Public Health England

Weekly Coronavirus Disease 2019 (COVID-19) Surveillance Report

Summary of COVID-19 surveillance systems

Year: 2020 Week: 22

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 week 21 (data between 18 May and 24 May 2020) and where available daily data up to 27 May 2020. References to COVID-19 represent the disease name and SARS-CoV-2 represent the virus name.

Summary

At a national level, most COVID-19 surveillance indicators remained have declined or remained at similar levels to the previous week. Some community and syndromic indicators are now at or approaching baseline levels. The rate of decline in some indicators has slowed, including rates of influenza like illness, GP sentinel swab positivity, hospitalisation rates, and 'Pillar 1' laboratory positivity rates. We continue to see a large number of acute respiratory infection outbreaks in care homes although these have declined for the past 6 weeks. Deaths among COVID-19 confirmed cases continue to decline steadily but there is still significant excess mortality observed.

Activity is highest in the North and Central regions of England, as evidenced by higher 'Pillar 1' laboratory positivity rates and primary care swabbing.

During week 20 the restriction on outdoor activities to once per day was lifted, guidance was issued to employers on creating safe working environments and people were encouraged to go back to work where they cannot work from home (https://www.gov.uk/guidance/working-safely-during-coronavirus-covid-19). There has been small increases in primary care sentinel positivity however this is currently based on a small number of samples and there should be interpreted with caution. No increases have been noted in syndromic surveillance indicators.

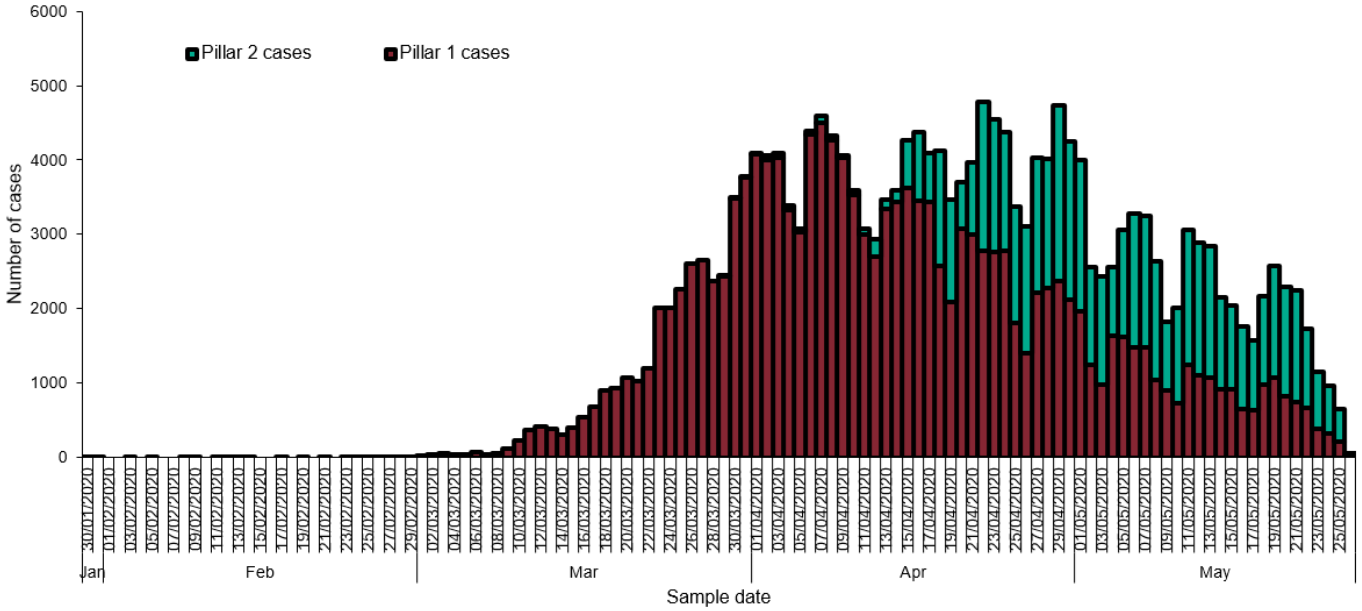
As of 09:00 on 27 May 2020, a total of 903,678 people have been tested, of which 150,903 have been confirmed positive for COVID-19 in England.

Figures 1 and 2 reflect cases tested under Pillar 1 (swab testing in PHE labs and NHS hospitals for those with a clinical need, and the most critical health and care workers) and Pillar 2 (mass-swab testing for critical key workers in the NHS, social care and other sectors).

Figures 3 to 10 and Tables 1 and 2 reflect cases tested under Pillar 1 only.

Overall case numbers and positivity continues to decrease in week 21. The highest number of cases continued to be seen in the older age groups with a change in distribution by gender, where more cases are females, which is likely to be due to the change in testing patterns i.e. more females being tested in some groups as positivity rates are similar in both genders (Figure 2). Rates and positivity of cases continue to be highest in the North of England.

Figure 1: Laboratory confirmed COVID-19 cases tested under Pillar 1 (n=150,903) and Pillar 2 (n=57,559), based on date of sample with overall positivity (%)



* For the most recent dates, more samples are expected therefore the decrease seen in this graph should be interpreted with caution The data are shown by the date 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 gender

Figure 2: Age/sex pyramids for laboratory confirmed COVID-19 cases tested through (a) Pillar 1 (n=148,725) and (b) Pillar 2 (n=56,884)

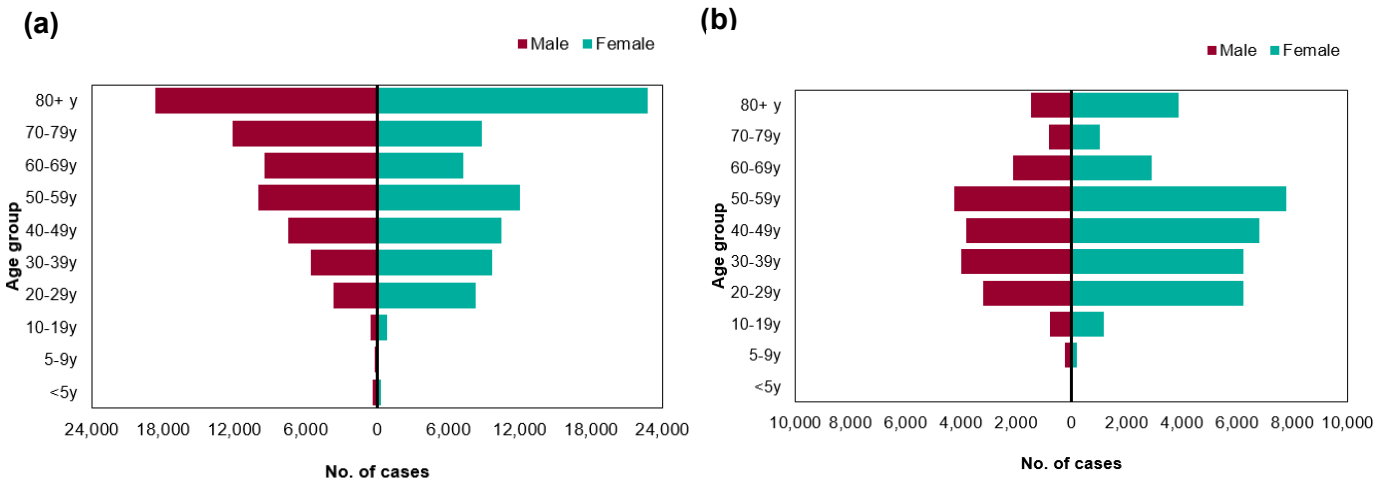


Figure 3: Weekly laboratory confirmed COVID-19 case rates per 100,000, tested under Pillar 1, by gender

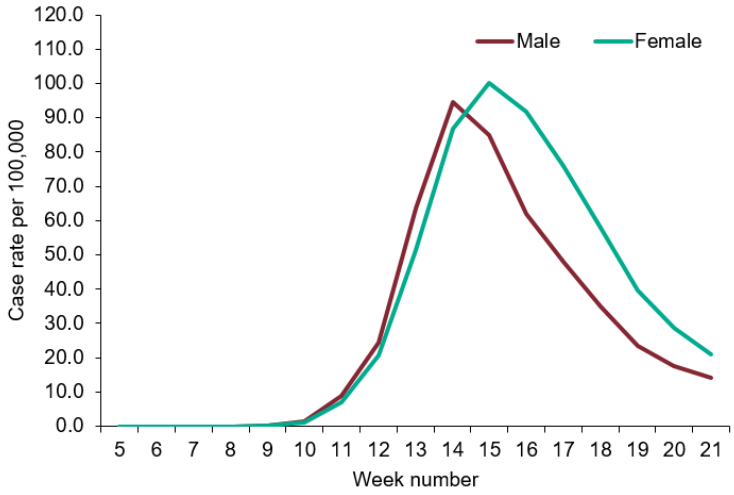


Figure 4: Weekly laboratory confirmed COVID-19 case rates per 100,000, tested under Pillar 1, by age group

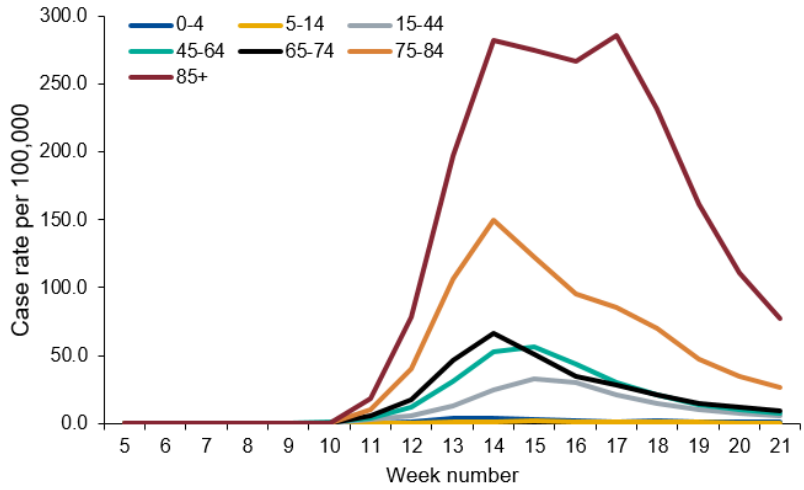
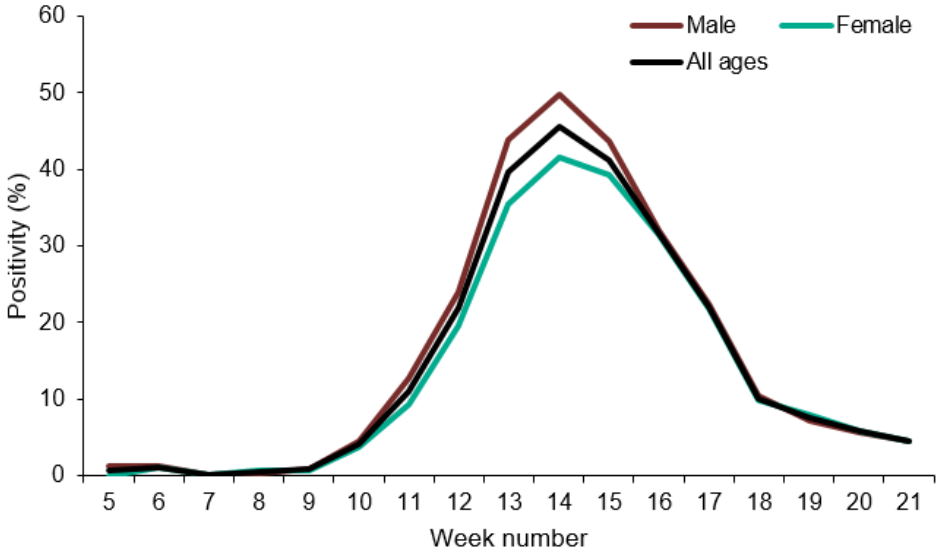
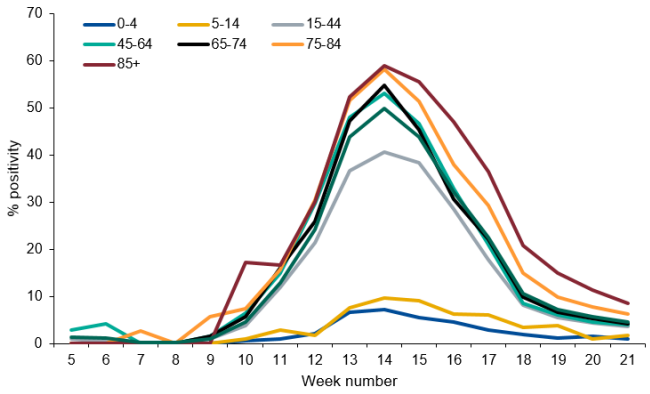


Figure 5: Weekly positivity (%) of laboratory confirmed COVID-19 cases tested under Pillar 1, (a) overall and by gender and (b) by gender and age group (SGSS and Respiratory DataMart)

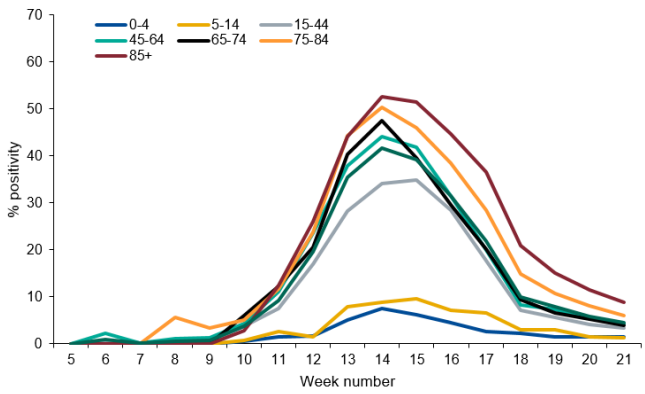
(a) Overall positivity % and by gender



(a) Male



(b) Female



PHE Centres and upper-tier local authority (UTLA)

Table 1: Cumulative number of cases (n=144,645) and people tested under Pillar 1 by PHE Centres (n=823,262)

PHE Centres	Cases	Total number of people tested
North East	9,979	48,526
North West	25,260	116,638
Yorkshire & Humber	14,033	86,813
West Midlands	16,692	88,124
East Midlands	8,954	56,585
East of England	14,454	89,321
London	26,867	125,922
South East	20,829	129,629
South West	7,577	81,704

Figure 6: Weekly laboratory confirmed COVID-19 case rates per 100,000 tested under Pillar 1, by PHE Centres and sample date week

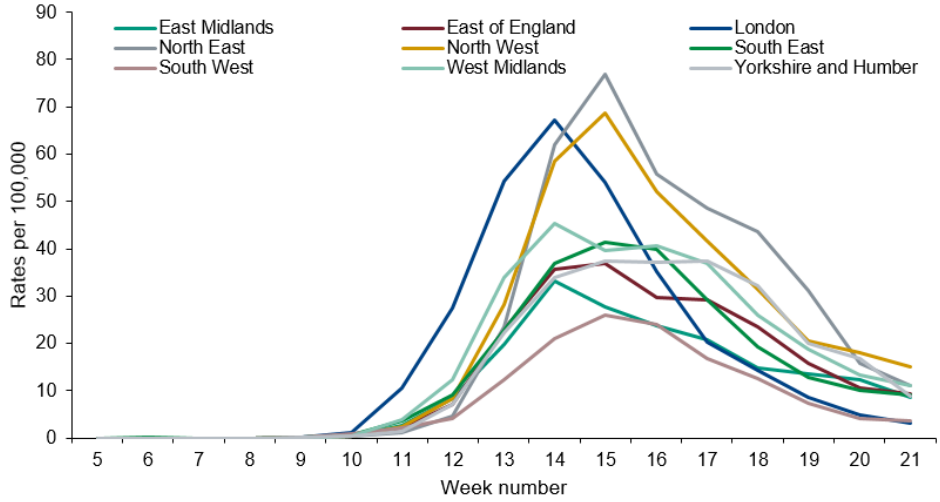


Figure 7: Weekly positivity of laboratory confirmed COVID-19 cases tested under Pillar 1 (%) by PHE Centres and sample date week, (SGSS and Respiratory DataMart)

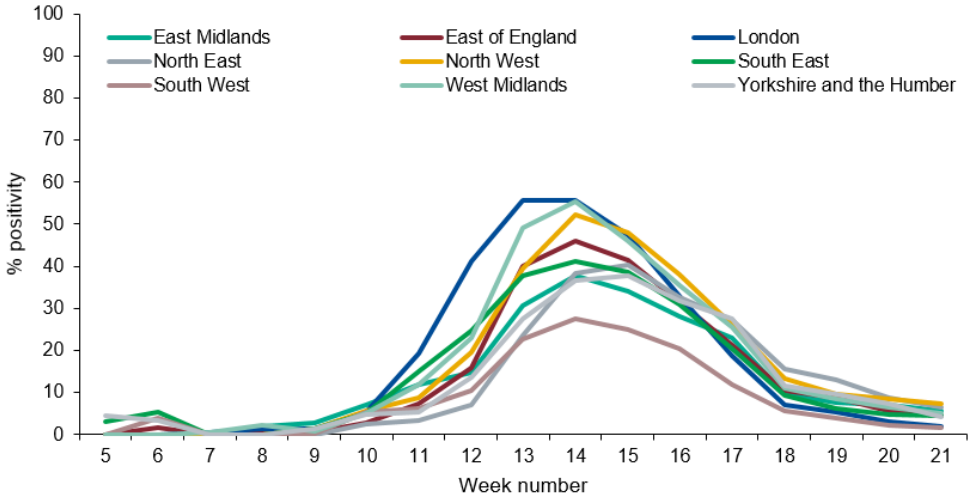


Figure 8: Cumulative rate of COVID-19 cases per 100,000 tested under Pillar 1, by upper-tier local authority, England (box shows enlarged maps of London area)

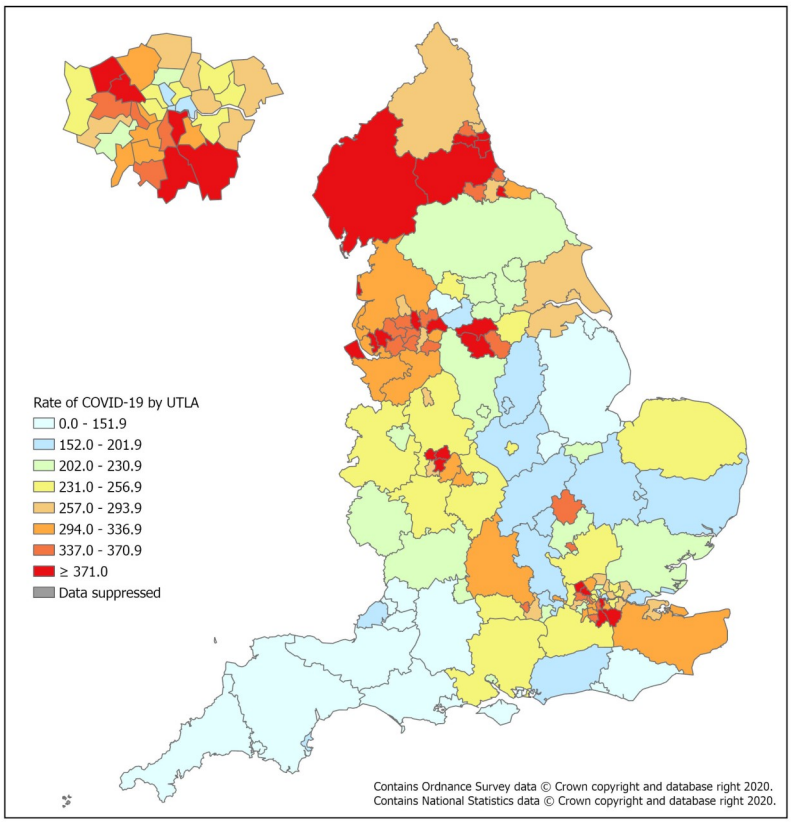
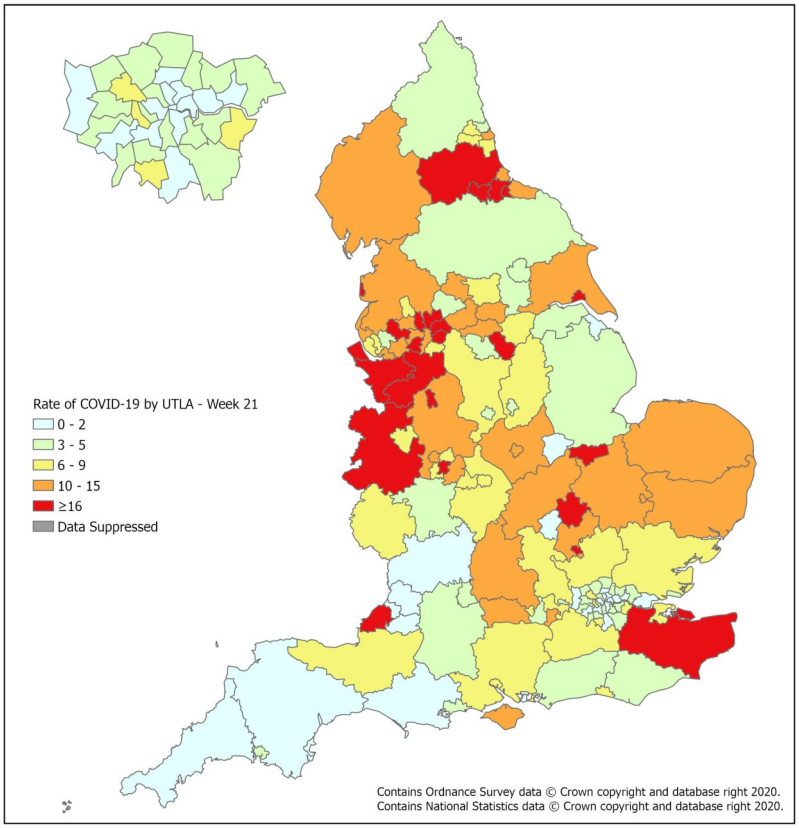


Figure 9: Weekly rate of COVID-19 cases per 100,000 tested under Pillar 1, by upper-tier local authority, England (box shows enlarged maps of London area)



Ethnicity

Figure 10: Ethnic group of cumulative laboratory confirmed COVID-19 cases tested under Pillar 1 (n=136,779)

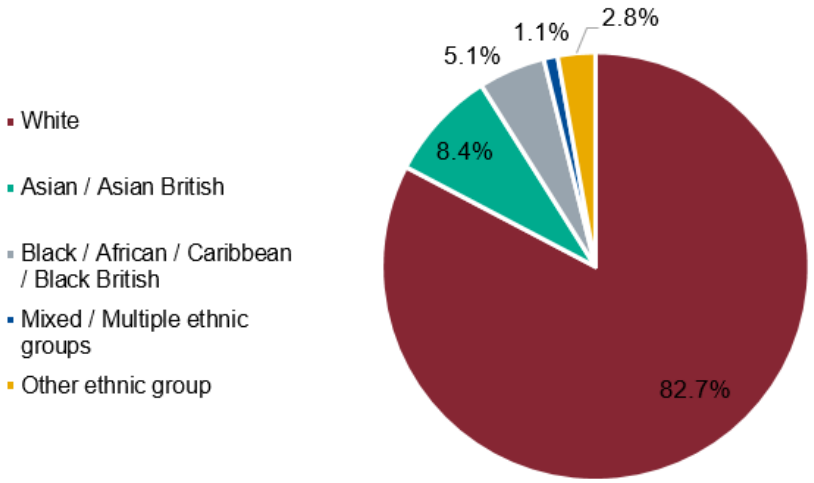


Table 2: Number of cases tested under Pillar 1 and percentage (%) by ethnic group and week

Ethnic group	Week - number (%)			
	18	19	20	21
White	10,063 (87.8%)	6,446 (87.4%)	4,849 (88.4%)	3,017 (87.8%)
Asian / Asian British	701 (6.1%)	493 (6.7%)	331 (6.0%)	214 (6.2%)
Black / African / Caribbean / Black British	331 (2.9%)	230 (3.1%)	164 (3.0%)	85 (2.5%)
Mixed / Multiple ethnic groups	117 (1.0%)	59 (0.8%)	44 (0.8%)	37 (1.1%)
Other ethnic group	255 (2.2%)	148 (2.0%)	99 (1.8%)	82 (2.4%)

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

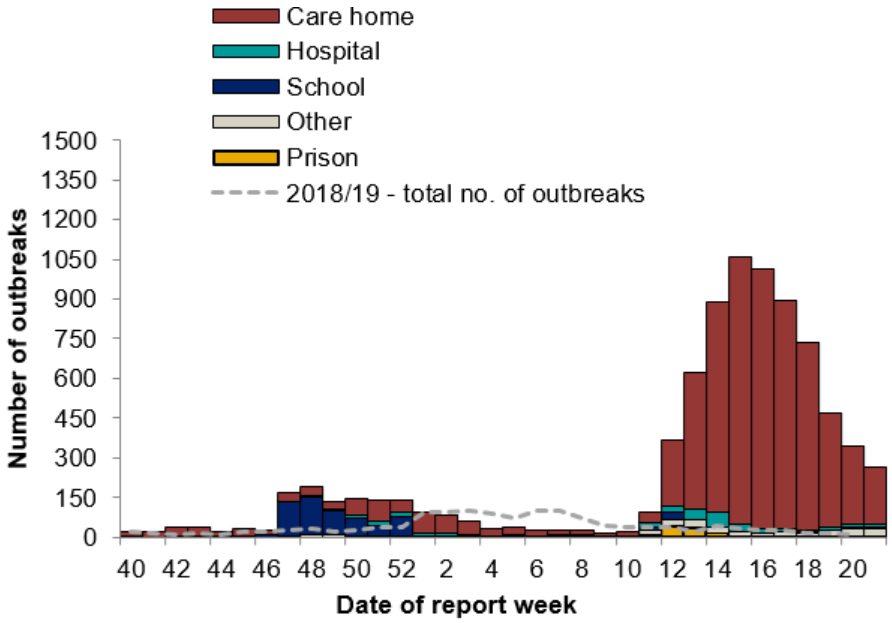
Acute respiratory outbreaks, England

Information on acute respiratory outbreaks is collected by PHE's Health Protection Teams (HPTs).
An outbreak is defined as two or more people experiencing a similar illness, which appears to be linked to a particular setting.

264 new acute respiratory outbreaks have been reported in week 21 (Figure 11):

- 215 outbreaks were from care homes where 78 tested positive for SARS-CoV-2
- 13 outbreaks were from hospitals where 12 tested positive for SARS-CoV-2
- 3 outbreaks were from schools where all tested positive for SARS-CoV-2
- 4 outbreak were from prisons
- 29 outbreaks were from the Other Settings category where 9 tested positive for SARS-CoV-2

Figure 11: Number of acute respiratory outbreaks by institution, England



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.

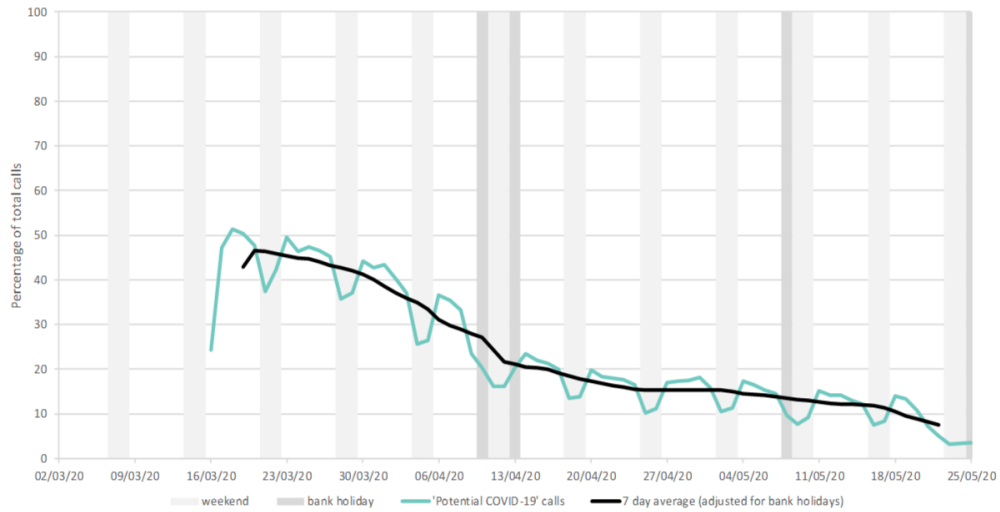
Up to 25 May 2020, the daily percentage of NHS 111 'potential COVID-19-like calls (as a percentage of total NHS 111 calls) and the daily number of NHS 111 'potential COVID-19' completed online assessments decreased (Figure 12).

Please note that all NHS 111 'potential COVID-19' indicators may not include all NHS 111 integrated urgent care service calls and therefore should be used to monitor trends rather than numbers. All NHS 111 indicator trends should be interpreted with caution due to current national advice and guidance regarding access to health care services during the COVID-19 pandemic.

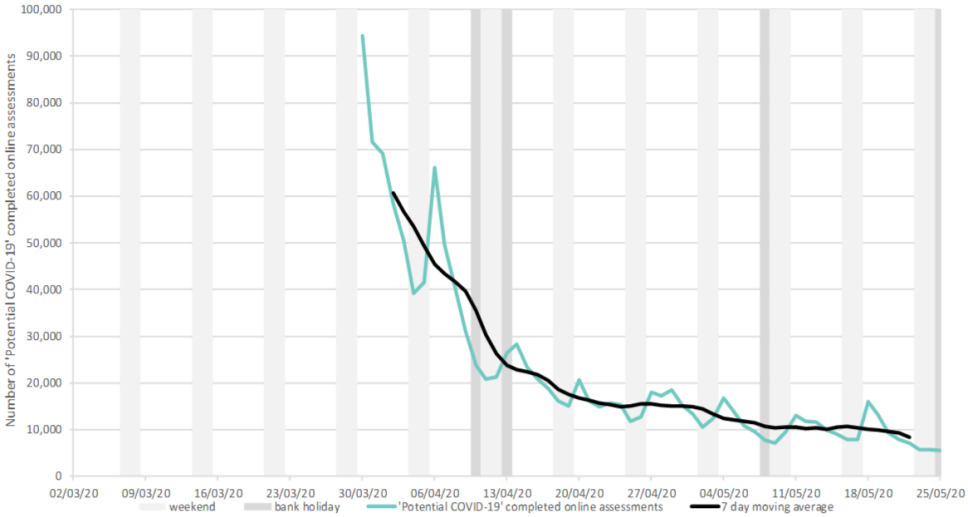
Further information about these caveats is available from the PHE Remote Health Advice Syndromic Surveillance bulletin.

Figure 12 (a-b): NHS 111 telephony and online potential COVID-19 indicators, England

(a) Daily 'potential COVID-19' calls received through the NHS 111 telephony service as a percentage of total calls (and moving 7-day average), England



(b) Daily 'potential COVID-19' NHS 111 online assessments as the number of completed online assessments (and 7-day moving average), England



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.

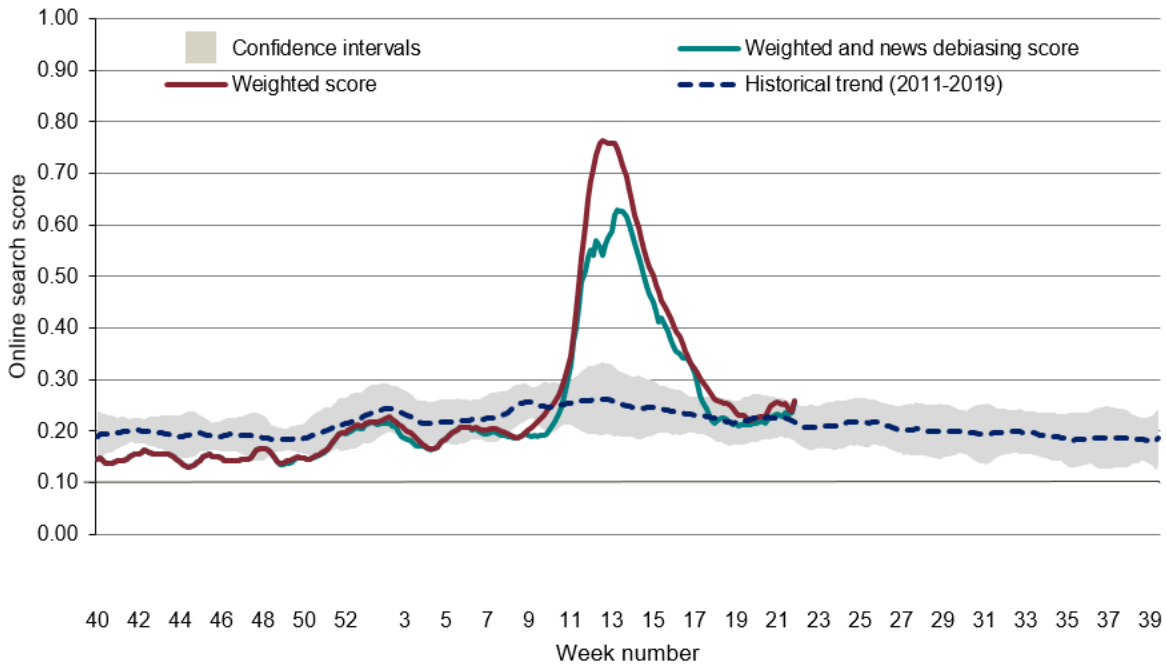
Google search queries

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" (e.g. "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-debiaising weighted scores continued to decrease throughout week 21 with small increases noted towards the end of the week (Figure 13).

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

Figure 13: Normalised Google search score for COVID-19 symptoms, with weighted score for media-debiasing and historical trend, England



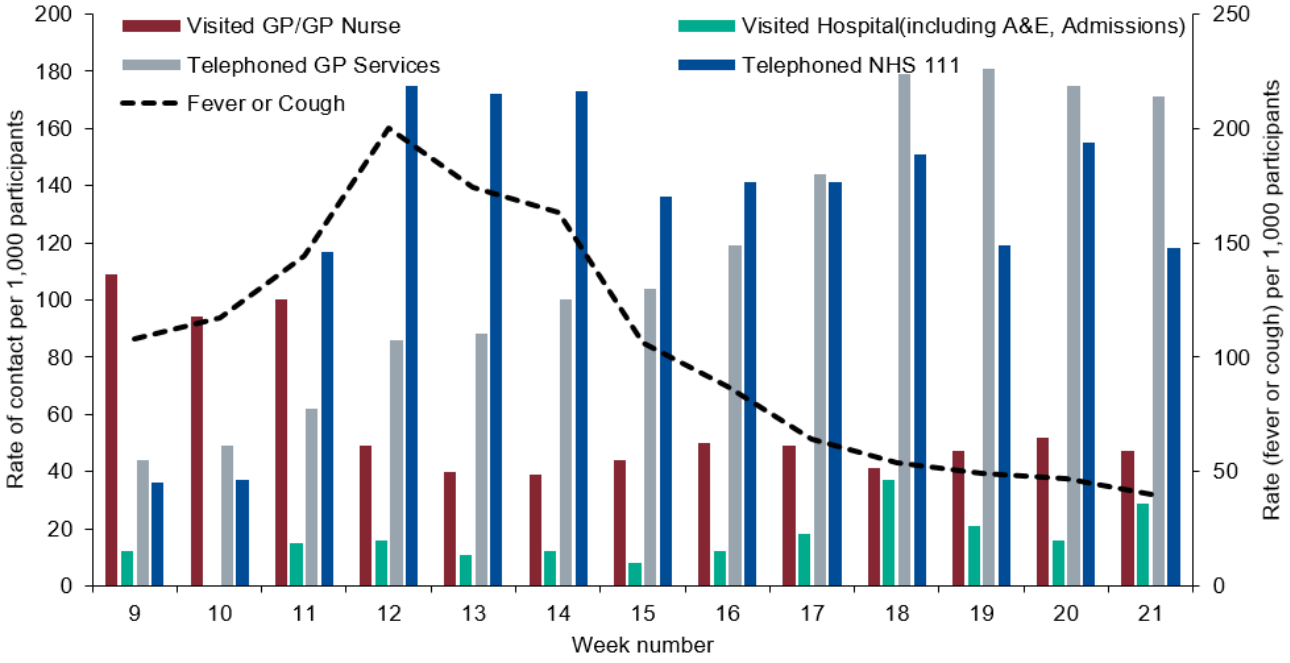
Internet based surveillance

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 4,204 participants completed the weekly COVID-19 surveillance survey in week 21, of which 170 (4.0%) reported fever or cough, a slight decrease from 4.7% reported in week 20. The most commonly reported method of access to healthcare services was through telephone services (Figure 14), which is in line with current government recommendations.

Figure 14: Rate of contact with different healthcare services among FluSurvey participants reporting fever or cough symptoms, week 09 to 21, 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 25 May 2020, GPIH consultations for potential COVID-19-like and ILI consultations decreased slightly (Figure 15). Through GPOOH consultations (up to 24 May 2020), the daily percentage (as a percentage of total contacts with a Read code) for difficulty breathing/wheeze/asthma and ILI also decreased in England (Figure 16).

Please note GP data should be interpreted with caution due to changes in advice regarding accessing GP surgeries due to COVID-19. Influenza-like-illness (ILI) rates are now approaching baseline levels after a recent change in the use of a new COVID-19 Care Pathway template which had affected recording of influenza-like illness from mid-April (Figure 12(a)). Further information about these caveats is available from the PHE GP In Hours Syndromic Surveillance bulletin.

Figure 15 (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

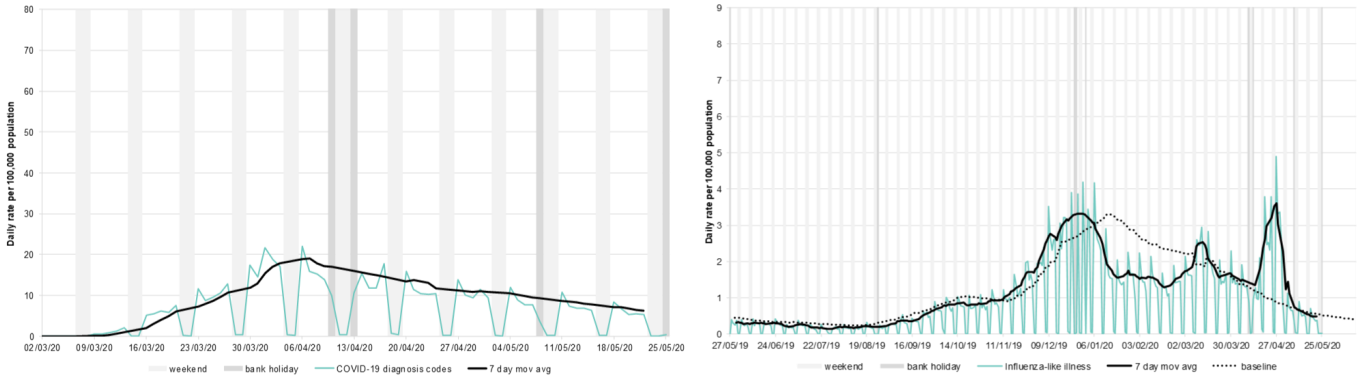
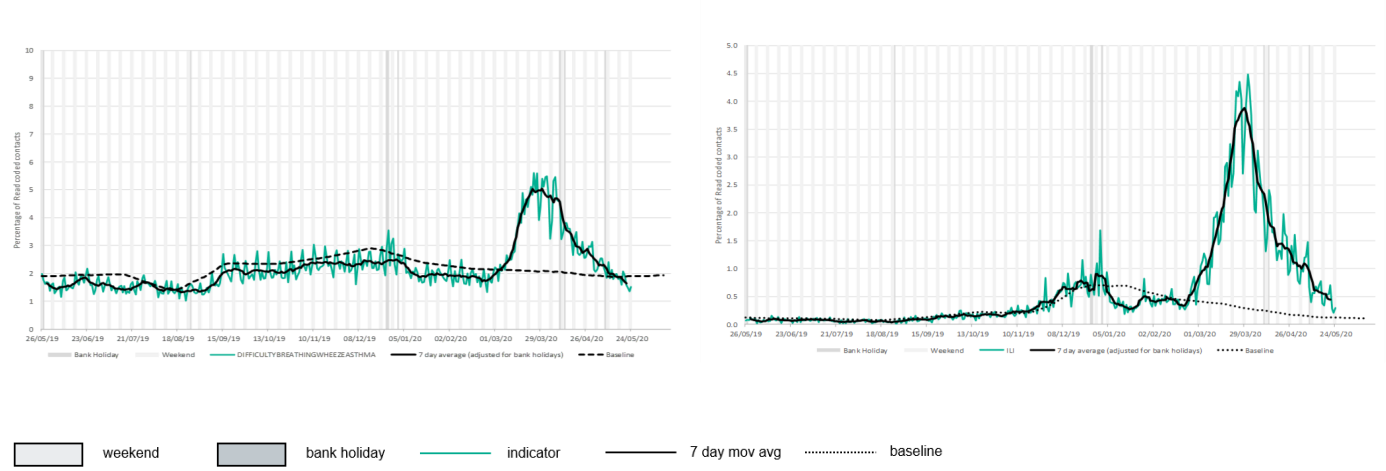


Figure 16 (a-b) : GPOOH contacts indicators, England

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

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

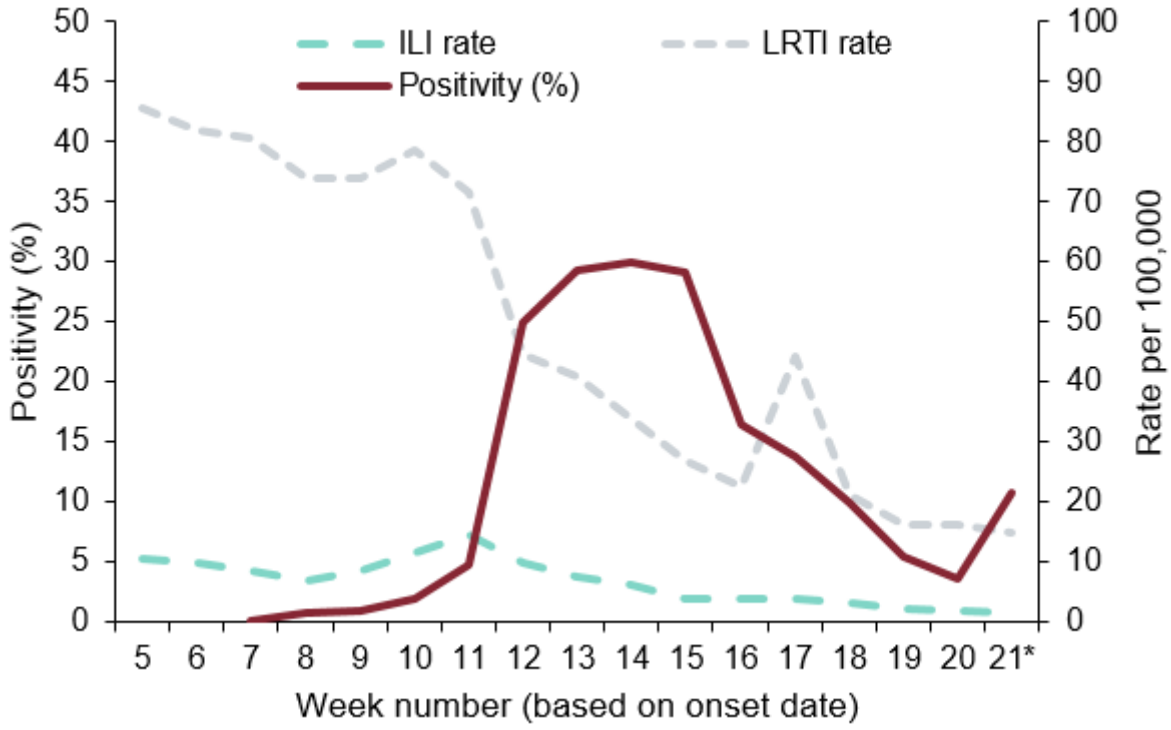


RCGP Swabbing Scheme

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 200 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 27 May 2020, a total of 4,158 patients have been tested of which 575 have tested positive for SARS-CoV-2 through this scheme. The overall positivity increased at 10.8% (10/93) in week 20 compared to 3.6% (9/250) in the previous week (Figure 17). Consultations for LRTI have also continued to decreased, while consultations for ILI remained stable (Figure 17). The highest positivity by PHE region was noted in the North region (Figure 18). The highest positivity by age group was observed in the 45-64 year olds and by gender in males (Figure 19).

Figure 17: Overall weekly positivity (%), ILI and LRTI consultations rates (per 100,000), RCGP, England



* For the most recent week, more samples are expected therefore the increase seen in this graph and the following graphs in this section, should be interpreted with caution as it is based on small numbers

RCGP Swabbing Scheme

Figure 18: Overall positivity (%) (weekly) by PHE Region, England (RCGP)

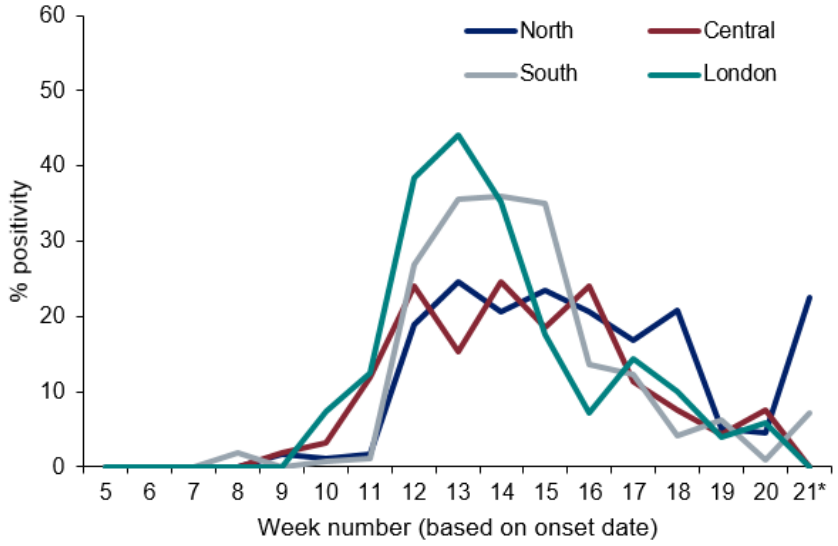
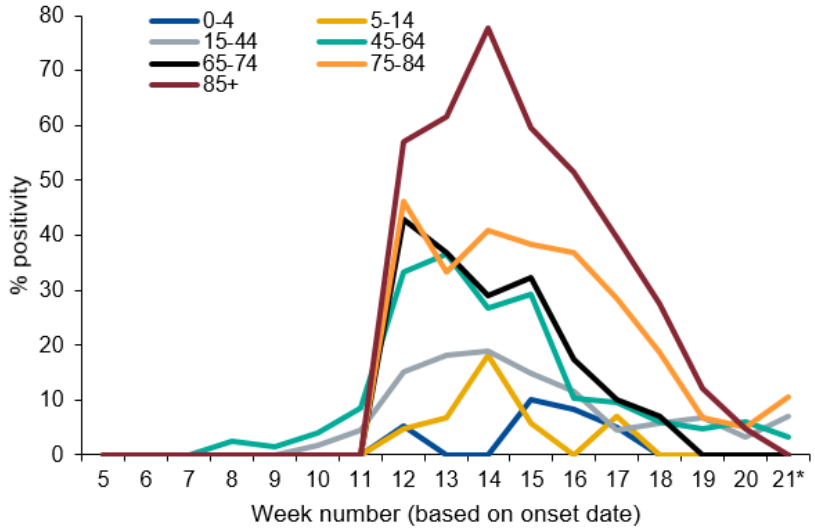
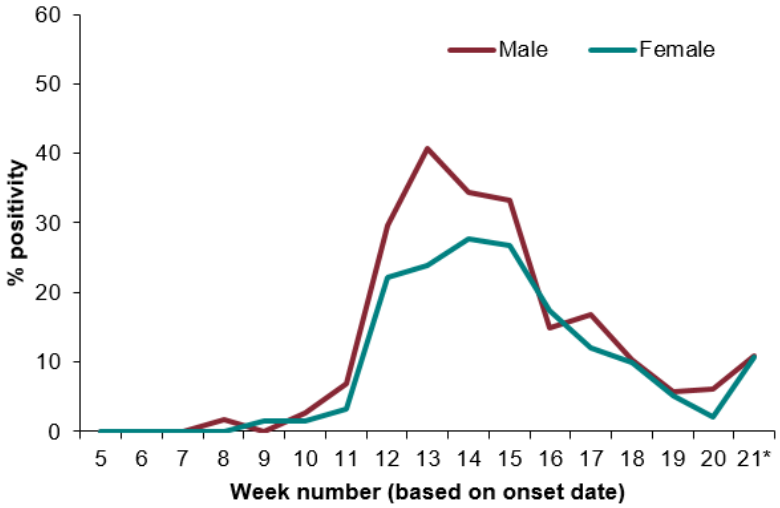


Figure 19: Positivity (%) (weekly) by (a) age group and (b) gender, England (RCGP)

(a)



(b)



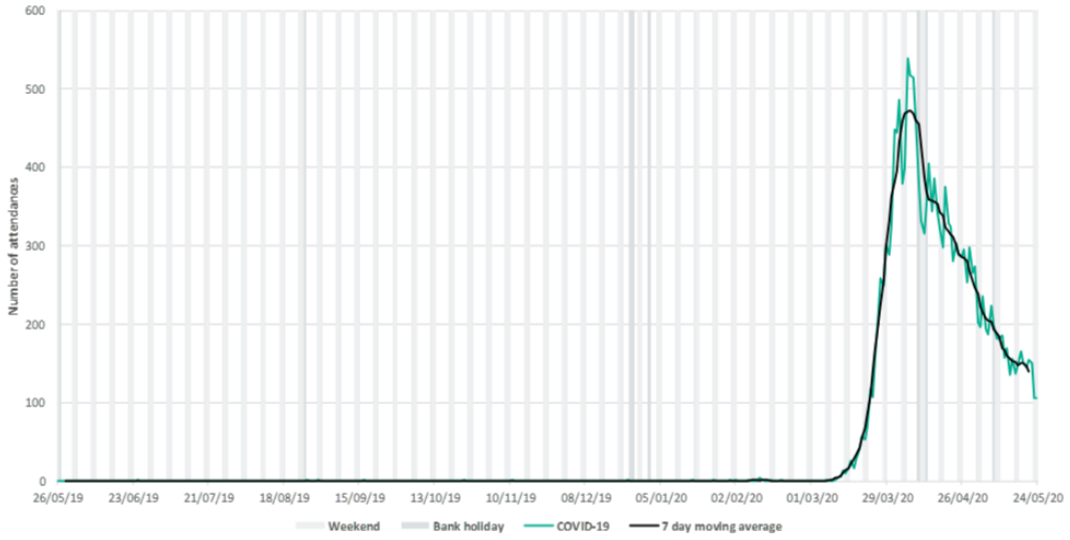
Emergency Department attendances, Syndromic surveillance

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

Up to 24 May 2020, the daily number of ED attendances for all ages as reported by 78 EDs in England for COVID-19-like attendances decreased (Figure 20).

Please note: the COVID-19-like ED indicator is an underestimation of 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 20: COVID-19-like, daily ED attendances, all ages, England



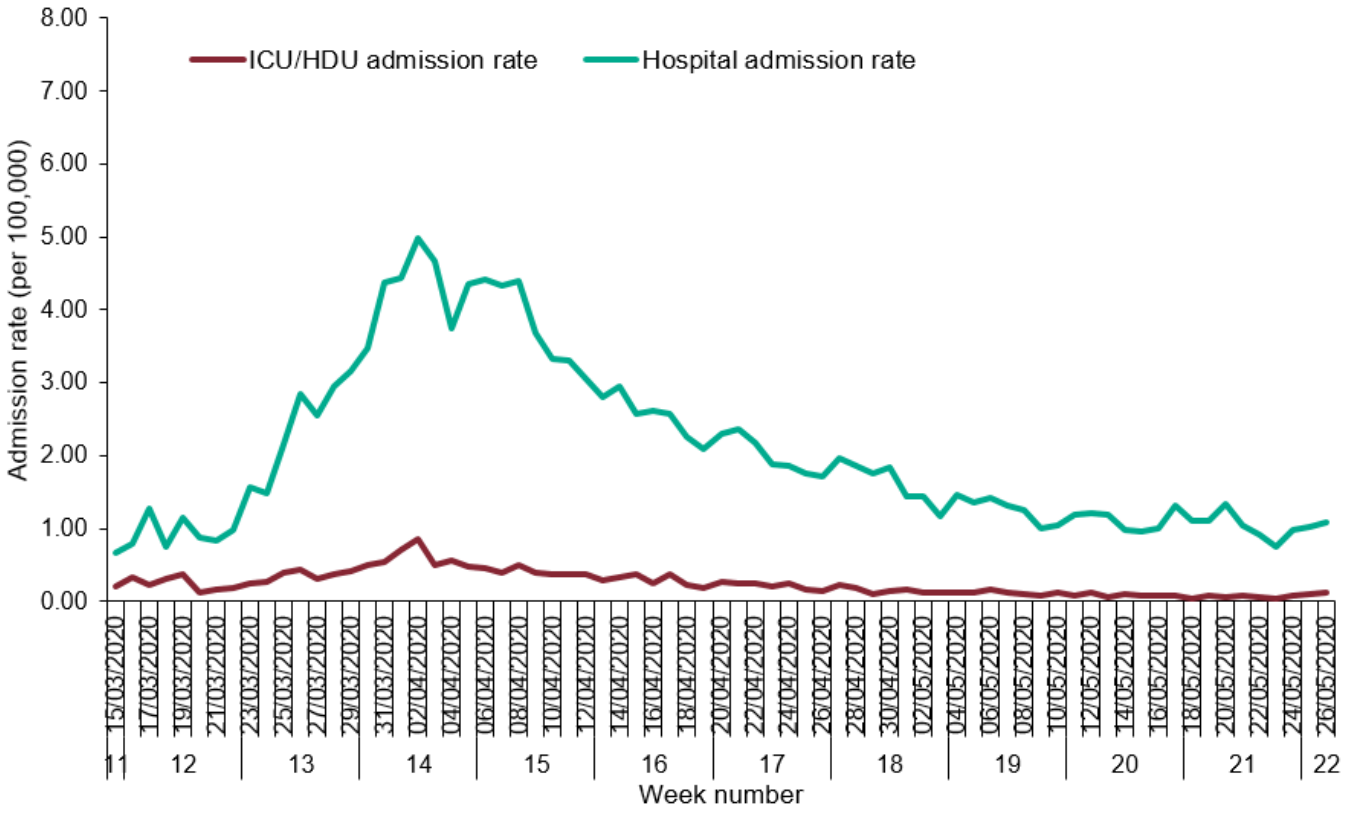
COVID-19 Hospitalisation in England Surveillance System (CHESS)

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

Up to 27 May 2020, the daily admission rates for both hospitalisations and ICU/HDU COVID-19 admissions have increased slightly. By NHS regions, the highest hospitalisation and ICU/HDU rates were observed in London.

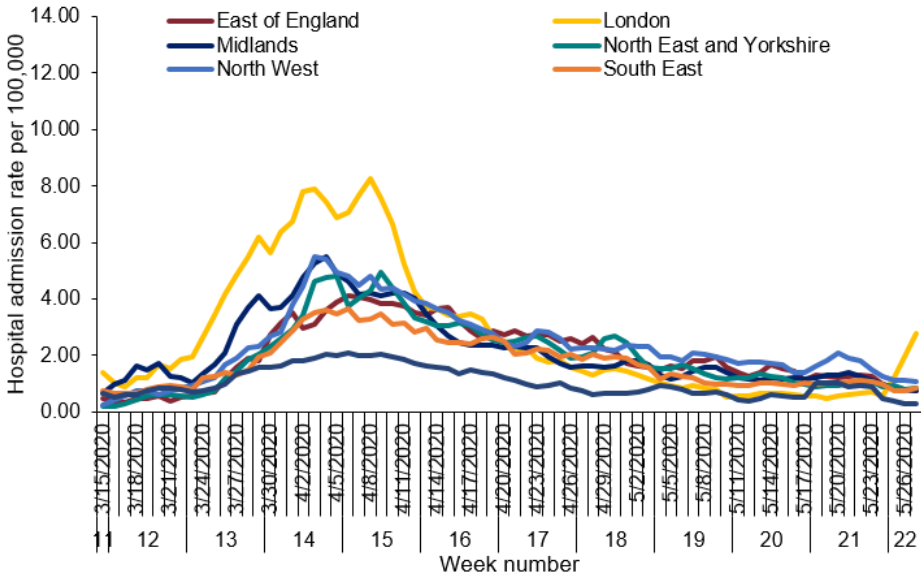
Figure 21: Overall daily hospital and ICU/HDU admission rates per 100,000 of new COVID -19 positive cases reported through CHESS, England



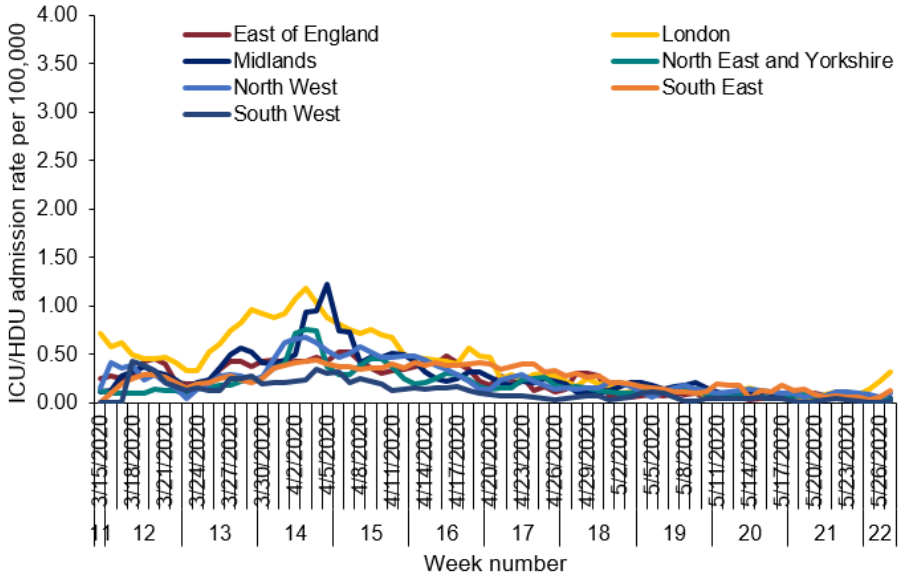
COVID-19 Hospitalisation in England Surveillance System (CHESS)

Figure 22: Daily admission rate for (a) hospital admissions and (b) ICU/HDU admissions by NHS regions (3 day moving average rate) of new COVID-19 positive cases reported through CHESS

(a)



(b)



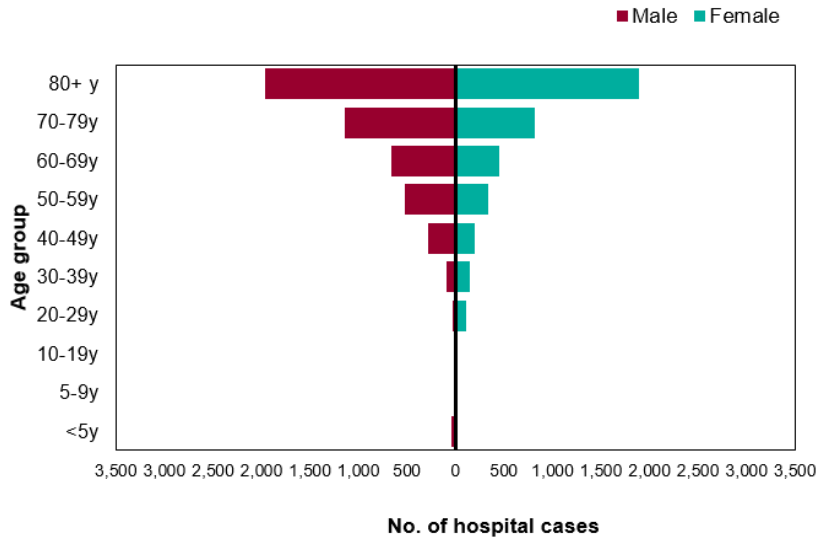
* For the most recent week, more samples are expected therefore the increase seen in the above graphs should be interpreted with caution.

COVID-19 Hospitalisation in England Surveillance System (CHESS)

Figure 23 and 24 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 23: Age/sex pyramid of new (a) hospital (lower level of care) (n=8,754) and (b) ICU/ HDU (n=4,127) COVID-19 cases reported through CHESS, England

(a)



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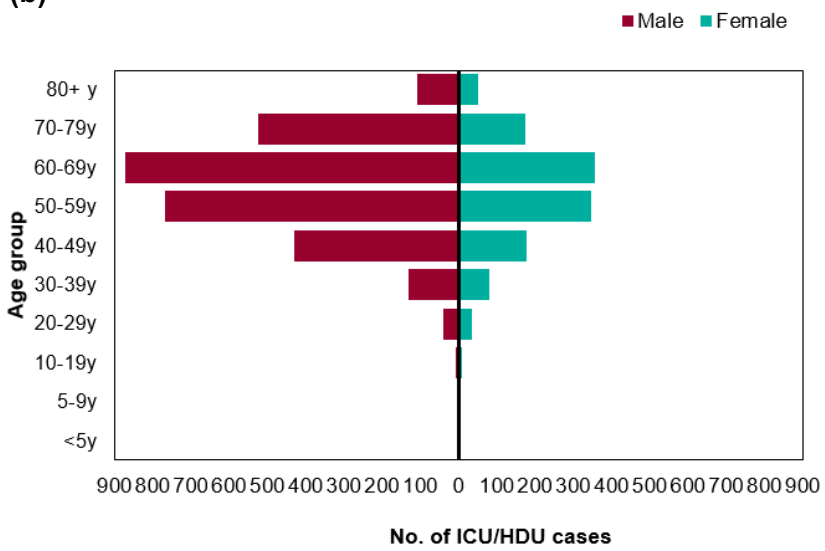
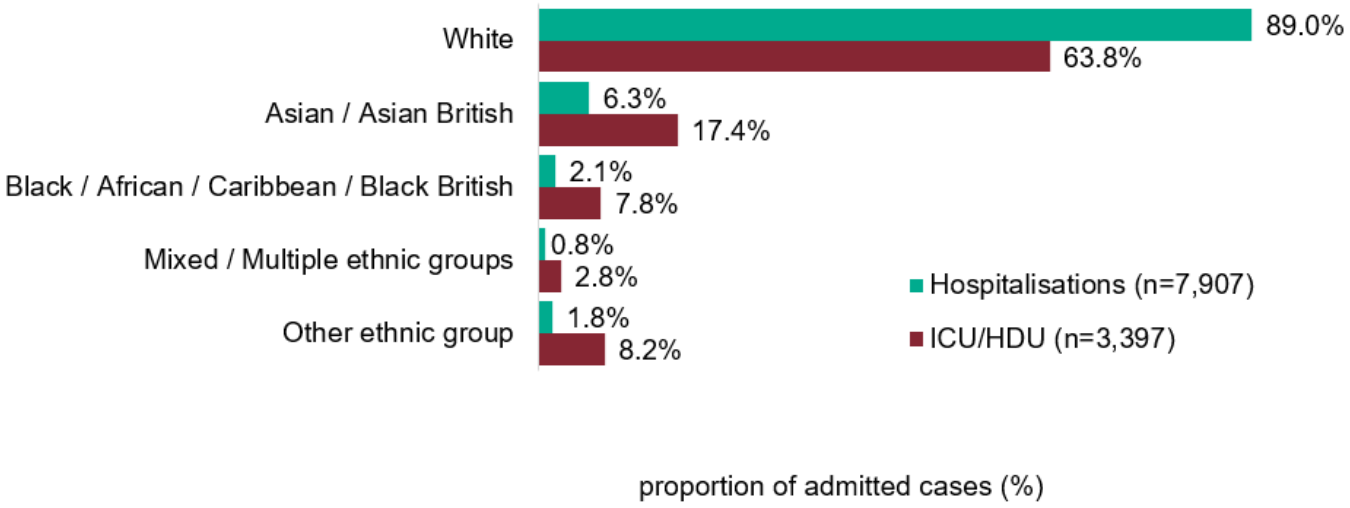


COVID-19 Hospitalisation in England Surveillance System (CHESS)

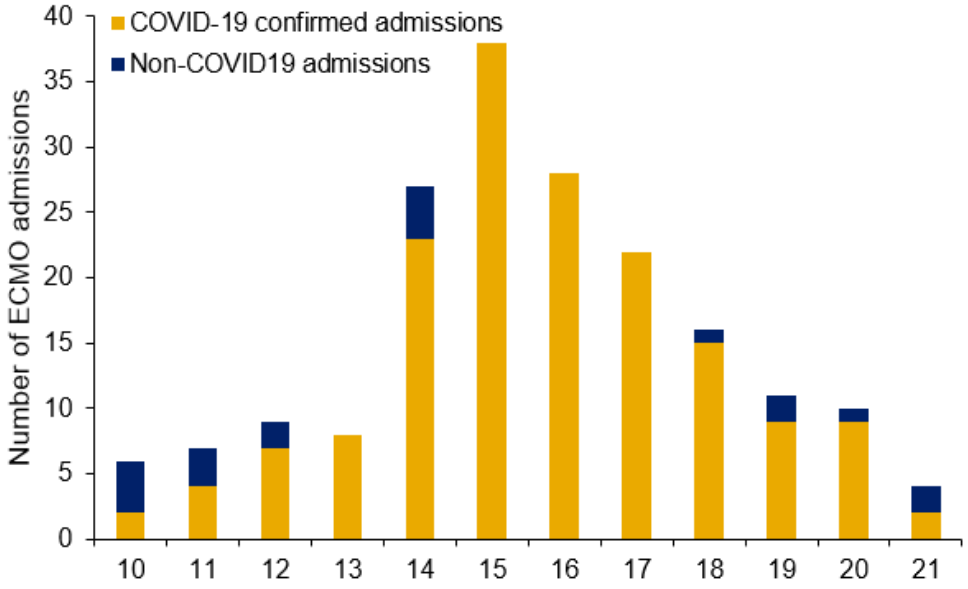
Figure 24: Ethnic group of new hospitalisations (lower level of care) (n=7,907) and ICU/ HDU (n=3,397) COVID-19 cases reported through CHESS, England



UK Severe Respiratory Failure (SRF) centres admissions

Up to 27 May 2020, a total of 167 laboratory confirmed COVID-19 admissions have been reported from the 5 SRFs in England (Figure 25).

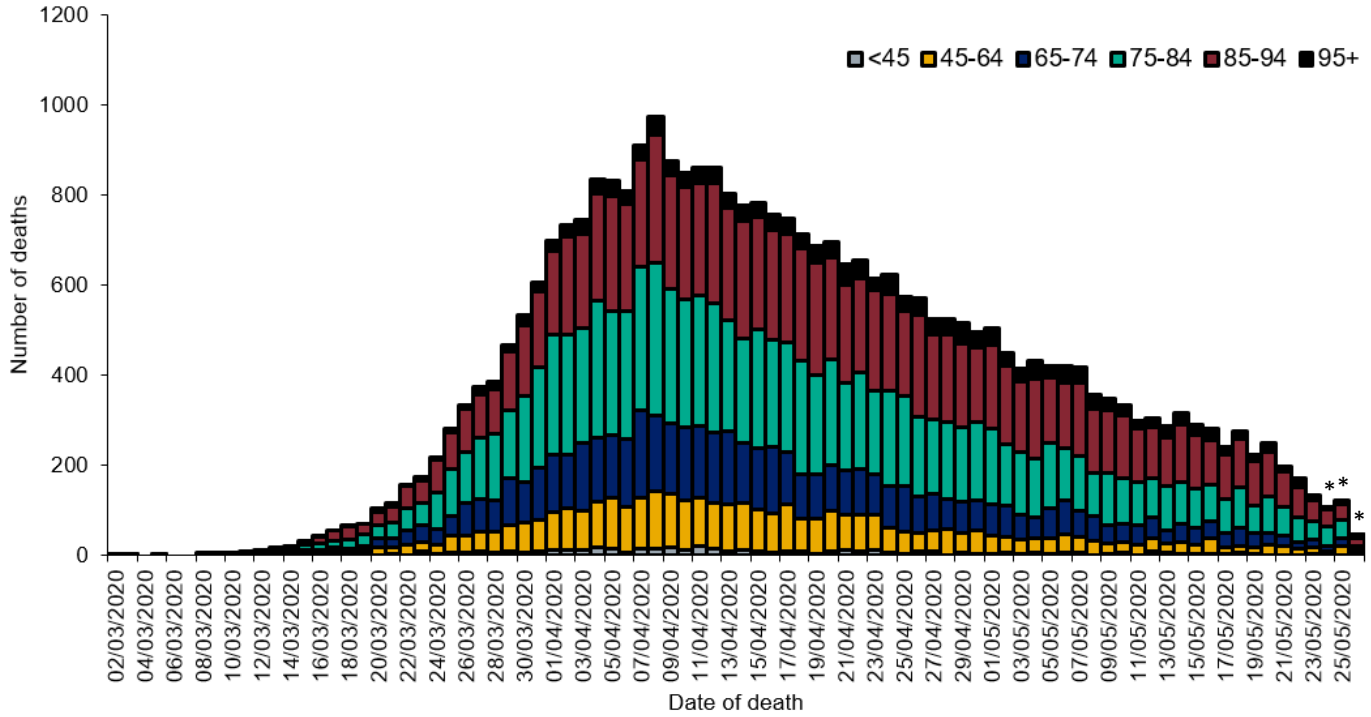
Figure 25: All COVID-19 and non-COVID-19 laboratory confirmed ECMO admissions to SRFs, UK



Cumulative deaths

As of 5pm on 26 May 2020, a total of 33,362 cases with confirmed COVID-19 have died in England.

Figure 26: Cumulative number of deaths by date of death and age group, England (n=33,362)



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

Table 3: Cumulative number of deaths by PHE Centres (n=32,981)

PHE Centres	Number of deaths
North East	1,908
North West	5,324
Yorkshire & Humber	3,030
West Midlands	4,271
East Midlands	2,460
East of England	3,791
London	6,236
South East	4,251
South West	1,710

Cumulative deaths

Figure 27: Age/sex pyramid of laboratory confirmed COVID-19 deaths (n=33,362)

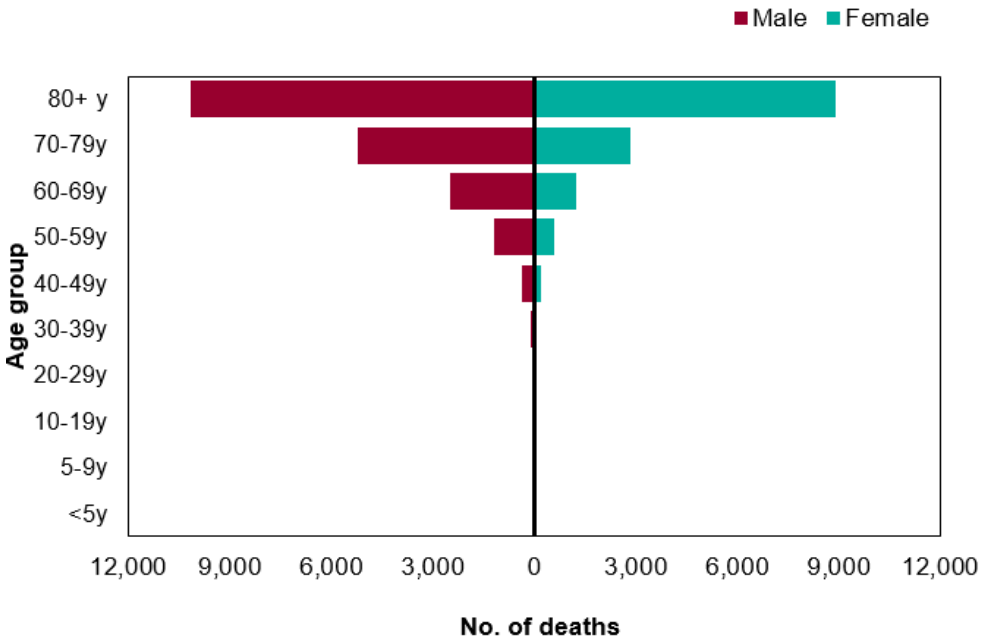
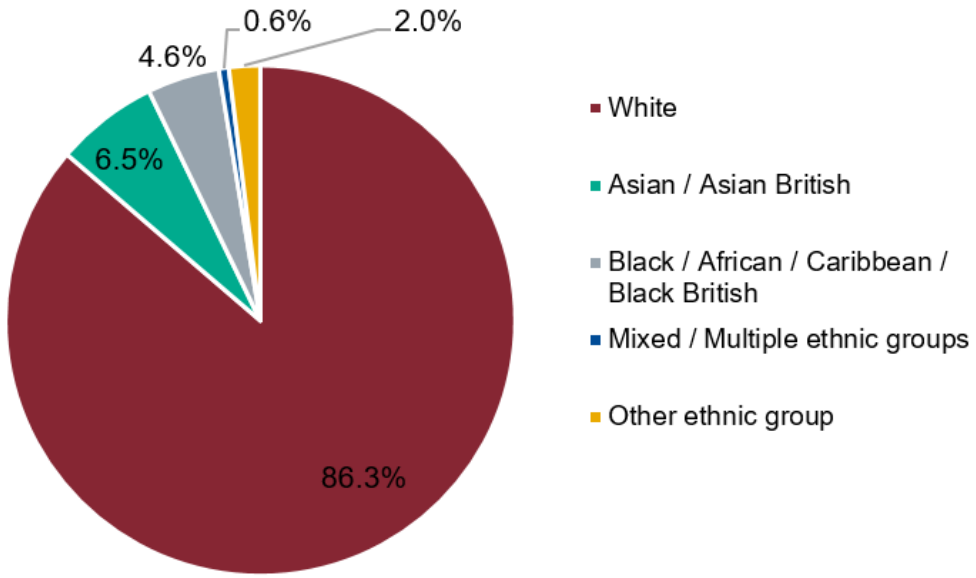


Figure 28: Ethnic group of confirmed COVID-19 deaths, England (n= 33,160)



Sero-prevalence epidemiology, England

Control of COVID-19 requires the ability to detect asymptomatic and mild infections, that would not present to healthcare and would otherwise remain undetected through existing surveillance systems. This is important to determine the true number of infections within the general population to understand transmission, to inform control measures such as social distancing and school closures and to provide a denominator for the estimation of severity measures such as infection fatality and infection hospitalisation ratios. A number of serological collections have been established by PHE to provide an age-stratified geographically representative sample across England over time. These include samples from healthy adult blood donors, supplied by the NHS Blood and Transplant (NHS BT). Donor samples from different geographic regions (approximately 1000 samples per region) in England are tested each week. The results presented here are based on testing using the Euroimmun assay.

Figure 29 shows the overall prevalence in each region over time which has been adjusted for the accuracy of the Euroimmun assay (sensitivity and specificity).

After making adjustments based on the latest information on the accuracy of the assay*, the overall adjusted prevalence in London increased from 1.3% in week 13 to 10.6% in weeks 15-16 and 14.8% in week 18. It is important to note that the adjusted figures presented this week have changed slightly from those reported last week based on updated evidence about assay sensitivity, which appears to be better after more convalescent samples from confirmed cases have been tested.

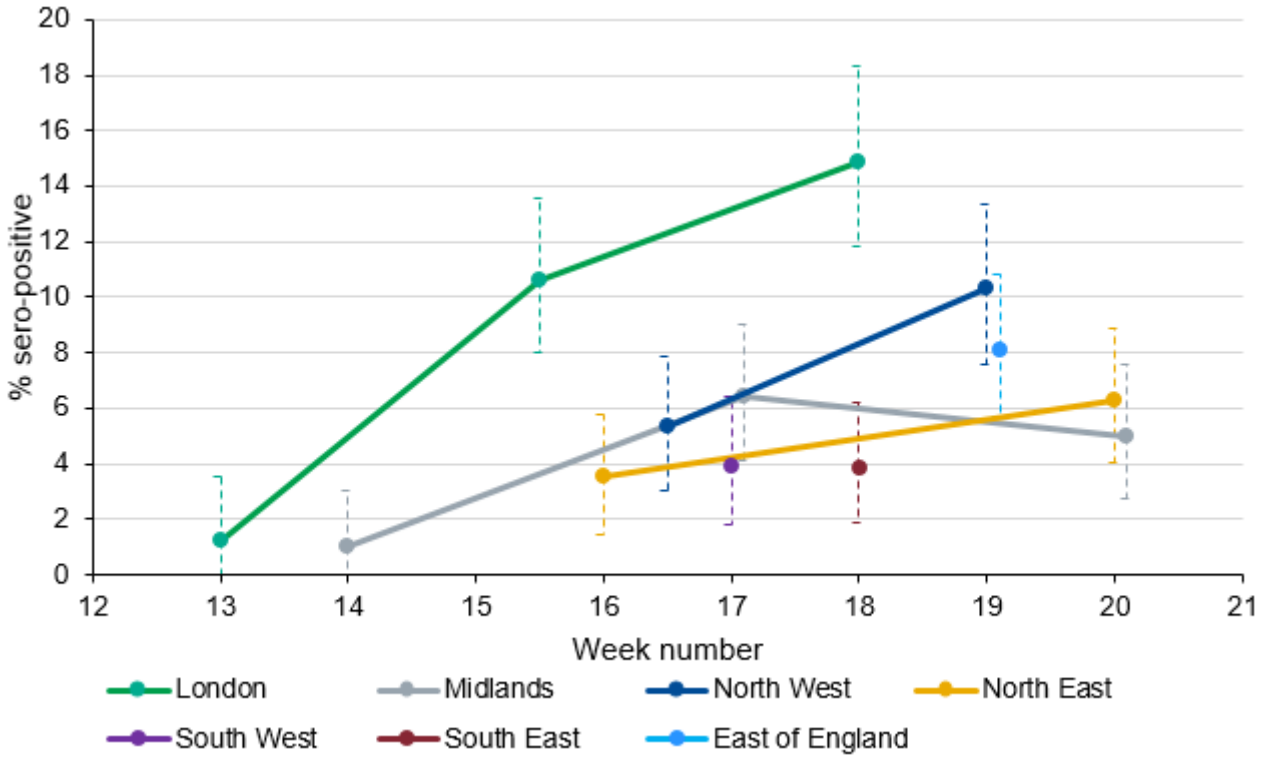
The estimates among adults show a continued increase in prevalence within London, however the increase seen between weeks 16 and 18 is relatively smaller than the increase observed between weeks 13 and 16. Given that the antibody response takes at least two weeks to become detectable, those displaying a positive result in week 18 are likely to have become infected before mid-April. As the incidence in this period may only have just begun to slow following the impact of lockdown measures, this may explain the slight increase over that period.

The lower prevalence in the samples from other regions including the Midlands, North East, South East and South West regions is consistent with data from other surveillance systems. The adjusted prevalence in the Midlands in week 14 was similar to that in London in weeks 13-14 but lower in week 17 compared with later sampling in London. The adjusted prevalence in North East and North West regions in weeks 16 is well above baseline (3.5% and 5.3% respectively), higher than in London and the Midlands in week 14, but not as high as seen in London in week 16, which is consistent with the surveillance trends reported for England.

The highest adjusted prevalence in all regions is typically found among adolescents and young adults in the 17-29 year old age group (from week 16 onwards, varying from 4.4% in the South East [week 18] to 16.9% in the North West regions [weeks 16-17]). However, in the most recent data from London, the increase is more marked in older age groups suggesting that this population have been affected later. These patterns may reflect differences in behaviour and mixing patterns in the different age groups.

Sero-prevalence epidemiology, England

Figure 29: Overall SARS-CoV-2 antibody Seroprevalence (%) in blood donors by PHE centres, using Euroimmun test adjusted for sensitivity (79%) and specificity (99%) and 95% confidence intervals (dashed lines)



Excess all-cause mortality, UK

In week 21 2020 in England, statistically significant excess mortality by week of death above the upper 2 z-score threshold was seen overall, by age group in the 65+ year olds and sub nationally (all ages) in the North East, Yorkshire & Humber, East & West Midlands, and South East regions after correcting GRO disaggregate data for reporting delay with the standardised Euro-MOMO algorithm (Figure 26 and Table 3). This data is provisional due to the time delay in registration; numbers may vary from week to week.

Figure 30: Weekly observed and expected number of all-cause deaths in all ages, with the dominant circulating influenza type(s), England, 2015 to week 21 2020

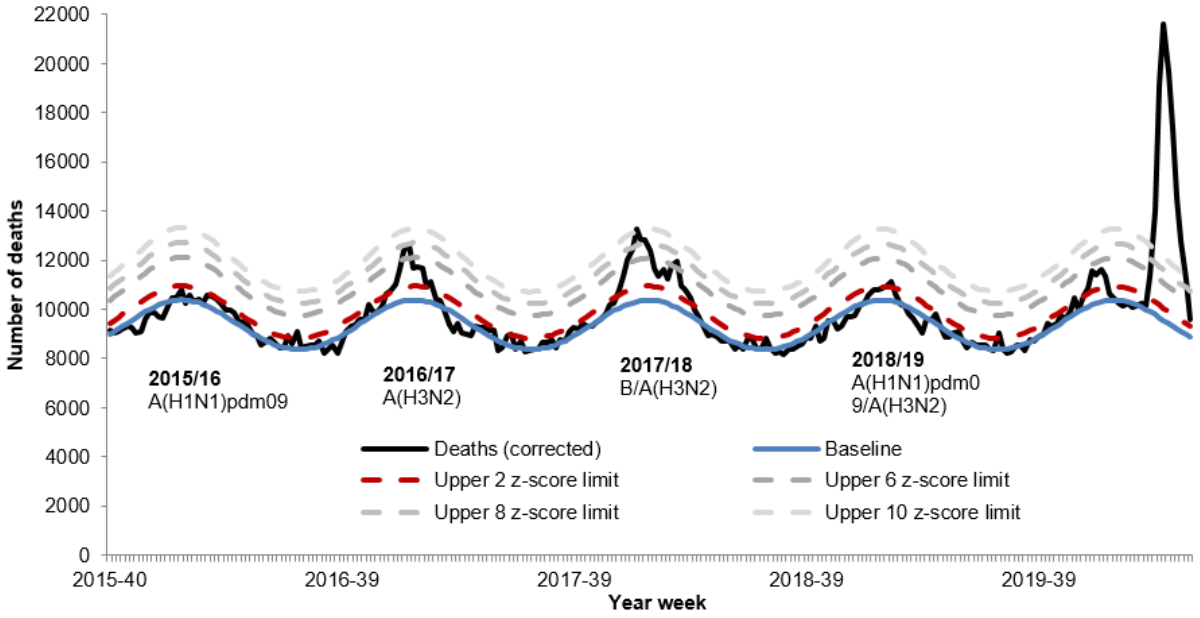


Table 4: Excess mortality by age group, England

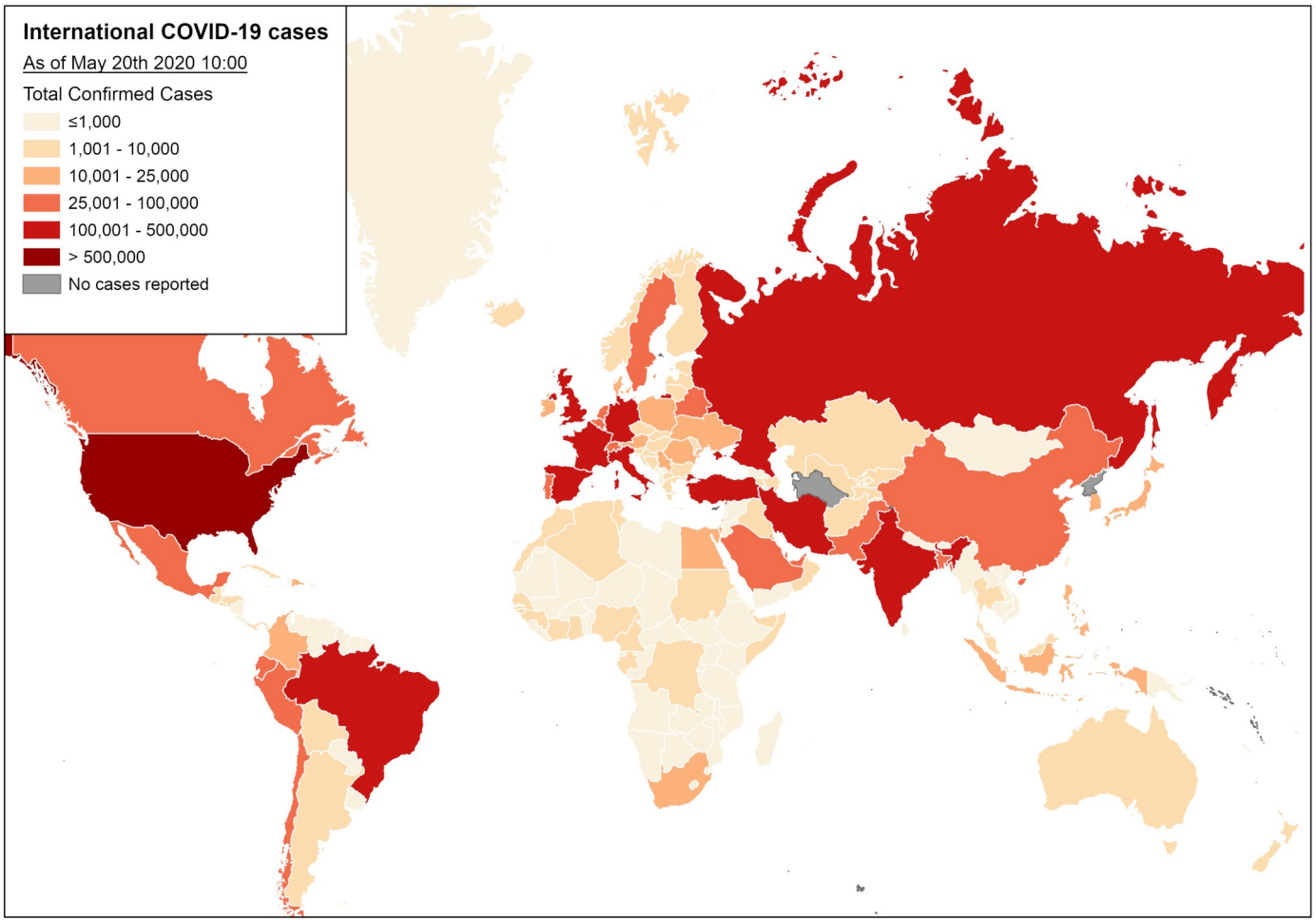
Age group (years)	Excess detected in week 21 2020?	Weeks with excess in 2019/20
<5	x	48
5-14	x	NA
15-64	x	52-02; 12-20
65+	✓	47;50-02;12-21

** Excess mortality is calculated as the observed minus the expected number of deaths in weeks above threshold*

Global situation

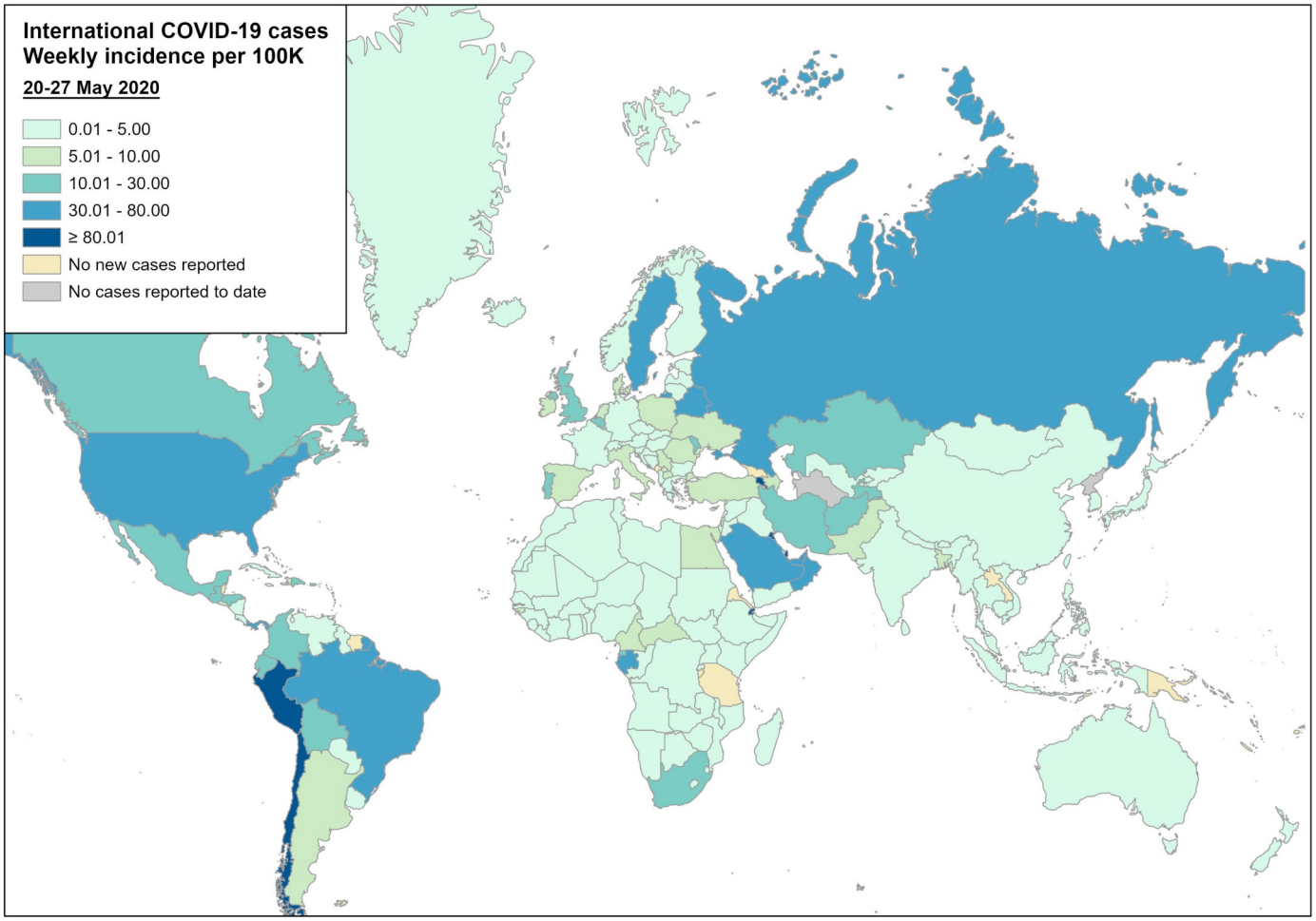
Globally, up to 27 May 2020, a total of 5,273,079 cases of COVID-19 infection have been reported worldwide, including 312,559 COVID-19 related deaths.

Figure 31: Global map of cumulative COVID-19 cases



Global situation

Figure 32: Global map of weekly COVID-19 case incidence rate per 100,000, week 21 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.