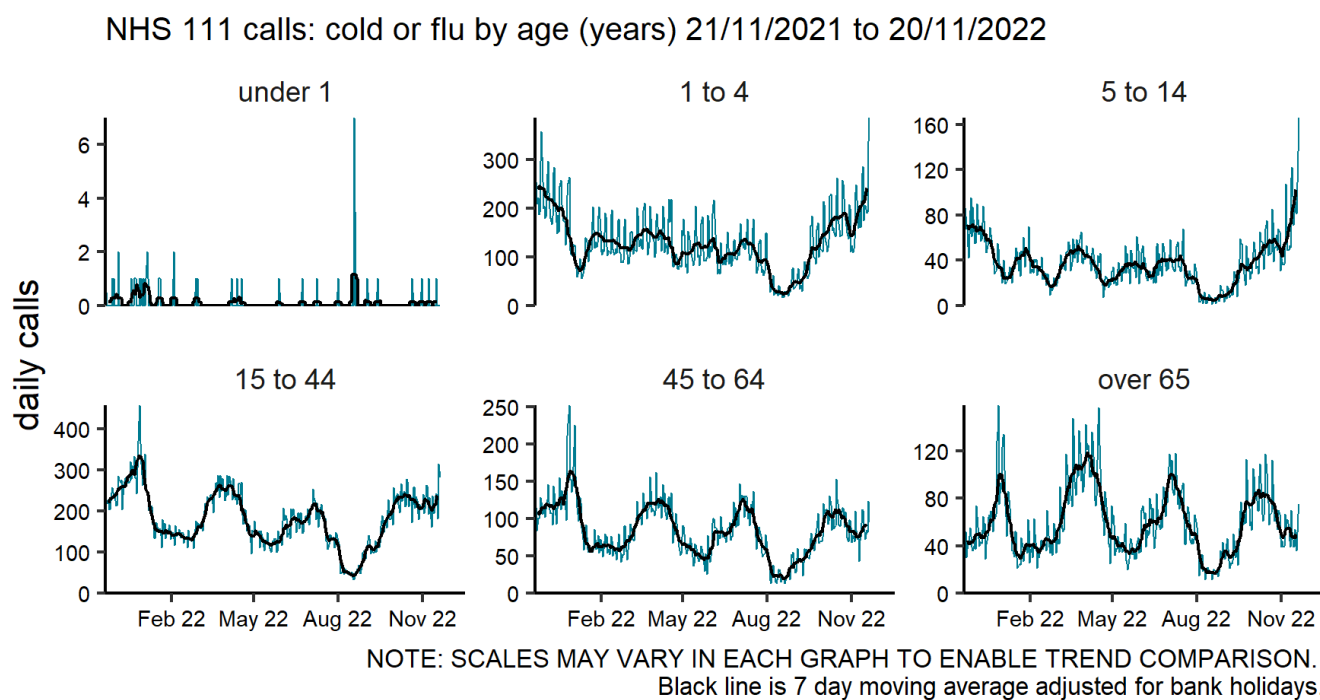


**Figure 30: NHS 111 telephony indicators (and 7-day moving average) for number of daily cold or flu calls, England (a) nationally and (b) by age group**

(a)

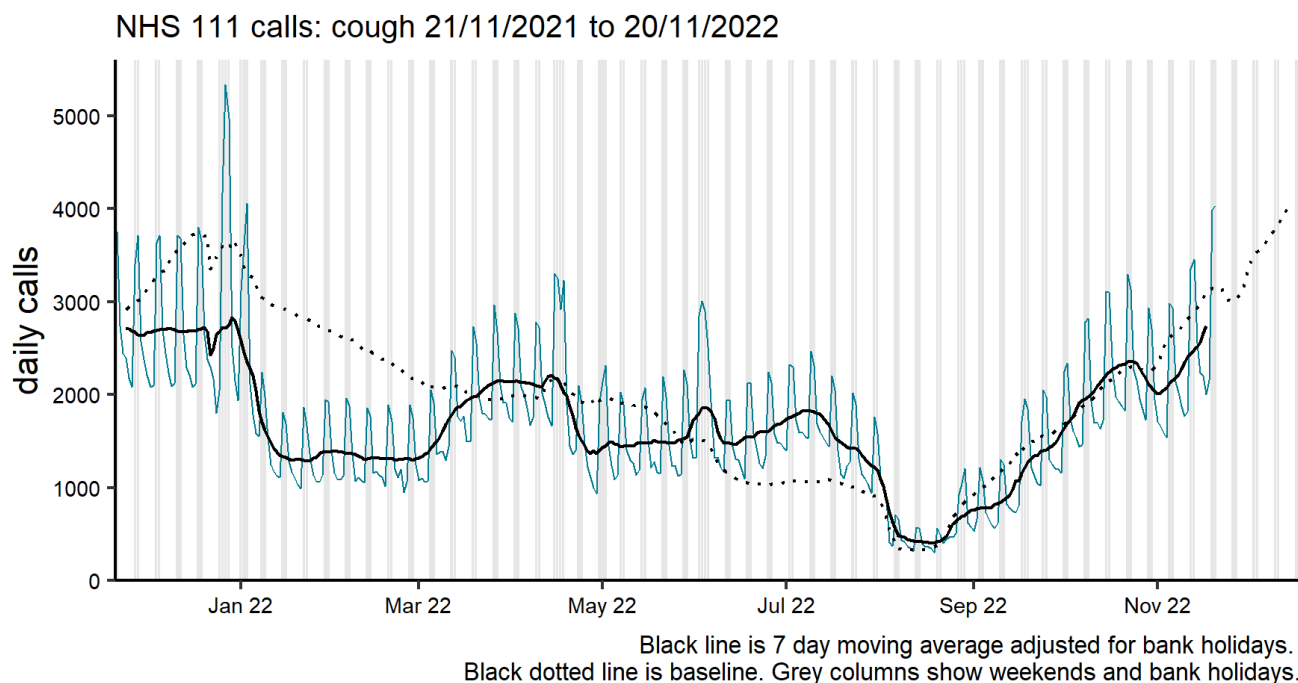


(b)

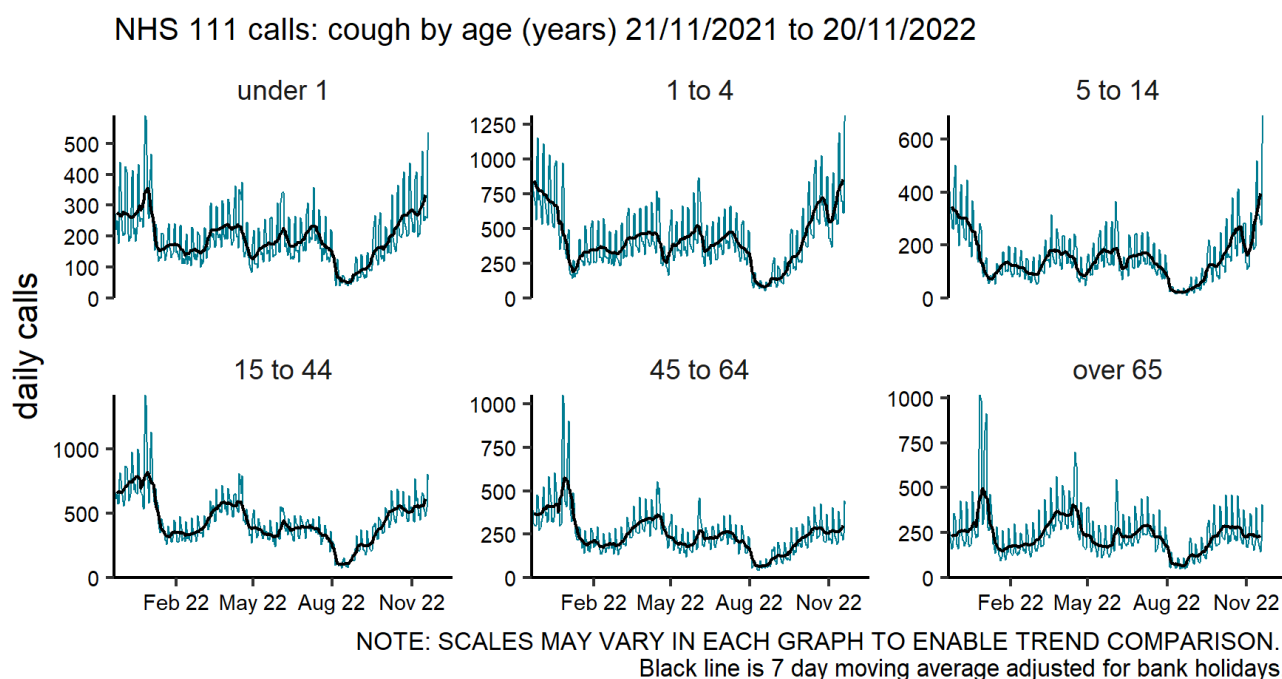


**Figure 31: NHS 111 telephony indicators (and 7-day moving average) for number of daily cough calls, England (a) nationally and (b) by age group**

(a)



(b)



# Primary care surveillance

## RCGP (England)

The weekly ILI consultation rate through the RCGP surveillance was 5.3 per 100,000 registered population in participating GP practices in week 46 compared with 4.5 per 100,000 in the previous week. This is below the baseline threshold (11.47 per 100,000) (Figure 32). By age group, the highest rates were seen in those under 1 year (11.2 per 100,000). The lower respiratory tract infections (LRTI) consultation rate was at 78.7 per 100,000 in week 46, compared with the rate of 72.2 per 100,000 in the previous week. The COVID-19 indicator rate was at 36.4 per 100,000 in week 46 compared with a rate of 31.6 per 100,000 in the previous week (Figure 33).

**Figure 32: RCGP influenza-like illness (ILI) consultation rates, all ages, England**

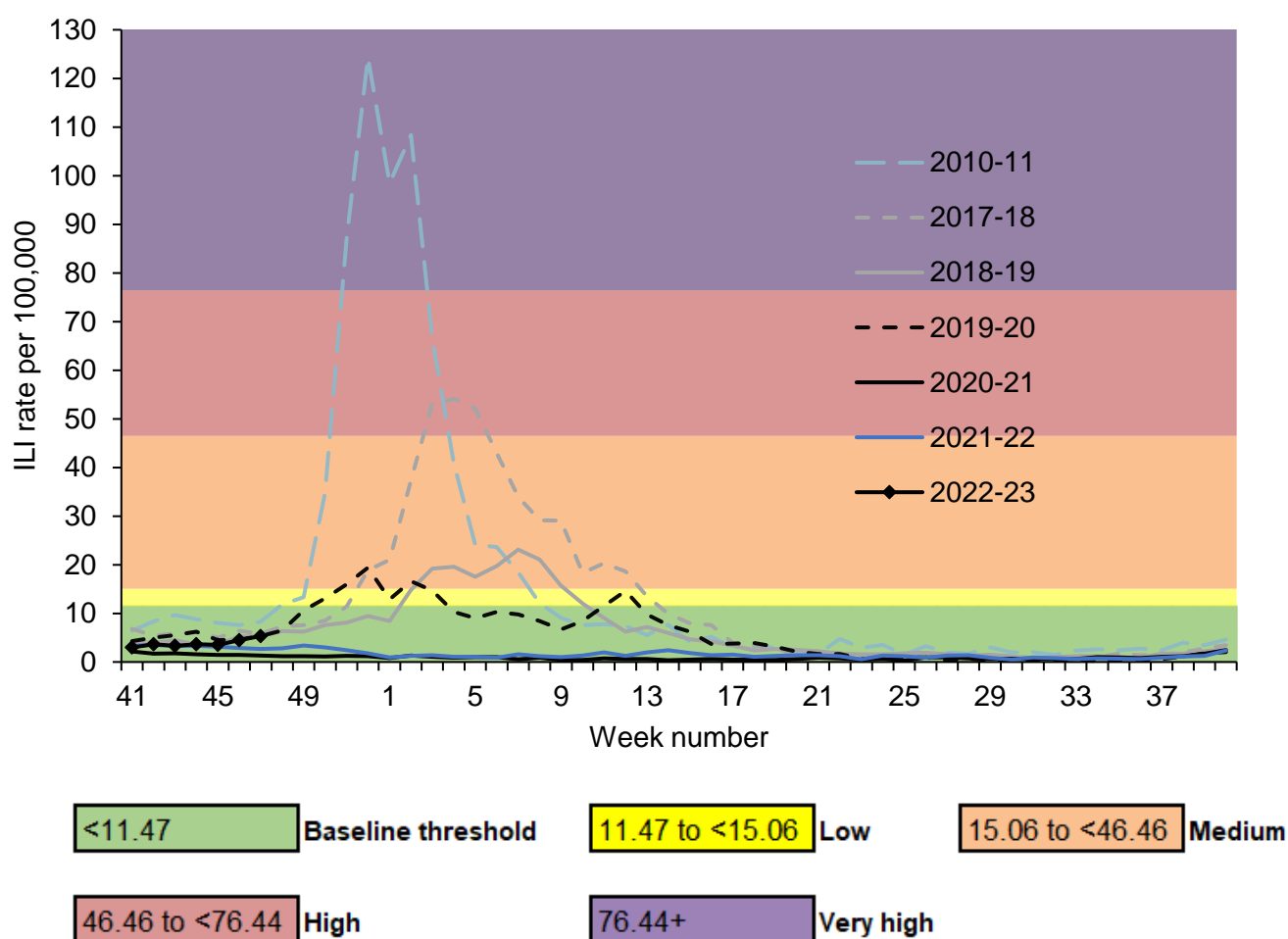
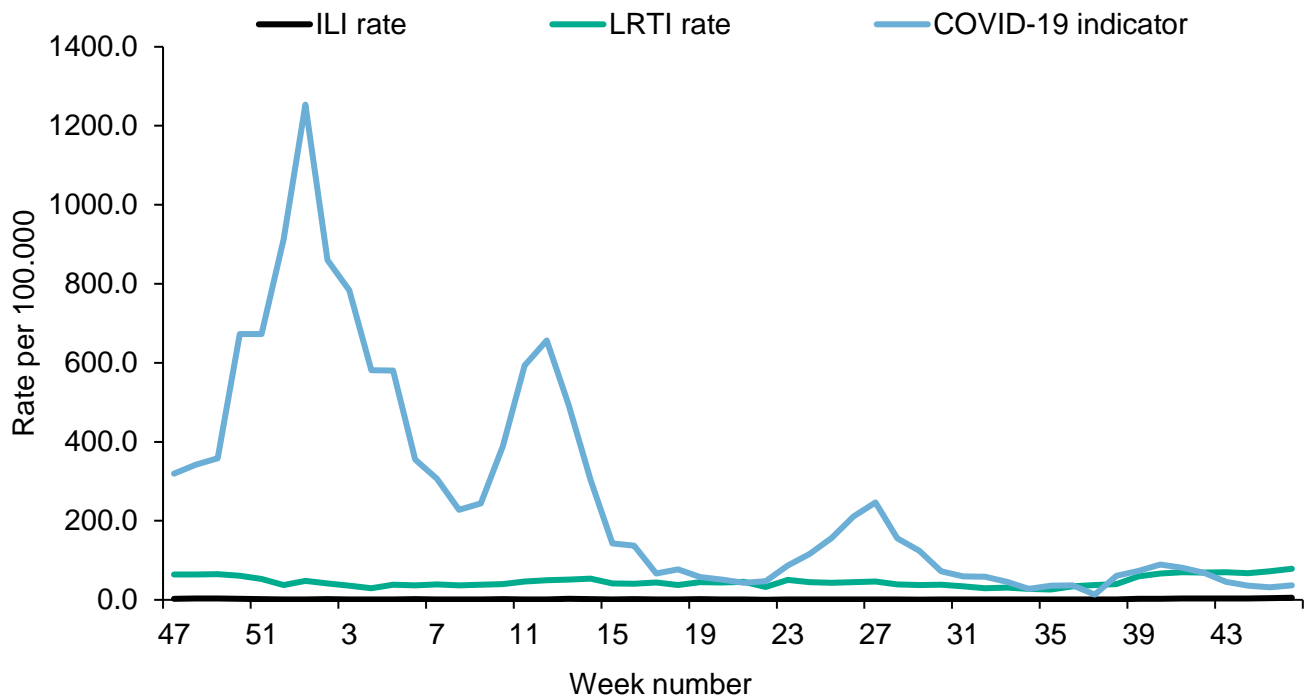


Figure 33: RCGP ILI, LRTI and COVID-19 indicator rates, England



## UK

Overall, weekly ILI consultations rates were below baseline levels in all UK schemes (Table 2).

By age group, the highest incidence age groups were in the 1 to 4 year olds in Wales (7.6 per 100,000), the 45 to 64 year olds in Northern Ireland (4.8 per 100,000) and in the 15 to 44 year olds in Scotland (5.6 per 100,000).

**Table 2: GP ILI consultations in the UK for all ages with MEM (Moving Epidemic Method) thresholds applied**

GP ILI consultation rates (all ages)	Week number												
	40	41	42	43	44	45	46	47	48	49	50	51	52
England (RCGP)	3.0	3.7	3.3	3.6	3.5	4.5	5.3						
Wales	3.5	2.8	3.9	4.8	6.3	7.0	3.5						
Scotland	2.1	1.8	4.0	3.8	3.5	4.8	4.6						
Northern Ireland	1.3	2.2	1.8	3.5	3.0	3.7	3.5						

The Moving Epidemic Method (MEM) has been adopted by the European Centre for Disease Prevention and Control to calculate thresholds for GP ILI consultations for the start of influenza activity (based on 10 seasons excluding 2020 to 2021), in a standardised approach across Europe.

## Sentinel swabbing scheme in England

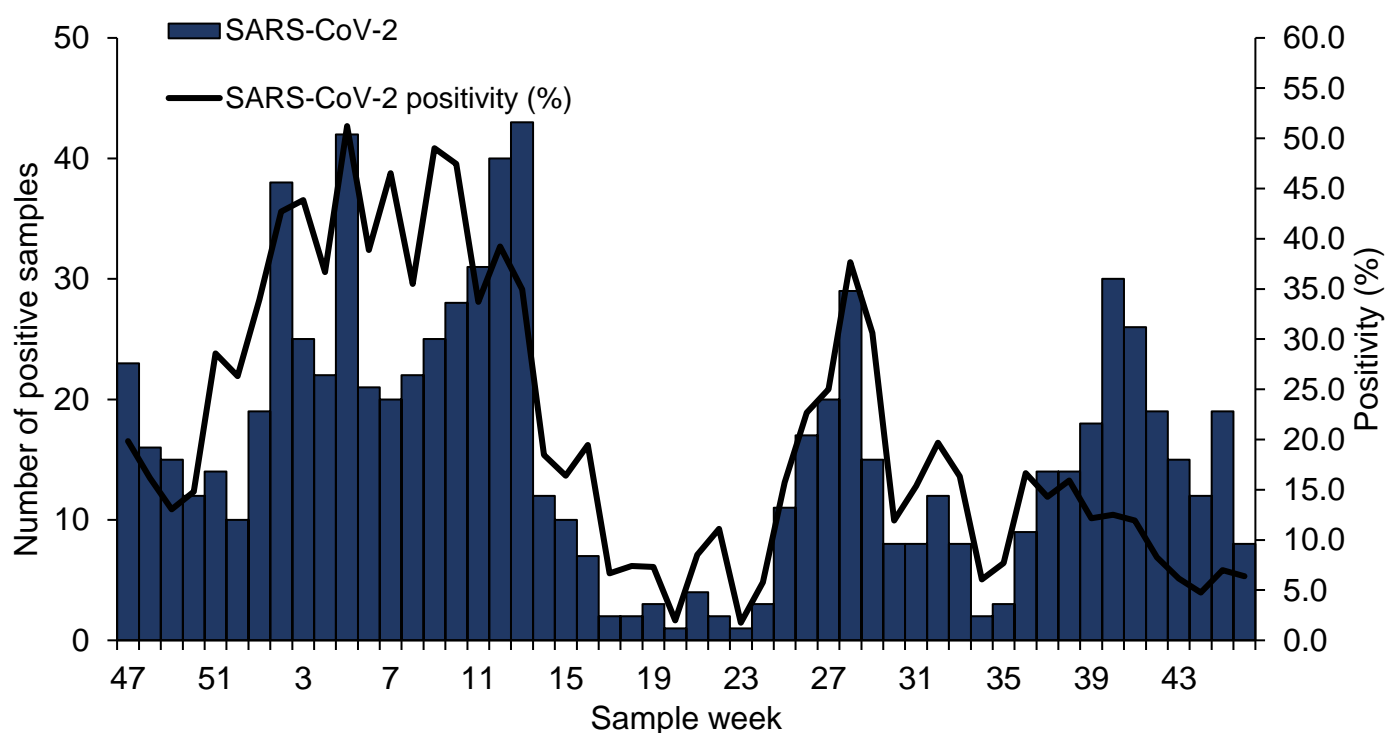
In week 46 2022, 8 samples tested positive for SARS-CoV-2 through the GP sentinel swabbing scheme in England (Figure 34).

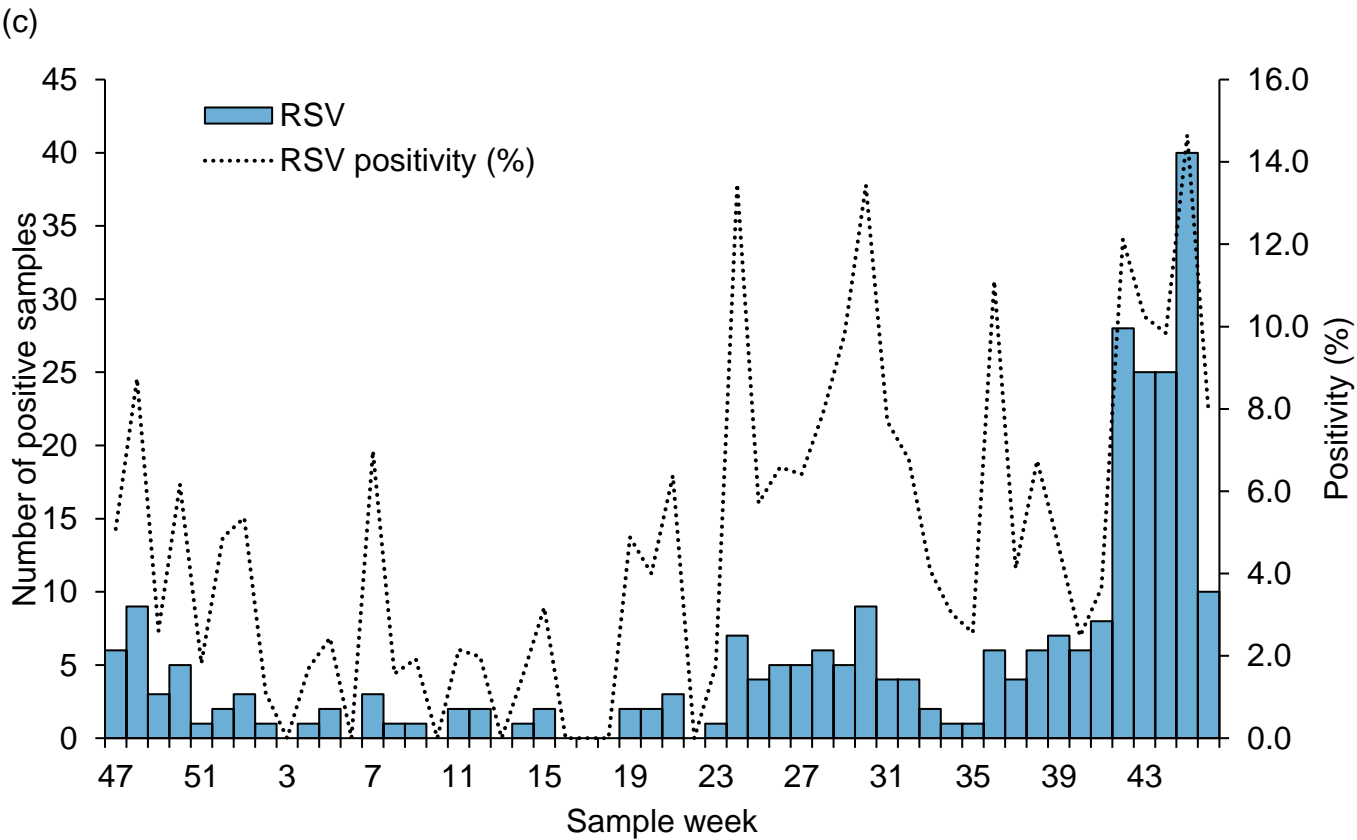
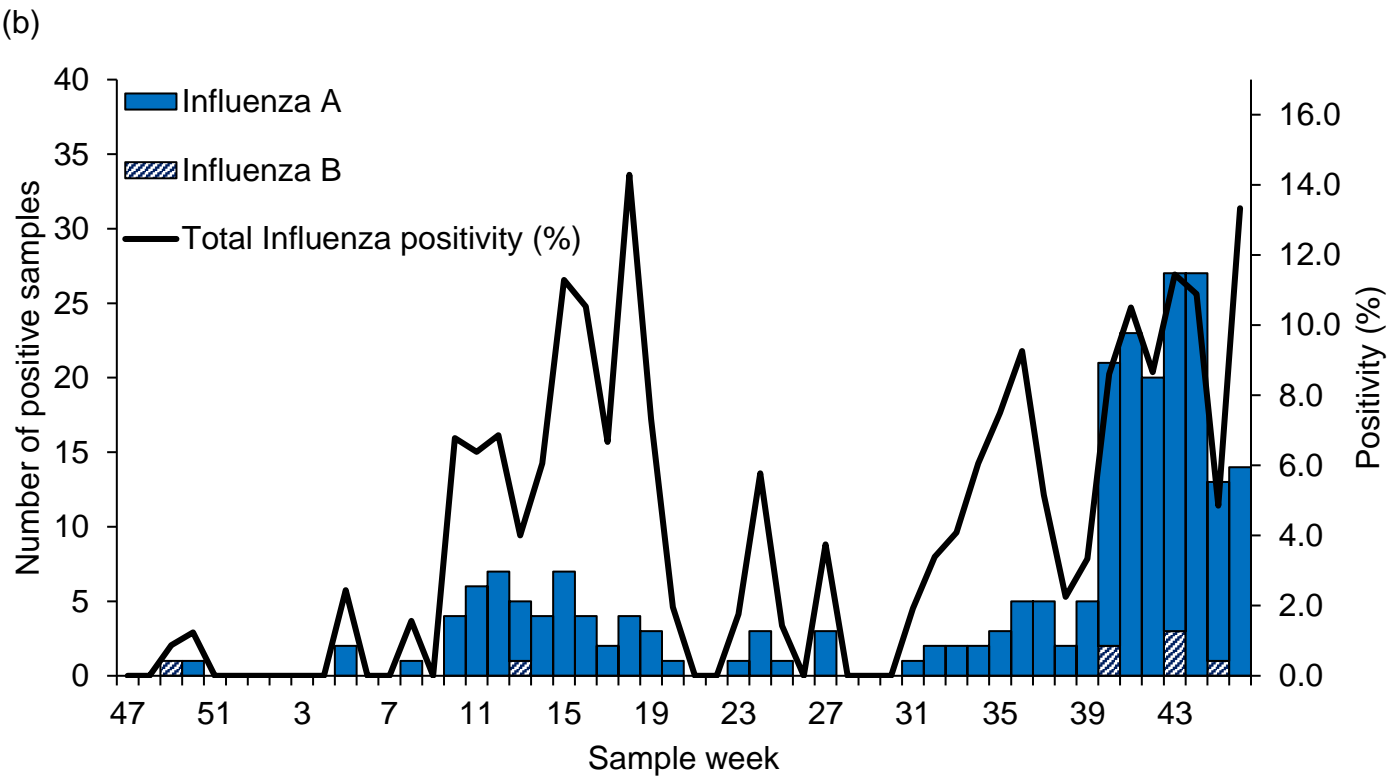
In week 46 2022, 10 samples tested positive for RSV and 14 samples tested positive for influenza in England through the GP sentinel swabbing scheme.

\* Please note that due to lower sample numbers, data from week 14 of 2022 onwards should be interpreted with caution.

**Figure 34: Number of positive samples and weekly positivity (%) for (a) COVID-19 and (b) Influenza and (c) RSV, GP sentinel swabbing scheme**

(a)





\*For the most recent week, more samples are expected to be tested therefore the graphs in Figure 34 should be interpreted with caution

\*Positivity (%) is not calculated when the total number tested is less than 10

## GP In Hours, Syndromic Surveillance

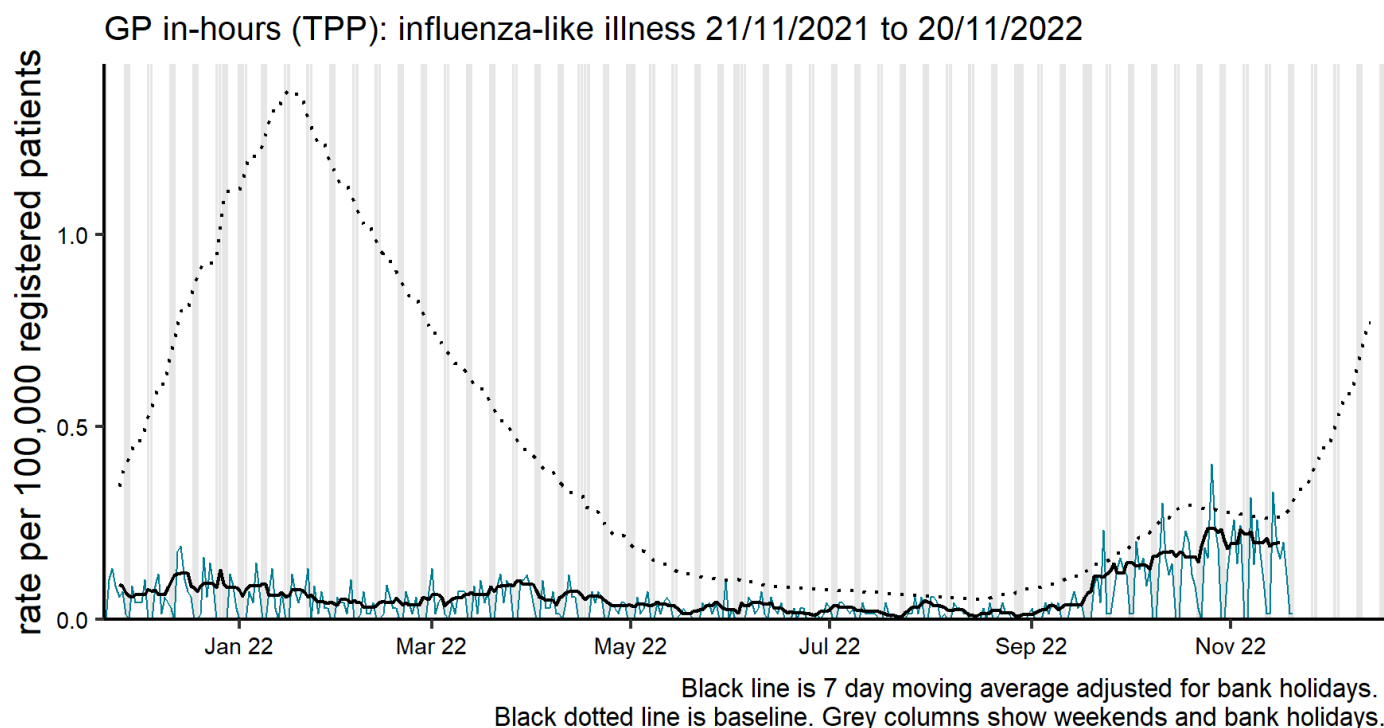
The GP In Hours (GPIH) syndromic surveillance system monitors the number of GP visits during regular hours of known clinical indicators.

Up to 20 November, the rate of GP in-hours consultations for influenza-like illness consultations was stable nationally (Figure 35).

Further indicators and information about caveats are available from the [GP In Hours Syndromic Surveillance bulletin](#).

**Figure 35: GPIH clinical indicators for influenza-like illness GP consultations, England (a) nationally, (b) by age group and (c) by UKHSA centre**

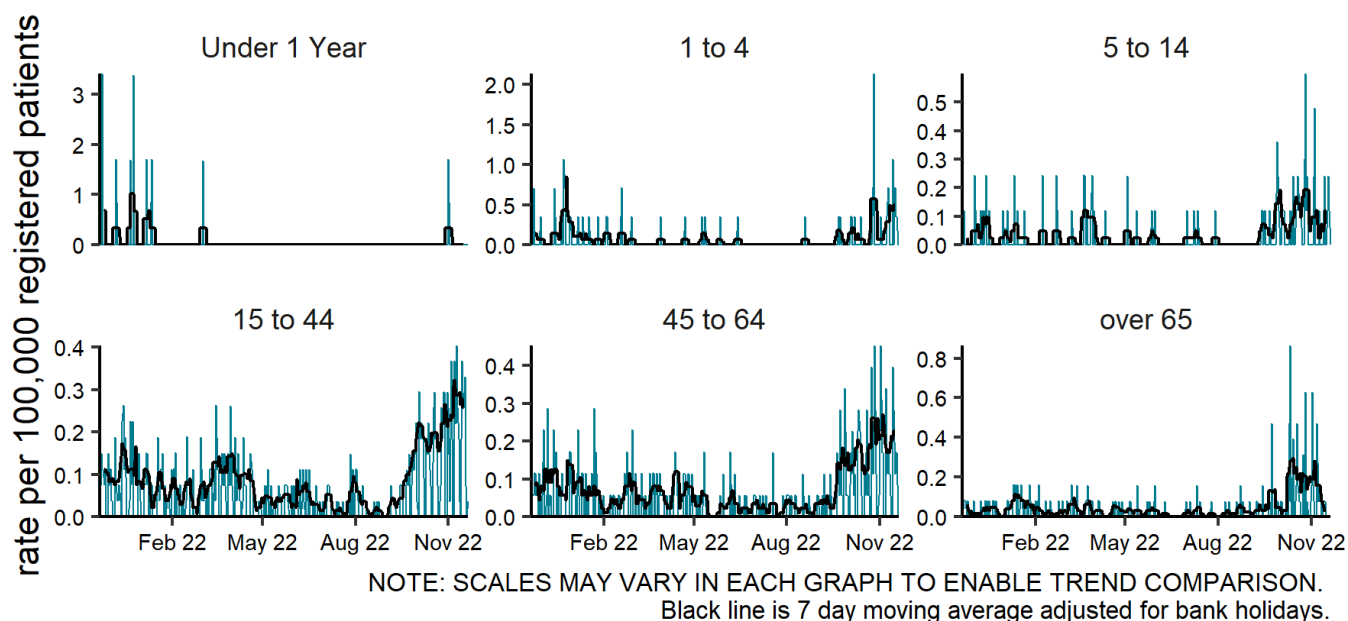
(a)





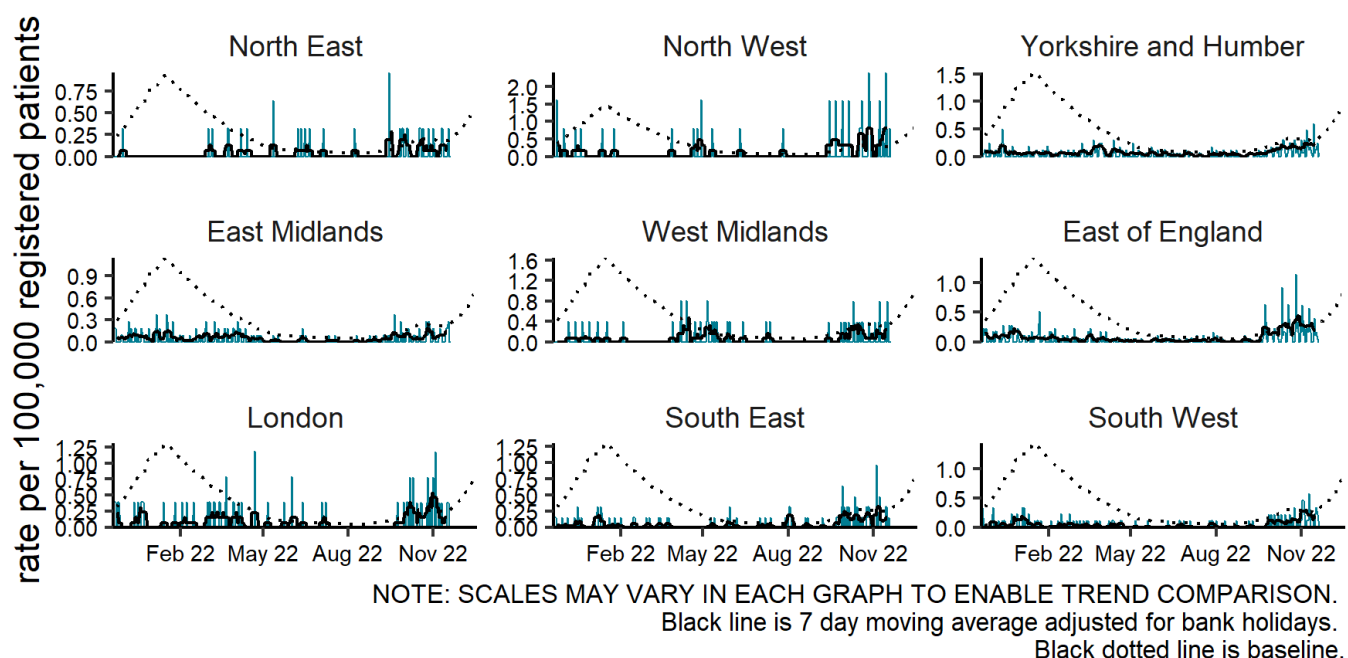
(b)

GP in-hours (TPP): influenza-like illness by age (years) 21/11/2021 to 20/11/2022



(c)

GP in-hours (TPP): influenza-like illness by region 21/11/2021 to 20/11/2022



GPIH Baselines are modelled from historical data to give current seasonally expected levels. GP consultations rates decreased during 2020 due to changes in guidance on accessing health care, therefore separate modelled estimates are provided to show seasonally expected levels pre-COVID-19.

## GP Out of Hours, Syndromic Surveillance

The GP Out of Hours (GPOOH) syndromic surveillance system monitors the numbers of daily unscheduled visits and calls to GPs during evenings, overnight, on weekends and on public holidays. This system covers around 55% of England's out of hour activity.

Due to a disruption with a GPOOH clinical software system provider, GPOOH data from 4 August onwards is not currently available. Data from GPOOH systems will be added back into this report once available. The most recent data is available in [previous reports](#).

## Secondary care surveillance

### SARI Watch

The Severe Acute Respiratory Infection (SARI) Watch surveillance system was established in 2020 to report the number of laboratory-confirmed influenza and COVID-19 cases admitted to hospital and critical care units (ICU and HDU) in NHS acute trusts across England. This has replaced the UK Severe Influenza Surveillance Schemes (USISS) Mandatory and Sentinel data collections for influenza surveillance used in previous seasons, and the COVID-19 hospitalisations in England surveillance system (CHESS) collections for COVID-19 surveillance.

The weekly rate of new admissions of COVID-19, influenza and RSV cases is based on the trust catchment population of those NHS Trusts who made a new return. This may differ from other published figures such as the total number of people currently in hospital with COVID-19.

The Moving Epidemic Method (MEM) thresholds for influenza hospital and ICU or HDU admissions are calculated based on the 2016 to 2017 to the 2021 to 2022 seasons (data from 2020 to 2021 was excluded due to the COVID-19 pandemic). These thresholds have been applied to data from the 2022 to 2023 season onwards.

Trends in hospital and critical care admission rates need to be interpreted in the context of testing recommendations. Please note that routine asymptomatic testing through NHS settings has been paused from 31 August 2022, therefore SARI-Watch data should be interpreted with this in mind.

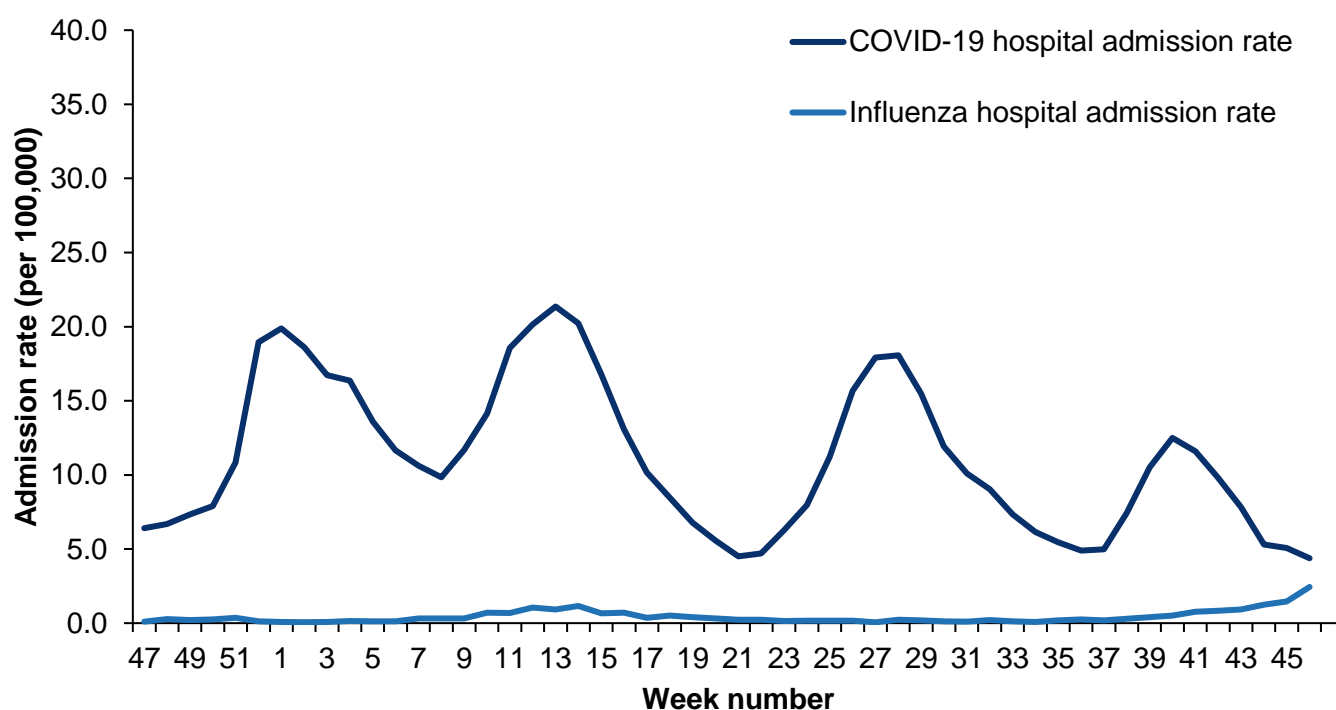
## Hospitalisations, SARI Watch

In week 46, the overall weekly hospital admission rate for COVID-19 decreased to 4.38 per 100,000 compared with 5.07 per 100,000 in the previous week.

By UKHSA centre, the highest hospital admission rate for COVID-19 was observed in the South West. By age group, the highest hospital admission rate for confirmed COVID-19 was in the 85 year olds and over.

In week 46, the overall weekly hospital admission rate for influenza increased to 2.44 per 100,000 compared with 1.47 per 100,000 in the previous week. There were 218 new hospital admissions to sentinel trusts for influenza (41 influenza A(H1N1)pdm09, 26 influenza A(H3N2), 131 influenza A(not subtyped) and 20 influenza B) in week 46.

**Figure 36: Weekly overall hospital admission rates of new COVID-19 and influenza positive cases per 100,000 population reported through SARI Watch, England**

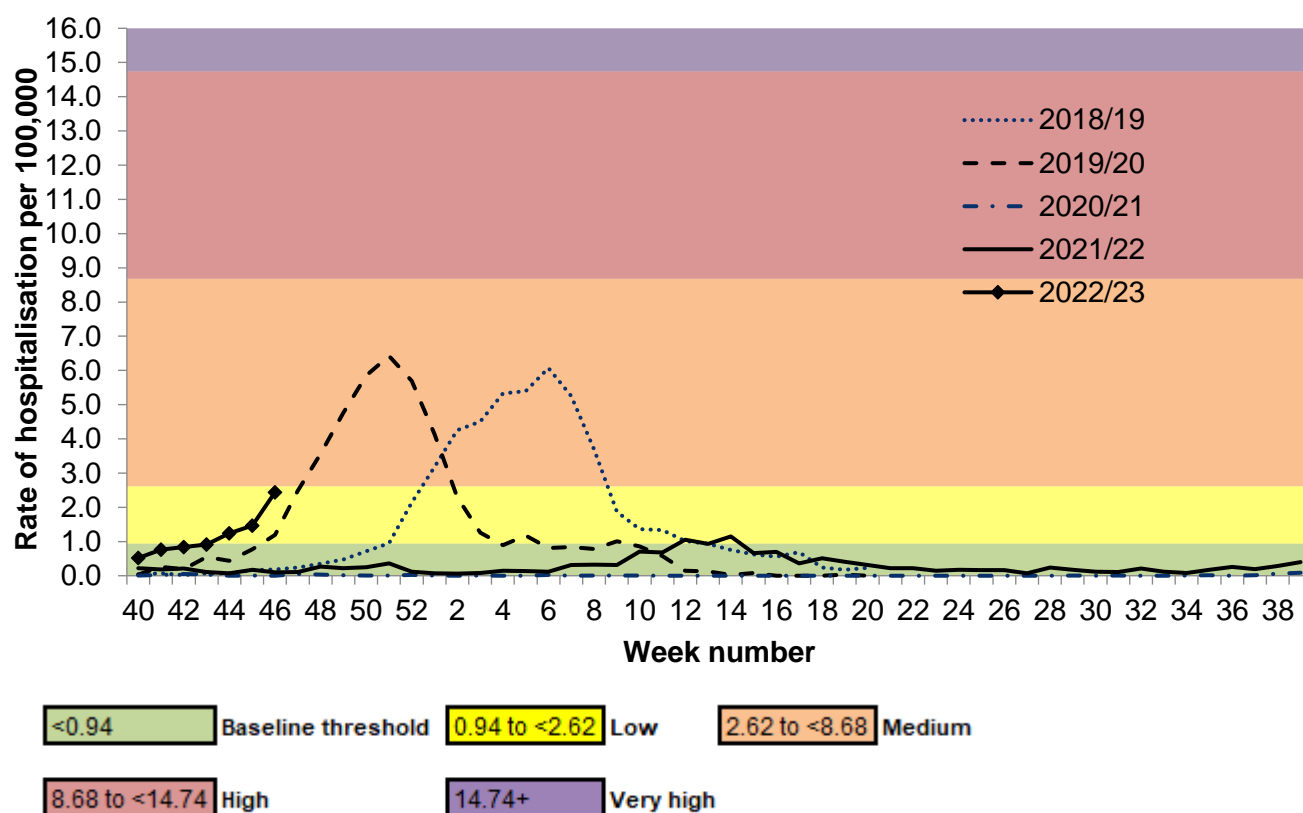


\* Influenza hospital admission rate based on 23 sentinel NHS trusts for week 46.

\* COVID-19 hospital admission rate based on 91 NHS trusts for week 46.

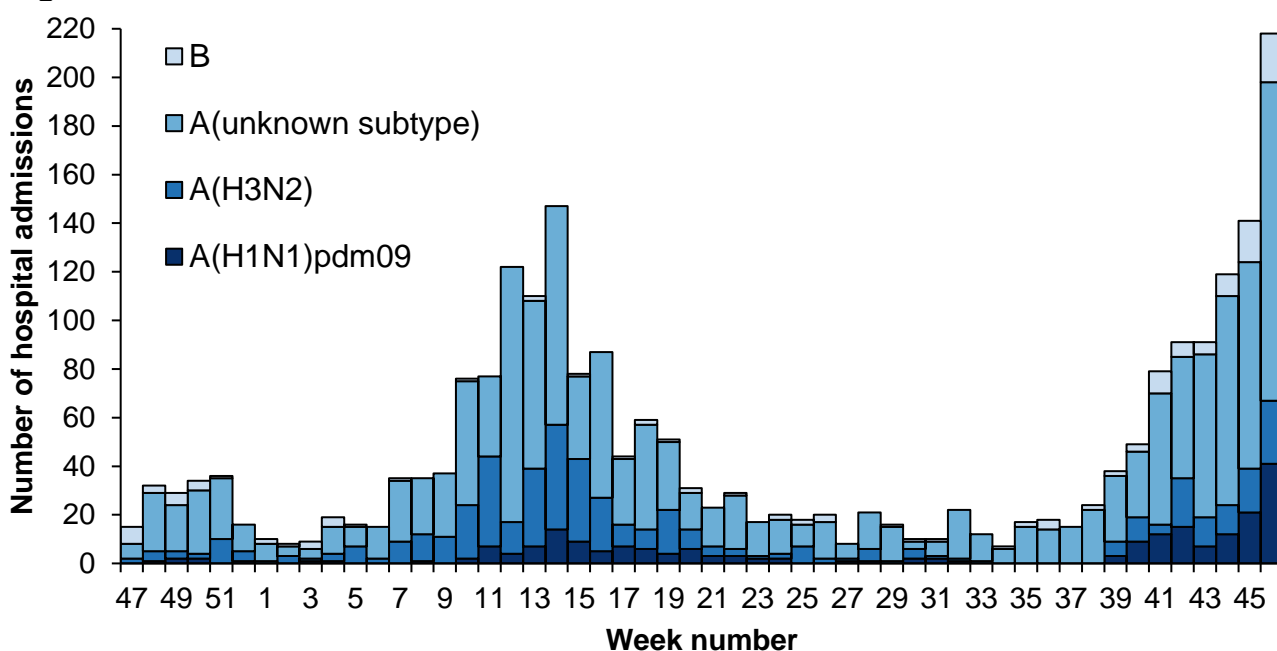
\* SARI Watch data is provisional.

**Figure 37: Weekly overall influenza hospital admission rates per 100,000 trust catchment population with MEM thresholds, SARI Watch, England**



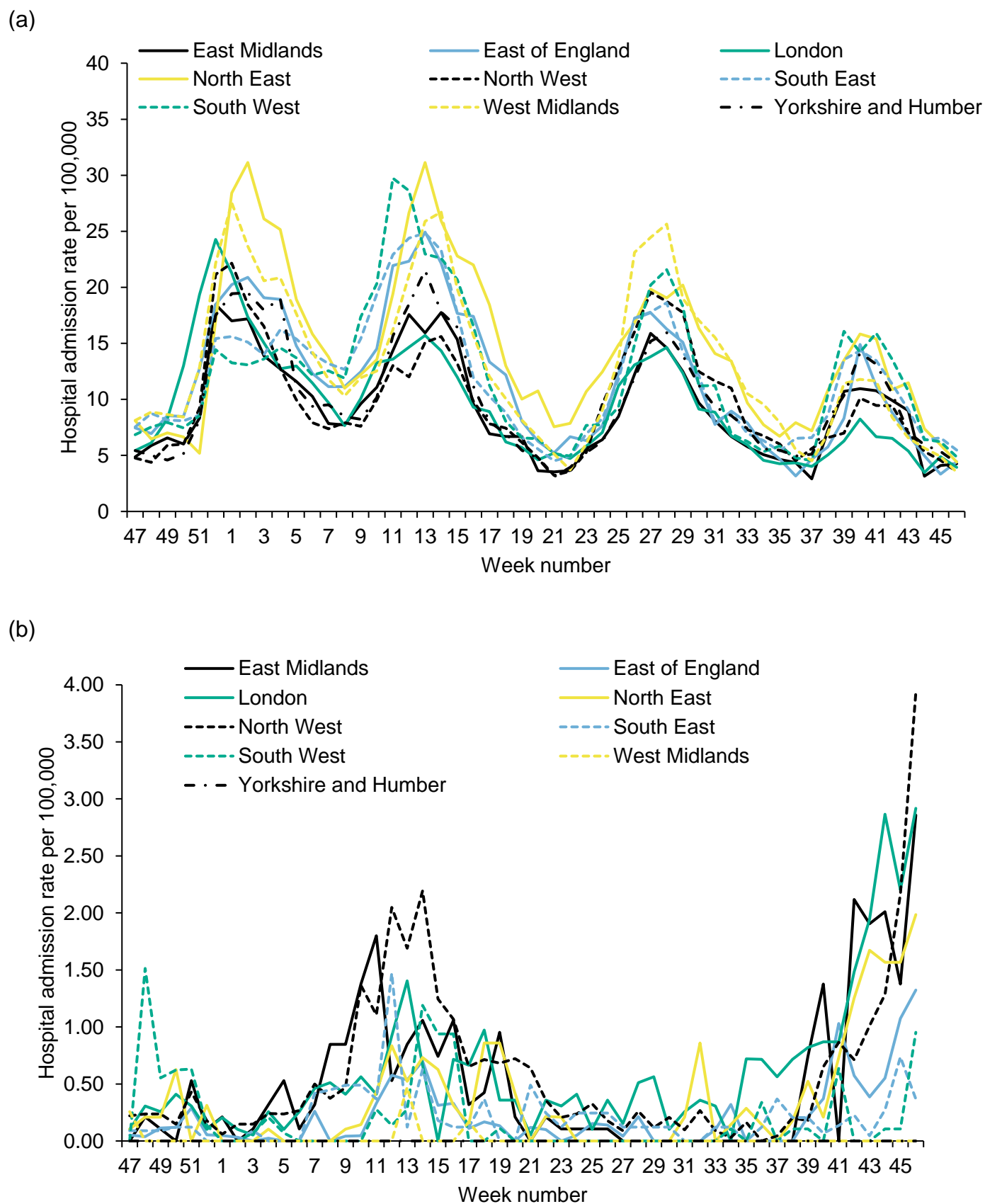
\* MEM thresholds are based on data from the 2016 to 2017 to the 2021 to 2022 seasons (data from 2020 to 2021 was excluded due to the COVID-19 pandemic).

**Figure 38: Weekly influenza hospital admissions by influenza type, SARI Watch, England**

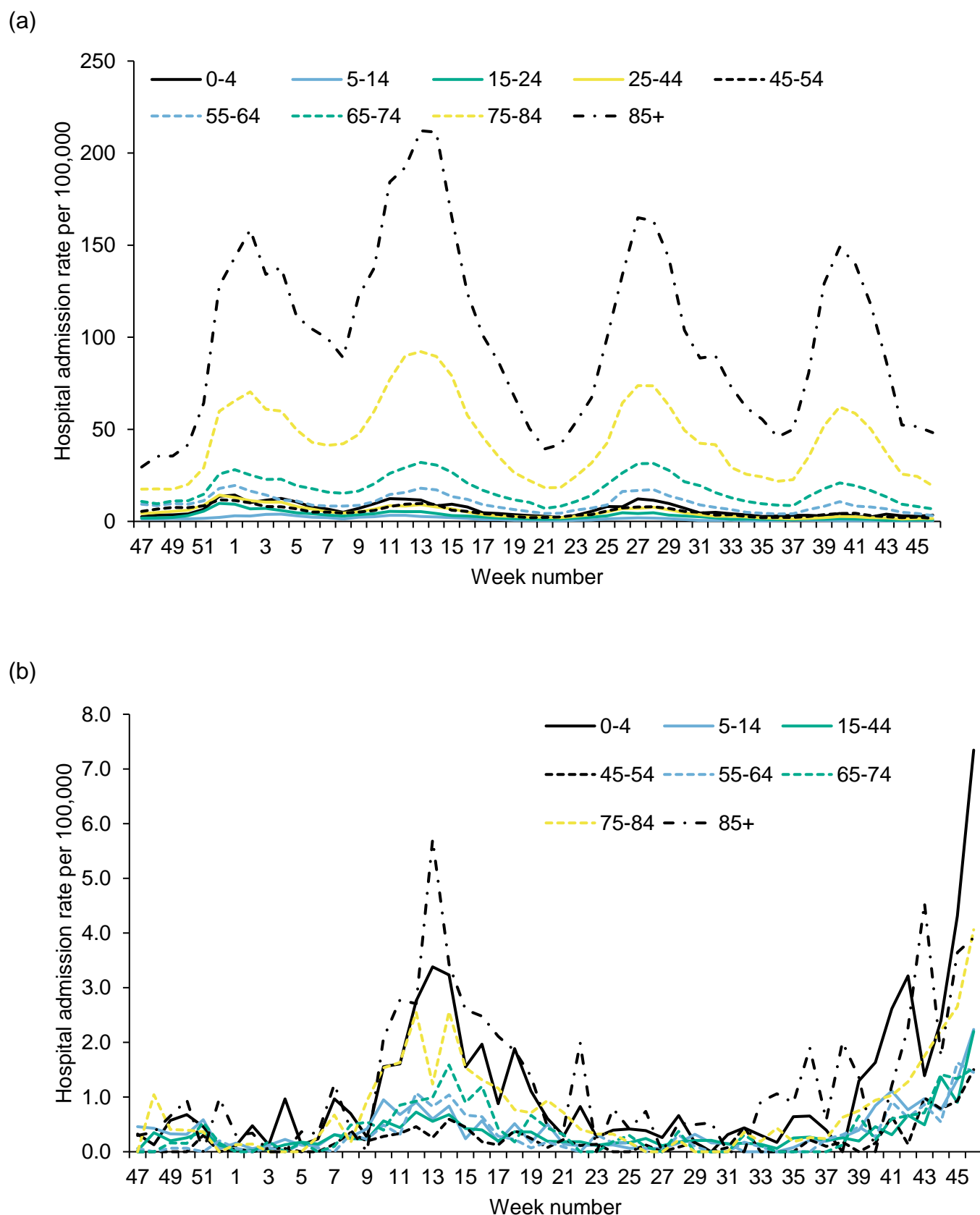


\*Number of influenza hospital admissions based on sentinel NHS trusts.

**Figure 39: Weekly hospital admission rate by UKHSA centre for new (a) COVID-19 positive cases and (b) influenza reported through SARI Watch**



**Figure 40: Weekly hospital admission rate by age group for new (a) COVID-19 positive cases and (b) influenza reported through SARI Watch**



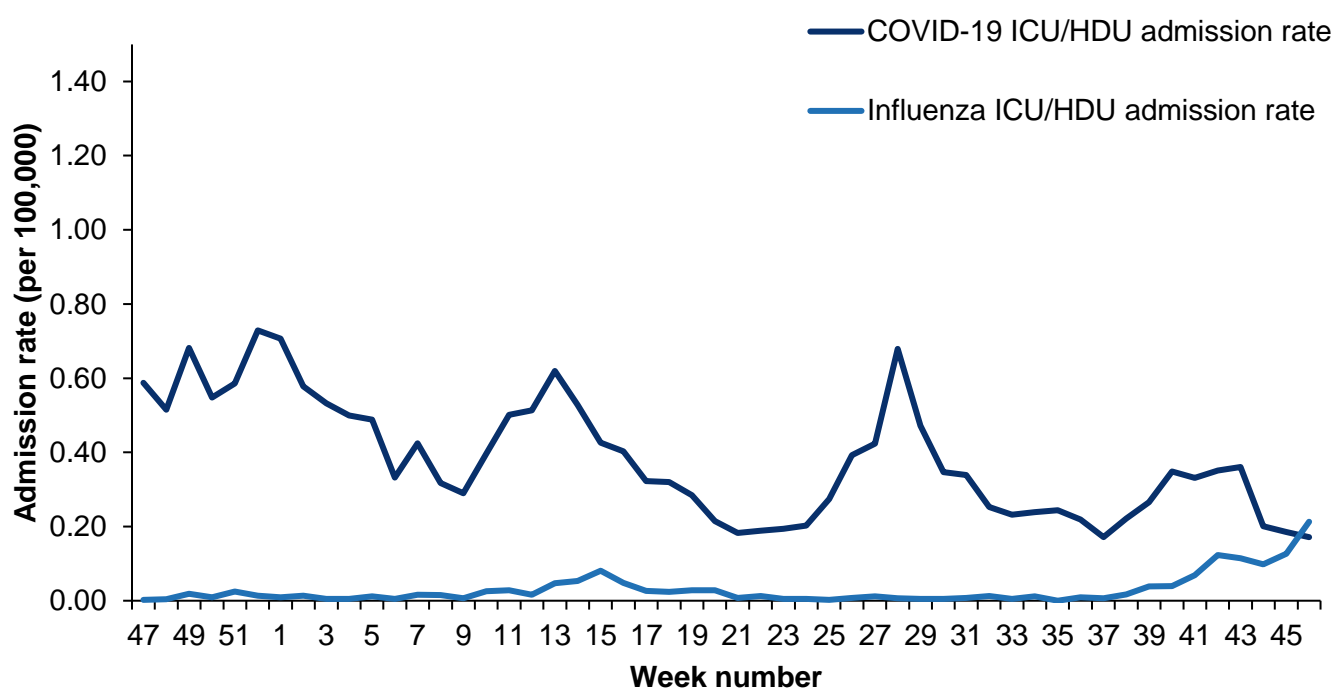
## ICU or HDU admissions, SARI Watch

In week 46, the overall weekly ICU or HDU admission rates for COVID-19 decreased to 0.17 per 100,000 compared with 0.19 per 100,000 in the previous week. Note that ICU or HDU admissions rates may represent a lag from admission to hospital to an ICU or HDU ward.

By UKHSA centre, the highest ICU or HDU admission rates for COVID-19 were observed in London. By age groups, the highest ICU or HDU admission rates for COVID-19 were observed in 75 to 84 year olds.

In week 46, the overall ICU or HDU rate for influenza was 0.21 per 100,000 compared with 0.13 per 100,000 in the previous week. There were 90 new case report of an ICU or HDU admission for influenza in week 46 (6 influenza A(H1N1)pdm09, 8 influenza A(H3N2), 57 influenza A(not subtyped) and 19 influenza B).

**Figure 41: Weekly overall ICU or HDU admission rates of new COVID-19 and influenza positive cases per 100,000 population reported through SARI Watch, England**



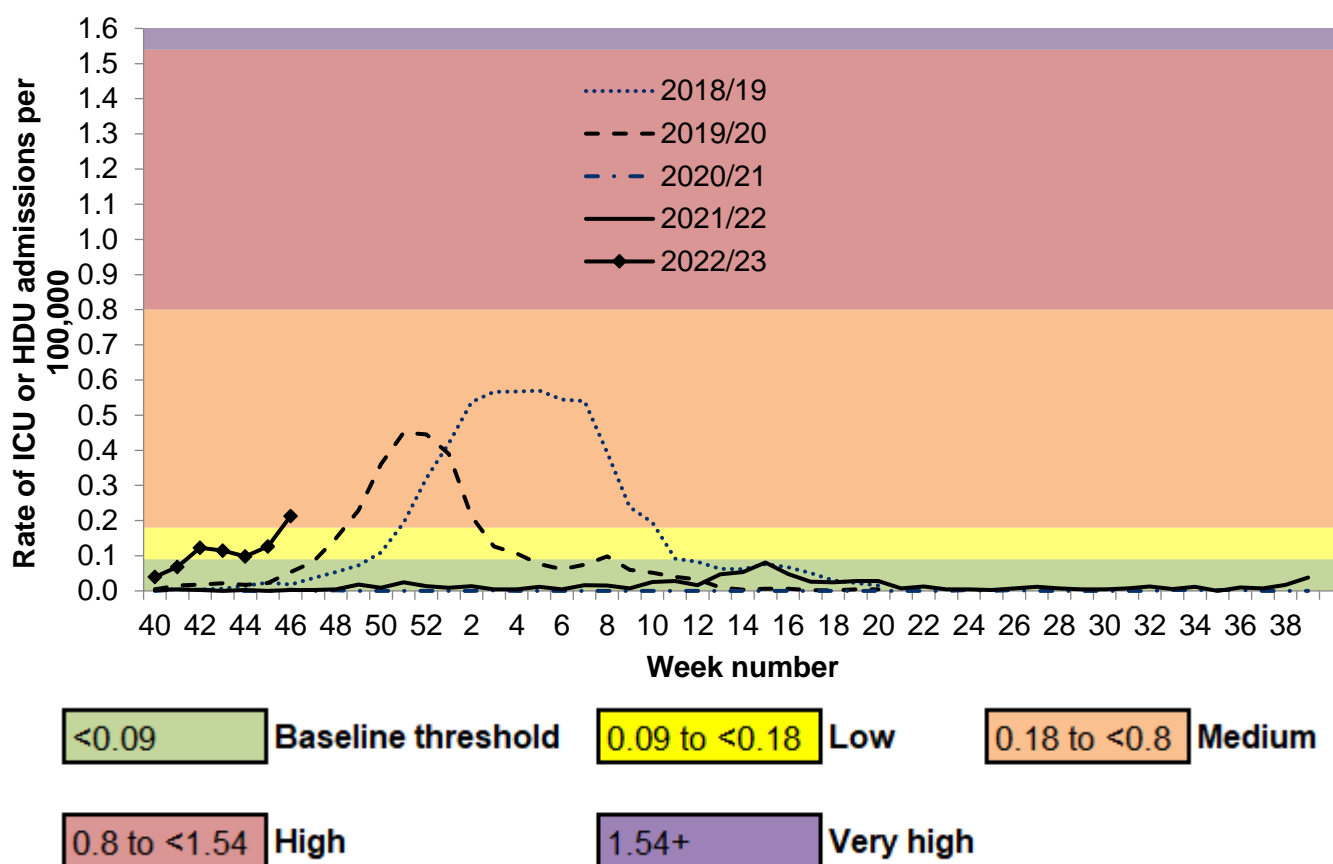
\* Influenza ICU or HDU admission rate based on 99 NHS trusts for week 46.

\* COVID-19 ICU or HDU admission rate based on 82 NHS trusts for week 46.

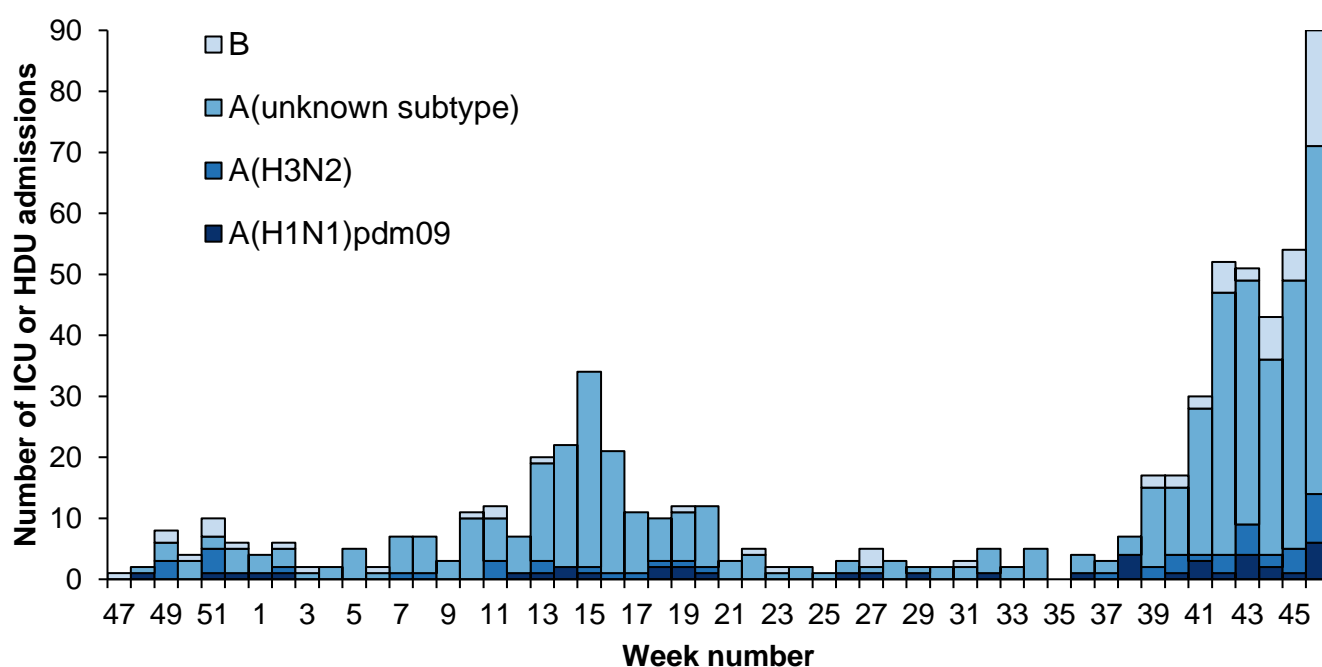
\* SARI Watch data is provisional.



**Figure 42: Weekly overall influenza ICU or HDU admission rates per 100,000 trust catchment population with MEM thresholds, SARI Watch, England**

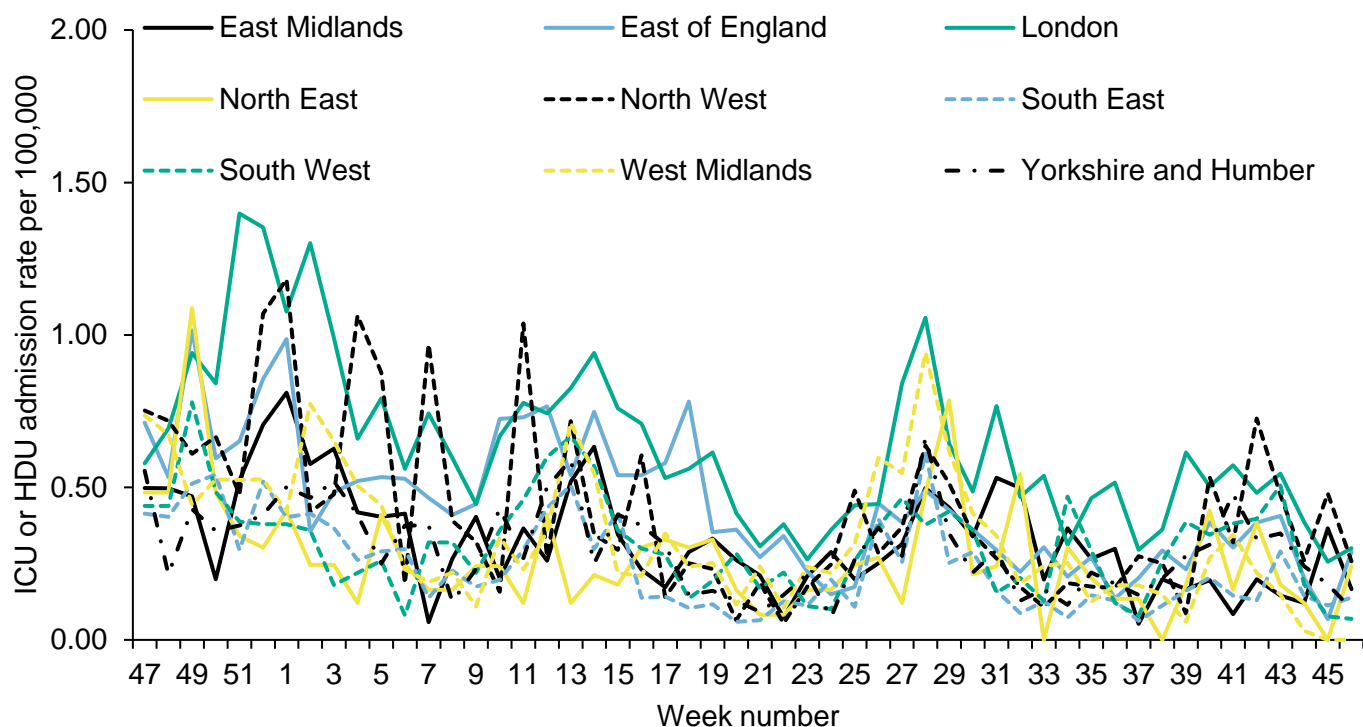


**Figure 43: Weekly influenza ICU or HDU admissions by influenza type, SARI Watch, England**

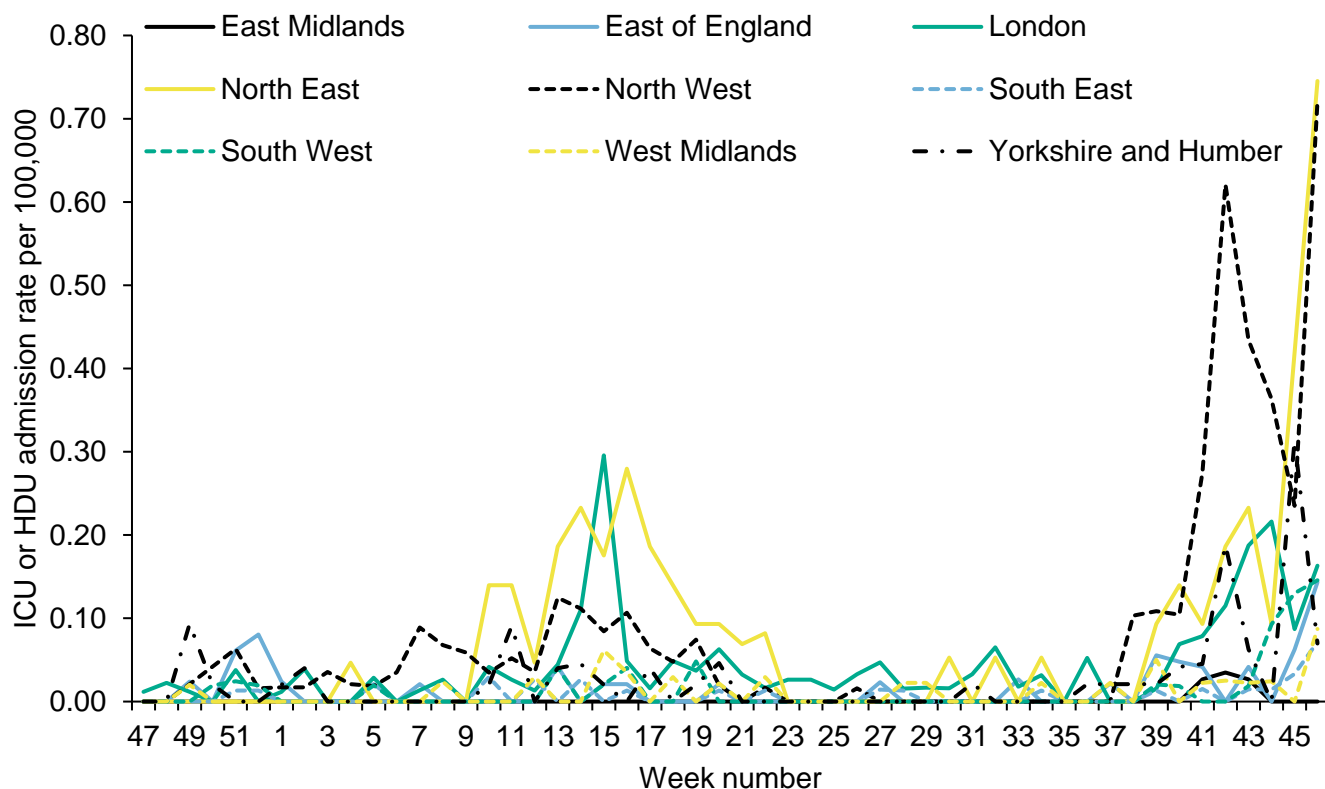


**Figure 44: Weekly ICU or HDU admission rate by UKHSA centre for new (a) COVID-19 positive cases and (b) influenza, reported through SARI Watch**

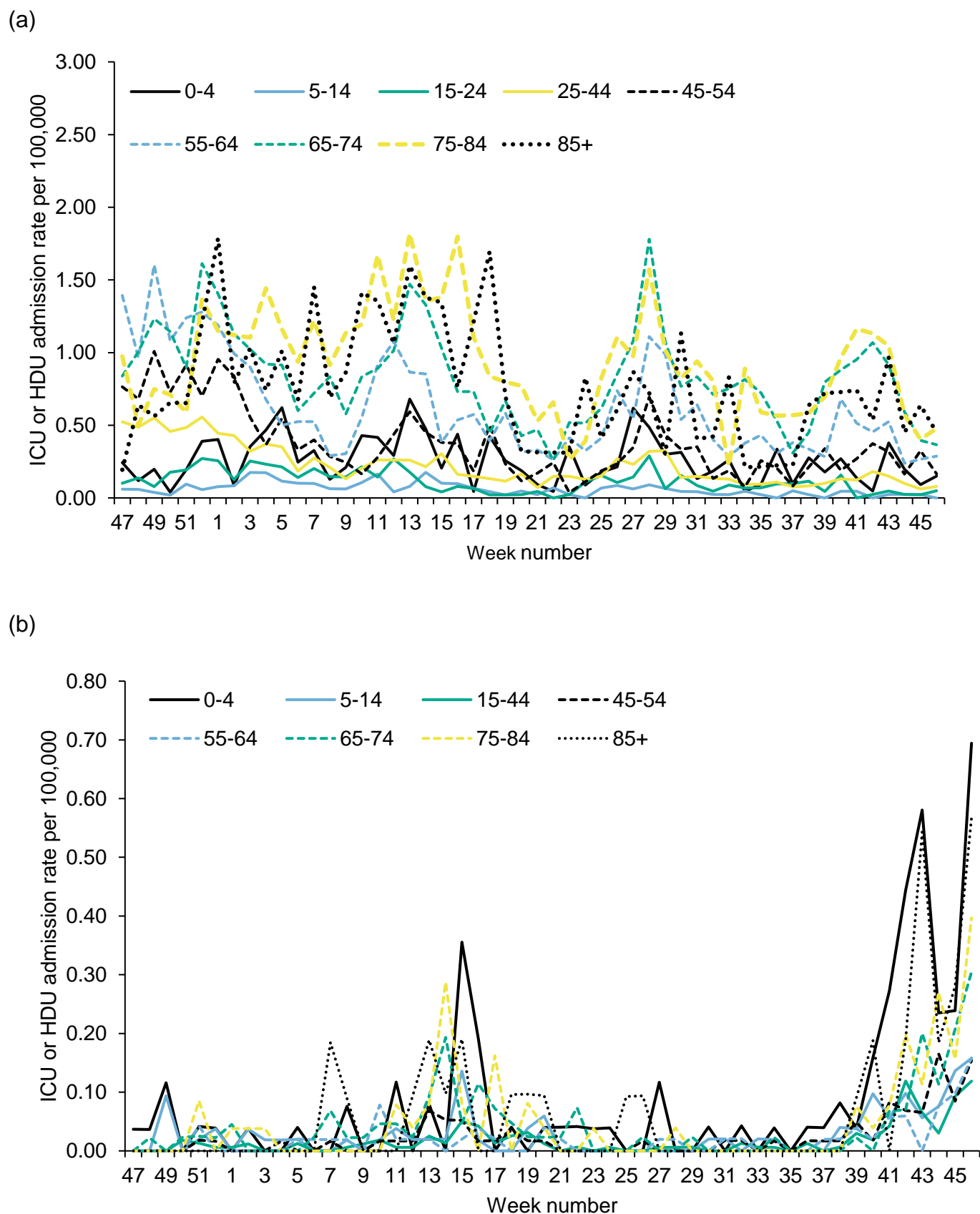
(a)



(b)



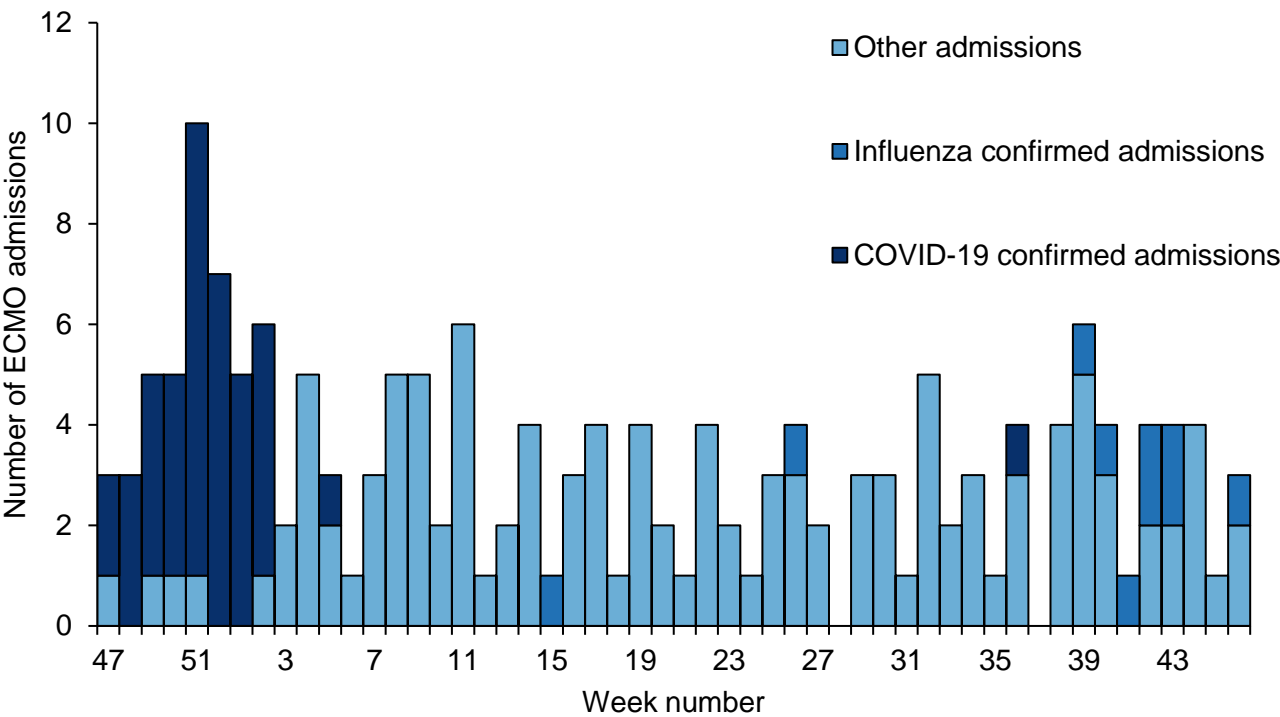
**Figure 45: Weekly ICU or HDU admission rate by age group for new (a) COVID-19 positive cases and (b) influenza, reported through SARI Watch**



## ECMO, SARI Watch

There was one new laboratory confirmed influenza admission reported in week 46 from the 6 Severe Respiratory Failure (SRF) centres in the UK (Figure 46). No new COVID-19 admissions were reported.

**Figure 46: Laboratory confirmed ECMO admissions (COVID-19, influenza and non-COVID-19 confirmed) to Severe Respiratory Failure centres in the UK**

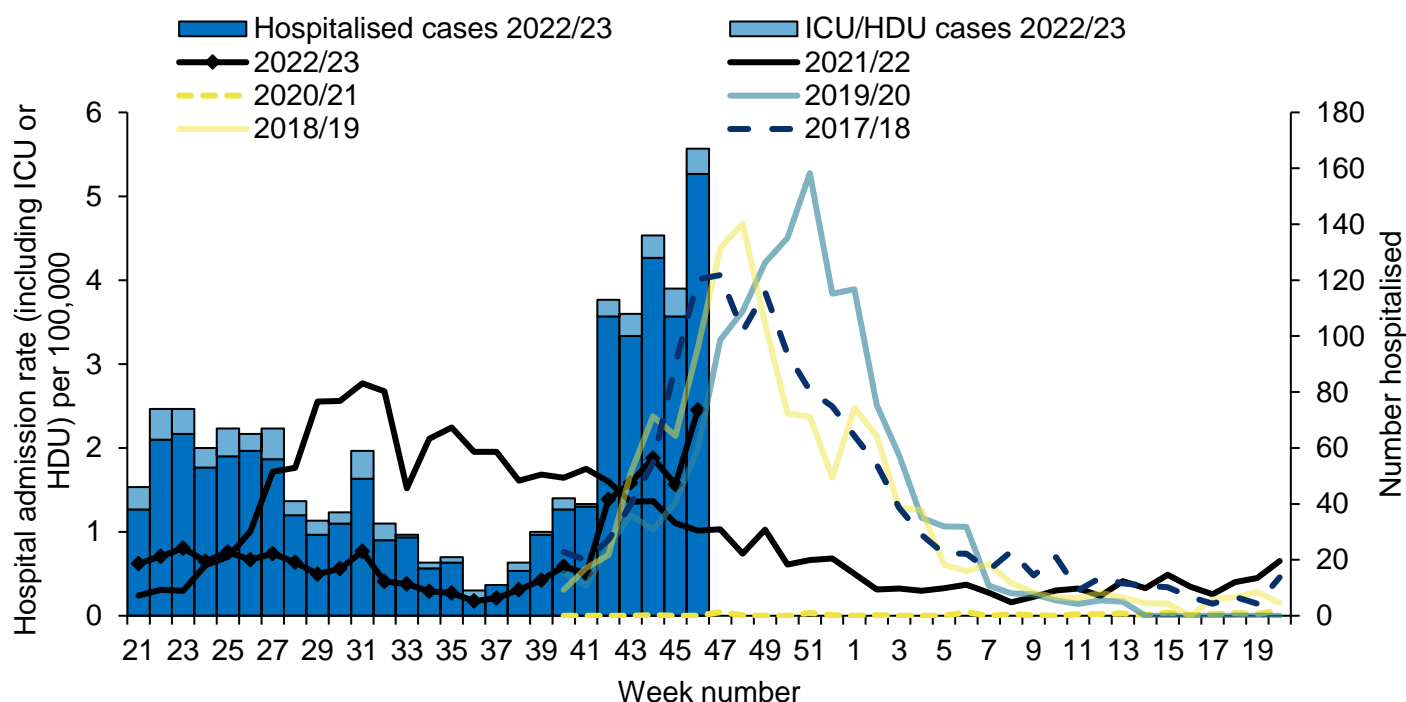


\* SARI Watch data is provisional.

## RSV admissions, SARI Watch

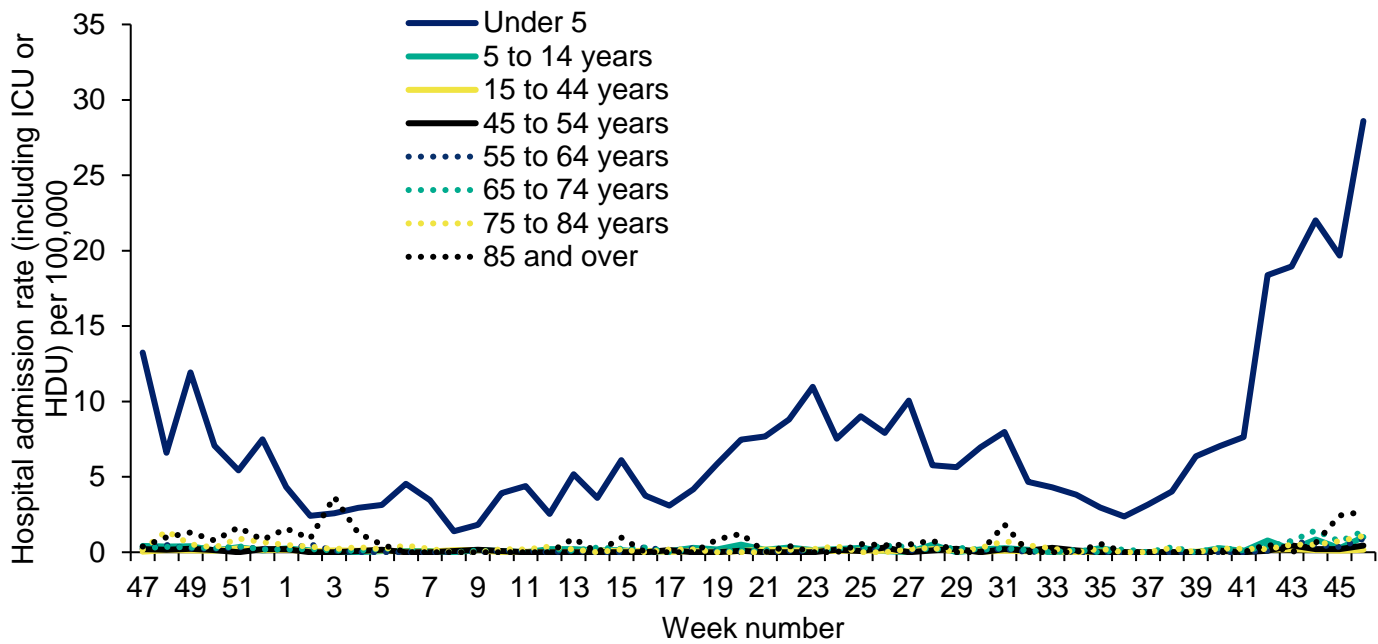
Data on hospitalisations, including ICU or HDU admissions, with respiratory syncytial virus (RSV) are shown below. RSV SARI Watch surveillance is sentinel.

**Figure 47: Weekly overall hospital admission rates (including ICU or HDU) of RSV positive cases per 100,000 population reported through SARI Watch, England**



\* Please note that in previous seasons, RSV SARI Watch surveillance has run from week 40 to week 20. In the 2020 to 2021 season onwards this was extended to run throughout the year, to allow for surveillance of out-of-season trends

**Figure 48: Weekly hospitalisation (including ICU or HDU) admission rates by age group for new RSV cases reported through SARI Watch, England**



\* Please note that rates are based on the number of hospitalised cases divided by the Trust catchment population, multiplied by 100,000

\* SARI Watch data is provisional

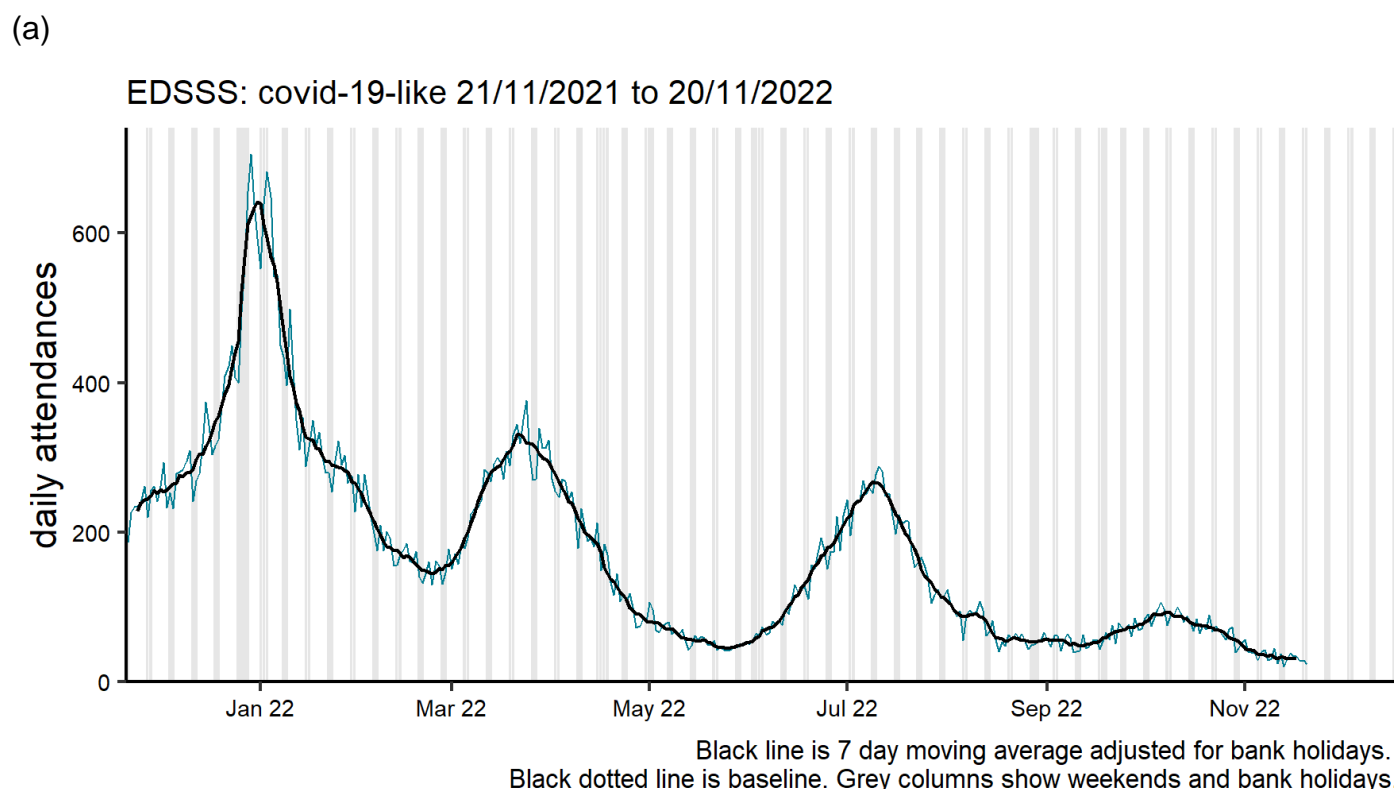
## Emergency Department attendances, Syndromic surveillance

The [Emergency Department Syndromic Surveillance System \(EDSSS\)](#) monitors the daily visits in a network of emergency departments across England.

Up to 20 November, ED attendances as reported by 143 EDs for acute respiratory infection increased, particularly in those under 15 years. ED attendances for COVID-19-like infections were stable nationally. ED attendances for influenza-like illness increased across most age groups (figures 49, 50 and 51).

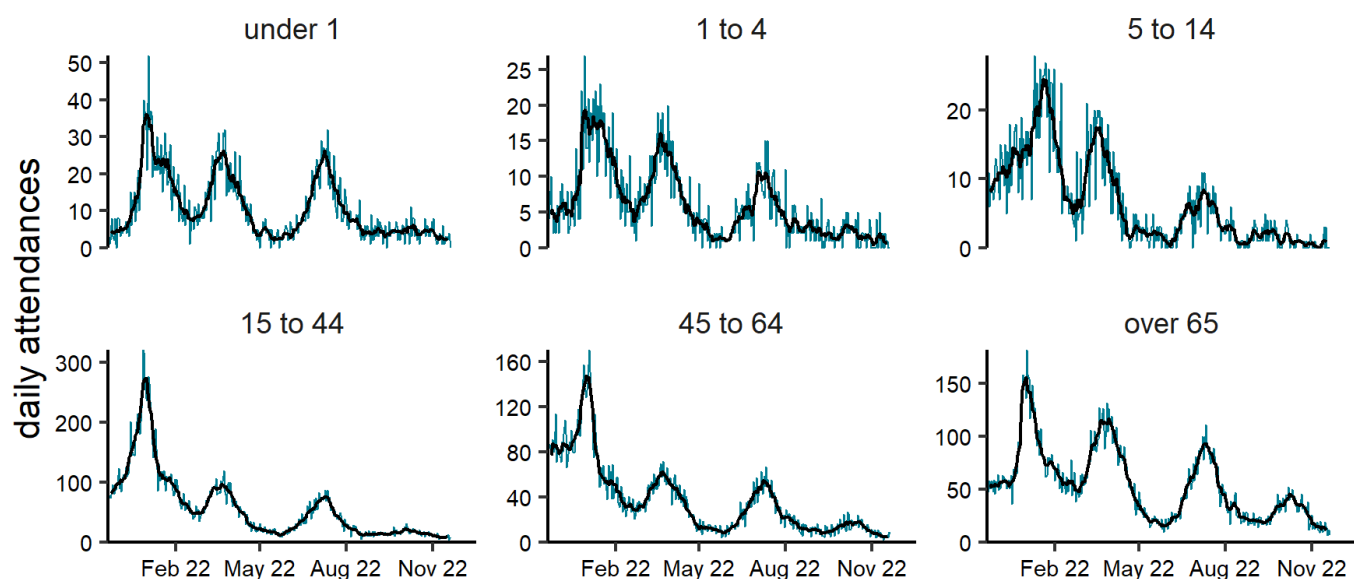
Please note: the COVID-19-like ED indicator is an underestimation of the number of COVID-19 attendances as it only includes attendances with a COVID-19-like diagnosis as their primary diagnosis. The EDSSS COVID-19-like indicator should therefore be used to monitor trends in ED attendances and not to estimate actual numbers of COVID-19 ED attendances. Further information about these caveats is available from the [Emergency Department Syndromic Surveillance](#) bulletin.

**Figure 49: Daily ED attendances for COVID-19-like infections, England (a) nationally, (b) by age group and (c) by UKHSA centre**



(b)

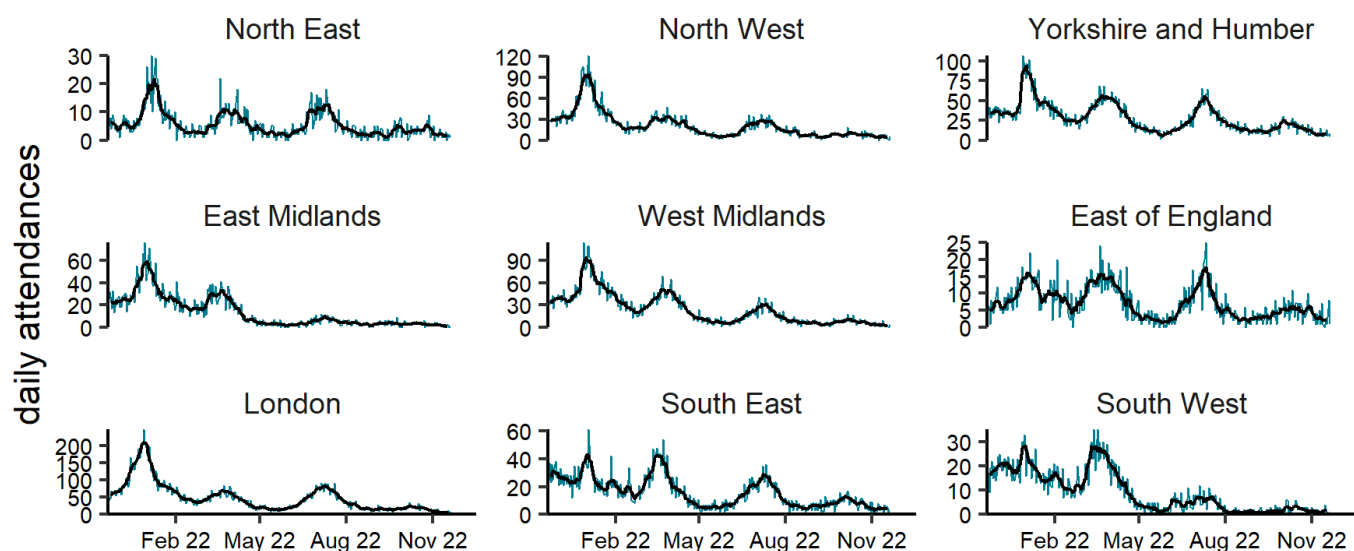
EDSSS: covid-19-like by age (years) 21/11/2021 to 20/11/2022



NOTE: SCALES MAY VARY IN EACH GRAPH TO ENABLE TREND COMPARISON.  
Black line is 7 day moving average adjusted for bank holidays.

(c)

EDSSS: covid-19-like by region 21/11/2021 to 20/11/2022

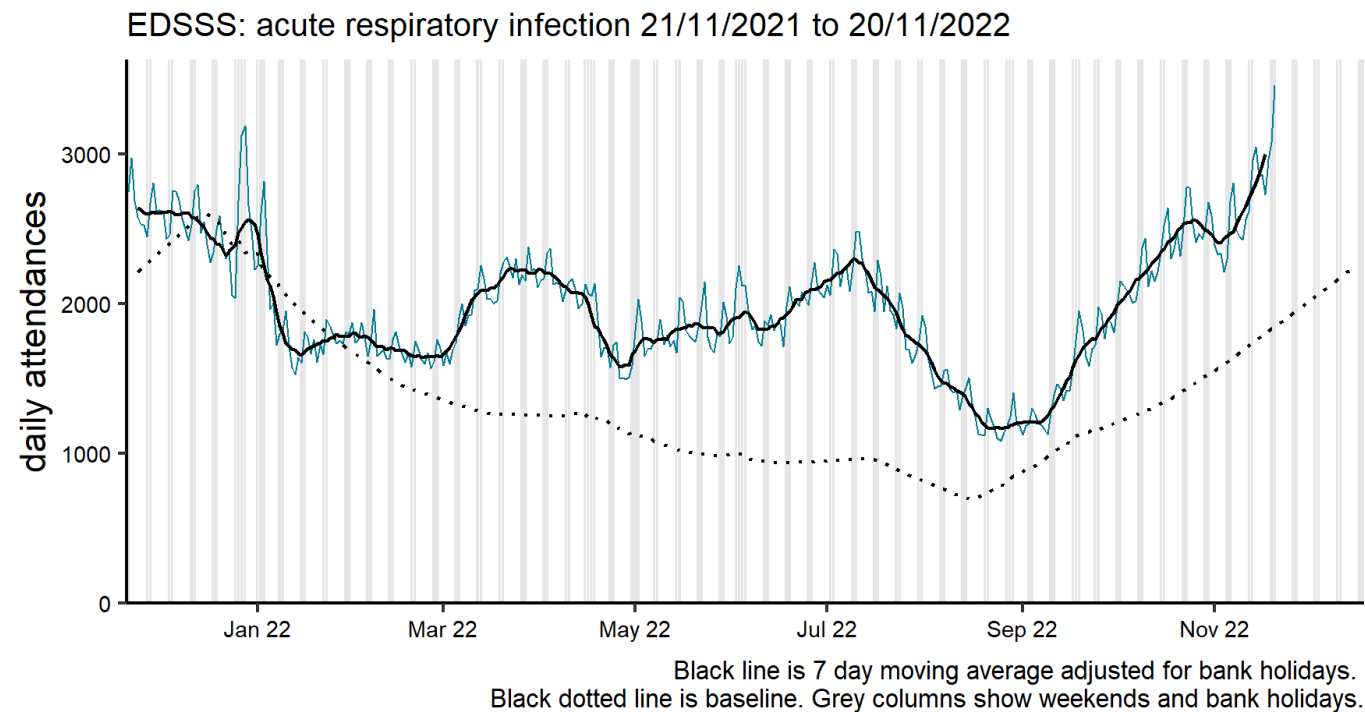


NOTE: SCALES MAY VARY IN EACH GRAPH TO ENABLE TREND COMPARISON.  
Black line is 7 day moving average adjusted for bank holidays.  
Black dotted line is baseline.

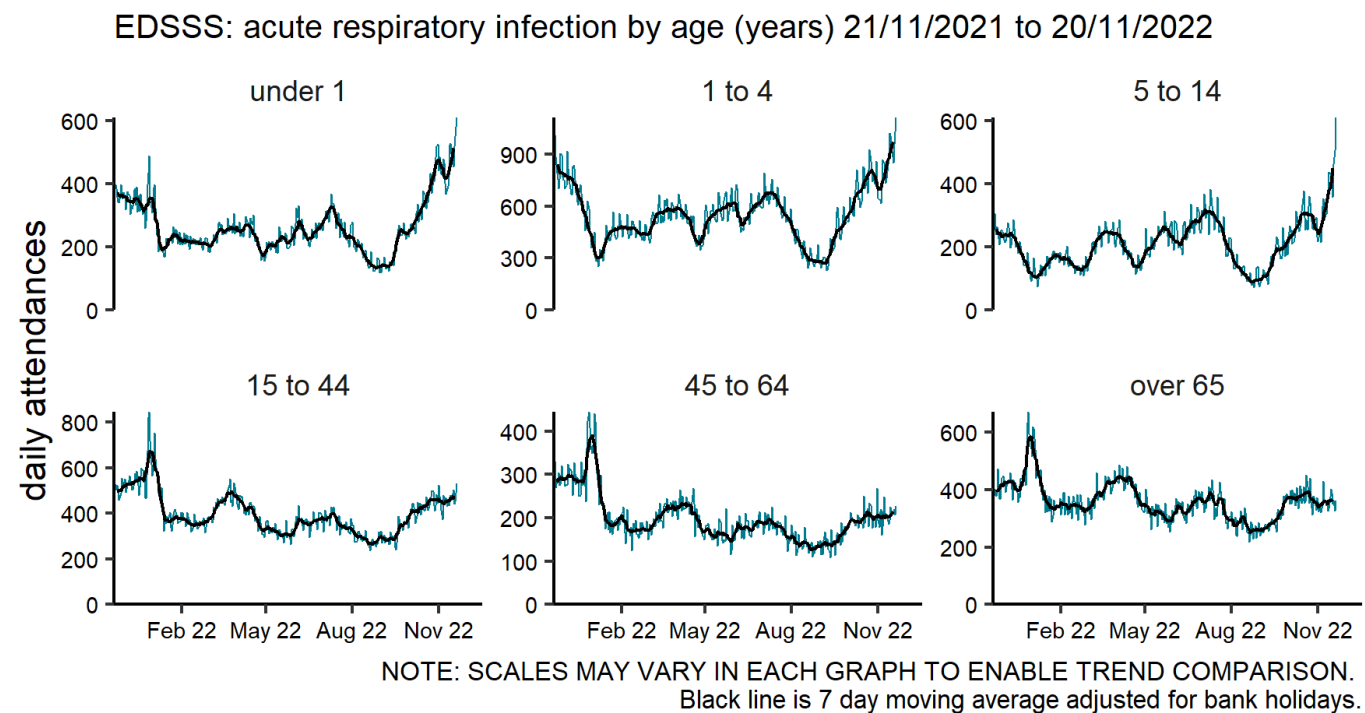


**Figure 50: Daily ED attendances for acute respiratory infection, England (a) nationally, (b) by age group and (c) by UKHSA centre**

(a)

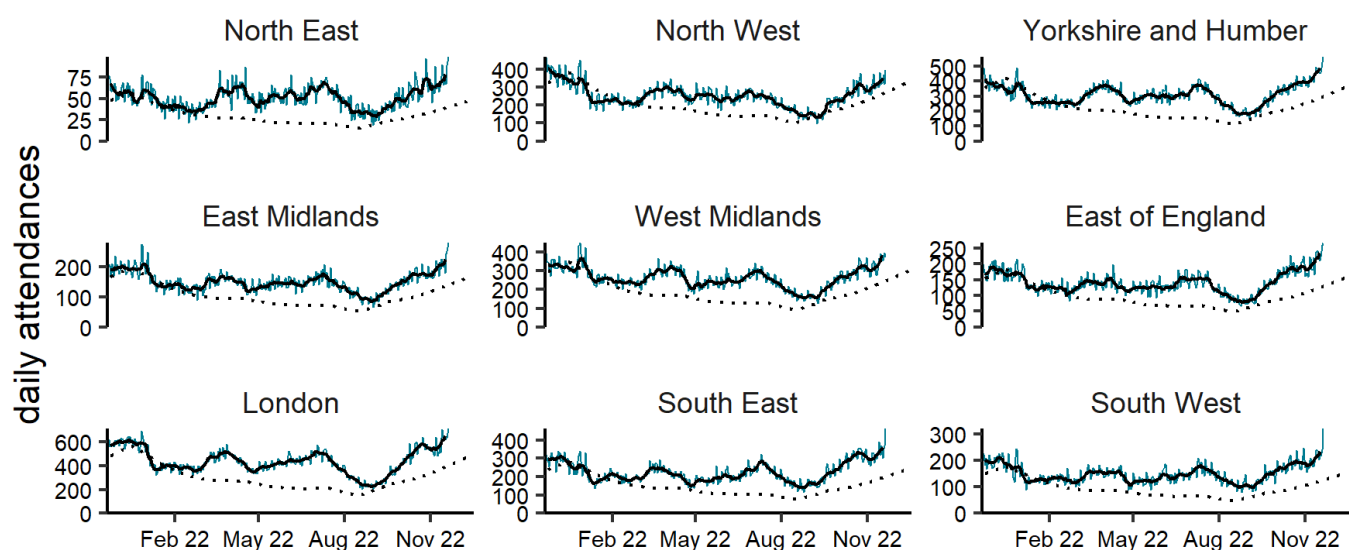


(b)



(c)

EDSSS: acute respiratory infection by region 21/11/2021 to 20/11/2022

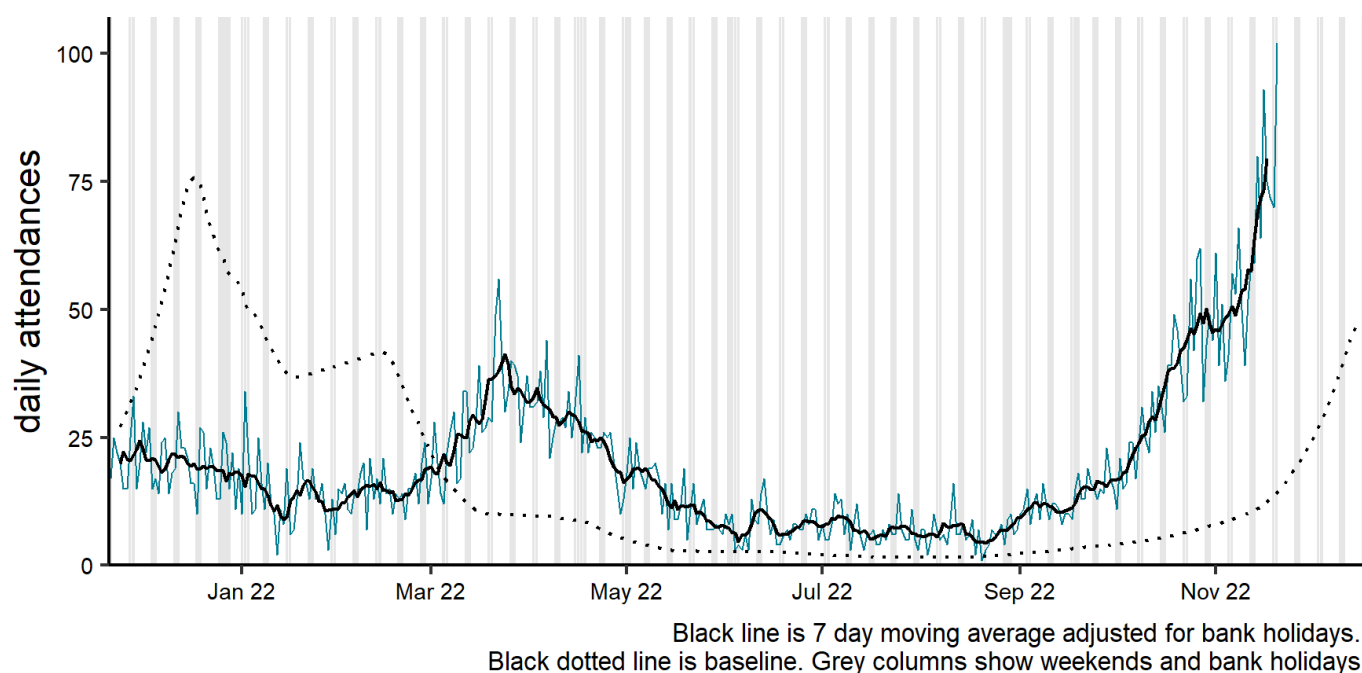


NOTE: SCALES MAY VARY IN EACH GRAPH TO ENABLE TREND COMPARISON.  
Black line is 7 day moving average adjusted for bank holidays.  
Black dotted line is baseline.

**Figure 51: Daily ED attendances for influenza-like illness, England (a) nationally, (b) by age group and (c) by UKHSA centre**

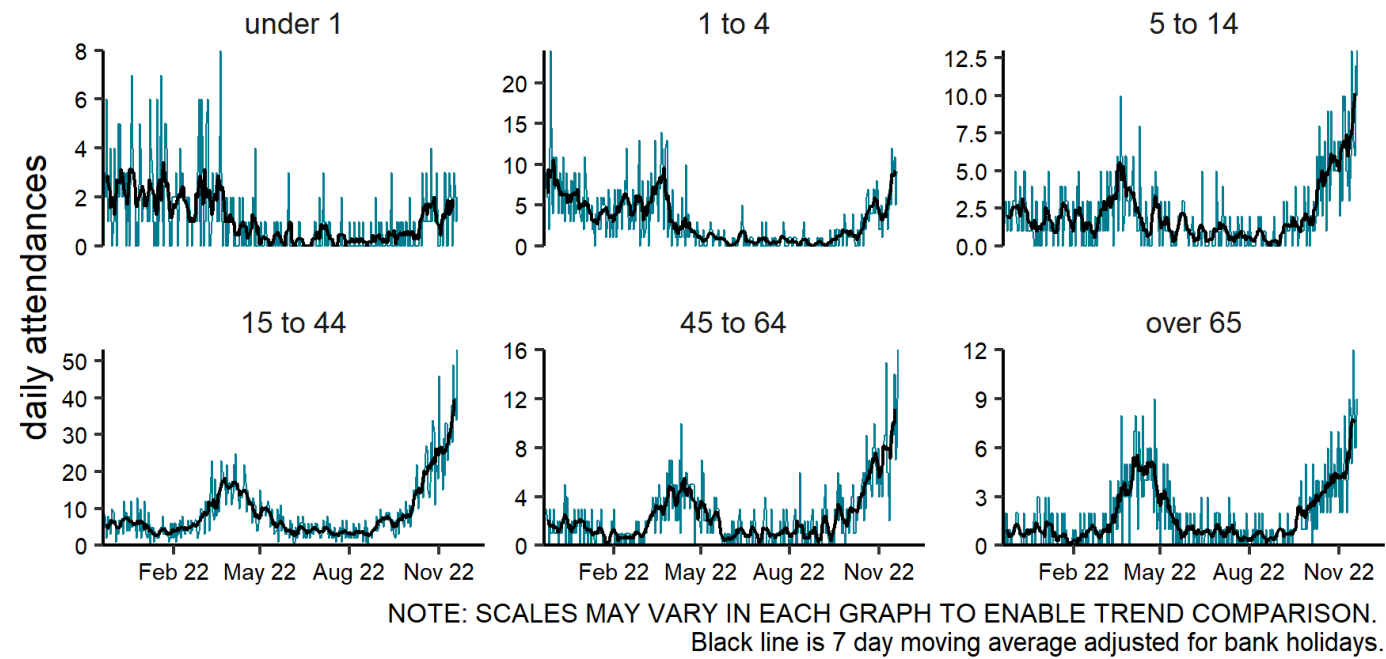
(a)

EDSSS: influenza-like illness 21/11/2021 to 20/11/2022



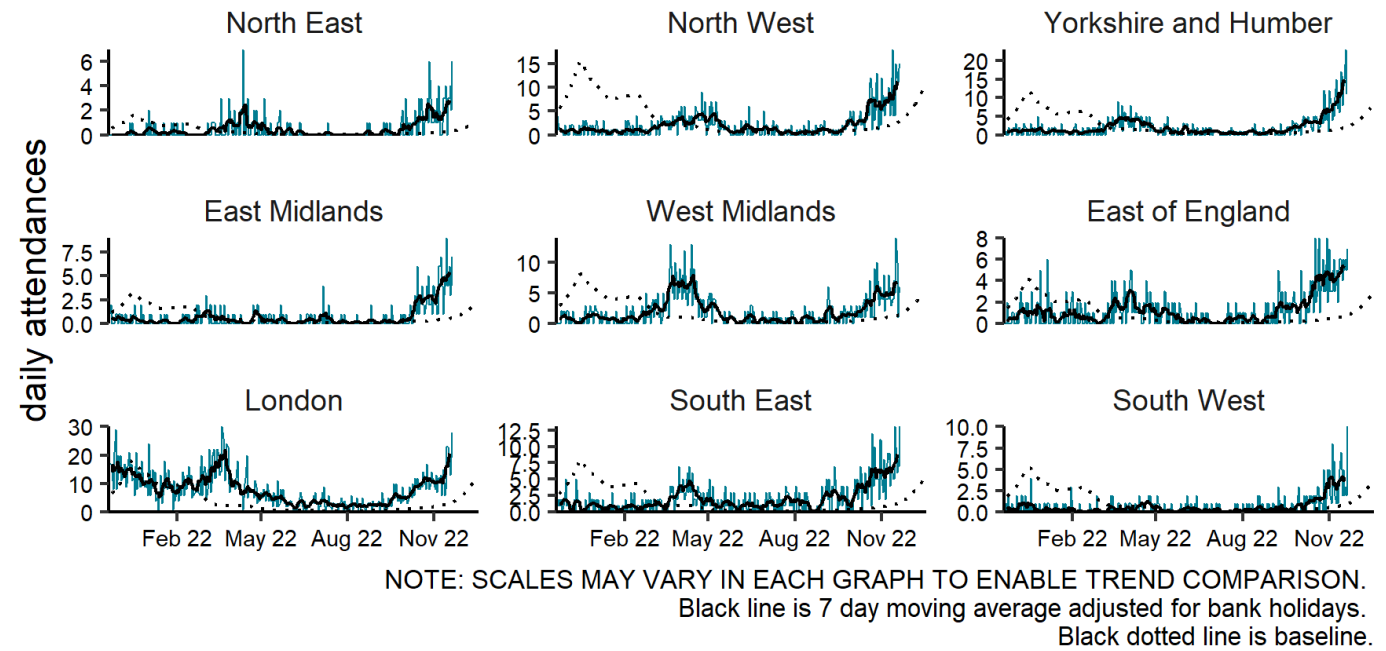
(b)

EDSSS: influenza-like illness by age (years) 21/11/2021 to 20/11/2022



(c)

EDSSS: influenza-like illness by region 21/11/2021 to 20/11/2022

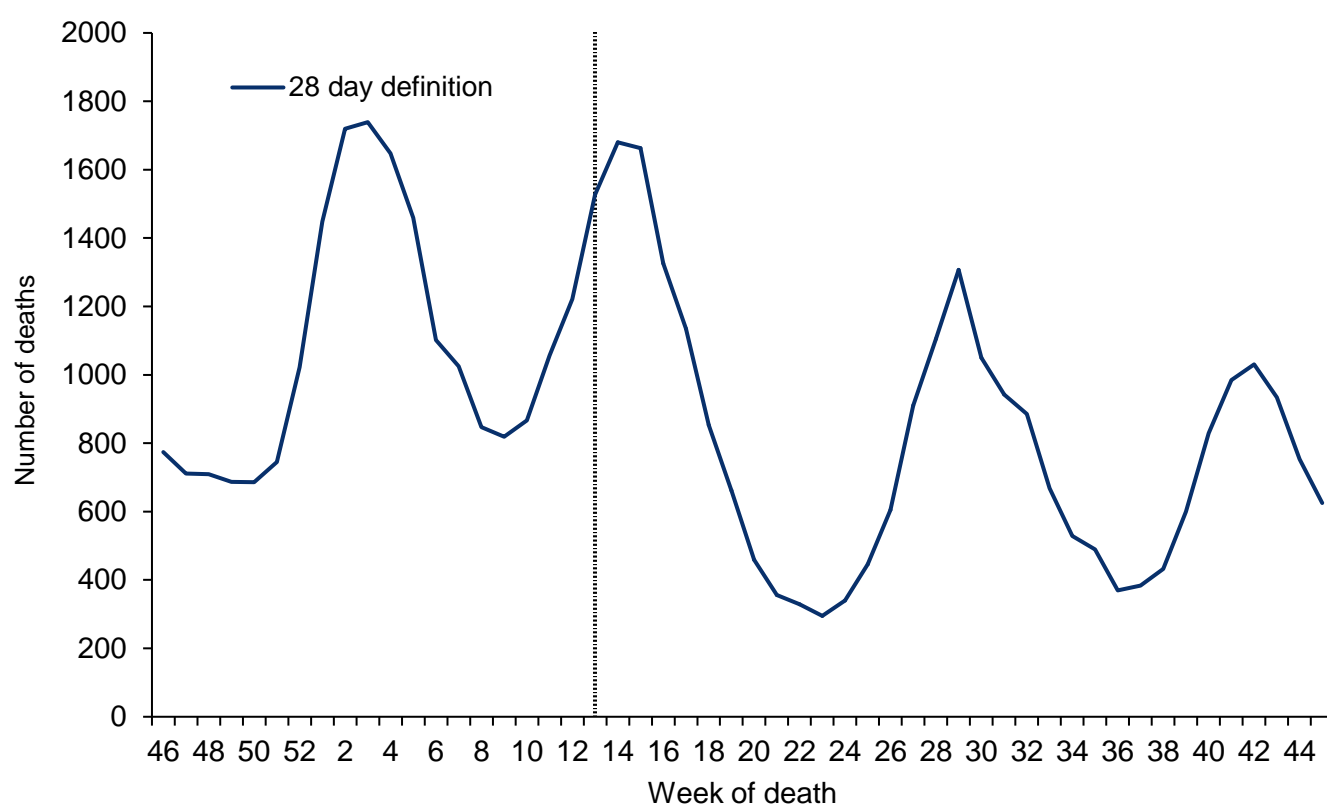


# Mortality surveillance

## COVID-19 deaths

COVID-19 related deaths by the 28 day definition are reported below. This metric includes a death in a person with a positive COVID-19 test who died within (equal to or less than) 28 days of the first positive specimen date in the most recent episode of infection.

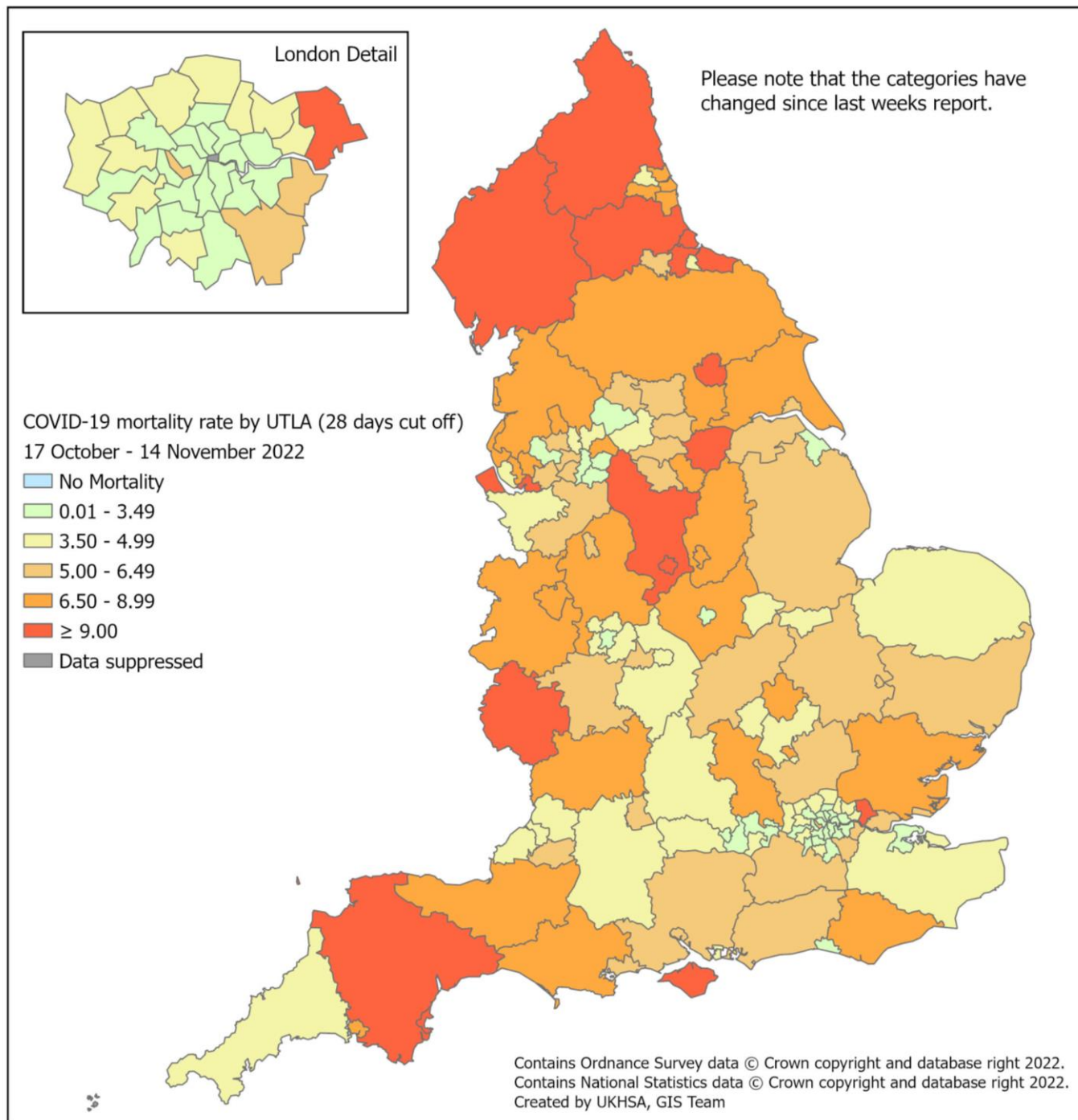
**Figure 52: Number of deaths by week of death and time since a positive COVID-19 test (28 day definition), England**



\* Vertical dotted line indicates the end of provision of free universal testing for the general public in England, as outlined in the plan for [living with COVID-19](#).

\* Data is shown by the week of death. This gives the most accurate analysis of this time progression, however, for the most recent weeks' numbers more deaths are expected to be registered therefore this should be interpreted with caution.

**Figure 53: Cumulative mortality rate of COVID-19 cases per 100,000 population tested under Pillars 1 and 2 for the weeks 41 to 45 by 28 day definition**



## Daily excess all-cause mortality (England)

Deaths occurring from 1 January 2020 to 16 November 2022 were assessed to calculate the daily excess above a baseline using age-group and region specific all cause deaths as provided daily by the General Register Office (GRO). The deaths were corrected to allow for delay to registration based on past data on these delays and the baseline was from the same day of the year in the previous 5 years plus or minus 7 days with an extrapolated time trend, and with 2 and 3 standard deviation (SD) limits shown (Figure 54).

Weeks in which at least 2 days exceeded the 3SD threshold are shown in Table 3 and the daily difference from the baseline by age and region is given in Figure 54.

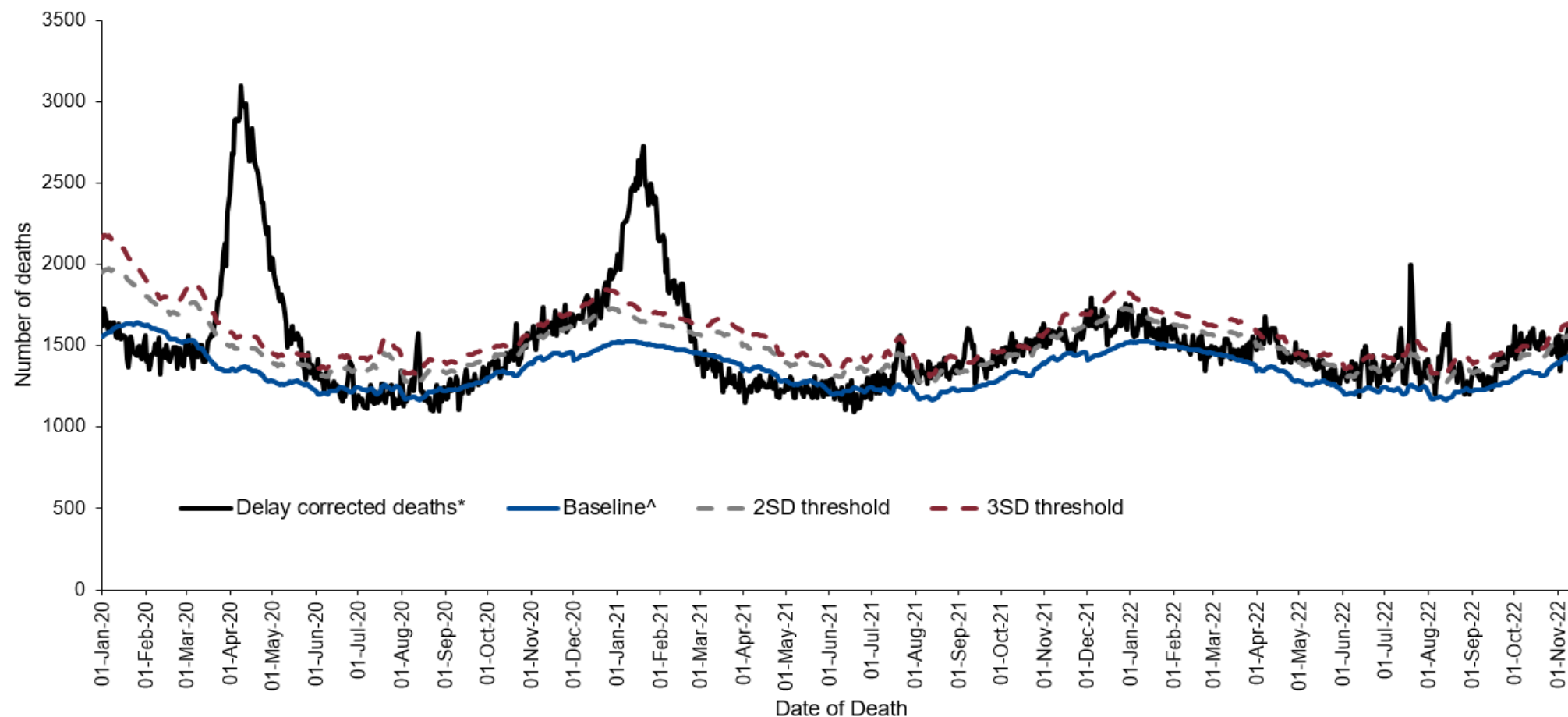
Note that as this data is by date of death with delay corrections, numbers are subject to change each week, particularly for more recent days. The current week's model supersedes models presented in previous week.

Excess all-cause mortality was observed in 4 of the last 8 weeks; weeks 39, 40, 41 and 42.

Note that level 3 heat-health alerts were issued for June 17 to 18, July 11 to 21, and August 9 to 16 2022, and a level 4 heat-health alert issued for July 18 to 19 2022.

Other measures of excess mortality published by UKHSA are the [Fingertips excess mortality in England report](#), which uses ONS death registration data and [the all-cause mortality surveillance report](#), which uses the EuroMOMO model to measure excess deaths.

**Figure 54: Daily excess all-cause deaths in all ages, England, 1 January 2020 to 16 November 2022**



^Baseline calculation:

January to November 2020: same day in previous 5 years plus or minus 1 week with a linear trend.

December 2020 to March 2021: past 3 low flu years plus or minus 2 weeks, no trend.

March 2021 onwards: same baseline as 2020.

\*corrected for delay to registration from death.

**Table 3: Excess all-cause deaths by (a) age group and (b) UKHSA centres, England**

(a)

Age Group	Excess detected in week 45 2022?	Weeks in excess from week 10 to 53 2020	Weeks in excess from week 1 to 52 2021	Weeks in excess from week 1 2022
All	x	13 to 21, 33, 43, 45, 50, 52 to 53	01 to 07, 29, 31 to 32, 35 to 36, 40 to 44, 48	14 to 15, 17 to 18, 23 to 24, 27 to 29, 32 to 33, 39 to 42
under 25	x	None	None	None
25 to 44	x	14 to 16	None	None
45 to 64	x	12 to 19, 49 to 50, 52 to 53	01 to 08, 23, 29 to 30, 36, 41 to 44, 48 to 49	29
65 to 74	x	13 to 19, 46, 48, 52 to 53	01 to 07, 36, 43, 48	32, 40
75 to 84	x	13 to 21, 33, 45, 49, 52 to 53	01 to 07, 32, 36, 40, 42	14 to 19, 22 to 24, 27 to 29, 31 to 32, 36, 38 to 42
85+		13 to 21, 33, 53	01 to 07, 31, 36	28 to 29, 32, 39, 41 to 42

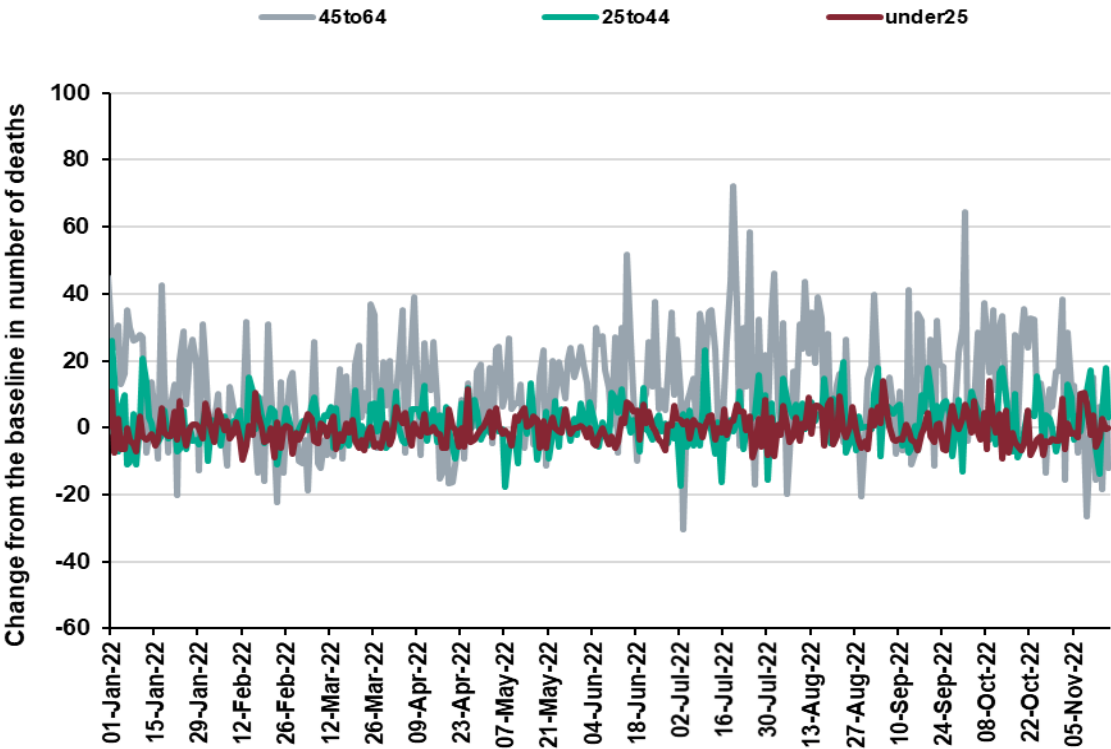
(b)

UKHSA Centres	Excess detected in week 45 2022?	Weeks in excess from week 10 to 53 2020	Weeks in excess from week 1 to 52 2021	Weeks in excess from week 1 2022
East of England	x	14 to 19, 52 to 53	01 to 07	23, 27, 29
East Midlands	x	13 to 19, 48	01 to 07	29
London	x	12 to 19, 33, 52 to 53	01 to 06, 36	None
North East	x	14 to 21	02 to 04	None
North West	x	13 to 19, 33, 42 to 47	01 to 07, 31 to 32, 36, 43	14 to 15, 29 to 30, 32, 42
South East	x	13 to 21, 33, 50 to 53	01 to 07, 36, 41, 49	14, 32, 40 to 42
South West	x	13 to 19, 33	02 to 07, 29, 36	29, 32, 34, 39
West Midlands	x	13 to 20, 45, 48	01 to 07, 29, 36, 40, 48	13, 29, 32, 41 to 42
Yorkshire and Humber	x	14 to 21, 23, 43 to 50	02 to 04, 32, 35 to 36	29, 32

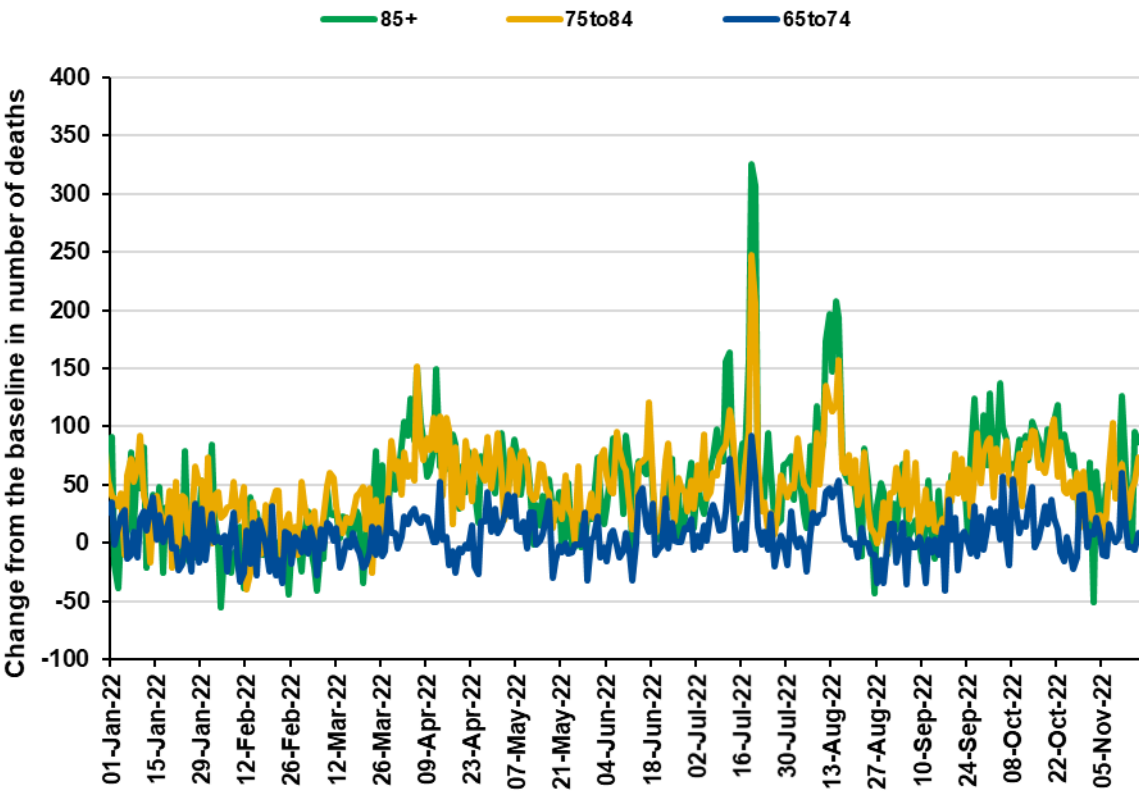


**Figure 55: Daily excess all-cause deaths by age group, England, 1 January to 16 November 2022**

(a)

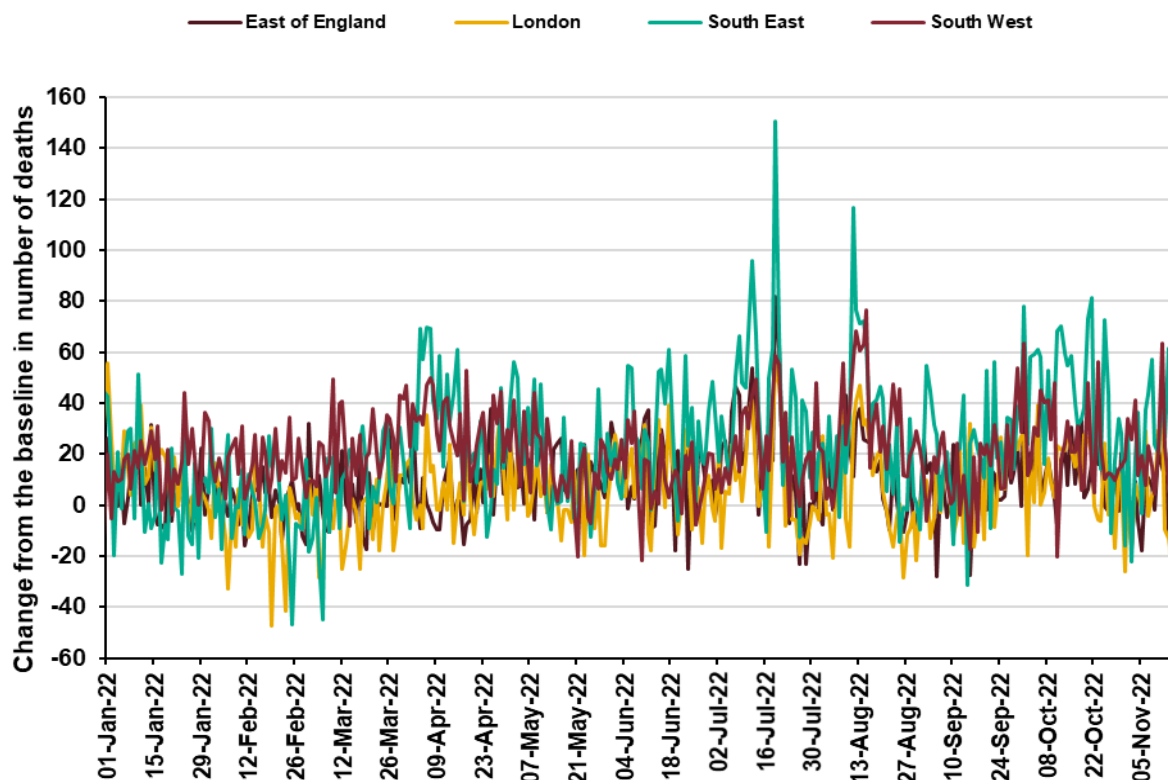


(b)

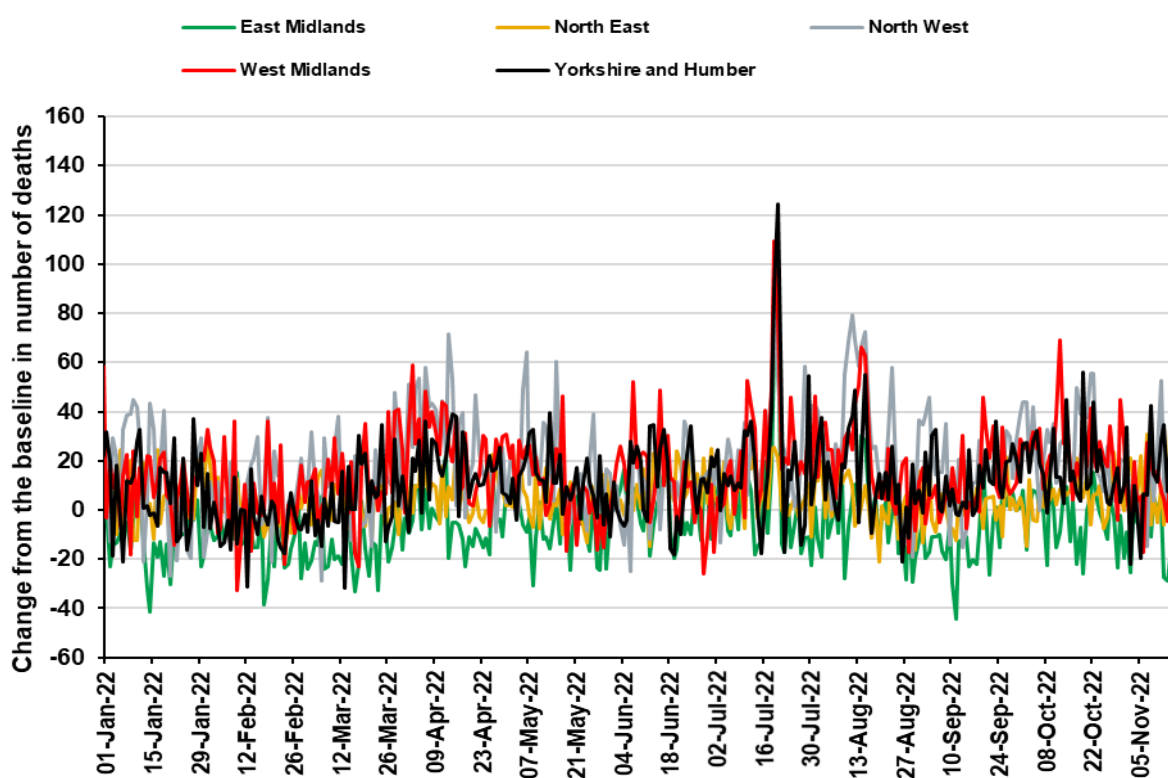


**Figure 56: Daily excess all-cause deaths by UKHSA centre, England, 1 January to 16 November 2022**

(a)



(b)



# Microbiological surveillance

## Influenza virus characterisation

UKHSA characterises the properties of influenza viruses through one or more tests, including genome sequencing (genetic analysis) and haemagglutination inhibition (HI) assays (antigenic analysis). These data are used to compare how similar the currently circulating influenza viruses are to the strains included in seasonal influenza vaccines, and to monitor for changes in circulating influenza viruses. The interpretation of genetic and antigenic data sources is complex due to a number of factors, for example, not all viruses can be cultivated in sufficient quantity for antigenic characterisation, so that viruses with sequence information may not be able to be antigenically characterised as well. Occasionally, this can lead to a biased view of the properties of circulating viruses, as the viruses which can be recovered and analysed antigenically, may not be fully representative of majority variants, and genetic characterisation data does not always predict the antigenic characterisation.

As of week 47 2022, the UKHSA Respiratory Virus Unit have genetically characterised 306 influenza A viruses (159 A(H3N2) and 147 A(H1N1)pdm09 viruses) and 3 influenza B viruses that were detected since week 34 2022 (week commencing 22 August 2022), by sequencing of the haemagglutinin (HA) gene.

The 159 influenza A(H3N2) viruses genetically characterised, all belong in the genetic subclade 3C.2a1b.2a.2. The Northern Hemisphere 2022 to 2023 influenza A(H3N2) vaccine strain (an A/Darwin/9/2021-like virus) also belongs in this 3C.2a1b.2a.2 genetic subclade.

The 147 influenza A(H1N1)pdm09 viruses characterised to date this season, all belong in genetic subgroup 6B.1A.5a.2. The Northern Hemisphere 2022 to 2023 influenza A(H1N1)pdm09 vaccine strain (an A/Victoria/2570/2019-like virus) also belongs in genetic subclade 6B.1A.5a, within the 6B.1A.5a.2 cluster.

Three influenza B/Victoria lineage viruses have been genetically characterised, both belonging in subclade V1A3, within the subgroup V1A3a.2. The Northern Hemisphere 2022 to 2023 influenza B/Victoria lineage vaccine strain (a B/Austria/1359417/2021-like virus) also belongs in this V1A3a.2 subclade/group.

It is too early to predict which influenza lineages will dominate throughout the season, and a close watch will be kept on the proportion of different viruses circulating to assist with the evaluation of vaccine effectiveness.

## Influenza antiviral susceptibility

Influenza positive samples are genome sequenced and screened for mutations in the virus neuraminidase (NA) and the cap-dependent endonuclease (PA) genes known to confer neuraminidase inhibitor or baloxavir resistance, respectively. The samples tested are routinely obtained for surveillance purposes, but diagnostic testing of patients suspected to be infected with antiviral-resistant virus is also performed.

Influenza virus sequences from samples collected between weeks 34 2022 and 45 2022 have been analysed. No viruses with known markers of resistance to neuraminidase inhibitors were detected in 146 A(H3N2), 140 A(H1N1)pdm09 and 3 Influenza B NA sequences analysed. No viruses with known markers of resistance to baloxavir marboxil were detected in 126 A(H3N2), 123 A(H1N1)pdm09 and 2 influenza B PA sequences analysed.

**Table 4: Antiviral susceptibility of influenza positive samples tested at UKHSA-RVU**

(Sub)type	Neuraminidase Inhibitors		Baloxavir	
	Susceptible	Reduced Susceptibility	Susceptible	Reduced Susceptibility
A(H3N2)	146	0	126	0
A(H1N1)pdm09	140	0	123	0
B/Victoria-lineage	3	0	2	0

## SARS-CoV-2 variants

This section is updated fortnightly. The last update was in the week 46 2022 report.

UKHSA conducts genomic surveillance of SARS-CoV-2 variants.

This section provides an overview of new and current circulating variants in England.

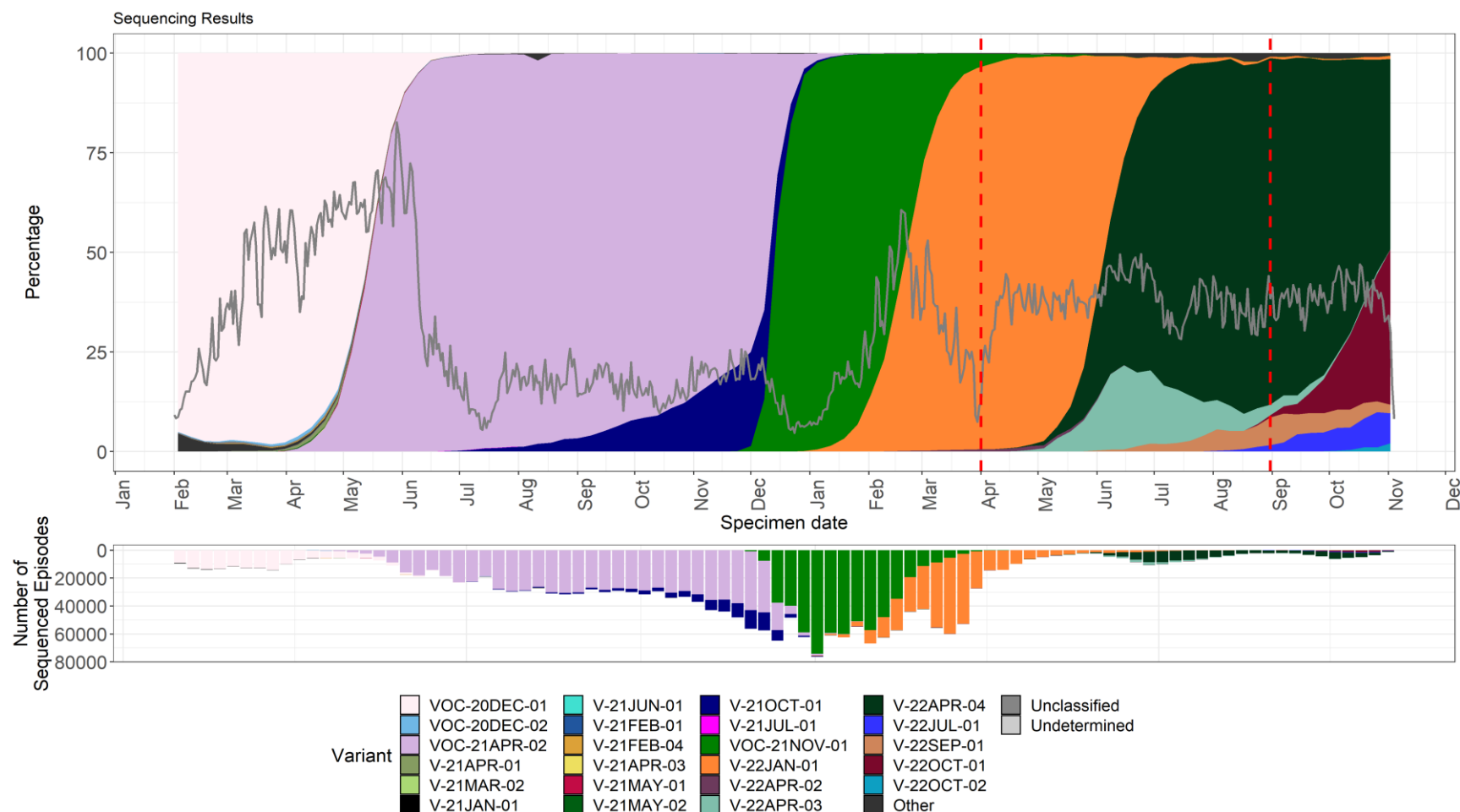
Detailed surveillance of particular variants of concerns can be found in recent [technical briefings](#).

Information on whole genome sequencing coverage can be found in the accompanying slide set.

The prevalence of different UKHSA-designated variants amongst sequenced episodes is presented in Figure 55.

Of the sequenced episodes from 30 October 2022 to 5 November 2022, 0.9% were BA.2 (V-22JAN-01), 0.1% were BA.1 (VOC-21NOV-01), 2.1% were BA.4.6 (V-22SEP-01), 47.7% were BA.5 (V-22APR-04), 39.0% were BQ.1 (V-22OCT-01), 7.5% were BA.2.75 (V-22JUL-01), and 0.5% were classified as Other.

**Figure 57. Prevalence of SARS-CoV-2 variants amongst available sequences episodes for England from 1 February, as of 15 November 2022**



The grey line indicates proportion of cases sequenced.

The vertical dashed lines (red) denote changes in policies:

- April line denotes the start of England's 'Living with COVID' Plan.
- End of August line denotes the change in asymptomatic testing

Note: Recombinants such as XD, are not specified but are largely within the 'other' group currently as numbers are too small.

As of week 45 2022, BA.5 continues to be the predominant circulating variant in England (Table 5).

**Table 5. Total distribution of SARS-CoV-2 variants detected in England in the last 12 weeks, up to week 44 (week ending 6 November 2022)**

Variant	Other names by which this variant is known	Total confirmed (sequencing) cases in the last 12 weeks	Last reported specimen date
VOC-21APR-02	Delta	1	15-08-2022
VOC-21NOV-01	Omicron BA.1	17	01-11-2022
V-22JAN-01	Omicron BA.2	194	04-10-2022
V-22APR-03	Omicron BA.4	618	01-11-2022
V-22APR-04	Omicron BA.5	31322	06-11-2022
V-22JUL-01	Omicron BA.2.75	2111	05-11-2022
V-22SEP-01	Omicron BA.4.6	1976	05-11-2022
V-22OCT-01	BQ.1	5626	06-11-2022
V-22OCT-02	XBB	175	06-11-2022

\*Sequencing data has a lag of approximately two weeks therefore the presented numbers should be interpreted in this context

\*Cumulative numbers may be revised up or down as a results of reclassification of results, re-infections and changes to diagnostic tests, new variants or public health management levels

\*Confirmed individuals are confirmed COVID-19 cases with a validated sequencing result meeting the confirmed case definitions.

## Antimicrobial susceptibility

Table 6 shows in the 12 weeks up to week 46 2022, the proportion of all lower respiratory tract isolates of *Streptococcus pneumoniae*, *Haemophilus influenzae*, *Staphylococcus aureus*, MRSA (Methicillin-resistant *Staphylococcus aureus*) and MSSA (methicillin-susceptible *Staphylococcus aureus*) tested and susceptible to antibiotics. These organisms are the important causes of community-acquired pneumonia (CAP) and the choice of antibiotics reflects the British Thoracic Society empirical guidelines for management of CAP in adults.

**Table 6: Antimicrobial susceptibility surveillance in lower respiratory tract**

Organism	Antibiotic	Specimens tested (N)	Specimens susceptible (%)
<b><i>S. pneumoniae</i></b>	Penicillin	1,760	87
	Macrolides	1,962	82
	Tetracycline	1,814	82
<b><i>H. influenzae</i></b>	Amoxicillin or ampicillin	7,915	44
	Co-amoxiclav	9,366	49
	Macrolides	1,983	4
	Tetracycline	9,482	98
<b><i>S. aureus</i></b>	Methicillin	4,636	93
	Macrolides	5,477	70
<b>MRSA</b>	Clindamycin	229	45
	Tetracycline	286	74
<b>MSSA</b>	Clindamycin	3,154	75
	Tetracycline	3,842	94

\* Macrolides = erythromycin, azithromycin and clarithromycin

Data source: UKHSA's SGSS Antimicrobial Resistance (AMR) module, please note that this is different to the data source used in the reports published between weeks 41, 2020 to 5, 2021 inclusive of the 2020 to 2021 influenza season when the SGSS Communicable Disease Report (CDR) module was used instead due to a UKHSA SGSS AMR data infrastructure issue which has now been resolved. Therefore, the above results are not directly comparable to the results reported between weeks 41, 2020 and 5, 2021. The AMR module of SGSS was used during the 2019 to 2020 influenza season. There has been a reduction in the total number of bacterial positive lower respiratory tract clinical samples reported to UKHSA since mid-March 2020.



## COVID-19 sero-prevalence surveillance

Since week 42 2021, updates on COVID-19 sero-prevalence estimates have been published in the weekly [COVID-19 vaccine surveillance report](#).

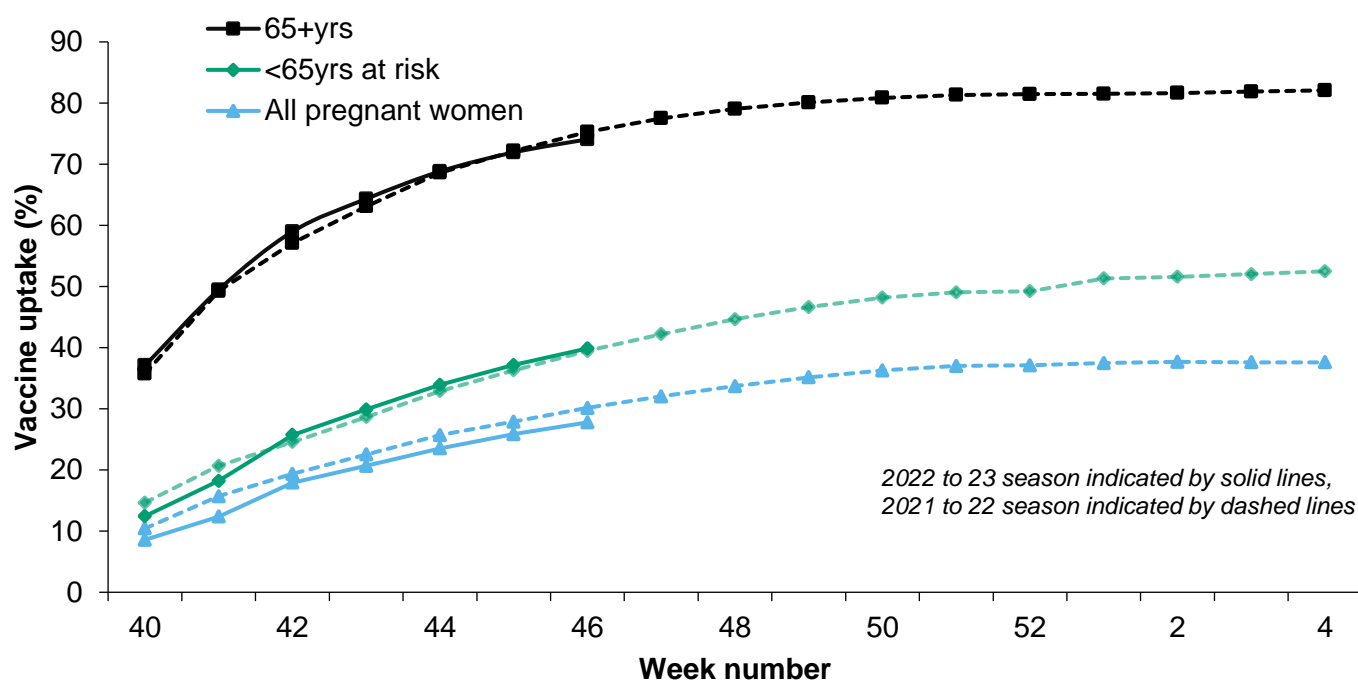
# Influenza vaccination

## Influenza vaccine uptake in GP patients

Up to week 46 of 2022, in 96.6% of GP practices reporting weekly to ImmForm for the main collection, the provisional proportion of people in England who had received the 2022 to 2023 influenza vaccine in targeted groups was as follows:

- 39.9% in those under 65 years in a clinical risk group
- 27.8% in all pregnant women
- 74.1% in all 65 year olds and over
- 22.7% in those aged 50 to 64 years who are not in a clinical risk group

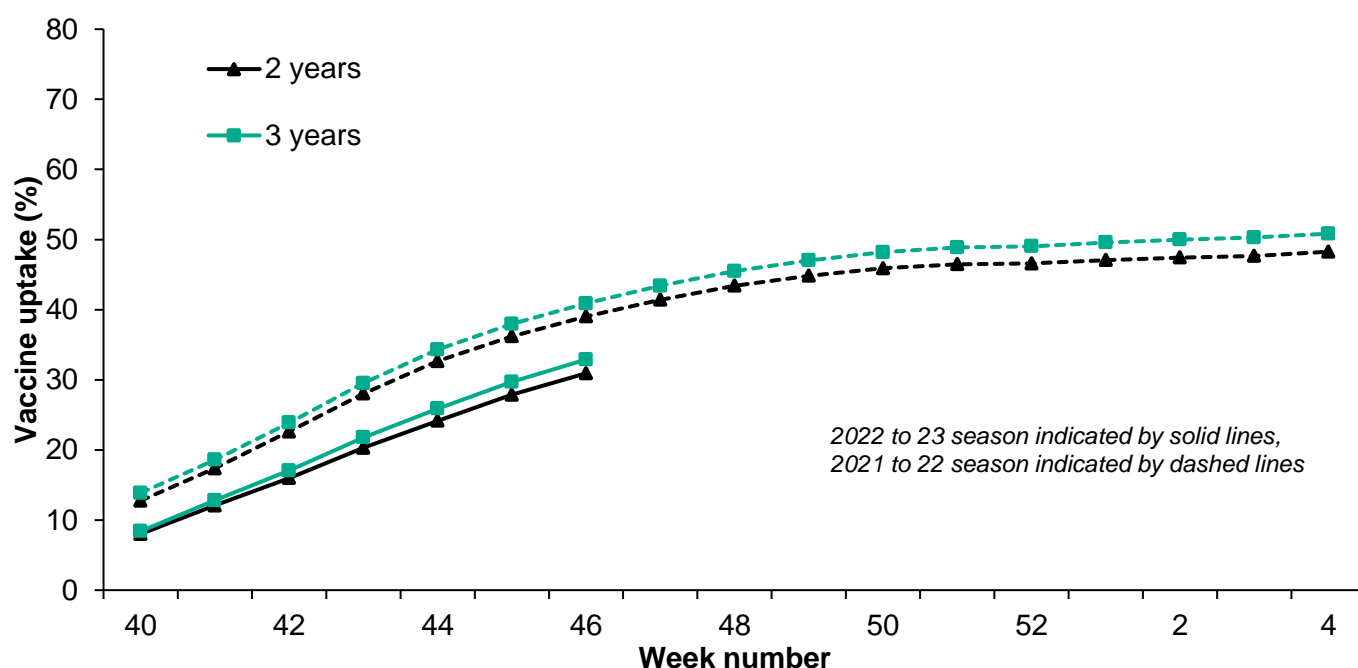
**Figure 58: Cumulative weekly influenza vaccine uptake by target group in England**



In 2022 to 2023, all 2 and 3 year olds continue to be eligible for influenza vaccination through their GPs. Up to week 46 of 2022, in 98.1% of GP practices reporting weekly to ImmForm for the childhood collection, the provisional proportion of children in England who had received the 2022 to 2023 influenza vaccine in targeted groups was as follows:

- 30.9% in all 2 year olds
- 32.9% in all 3 year olds

Figure 59: Cumulative weekly influenza vaccine uptake in 2 and 3 year olds, in England



This week, [monthly data](#) which covers vaccinations that were given between 1 September and 31 October 2022 for GP patients, frontline healthcare workers and school aged children has been published for the second time this season and comparator data is available for previous seasons. The [monthly GP report](#) includes ethnicity data for at-risk groups, pregnant women and those aged 65 years and over.

For at risk groups aged 16 to under 65 years when grouped by ethnicity, the highest vaccine uptake was seen in some White (British and Irish) and some Asian (Bangladeshi, Indian, Chinese, Any other Asian background) ethnicities with the lowest uptake seen in some Black ethnicities (Caribbean, Mixed White and Black Caribbean, Any other Black background) and the Pakistani group. For pregnant women, when grouped by ethnicity, the highest vaccine uptake was seen in the Chinese ethnic group, some White (British and Irish) ethnic groups and some Asian (Indian, Mixed White and Asian, Any other Asian background) ethnic groups, with the lowest uptake seen in some Black ethnic groups (Caribbean, Any Other Black background, Mixed White and Black Caribbean, African) and the Pakistani group ethnic group. For 65 years and over when grouped by ethnicity, the highest vaccine uptake was seen in White – British with the lowest uptake seen in Black ethnic groups and the Pakistani ethnic group.

## Influenza vaccine uptake in school age children

This week, provisional [monthly data](#) on influenza vaccine uptake in children in school years Reception to Year 6 was published, showing the provisional proportion of children who received the 2022 to 2023 influenza vaccine via school, pharmacy or GP practice between 1 September and 31 October 2022. Vaccine uptake is the highest on record at this timepoint in the season for primary school aged children.

## Influenza vaccine uptake in healthcare workers

This week, provisional [monthly data](#) on influenza vaccine uptake in frontline healthcare workers was published, showing vaccine uptake at national, commissioning region, and Trust level, and by staff group, between 1 September and 31 October 2022.

# COVID-19 vaccination

## COVID-19 vaccine uptake in England

COVID-19 vaccinations began in England on 8 December 2020 during week 50 2020 (week ending 13 December 2020). Cumulative data up to week 46 2022 (week ending 20 November 2022) was extracted from the National Immunisation Management Service (NIMS). The data presented this week is the provisional proportion of living people resident in England who had received at least one dose, 2 doses and 3 doses of a COVID-19 vaccination by age group. The overall vaccine uptake in the living and resident population for those with at least dose 1 was 70.7%, 67.2% for dose 2 and 53.2% for dose 3. The breakdown by sex showed vaccine uptake in males was 68.2% and 73.2% in females for dose 1. For dose 2 vaccine uptake by sex was 64.7% in males and 69.9% in females. For dose 3 vaccine uptake by sex was 50.4% in males and 56.2% in females. The vaccine uptake rate in adults aged 18 and over was 82.3% (41,140,811 out of 49,992,983) for dose 1; 79.5% (39,763,179 out of 49,992,983) for dose 2 and 65.8% (32,918,263 out of 49,992,983) for dose 3.

**Table 7: Provisional cumulative COVID-19 vaccine uptake by age in England**

NATIONAL	People in NIMS cohort who are living and resident in England	Vaccinated with at least 1 dose		Vaccinated with at least 2 doses		Vaccinated with at least 3 doses	
		Number vaccinated	% vaccine uptake	Number vaccinated	% vaccine uptake	Number vaccinated	% vaccine uptake
Over 80	2,942,844	2,838,405	96.5	2,823,009	95.9	2,765,641	94.0
75 to under 80	2,383,236	2,297,072	96.4	2,283,193	95.8	2,236,258	93.8
70 to under 75	2,701,216	2,565,757	95.0	2,544,551	94.2	2,469,960	91.4
65 to under 70	2,972,380	2,771,013	93.2	2,741,045	92.2	2,614,977	88.0
60 to under 65	3,603,099	3,301,886	91.6	3,258,960	90.4	3,031,384	84.1
55 to under 60	4,122,287	3,696,716	89.7	3,638,561	88.3	3,295,471	79.9
50 to under 55	4,171,489	3,635,599	87.2	3,564,012	85.4	3,118,516	74.8
45 to under 50	3,872,763	3,189,876	82.4	3,104,953	80.2	2,561,373	66.1
40 to under 45	4,302,100	3,342,237	77.7	3,224,264	74.9	2,509,168	58.3
35 to under 40	4,601,563	3,371,890	73.3	3,218,087	69.9	2,335,568	50.8
30 to under 35	4,755,964	3,350,723	70.5	3,157,598	66.4	2,148,126	45.2
25 to under 30	4,361,342	3,042,059	69.8	2,831,010	64.9	1,827,609	41.9
20 to under 25	3,817,815	2,748,372	72.0	2,506,612	65.7	1,560,748	40.9
18 to under 20	1,384,885	989,206	71.4	867,324	62.6	443,464	32.0
16 to under 18	1,397,534	896,043	64.1	709,775	50.8	194,146	13.9
12 to under 16	2,944,828	1,478,514	50.2	1,113,600	37.8	34,532	1.2
5 to under 12	5,005,403	559,117	11.2	337,798	6.7	8,228	0.2
<b>Total*</b>	<b>62,341,473</b>	<b>44,074,627</b>	<b>70.7</b>	<b>41,924,367</b>	<b>67.2</b>	<b>33,155,172</b>	<b>53.2</b>

\*Caution should be exercised when summing the age figures as the sum of these will not equal the England total. This is due to individuals vaccinated in England where the individual had an unknown age group or where age is less than 5 years old. Individuals vaccinated in England who have a registered

address outside of England or where their address is unknown have been excluded. Due to changes in GP practice lists in order to include newly registered patients and remove those who are no longer resident, there will be slight variation to the figures to reflect those who are currently resident in England.

From 18 November 2021 (week 46 2021) UKHSA started to report on those in the population with at least 3 doses of COVID-19 vaccine. These figures count the number of doses a person has had in chronological order and includes vaccinations given before the start of the programme where data is available to provide a more complete record of the population coverage estimates.

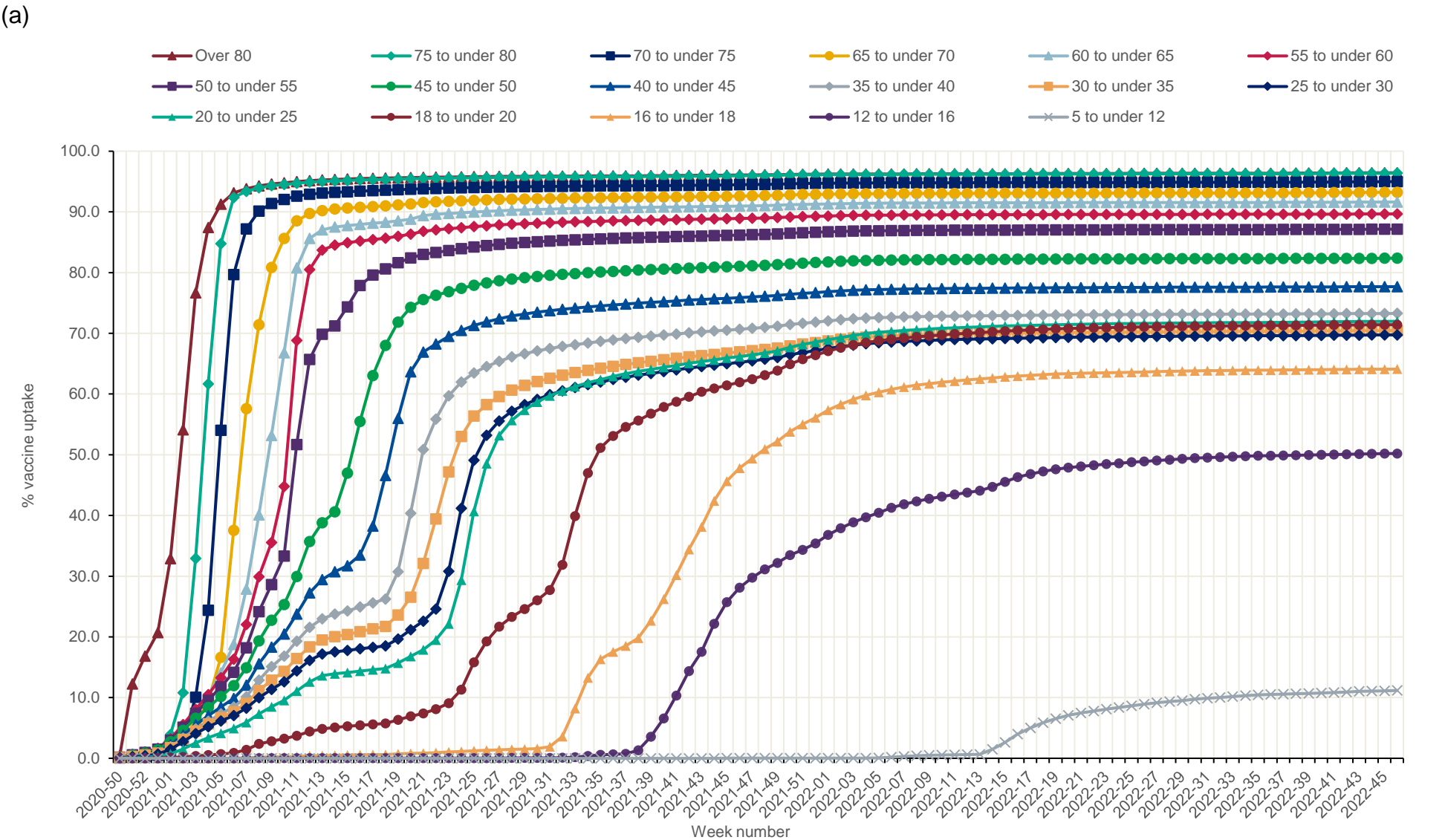
Age was previously calculated as age on the 31 August 2021 (academic cohort for all ages). Please note that from 14 April 2022 (week 15 2022), age is calculated on the date data is extracted. The weekly vaccine coverage data is extracted on a Tuesday with data capped to the previous Sunday and all backing data is updated each week going back to the start of the programme.

From 1 September 2022 (week 35 2022), the definition used in the table looking at eligibility by month for the spring booster campaign was changed from '6 months since the last dose' to '3 months since the last dose' to account for the earliest time a person can become eligible for the campaign. Eligibility table for the autumn booster campaign are calculated using the same method where a person is eligible after a 2 dose primary course provided there is an interval of at least 3 months since their last dose.

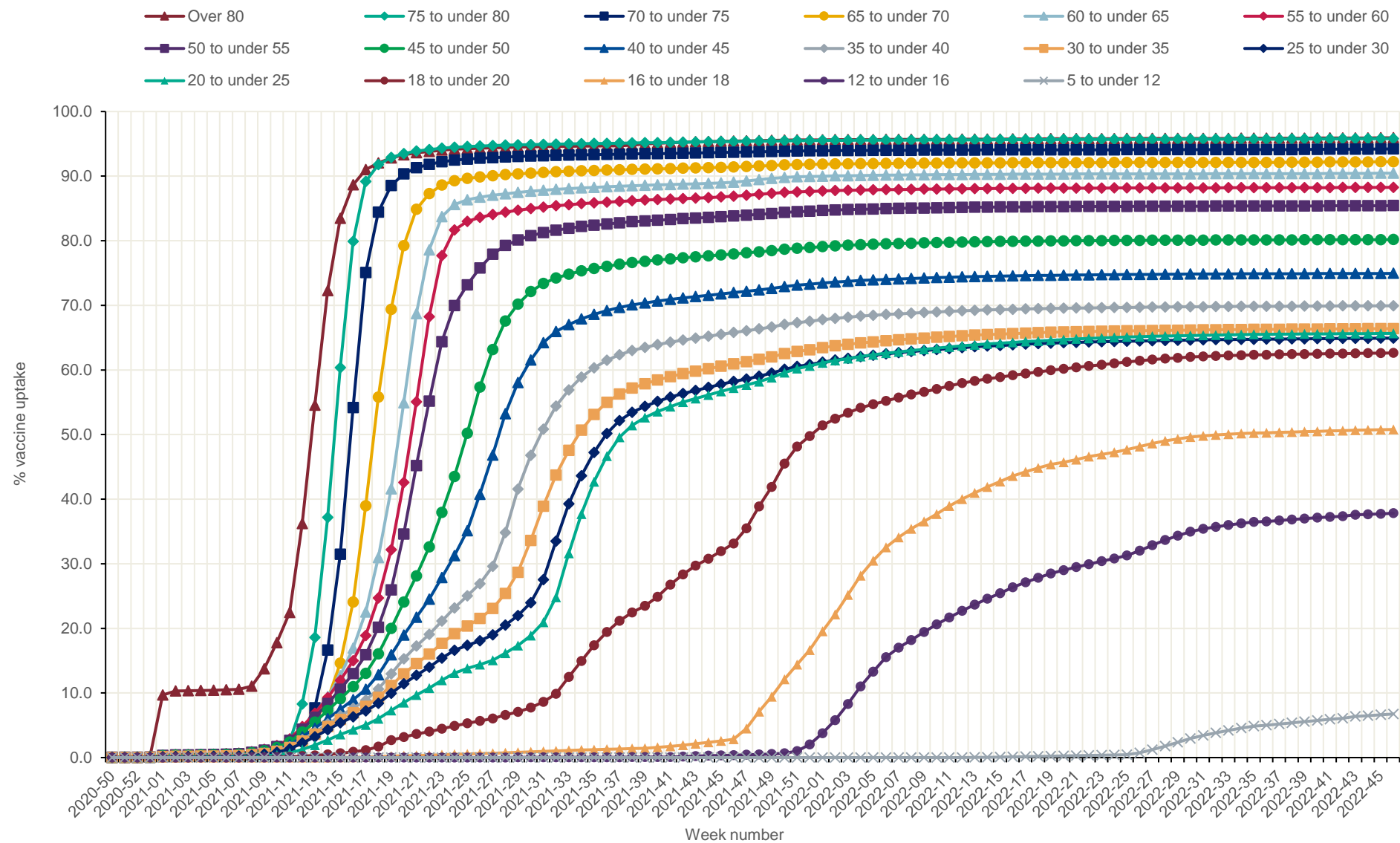
From 6 October 2022 (week 40 2022), all England coverage figures are of living people who are resident in England. Individuals vaccinated in England who have a registered address outside of England or where their address is unknown have been excluded.

Data is provisional and subject to change following further validation checks. Any changes to historic figures will be reflected in the most recent publication. Please note that numbers published by UKHSA are for public health surveillance purposes only.

**Figure 60: Cumulative weekly COVID-19 vaccine uptake by age in those who are living and resident in England for (a) Dose 1, (b) Dose 2 and (c) Dose 3** (please note the data for this graph is shown from week 36 (week ending 11 September 2021))



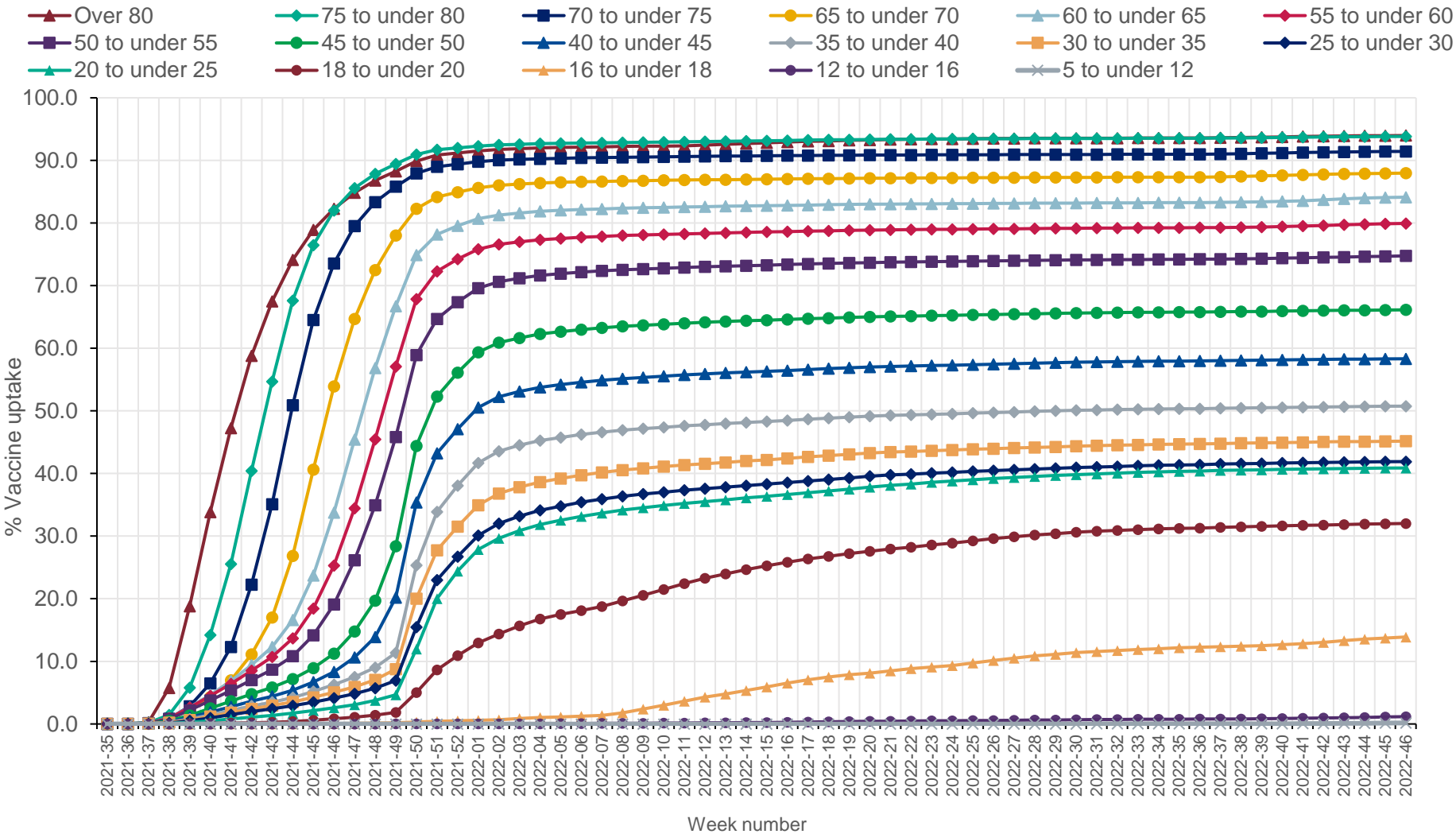
(b)





From the 6 January 2021 (week 1 of 2021), the Joint Committee on Vaccination and Immunisation (JCVI) advised initially prioritising delivery of the first vaccine dose to maximise the effect on public health in the short term and reduce the number of preventable deaths from COVID-19.

(c)



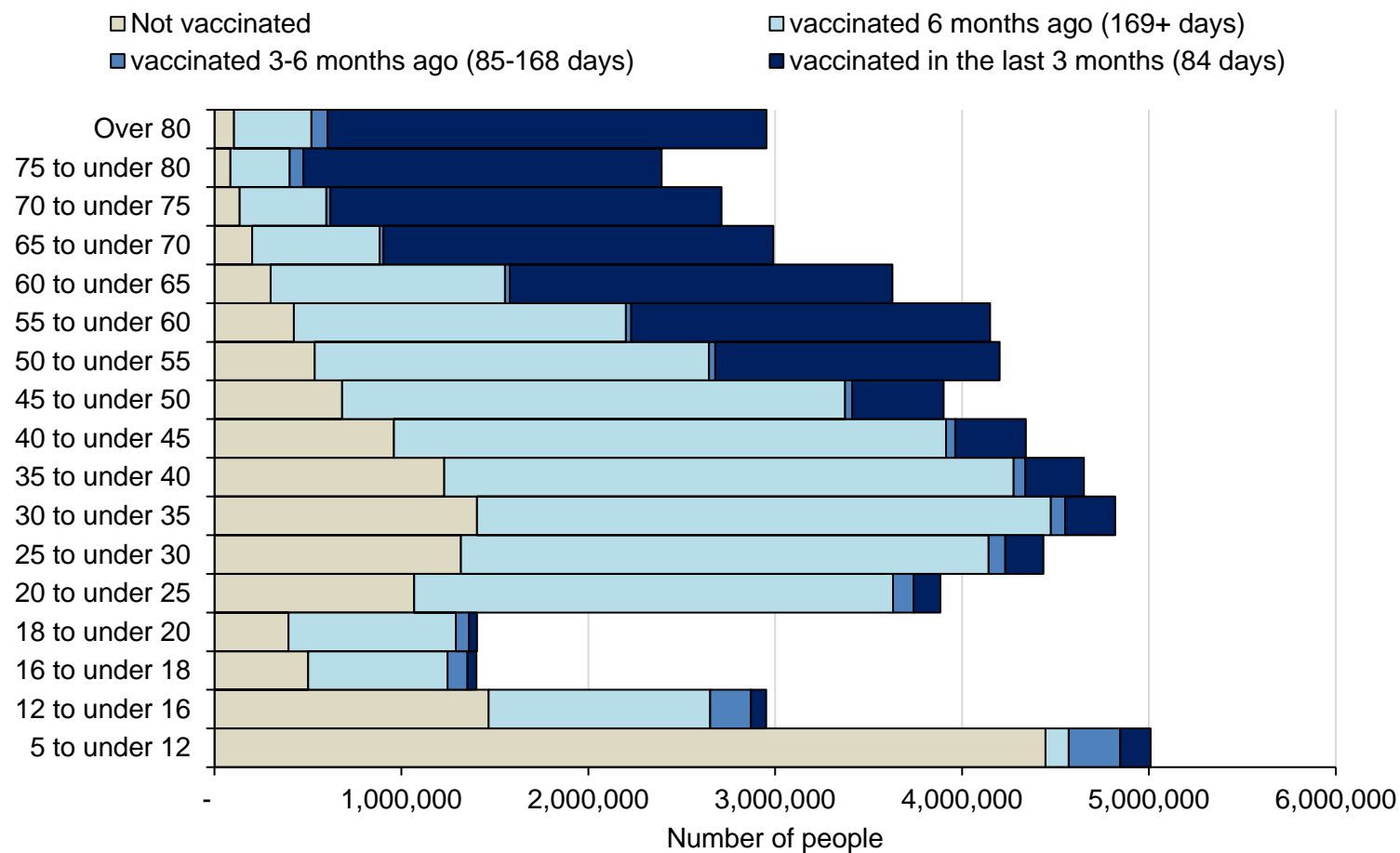
**Table 8: Provisional cumulative people vaccinated with any dose of COVID-19 vaccine in the last 3 months, 3 to 6 months and vaccinated more than 6 months ago**

National	People in NIMS cohort who are living and resident in England	Vaccinated in the last 3 months (84 days)		Vaccinated 3 to 6 months ago (85 to 168 days)		Vaccinated 6 months ago (169 or more days)	
		Numbers vaccinated	Percentage vaccinated	Numbers vaccinated	Percentage vaccinated	Numbers vaccinated	Percentage vaccinated
Over 80	2,942,844	2,349,033	79.8	84,748	2.9	415,094	14.1
75 to under 80	2,383,236	1,915,257	80.4	74,642	3.1	315,924	13.3
70 to under 75	2,701,216	2,092,354	77.5	22,050	0.8	463,440	17.2
65 to under 70	2,972,380	2,084,775	70.1	20,977	0.7	682,669	23.0
60 to under 65	3,603,099	2,047,803	56.8	24,602	0.7	1,253,881	34.8
55 to under 60	4,122,287	1,920,746	46.6	28,328	0.7	1,776,253	43.1
50 to under 55	4,171,489	1,521,992	36.5	32,650	0.8	2,110,388	50.6
45 to under 50	3,872,763	490,100	12.7	38,124	1.0	2,691,225	69.5
40 to under 45	4,302,100	376,857	8.8	49,988	1.2	2,954,414	68.7
35 to under 40	4,601,563	313,799	6.8	63,084	1.4	3,046,083	66.2
30 to under 35	4,755,964	268,175	5.6	76,809	1.6	3,069,723	64.5
25 to under 30	4,361,342	203,426	4.7	89,645	2.1	2,822,972	64.7
20 to under 25	3,817,815	143,775	3.8	109,086	2.9	2,561,523	67.1
18 to under 20	1,384,885	43,098	3.1	70,074	5.1	895,371	64.7
16 to under 18	1,397,534	48,205	3.4	106,748	7.6	745,824	53.4
12 to under 16	2,944,828	81,470	2.8	218,857	7.4	1,186,094	40.3
5 to under 12	5,005,403	162,479	3.2	275,632	5.5	124,798	2.5

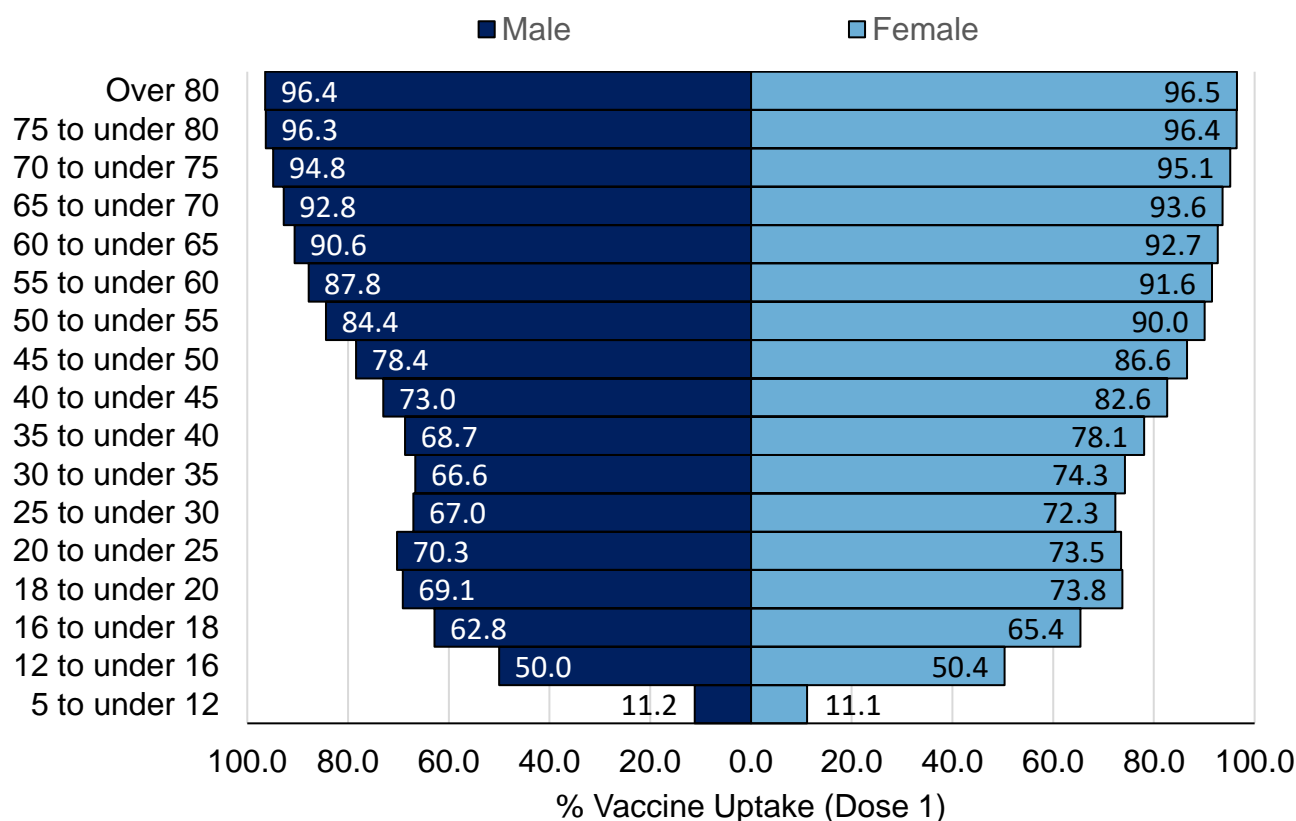
\*Table 8 was revised on 25 November 2022 to correct duplicated data in the final column.

Table 8 is presented to provide an overview of how recently a person has been vaccinated either through the primary vaccination campaign or subsequent booster campaigns. This helps us understand the data in the context of vaccine waning across the whole COVID-19 programme. Breakdowns by Ethnicity, and IMD, by age can be found in the backing tables.

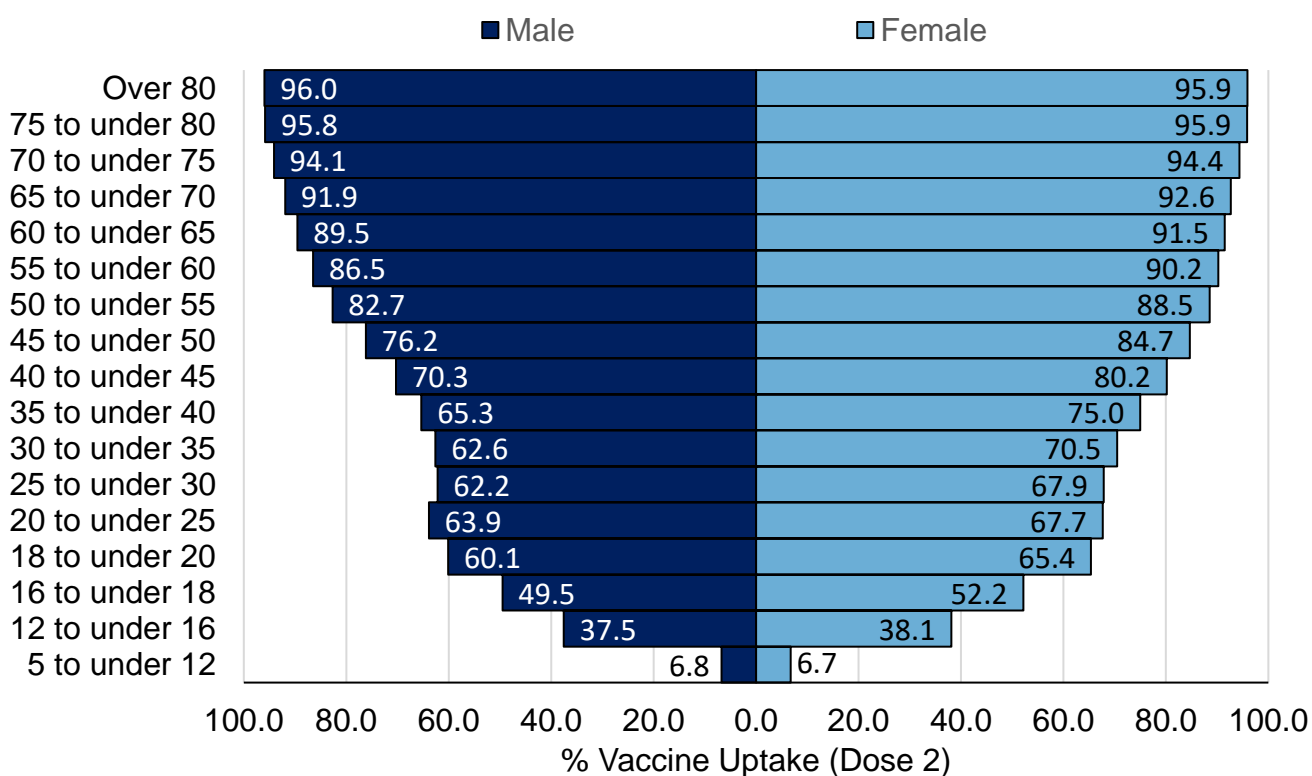
**Figure 61: Provisional cumulative people vaccinated with any dose of COVID-19 vaccine in the last 3 months, 3 to 6 months and vaccinated more than 6 months ago**



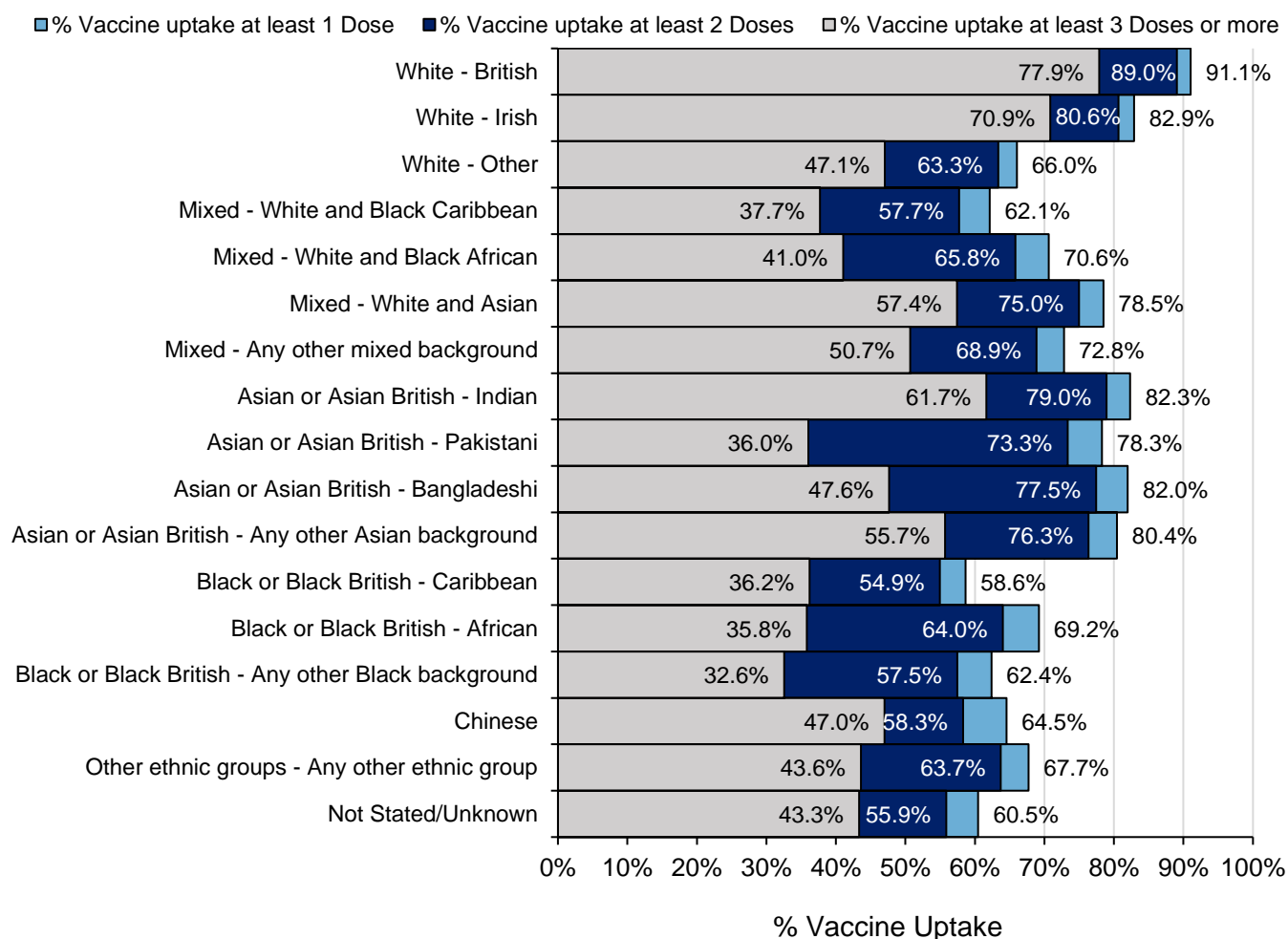
**Figure 62: Age-Sex pyramid for COVID-19 vaccine uptake by age in those living and resident in England for dose 1**



**Figure 63: Age-Sex pyramid for COVID-19 vaccine uptake by age in those living and resident in England for dose 2**



**Figure 64: Cumulative weekly COVID-19 vaccine uptake by ethnicity in those living and resident in England, aged 18 and over**



For a regional breakdown of the ethnicity data, please see the data file that accompanies this report.

## Autumn Booster Campaign

Immunity derived from vaccination declines over time and following on from the Spring campaign, the JCVI has recommended an Autumn Booster campaign with the primary objective to boost immunity in those at higher risk from COVID-19 and thereby optimise protection against severe COVID-19, specifically hospitalisation and death, over winter 2022 to 2023.

The Autumn booster data reported below covers any booster dose administered from the 1 September 2022 provided there is at least 3 months from the previous dose. Eligible groups for the Autumn booster campaign are defined in the COVID-19 healthcare guidance [Green Book](#) and include residents in a care home for older adults, staff working in care homes for older adults, frontline health and social care workers, all adults aged 50 years and over, persons aged 5 to 49 years in a clinical risk group, household contacts of people with immunosuppression, and carers.

Tables 9 presents coverage as measured against the total population and includes people who are not yet due to have their Autumn booster. It is important that unvaccinated individuals, especially vulnerable adults, receive a primary course of vaccination, irrespective of whether individuals have had previous infection. Table 9 should be interpreted in the context of Table 8 which shows how recently a person who is living and resident in England has been vaccinated either through the primary vaccination campaign or a subsequent booster campaign. This helps us understand the data in the context of vaccine waning across the whole COVID-19 programme.

By the end of week 46 2022 (week ending 20 November 2022), 60.1% (13,881,651 out of 22,896,551) of all people aged over 50 years had been vaccinated with an Autumn booster dose since 1 September 2022 (Table 9).

**Table 9: Provisional cumulative people vaccinated by age with a booster of COVID-19 vaccine from the 1 September 2022 as part of the Autumn booster campaign in England**

National	People in NIMS cohort who are living and resident in England	Vaccinated with an Autumn booster since 1 September 2022*	Percentage vaccine uptake
Over 80	2,942,844	2,340,505	79.5
75 to under 80	2,383,236	1,908,235	80.1
70 to under 75	2,701,216	2,084,779	77.2
65 to under 70	2,972,380	2,077,330	69.9
60 to under 65	3,603,099	2,040,977	56.6
55 to under 60	4,122,287	1,914,129	46.4
50 to under 55	4,171,489	1,515,696	36.3
Total aged 50 and over	22,896,551	13,881,651	60.6

\*Autumn booster defined as any additional dose of vaccine after a 2 dose primary course provided there is an interval of at least 3 months and it is given since the 1 September 2022.

**Table 10: Provisional cumulative people vaccinated with an autumn booster COVID-19 vaccine against those eligible by the end of December 2022**

Age at end of December	Eligible by the end of December	Of those eligible by the end of December, numbers vaccinated	Percentage vaccine uptake eligible end of December
Over 80	2,830,694	2,340,466	82.7
75 to under 80	2,289,565	1,908,210	83.3
70 to under 75	2,553,090	2,084,767	81.7
65 to under 70	2,753,984	2,077,325	75.4
60 to under 65	3,277,851	2,040,962	62.3
55 to under 60	3,661,352	1,914,110	52.3
50 to under 55	3,587,590	1,515,682	42.2
Total aged 50 and over	20,954,126	13,881,522	66.2

Table 10 looks at people aged 50 and over at the end of December 2022 who are eligible for an autumn booster if they have completed a primary course of 2 doses and are at least 3 months (84 days) from their previous dose.

Please note that this uses a different age cut off definition to the rest of the report and is therefore not a subset of other tables.

Eligible population figures in this table do not include those who are aged 50 and over and have not been vaccinated; unvaccinated people are taken into consideration in the coverage tables above. This table is based on those who have been vaccinated and may include those who are no longer resident in England or have an unknown address.

## Immunosuppression

Provisional vaccine uptake data in living and resident people identified as immunosuppressed in England to the end of week 46 (week ending 20 November 2022) can be found in Table 11. This shows that vaccine uptake in the 493,079 identified as immunosuppressed was 96.2% for at least dose 1, 95.2% for at least 2 doses and 89.8% for at least 3 doses.



**Table 11: Vaccine uptake in people identified as immunosuppressed in England**

Immuno-suppression	People in NIMs Cohort who are living and resident in England	Numbers vaccinated with at least 1 dose	Percentage vaccine uptake with at least 1 dose	Numbers vaccinated with at least 2 doses	Percentage vaccine uptake with at least 2 doses	Numbers vaccinated with at least 3 doses	Percentage vaccine uptake with at least 3 doses
England	493,079	474,312	96.2	469,212	95.2	442,802	89.8

**Table 12: Vaccine uptake in people identified as immunosuppressed in England with a booster of COVID-19 vaccine from the 1 September 2022 as part of the Autumn booster campaign\***

Immuno-suppression	People in NIMS cohort who are living and resident in England	Vaccinated with an autumn booster since 1 September 2022*	Percentage vaccine uptake
England	493,079	307,550	62.4

\*autumn booster defined as any additional dose of vaccine after a 2 dose primary course provided there is an interval of at least 3 months and it is given since the 1 September 2022

Tables 11 and 12 present coverage as measured against the total population of people identified as immunosuppressed. The current uptake of the autumn booster in people identified as immunosuppressed is 62.4%. Many people in this group have been vaccinated more recently and are still becoming eligible for their autumn booster. This can be seen in Table 13, in which 70.2% of people identified as immunosuppressed are covered by a vaccine given in the last 6 months.

**Table 13: People identified as immunosuppressed in England vaccinated with any dose of COVID-19 vaccine in the last 3 months, 3 to 6 months and vaccinated more than 6 months ago**

Immuno-suppression	People in NIMS cohort who are living and resident in England	Vaccinated in the last 3 months (84 days)		Vaccinated 3 to 6 months ago (85 to 168 days)		Vaccinated 6 months ago (169 or more days)	
		Numbers vaccinated	Percentage vaccinated	Numbers vaccinated	Percentage vaccinated	Numbers vaccinated	Percentage vaccinated
England	493,079	309,228	62.7	37,123	7.5	127,961	26.0

Table 13 is presented to provide an overview of how recently a person identified as immunosuppressed has been vaccinated either through the primary vaccination campaign or a subsequent booster campaign. This helps us understand the data in the context of vaccine waning across the whole COVID-19 programme and shows that most people identified as immunosuppressed have been recently vaccinated.

Detailed information on the NHS Digital characterisation of the immunosuppressed group can be found on the [NHS Digital website](#).

For COVID-19 data on the real-world effectiveness of the COVID-19 vaccines, and on COVID-19 vaccination in pregnancy, please see [the COVID-19 vaccine surveillance reports](#).

For COVID-19 management information on the number of COVID-19 vaccinations provided by the NHS in England, please see the [COVID-19 vaccinations](#) webpage.

For COVID-19 daily vaccination figures and definitions, please see the [Vaccinations' section of the UK COVID-19 dashboard](#).

## International update

### Global COVID-19 update

For further information on the global COVID-19 situation please see the [World Health Organisation \(WHO\) COVID-19 situation reports](#).

### Global influenza update

Updated on 14 November 2022 (based on data up to 30 October 2022) ([WHO website](#)).

Globally, influenza activity increased and where subtyped, influenza A(H3N2) viruses predominated. An increasing trend of influenza activity was observed in the northern hemisphere while a plateau was observed in the southern hemisphere.

In the countries of North America, influenza activity increased steeply in recent weeks. Influenza A(H3N2) was predominant among the few subtyped viruses.

In Europe, overall influenza activity followed an increasing trend but remained relatively low. Influenza A viruses predominated among the reported detections in general with A(H3N2) viruses accounting for the majority of subtyped influenza A viruses.

In central Asia, Kazakhstan reported high influenza activity with B/Victoria-lineage viruses predominating.

In East Asia, influenza activity of predominantly influenza A(H3N2) remained stable at intermediate levels overall.

In Western Asia influenza activity was elevated. Detections of influenza continued to increase in some countries of the Arabian Peninsula.

In the Caribbean and Central American countries, low influenza activity was reported with influenza A(H3N2) most frequently detected.

In the tropical countries of South America, influenza detections were low and A(H3N2) detections predominated.

In tropical Africa, influenza activity remained low with detections of influenza A(H3N2), B/Victoria and A(H1N1)pdm09 reported.

In Southern Asia, influenza activity increased steeply, with elevated activity reported in Bhutan, Iran and Pakistan. The majority of subtyped detections were influenza A(H3N2), followed by A(H1N1)pdm09 and few influenza B detections.

In South East Asia, detections of predominantly influenza A(H3N2) followed by influenza B and influenza A(H1N1)pdm09 decreased.

In the temperate zones of the southern hemisphere, overall influenza activity appeared to decrease this reporting period, except in temperate South America where activity increased in several countries.

In Oceania, influenza activity remained very low with detections of influenza A(H1N1)pdm09 and influenza A(H3N2) and some B viruses in Australia. ILI activity in New Zealand and, in general, across the Pacific Islands remained low except in a few countries.

In Southern Africa, decreasing detections of influenza B/Victoria and influenza A(H3N2) were reported.

In temperate South America, influenza detections have continued to increase in Argentina, Chile and Uruguay. Influenza A(H3N2) viruses predominated in Chile and Uruguay, while influenza B and influenza A(H1N1)pdm09 predominated among subtyped viruses in Argentina.

The WHO GISRS laboratories tested more than 229,940 specimens during that time period. 15,723 were positive for influenza viruses, of which 14,589 (92.8%) were typed as influenza A and 1,134 (7.2%) as influenza B. Of the sub-typed influenza A viruses, 1,424 (21.2%) were influenza A(H1N1)pdm09 and 5,284 (78.8%) were influenza A(H3N2). Of the characterized B viruses, all 300 (100%) belonged to the B/Victoria lineage.

## Influenza in Europe

Updated for data for week 45 2022 ([Joint ECDC-WHO Europe Influenza weekly update](#)).

The percentage of all sentinel primary care specimens from patients presenting with ILI or ARI symptoms that tested positive for an influenza virus was 13% which is higher than the previous week (8%) and above the epidemic threshold set at 10%.

For week 45 2022, of 39 countries and areas reporting on intensity of influenza activity, 24 reported baseline-intensity (across the Region), 13 reported low-intensity (across the Region), 1 reported medium-intensity (Kazakhstan) and 1 reported high-intensity (Malta). Of 39 countries and areas reporting on geographic spread of influenza viruses,

10 reported no activity (across the Region), 18 reported sporadic spread (across the Region), 4 reported local spread (Lithuania, Malta, Norway and United Kingdom (Northern Ireland)), 5 reported regional spread (Albania, Finland, France, Kazakhstan and Republic of Moldova) and 2 reported widespread activity (Germany and Portugal).

For week 45 2022, 222 (13%) of 1,746 sentinel specimens tested positive for influenza virus; 62% were type A and 38% were type B. Of 112 subtyped A viruses, 88% were A(H3) and 12% A(H1)pdm09. Of 79 type B viruses ascribed to a lineage, all were B/Victoria. Of 25 countries and areas across the Region that each tested at least 10 sentinel specimens in week 45 2022, 5 reported a rate of influenza virus detections above 10% (median 30%; range 12% - 100%): Kazakhstan (100%), Portugal (42%), Germany (30%), Georgia (12%) and United Kingdom (Scotland) (12%).

For the season to date, 1,026 (8%) of 12,639 sentinel specimens tested positive for an influenza virus. More influenza type A (n=857, 84%) than type B (n=169, 16%) viruses have been detected. Of 719 subtyped A viruses, 607 (84%) were A(H3) and 112 (16%) were A(H1)pdm09. Of 109 influenza type B viruses ascribed to a lineage, all were B/Victoria (36% of type B viruses were reported without a lineage).

For week 45 2022, 1,179 of 38,410 specimens from non-sentinel sources (such as hospitals, schools, primary care facilities not involved in sentinel surveillance, or nursing homes and other institutions) tested positive for influenza virus; 1,053 (89%) were type A and 126 (11%) were type B. Of 219 subtyped A viruses, 115 (53%) were A(H1)pdm09 and 104 (47%) were A(H3). Of 56 type B viruses ascribed to a lineage, all were Victoria lineage.

For the season to date, more influenza type A (n=6 143, 88%) than type B (n=856, 12%) viruses have been detected. Of 2,274 subtyped A viruses, 1 503 (66%) were A(H3) and 771 (34%) were A(H1)pdm09. Of 143 influenza type B viruses ascribed to a lineage, all were B/Victoria (83% of type B viruses were reported without a lineage).

## Influenza in North America

For further information on influenza in the United States of America please see the [Centre for Disease Control weekly influenza surveillance report](#). For further information on influenza in Canada please see the [Public Health Agency weekly influenza report](#).

## Influenza in Australia

For further information on influenza in Australia please see the [Australian Influenza Surveillance Report and Activity Updates](#).

## Other respiratory viruses

### Avian influenza and other zoonotic influenza

[Latest WHO update on 5 October 2022](#)

From 31 August to 5 October 2022, one human case of infection with an avian influenza A(H5N6) virus, one human case of infection with an avian influenza A(H10N3) virus, and one human case of infection with an influenza A(H1N1) variant virus were reported officially. Additionally, three human cases of infection with influenza A(H1N2) variant viruses were detected.

The overall public health risk from currently known influenza viruses at the human-animal interface has not changed, and the likelihood of sustained human-to-human transmission of these viruses remains low. Human infections with viruses of animal origin are expected at the human-animal interface wherever these viruses circulate in animals.

### Middle East respiratory syndrome coronavirus (MERS-CoV)

From April 2012 to October 2022, a total of 2,600 laboratory-confirmed cases of MERS-CoV and 935 associated deaths were reported globally to [WHO](#) under the International Health Regulations (IHR 2005).

Between 29 December 2021 and 31 October 2022, 4 laboratory-confirmed cases of MERS-CoV were reported to WHO by the Ministry of Health of the Kingdom of Saudi Arabia. No deaths were reported ([WHO website](#)).

On 28 April 2022, the National IHR Focal point of Oman notified WHO of one case of MERS-CoV in Oman ([WHO website](#)).

Between 22 March and 3 April 2022, the National IHR Focal Point of Qatar reported 2 laboratory-confirmed cases of Middle East respiratory syndrome coronavirus (MERS-CoV) infection to the WHO ([WHO website](#)).

A total of 5 cases of Middle East respiratory syndrome coronavirus, MERS-CoV, (3 imported and 2 linked cases) have been confirmed in the UK through ongoing surveillance since September 2012.

[Further information on management and guidance of possible cases](#) is available online. The latest [ECDC MERS-CoV risk assessment](#) highlights that risk of widespread transmission of MERS-CoV remains very low.

## Related links

[Previous national COVID-19 reports](#)

[Previous weekly influenza reports](#)

[Annual influenza reports](#)

[COVID-19 vaccine surveillance reports](#)

[Previous COVID-19 vaccine surveillance reports](#)

[Public Health England \(PHE\) monitoring of the effectiveness of COVID-19 vaccination](#)

[Investigation of SARS-CoV-2 variants of concern: technical briefings](#)

[Sources of surveillance data for influenza, COVID-19 and other respiratory viruses](#)

UKHSA has delegated authority, on behalf of the Secretary of State, to process Patient Confidential Data under Regulation 3 The Health Service (Control of Patient Information) Regulations 2002

Regulation 3 makes provision for the processing of patient information for the recognition, control and prevention of communicable disease and other risks to public health.

# About the UK Health Security Agency

The [UK Health Security Agency](#) is an executive agency, sponsored by the [Department of Health and Social Care](#).

© Crown copyright 2022

Prepared by: Immunisation and Vaccine Preventable Diseases Division  
For queries relating to this document, please contact: [Enquiries@ukhsa.gov.uk](mailto:Enquiries@ukhsa.gov.uk)

Published: 24 November 2022



You may re-use this information (excluding logos) free of charge in any format or medium, under the terms of the Open Government Licence v3.0. To view this licence, visit [OGL](#). Where we have identified any third party copyright information you will need to obtain permission from the copyright holders concerned.



UKHSA supports the UN  
Sustainable Development Goals

