Public Health England

Weekly Coronavirus Disease 2019 (COVID-19) surveillance report

Summary of COVID-19 surveillance systems

Year: 2020 Week: 40

This report summarises the information from the surveillance systems which are used to monitor the Coronavirus Disease 2019 (COVID-19) pandemic in England. More information on the surveillance systems are available here.

The report is based on data from week 39 (between 21 August and 27 September 2020) and for some indicators daily data up to 29 September 2020. References to COVID-19 represent the disease name and SARS-CoV-2 represent the virus name.

Data is reported from week 27 (week beginning 29 June 2020) onwards. For reports with data prior to week 27, consult previous reports here.

This will be the last COVID-19 surveillance report, as of 8 October 2020, the information in this report will be published in a combined Weekly flu and COVID-19 Surveillance Report on GOV.UK.

Summary

Several surveillance indicators suggest that COVID-19 activity at a national level has continued to increase during week 39.

- There are several indicators that combine to provide a picture of the number of COVID-19 cases and trends over time, of which cases reported is just one.
- Case detections, hospitalisations and deaths continue to increase.
- Some non-specific community indicators suggest that reports of respiratory symptoms are stabilising or declining, however, this may not be related to COVID-19.
- Indicators used to make this assessment include, but are not limited to, the number of patients in hospital with coronavirus, seroprevalence, modelling data, ONS and React surveillance data, positivity rates and NHS indicators such as GP attendance, calls to the NHS 111 service and hospital admissions.

Case detections in England increased from 26,259 in week 38 to 29,797 in week 39. Case rates remain highest in North West and Yorkshire and Humber. By age group, cases rates remain highest in the 20-29 year olds. Further increases in detections for week 39 are expected as more results for the most recent samples become available. Positivity rates have increased further across most age groups and were highest in the 60-69 year olds tested through Pillar 2 (community testing) and those in the 20-29 years in Pillar 1 (NHS and PHE testing). Positivity by regions remains highest in the North. At a local authority level, incidence was highest in Newcastle upon Tyne. Case detections are limited by testing capacity, therefore positivity rates provide a better indication of change in activity in some areas. An increase in rates in 17 to 19 year olds in the least deprived quintiles was noted again.

The overall number of acute respiratory infection incidents reported to PHE Health Protection Teams increased from 772 in the previous week to 782 in week 39. The highest increases were noted in the number of incidents in workplace and other settings in comparison to the previous week. Rhinovirus activity decreased but remains high in school aged children. This may account for some of the acute respiratory infection incidents reported.

Contact tracing data is presented in this report and the commonest contacts that individuals can name are household, household visitors or visiting friends and relatives. Other important named contacts come from leisure or community activities and workplaces. Since 10 August, people who test positive are also asked about places they have been and activities they have done in the days before becoming unwell; eating out was the most commonly reported activity in the 2-7 days prior to symptom onset. Although this does not describe confirmed sources of infection, the information may be helpful to indicate possible places where transmission is happening. Local authorities and local health protection teams investigate links to settings to determine whether any further action is required.

A range of non-specific community indicators suggest that reports of respiratory symptoms are beginning to stabilise or decline. These declines were mainly in children and may reflect a normalisation following increases in respiratory illness reports that are often seen at the start of the school term.

Through the GP swabbing scheme, positivity remained stable at 1.7% in week 39.

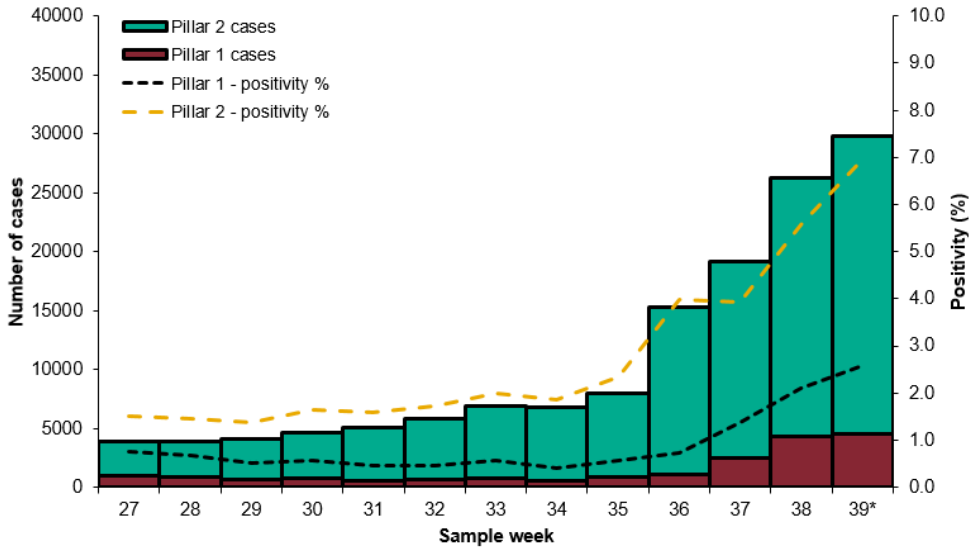
Emergency department attendances with a COVID-19-like diagnosis were stable. Increases continued to be seen in hospital and ICU/HDU admission rates for confirmed COVID-19 at national level, particularly in the older age groups and in the North West for hospitalisations and Midlands for ICU/HDU admissions by region.

COVID-19 deaths increased in week 39 but no excess mortality was observed overall in week 38.

As of 09:00 on 29 September 2020, a total of 382,686 have been confirmed positive for COVID-19 in England under Pillar 1 and 2.

Overall case numbers and positivity continued to increase in both Pillar 1 and 2, in week 39, with the majority of cases reported from Pillar 2. The highest case rates continued to be seen in the 20-29 year olds. Positivity was highest in 20-29 year olds in Pillar 1 and in the 60-69 year olds in Pillar 2. Cases rates and positivity continue to be highest in the North of England.

Figure 1: Laboratory confirmed COVID-19 cases tested under Pillar 1 and Pillar 2, based on sample week with overall positivity for Pillar 1 and 2 (%)

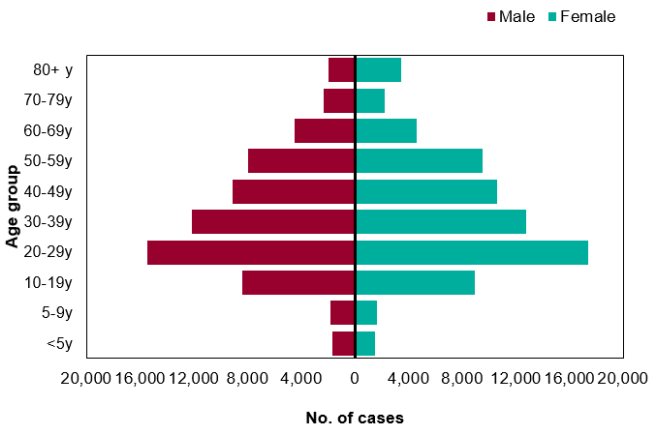


* For the most recent week, more samples are expected therefore the decrease seen in this graph should be interpreted with caution. The data are shown by the week the specimen was taken from the person being tested. This gives the most accurate analysis of this time progression, but it does mean that the latest days' figures may be incomplete.

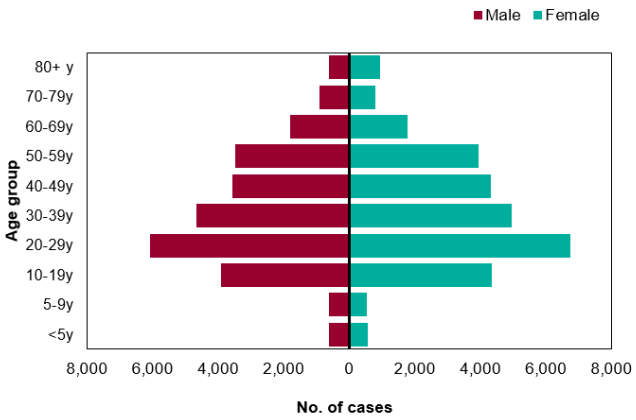
Age and sex

Figure 2: Age/sex pyramids for laboratory confirmed COVID-19 cases tested under Pillar 1 and 2 (a) cumulative number since week 27 (n=137,969), and (b) in weeks 38 and 39 (n=55,215)

(a)



(b)



Age and sex

Figure 3: Weekly laboratory confirmed COVID-19 case rates per 100,000, tested under Pillar 1 and Pillar 2, by sex

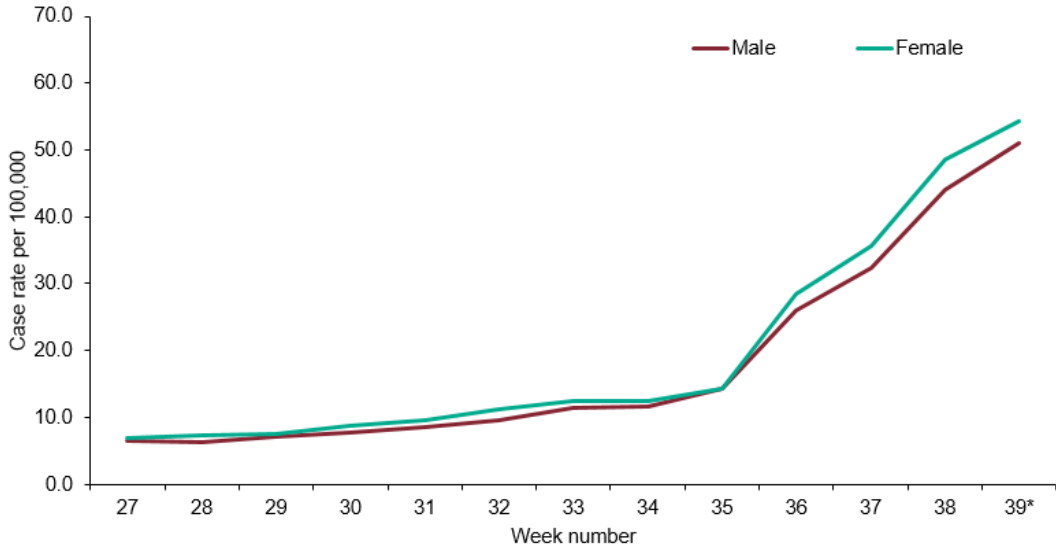


Figure 4: Weekly laboratory confirmed COVID-19 case rates per 100,000, tested under Pillar 1 and Pillar 2 , by age group

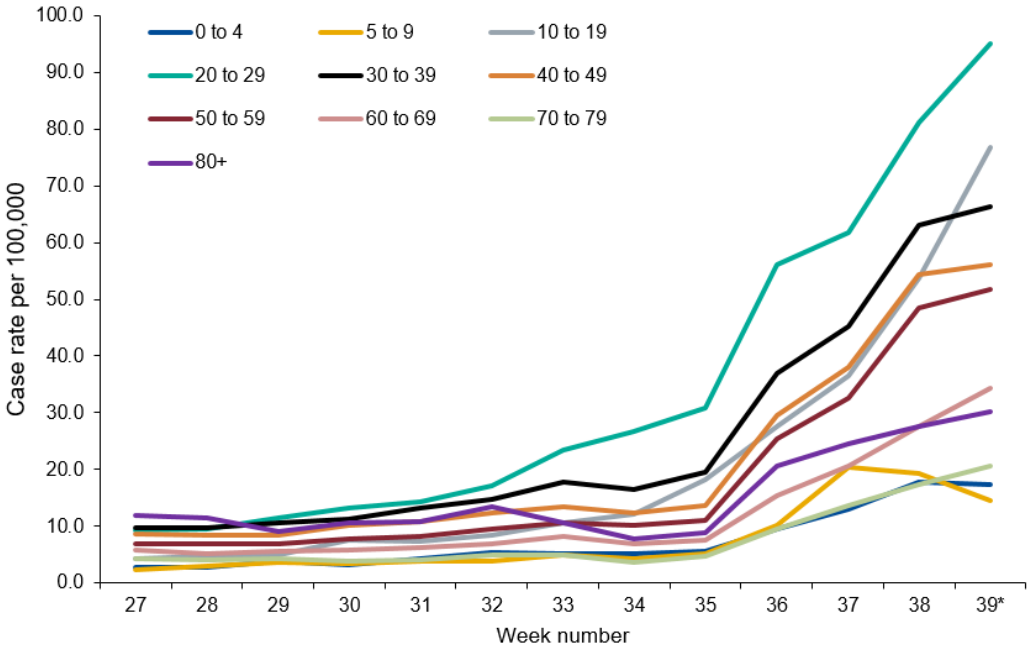
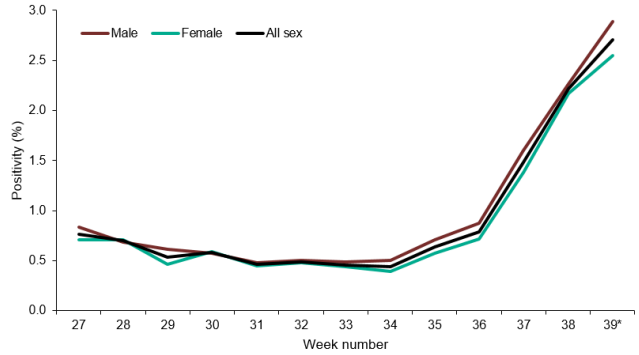


Figure 5: Weekly positivity (%) of laboratory confirmed COVID-19 cases tested overall and by sex under (a) Pillar 1 and (b) Pillar 2, (SGSS and Respiratory DataMart)

(a)



(b)

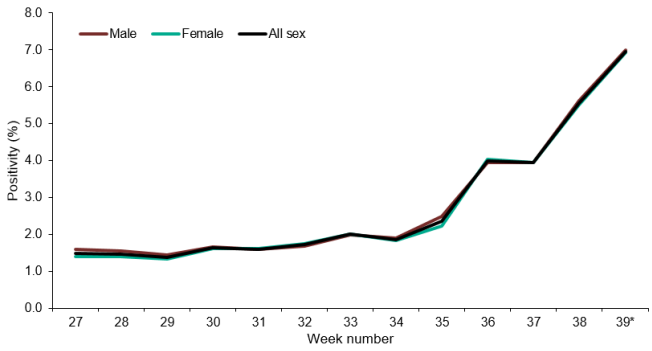
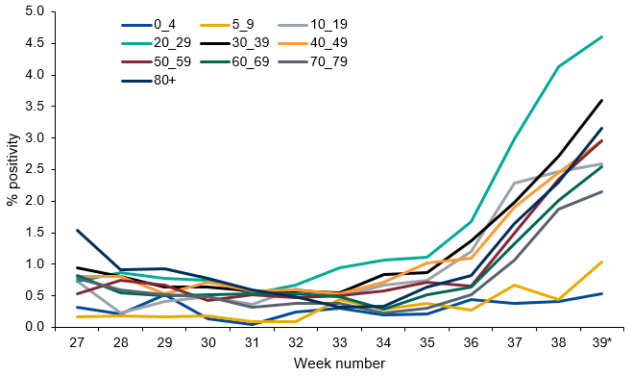
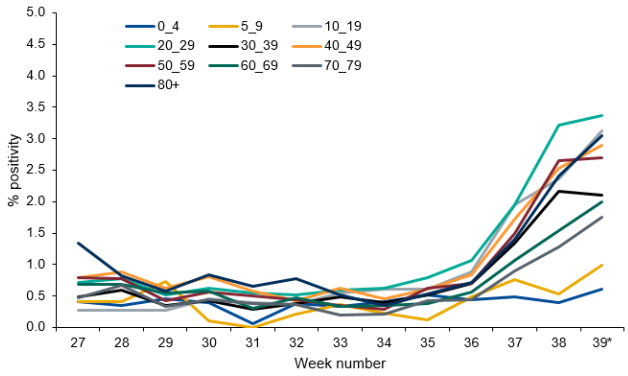


Figure 6: Weekly positivity (%) of laboratory confirmed COVID-19 cases tested under Pillar 1, (a) by male and age group and (b) by female and age group and; under Pillar 2, (c) by male and age group and (d) by female and age group, (SGSS and Respiratory DataMart)

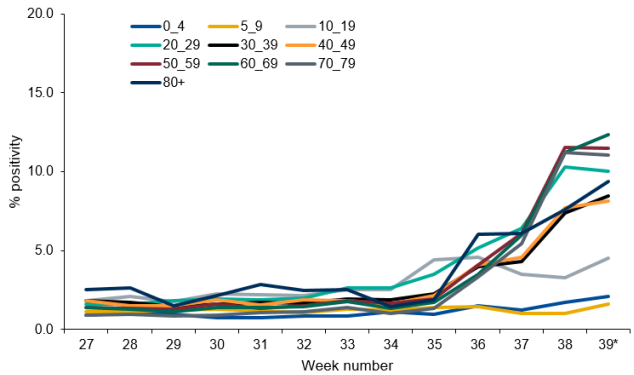
(a) Male (Pillar 1)



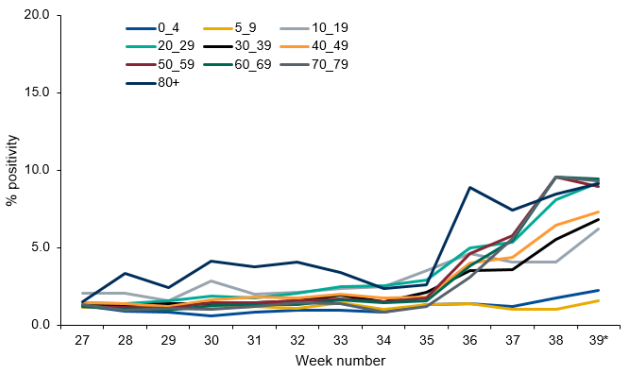
(b) Female (Pillar 1)



(c) Male (Pillar 2)



(d) Female (Pillar 2)



Geography

Table 1: Cumulative number of cases under Pillar 1 and 2 (n=372,440) and cumulative number of cases since week 27 under Pillar 1 and 2 (n=137, 490) and total number of people tested under Pillar 1 and 2 (n= 8,606,606) by PHE Centres

PHE Centres	Cumulative Pillar 1 + 2 cases	Cumulative since week 27, Pillar 1 + 2 cases	Total number of people tested (under Pillar 1 + 2)
North East	25,097	10,052	415,538
North West	82,371	40,138	1,346,697
Yorkshire & Humber	49,072	20,368	888,792
West Midlands	42,210	17,069	873,345
East Midlands	32,676	12,027	788,357
East of England	32,025	7,905	959,595
London	49,333	15,680	1,178,461
South East	41,908	9,182	1,329,096
South West	17,748	5,069	826,725

Figure 7: Weekly laboratory confirmed COVID-19 case rates per 100,000 population tested under Pillar 1 and Pillar 2, by PHE Centres and sample week

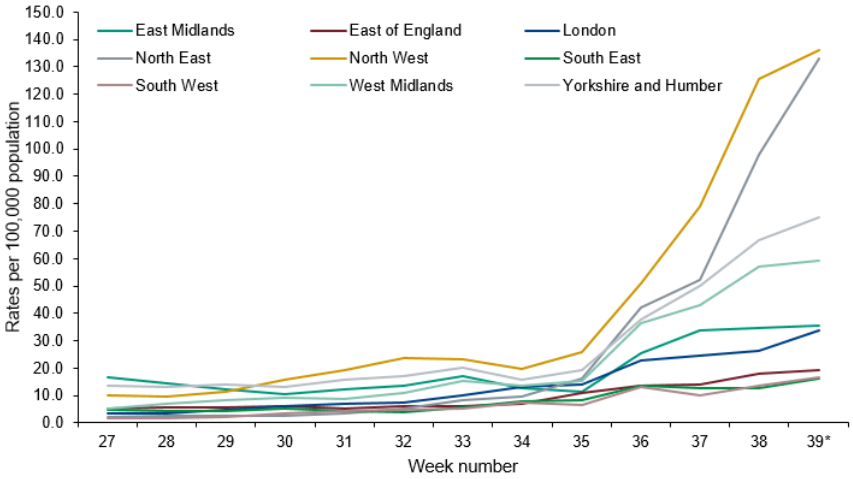
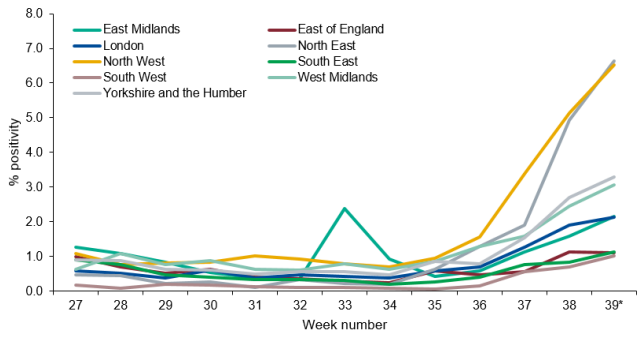


Figure 8: Weekly positivity of laboratory confirmed COVID-19 cases tested under (a) Pillar 1 (%) and (b) Pillar 2 (%), by PHE Centres and sample week, (SGSS and Respiratory DataMart)

(a)



(b)

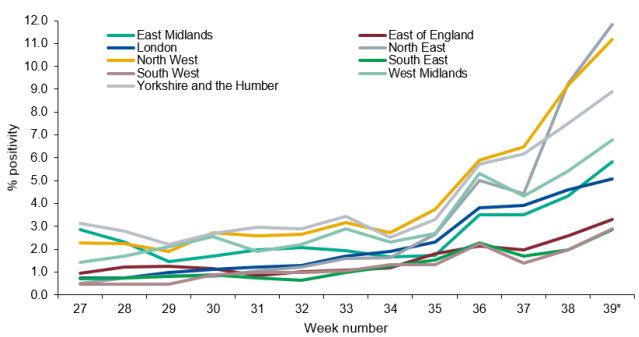


Figure 9: Cumulative rate of COVID-19 cases per 100,000 population tested under Pillar 1 and 2, by upper-tier local authority, England (box shows enlarged map of London area)

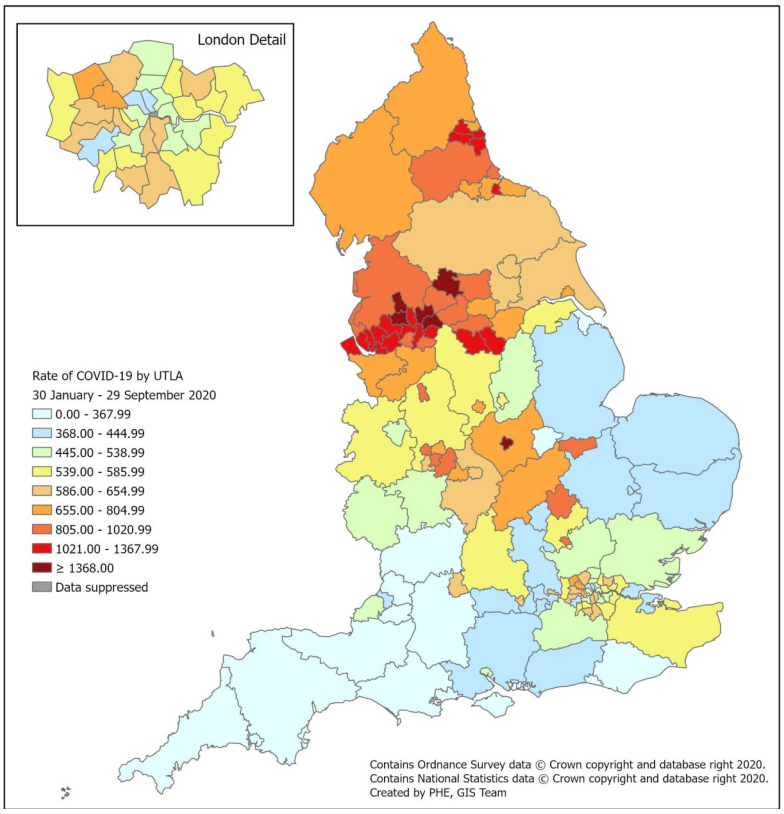


Figure 10: Cumulative rate (from week 27) of COVID-19 cases per 100,000 population tested under Pillar 1 and 2, by upper-tier local authority, England (box shows enlarged map of London area)

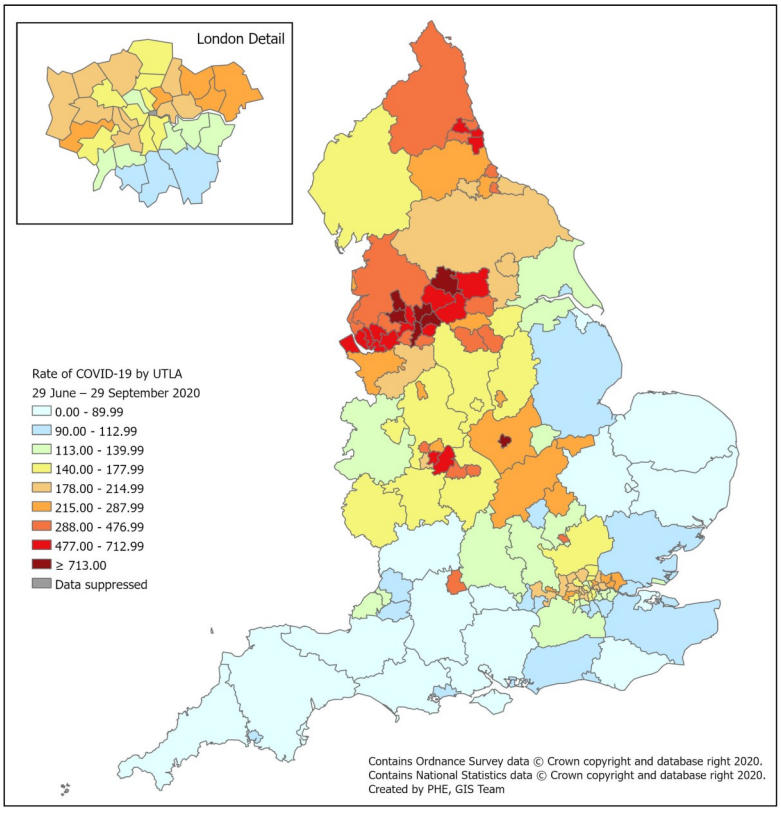


Figure 11: Weekly rate of COVID-19 cases per 100,000 population tested under Pillar 1 and 2, by upper-tier local authority, England (box shows enlarged map of London area)

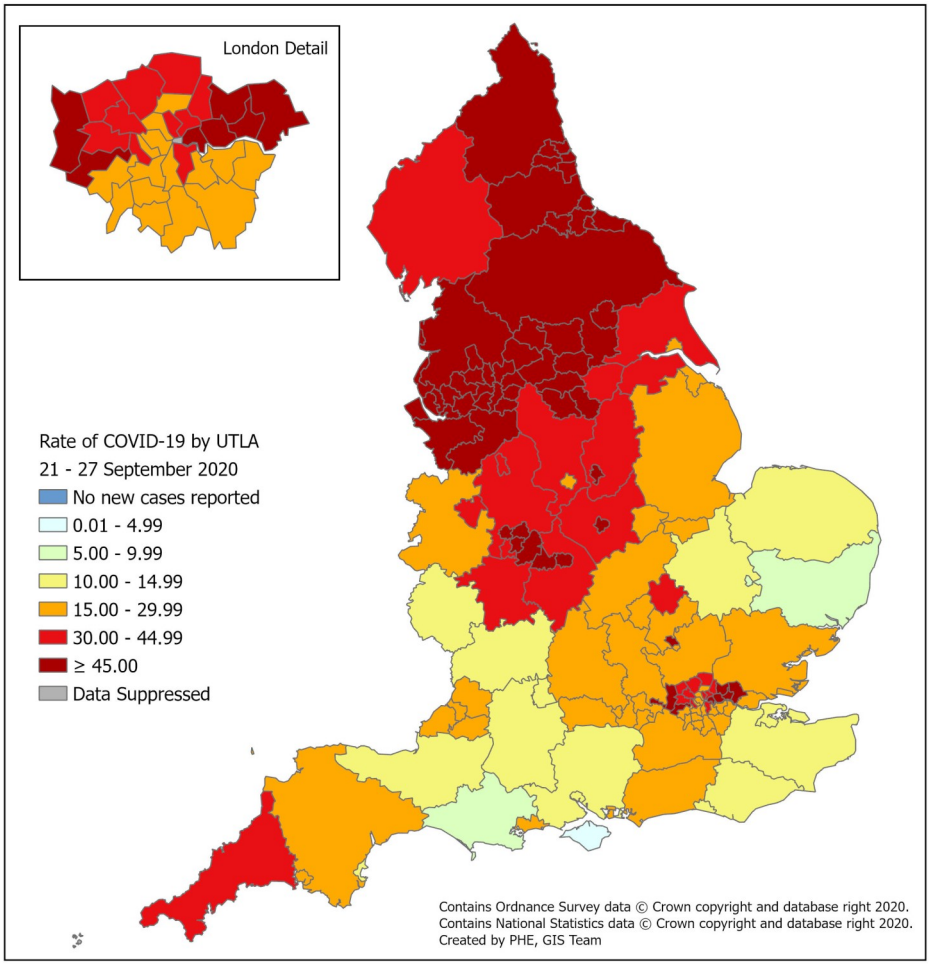
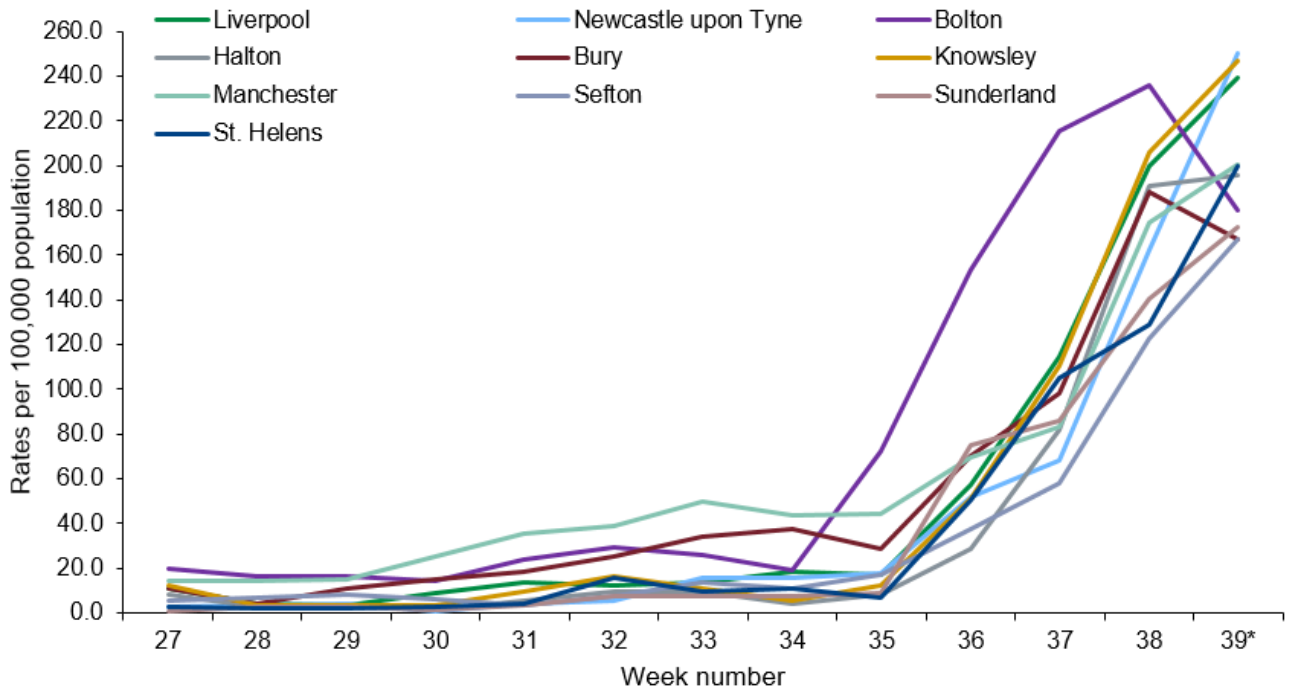


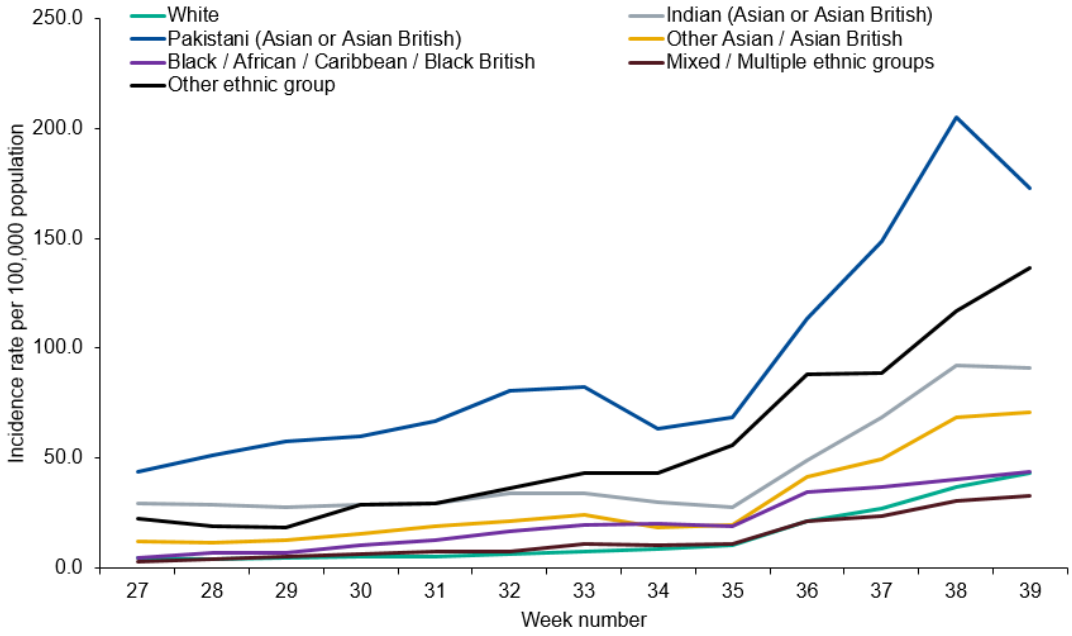
Figure 12: UTLA with the highest weekly rate of COVID-19 cases per 100,000 population tested under Pillar 1 and 2*



*The UTLA data presented in this figure, is based on data extracted on Tuesday 29 September, covering the period of 21 September to 27 September 2020 (week 39).

Ethnicity

Figure 13: Weekly incidence per 100,000 population by ethnicity, England



Incidence rates by region

In the regions with the highest overall rates and with most local authorities on the watchlist, the age groups most affected appears to be young working age adults (20-29 years). This is consistent with mixing patterns in this age group who may be more likely to be working away from home, including in public facing roles. In those regions, highest rates are also observed in Asian communities of either Other ethnic background or Pakistani origin, most likely reflecting the ethnic mix in the most affected local areas. In some regions the daily numbers of cases in each ethnic group can be small, so minor variations in rates should be interpreted with caution.

Figure 14: Weekly incidence per 100,000 population by age group and region, weeks 31-39

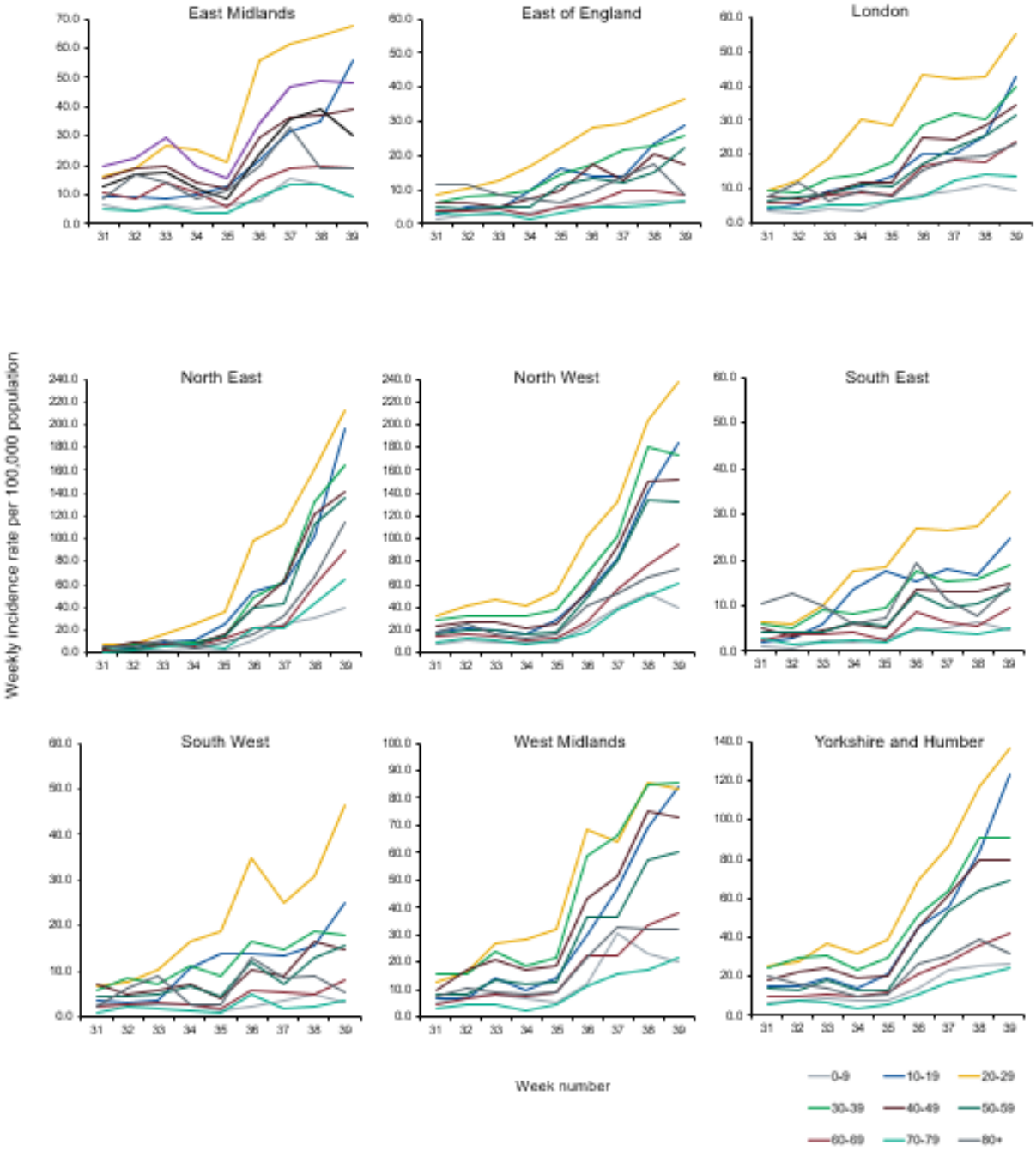
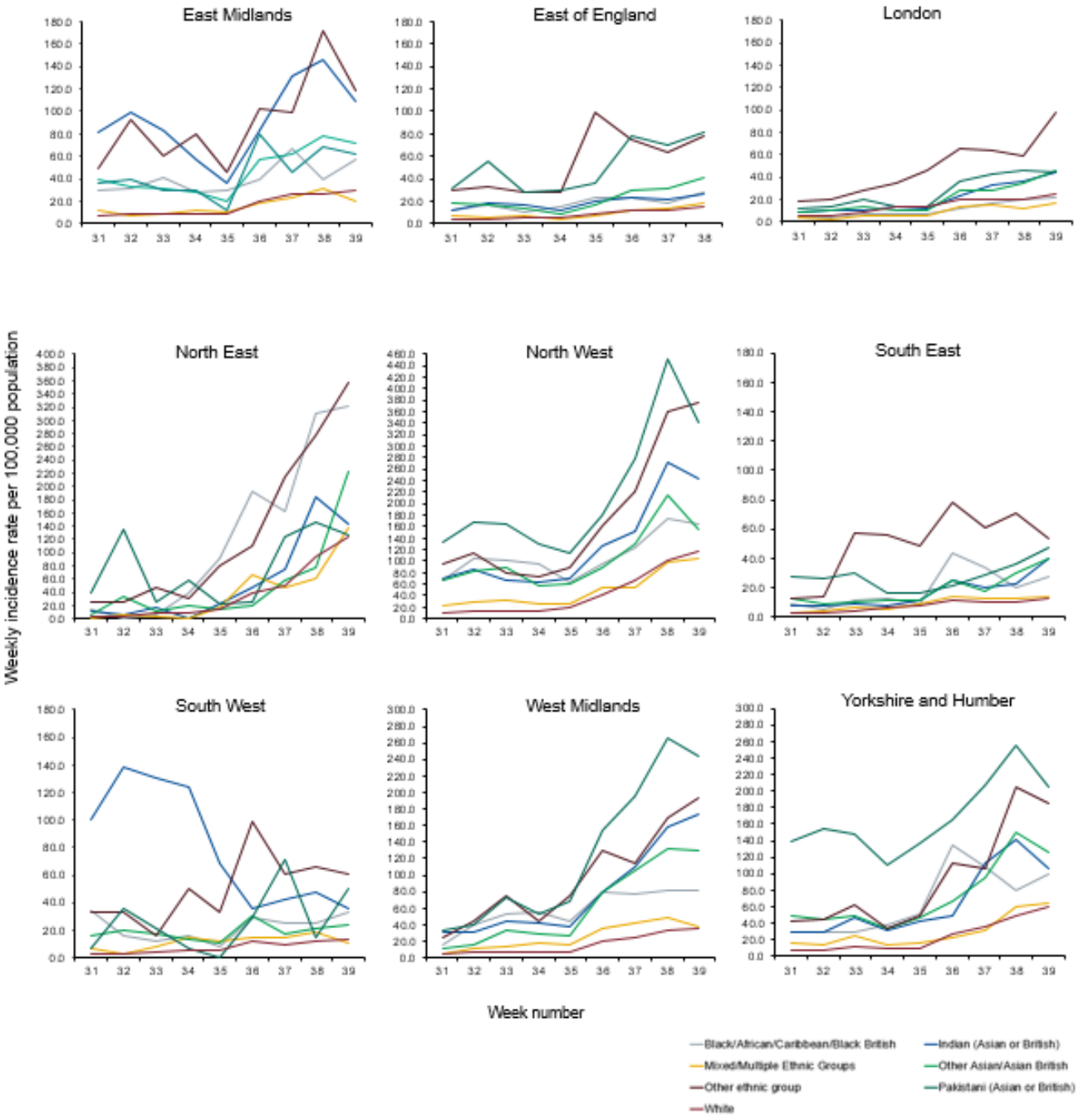


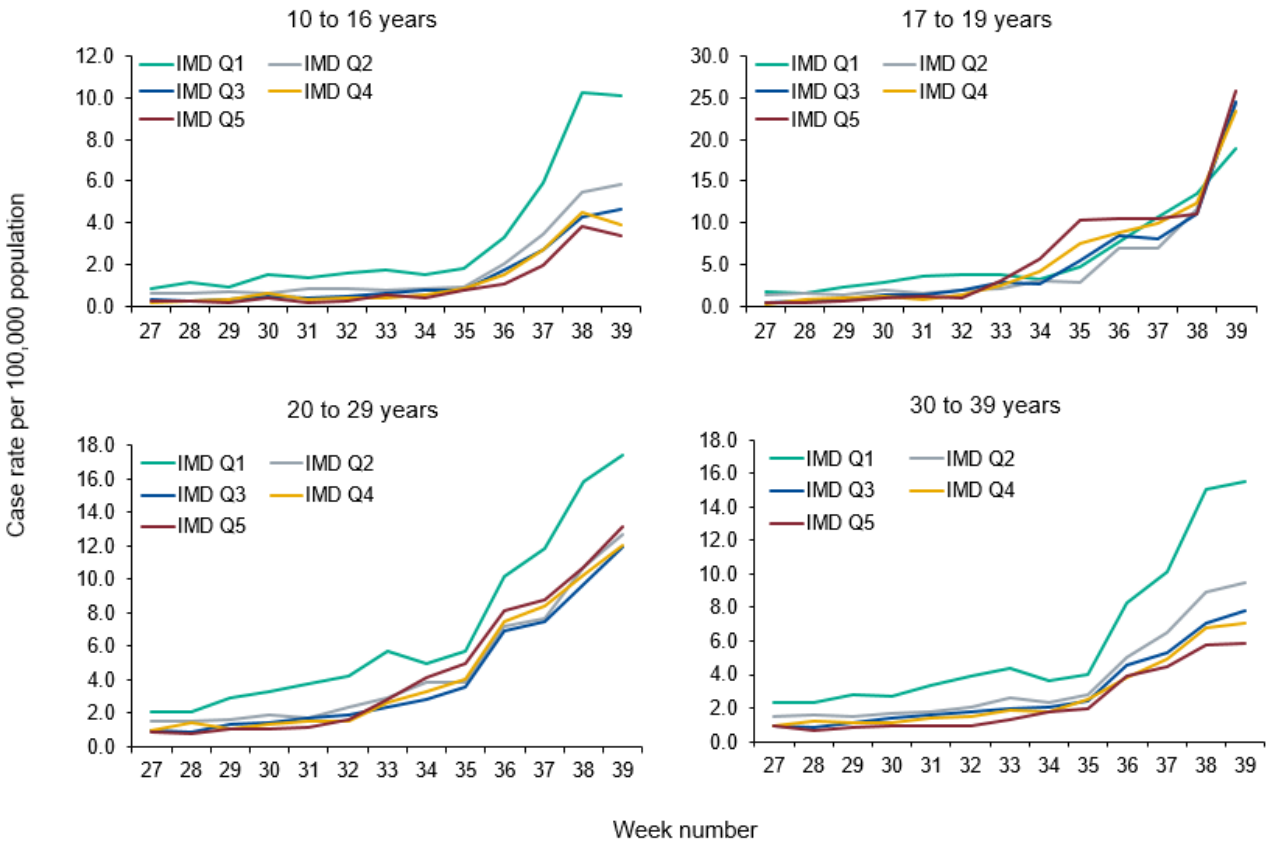
Figure 15: Weekly incidence per 100,000 population by ethnicity and region, weeks 31-39



*Data presented in Figures 14 & 15 are calculated using Government Office Region denominators

Case rates by Index of Multiple Deprivation (IMD)

Figure 16: Weekly case rate per 100,000 population by IMD quintile (1 being the most deprived and 5 being the least deprived, weeks 27-39



Other respiratory viruses, Datamart

The Respiratory Datamart system was initiated during the 2009 influenza pandemic to collate all laboratory testing information in England. It is now used as a laboratory surveillance tool, monitoring all major respiratory viruses in England.

Figure 17 and 18 represent weekly positivity of other respiratory viruses in particular rhinovirus.

In week 39, the positivity for rhinovirus decreased to 22.2% compared to 25.9 in the previous week (Figure 17). The highest positivity was seen in the 5-14 and 0-4 year olds (Figure 18).

Figure 17: Weekly positivity for other respiratory viruses reported through Respiratory Datamart, England

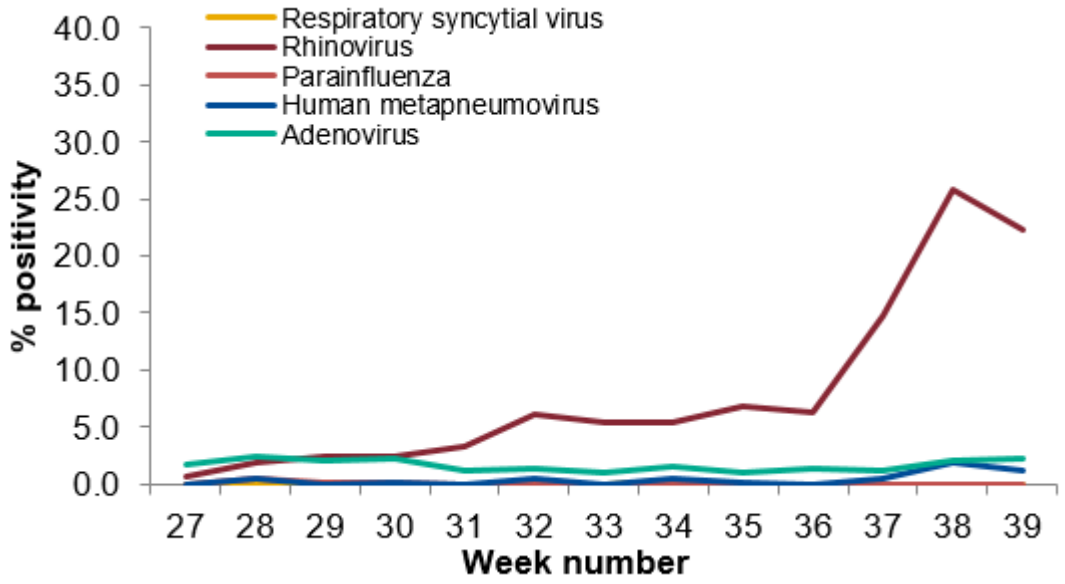
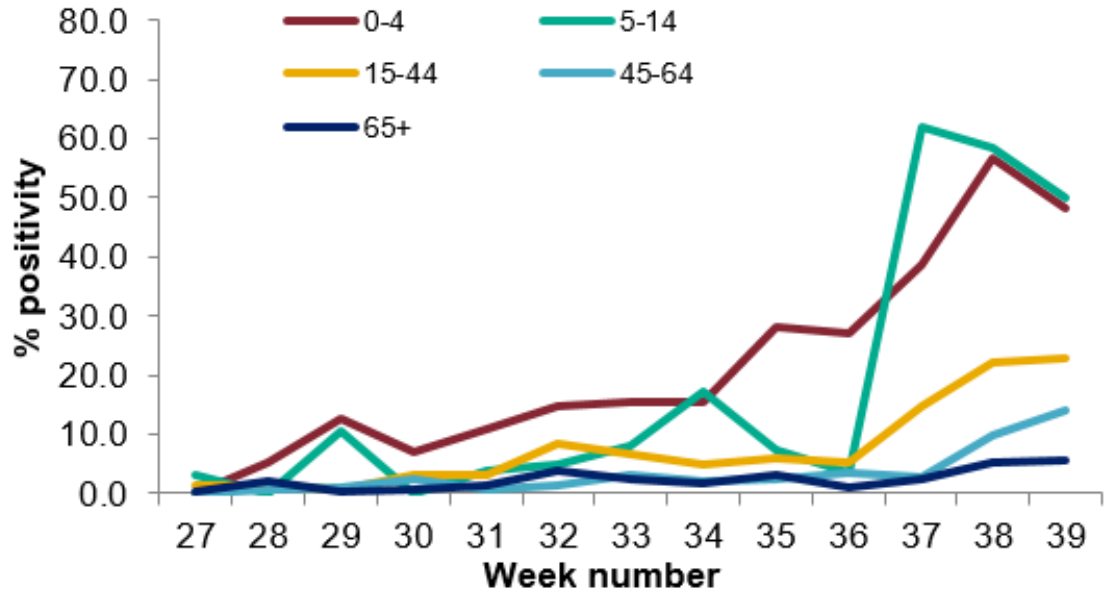


Figure 18: Weekly positivity for rhinovirus by age group, reported through Datamart, England



This section summarises the monitoring of acute respiratory infection incidents and internet based surveillance systems for COVID-19.

Acute respiratory infection incidents, England

Information on acute respiratory infection (ARI) incidents is based on situations reported to PHE Health Protection Teams (HPTs). These include:

- confirmed outbreaks of acute respiratory infections ie two or more laboratory confirmed cases (COVID-19, influenza or other respiratory pathogen) linked to a particular setting
- situations where an outbreak is suspected. All suspected outbreaks are further investigated by the HPT in liaison with local partners and a significant proportion do not meet the criteria of a confirmed outbreak. For example if suspected cases test negative for COVID-19 or other respiratory pathogens, or cases are subsequently found not to have direct links to the setting. Since Pillar 2 testing became open to everyone during week 21 more incidents of mild disease have been detected in settings with healthy young populations.

Processes for reporting ARI incidents vary between PHE Centres.

The number of incidents in each setting with at least one laboratory confirmed case of COVID-19 are reported below.

782 new ARI incidents have been reported in week 39 (Figure 19):

- 143 incidents were from care homes where 91 had at least one linked case that tested positive for SARS-CoV-2
- 27 incidents were from hospitals where 25 had at least one linked case that tested positive for SARS-CoV-2 and 1 tested positive for rhinovirus
- 296 incidents were from educational settings where 222 had at least one linked case that tested positive for SARS-CoV-2
- 3 incidents were from prisons where all 3 incidents had at least one linked case that tested positive for SARS-CoV-2
- 204 incidents were from workplace settings where 141 had at least one linked case that tested positive for SARS-CoV-2
- 33 incidents were from food outlet/restaurant settings where 24 had at least one linked case that tested positive for SARS-CoV-2
- 76 incidents were from the other settings category where 40 had at least one linked case that tested positive for SARS-CoV-2

Acute respiratory infection incidents, England

Figure 19: Number of acute respiratory infection (ARI) incidents by institution, England

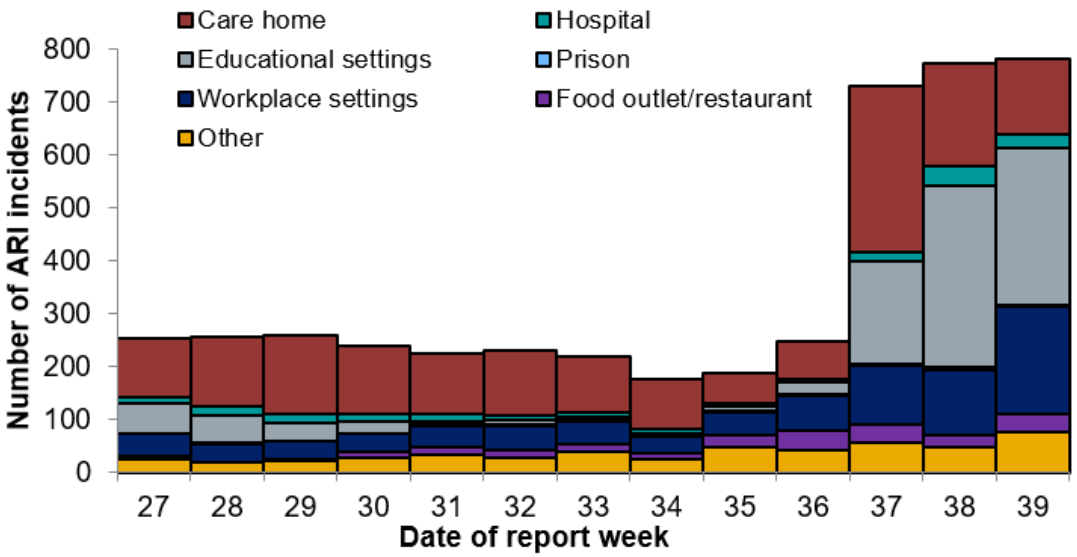
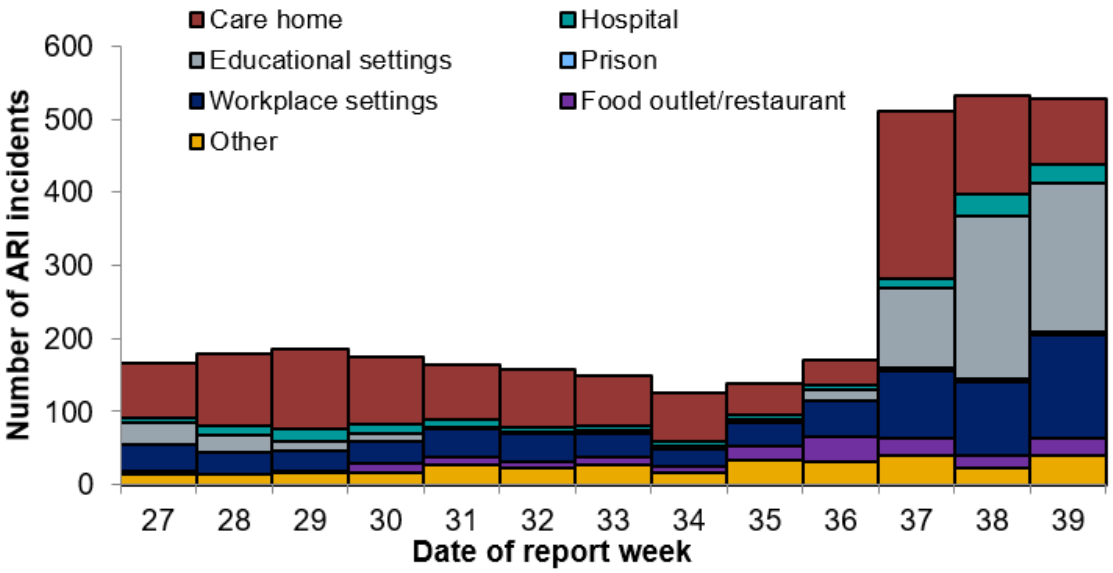


Figure 20: Number of COVID-19 incidents by institution from week 27, England



Acute respiratory infection incidents, England

Table 2: Total number of situations/incidents by institution and PHE Centres over the past four weeks with the total number in the last week in brackets

PHE Centres	Cumulative number of incidents by instituition over the past 4 weeks with total number in the last week in brackets							
	Care home	Hospital	Educational settings	Prisons	Workplace settings	Food outlet/restaurant settings	Other settings	Total
East of England	58(13)	6(3)	40(10)	0(0)	29(13)	5(4)	8(2)	146(45)
East Midlands	102(19)	8(5)	62(14)	2(2)	40(17)	10(1)	13(3)	237(61)
London	36(7)	18(2)	158(89)	1(0)	58(21)	10(3)	22(7)	303(129)
North East	46(14)	2(0)	32(14)	1(0)	21(3)	10(0)	21(7)	133(38)
North West	76(11)	12(5)	159(41)	3(0)	144(73)	41(11)	63(32)	498(173)
South East	102(26)	16(7)	49(14)	2(1)	21(5)	12(1)	19(4)	221(58)
South West	97(17)	2(1)	90(16)	1(0)	34(11)	7(2)	13(4)	244(51)
West Midlands	106(24)	21(3)	176(70)	0(0)	78(35)	20(6)	29(8)	430(146)
Yorkshire and Humber	97(12)	4(1)	87(28)	4(0)	78(26)	12(5)	35(9)	317(81)
Total	720(143)	89(27)	853(296)	14(3)	503(204)	127(33)	223(76)	2529(782)

Confirmed COVID-19 clusters or outbreaks in educational settings , England

ARI incidents in educational settings are reviewed to identify confirmed COVID-19 clusters or outbreaks as per the definitions below. This does not include incidents with only one confirmed case identified, incidents where COVID-19 is suspected but confirmation is awaited, incidents where other causative organisms have been identified or incidents where there was no causative organisms identified.

A cluster is defined as two or more test-confirmed cases of COVID-19 among individuals associated with a specific non-residential setting with illness onset dates within a 14-day period (in the absence of detailed information about the type of contact between the cases).

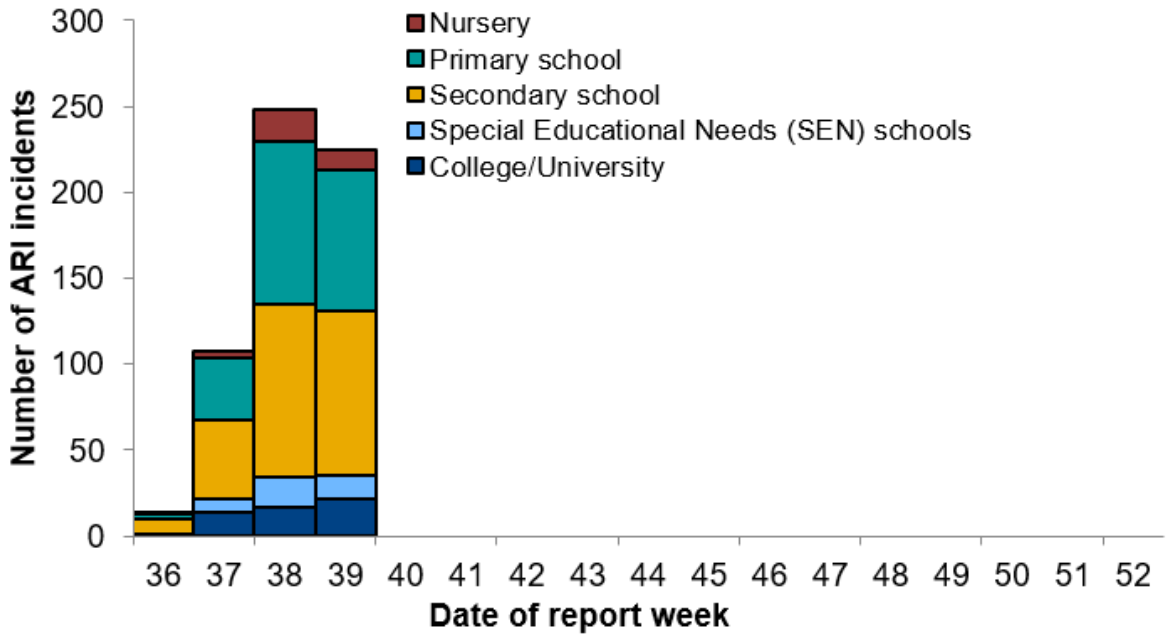
An outbreak is defined as two or more test-confirmed cases of COVID-19 among individuals associated with a specific non-residential setting with illness onset dates within 14 days, and one of:

(1) Identified direct exposure between at least 2 of the test-confirmed cases in that setting (for example under one metre face to face, or spending more than 15 minutes within 2 metres) during the infectious period of one of the cases

(2) When there is no sustained local community transmission - absence of an alternative source of infection outside the setting for the initially identified cases

In week 39, there were 225 confirmed COVID-19 clusters or outbreaks in educational settings. The highest number of COVID-19 confirmed clusters or outbreaks were reported through secondary schools (Figure 21).

Figure 21: Number of COVID-19 confirmed clusters or outbreaks by type of educational setting, England



Confirmed COVID-19 clusters or outbreaks in educational settings , England

Table 3: Cumulative number of confirmed COVID-19 clusters or outbreaks by type of educational setting and PHE Centres since week 36, England

PHE Centres	Cumulative number of confirmed COVID-19 clusters or outbreaks by type of educational setting with the total number in the last week in brackets					
	Nursery	Primary school	Secondary school	Special Educational Needs (SEN) schools	College/University	Total
East of England	3 (1)	11 (3)	14 (4)	2 (0)	4 (2)	34 (10)
East Midlands	2 (1)	18 (1)	16 (4)	2 (0)	9 (4)	47 (10)
London	6 (2)	40 (24)	47 (29)	8 (6)	13 (7)	114 (68)
North East	0	8 (2)	13 (6)	1 (0)	2 (1)	24 (9)
North West	8 (1)	41 (12)	54 (11)	11 (1)	8 (3)	124 (28)
South East	6 (2)	3 (0)	14 (7)	3 (0)	1 (1)	25 (10)
South West	2 (1)	8 (3)	10 (3)	2 (1)	2 (1)	24 (9)
West Midlands	4 (3)	68 (29)	57 (22)	3 (3)	7 (2)	139 (59)
Yorkshire and Humber	4 (1)	19 (8)	27 (10)	7 (2)	7 (1)	64 (22)
Total	35 (12)	216 (82)	252 (96)	39 (13)	53 (22)	595 (225)

Cases by type of residence

Table 4 shows the proportion of confirmed COVID-19 cases according to their type of residence. Property classifications are derived from Ordnance Survey AddressBase and are matched to address details within the laboratory data. Properties are identified by unique property reference number (UPRN) and basic land property unit (BLPU). Cases with poor or no address data which failed the address matching and are classed as 'undetermined'. No fixed abode and overseas addresses identified by recording in the laboratory data.

In week 39, there were small increases in the percentage of cases in residential dwellings remained stable (Table 4).

Table 4: Type of residence of confirmed COVID-19 cases by percentage of total weekly cases

Type of residence	week 27	week 28	week 29	week 30	week 31	week 32	week 33	week 34	week 35	week 36	week 37	week 38	week 39
Residential dwelling (including houses, flats, sheltered accommodatic	74.6	71.6	75.0	72.9	73.6	71.9	71.4	74.1	76.2	77.7	80.5	80.8	80.6
Undetermined	18.9	20.1	19.3	20.5	19.8	21.0	22.8	21.2	19.2	17.6	15.3	15.6	15.4
Care/Nursing home	4.8	6.1	4.4	4.5	5.6	5.7	4.2	2.8	2.5	3.1	2.6	1.8	1.4
Residential institution (including residential education)	0.2	0.2	0.1	0.4	0.1	0.1	0.3	0.4	0.4	0.4	0.5	0.4	0.9
House in multiple occupancy (HMO)	0.4	0.3	0.3	0.6	0.4	0.4	0.4	0.7	0.7	0.4	0.4	0.6	0.8
Medical facilities (including hospitals and hospices, and mental health	0.6	1.4	0.8	0.9	0.3	0.2	0.5	0.5	0.4	0.3	0.4	0.5	0.4
Other property classifications	0.2	0.2	0.1	0.2	0.2	0.4	0.4	0.4	0.5	0.5	0.3	0.2	0.3
Prisons, detention centres, secure units	0.2	0.1	0.0	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.2
No fixed abode	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Overseas address	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

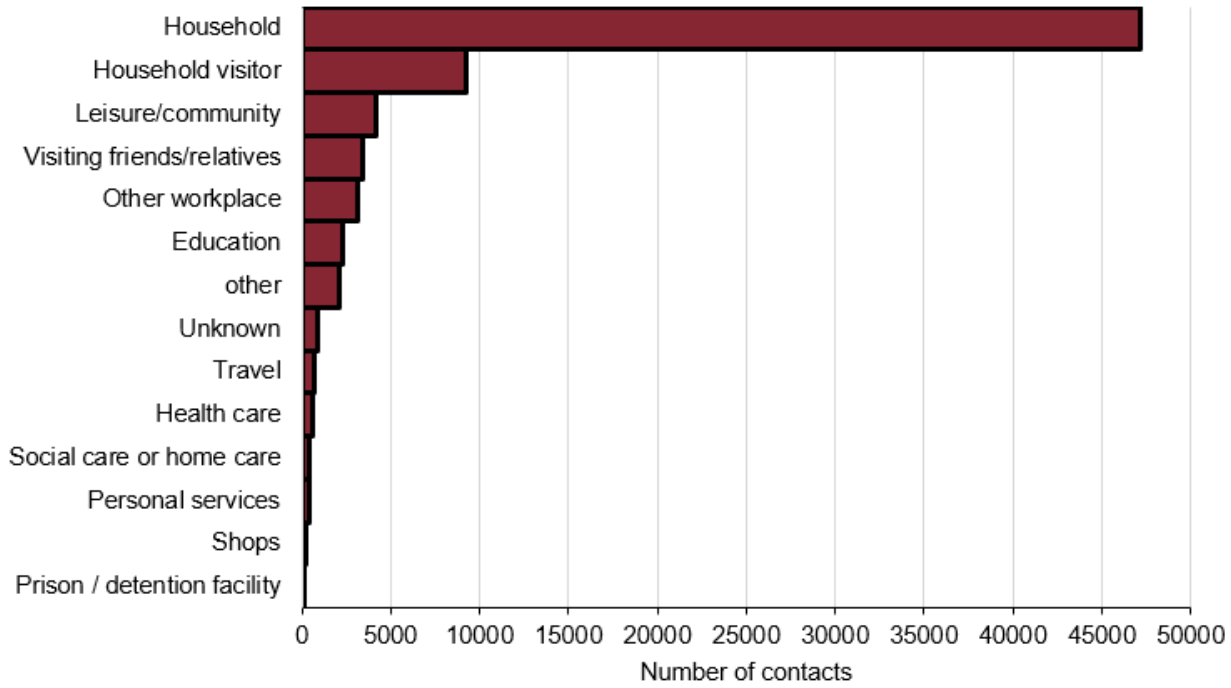
Contact tracing

Once a person has a confirmed positive test result for coronavirus, this person is transferred to NHS Test and Trace and a case is opened for them. The NHS Test and Trace service will get in contact via a text, email alert or phone call. People are asked to share details of other people with whom they have had close, recent contact and places they have visited. They can respond online via a secure website or by telephone with a contract tracer. Once contacts have been identified, they will be contacted in turn by the NHS Test and Trace service and advised to self-isolate.

Contacts in Figure 22 are those named by people testing positive and contact traced by NHS Test and Trace. The setting is the potential exposure setting as reported by the person who tested positive, when they had close interaction with the named contact. The most common setting was the household, where 63.0% of all contacts were identified. The next most common setting was visitors to the household of the person who tested positive (12.3%).

The number of contacts excludes those identified as part of management of complex cases: such as those investigated as part of an outbreak, for example, if someone works in or has recently visited a health or care setting such as a hospital or care home, a prison or other secure setting, or a school for people with special needs. For complex cases, contacts are often managed at a situation rather than individual level, with advice being issued to the contact institution (for example in a care home or prison). Therefore information on individual contacts associated with these situations is not available.

Figure 22: Contacts by exposure/activity setting in week 39, England
(Data source: NHS Test and Trace)



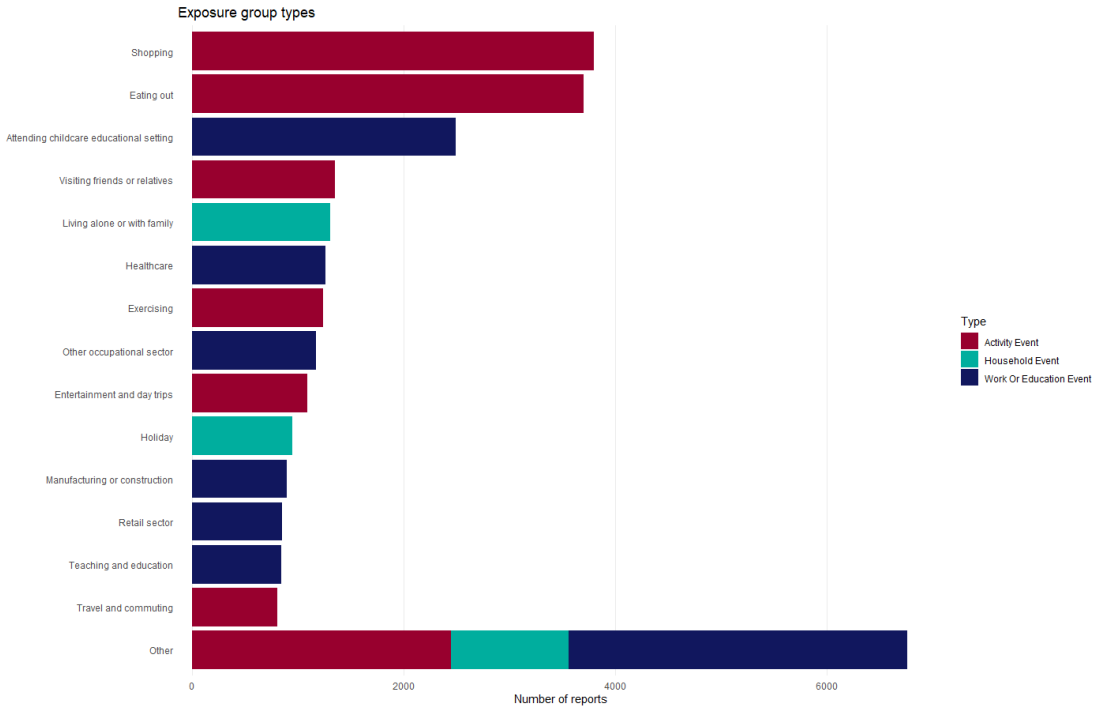
Note: categories have been grouped as follows: leisure / community includes eating out, attending events and celebrations, exercising, worship, arts, entertainment or recreation, community activities and attending play groups or organised trips; other workplace includes: retail, manufacturing or construction, hospitality, transport, emergency services or border force, food production and agriculture, prison, financial services, civil service or local government, information and communication, military, critical national infrastructure.
Personal services includes hairdressers, barbers, tattooists and nail bars.

Contact tracing

Since 10 August, people who test positive are also asked about places they have been and activities they have done in the days before becoming unwell (in the 2-7 days prior to symptom onset). Although this can't say for certain if this is where someone picked up the infection, the information may be helpful to indicate possible places where transmission is happening. Local authorities and local health protection teams investigate links to settings to determine whether any further action is required.

From 21 to 27 September 2020, 14,826 people testing positive were referred to NHS Test and Trace and reported at least one event within the enhanced contact tracing time period. In total 28,486 events were reported. The most common activities/events were shopping (3,799 events, 13.3% of all those reported) and eating out (3,699 events, 13.0%).

Figure 23: Events and activities reported by people testing positive, prior to symptom onset (enhanced contact tracing). England, NHS Test and Trace (people referred to NHS Test and Trace 21-27/09/2020).



Note: 'other' includes a wide range of different activities and settings, each of which has small numbers of individuals, as well as activities which did not fit any specific category and were added as other by the case. This includes: (all within 'activities': Arts entertainment or recreation; Civil service or government; Close contact services; Community and charity activities; Critical national infrastructure; Emergency services; Financial services; Food production; Hospitality; Immigration border services; Information and communication; Military; Personal care; Prison; Private events and celebrations; Public events and mass gathering; event within a shared household; Sport events; Supported living; Teaching and education; Transport; Visit-

NHS 111

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.

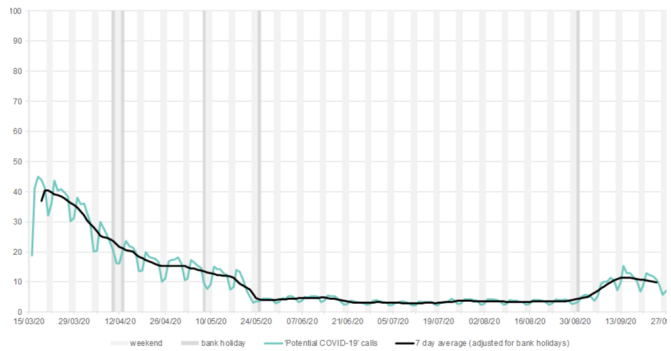
Up to 27 September 2020, the daily percentage of NHS 111 'potential COVID-19-like' calls (as a percentage of total NHS 111 calls) and number of online assessments are stable. The daily percentage of cold/flu calls (as a percentage of total NHS 111 calls) and cold/flu completed online assessments are decreasing (Figure 24 and 25).

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

Further information about these caveats is available from the PHE Remote Health Advice Syndromic Surveillance bulletin.

Figure 24 (a-b): NHS 111 telephony indicators (and 7-day moving average), England

(a) Daily potential COVID-19 calls as a percentage of total calls, all ages



(b) Daily cold/flu calls as a percentage of total calls, all ages

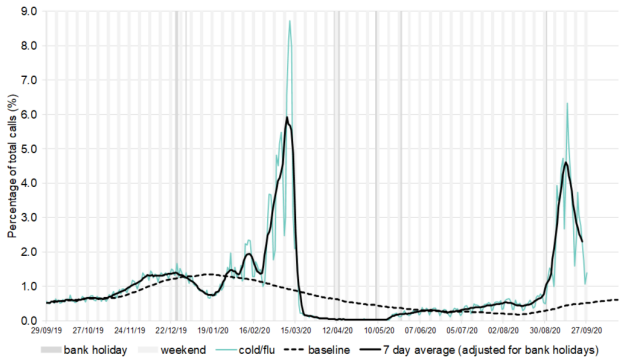
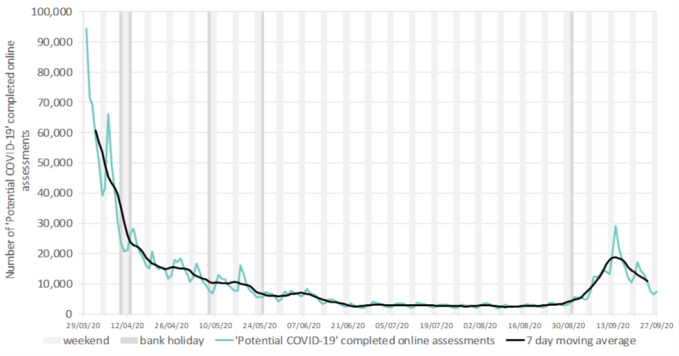
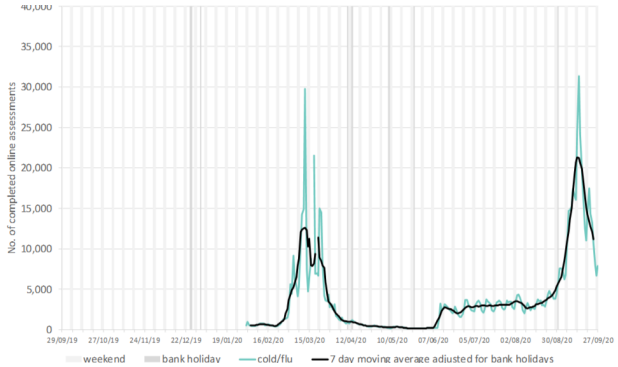


Figure 25 (a-b): NHS 111 completed online assessments (and 7-day moving average), England

(a) Daily 'potential COVID-19' online assessments as the number of completed online assessments, all ages



(b) Daily cold/flu online assessments as the number of completed online assessments, all ages



Internet based surveillance

PHE's internet based surveillance systems aim to monitor the volume of people searching for typical symptoms of COVID-19 on the internet as well as tracking self-reported respiratory symptoms and health seeking behaviour patterns related to COVID-19.

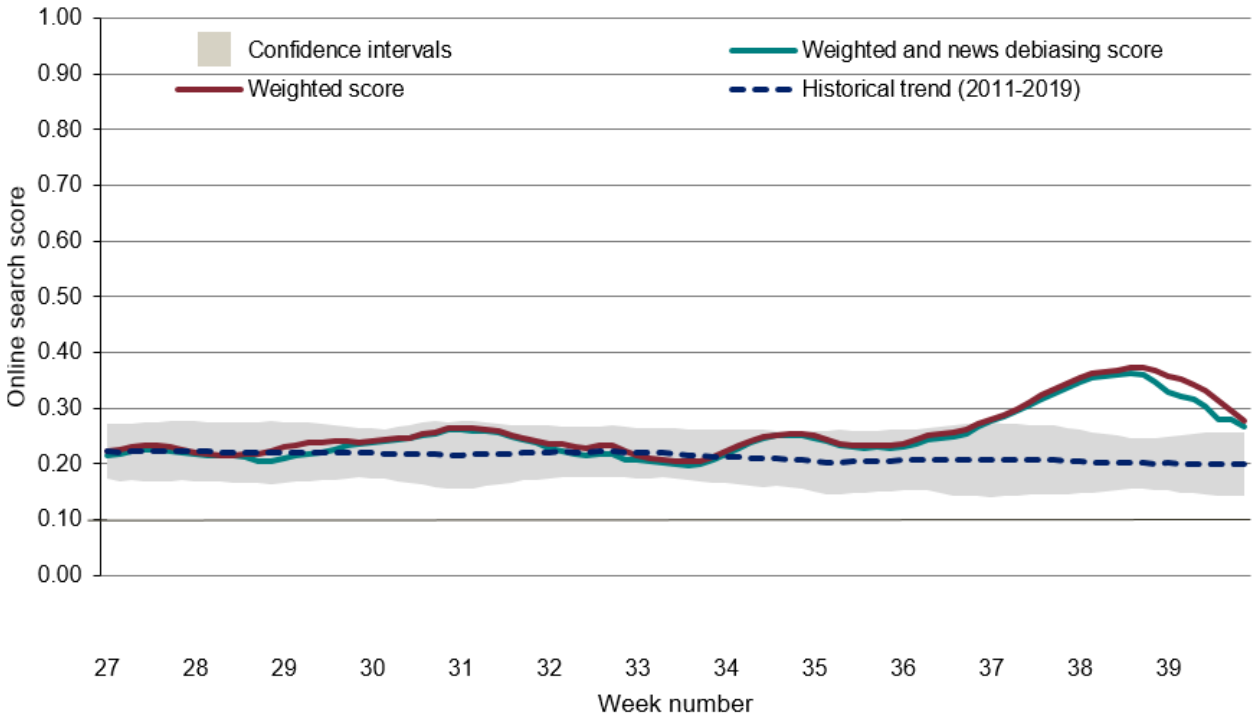
Google search queries

This is a web-based syndromic surveillance system which uses daily search query frequency statistics obtained from the Google Health Trends API [1]. This model focuses on search queries about COVID-19 symptoms as well as generic queries about "coronavirus" (eg "covid-19"). The search query frequency time series has been 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.

The overall and media-debiasing weighted scores decreased in week 39 (Figure 26).

[1] For more information about this model, please see https://arxiv.org/abs/2003.08086

Figure 26: Normalised Google search score for COVID-19 symptoms, with weighted score for media-debiasing and historical trend, England



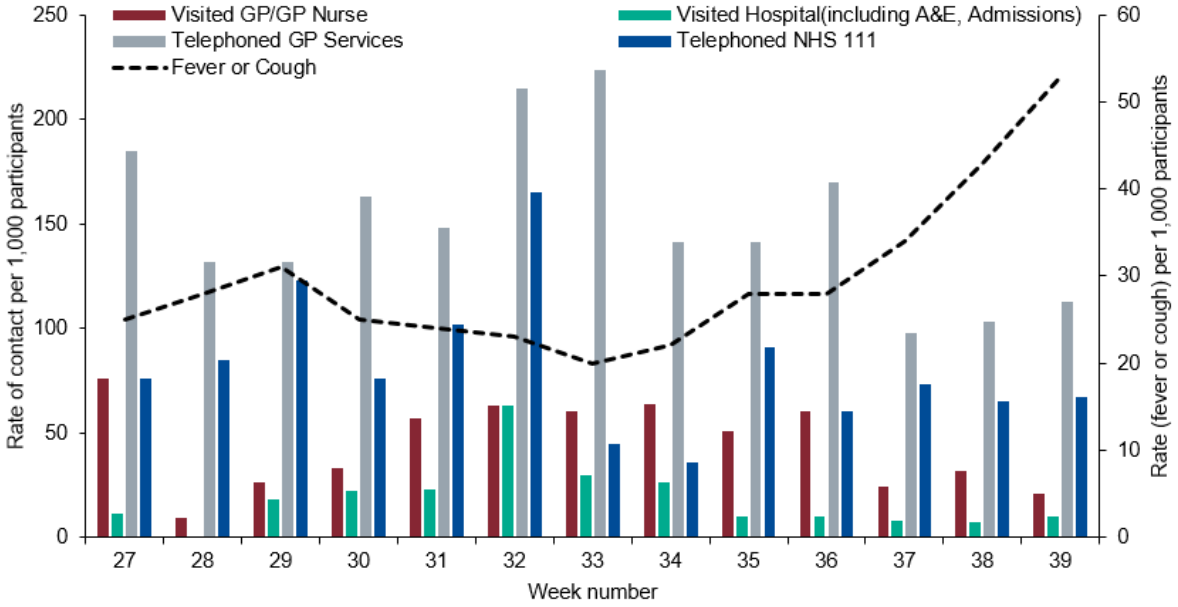
Internet based surveillance

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.

A total of 3,694 participants completed the weekly COVID-19 surveillance survey in week 39, of which 195 (5.3%) reported fever or cough, a slight increase from the previous week. The most commonly reported method of access to healthcare services continue to be through telephoning a GP practice in week 39 (Figure 27).

Figure 27: Rate of contact with different healthcare services among FluSurvey participants reporting fever or cough symptoms, week 27 to 39, England



GP In Hours (GPIH) and GP Out of Hours (GPOOH), Syndromic surveillance

The GP In Hours (GPIH) syndromic surveillance system monitors the number of GP visits during regular hours of known clinical indicators. 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. Both systems cover around 55% of England's population.

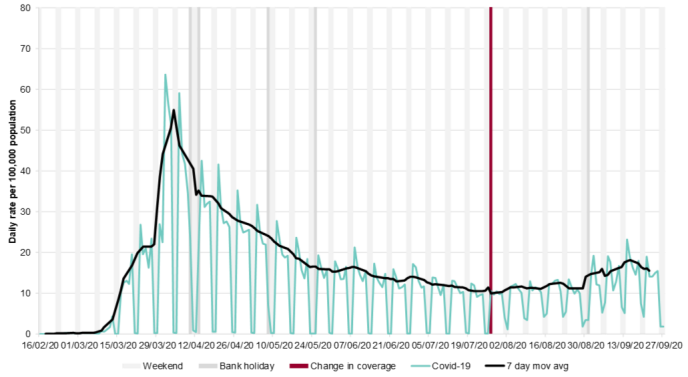
Up to 27 September 2020, GPIH consultations for potential COVID-19-like consultations decreased while ILI consultations remained stable (Figure 28). Please note that the GPIH COVID-19-like indicator presented in this report is derived from a reduced denominator population, compared to ILI. Please also note, week 36 contains a bank holiday and there were also days with a reduced denominator and therefore these recent rates should be interpreted with some caution.

Rates should therefore be treated with caution (baselines are also not available this week). Through GPOOH consultations (up to 27 September 2020), the daily percentage (as a percentage of total contacts with a Read code) for ILI and difficulty breathing/wheeze/asthma contacts have decreased (Figure 29).

Please note GP data should be interpreted with caution due to changes in advice regarding accessing GP surgeries due to COVID-19. Further information about these caveats is available from the PHE GP In Hours Syndromic Surveillance bulletin.

Figure 28 (a-b): GPIH clinical indicators, England

(a) potential COVID-19 GP consultations, daily incidence rates per 100,000 population, all ages



(b) Influenza-like illness consultations, daily incidence rates per 100,000 population, all ages

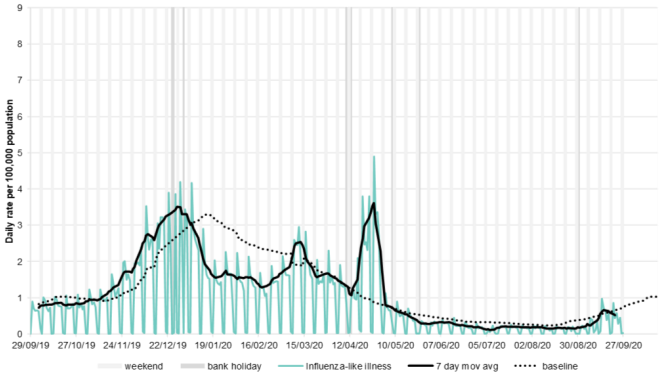
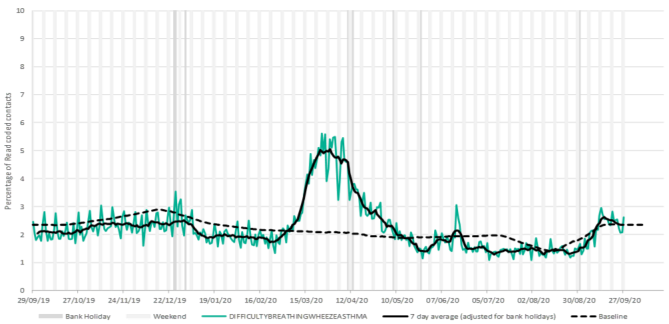
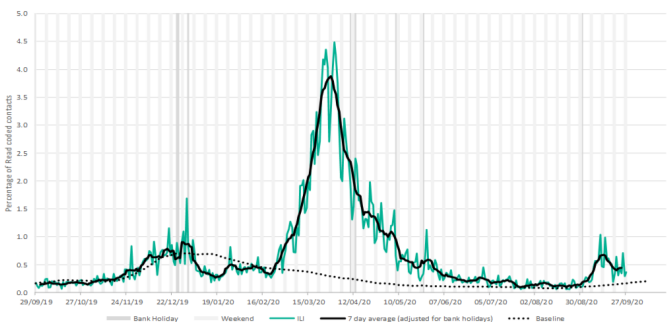


Figure 29 (a-b) : GPOOH contacts indicators, England

(a) Difficulty breathing/wheeze/asthma, daily contacts (%), all ages



(b) Influenza-like illness, daily contacts (%), all ages

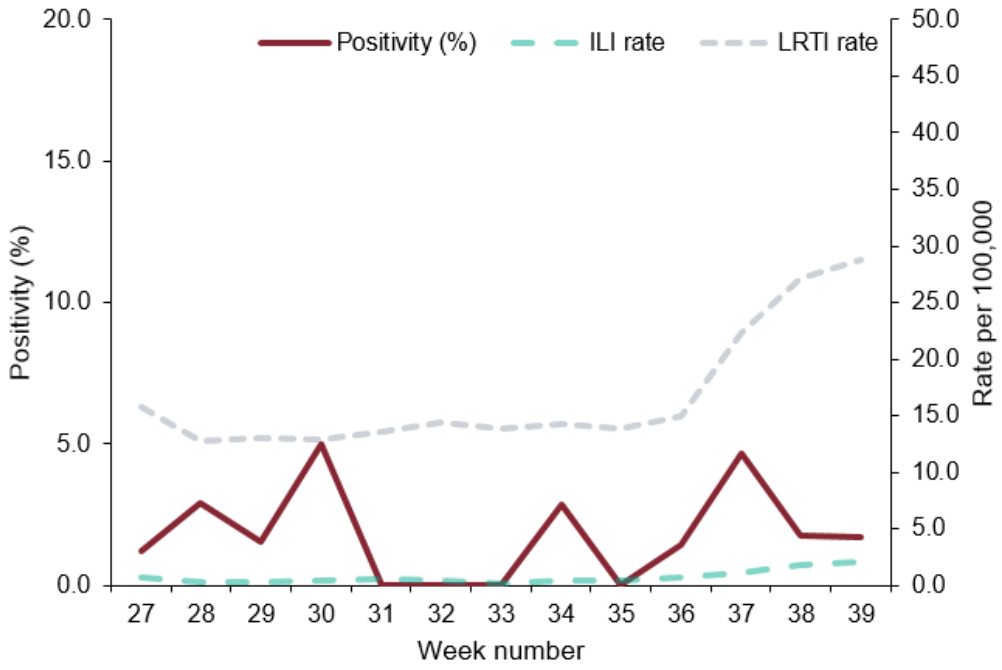


RCGP swabbing scheme

This is an extended primary care surveillance system through the RCGP sentinel integrated clinical and virological scheme. The extension of the scheme was initiated on 24 February 2020. A sample of patients presenting to around 300 GP practices with Influenza-like Illness (ILI) and Lower Respiratory Tract Infections (LRTI) (not suspected for COVID-19) will be tested. This enables the week on week monitoring of test "positivity rate" to observe the trend in the proportion of people with confirmed COVID-19.

Up to 29 September 2020, a total of 6,034 patients have been tested of which 635 have tested positive for SARS-CoV-2 through this scheme. The overall positivity was at 1.7% (2/116) in week 39 compared to the same positivity (5/286) in the previous week (Figure 30). Positivity was highest in the 45-64 years age group and in the North of England. Consultations for LRTI and ILI increased slightly in week 39 (Figure 30).

Figure 30: Overall weekly positivity (%), ILI and LRTI consultations rates (per 100,000), RCGP, England



*For the most recent week, more samples are expected to be tested therefore the graph in Figures 23-25 should be interpreted with caution

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

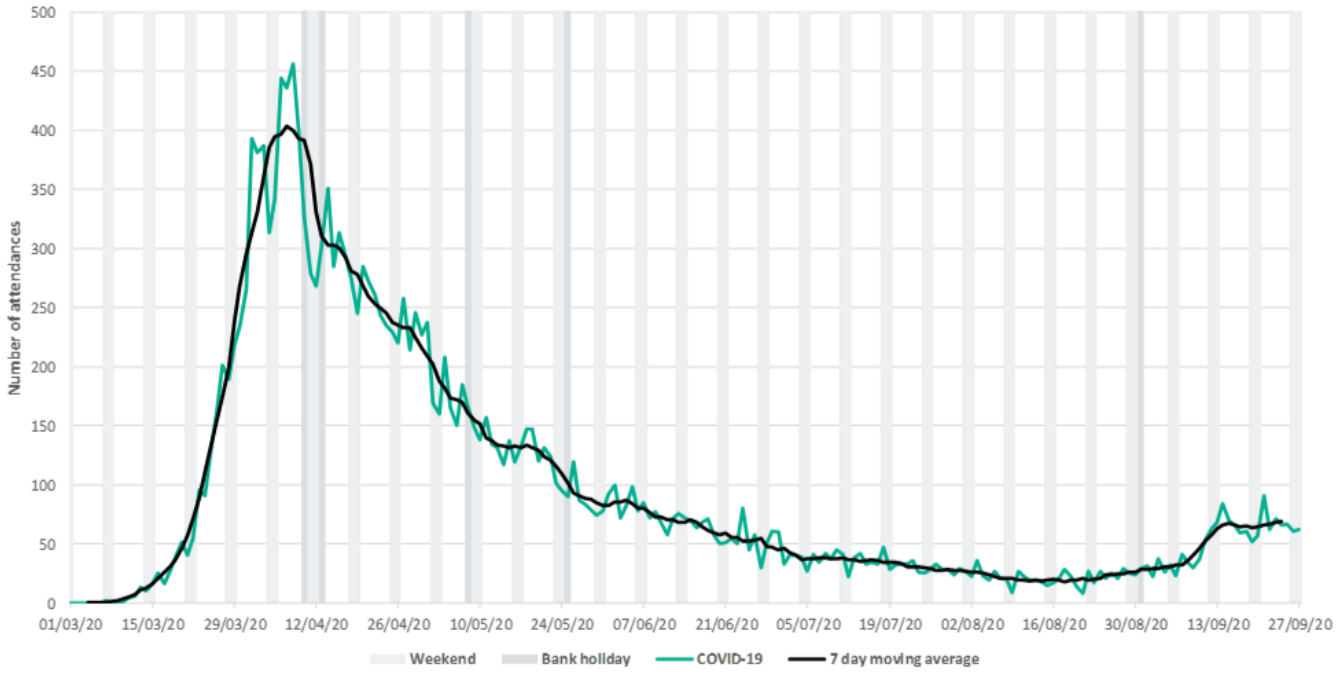
Emergency Department attendances, Syndromic surveillance

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

Up to 27 September 2020, the daily number of ED attendances for all ages as reported by 65 EDs in England during week 39, for COVID-19-like attendances remained stable (Figure 29).

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 PHE Emergency Department Syndromic Surveillance bulletin.

Figure 31: COVID-19-like, daily ED attendances, all ages, England



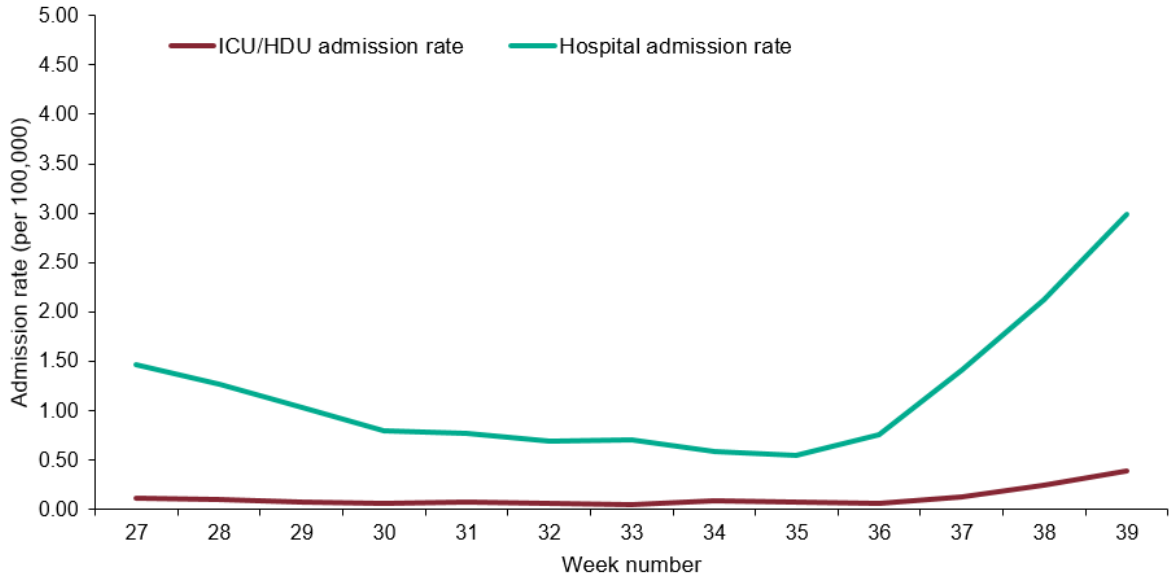
COVID-19 Hospitalisation in England Surveillance System (CHESS)

The CHESS surveillance system monitors daily new acute respiratory infections (ARI) and new laboratory confirmed COVID-19 admissions to hospital including critical care (ICU/HDU). Trends in hospital and critical care admission rates need to be interpreted in the context of testing recommendations.

A total of 134 NHS Trusts are now participating, although the number of Trusts reporting varies by day. The weekly rate of new admissions of COVID-19 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.

In week 39, the weekly admission rate for hospital and ICU/HDU admissions have continued to increase.
The hospitalisation rate was at 2.99 per 100,000 in week 39 compared to 2.13 per 100,000 in the previous week. The ICU/HDU rate was at 0.39 per 100,000 in week 39 compared to 0.25 per 100,000 in the previous week (Figure 32). By NHS regions, the highest hospitalisation rate continued to be observed in the North West however the ICU/HDU rate was highest in the Midlands (Figure 33). By age group, the highest hospitalisation rate was observed in the 85+ year olds and the highest ICU/HDU rate was observed in the 75-84 year olds (Figure 34).

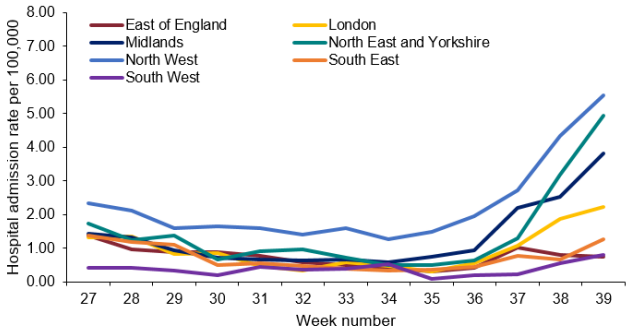
Figure 32: Weekly overall hospital and ICU/HDU admission rates per 100,000 of new COVID-19 positive cases reported through CHESS, England



COVID-19 Hospitalisation in England Surveillance System (CHESS)

Figure 33: Weekly admission rate for (a) hospital admissions and (b) ICU/HDU admissions by NHS regions of new COVID-19 positive cases reported through CHESS

(a)



(b)

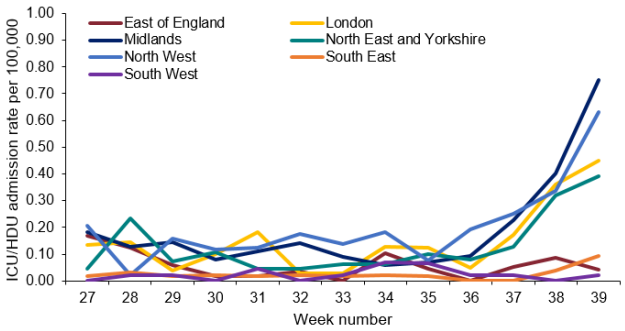
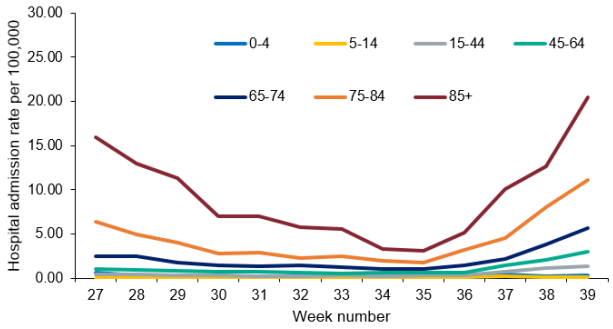


Figure 34: Weekly admission rate for (a) hospital admissions and (b) ICU/HDU admissions by age group of new COVID-19 positive cases reported through CHESS

(a)



(b)

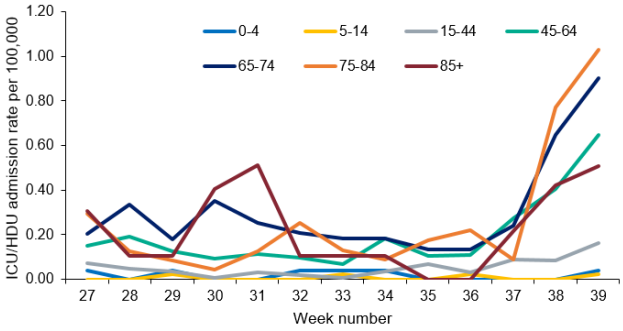
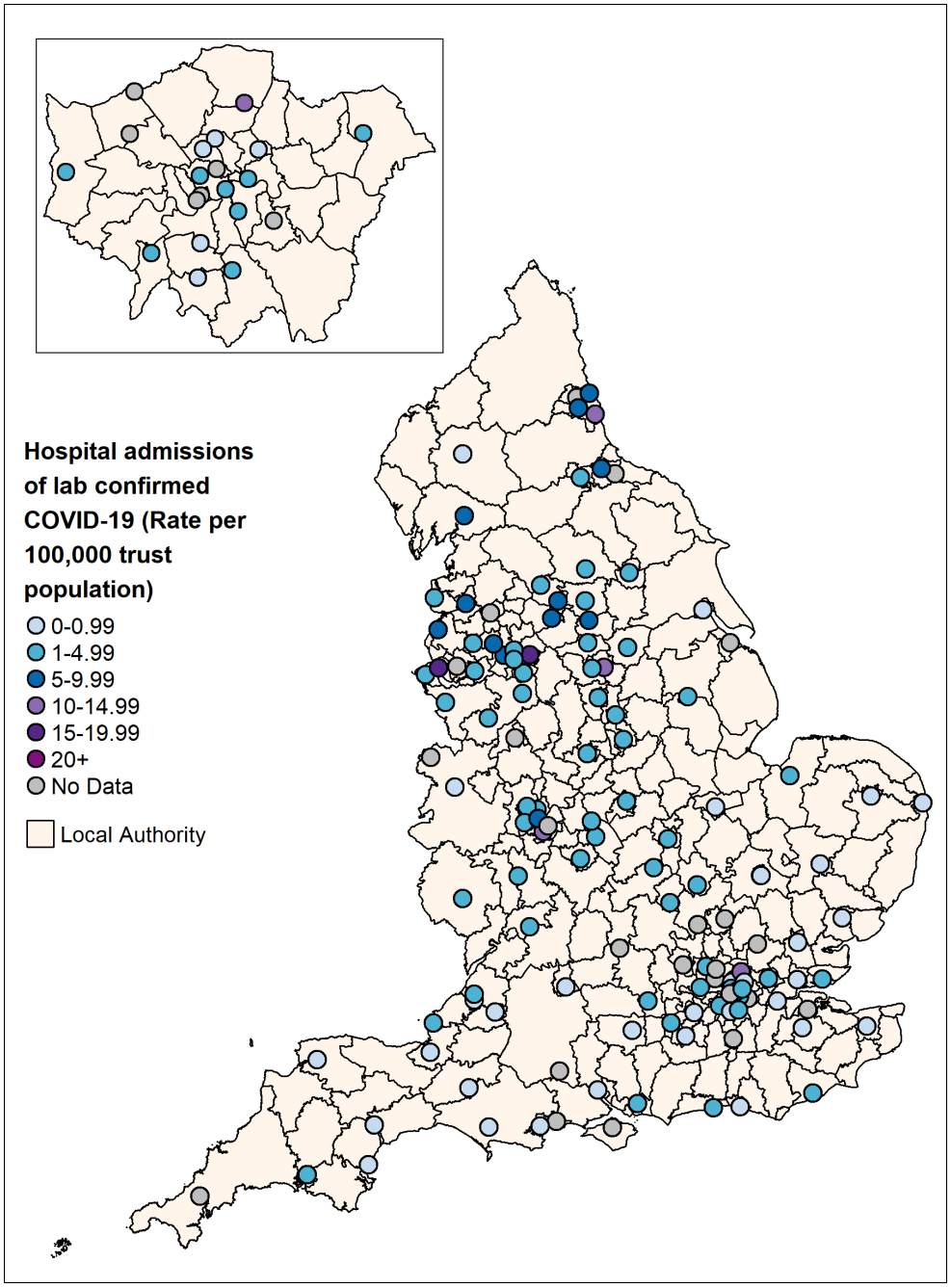


Figure 35: Weekly admission rates for hospitalised laboratory confirmed COVID-19 cases reported through CHESS, week 39

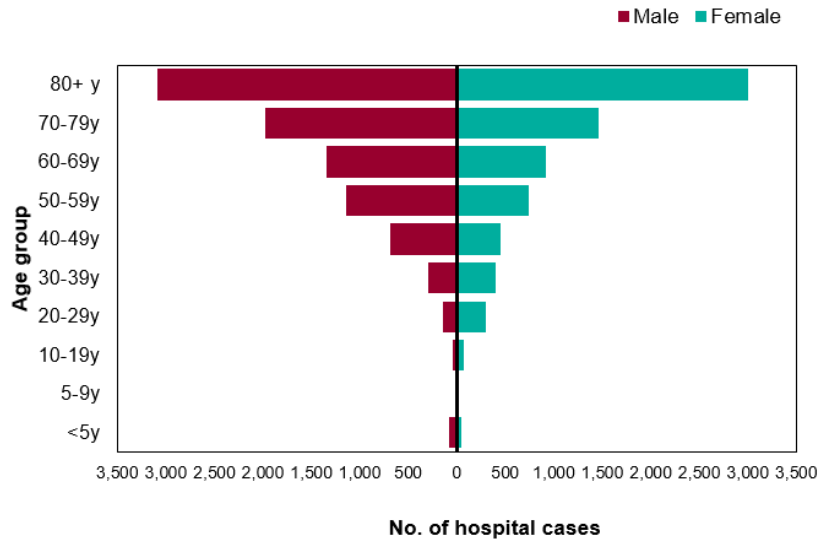


COVID-19 Hospitalisation in England Surveillance System (CHESS)

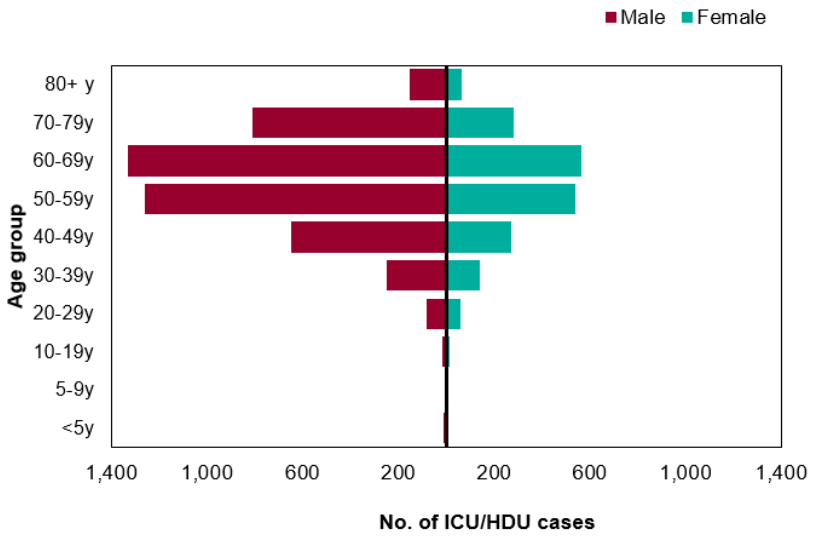
Figure 36 and 37 are based on individual patient level data which are provided to CHESS from a subset of NHS Acute Trusts, therefore the data should be interpreted with caution as the distribution of age, sex and ethnic group may not be representative of all hospitalised patients.

Figure 36: Age/sex pyramid of new (a) hospital (lower level of care) (n=16,204) and (b) ICU/ HDU (n=6,499) COVID-19 cases reported through CHESS, England

(a)

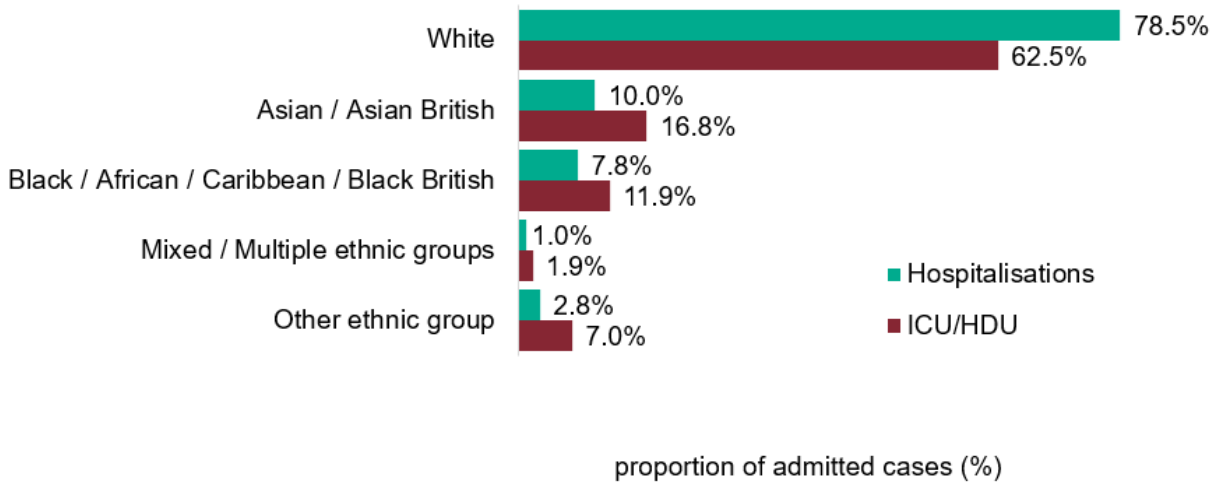


(b)



COVID-19 Hospitalisation in England Surveillance System (CHESS)

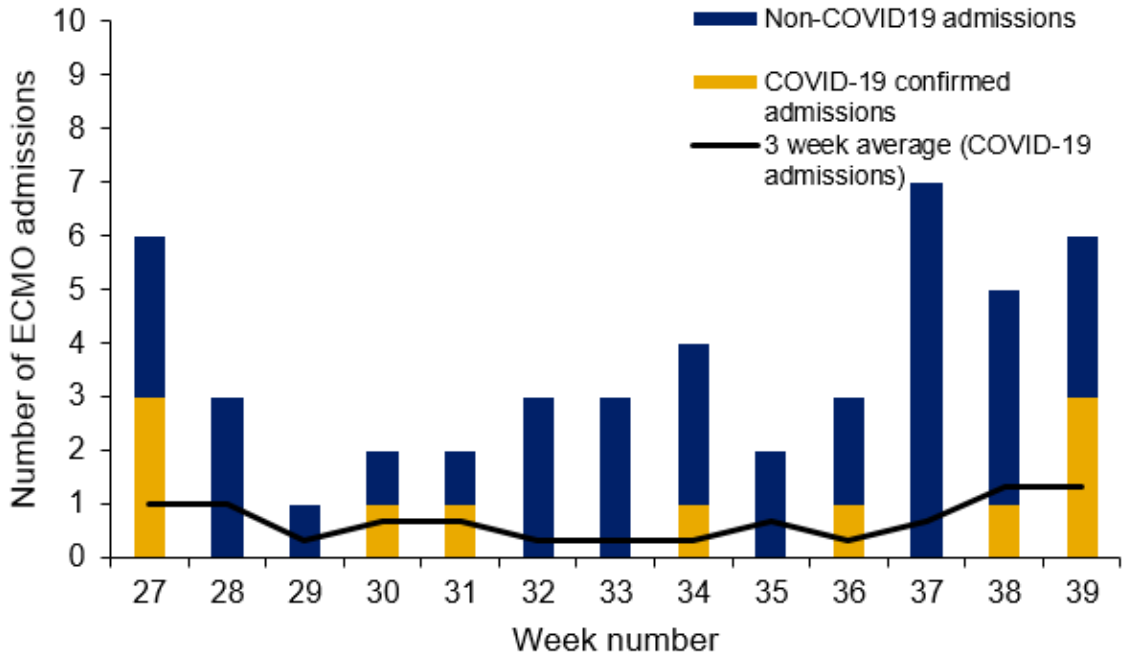
Figure 37: Ethnic group of new hospitalisations (lower level of care) (n=15,576) and ICU/ HDU (n=5,994) COVID-19 cases reported through CHESS, England



UK Severe Respiratory Failure (SRF) centres admissions

Between 3 March and 29 September 2020, a total of 228 laboratory confirmed COVID-19 admissions have been reported from the 5 SRFs in England. There were three new laboratory confirmed COVID-19 admissions reported in week 39.

Figure 38: Laboratory confirmed ECMO admissions (COVID-19 and non-COVID-19 confirmed) to SRFs, England



Cumulative deaths

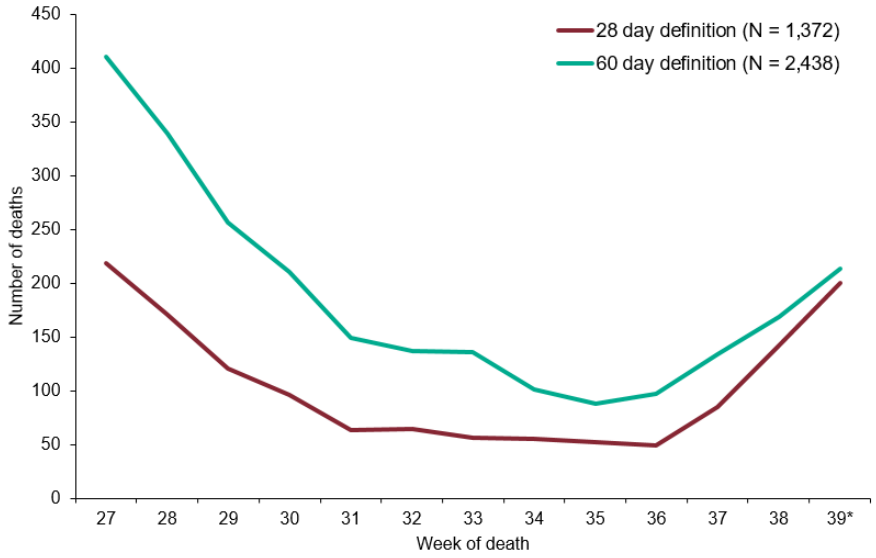
Changes to the definitions of COVID-19 related deaths in England are described in more detail in an accompanying PHE technical summary.

The current definitions used for mortality surveillance of COVID-19 in England are:

(a) 28 day definition: A death in a person with a laboratory-confirmed positive COVID-19 test and died within (equal to or less than) 28 days of the first positive specimen date
(b) 60 day definition: A death in a person with a laboratory-confirmed positive COVID-19 test and either: died within 60 days of the first specimen date OR died more than 60 days after the first specimen date only if COVID-19 is mentioned on the death certificate

The introduction of these definitions will affect the numbers which have been presented in past reports and therefore Figure 39 represents these differences by definition.

Figure 39: Cumulative number of deaths since week 27 by week of death and time since laboratory confirmation of COVID-19, England



* For the most recent week, more deaths will be reported therefore the decrease seen in this graph should be interpreted with caution

Figure 40: Age/sex pyramid of laboratory confirmed COVID-19 deaths, since week 27

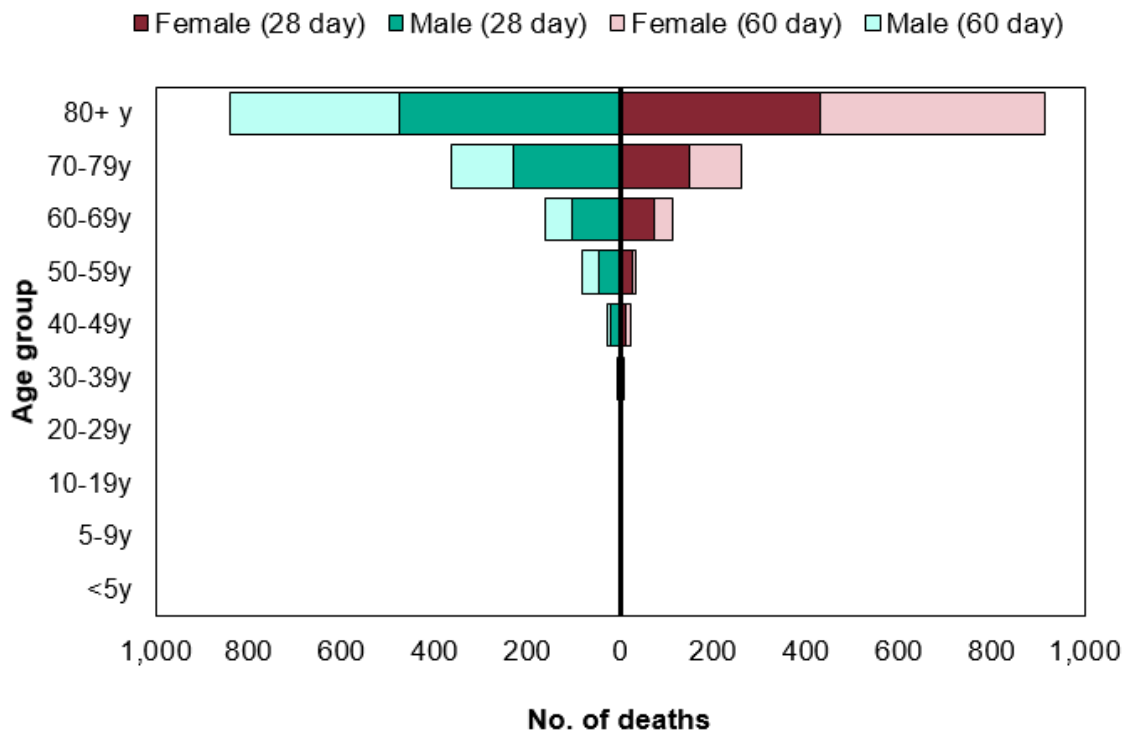


Table 5: Ethnic group (%) of COVID-19 deaths and time since laboratory confirmation of COVID-19, England

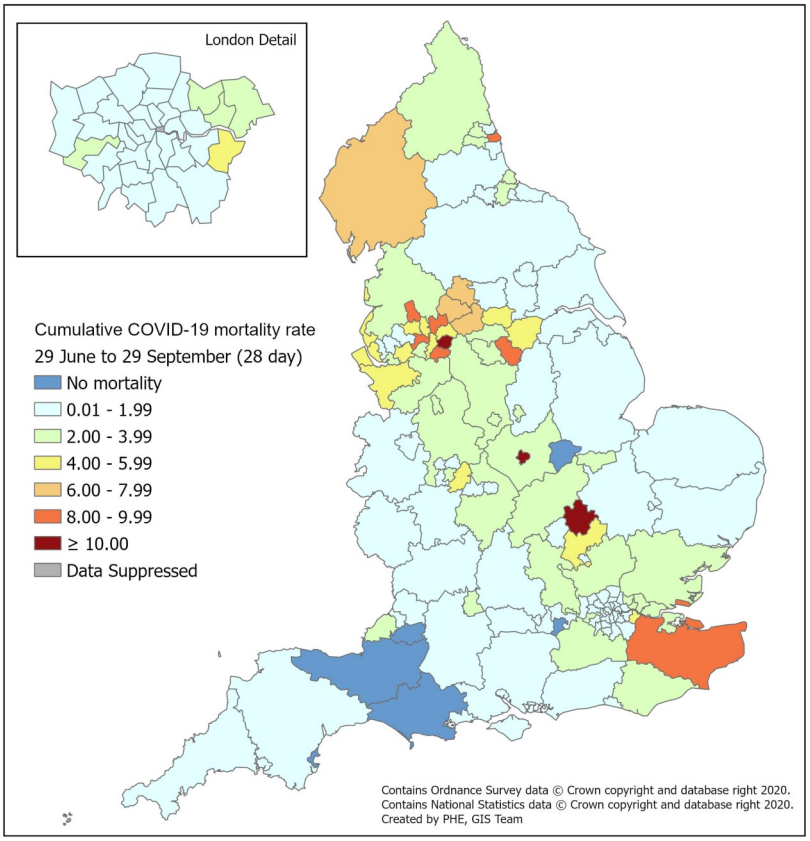
Ethnicity	28 day definition	60 day definition
White	82.9	87.9
Asian / Asian British	12.8	8.3
Black / African / Caribbean / Black British	2.1	1.9
Mixed / Multiple ethnic groups	0.6	0.5
Other ethnic group	1.6	1.4

Table 6: Cumulative number of COVID-19 deaths since week 27 and time since laboratory confirmation of COVID-19 by PHE Centres

PHE Centres	Number of deaths by definition	
	28 day definition	60 day definition
North East	75	139
North West	423	668
Yorkshire & Humber	194	353
West Midlands	159	299
East Midlands	154	280
East of England	162	322
London	103	198
South East	236	460
South West	40	93

Figure 41: Cumulative mortality rate of COVID-19 cases per 100,000 population tested under Pillar 1 and 2 since week 27 by (a) 28 day definition and (b) 60 day definition

(a)



(b)

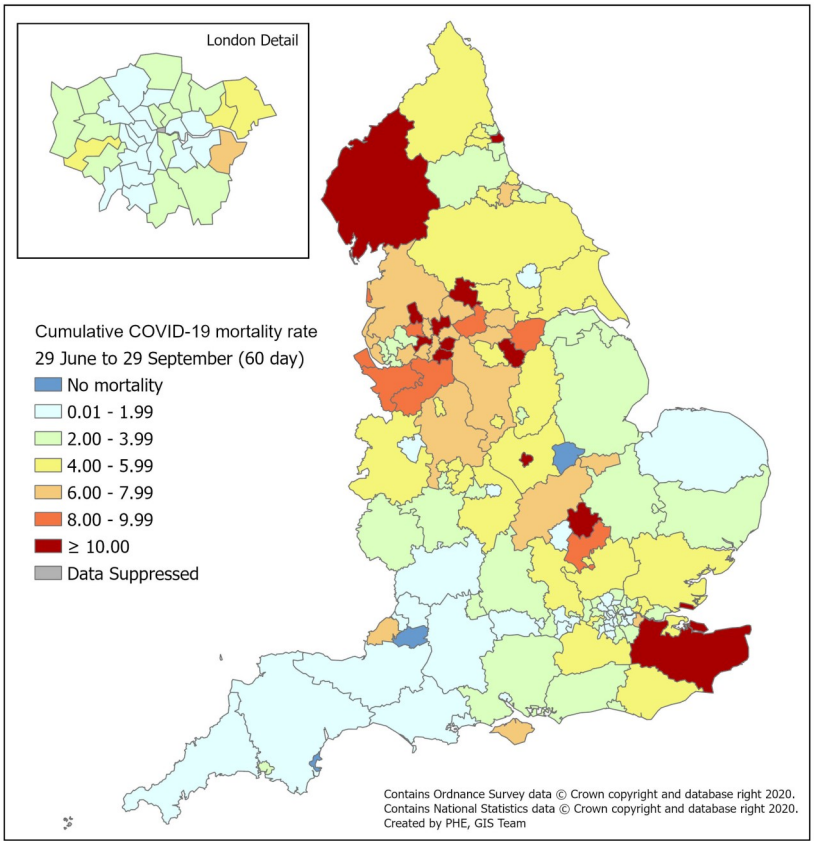
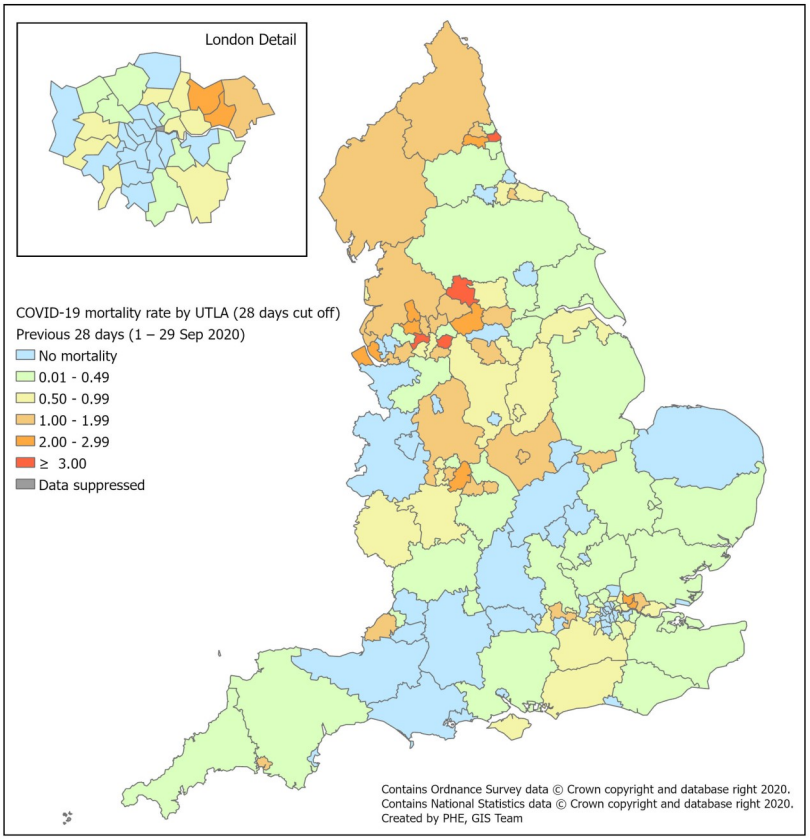
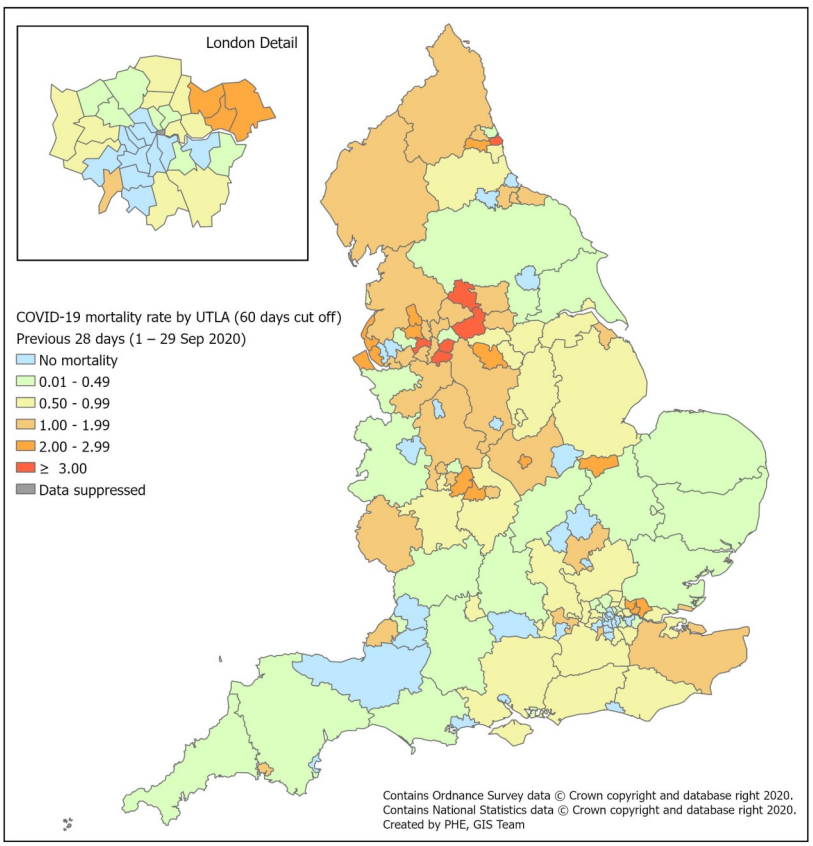


Figure 42: Cumulative mortality rate of COVID-19 cases per 100,000 population tested under Pillar 1 and 2 over the past 4 weeks by (a) 28 day definition and (b) 60 day definition

(a)



(b)



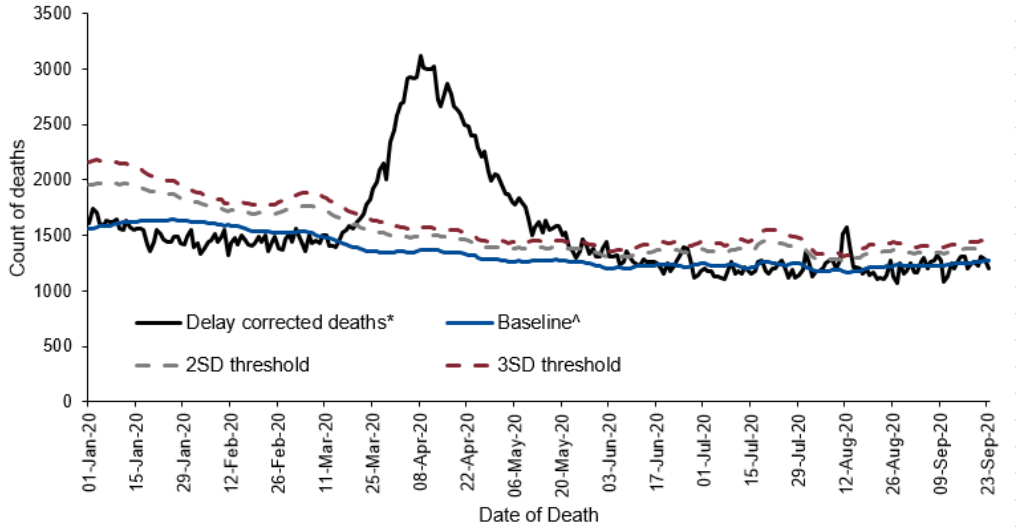
Daily excess all-cause mortality, UK

Deaths occurring from 1 January to 23 September 2020 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 +/- 7 days with an extrapolated time trend, and with 2 and 3 standard deviation (SD) limits shown (Figure 43).

Weeks in which at least 2 days exceeded the 3SD threshold are shown in Table 9 and the daily difference from the baseline by age and region is given in Figure 44. Note that as these data are by date of death with delay corrections, numbers are subject to change each week, particularly for more recent days.

No significant excess all-cause mortality was observed in week 38 overall, by age group or subnationally. The excess noted in week 33 coincides with a heat wave (Figure 43, 44 and Table 7).

Figure 43: Daily excess all-cause deaths in all ages, England, 1 January 2020 to 23 September 2020



^ based on same day in previous 5 years +/- 1 week with a linear trend projected

* corrected for delay to registration from death

Daily excess all-cause mortality, UK

Table 7: Excess all-cause deaths by (a) age group and (b) PHE centres , England

(a)

	Excess detected in week 38 2020?	Weeks in excess since week 10 2020
Age group		
All	x	13 to 21, 33
under25	x	None
25 to 44	x	14 to 16, 32
45 to 64	x	12 to 19
65 to 74	x	13 to 19
75 to 84	x	13 to 21, 33
85+	x	13 to 21, 33

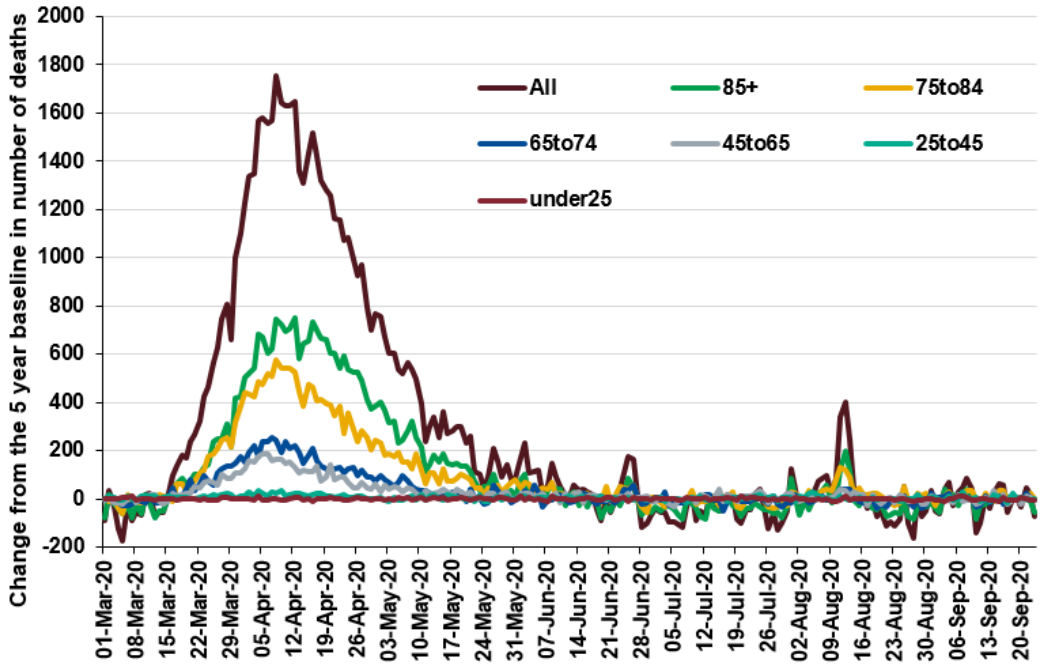
(b)

	Excess detected in week 38 2020?	Weeks in excess since week 10 2020
PHE centres		
East of England	x	14 to 19
East Midlands	x	13 to 19
London	x	12 to 19,33
North East	x	14 to 21
North West	x	13 to 20, 23, 33
South East	x	13 to 21, 33
South West	x	14 to 19, 33
West Midlands	x	13 to 20
Yorkshire and Humber	x	14 to 21, 23

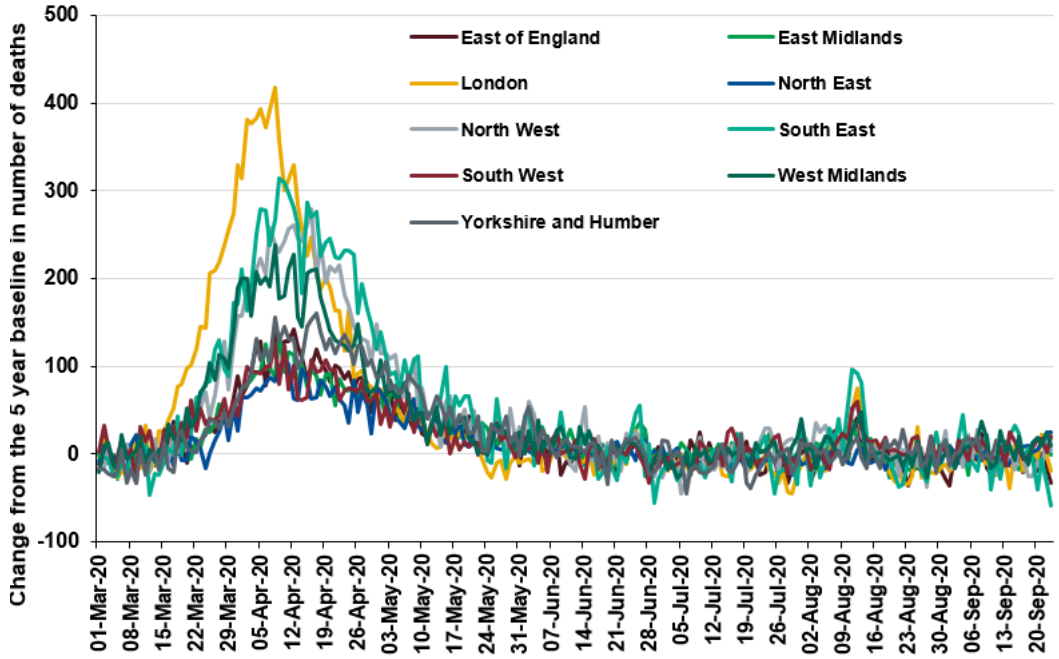
Daily excess all-cause mortality, UK

Figure 44: Daily excess all-cause deaths by (a) age group and (b) PHE centres , England, 1 March 2020 to 23 September 2020

(a)



(b)



Sero-prevalence epidemiology, England

In this week's report the results from testing samples from the following sources are included:

Healthy adult blood donors aged 17 years and older, supplied by the NHS Blood and Transplant (NHS BT collection) between weeks 13 -38. Donor samples from two different geographic regions (approximately 1000 samples per region) in England are tested each week. From week 26, an exclusion of donors aged 70 years and older donating throughout lockdown was lifted, and therefore data from the most recent sampling periods include donors in this older age group.

Data from residual samples from individuals aged 18-64 years collected through the PHE Sero Epidemiology Unit (SEU) from participating hospital laboratories and samples from patients from the same age group attending for routine blood tests at RCGP RSC participating practices across England since February 2020.

Seroprevalence in Adults aged 17 years and older (Blood Donors)

The results presented here are based on testing using the Euroimmun assay for blood donor samples collected between weeks 13-38. This week's report includes the results of testing the 6th sets of samples from the South East region and the East of England region (week 38).

National Prevalence

Overall population weighted prevalence among blood donors aged 17 years and older in England was 5.7% (95% CI 5.2% - 6.3%) (unadjusted) or 6.1% (95% CrI 5.4% - 6.8%) after adjustment for the accuracy of the Euroimmun assay (sensitivity 83.0% and specificity 99.3%) for the period 24th Aug – 18th September (weeks 35-38). Estimates are based on 8230 samples, of which 507 were positive. This compares with 7.8% (95% CI 7.2% - 8.6%) (unadjusted) or 8.3% (95% CrI 7.5% - 9.2%) (adjusted) for the period of 6th – 29th May (weeks 19-22). Declines in prevalence can partially be explained by demographic differences in the donor population, such as later data including donors aged 70 years and older who were previously excluded from donating during lockdown. Waning immunity may also be a contributing factor to the lower prevalence.

Regional Prevalence over Time

Figure 45 shows the overall prevalence in each region over time which has been adjusted for the sensitivity and specificity of the Euroimmun assay. It is important to note that the sensitivity and specificity of assays are subject to change as further data becomes available. Sensitivity for the Euroimmun assay is based on data from testing of convalescent sera taken 3 to 6 weeks after symptom onset.

Adjusted prevalence estimates vary across the country and over time. In London where prevalence estimates are highest, overall adjusted prevalence increased from 2.6% (week 13) to 15.7% (week 21). From week 24 adjusted prevalence was lower and eventually plateaued with estimates at 8.7% in week 31 and 8.2% in week 33. More recently London data shows increases in adjusted prevalence to 12.6% (95% CrI 10.2% - 15.3%) in week 35 and 10.8% (95% CrI 8.6% - 13.4%) in week 37. This increase is likely to be in part be due to increases in recent infection, although variability in the precise locations of sampling within London and potential changes in exposure of donors and likelihood of being part of the of the donor pool in earlier parts of the epidemic could also be contributory factors.

Prevalence estimates from other regions have been consistently lower than those from London; compatible with the lower incidence of COVID-19 observed in other surveillance systems.

Adjusted prevalence in the South East region was 2.8% (95% CrI 1.4% - 4.5%) in the latest data (week 38) lower than the prevalence of 3.7% (95% CrI 2.2% - 5.4%) observed in the previous survey in week 34.

Adjusted prevalence in the South West region was 3.5% (95% CrI 2.1% - 5.2%) in (week 37) similar to 2.9% (95% CrI 1.5% - 4.4%) observed in the previous survey in week 33.data from the Midlands show a higher adjusted prevalence at 6.8% (95% CrI 4.9%-8.9%) in week 35-36. This compares to 4.6% (95% CrI 3%-6.5%) in week 31-32. This observed increase is likely due to geographical variation of the population sampled, with a lower proportion of samples from Birmingham in week 31-32 compared to other sampling periods.

North East and Yorkshire NHS region the adjusted prevalence was 3.9% (95% CrI 2.4%-5.7%) in week 36 compared with 5% (95% CrI 3.3%-6.9%) in week 32. Similar plateauing has been seen across other regions.

Recent data from the North West show the adjusted prevalence was 7.2% (95% CrI 5.4% - 9.4%) in week 31 and more recently at 6.8% in week 35 (95% CrI 4.7-9.2%) showing a continued plateauing.

The change in prevalence seen in some regions is likely to be largely driven by changes in the precise locations of sample collection. Declines in prevalence can be partially explained by demographic differences in the donor population as lockdown measures are relaxed. Examples include a reduction in attendance of regular donors in August and that donors aged 70 years and above were not allowed to donate during lockdown, but this exclusion was lifted from week 26. Waning immunity may also be a contributing factor to the lower prevalence.

Prevalence by age group

Population weighted antibody prevalence (unadjusted) estimates have generally remained highest in donors aged 17-29 and decline with age, with lowest prevalence in donors aged 70-84. Donors aged 70-84 years are only included from week 26 onward as this age group, who were advised to shield during lockdown, have been able to return to donor clinics since then (Figure 46).

The largest variation over time are observed in those aged 17-29, prevalence has decreased from 11.4% (95% CI 9.1%-14.3%) in weeks 15-18 to 7.7% (95% CI 6.3%-9.4%) in week 36-37. There is less variation in unadjusted prevalence across other age groups.

Figure 45: Overall SARS-CoV-2 antibody seroprevalence (%) in blood donors by PHE centres, using Euroimmun test adjusted for sensitivity (83.0%) and specificity (99.3%) and 95% confidence intervals (dashed lines)

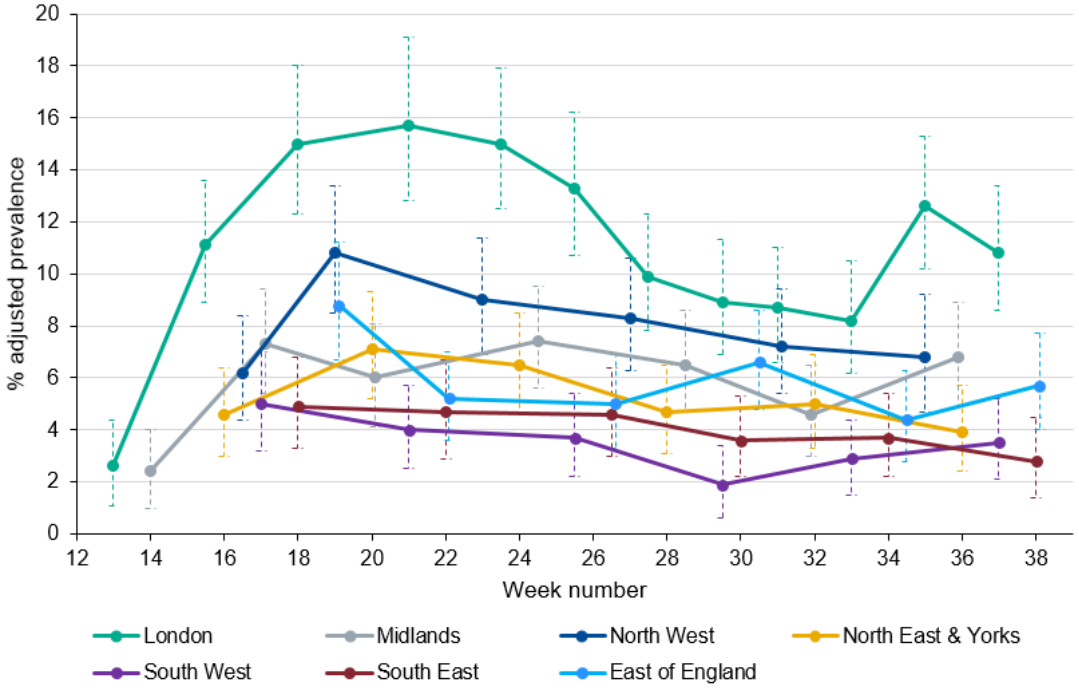
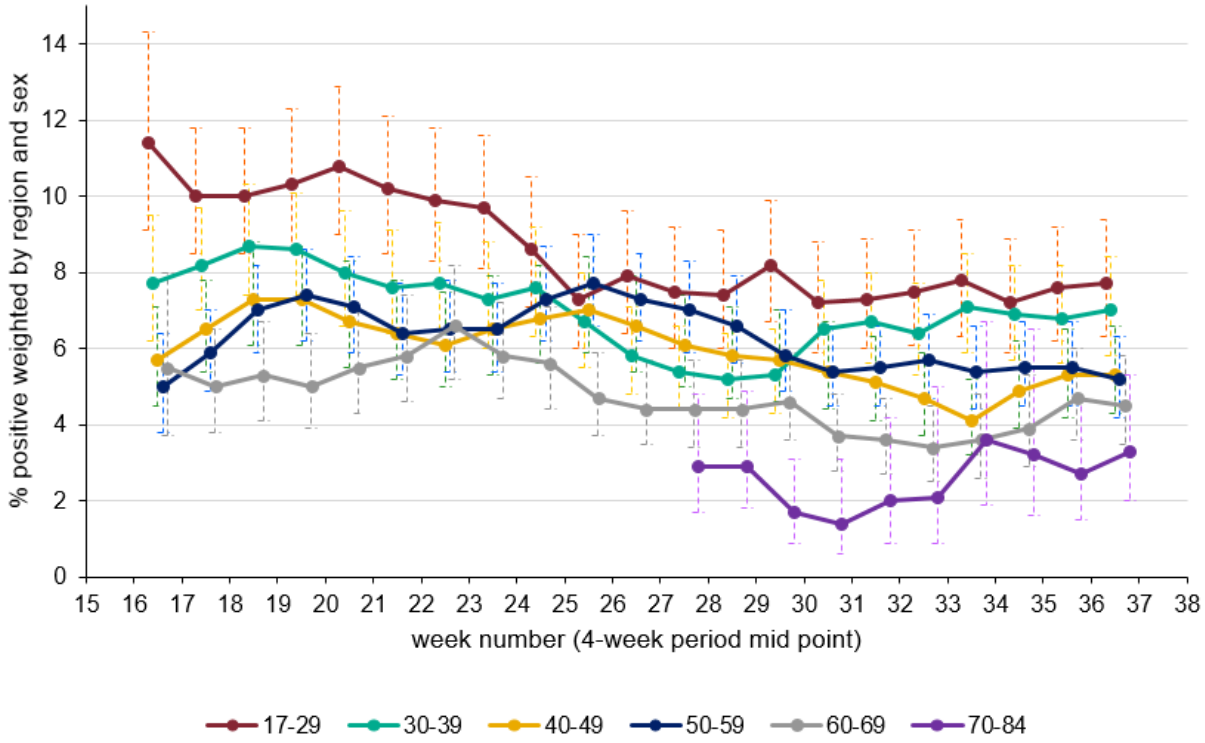


Figure 46: Population weighted 4-weekly rolling SARS-CoV-2 antibody seroprevalence in blood donors by age group, using Euroimmun test; error bars show 95% confidence intervals.



Seroprevalence in adults aged 18-64 years (SEU and RCGP collections)

As a comparison with the results from testing blood donors, two additional collections of individuals aged 18-64 have been analysed; these are SEU residual sera from participating hospital laboratories across the country and RCGP sera collected via general practitioners at the time of routine blood tests. These include 2523 samples from the SEU collected between 1st February and 8th September and 8929 samples from the RCGP collected between 16th March and 8th September. Samples were tested using both the Abbott and EuroImmun assay. For the Abbott assay % pos is given as % positive or indeterminate/equivocal, with an indeterminate assay cut-off of 0.8. Using a cut off of 0.8, Abbott sensitivity is estimated to be 95.7% and specificity 99.1%.

Overall population weighted national estimates for working age adults using the RCGP, SEU and NHSBT collections during weeks 25-33 are shown in Table 8. RCGP and NHSBT prevalence estimates using the NHSBT and RCGP collections were very similar, at approximately 6%. Estimates using the SEU collection were slightly lower, although sample sizes were also lower, and confidence intervals were overlapping. Estimates were slightly higher using the Abbott assay than the EuroImmun assay on comparable samples

Results of testing RCGP and SEU collections showed an increasing prevalence between mid March and June followed by a lower prevalence into July. Samples collected from August to early September show an increase in prevalence in all collections, compared to July, although confidence limits remain overlapping.

When stratified by age, the population weighted RCGP prevalence estimates were slightly lower in all age groups than in the corresponding blood donors, with the exception of the 60-65 year old age group, where prevalence was higher. Prevalence was highest in the younger adults (18-29 year olds) for blood donors and slightly lower in the older working age adults, but similar prevalence levels were seen in the youngest (18-29 years) and the oldest age group (60-65 year olds) in the RCGP collection. This may reflect inclusion of care home residents in the RCGP collection. Estimates using the SEU collection were more variable with wider confidence limits.

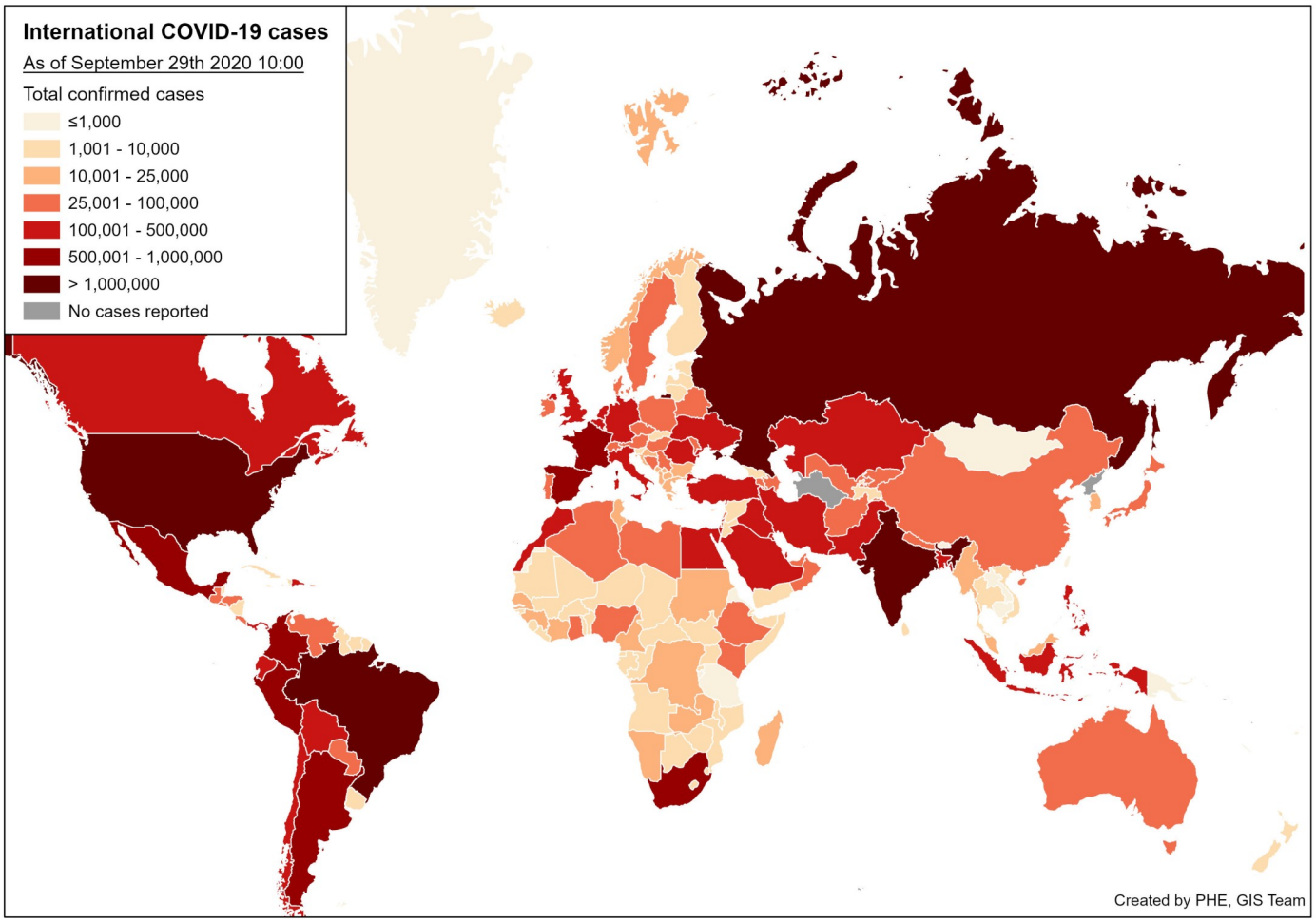
Table 8 : Population weighted (by NHS region, age group) estimates by assay and collection, weeks 25-33

Date range (weeks)	Positive	Ind	Negative	Total	Population weighted % pos (95% CI)
EuroImmun					
NHSBT	1051	178	15441	16670	6.3% (5.9% - 6.7%)
RCGP	208	24	3860	4092	5.9% (4.9% - 7.0%)
SEU	59	8	901	968	4.5% (3.3% - 6.3%)
Abbott					
RCGP	205	51	4059	4315	6.5% (5.5% - 7.6%)
SEU	72	18	1122	1212	5.2% (3.9% - 7.0%)

Global situation

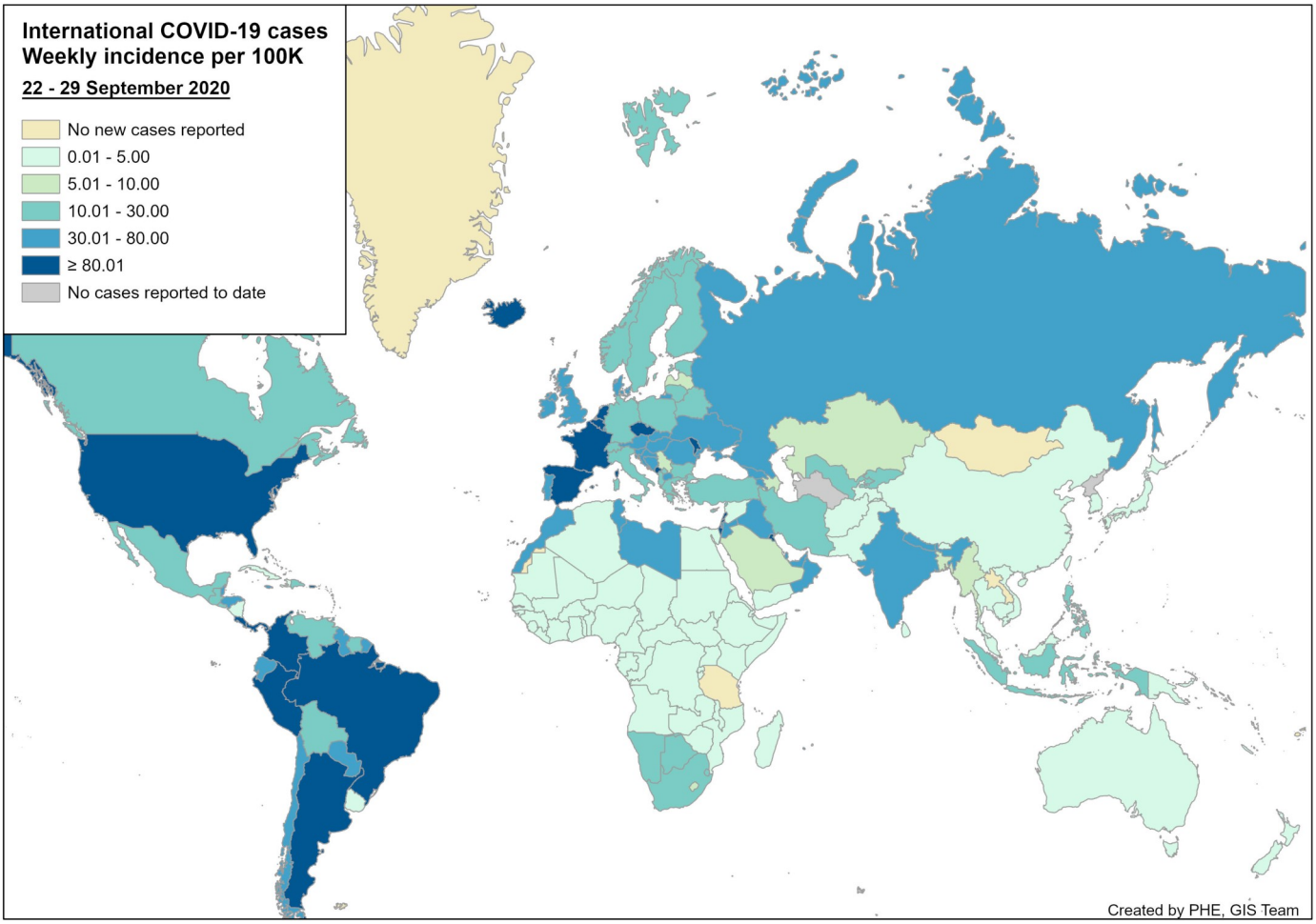
Globally, up to 29 September 2020, a total of 33,480,602 cases of COVID-19 infection have been reported worldwide, including 1,003,742 COVID-19 related deaths.

Figure 47: Global map of cumulative COVID-19 cases



Global situation

Figure 48: Global map of weekly COVID-19 case incidence rate per 100,000, week 39 2020



PHE 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

http://www.legislation.gov.uk/uksi/2002/1438/regulation/3/made. 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.