



# COVID Symptom Study Report

**15 January 2021**

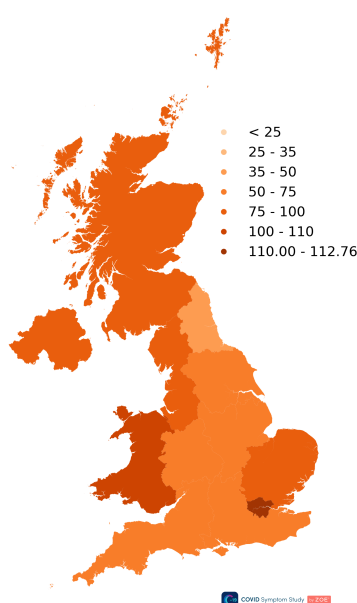
Analysis by ZOE and King's College London

[covid.joinzoe.com](https://covid.joinzoe.com)

## Daily new cases of COVID - Incidence (based on 2 weeks up to 11 January 2021)

We estimate there have been 49815 daily new cases of COVID in the UK on average over the two weeks up to 11 January 2021. This is based on the number of newly symptomatic app users per day, and the proportion of these who give positive swab tests.

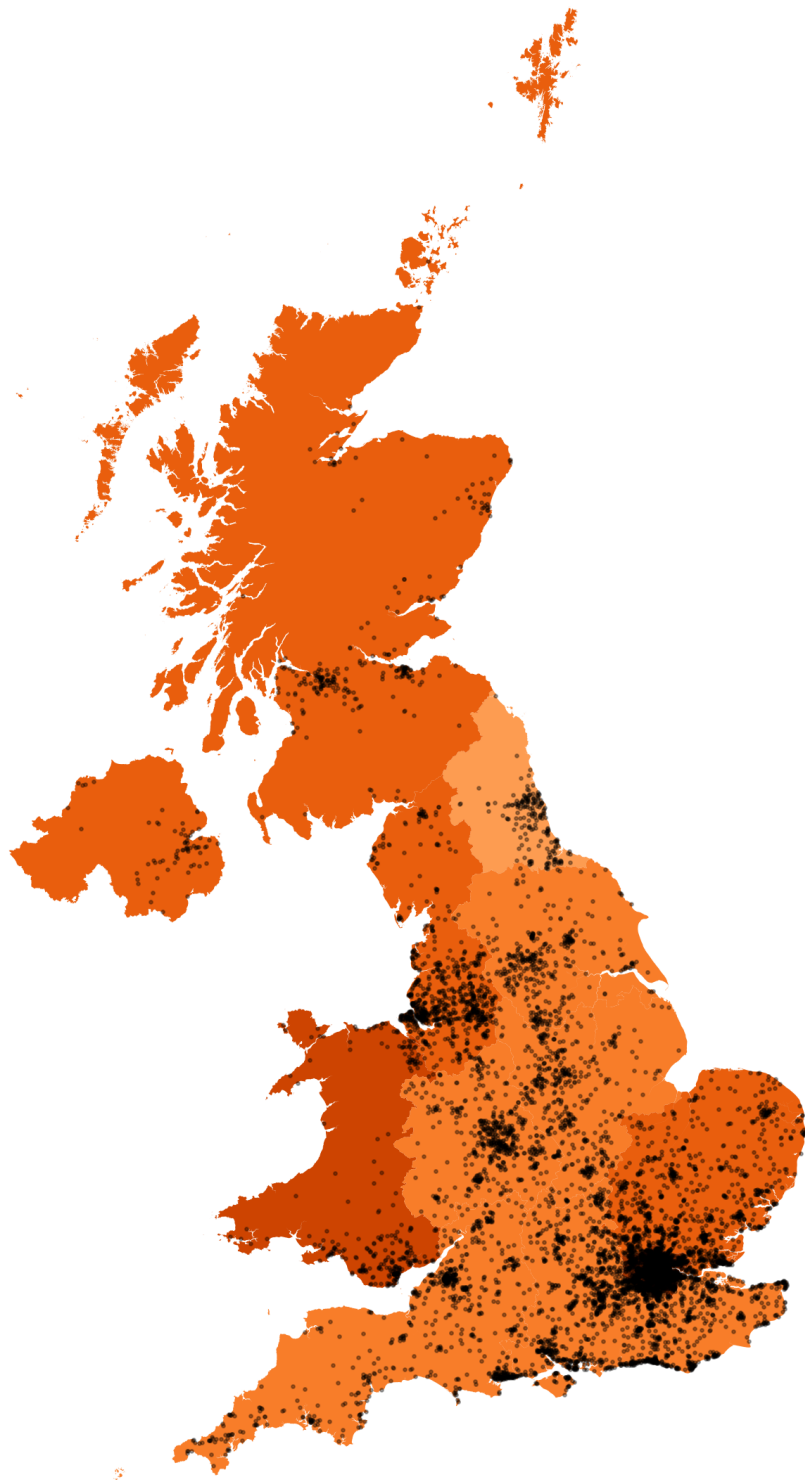
### Daily new cases of COVID per 100,000 (11 January 2021) <sup>[1]</sup>



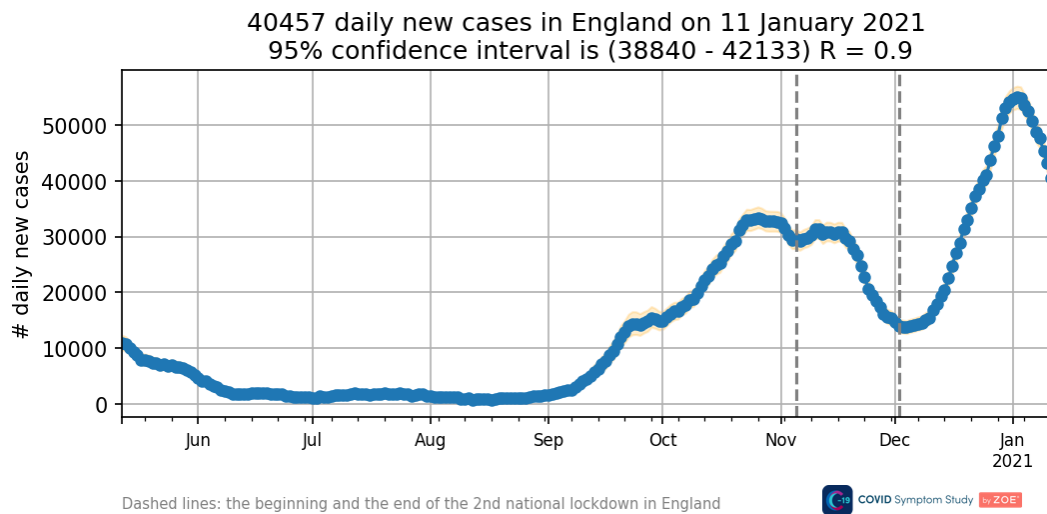
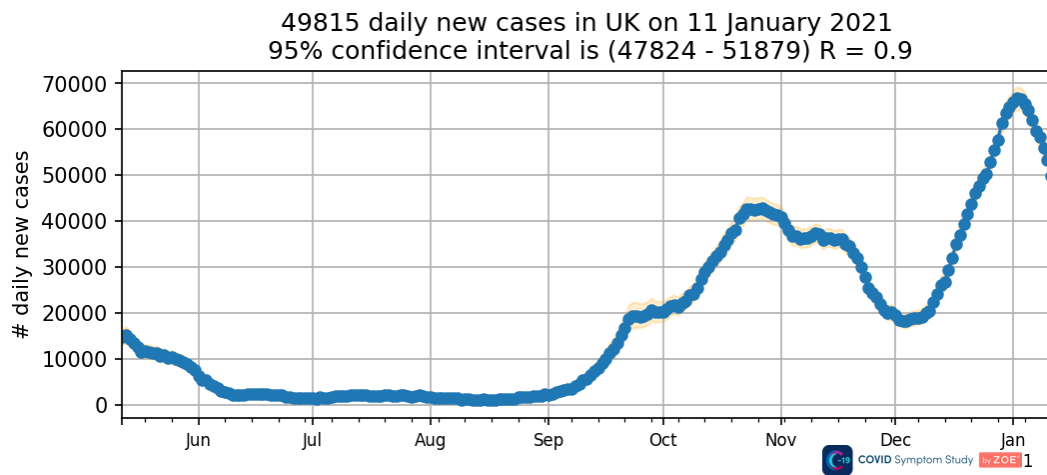
	Daily new cases per 100,000	R
England	69 - 75	0.9 (0.8 - 1.0)
South East	64 - 75	0.9 (0.7 - 1.0)
London	104 - 123	0.8 (0.7 - 0.9)
Scotland	63 - 100	1.0 (0.9 - 1.1)
Wales	90 - 140	0.8 (0.7 - 1.0)
East of England	72 - 88	0.9 (0.7 - 1.0)
South West	49 - 63	1.0 (0.9 - 1.1)
North West	70 - 91	1.1 (1.0 - 1.3)
West Midlands	49 - 69	1.0 (0.9 - 1.1)
East Midlands	43 - 62	0.9 (0.8 - 1.0)
Yorkshire and The Humber	45 - 64	0.9 (0.8 - 1.0)
North East	37 - 66	1.1 (0.9 - 1.2)
Northern Ireland	56 - 145	1.1 (0.9 - 1.3)

[1] Please refer to the publication by [Varsavsky et al. \(2020\)](#) for details on how R values are calculated

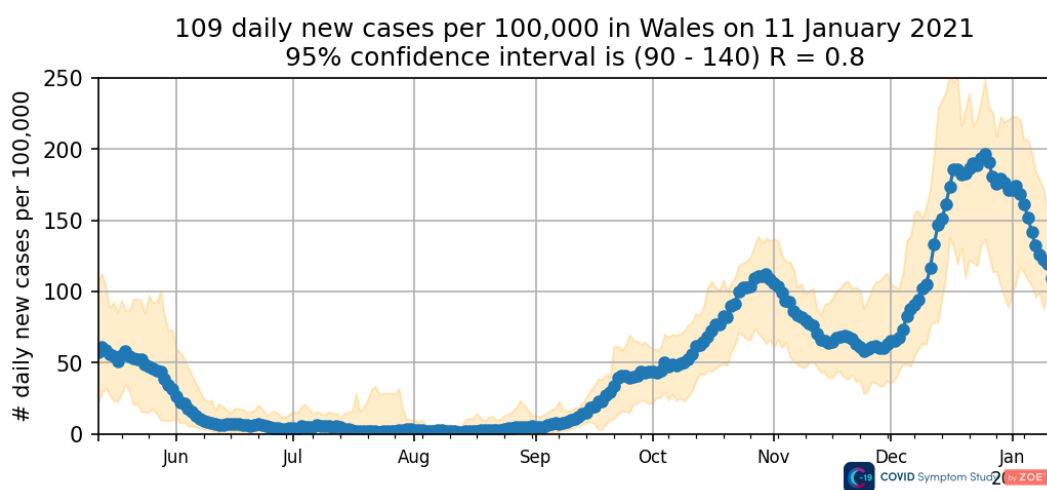
Location of positive test results reported in the UK  
in the 2 weeks up to 11 January 2021



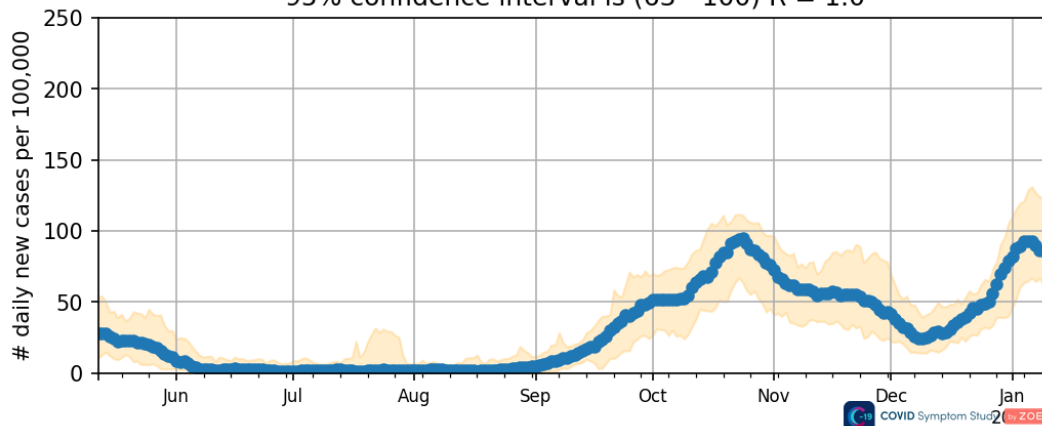
## Changes in daily new cases of COVID in UK (based on 2 weeks up to each date)



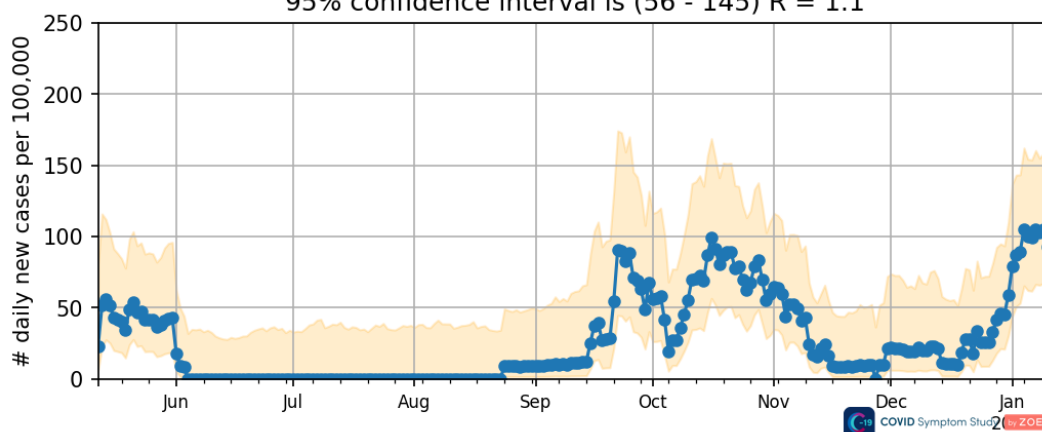
## Changes in daily new cases of COVID per 100,000 in different regions (based on 2 weeks up to each date)



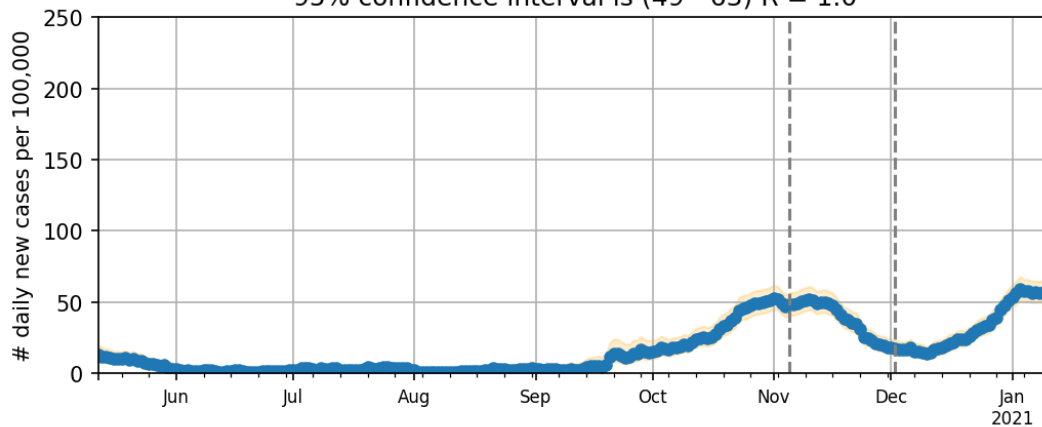
77 daily new cases per 100,000 in Scotland on 11 January 2021  
95% confidence interval is (63 - 100)  $R = 1.0$



91 daily new cases per 100,000 in Northern Ireland on 11 January 2021  
95% confidence interval is (56 - 145)  $R = 1.1$

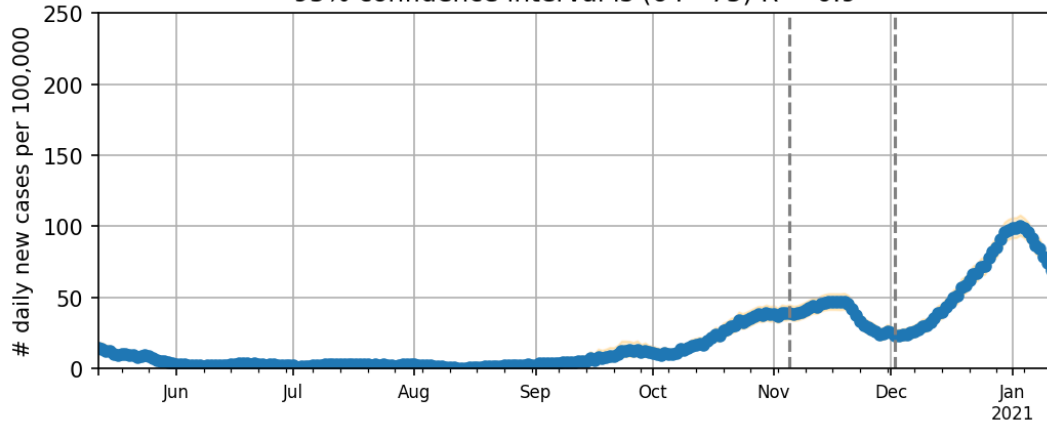


55 daily new cases per 100,000 in South West on 11 January 2021  
95% confidence interval is (49 - 63)  $R = 1.0$



Dashed lines: the beginning and the end of the 2nd national lockdown in England

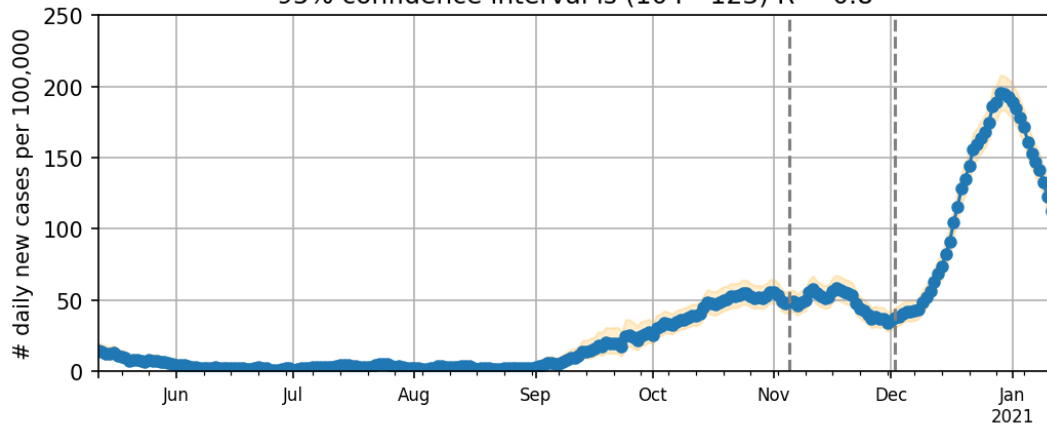
69 daily new cases per 100,000 in South East on 11 January 2021  
95% confidence interval is (64 - 75)  $R = 0.9$



Dashed lines: the beginning and the end of the 2nd national lockdown in England

COVID Symptom Study by ZOE

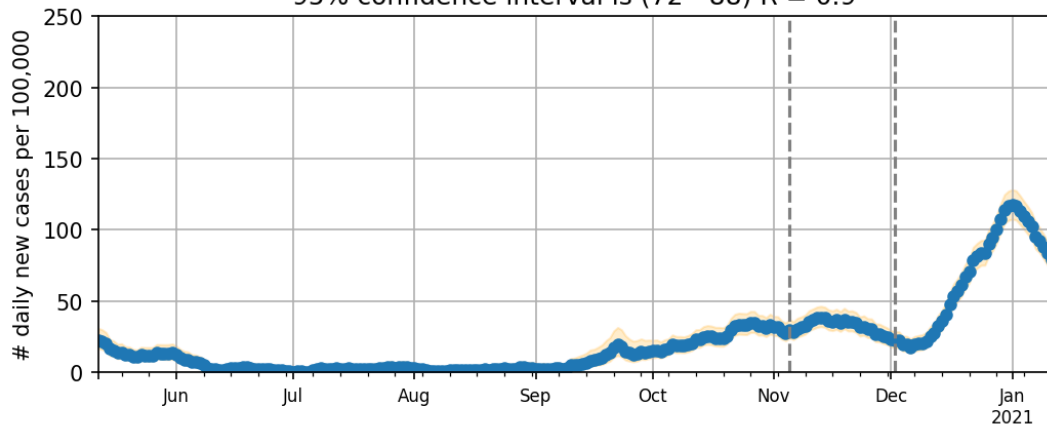
113 daily new cases per 100,000 in London on 11 January 2021  
95% confidence interval is (104 - 123)  $R = 0.8$



Dashed lines: the beginning and the end of the 2nd national lockdown in England

COVID Symptom Study by ZOE

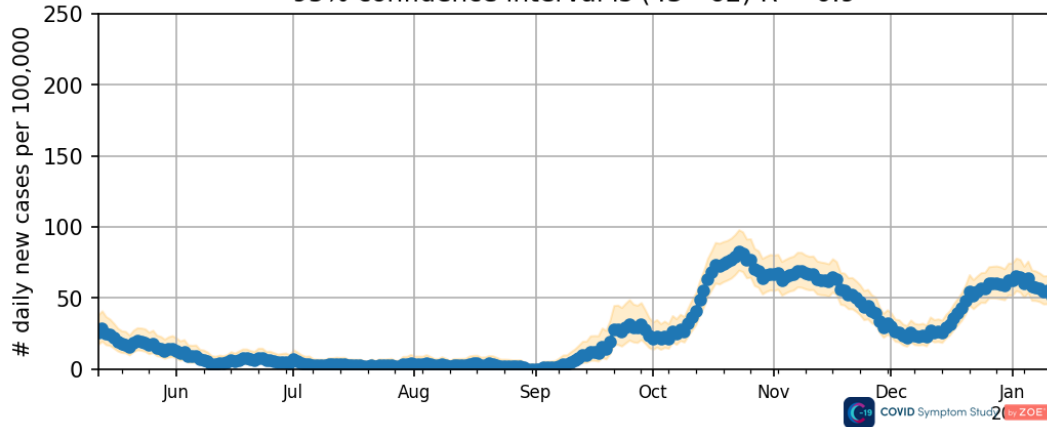
80 daily new cases per 100,000 in East of England on 11 January 2021  
95% confidence interval is (72 - 88)  $R = 0.9$



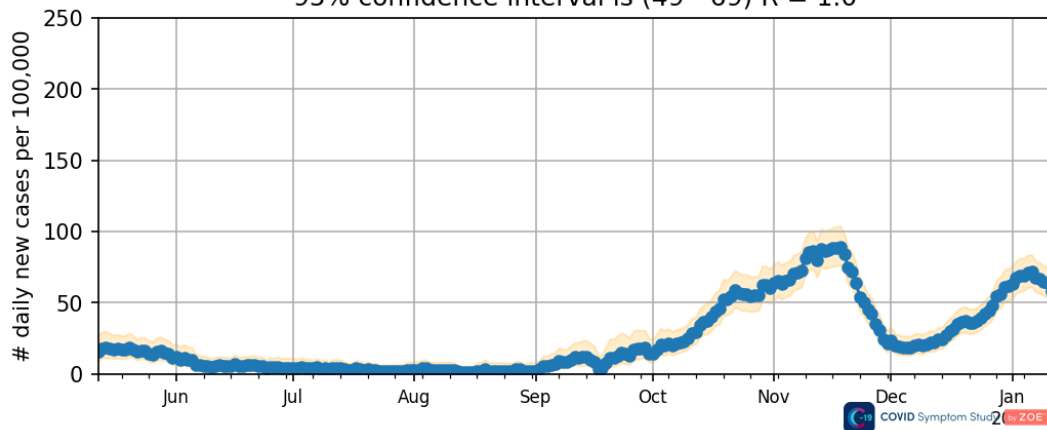
Dashed lines: the beginning and the end of the 2nd national lockdown in England

COVID Symptom Study by ZOE

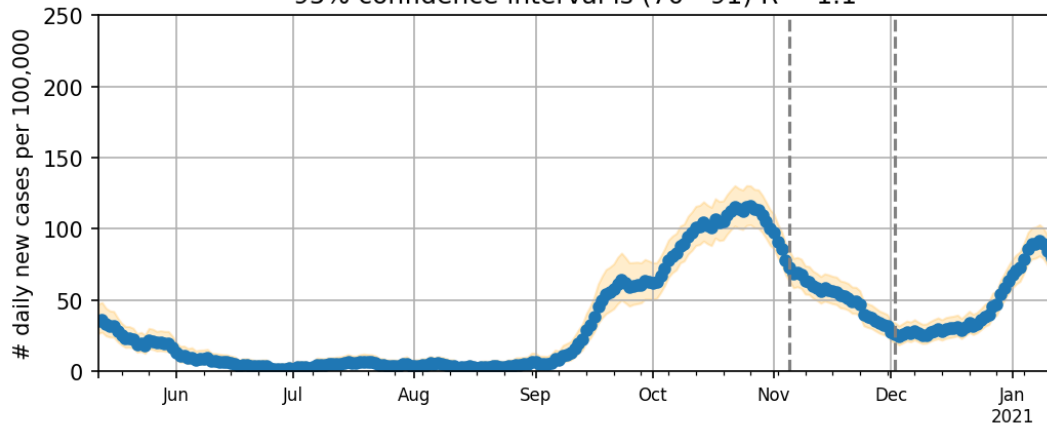
52 daily new cases per 100,000 in East Midlands on 11 January 2021  
95% confidence interval is (43 - 62)  $R = 0.9$



58 daily new cases per 100,000 in West Midlands on 11 January 2021  
95% confidence interval is (49 - 69)  $R = 1.0$

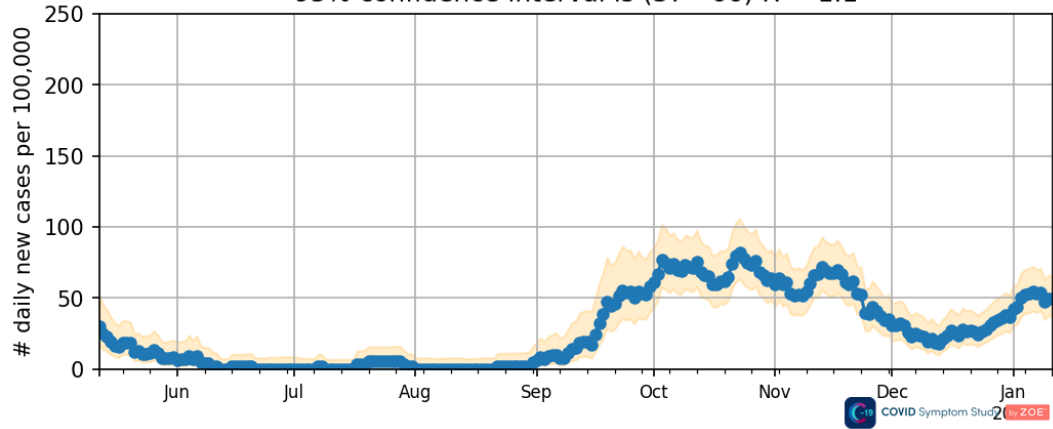


80 daily new cases per 100,000 in North West on 11 January 2021  
95% confidence interval is (70 - 91)  $R = 1.1$

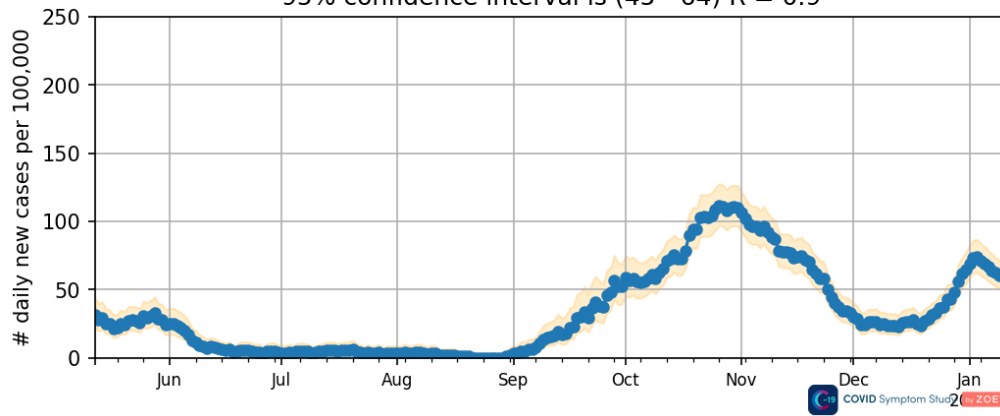


Dashed lines: the beginning and the end of the 2nd national lockdown in England

50 daily new cases per 100,000 in North East on 11 January 2021  
95% confidence interval is (37 - 66)  $R = 1.1$



54 daily new cases per 100,000 in Yorkshire and The Humber on 11 January 2021  
95% confidence interval is (45 - 64)  $R = 0.9$





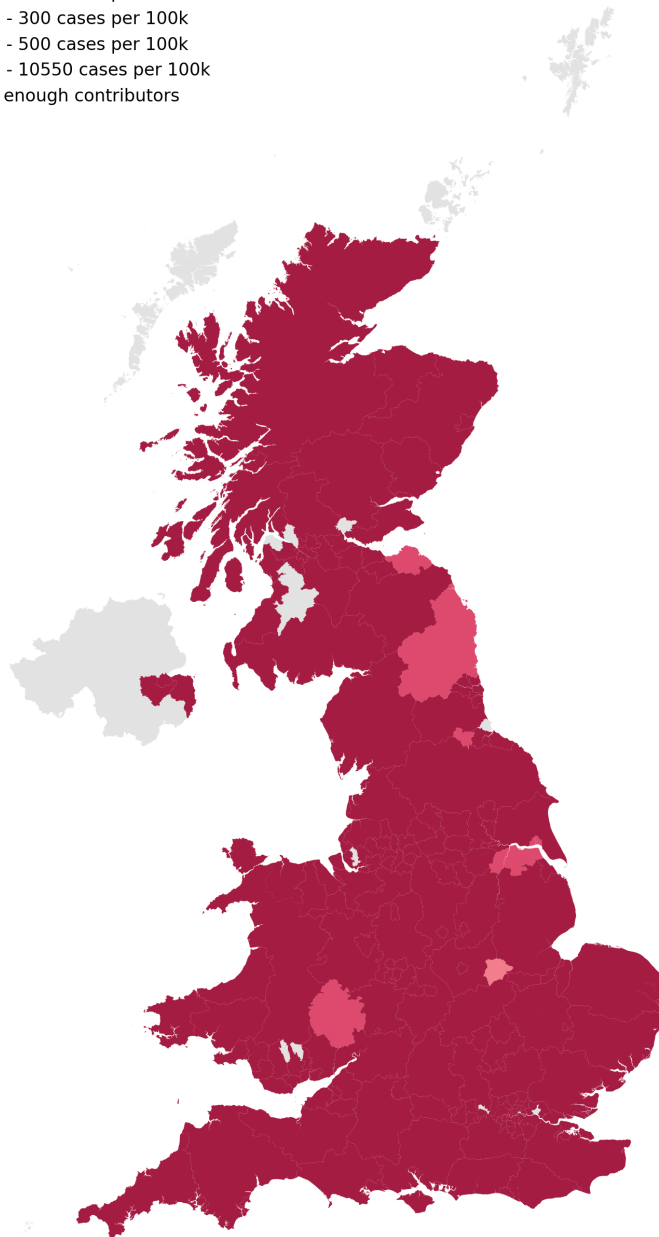
# COVID active cases - Prevalence (on 14 January 2021)

The COVID active cases (prevalence) or Symptomatic COVID estimate is based on the most recent report for each contributor that logged during the previous 7 days.

## Estimated rate of people with Symptomatic COVID

Based on data from 1074350 contributors that logged from 7 January 2021 to 14 January 2021

- 0 - 100 cases per 100k
- 100 - 200 cases per 100k
- 200 - 300 cases per 100k
- 300 - 500 cases per 100k
- 500 - 10550 cases per 100k
- Not enough contributors



## COVID active cases - English tier system

The local restriction tiers by area were replaced by a national lockdown on the 4th of January 2021.

The table below contains the previous 7 days' average prevalence rates for the English tier regions. The tier areas and the tier assignments are defined by the Department of Health and Social Care and we provide estimated rates based on data from the CSS App.

		Current tier assignment	Prevalence rate (per 100,000)	Last week's trend	Prevalence rate among 60+ (per 100,000)	Last week's trend among 60+
Region	Subregion					
North West	Liverpool City Region	5.0	1481	●	616	●
	Lancashire, Blackpool, and Blackburn with Darwen	5.0	1084	▲	385	▲
	Cumbria	5.0	823	●	473	●
	Greater Manchester	5.0	781	▲	262	▲
	Warrington and Cheshire	5.0	770	●	211	●
North East	Tees Valley (LA5)	5.0	1033	●	283	●
	North East 7 (LA7)	5.0	804	●	217	●
Yorkshire and The Humber	The Humber	5.0	892	●	303	●
	York and North Yorkshire	5.0	881	▼	234	▼
	South Yorkshire	5.0	733	▲	401	▲
	West Yorkshire	5.0	646	▲	275	▲
East Midlands	Northamptonshire	5.0	855	▼	404	▼
	Nottingham and Nottinghamshire	5.0	767	▼	258	▼
	Leicester and Leicestershire	5.0	707	●	234	●
	Derby and Derbyshire	5.0	665	●	226	●
	Lincolnshire	5.0	426	●	153	●
	Rutland	5.0	missing	●	missing	●
West Midlands	Birmingham and Black Country	5.0	1267	▲	487	▲
	Worcestershire	5.0	945	▲	322	▲
	Staffordshire and Stoke-on-Trent	5.0	858	●	455	●
	Shropshire and Telford & Wrekin	5.0	753	▲	134	▲
	Warwickshire, Coventry and Solihull	5.0	618	▼	290	▼
	Herefordshire	5.0	278	●	178	●
London	London	5.0	2243	▼	858	▼
East of England	Essex, Thurrock and Southend on Sea	5.0	1985	●	701	●
	Bedfordshire and Milton Keynes	5.0	1498	●	490	●

		Current tier assignment	Prevalence rate (per 100,000)	Last week's trend	Prevalence rate among 60+ (per 100,000)	Last week's trend among 60+
Region	Subregion					
	Hertfordshire	5.0	1269	▼	621	▼
	Suffolk	5.0	1194	●	233	●
	Norfolk	5.0	983	●	294	●
	Cambridgeshire and Peterborough	5.0	932	▲	276	▲
	Kent & Medway	5.0	1366	▼	514	▼
	East and West Sussex, and Brighton and Hove	5.0	1317	▲	510	▲
	Surrey	5.0	1197	▼	503	▼
	Hampshire, Portsmouth and Southampton.	5.0	988	●	352	●
	Reading, Wokingham, Bracknell Forest, Windsor and Maidenhead, West Berkshire	5.0	928	●	482	●
	Oxfordshire	5.0	764	▼	321	▼
South East	Buckinghamshire	5.0	745	▼	404	▼
	Isle of Wight	5.0	missing	●	missing	●
	Slough	5.0	missing	●	missing	●
	Dorset, Bournemouth, Christchurch and Poole	5.0	1099	▲	273	▲
	Bristol, South Gloucestershire, North Somerset	5.0	841	●	172	●
	Gloucestershire	5.0	777	●	173	●
	Somerset and Bath and North East Somerset	5.0	765	▲	219	▲
	Wiltshire and Swindon	5.0	561	▲	261	▲
	Devon	5.0	472	▲	177	▲
	Cornwall and Isles of Scilly	5.0	465	●	142	●

[\*] The districts in the county are assigned to multiple different tiers.

- ▲ implies an increase in prevalence in the past week
- implies that prevalence has been fairly constant in the past week
- ▼ implies a decrease in prevalence in the past week
- too few respondents

## Supplementary table on regions for tier assignment - English tier system

**The local restriction tiers by area were replaced by a national lockdown on the 4th of January 2021.**

In addition to case detection rates, tier assignment decisions take into account the rate at which cases are rising or falling, the positivity rate (the number of positive cases detected as a percentage of tests taken) and the pressure on the NHS. Therefore, in the table below we report the R rate, the positivity rate and the percentage of hospital bed capacity occupied by COVID patients for each region in England. <sup>[2]</sup>

<b>Region</b>	<b>Positivity rate</b>	<b>Incidence rate (per 100,000)</b>	<b>R rate</b>	<b>% hospital bed occupancy</b>
<b>South East</b>	9.8 %	69.2	0.9	42.98 %
<b>London</b>	12.0 %	112.8	0.8	54.38 %
<b>East of England</b>	10.97 %	79.5	0.9	41.96 %
<b>South West</b>	8.37 %	55.4	1.0	22.99 %
<b>North West</b>	11.63 %	80.0	1.1	28.20 %
<b>West Midlands</b>	8.86 %	58.1	1.0	32.02 %
<b>East Midlands</b>	7.92 %	51.7	0.9	32.02 %
<b>Yorkshire and The Humber</b>	8.59 %	53.8	0.9	21.45 %
<b>North East</b>	7.93 %	49.7	1.1	21.45 %

[2] The % hospital bed occupancy is calculated as a ratio of the Total number of confirmed COVID-19 patients in hospital on the reporting date ([source: coronavirus.gov.uk](https://coronavirus.gov.uk)) and the overnight bed availability for acute and general cases ([source: NHS Statistics](https://nhs.uk/statistics)). This statistics is published on NHS Region level, therefore the same occupancy rate corresponds to East and West Midlands, and North East and Yorkshire.

## Symptomatic COVID by Region

### Symptomatic COVID cases

East Midlands	29470
East of England	81678
London	184947
North East	21959
North West	76700
(*) Northern Ireland	22099
Scotland	60820
South East	105869
South West	41137
Wales	62743
West Midlands	59580
Yorkshire and The Humber	40810
<b>TOTAL</b>	<b>787819</b>

(\*) The number of respondents in Northern Ireland is low to generate a good estimate.

## Symptomatic COVID by Socio-economic status (IMD)

### Symptomatic COVID cases per 100,000 people

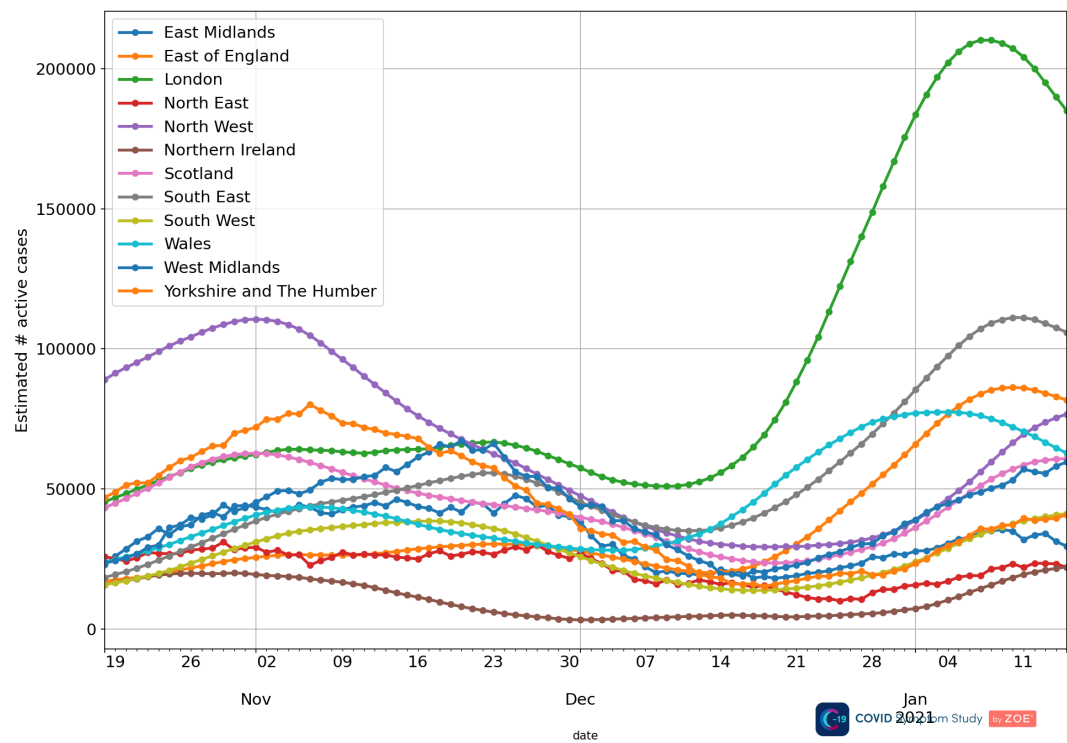
LOW (1st - 3rd decile )	1551
MEDIUM (4th - 6th decile)	1169
HIGH (7th - 10th decile)	946
<b>TOTAL</b>	<b>1197</b>

## Symptomatic COVID by Age

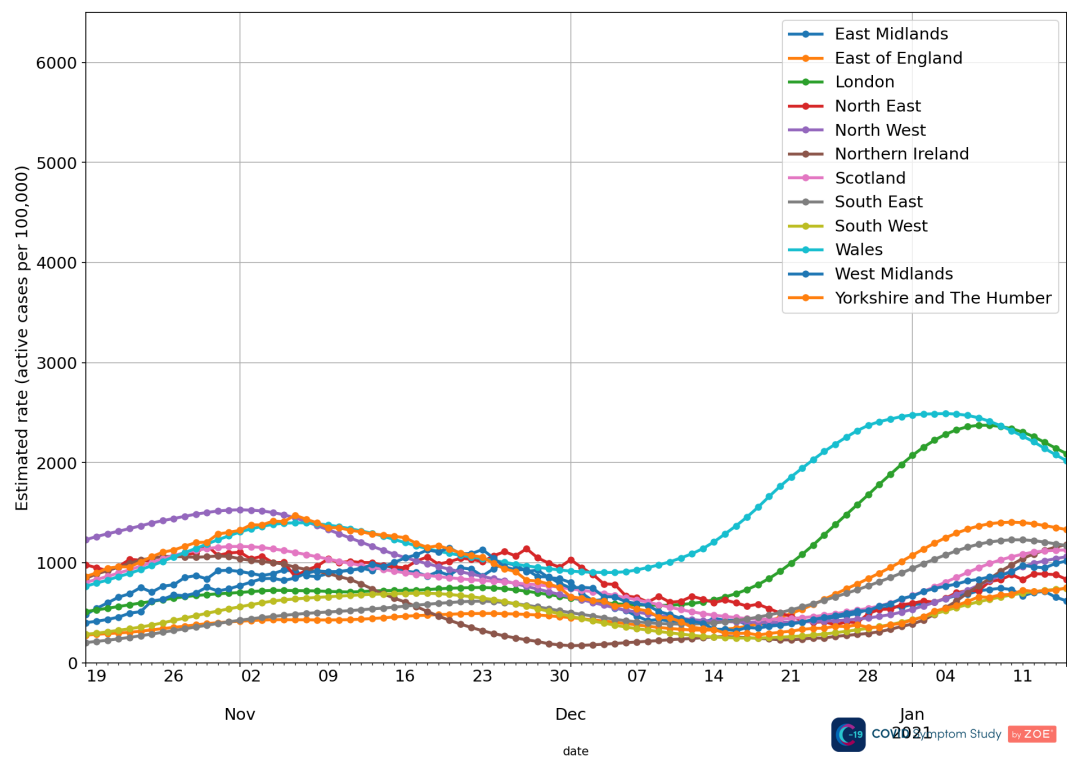
### Symptomatic COVID cases per 100,000 people

Age 0 - 9	351
Age 10 - 19	763
Age 20 - 29	2571
Age 30 - 39	2072
Age 40 - 49	1498
Age 50 - 59	1197
Age 60 - 69	547
Age 70 - 79	253
Age 80 - 89	296
<b>TOTAL</b>	<b>1197</b>

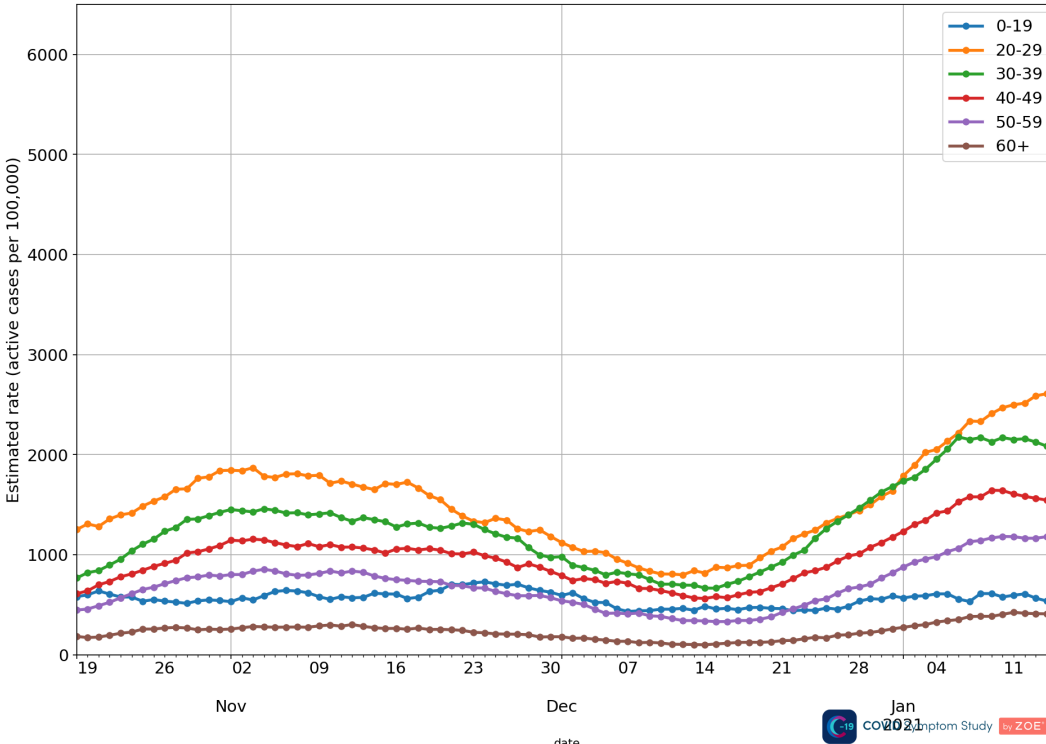
Estimate of people with Symptomatic COVID across Nations and Regions



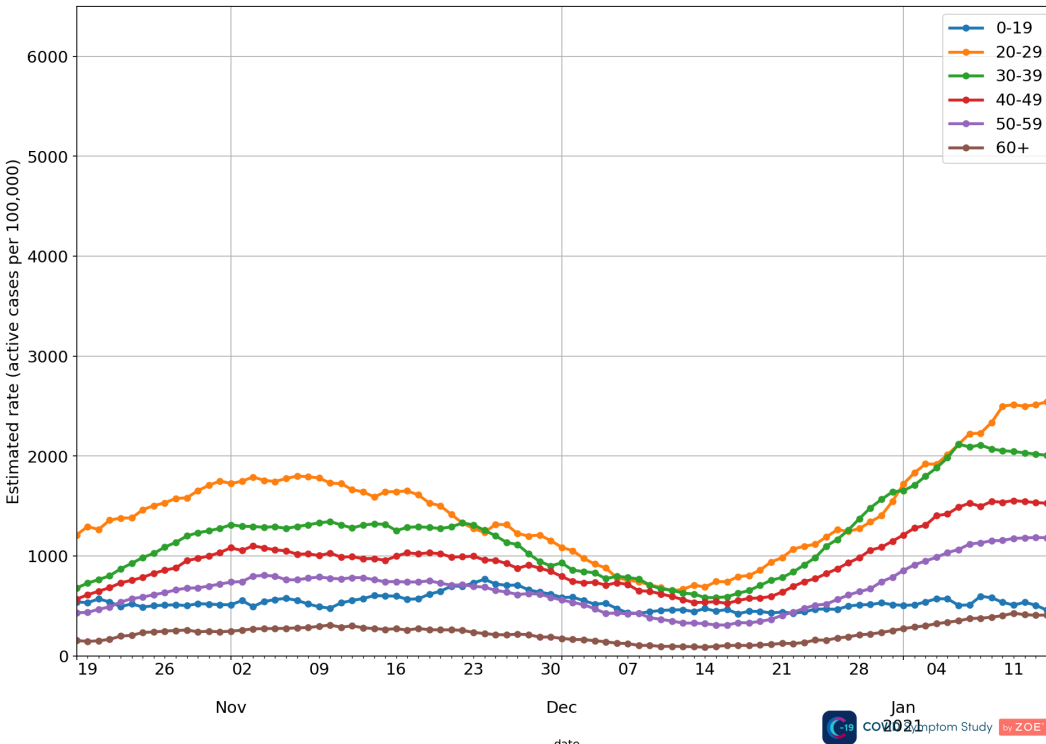
Estimated rate of people with Symptomatic COVID across Nations and Regions



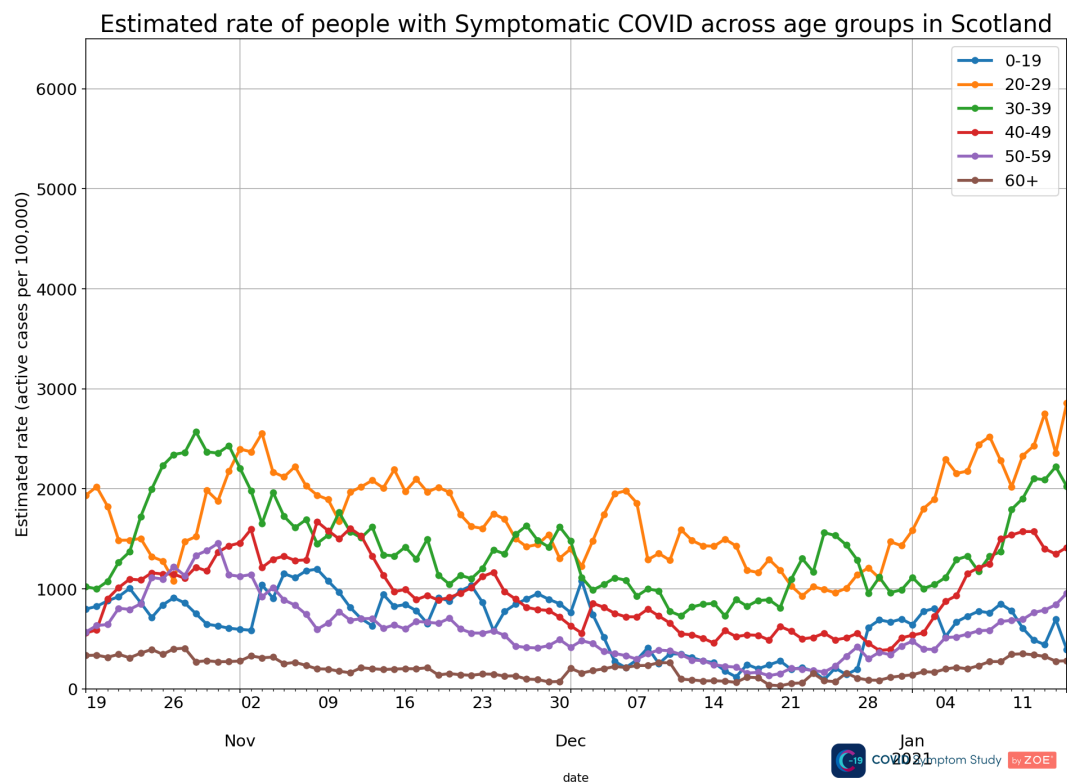
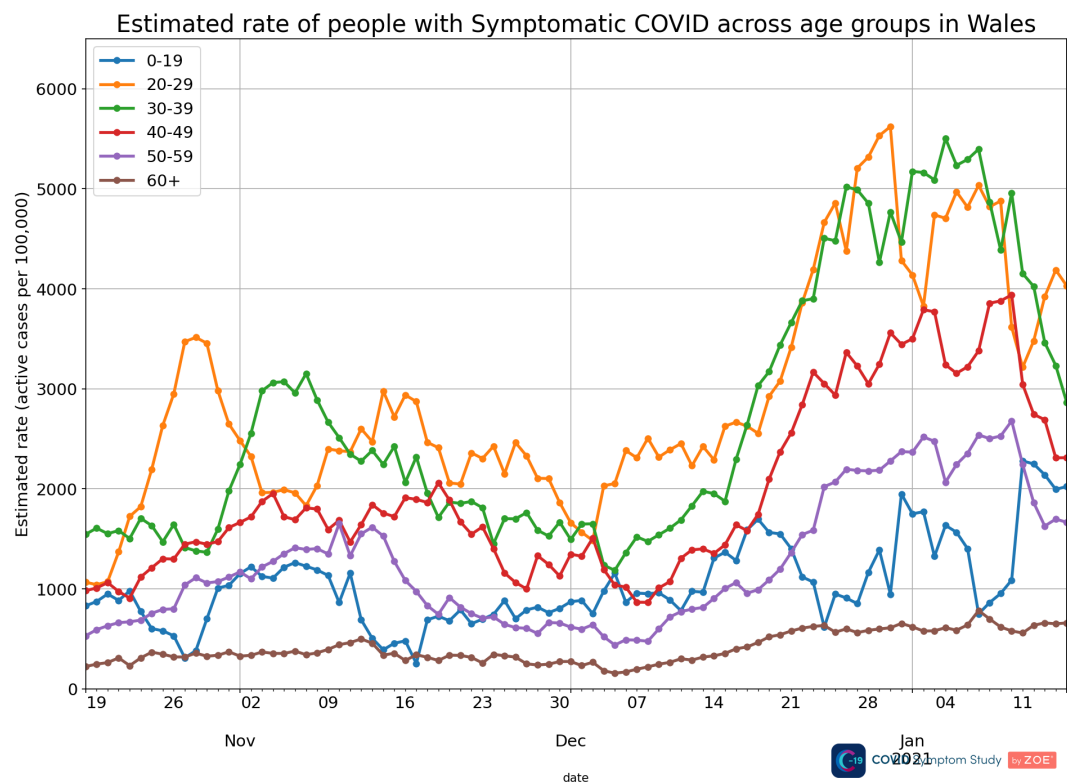
## Estimated rate of people with Symptomatic COVID across age groups in the UK



## Estimated rate of people with Symptomatic COVID across age groups in England

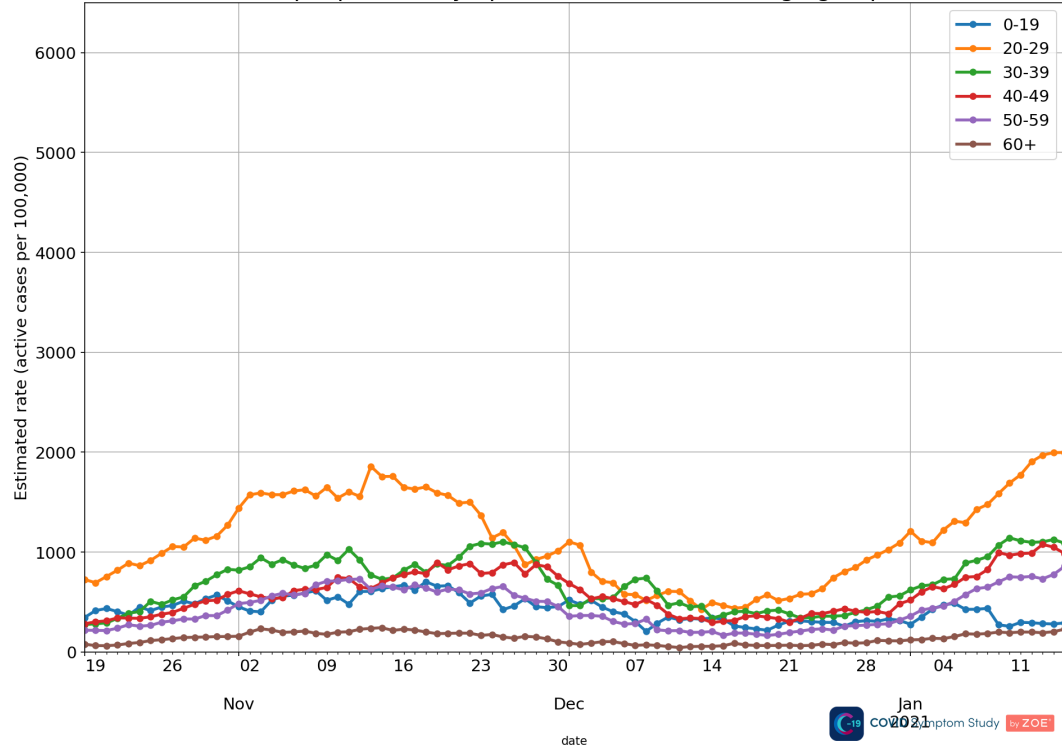


Estimated rate of people with Symptomatic COVID across age groups in different regions

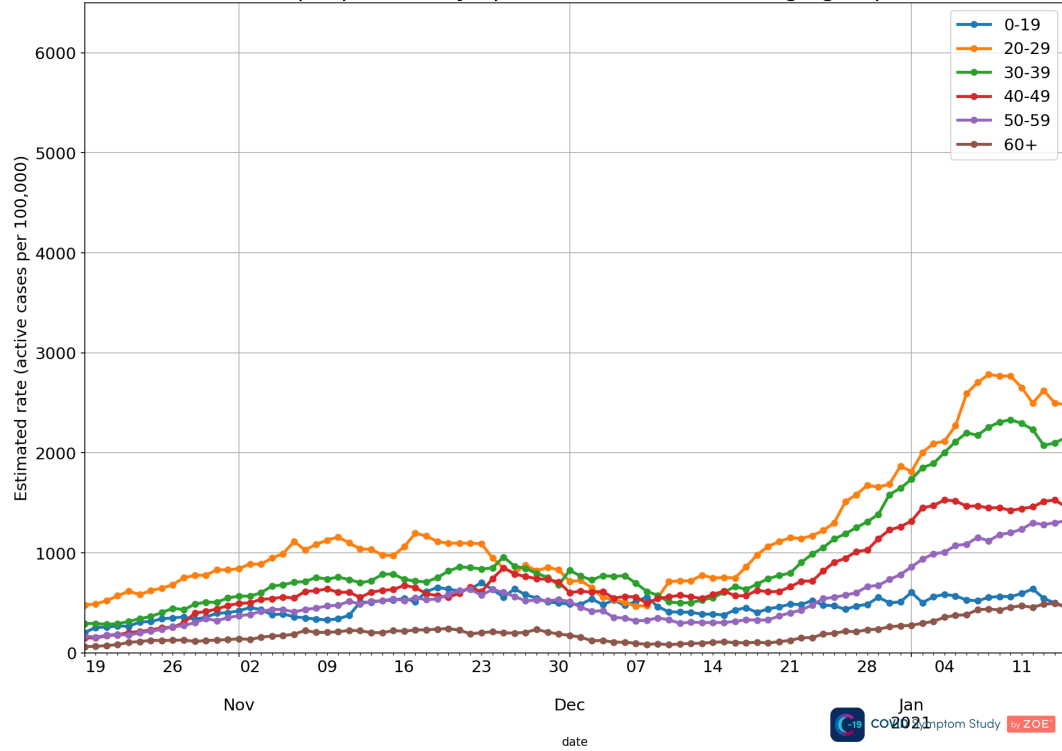




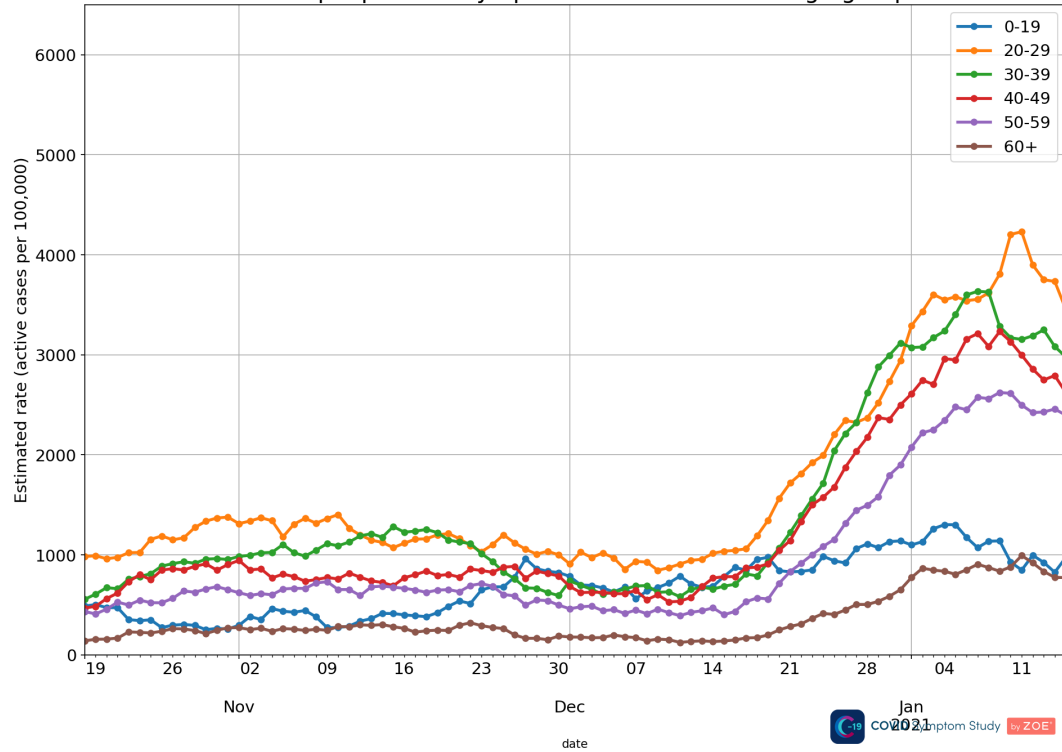
Estimated rate of people with Symptomatic COVID across age groups in South West



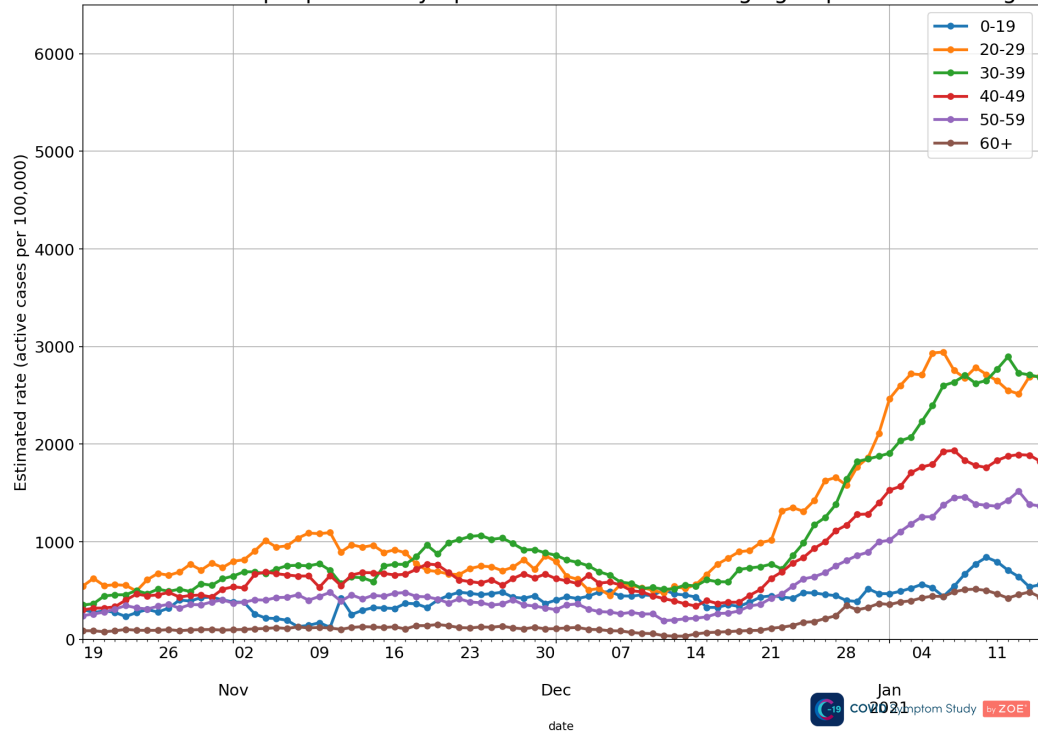
Estimated rate of people with Symptomatic COVID across age groups in South East



Estimated rate of people with Symptomatic COVID across age groups in London



Estimated rate of people with Symptomatic COVID across age groups in East of England



The chart displays the estimated rate of active COVID-19 cases per 100,000 people in the Netherlands from November 19 to January 11, 2021. The y-axis represents the estimated rate, ranging from 0 to 6000. The x-axis represents the date, with labels for Nov, Dec, and Jan 2021. The data is categorized by age group: 0-19 (blue), 20-29 (orange), 30-39 (green), 40-49 (red), 50-59 (purple), and 60+ (brown). The 20-29 age group shows the highest peak, reaching approximately 2200 cases per 100,000 in late November. The 30-39 age group also shows a significant peak, reaching approximately 1500 cases per 100,000 in late November. The 0-19 age group shows a peak of approximately 1100 cases per 100,000 in late November. The 40-49 age group shows a peak of approximately 1200 cases per 100,000 in late November. The 50-59 age group shows a peak of approximately 1000 cases per 100,000 in late November. The 60+ age group shows the lowest peak, reaching approximately 300 cases per 100,000 in late November. All age groups show a general decline in the estimated rate of active cases per 100,000 people from late November to early January, with some fluctuations.

Date	0-19	20-29	30-39	40-49	50-59	60+
Nov 19	600	1200	400	400	300	100
Nov 26	1000	1800	1000	800	600	200
Nov 29	1100	2200	1500	1200	1000	300
Dec 02	800	1900	1200	1100	800	200
Dec 09	600	2000	1200	1100	900	200
Dec 16	500	2200	1400	1200	900	200
Dec 23	700	1700	1700	1100	700	200
Dec 30	800	2100	1000	800	800	100
Jan 07	300	1000	700	700	500	100
Jan 14	200	600	600	600	400	50
Jan 21	300	1000	800	500	300	100
Jan 28	400	900	1200	700	400	100
Jan 04	400	1000	1500	800	500	200
Jan 11	400	1500	1000	700	700	200

The chart displays the estimated rate of active COVID-19 cases per 100,000 people in the Netherlands from November 19 to January 11, 2021. The y-axis represents the estimated rate, ranging from 0 to 6000. The x-axis represents the date, with labels for November (Nov), December (Dec), and January (Jan). The chart is divided into six age groups, each represented by a different colored line with markers:

- 0-19 (Blue line): Shows a relatively low and stable rate, generally below 1000, with a slight increase in early January.
- 20-29 (Orange line): Shows the highest rates, peaking around 2100 in early November and again rising to over 2500 by mid-January.
- 30-39 (Green line): Shows a significant peak around 2100 in late November, followed by a decline and then a rise to around 1800 in mid-January.
- 40-49 (Red line): Shows a peak around 1800 in late November, followed by a sharp decline and then a rise to around 1300 in mid-January.
- 50-59 (Purple line): Shows a peak around 1200 in late November, followed by a decline and then a rise to around 800 in mid-January.
- 60+ (Brown line): Shows the lowest rates, generally below 500, with a slight increase in early January.

The chart indicates that the 20-29 age group has the highest estimated rate of active cases, while the 60+ age group has the lowest. The rates for most age groups show a significant peak in late November, followed by a decline and then a rise in early January.

The graph displays the estimated rate of active COVID-19 cases per 100,000 people in the UK, categorized by age group, from November 19 to January 11, 2021. The y-axis represents the estimated rate (active cases per 100,000), ranging from 0 to 6000. The x-axis represents the date, with labels for Nov, Dec, and Jan 2021.

The age groups and their corresponding line colors are:

- 0-19 (Blue)
- 20-29 (Orange)
- 30-39 (Green)
- 40-49 (Red)
- 50-59 (Purple)
- 60+ (Brown)

Key observations from the graph:

- The 20-29 age group (Orange) shows the highest peak, reaching approximately 3100 cases per 100,000 in late November.
- The 30-39 age group (Green) also shows a significant peak, reaching approximately 2800 cases per 100,000 in late November.
- The 40-49 age group (Red) and 50-59 age group (Purple) show moderate peaks, reaching approximately 2100 and 1500 cases per 100,000, respectively, in late November.
- The 0-19 age group (Blue) shows a lower peak, reaching approximately 1200 cases per 100,000 in late November.
- The 60+ age group (Brown) shows the lowest peak, reaching approximately 500 cases per 100,000 in late November.
- All age groups show a general decline in the estimated rate of active cases from late November to early December, followed by a period of relative stability or a slight increase in early January.
- The 20-29 age group (Orange) shows a sharp increase in the estimated rate of active cases starting in early January, reaching approximately 2800 cases per 100,000 by January 11.

Estimated rate (active cases per 100,000)

0-19  
20-29  
30-39  
40-49  
50-59  
60+

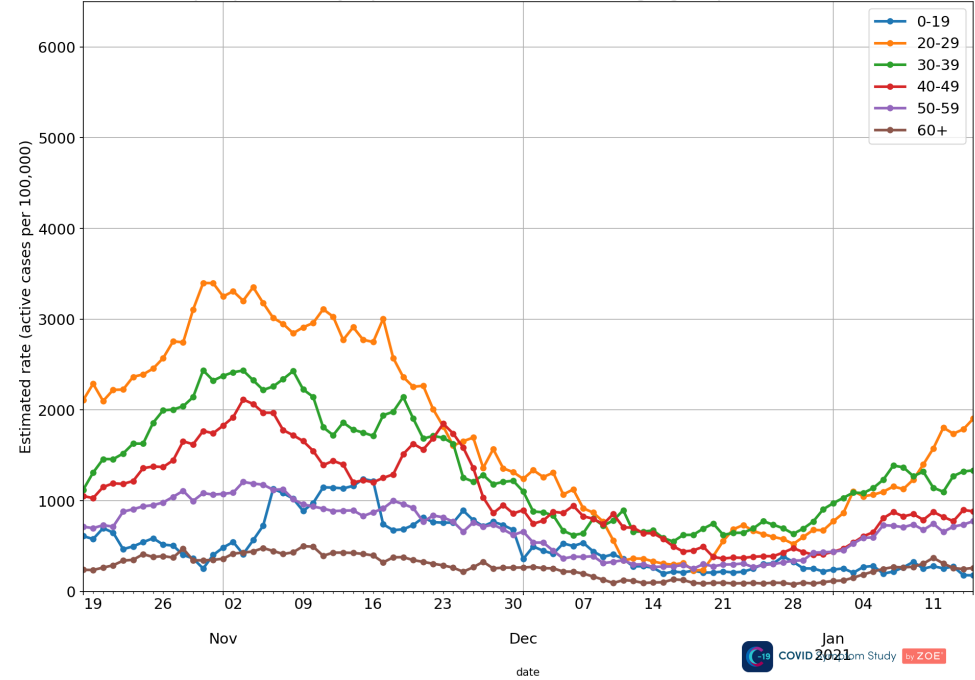
Nov Dec

date

Jan 2021

COVID-19 Infection Study by ZOE

Estimated rate of people with Symptomatic COVID across age groups in Yorkshire and The Humber



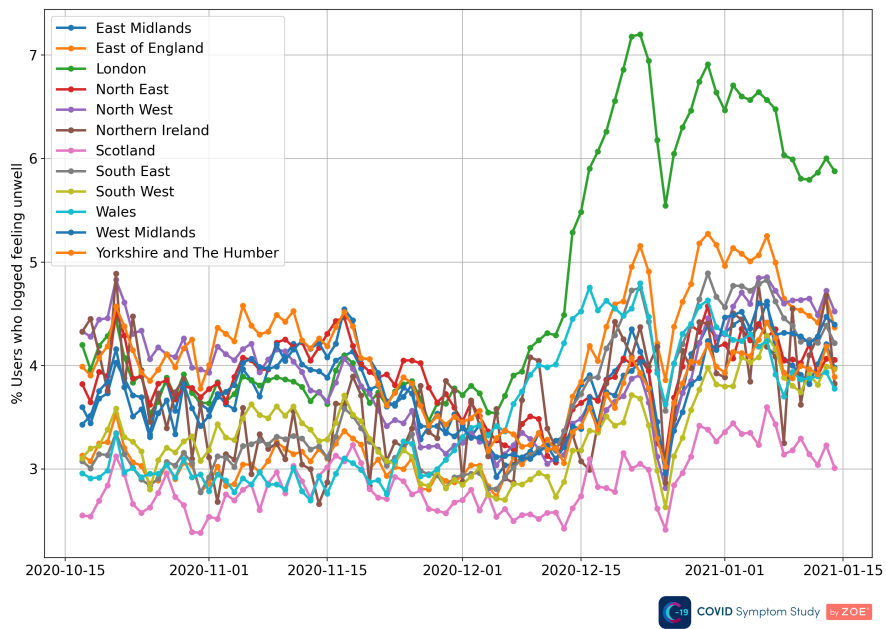
## Raw Data (up to 14 January 2021)

This section reports raw data by day, with no temporal averaging or rebalancing/ extrapolation to the UK population.

### Users who logged feeling unwell in the last 24 hours

	# users who logged feeling well	# users who logged feeling unwell	% users who logged feeling unwell
East Midlands	43434	1800	3.98 %
East of England	83357	3809	4.37 %
London	87323	5454	5.88 %
North East	18911	799	4.05 %
North West	54005	2559	4.52 %
Northern Ireland	3471	142	3.93 %
Scotland	35041	1127	3.12 %
South East	155557	6847	4.22 %
South West	82916	3425	3.97 %
Wales	32189	1263	3.78 %
West Midlands	43672	2008	4.40 %
Yorkshire and The Humber	43405	1757	3.89 %
TOTAL	683281	30990	4.34 %

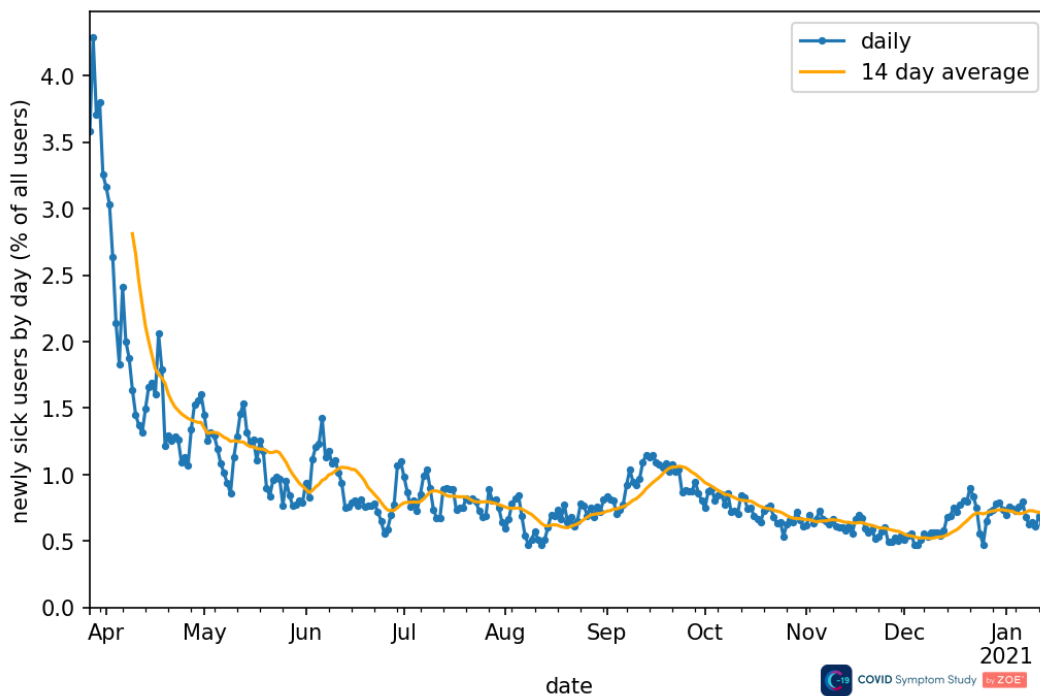
# Users who logged feeling unwell by day



## Newly Sick Users by Day (% of Active Users)

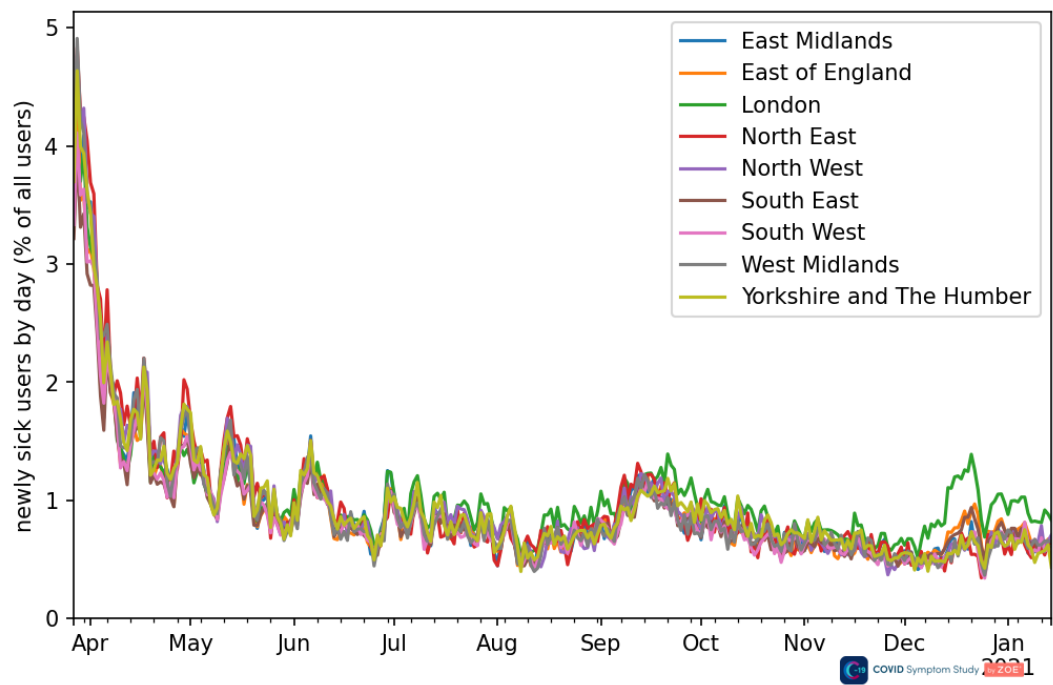
Active users are those who have been logging regularly in the past 10 days. Newly sick users are active users who haven't reported any symptoms for at least 9 days before reporting one of the following symptoms:

Persistent cough, Shortness of breath, Fever, Fatigue, Skipped meals, Hoarse voice, Sore throat, Delirium, Chest pain, Abdominal pain, Diarrhoea, Headache, Unusual muscle pains, Loss of smell, Chills or shivers, Eye soreness, Nausea, Dizzy light headed, Red welts on face or lips, Blisters on feet or any other symptom that makes them feel unwell





Newly Sick Users by Day in Administrative Regions (% of Active Users)



Positive Test Results by Day (% of Invited Test Takers)

