



# Weekly Influenza and COVID-19 Surveillance graphs

PHE publishes a weekly national influenza and COVID-19 surveillance report which summaries the information from the surveillance systems which are used to monitor influenza, COVID-19 and other seasonal respiratory viruses in England.

Additional figures based on these surveillance systems are included in this slide set.

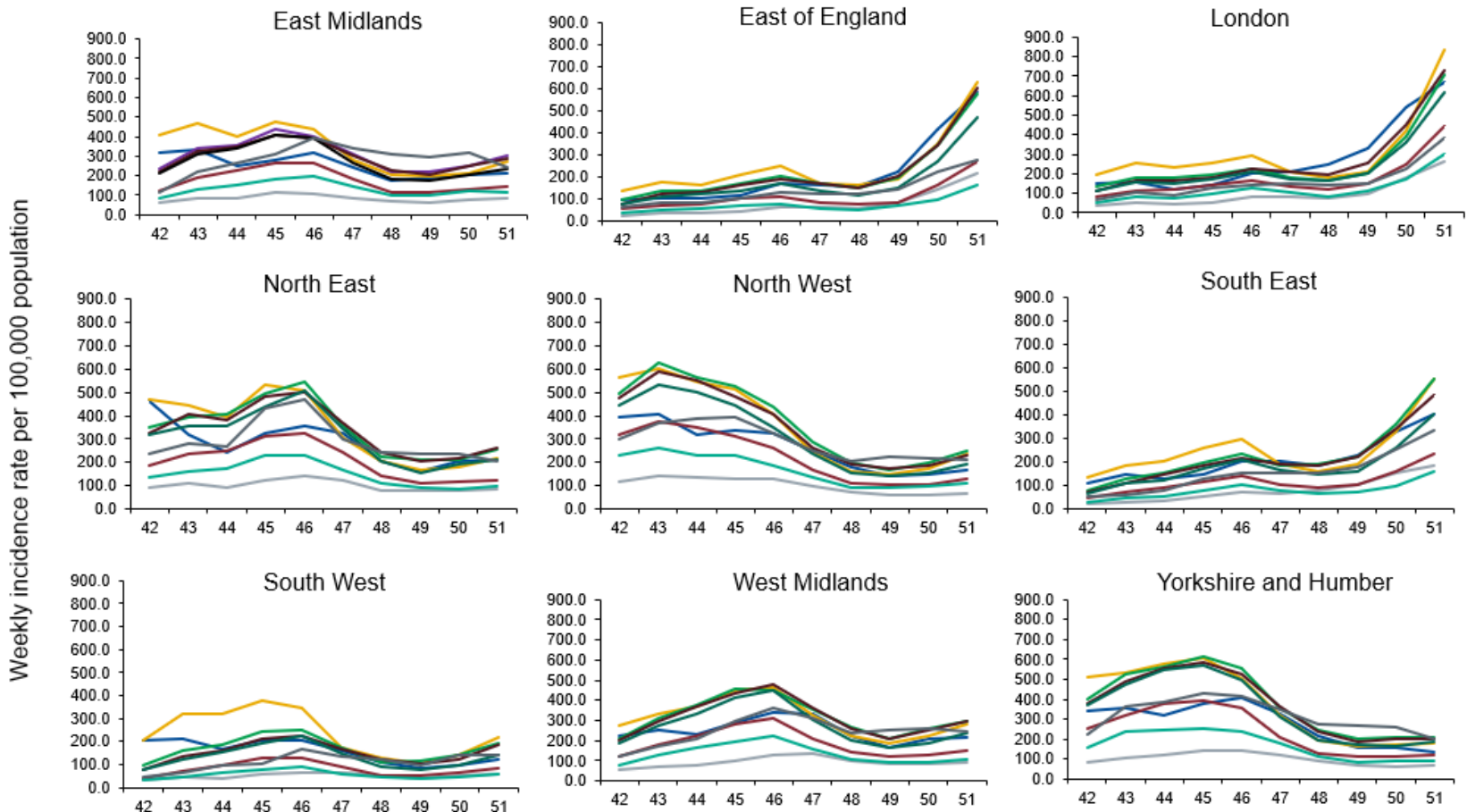
The figures presented in this slide set are based on data from week 51 (between 14 December to 20 December 2020).



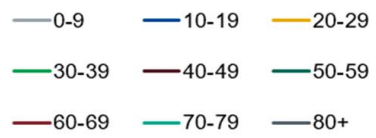
# Confirmed COVID-19 cases in England



# Weekly COVID-19 incidence per 100,000 population by age group and region, weeks 42 to 51



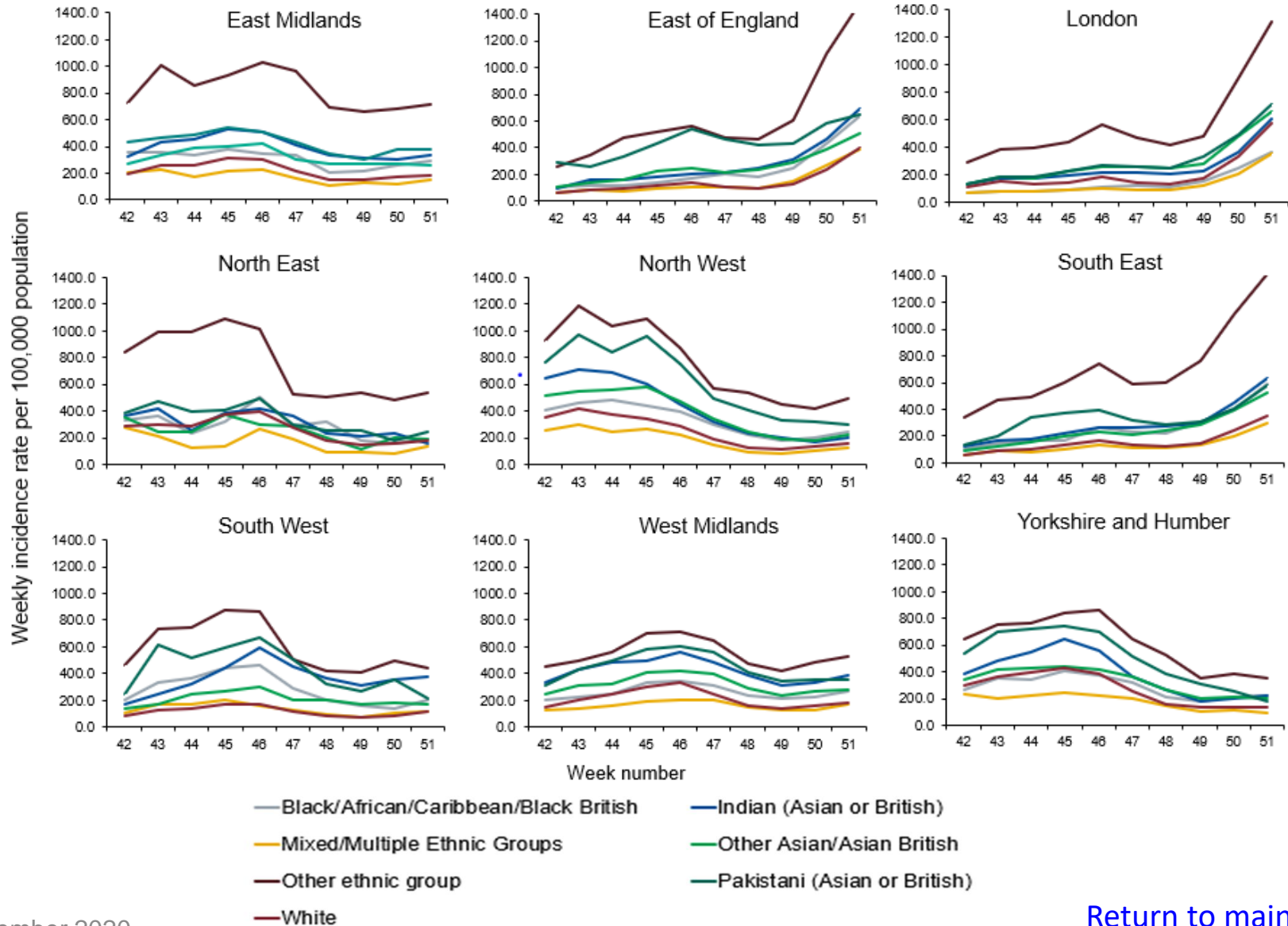
Weekly incidence rate per 100,000 population



Week number

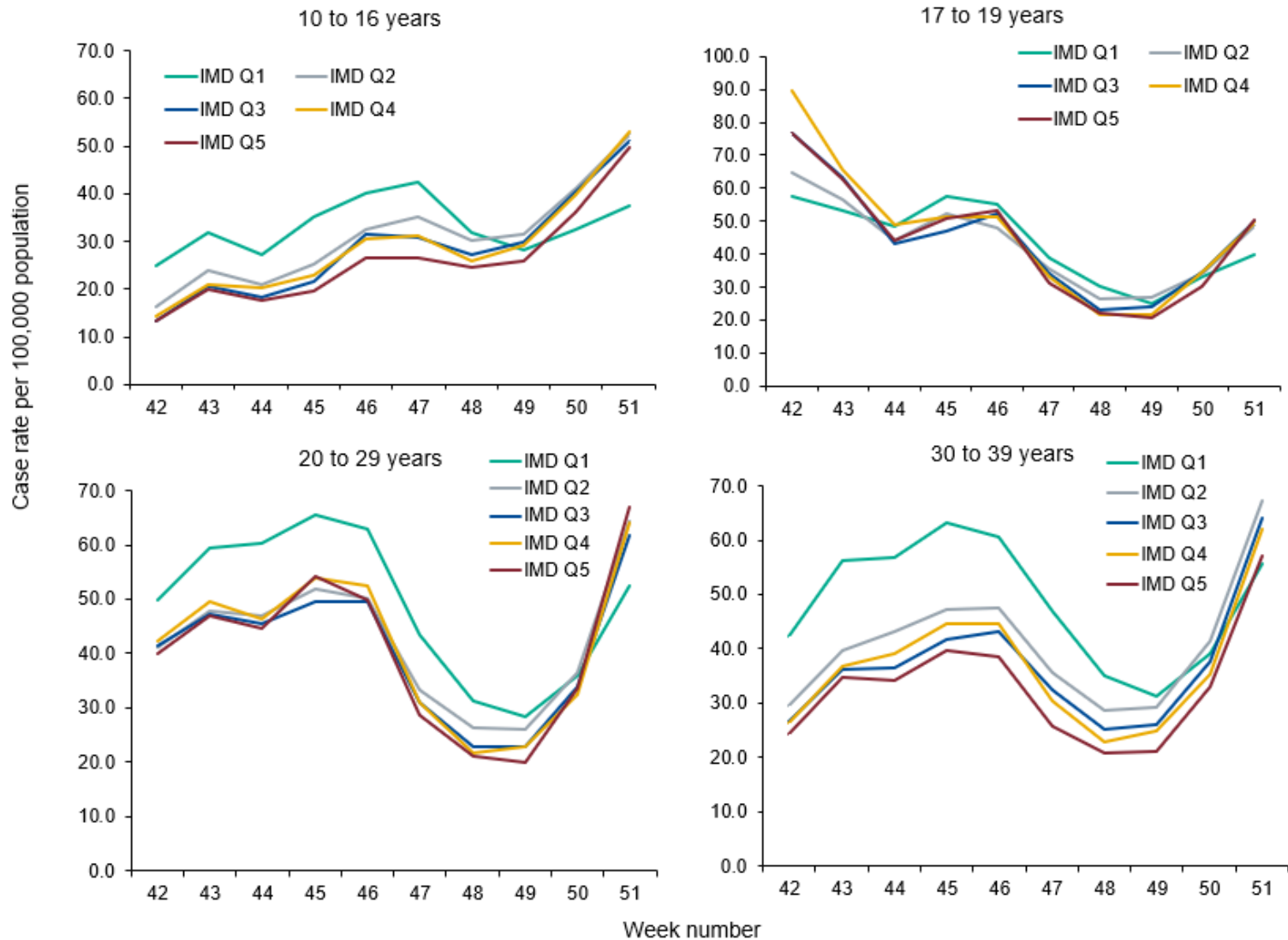


# Weekly COVID-19 incidence per 100,000 population by ethnicity and region, weeks 42 to 51



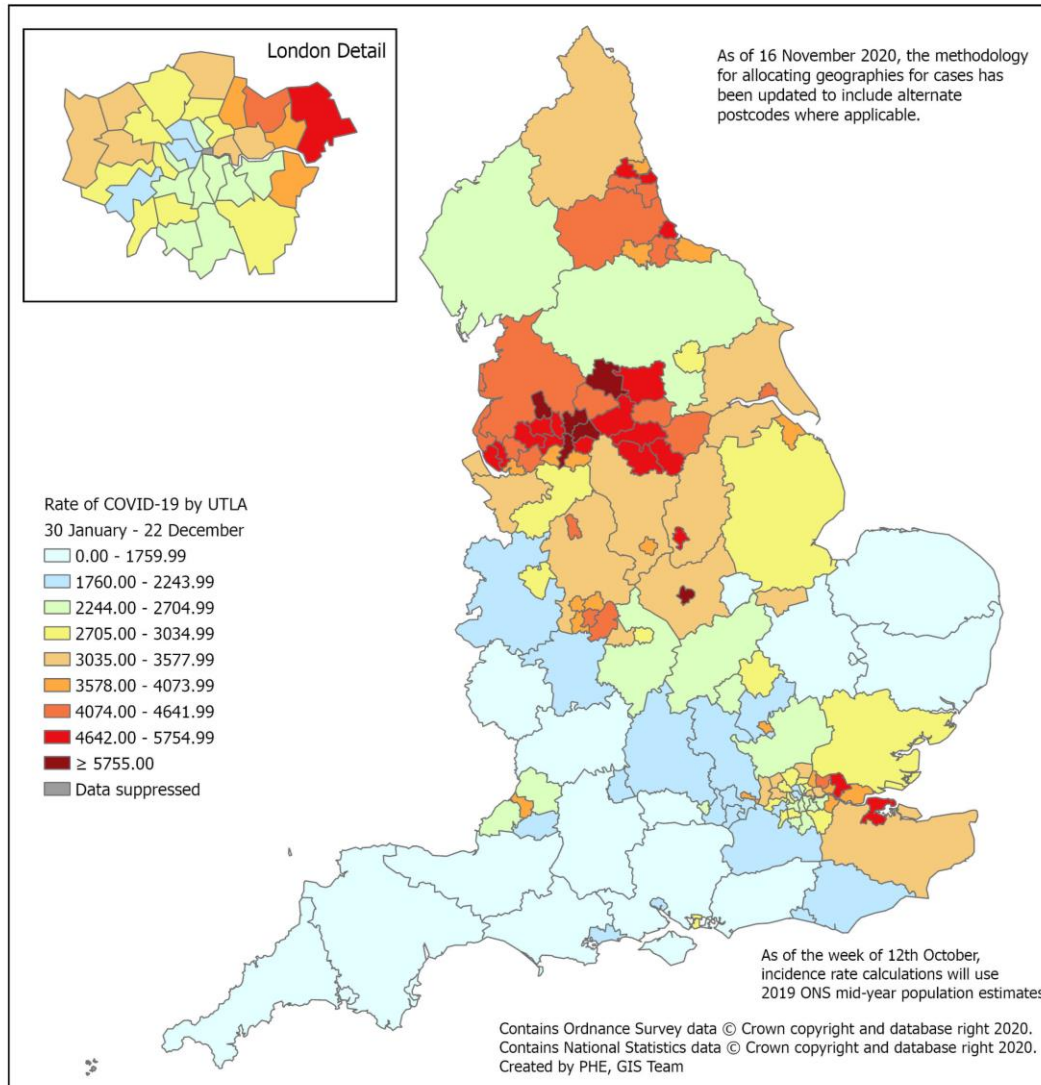


# Weekly COVID-19 rate per 100,000 population by IMD quintile (1 being the most deprived and 5 being the least deprived), weeks 42 to 51



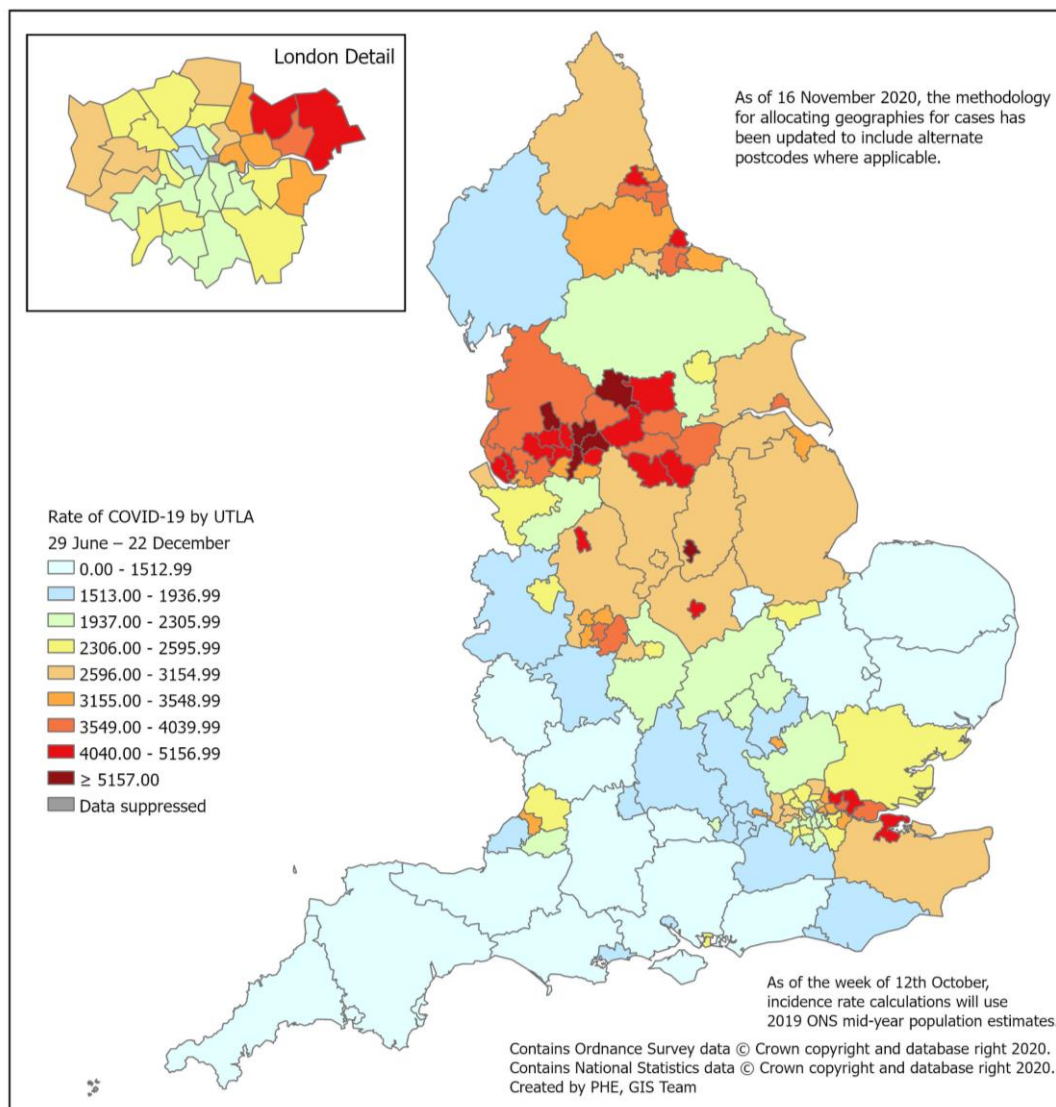


# Cumulative rate of COVID-19 cases per 100,000 population tested under Pillar 1 and 2, by upper-tier local authority, England (box shows enlarged map of London area)





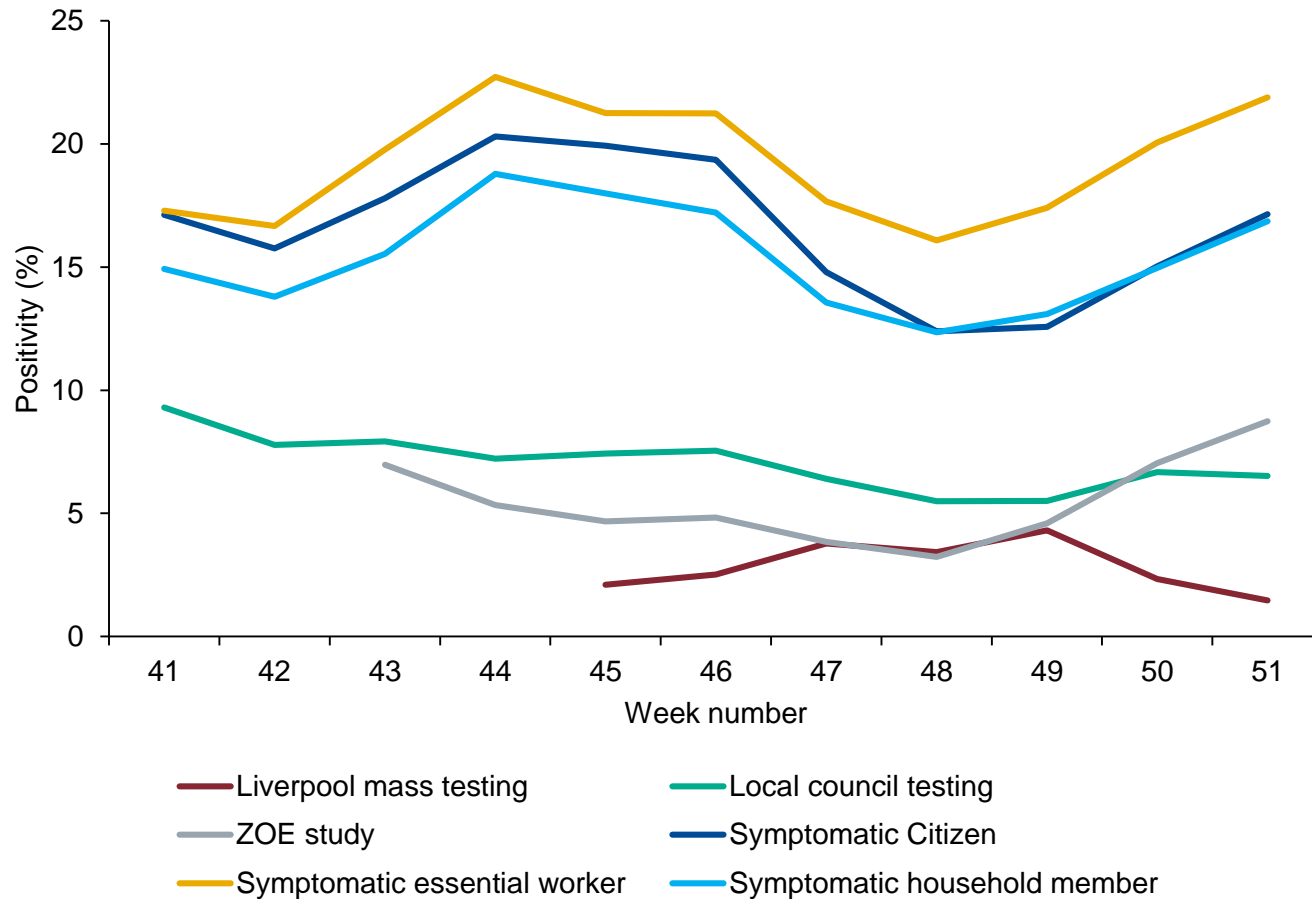
# Cumulative rate (from week 27) of COVID-19 cases per 100,000 population tested under Pillar 1 and 2, by upper-tier local authority, England (box shows enlarged map of London area)







# Weekly positivity of laboratory confirmed COVID-19 cases by reason for test, weeks 41 to 51





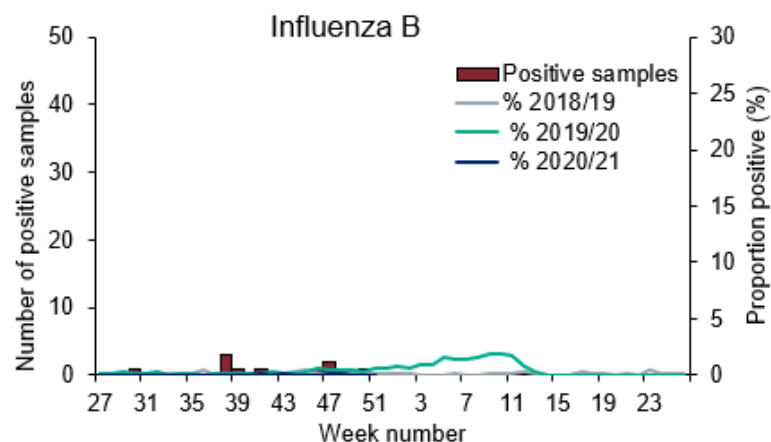
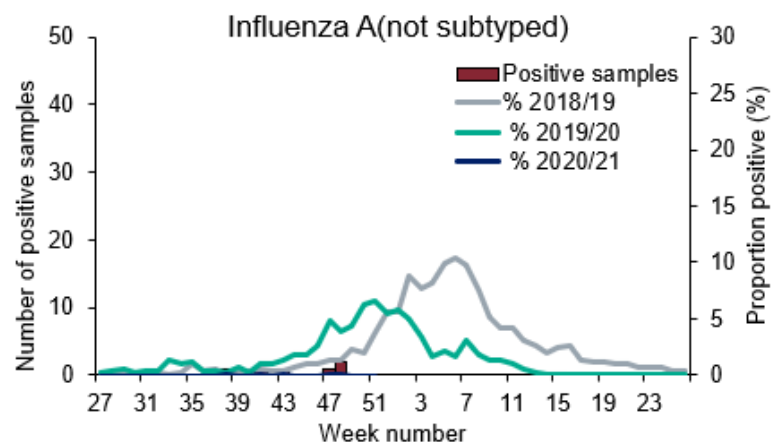
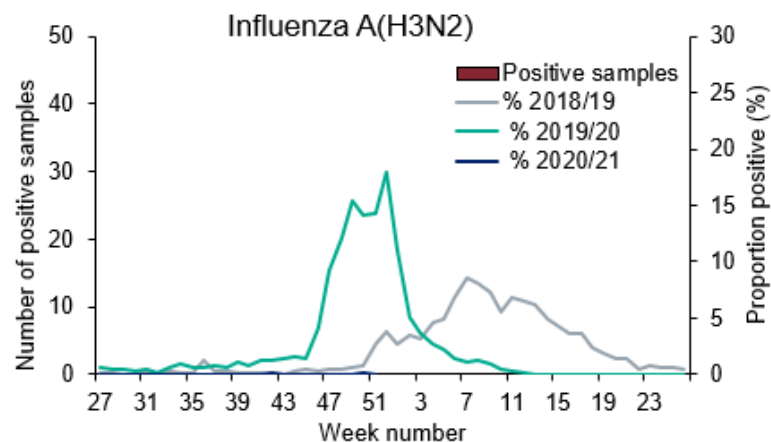
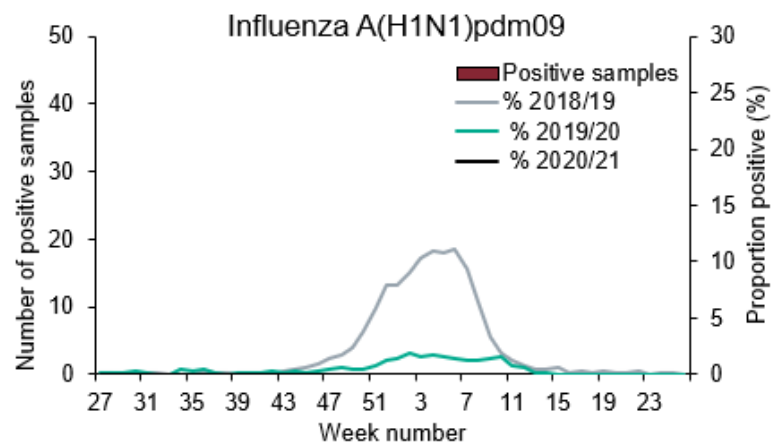


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# Respiratory Datamart system (England)

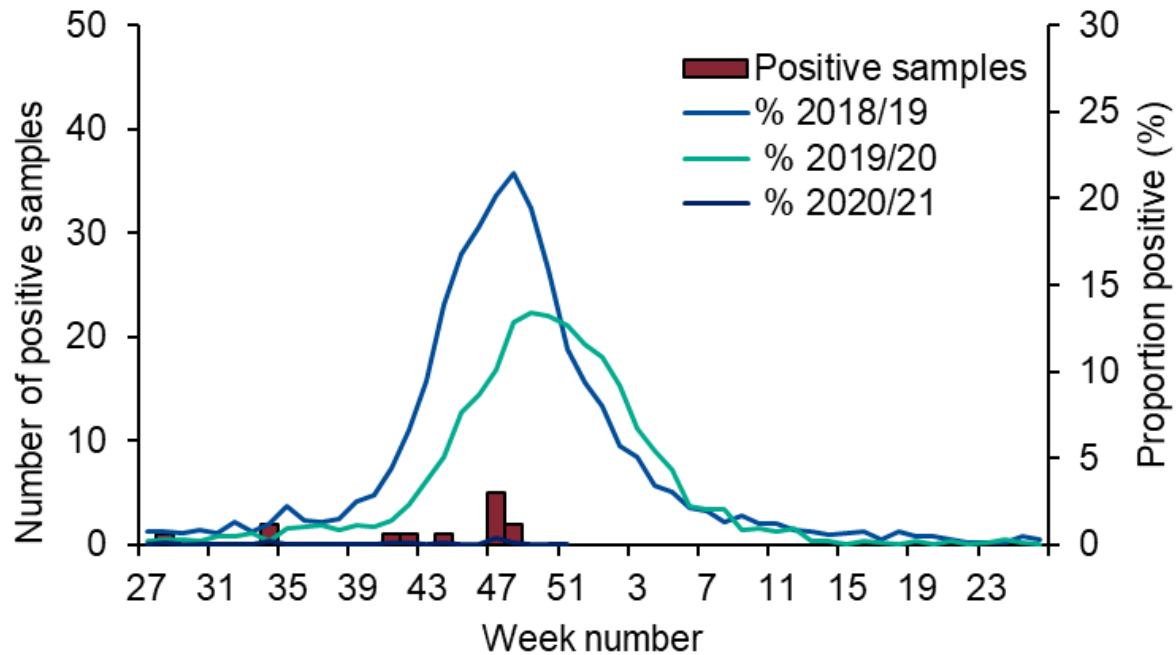


# Respiratory DataMart – Influenza subtypes



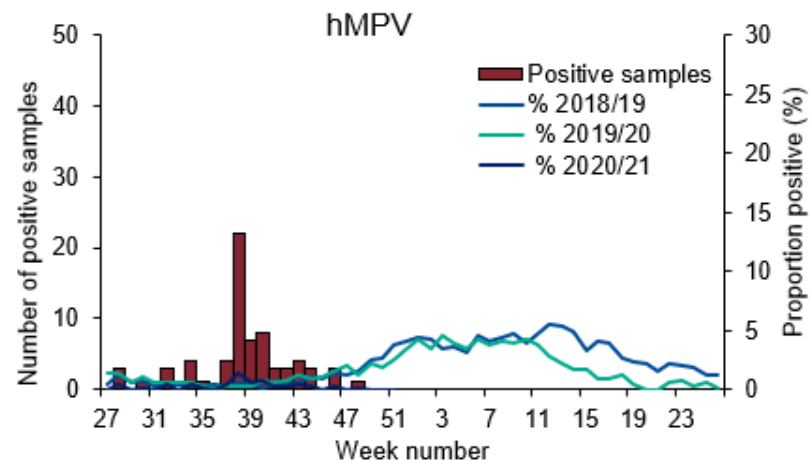
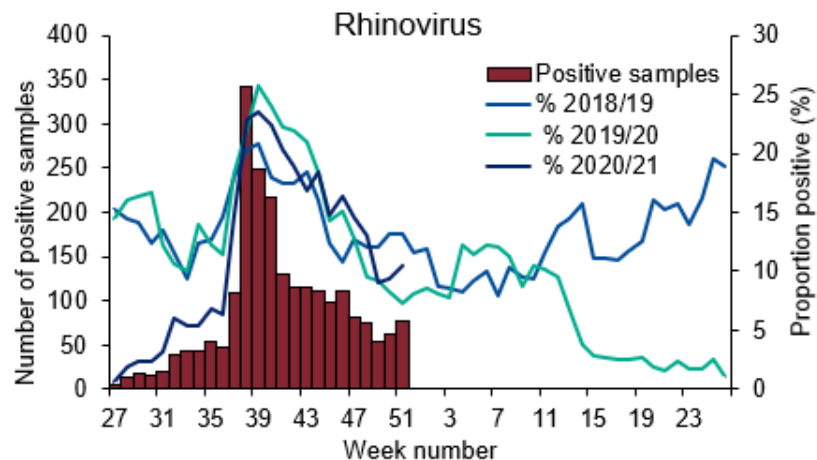
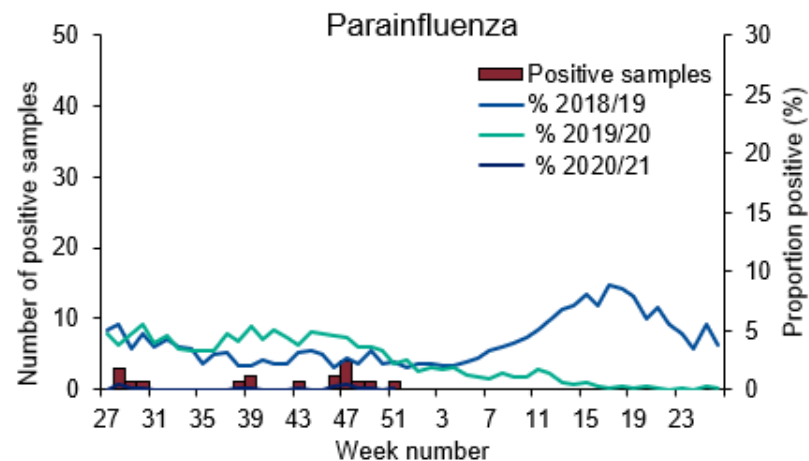
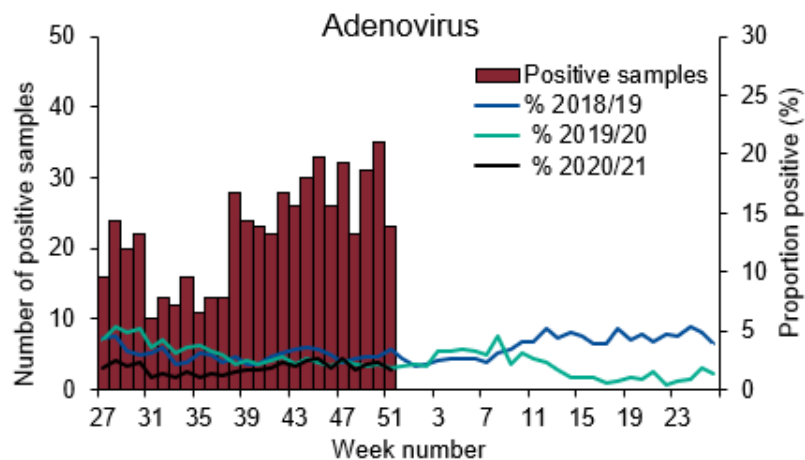


# Respiratory DataMart – Respiratory syncytial virus (RSV)





# Respiratory DataMart – other respiratory viruses



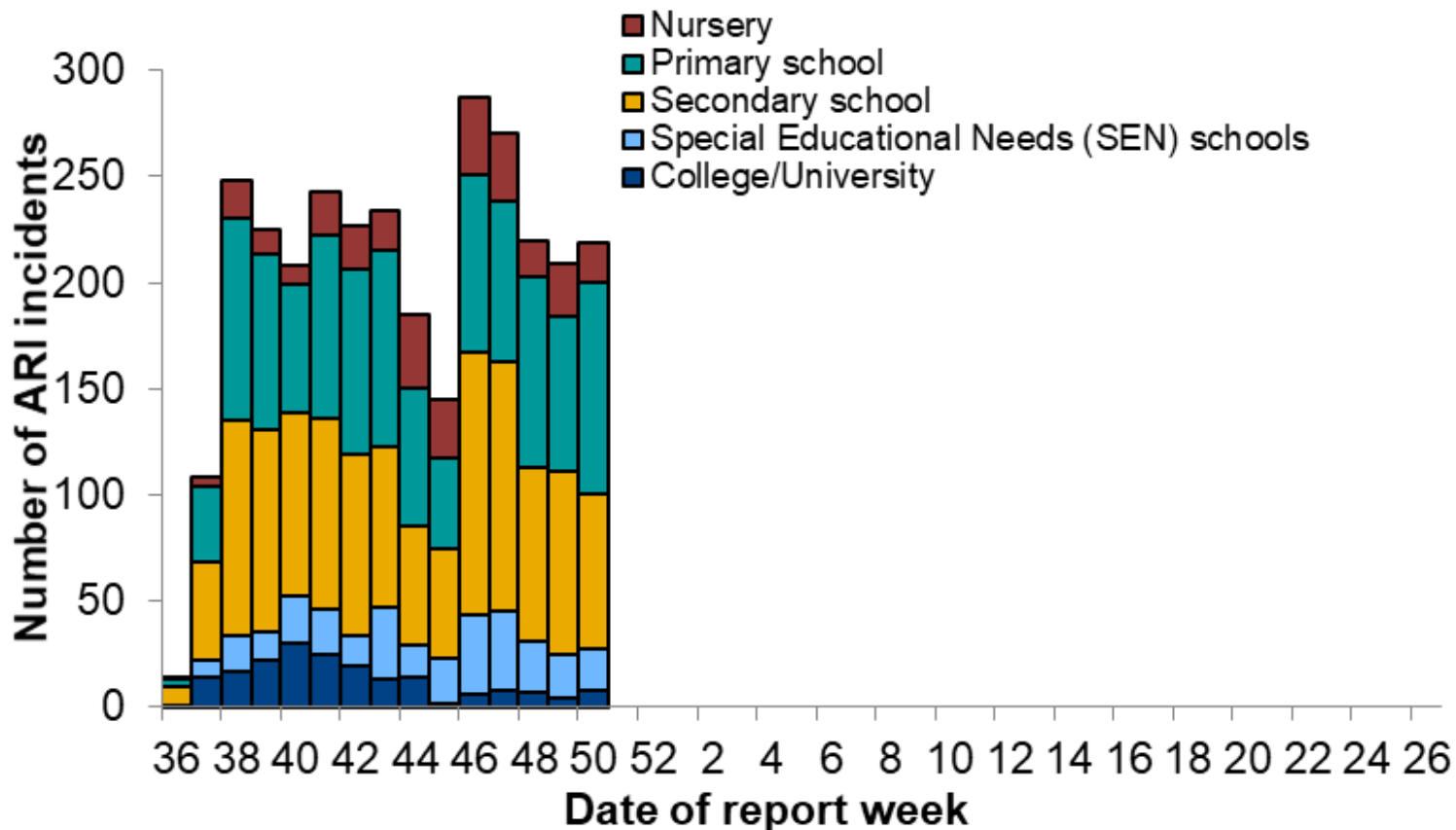


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# Community surveillance



# Number of COVID-19 confirmed clusters or outbreaks by type of educational setting, England





## Cumulative number of confirmed COVID-19 clusters or outbreaks by type of educational setting and PHE Centre since week 36, England

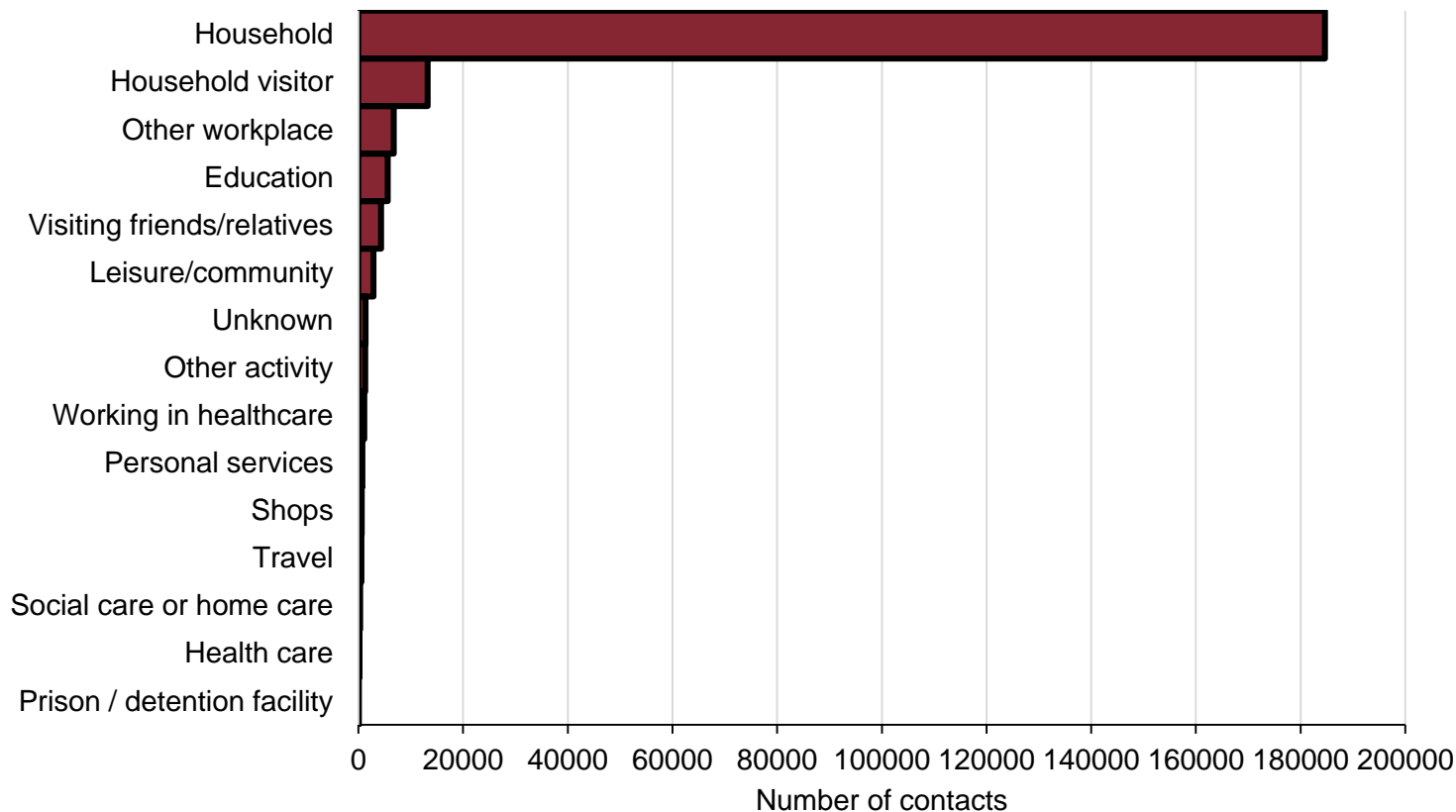
PHE Centres	Nursery	Primary school	Secondary school	Special Educational Needs (SEN) schools	College/University	Total
East of England	7 (0)	16 (0)	39 (0)	8 (0)	13 (1)	84 (1)
East Midlands	46 (2)	139 (4)	97 (0)	24 (0)	20 (0)	328 (6)
London	54 (6)	236 (46)	317 (37)	44 (4)	38 (1)	689 (94)
North East	1 (0)	18 (0)	23 (0)	7 (0)	5 (0)	54 (0)
North West	15 (0)	63 (2)	83 (0)	39 (0)	10 (0)	212 (2)
South East	78 (8)	200 (23)	268 (27)	65 (8)	31 (4)	640 (70)
South West	21 (0)	70 (8)	81 (4)	19 (1)	25 (0)	226 (13)
West Midlands	34 (2)	191 (12)	161 (3)	44 (4)	23 (2)	453 (23)
Yorkshire and Humber	41 (1)	137 (5)	112 (2)	42 (2)	24 (0)	356 (10)
<b>Total</b>	297(19)	1070 (100)	1181 (73)	305 (19)	189 (8)	3042 (219)

\*Number of outbreaks for Week 50 in brackets





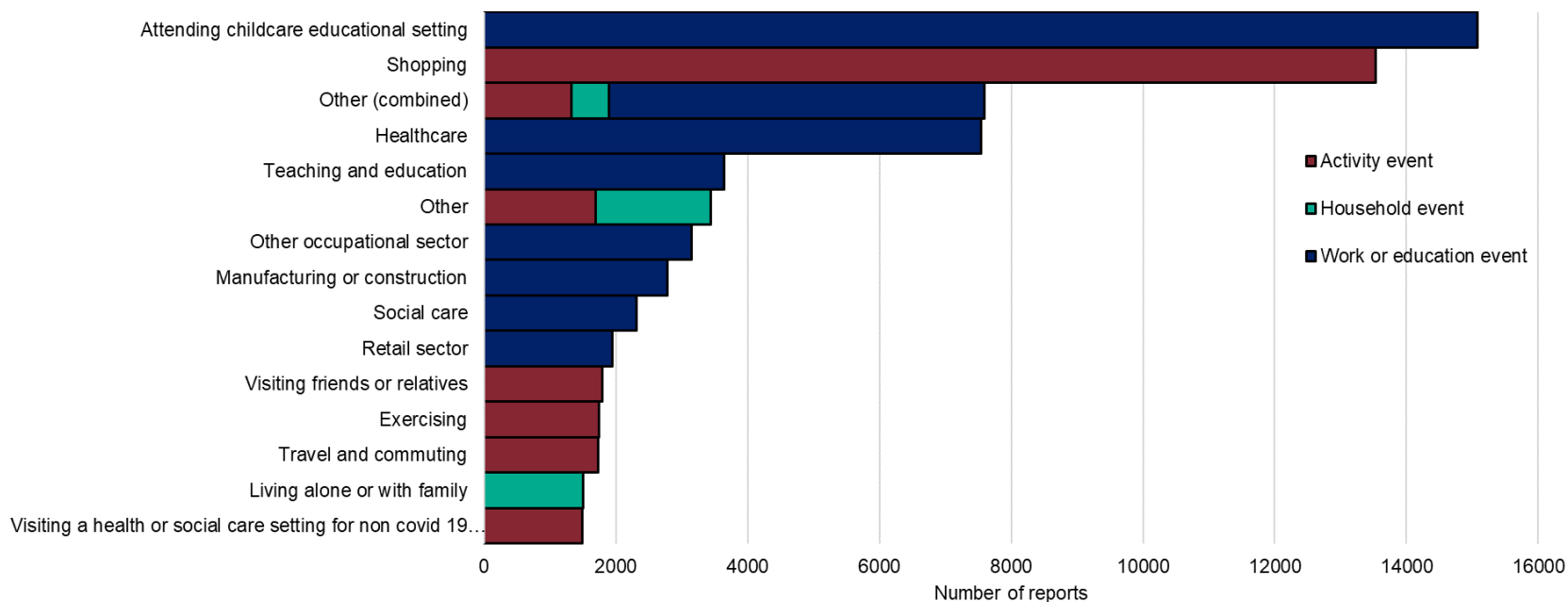
## Contacts by exposure/activity setting in week 50, England (Data source: NHS Test and Trace)



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.



# Events and activities reported by people testing positive, prior to symptom onset in week 50, England (Data source: NHS Test and Trace)



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;

'Other (combined)' includes all exposure group types that have small counts such as "went to church", "went to the zoo" within that event type.



## Common locations reported by people testing positive in week 50, England (Data source: NHS Test and Trace)

Of the 99,875 cases reported for contact tracing between 7 and 13 December, 25,453 (25.5%) had a common exposure with at least 1 other case. 6,960 common locations/settings were reported in total (of which the table calculates % of the most frequent). Supermarkets were the most frequently reported common location, followed by Secondary schools, and then Primary schools.

Setting	All ages**	%
Supermarket (visiting and working)	1084	15.6%
Secondary school (attending)	1044	15.0%
Primary school (attending)	867	12.5%
Hospital (visiting)	302	4.3%
Care home (working)	190	2.7%
Gym (visiting)	151	2.2%
Pub or bar (visiting)	143	2.1%
College (attending)	132	1.9%
Restaurant or cafe (visiting)	128	1.8%
Nursery preschool (attending)	123	1.8%
Hospitality (working)	122	1.8%
Warehouse (working)	121	1.7%
Clothes shopping (visiting)	100	1.4%
Special needs educational setting (attending)	85	1.2%

Common Exposure Reports use NHS Test and Trace enhanced contact tracing data to identify locations or activities reported by 2 or more cases. Once a case enters the NHS Test and Trace system, enhanced contact tracing information is collected on household, workplace, education and activities in the 7-2 day period before symptom onset (or date of test if onset date is not provided). Data collected for this period is primarily used to identify where someone may have caught their infection.

Data presented are for common exposures within the enhanced contact tracing data with a known postcode only. Activities, household and workplace events reported by cases are grouped based on a shared postcode. Any event with  $\geq 2$  cases associated with it ( $\geq 2$  persons declaring the same postcode with onsets (or date tested if unavailable) the last 7 days) is defined as a common exposure and is included in this report.

Locations with more visitors are more likely to be identified as common exposures. No adjustment has been made for how commonly a location is visited. The exposure category selected is the most commonly identified among all individuals with an event at that postcode. The exposure category can change retrospectively therefore, changing the most common exposure as reported here.

Common exposures identified in this way are not always indicative of epidemiological linkage between the cases and require further investigation. Some will be coincidental rather than relating to potential/actual transmission events.



# Surveillance in 'educational-age' cohorts



## Methodology and limitations

- Data source: SGSS Pillar 1 (NHS and PHE testing) and Pillar 2 (community testing) – England
- Educational-age cohorts have been calculated using dates of birth that correspond to a particular year group. School year groups run from 1 September to 31 of August of the following calendar year.
- We include all cases regardless of whether or not they attended an educational setting or whether or not the educational setting was open during the reporting period
- Data for the most recent week are provisional and likely to be an underestimate



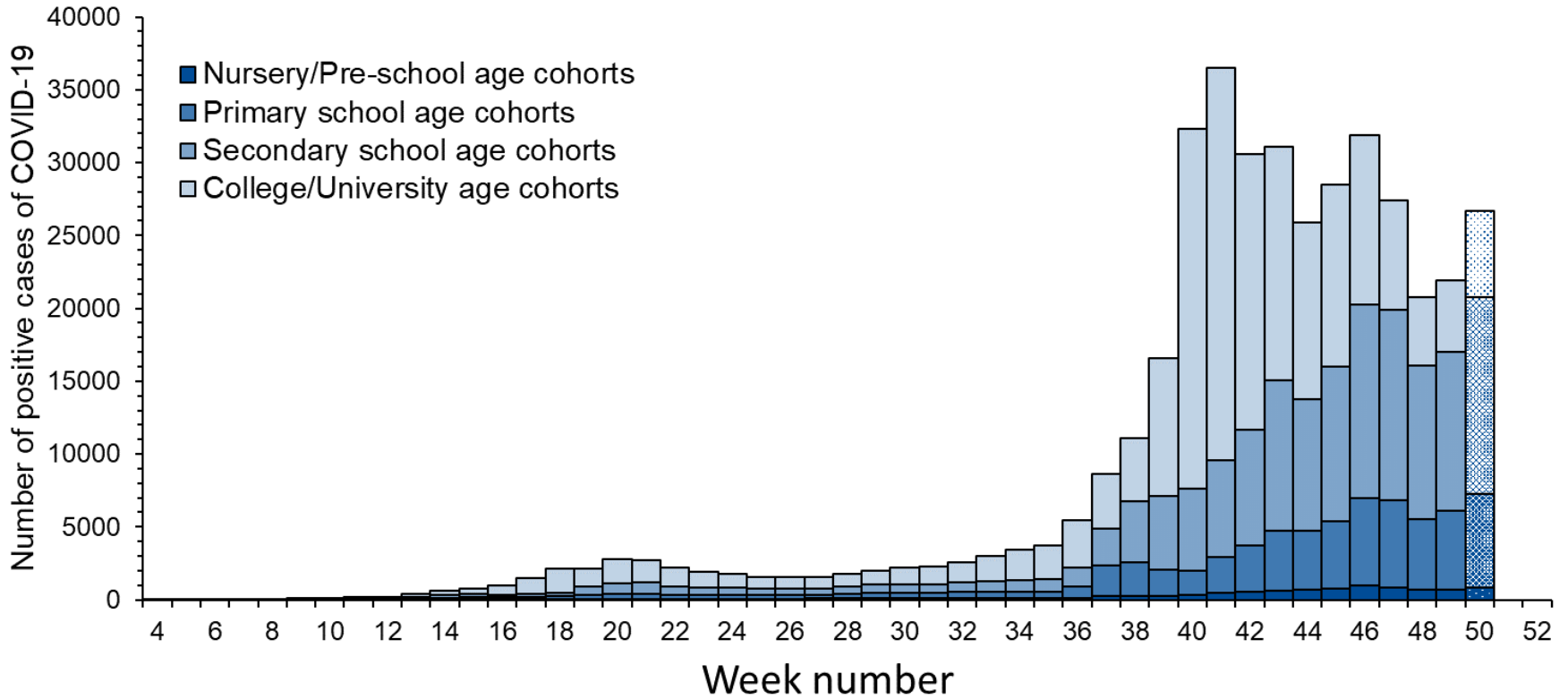
## Methodology and limitations - Birth cohort – Year group

- The table aside represents the birth cohorts for each year group

Birth cohort			Year group
01/09/1998	to	31/08/1999	Uni Year 4
01/09/1999	to	31/08/2000	Uni Year 3
01/09/2000	to	31/08/2001	Uni Year 2
01/09/2001	to	31/08/2002	Uni Year 1
01/09/2002	to	31/08/2003	Year 13
01/09/2003	to	31/08/2004	Year 12
01/09/2004	to	31/08/2005	Year 11
01/09/2005	to	31/08/2006	Year 10
01/09/2006	to	31/08/2007	Year 9
01/09/2007	to	31/08/2008	Year 8
01/09/2008	to	31/08/2009	Year 7
01/09/2009	to	31/08/2010	Year 6
01/09/2010	to	31/08/2011	Year 5
01/09/2011	to	31/08/2012	Year 4
01/09/2012	to	31/08/2013	Year 3
01/09/2013	to	31/08/2014	Year 2
01/09/2014	to	31/08/2015	Year 1
01/09/2015	to	31/08/2016	Reception
01/09/2016	to	31/08/2017	Pre-school
01/09/2017	to	31/08/2018	Nursery



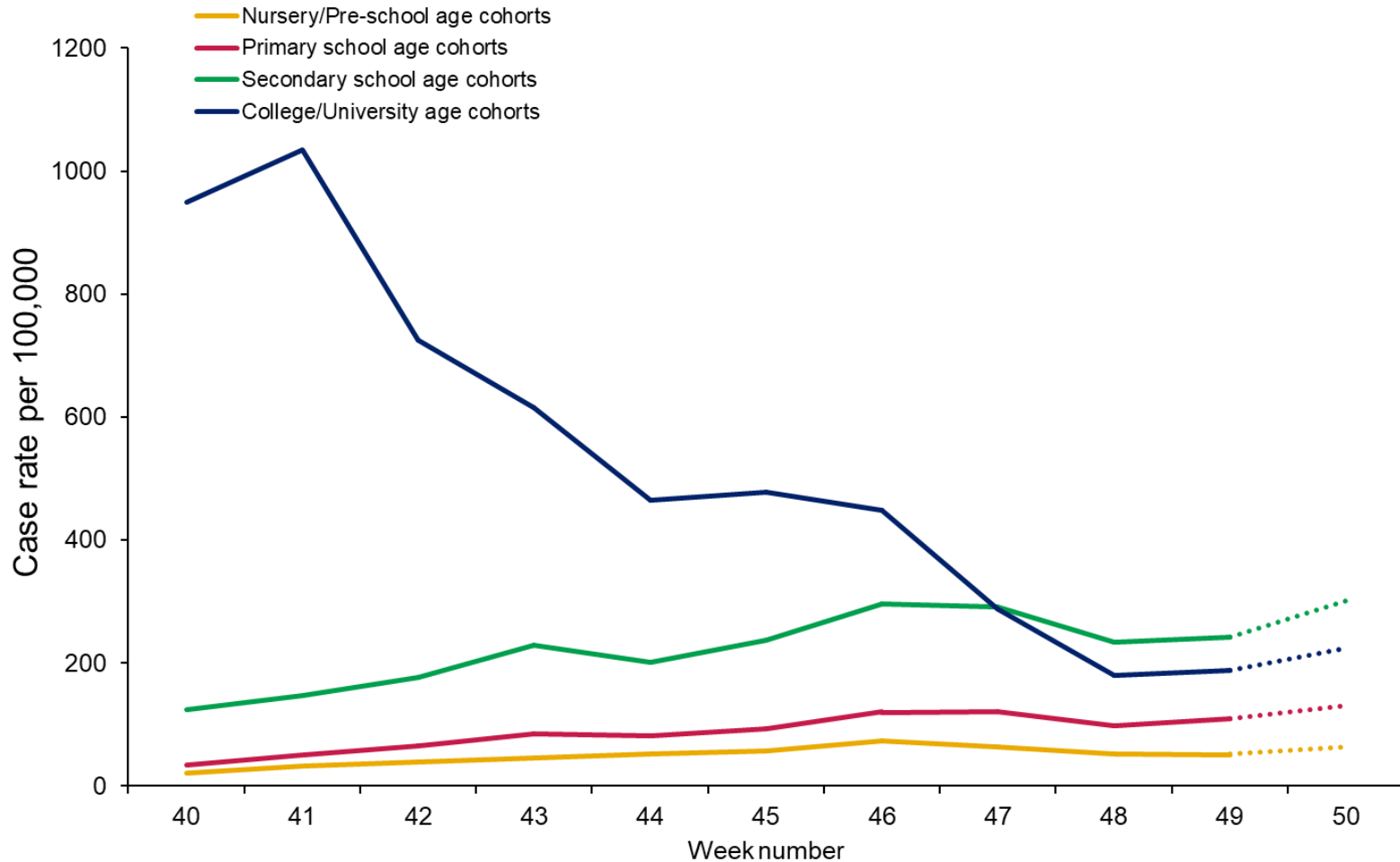
## Weekly number of laboratory confirmed COVID-19 cases in nursery/preschool, primary, secondary and college/university age cohorts





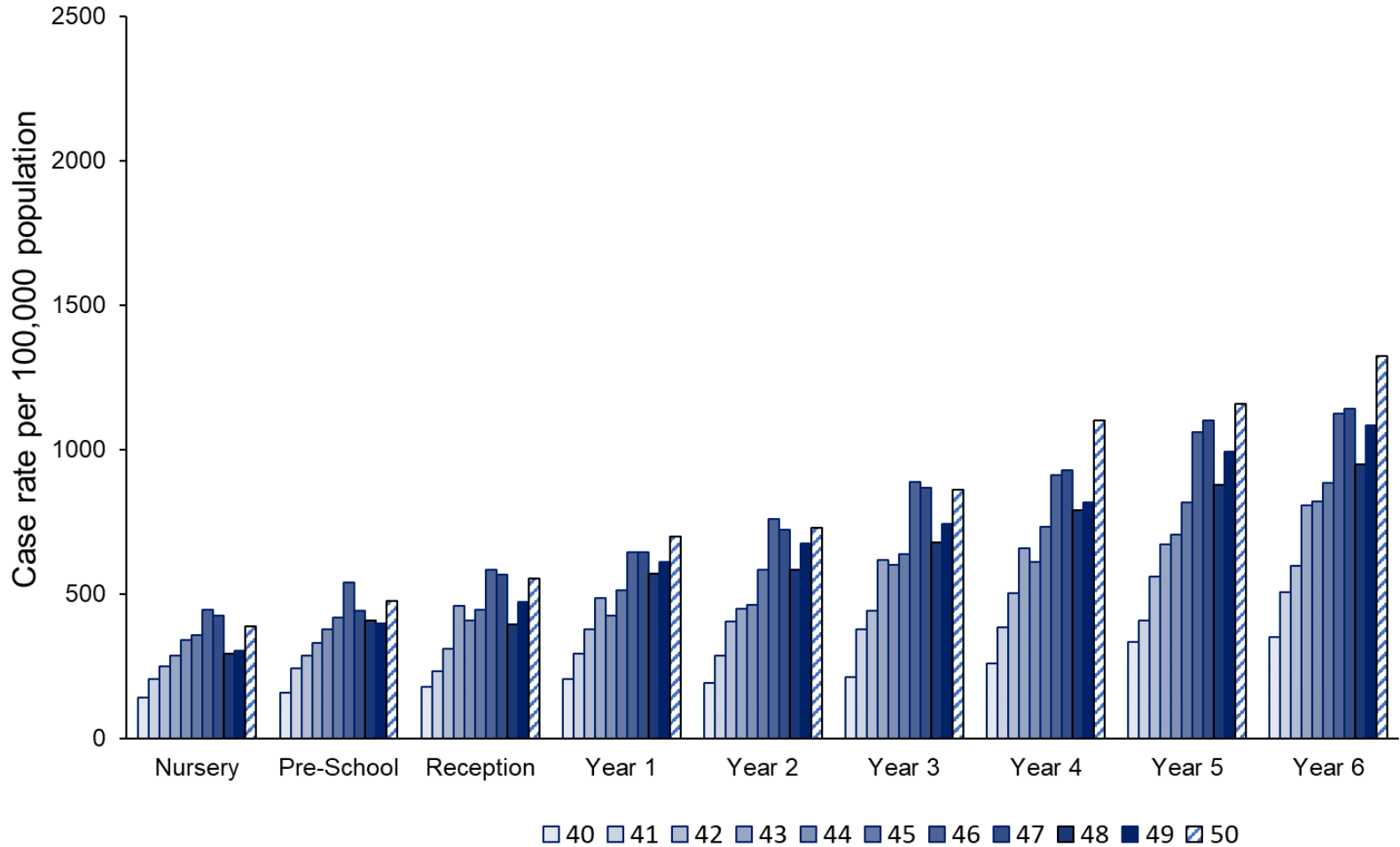


# Weekly incidence of laboratory confirmed COVID-19 cases per 100,000 population in nursery/preschool, primary school, secondary school and college/university age cohorts, week 40 to 50

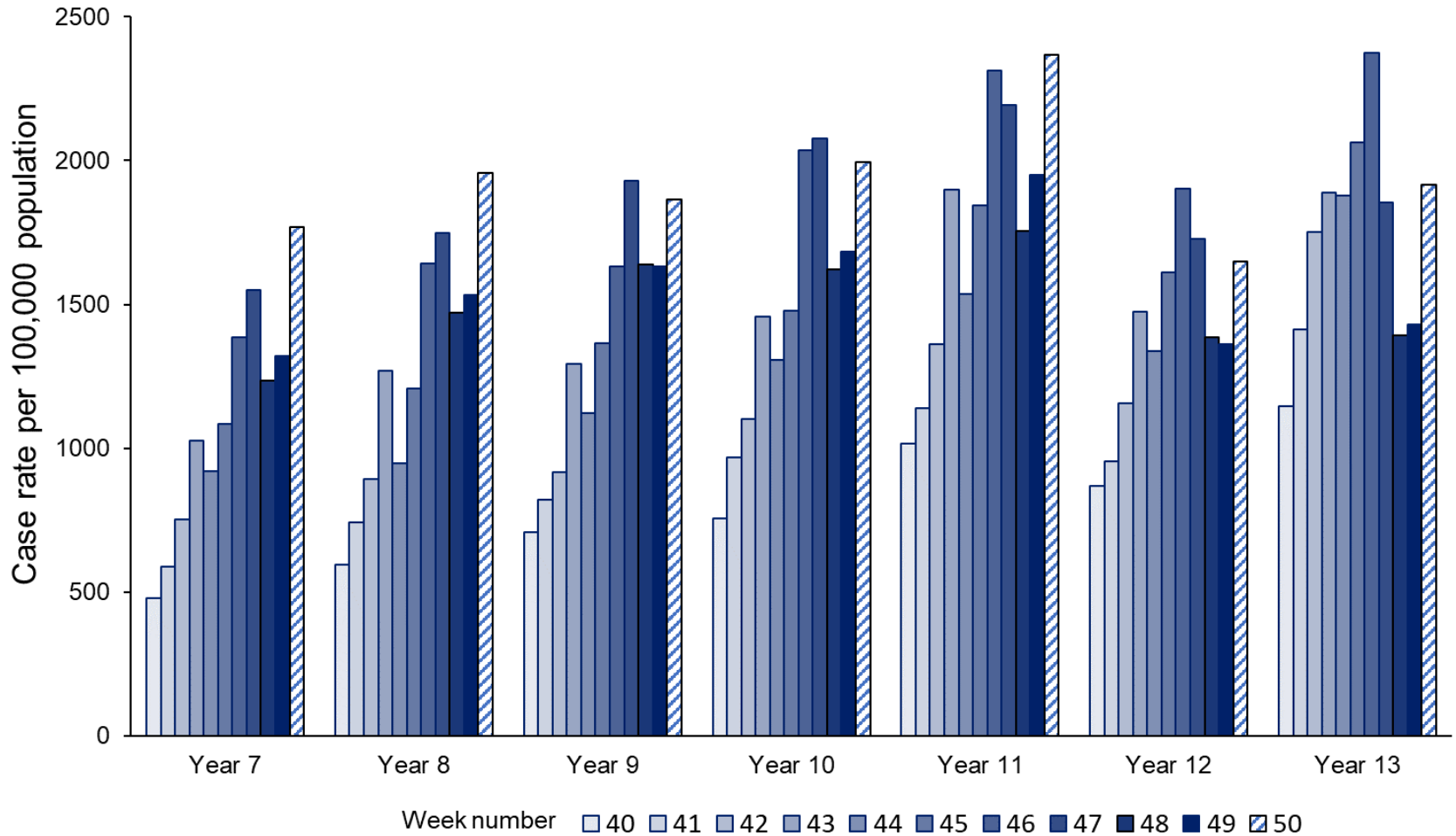




# Weekly incidence of laboratory confirmed COVID-19 cases per 100,000 population in educational age cohorts presented by Year group, from nursery to Year 6, week 40 to 50

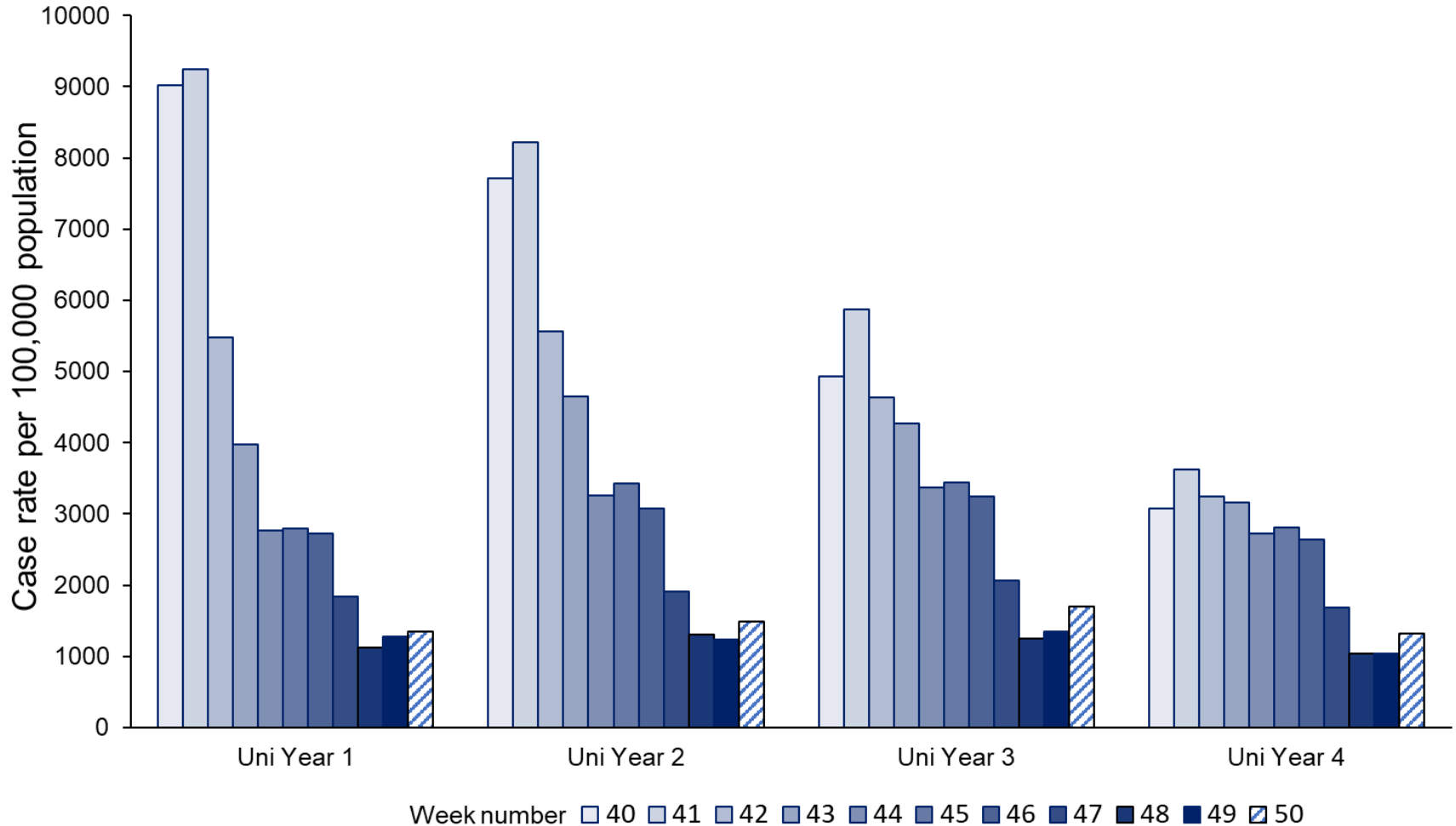


## Weekly incidence of laboratory confirmed COVID-19 cases per 100,000 population in educational age groups presented by secondary school year groups (Year 7 to Year 13), week 40 to 50



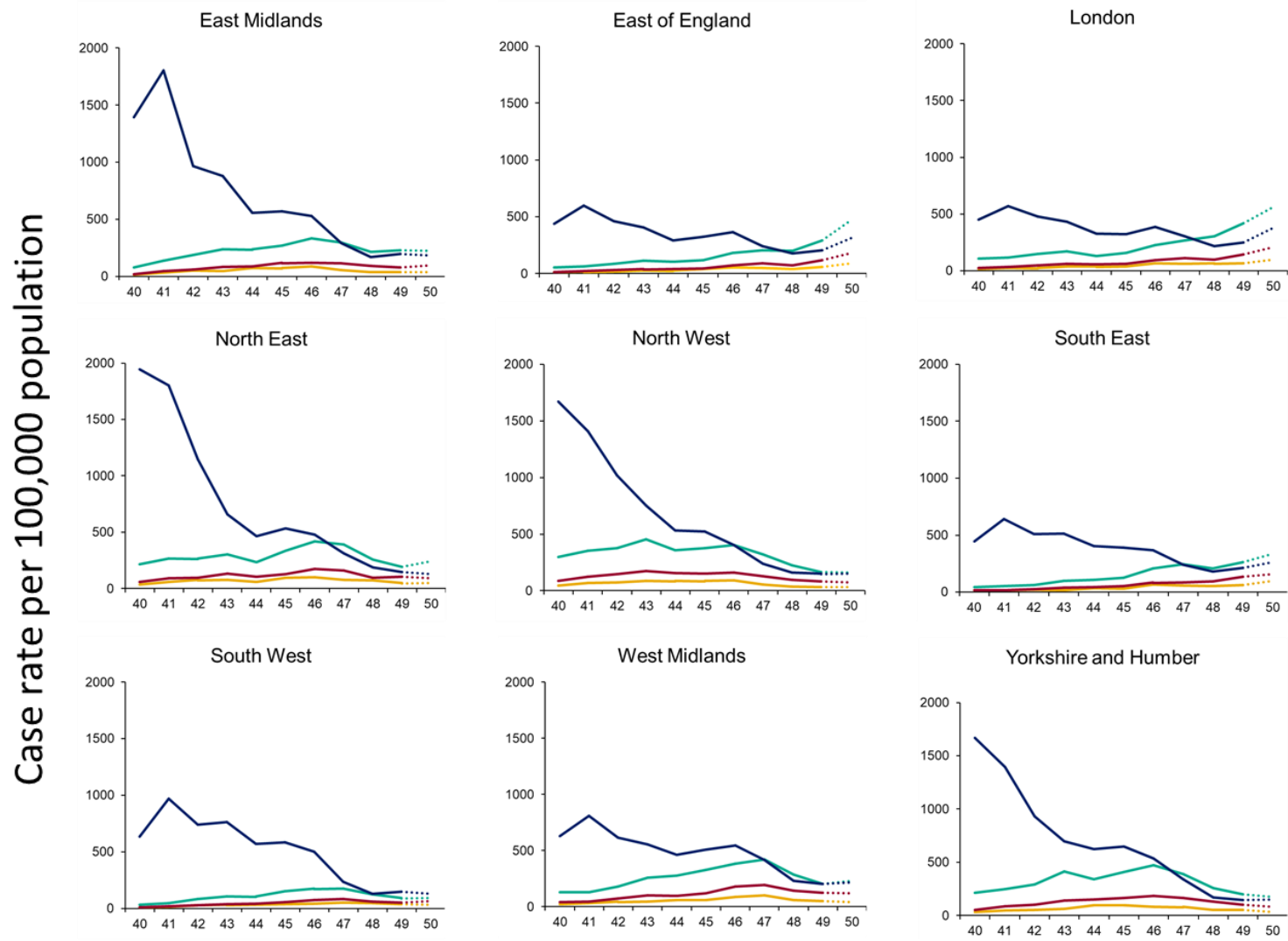


## Weekly incidence of laboratory confirmed COVID-19 cases per 100,000 population in educational age cohorts corresponding to university/college year groups, week 40 to 50





# Weekly incidence of laboratory confirmed COVID-19 cases per 100,000 population by educational age cohorts and PHE region, week 40 to 50

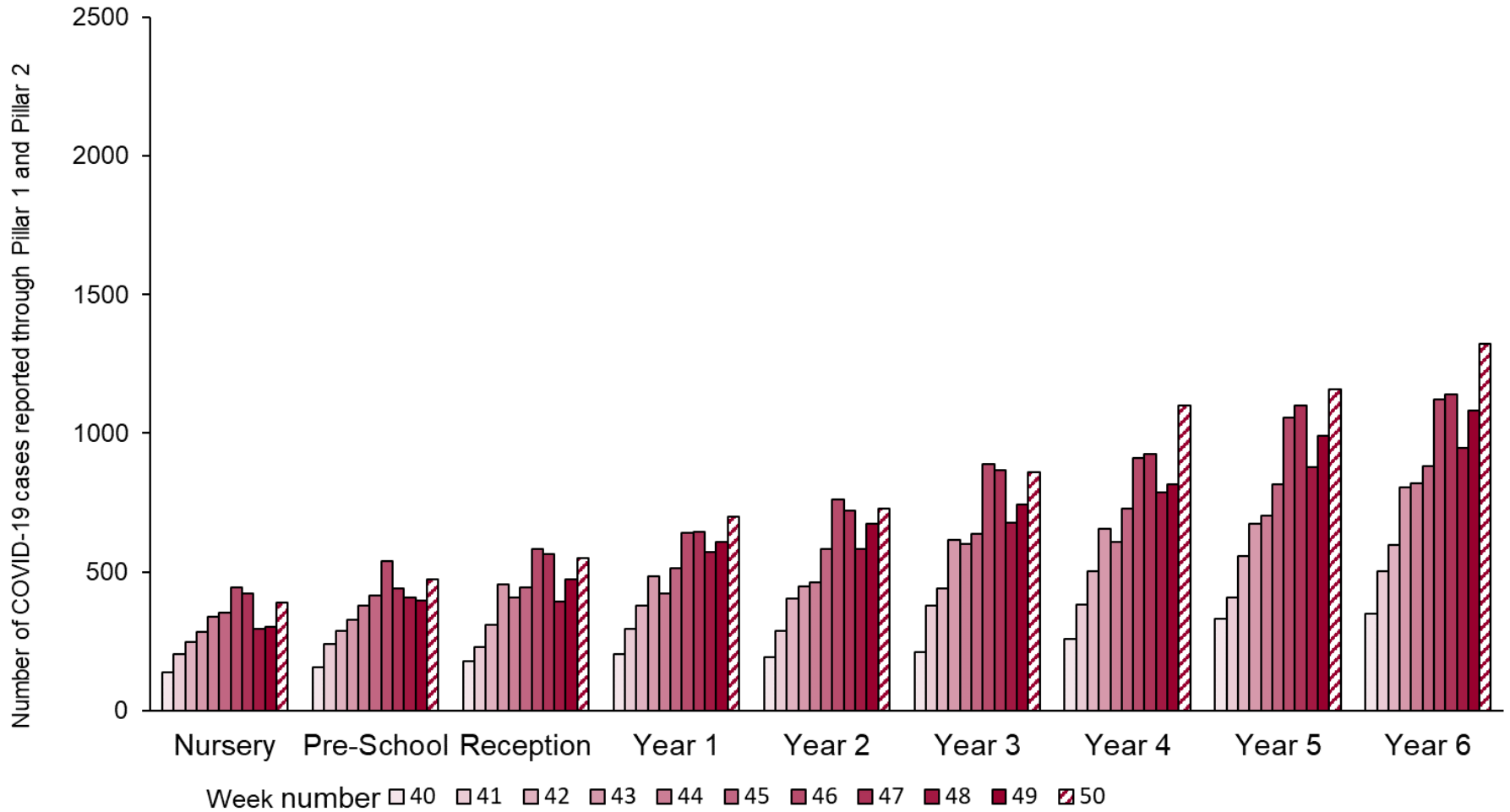


— Nursery/Pre-school age cohorts — Primary school age cohorts — Secondary school age cohorts — College/University age cohorts

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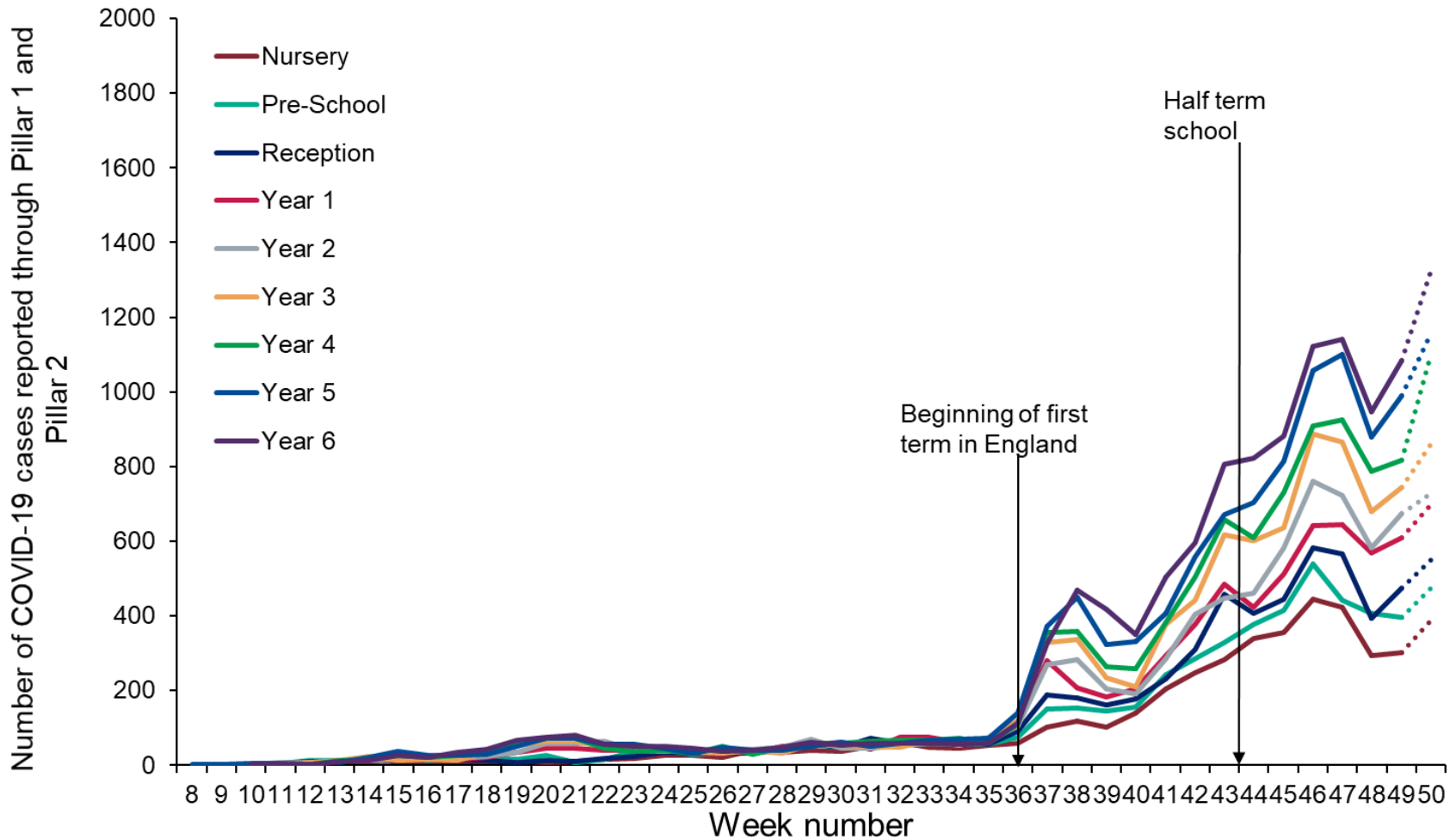


## Weekly number of new laboratory confirmed COVID-19 cases in educational age cohorts presented by Year group, from nursery to Year 6, week 40 to 50





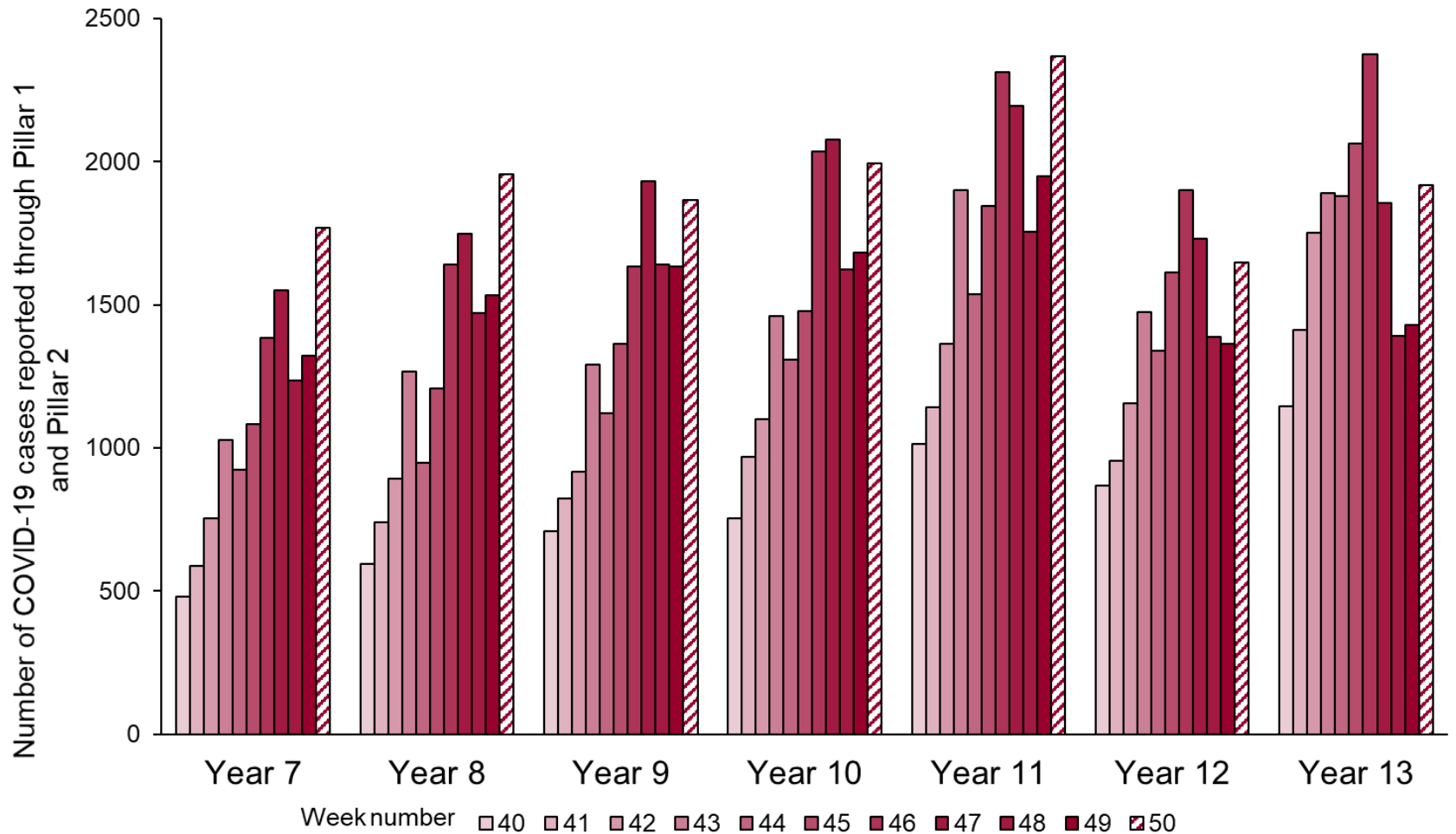
# Weekly number of new laboratory confirmed COVID-19 cases in educational age cohorts presented by Year group, from nursery to Year 6





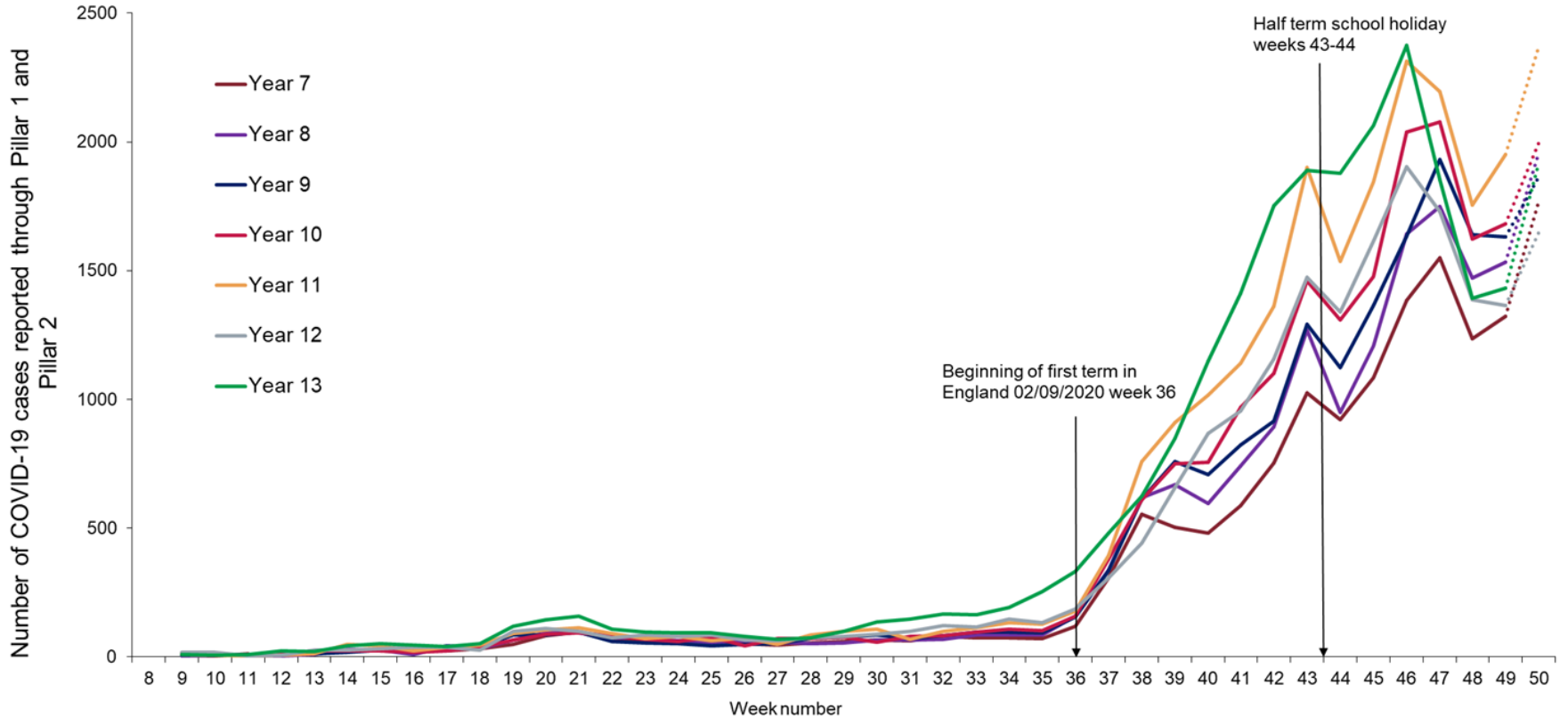


# Weekly number of new laboratory confirmed COVID-19 cases in educational age groups presented by secondary school year groups (Year 7 to Year 13), week 40 to 50



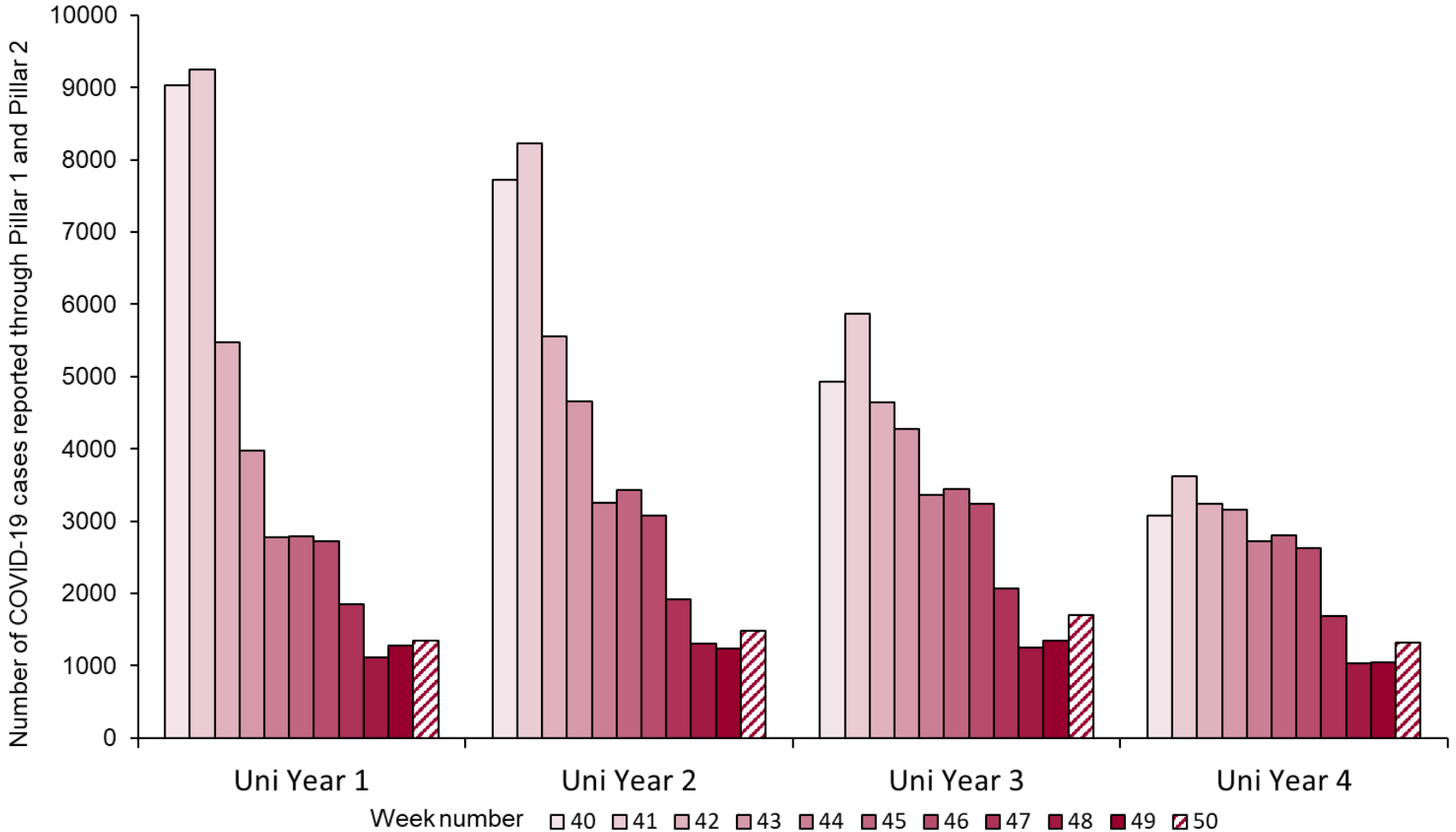


# Weekly number of new laboratory confirmed COVID-19 cases in educational age groups presented by secondary school year groups (Year 7 to Year 13)



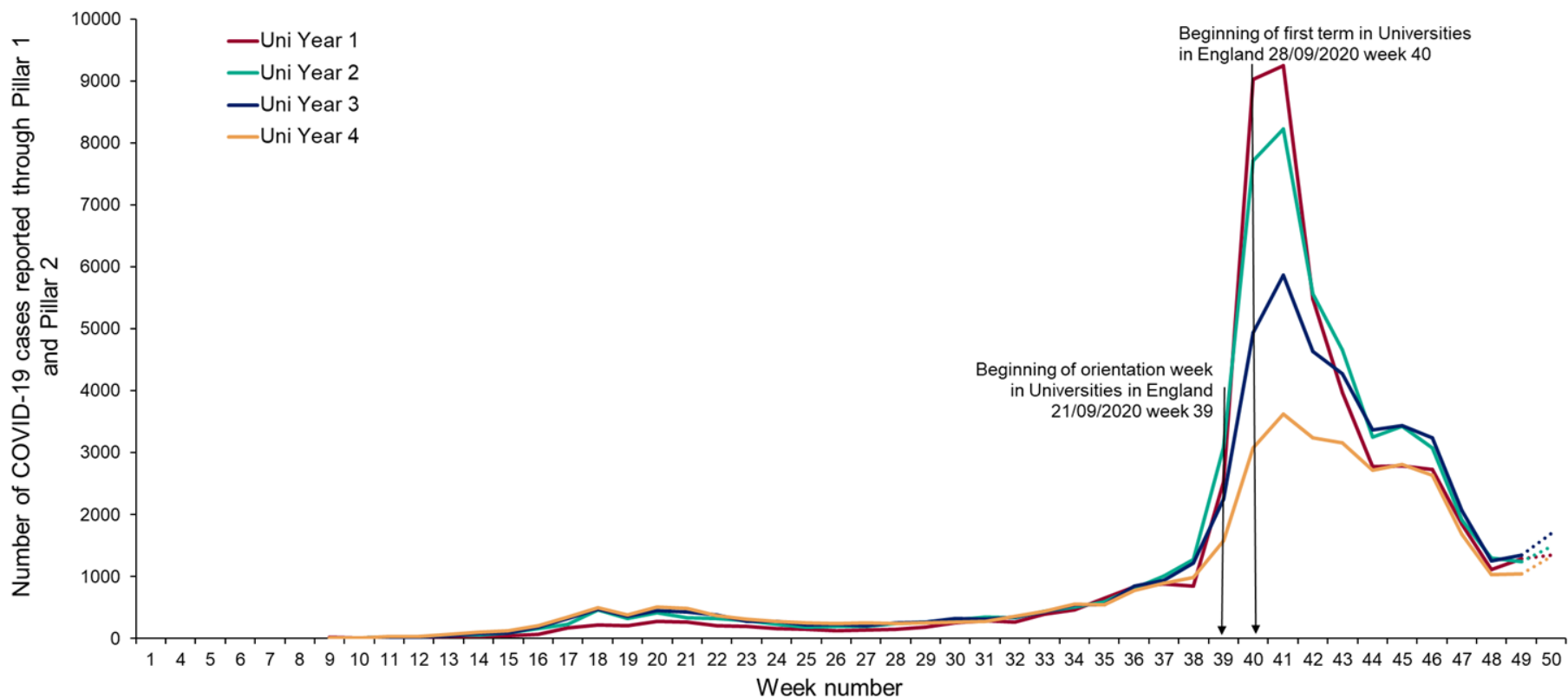


# Weekly number of new laboratory confirmed COVID-19 cases in educational age cohorts corresponding to university/college year groups, week 40 to 50





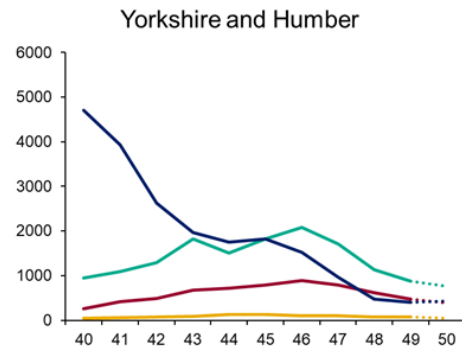
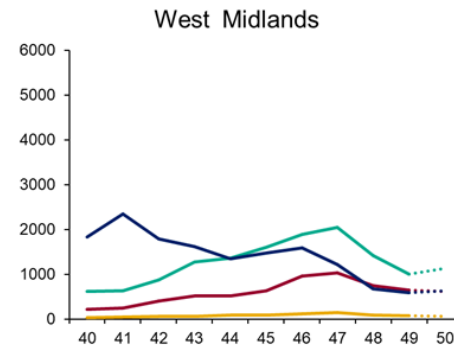
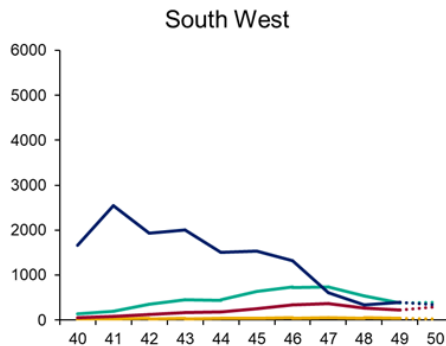
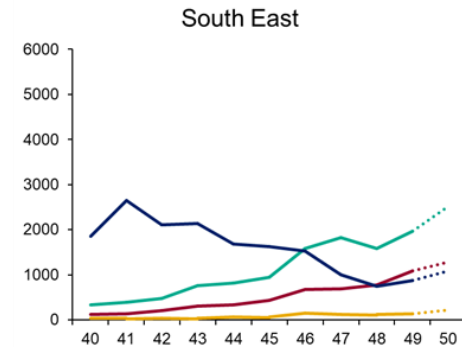
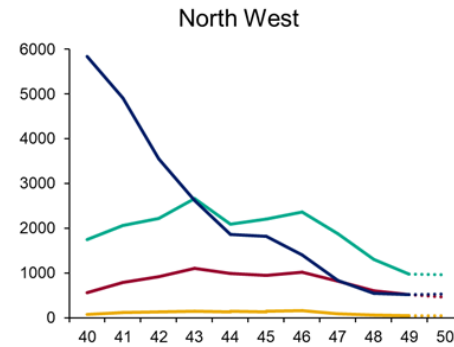
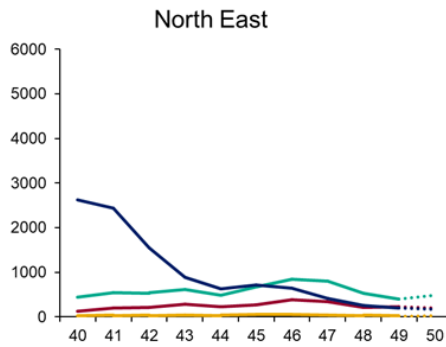
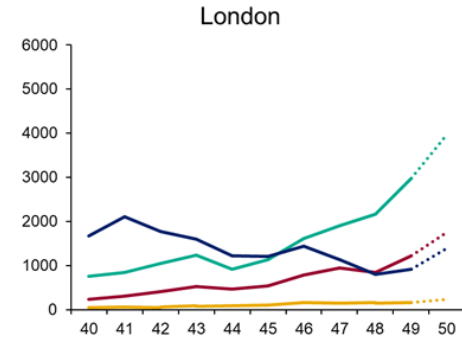
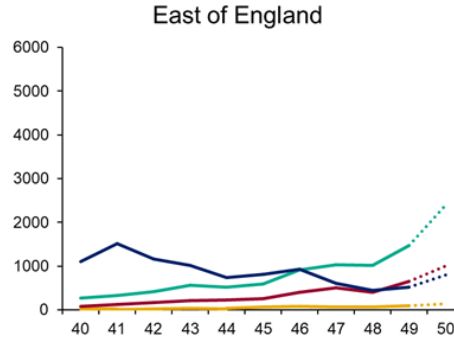
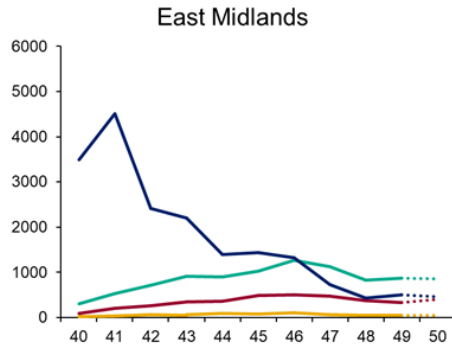
# Weekly number of new laboratory confirmed COVID-19 cases in educational age cohorts corresponding to university/college year groups





# Weekly number of new laboratory confirmed COVID-19 cases by educational age cohorts and PHE region, week 40 to 50

Number of new laboratory confirmed COVID-19 cases

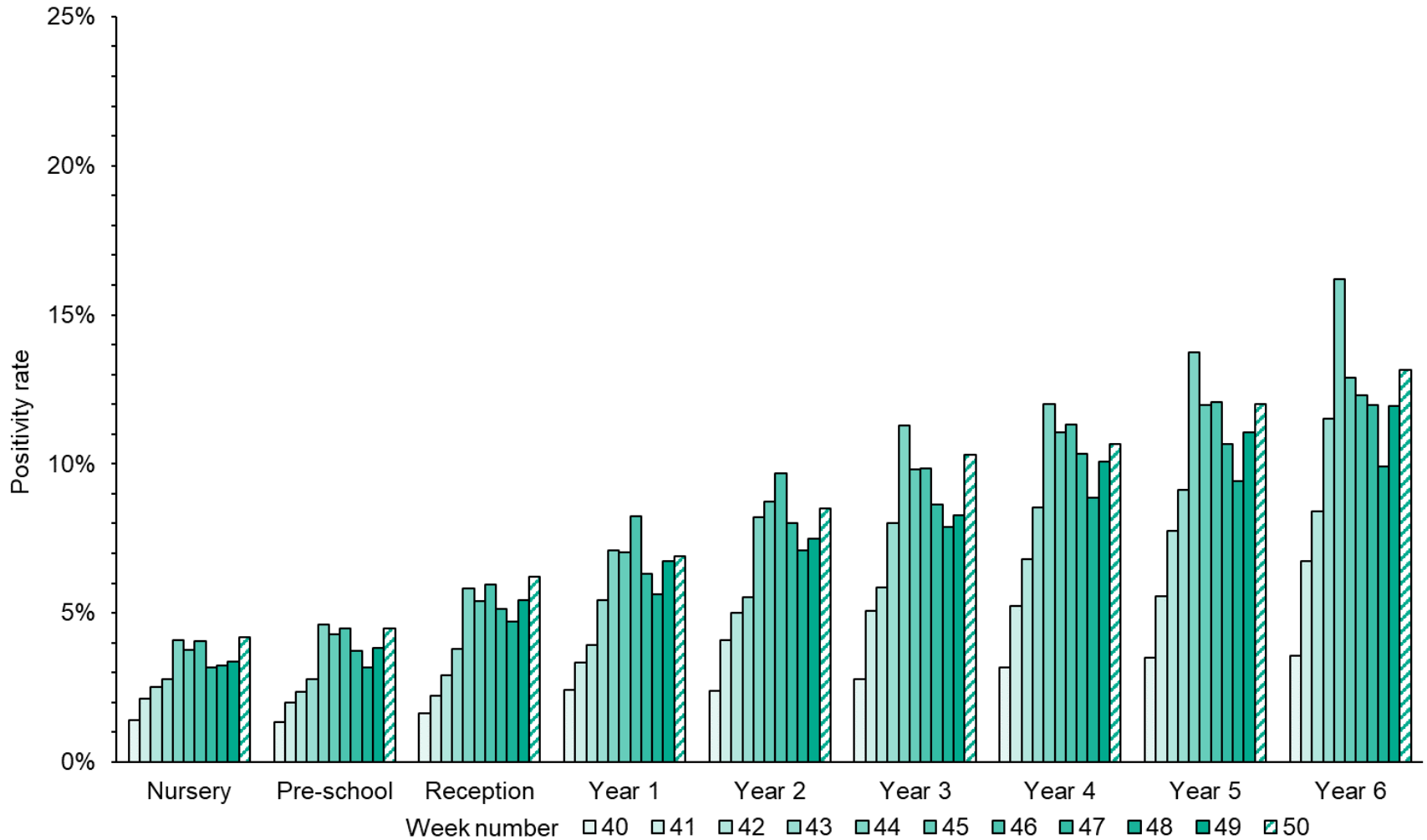


— Nursery/Pre-school age cohorts — Primary school age cohorts — Secondary school age cohorts — College/University age cohorts

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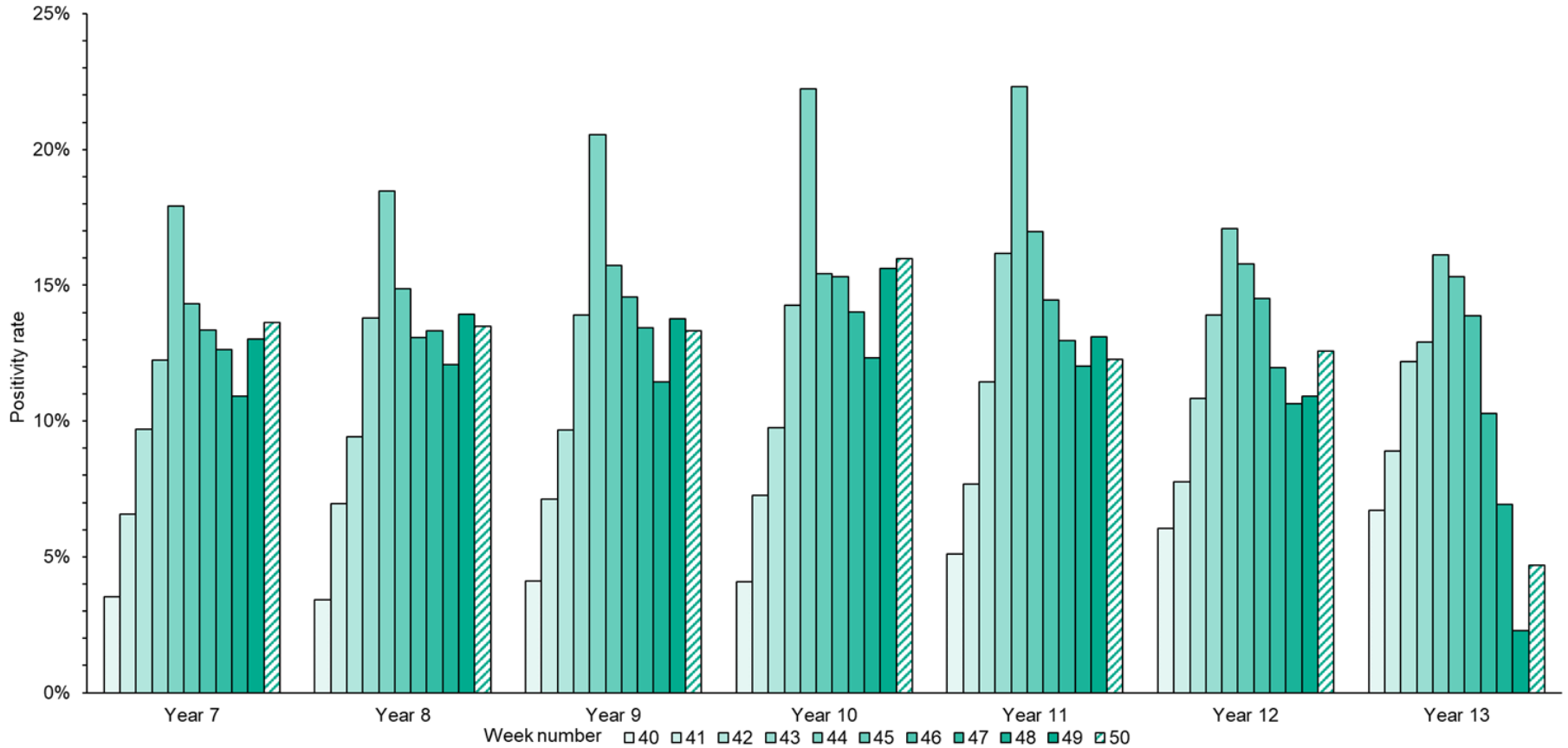


# Weekly positivity rates of confirmed COVID-19 cases in educational age cohorts presented by Year group, from nursery to Year 6, week 40 to 50





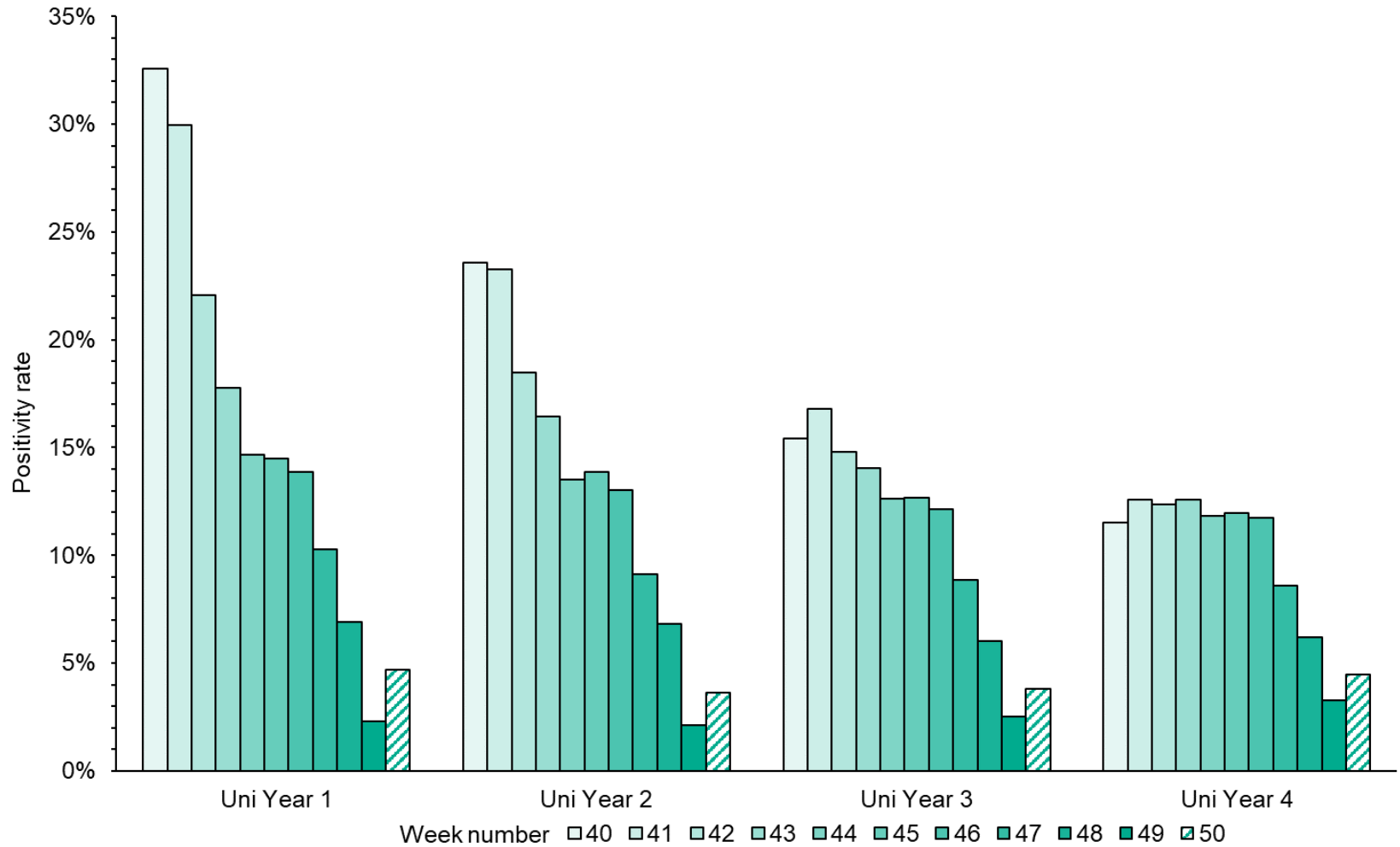
# Weekly positivity rates of confirmed COVID-19 cases in educational age cohorts presented by secondary school year group (Year 7 to Year 13), week 40 to 50





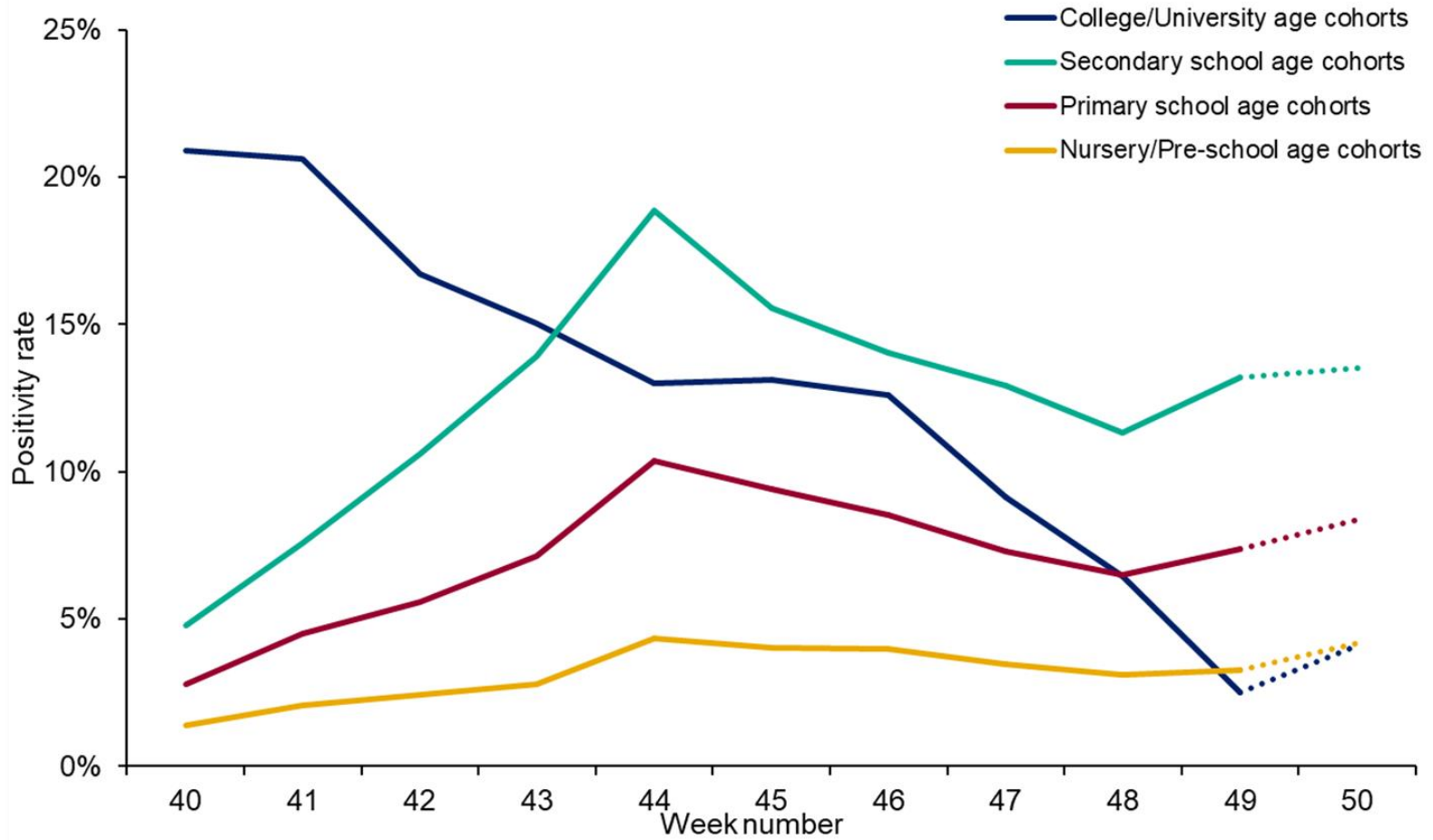


# Weekly positivity rates of confirmed COVID-19 cases in educational age cohorts corresponding to university/college year groups, week 40 to 50



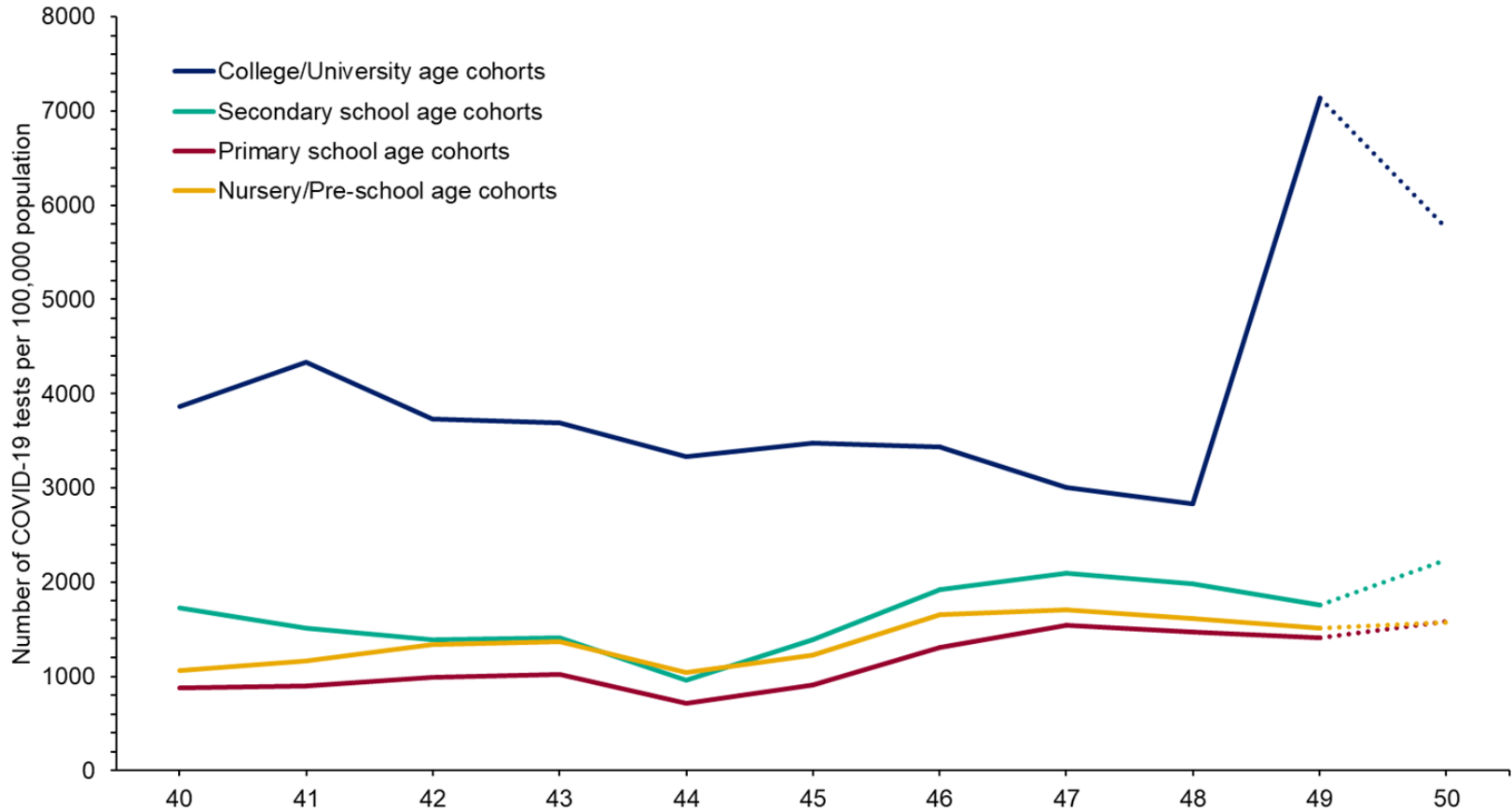


## Weekly positivity rates of confirmed COVID-19 cases, in nursery/preschool, primary school, secondary school and college/University age cohorts, week 40 to 50





## Weekly rate of new COVID-19 tests performed per 100,000 population in nursery/preschool, primary school, secondary school and college/University age cohorts, week 40 to 50



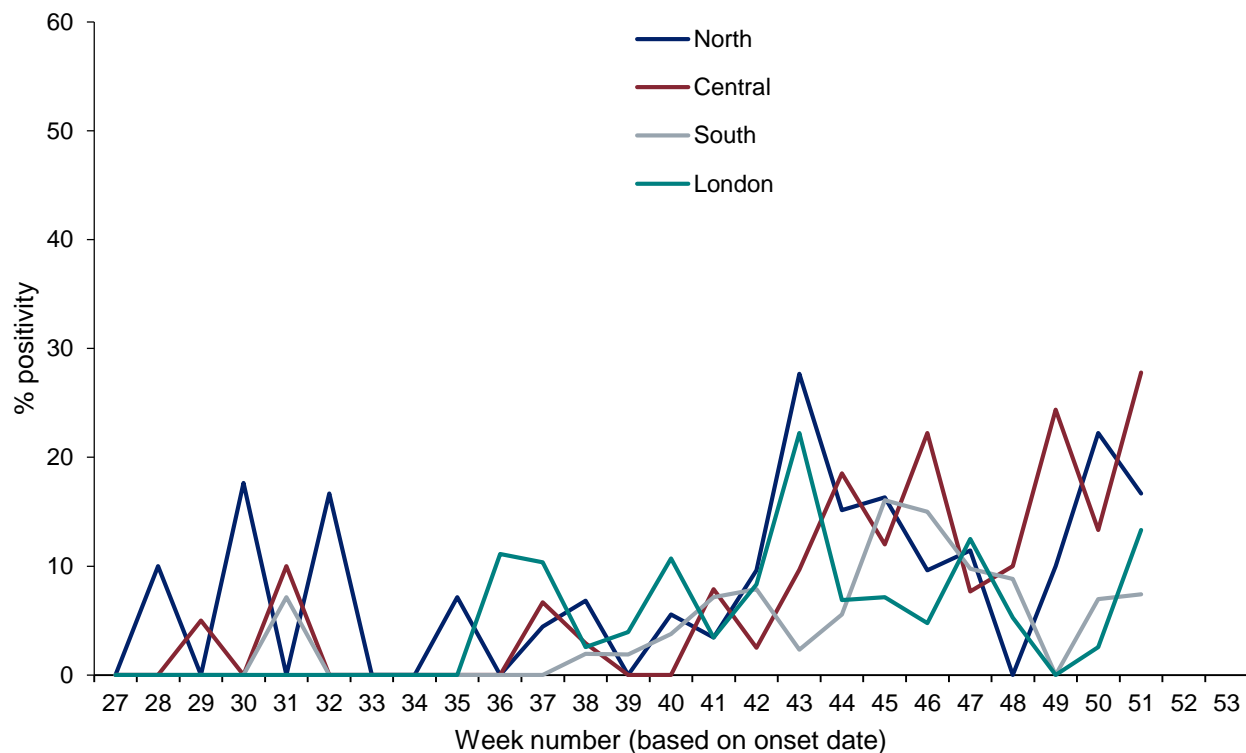
*\* From early December a mass testing programme has been rolled out in Higher Education Institutions using Lateral Flow Devices ahead of students returning home for the Christmas break. This will impact testing trends and positivity data during this period.*



# Primary care surveillance



## Overall SARS-CoV-2 positivity (%) (weekly) by PHE Region, England (RCGP)

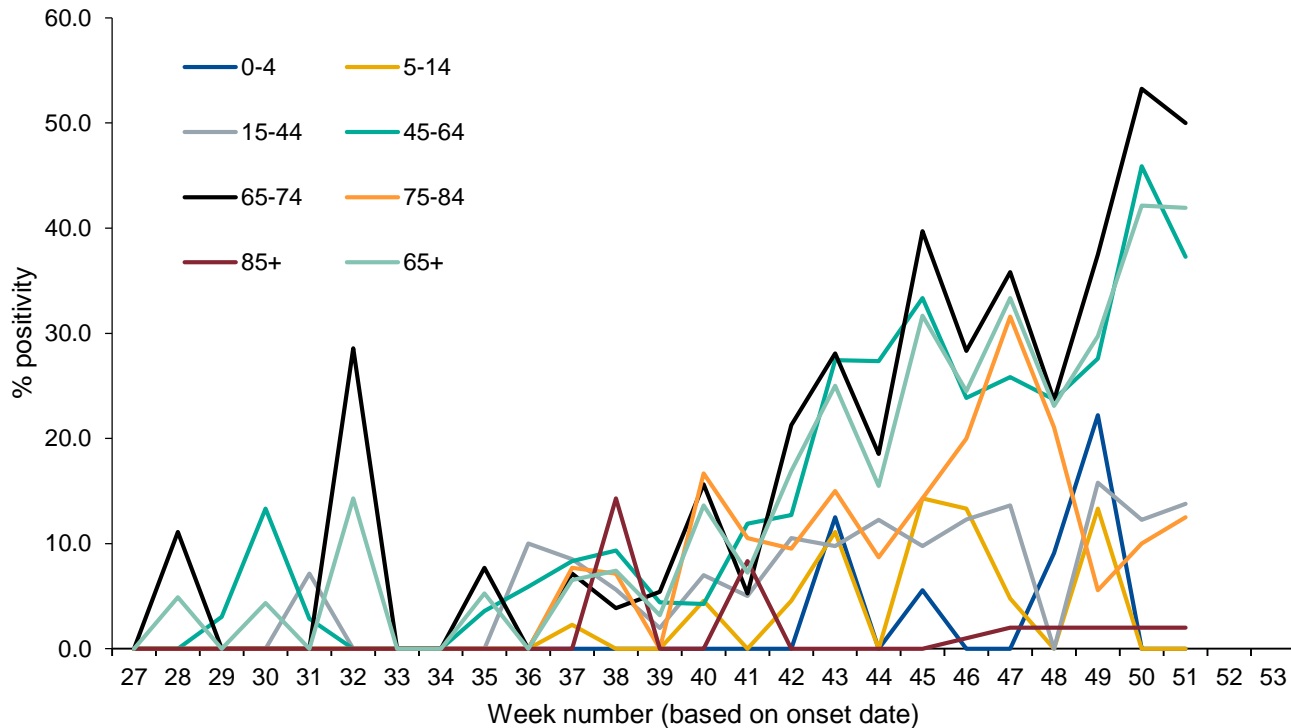


For the most recent week, more samples are expected to be tested therefore the graph should be interpreted with caution.

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



## Overall SARS-CoV-2 positivity (%) (weekly) by age group, England (RCGP)



For the most recent week, more samples are expected to be tested therefore the graph should be interpreted with caution.

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

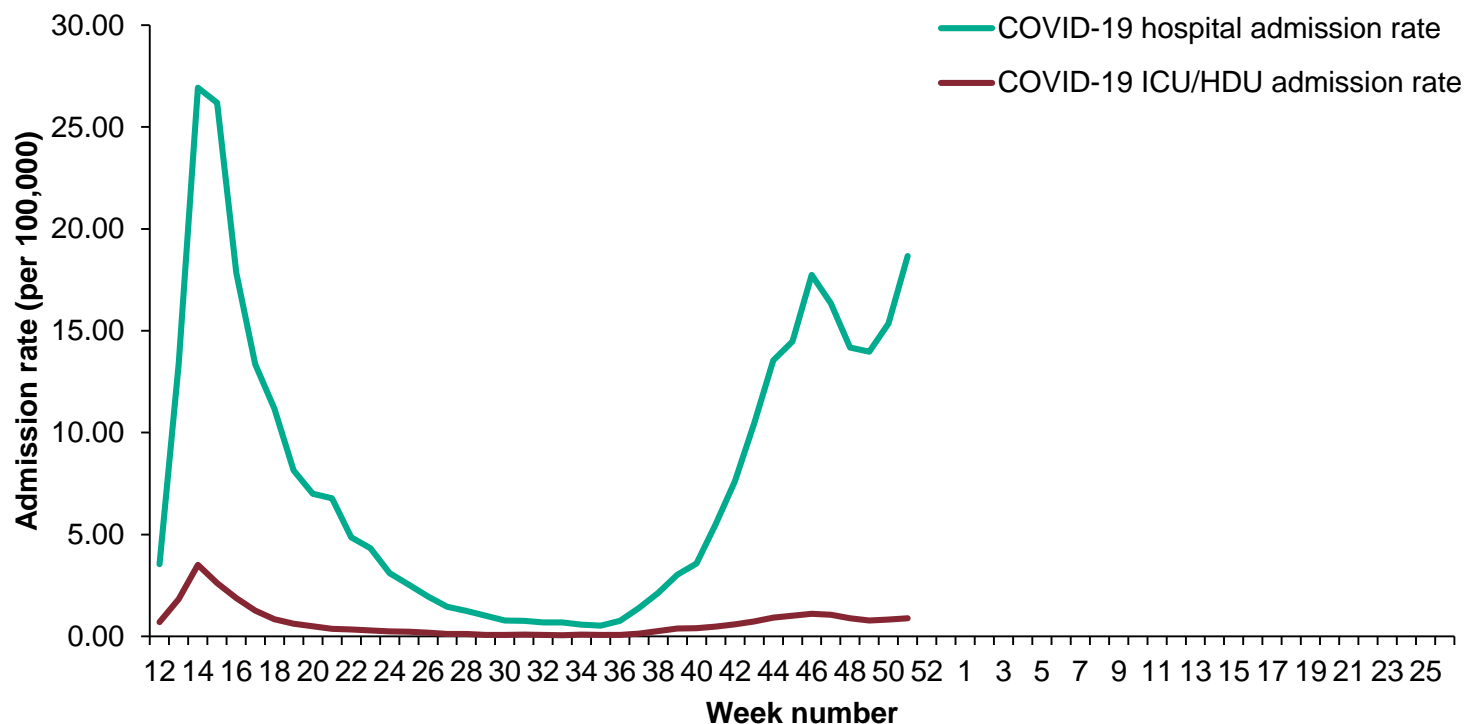


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# Secondary Care surveillance



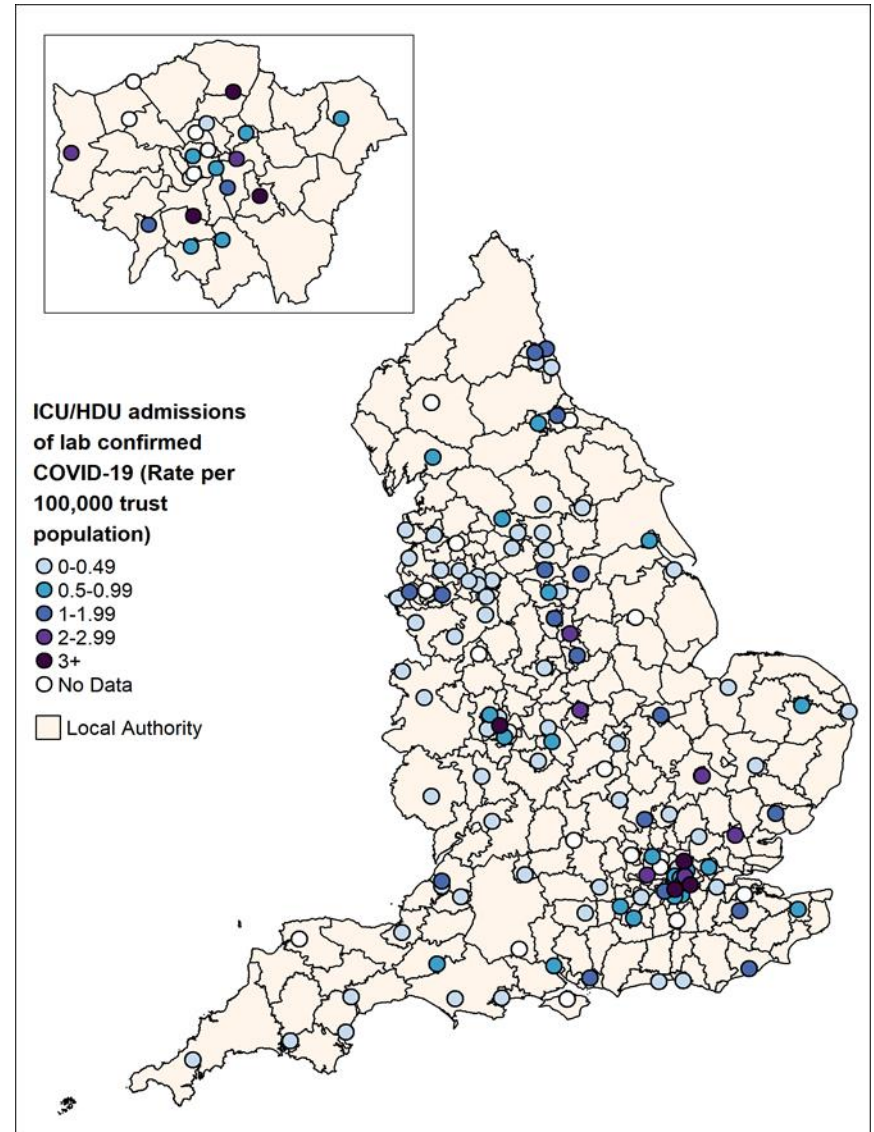
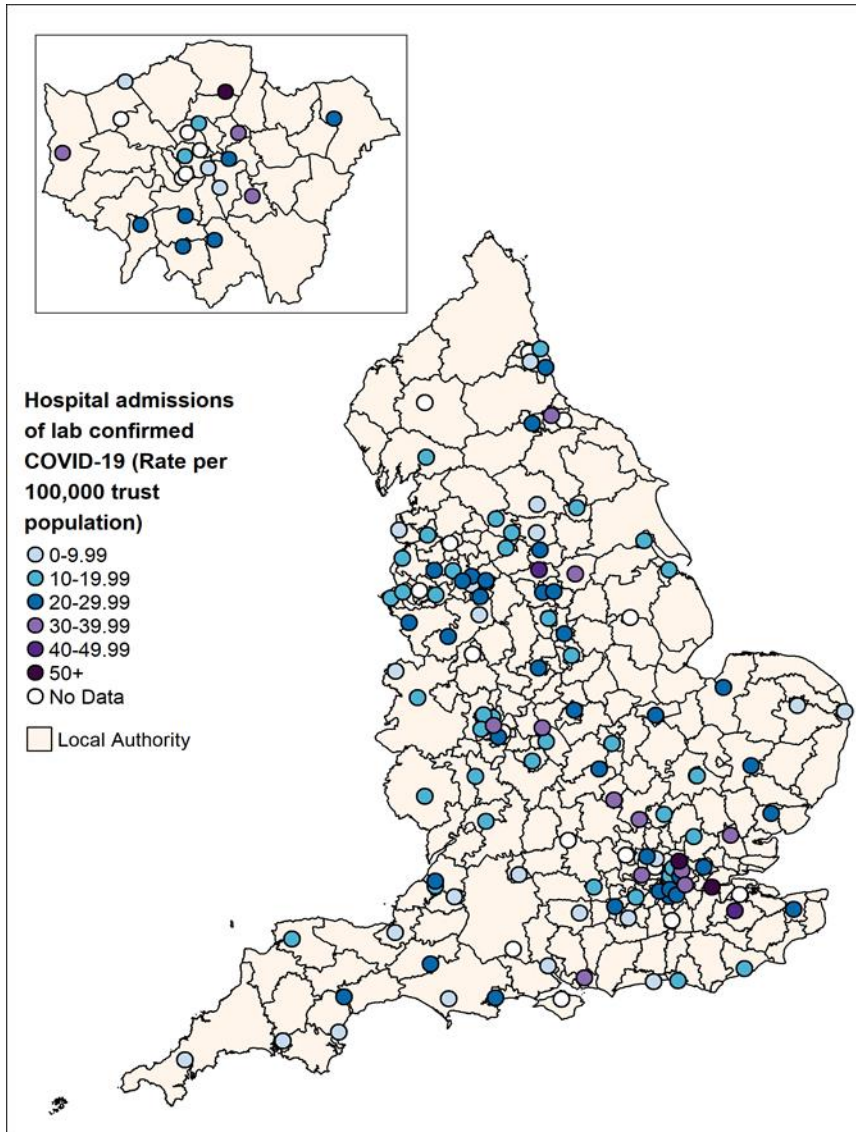
# Weekly overall hospital and ICU/HDU admission rates per 100,000 of new COVID-19 positive cases reported through SARI Watch, England since week 12







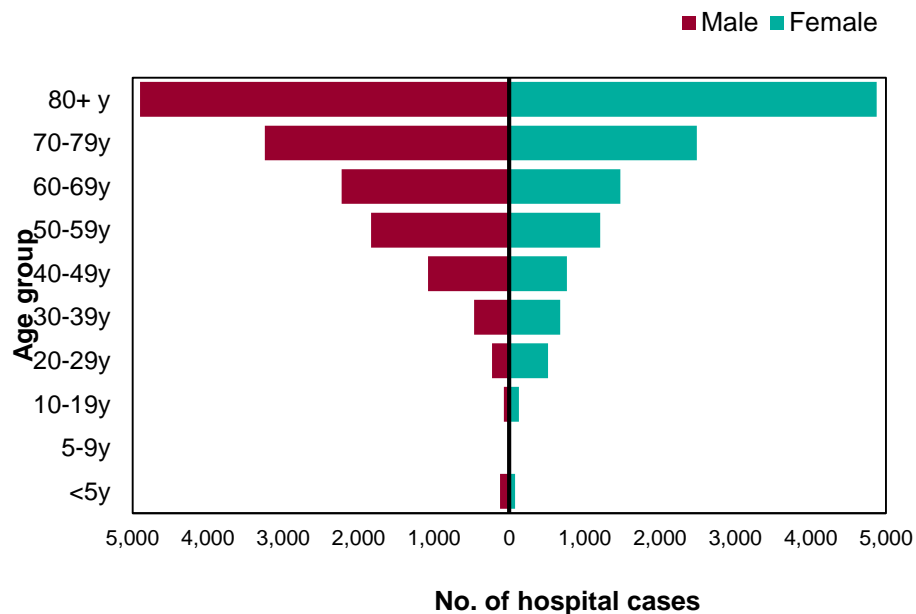
# Weekly admission rates for hospital and ICU/HDU laboratory confirmed COVID-19 cases reported through SARI Watch, week 51



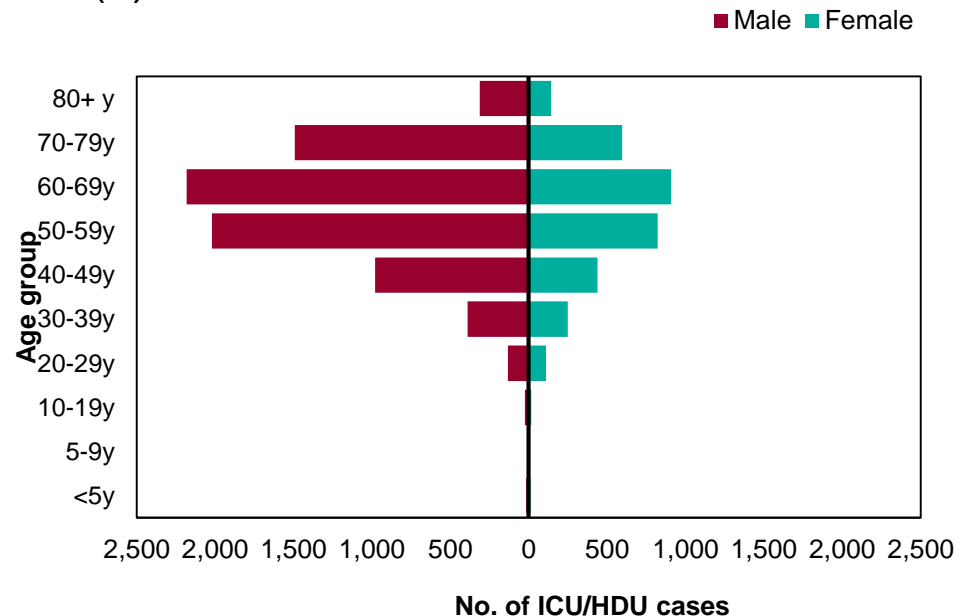


# Age/sex pyramid of new (a) hospital (lower level of care) (n=26,420) and (b) ICU/HDU (n=10,844) COVID-19 cases reported through SARI Watch, England

(a)



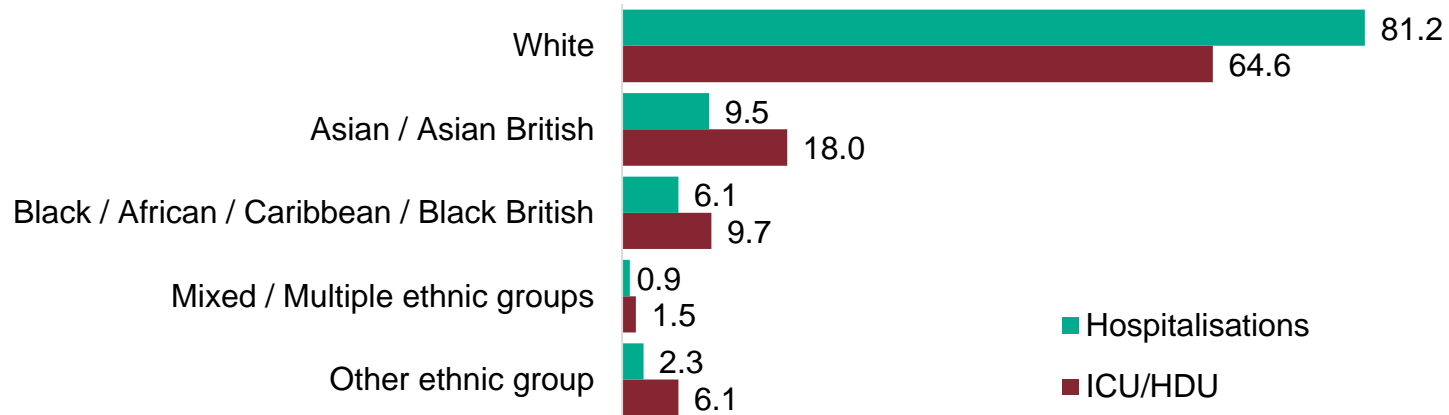
(b)



This figure is based on individual patient level data which are provided to SARI Watch 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.



# Ethnic group of new hospitalisations (lower level of care) (n=25,497) and ICU/HDU (n=10,066) COVID-19 cases reported through SARI Watch, England

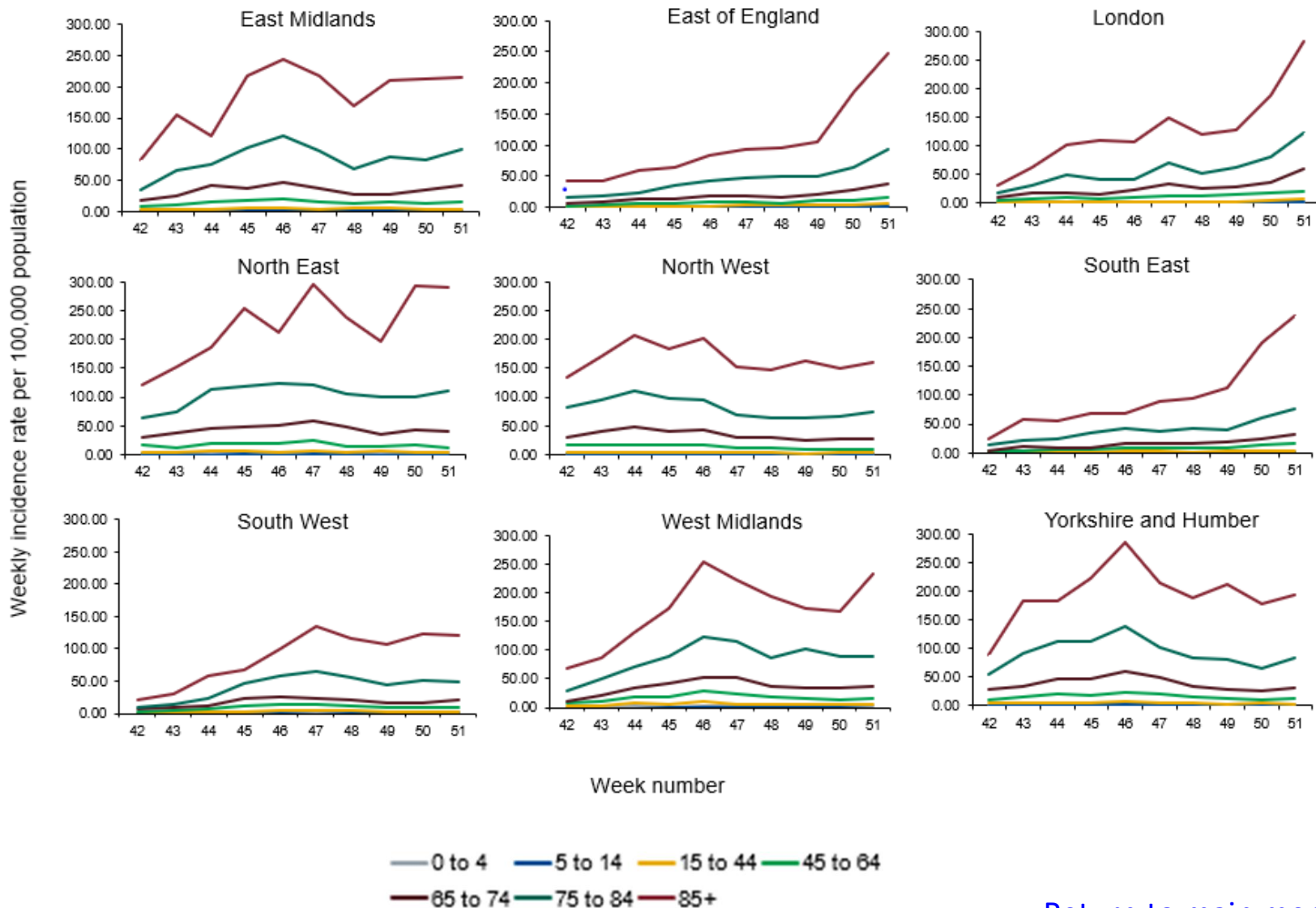


proportion of admitted cases (%)

This figure is based on individual patient level data which are provided to SARI Watch 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.



# Weekly COVID-19 hospitalisation rate per 100,000 trust catchment population by age group and region, weeks 42 to 51



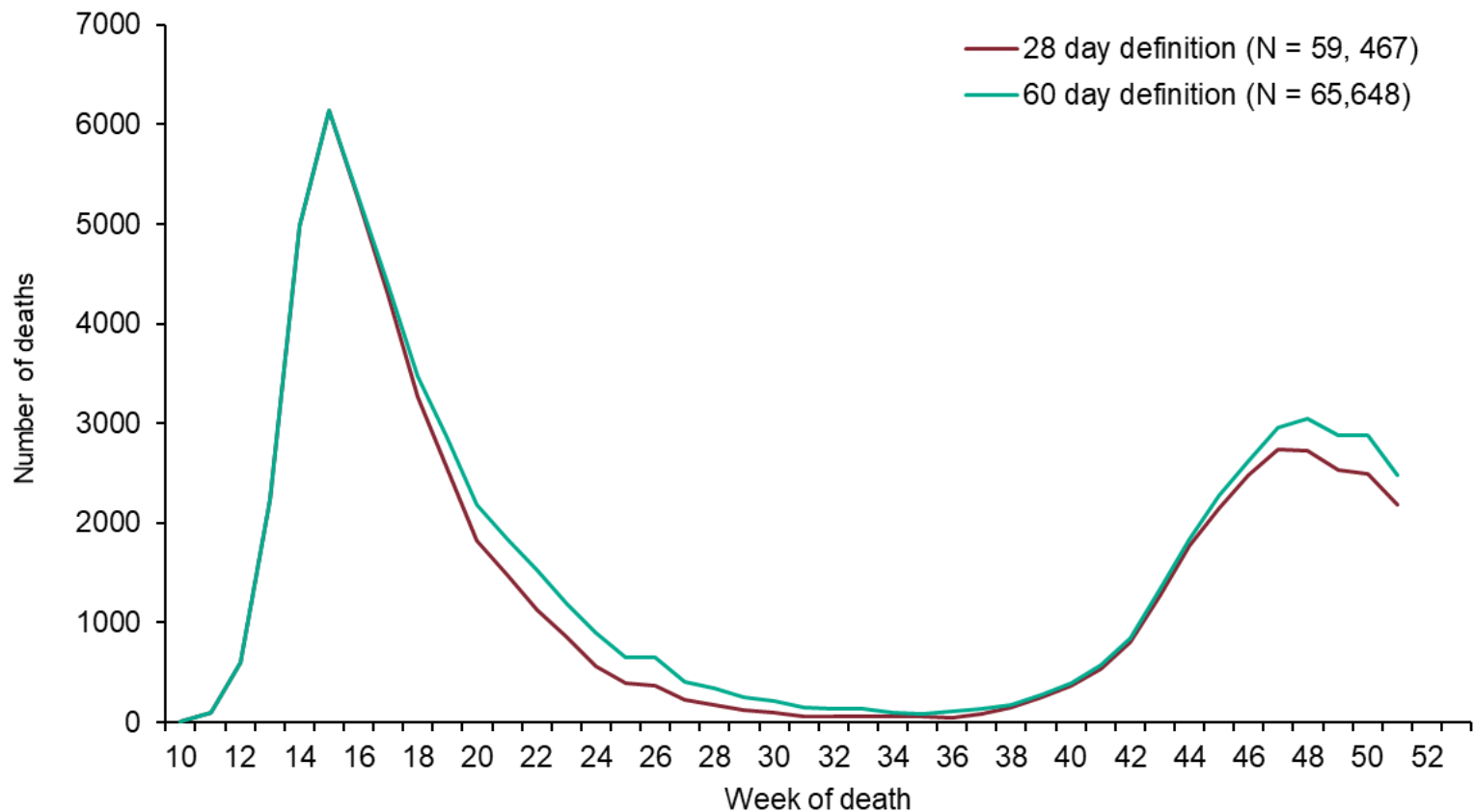


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England

# Mortality surveillance



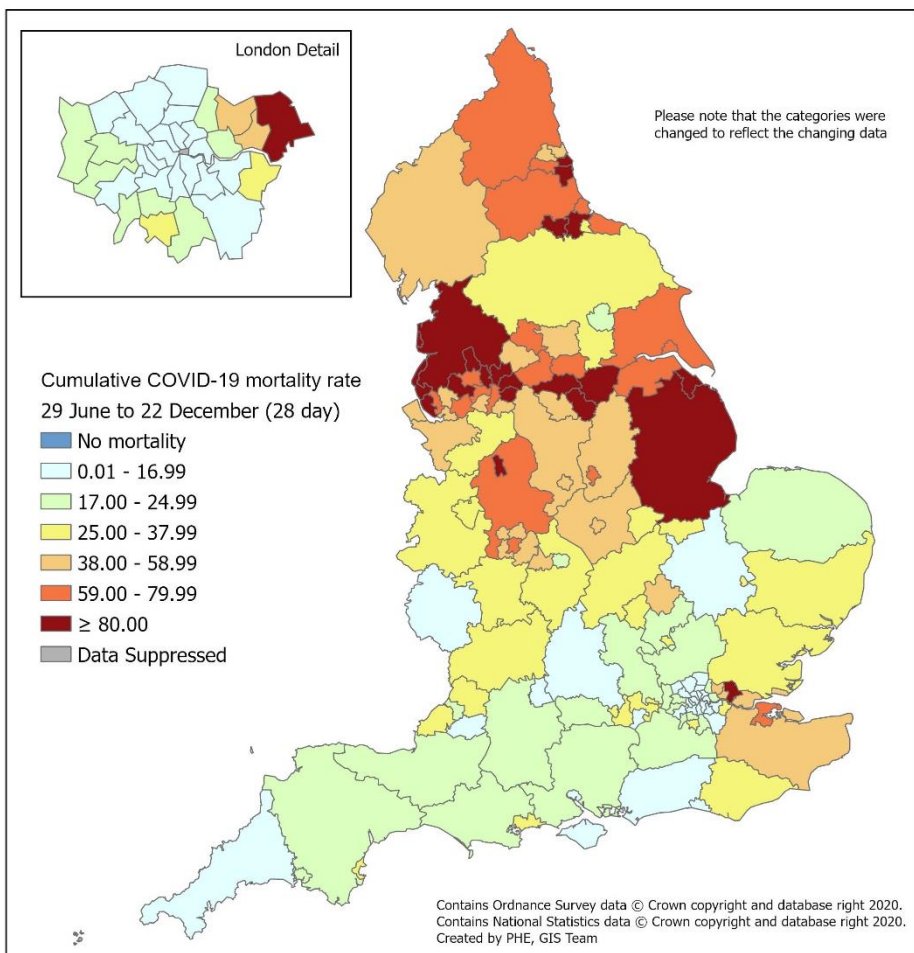
# Number of deaths since week 10 by week of death and time since laboratory confirmation of COVID-19, England



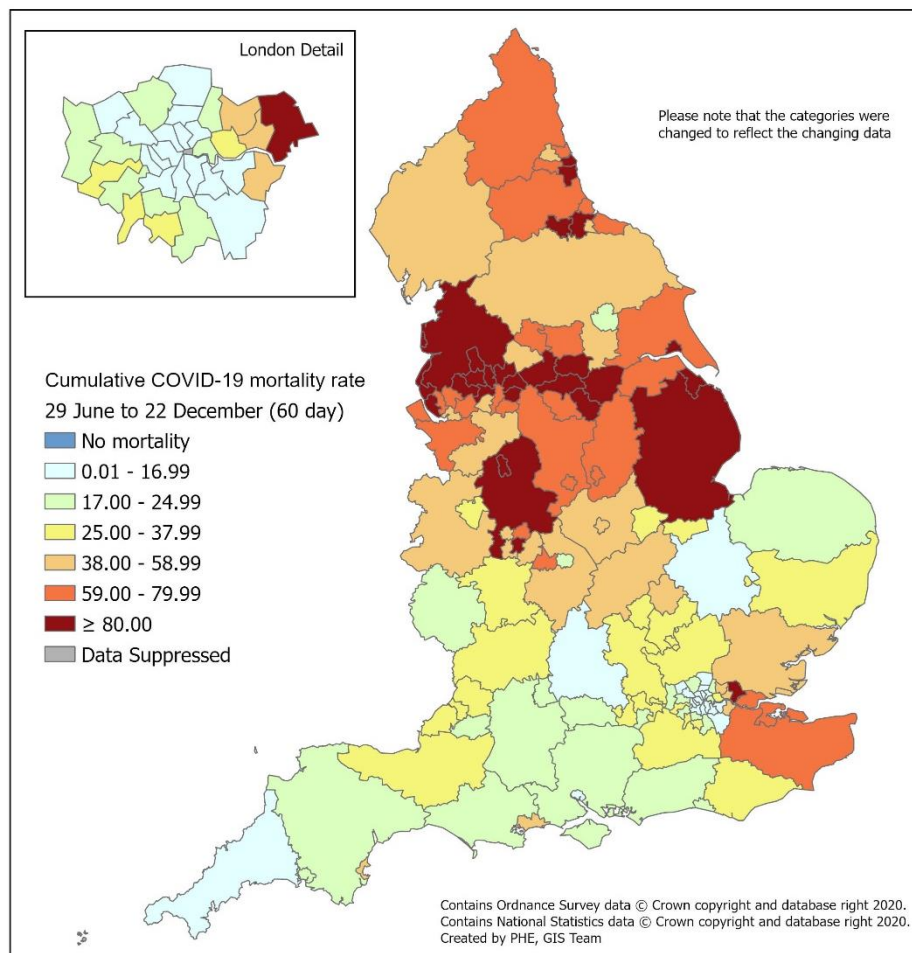


# Cumulative mortality rate of COVID-19 cases per 100,000 population tested under Pillar 1 and 2 since week 27 by (a) 28 day definition and (b) 60 day definition

(a)



(b)



*From this report onwards, rates have been calculated using mid-2019 ONS population estimates*





# Co/secondary infections with COVID-19





# Co/secondary infections with COVID-19 (data updated monthly)

- Caveat - a limited number of COVID-19 cases are tested for other respiratory viruses therefore data could represent an underestimate of co/secondary infection cases. Due to the low number of cases data is representative of January to October 2020 unless stated.
- Co/secondary infections refers to when a patient has an infection with more than one pathogen at the same time (co-infection), or acquires another infection after contracting the first infection (secondary infection).
- Numbers of co/secondary infection remain low across PHE surveillance systems except for patients requiring Extra Corporeal Membrane Oxygenation (ECMO) which are those with the most severe respiratory signs. Analysis of ECMO cases indicates co/secondary infections account for just less than a third of respiratory infection cases.
- Preliminary data analysis from the first pandemic wave (health care associated infections, *Streptococcus pneumoniae*, influenza, ECMO data) to end of September 2020 indicates that patients requiring ECMO and those not requiring ECMO with co/secondary infection have increased risk of mortality in comparison to patients without co/secondary infection.



## Co/secondary infections among Extra Corporeal Membrane Oxygenation (ECMO) patients (patients with most severe clinical respiratory signs)

Based on data including the first wave from week 10 (week beginning 2 March 2020) to week 46 (week ending 15 November) 2020 is included:

- 32% (117/364) of patients admitted to ECMO with a laboratory confirmed respiratory infection had a co/secondary infection reported.
- 43% (16/37) of patients with influenza had co/secondary infections
- 32% (86/268) of patients with COVID-19 had co/secondary infections}. Of these 86 cases, the most frequent co/secondary infections in COVID-19 cases were Gram-negative bacilli and fungi, accounting for 64% (55/86).



## Co/secondary infections among patients with Healthcare Associated Infections: Blood stream and respiratory infections (bacterial and fungal, COVID-19 cases up to September 3rd)

- 1.6% of COVID-19 patients had a bacterial/fungal infection at or within 28 days following their COVID-19 diagnosis: 0.5% respiratory infection; 0.9% bloodstream infection.
- Most (71%) of co/secondary infections were categorised as secondary infections.
- Most frequent species identified from respiratory co/secondary infection isolates were *Staphylococcus aureus*, followed by *Pseudomonas aeruginosa*, *Klebsiella pneumoniae* and *Haemophilus influenzae*.
- Most frequent species identified from blood co/secondary infection isolates were *Escherichia coli*, followed by *Enterococcus faecium*, *Klebsiella pneumoniae* and *Staphylococcus aureus*.
- Co-infections occur more frequently in the elderly (>70 years; 66% of co-infections)
- Secondary infections occurred more frequently in the 50 to 70years age groups (46% secondary infections)



# Co/secondary infection with respiratory viruses, vaccine preventable bacteria and fungi

Bacteria/Fungi	Cases per Month										Total Cases
	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sept	Oct	24.10.2020
Influenza A	0	0	28	5	0	0	0	0	0		33
Influenza B	0	0	10	3	0	0	0	0	0		13
Influenza A & B	0	0	1	0	0	0	0	0	0		1
Flu (not typed)	0	0	1	0	0	0	0	0	0		1
Parainfluenza (any subtype)	0	3	10	1	0	0	0	0	0		14
Seasonal coronavirus	0	6	41	56	8	0	0	0	0		111
Enterovirus	0	2	1	2	0	0	0	0	0		5
Adenovirus	0	2	11	0	0	0	0	0	0		13
Rhinovirus	0	21	68	7	1	0	0	1	0		98
RSV	0	5	17	1	0	0	0	0	0		23
Human metapneumovirus	0	3	34	8	0	0	1	0	0		55
Aspergillus fumigatus ISOLATES (azole resistant)	0	0	5 (1)	30 (3)	10	1	0	1	2	1	50 (4)
Probable/Proven cases of CAPA	0	0	1	8	3	3	0	0	1	0	16
Bordetella pertussis	0	0	0	0	0	0	0	0	0	-	0
Candidasp.:	0	0	1	21	6	1	0	0	0	0	29
CandidemiaOsteomyelitis/discitis:	0	0	0	0	0	0	0	0	1	0	1
Haemophilus influenzae	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC	TBC
Neisseria meningitidis	0	0	1	1	0	0	0	0	0	-	2
Streptococcus pneumoniae	0	0	16	23	1	0	TBC	TBC	TBC	TBC	TBC

The UK moved out of influenza season in early 2020/21 when COVID-19 increase began in March 2020

Data contains results from two systems (Respiratory DataMart system and SGSS).

Mycology data contains results from Mycology reference laboratory data, Candidaemia is representative of deep infection.

Legionella, mycoplasma and gastrointestinal infection data not included