COVID Symptom Study Report

15 January 2021

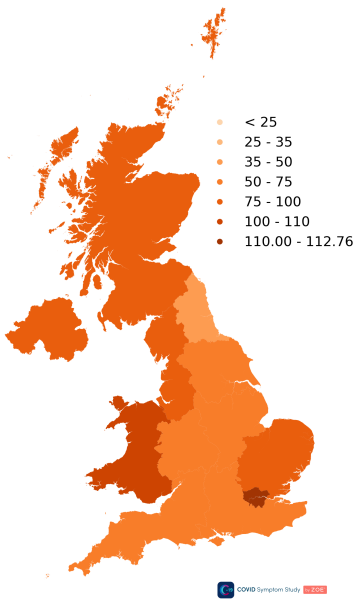
Analysis by ZOE and King's College London

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.

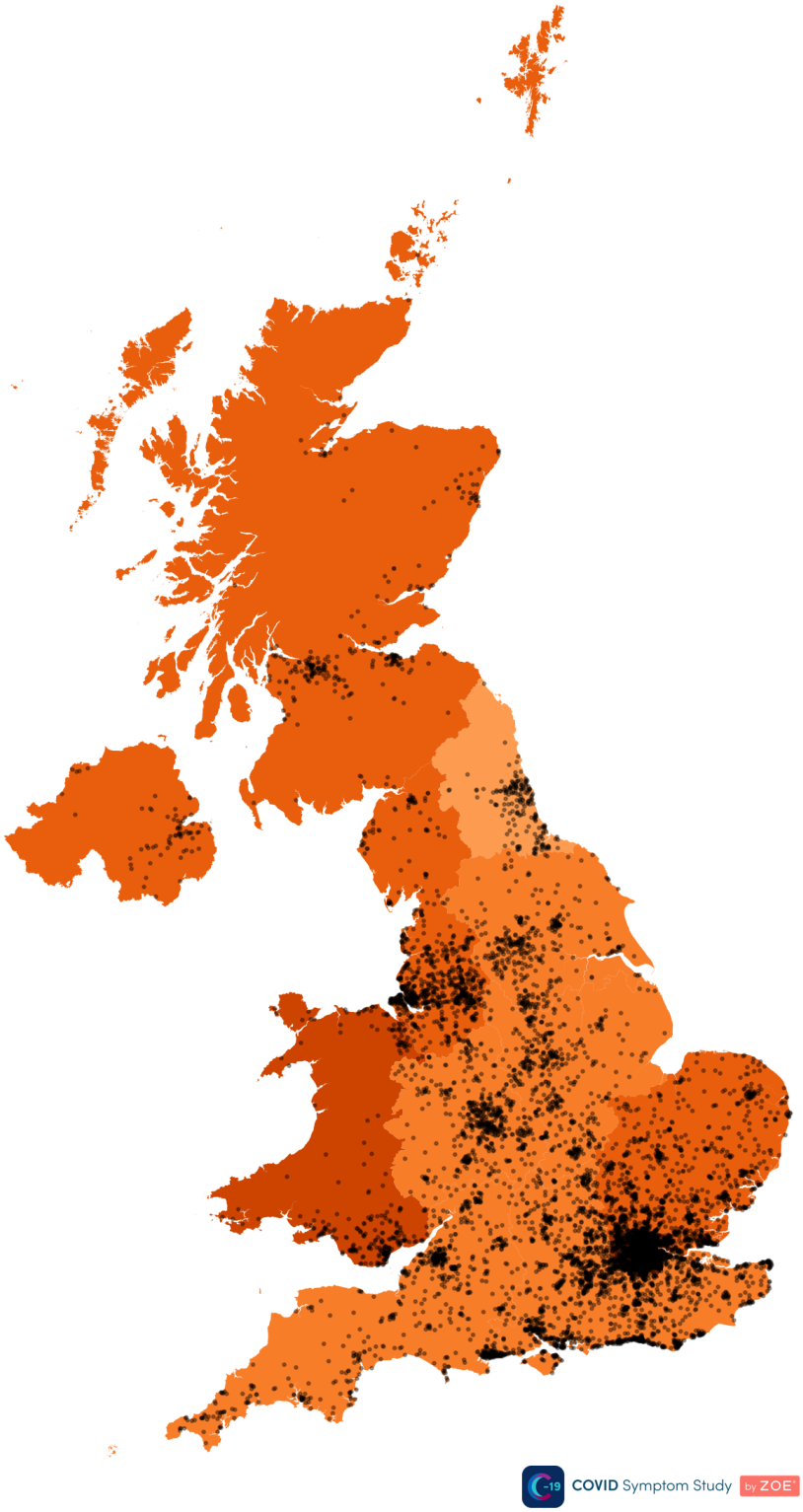
Daily new cases of COVID per 100,000 (11 January 2021) [1]



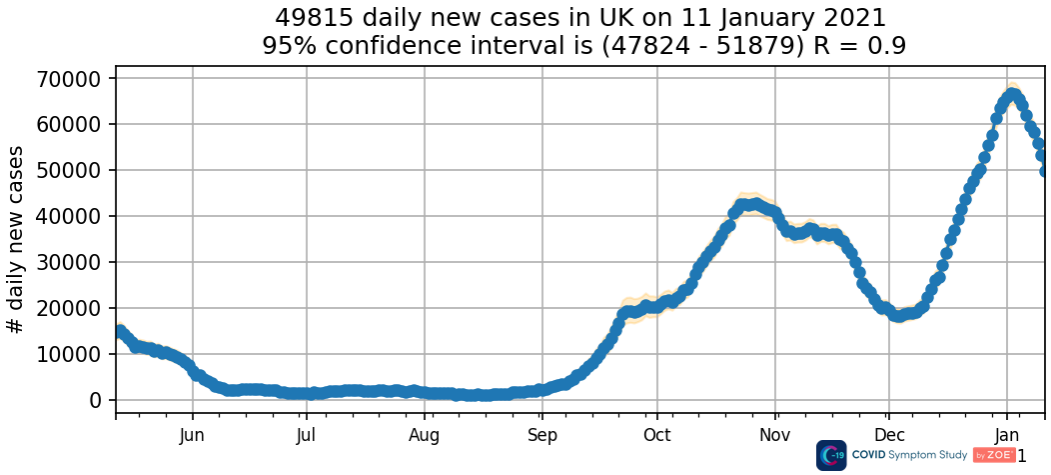
	Daily new cases per 100,000	R
England	69 - 75	0.9 (0.8 - 1.0)
South East	64 - 75	0.9 (0.7 - 1.0)
London	104 - 123	0.8 (0.7 - 0.9)
Scotland	63 - 100	1.0 (0.9 - 1.1)
Wales	90 - 140	0.8 (0.7 - 1.0)
East of England	72 - 88	0.9 (0.7 - 1.0)
South West	49 - 63	1.0 (0.9 - 1.1)
North West	70 - 91	1.1 (1.0 - 1.3)
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)

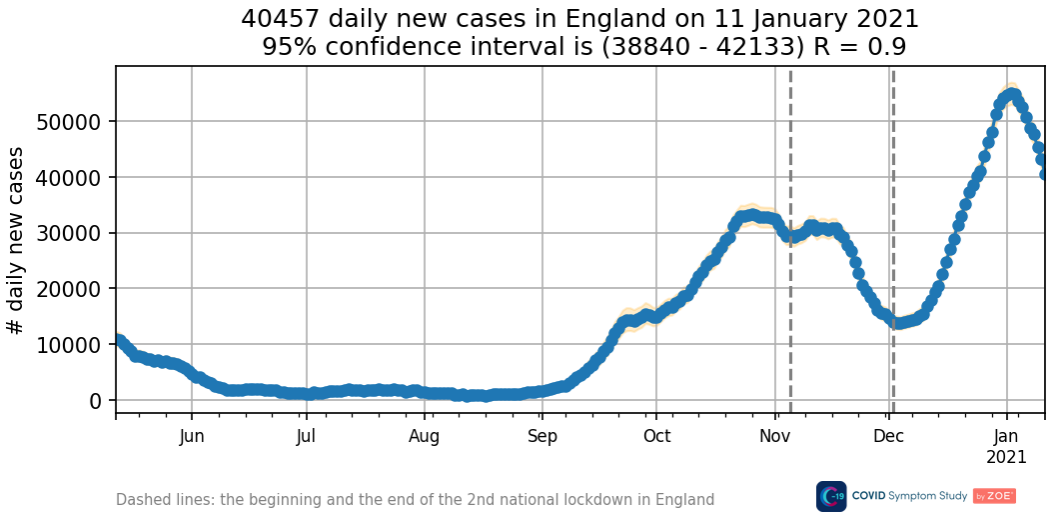
[1] Please refer to the publication by Varsavsky at al. (2020) for details on how R values are calculated

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

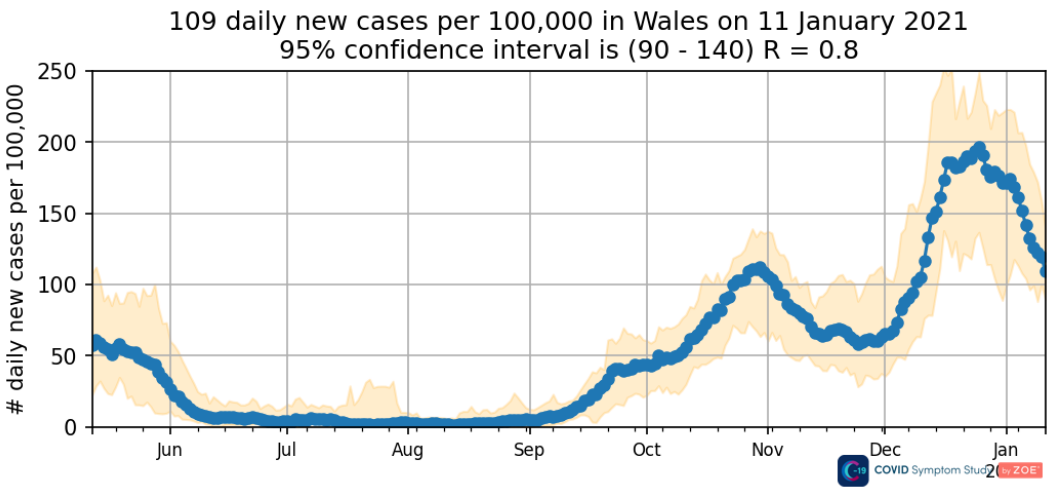


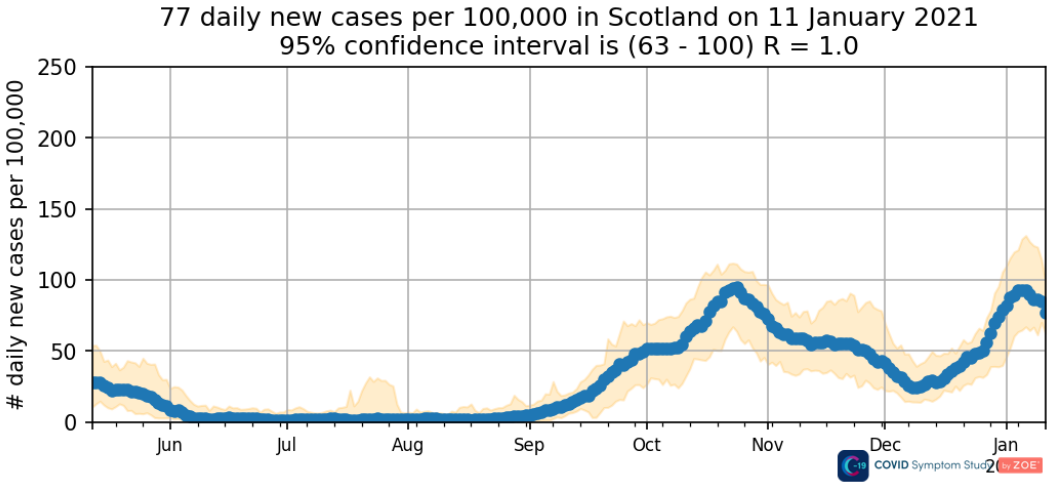
Changes in daily new cases of COVID in UK (based on 2 weeks up to each date)





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
daily new cases per 100,000
250
200
150
100
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0
Jun
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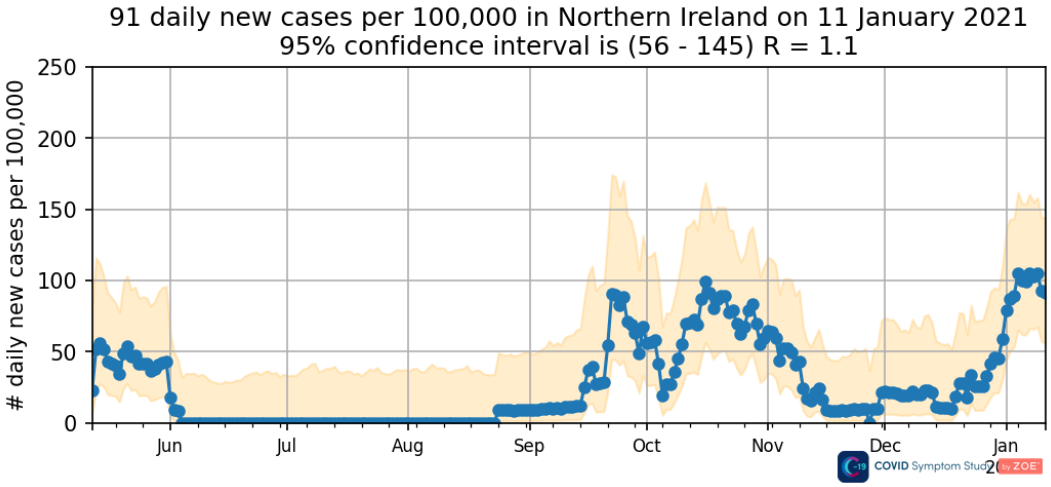
COVID Symptom Study by ZOE


91 daily new cases per 100,000 in Northern Ireland on 11 January 2021
95% confidence interval is (56 - 145) R = 1.1
daily new cases per 100,000
250
200
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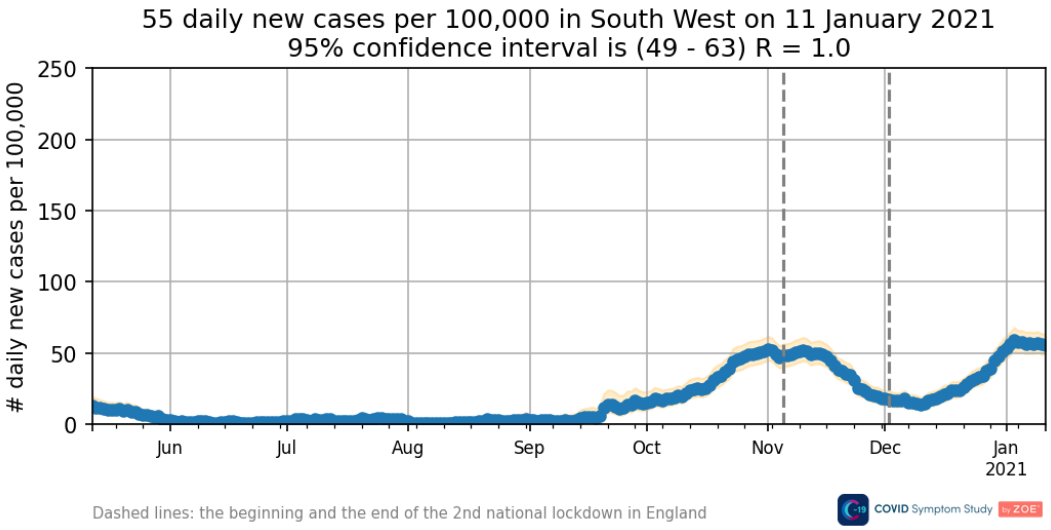
COVID Symptom Study by ZOE


55 daily new cases per 100,000 in South West on 11 January 2021
95% confidence interval is (49 - 63) R = 1.0
daily new cases per 100,000
250
200
150
100
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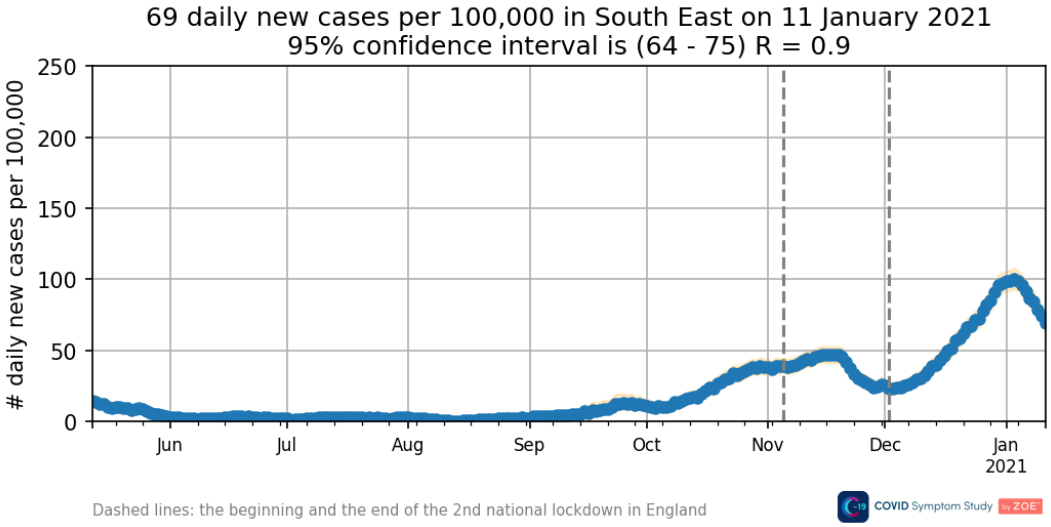
2021
Dashed lines: the beginning and the end of the 2nd national lockdown in England
COVID Symptom Study by ZOE


69 daily new cases per 100,000 in South East on 11 January 2021
95% confidence interval is (64 - 75) R = 0.9
daily new cases per 100,000
250
200
150
100
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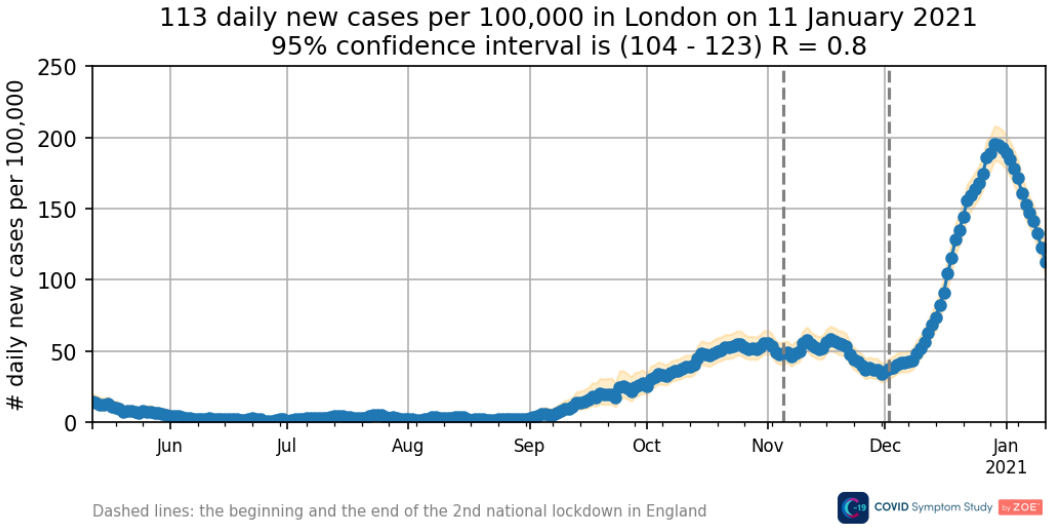
2021
Dashed lines: the beginning and the end of the 2nd national lockdown in England
COVID Symptom Study by ZOE


113 daily new cases per 100,000 in London on 11 January 2021
95% confidence interval is (104 - 123) R = 0.8
daily new cases per 100,000
250
200
150
100
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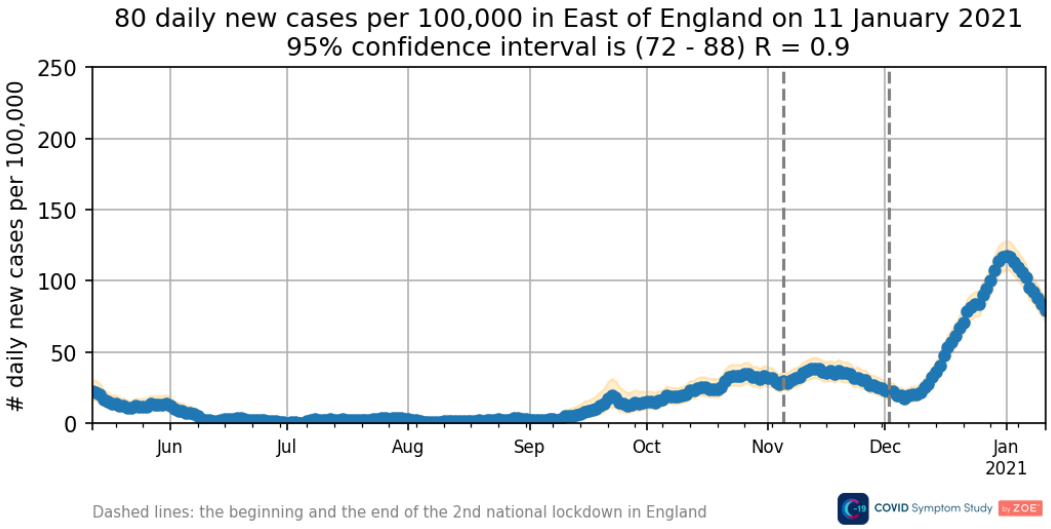
2021
Dashed lines: the beginning and the end of the 2nd national lockdown in England
COVID Symptom Study by ZOE


80 daily new cases per 100,000 in East of England on 11 January 2021
95% confidence interval is (72 - 88) R = 0.9
daily new cases per 100,000
250
200
150
100
50
0
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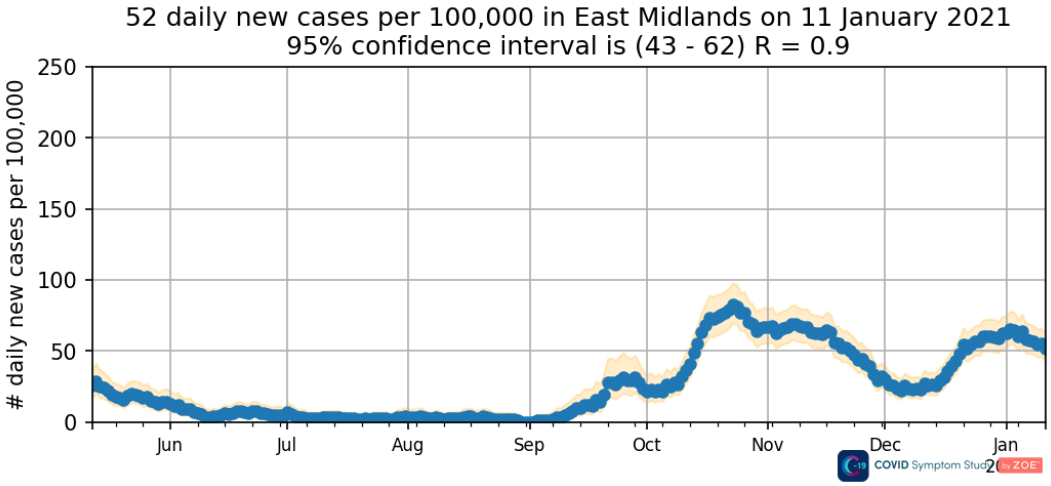
2021
Dashed lines: the beginning and the end of the 2nd national lockdown in England
COVID Symptom Study by ZOE


52 daily new cases per 100,000 in East Midlands on 11 January 2021
95% confidence interval is (43 - 62) R = 0.9
daily new cases per 100,000
250
200
150
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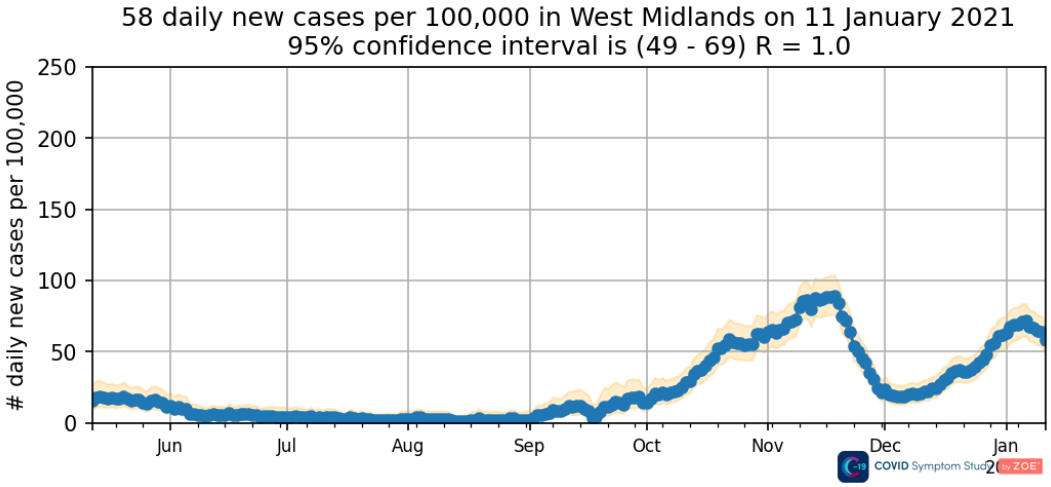
COVID Symptom Study by ZOE


58 daily new cases per 100,000 in West Midlands on 11 January 2021
95% confidence interval is (49 - 69) R = 1.0
daily new cases per 100,000
250
200
150
100
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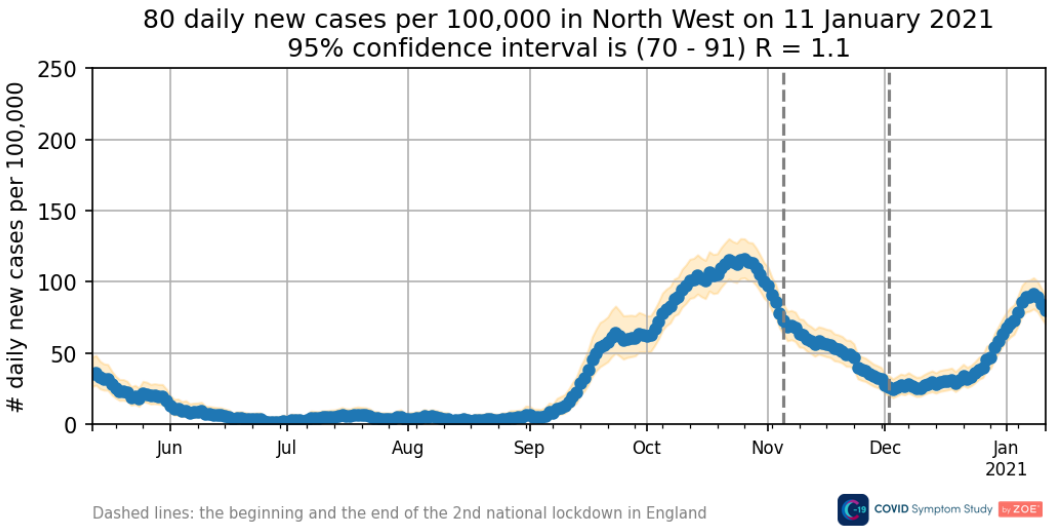
COVID Symptom Study by ZOE


80 daily new cases per 100,000 in North West on 11 January 2021
95% confidence interval is (70 - 91) R = 1.1
daily new cases per 100,000
250
200
150
100
50
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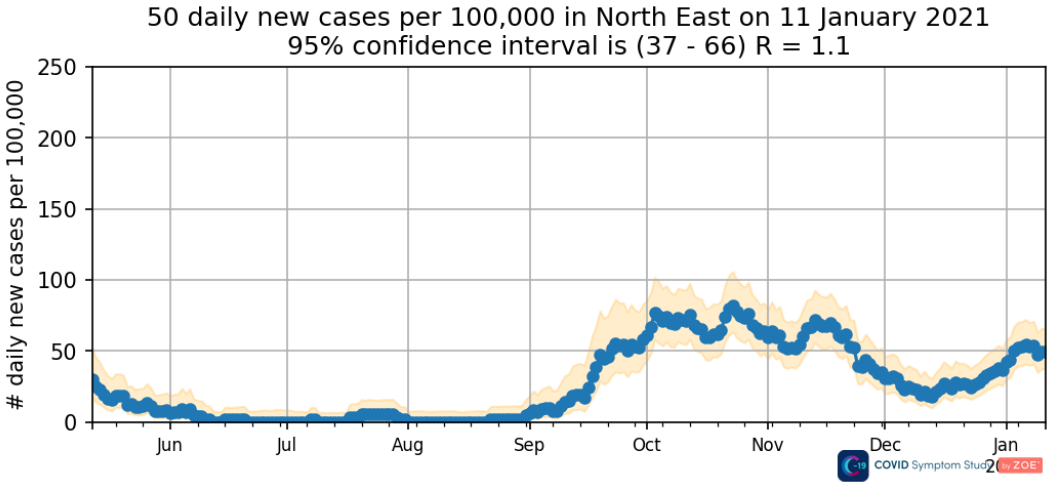
2021
Dashed lines: the beginning and the end of the 2nd national lockdown in England
COVID Symptom Study by ZOE


50 daily new cases per 100,000 in North East on 11 January 2021
95% confidence interval is (37 - 66) R = 1.1
daily new cases per 100,000
250
200
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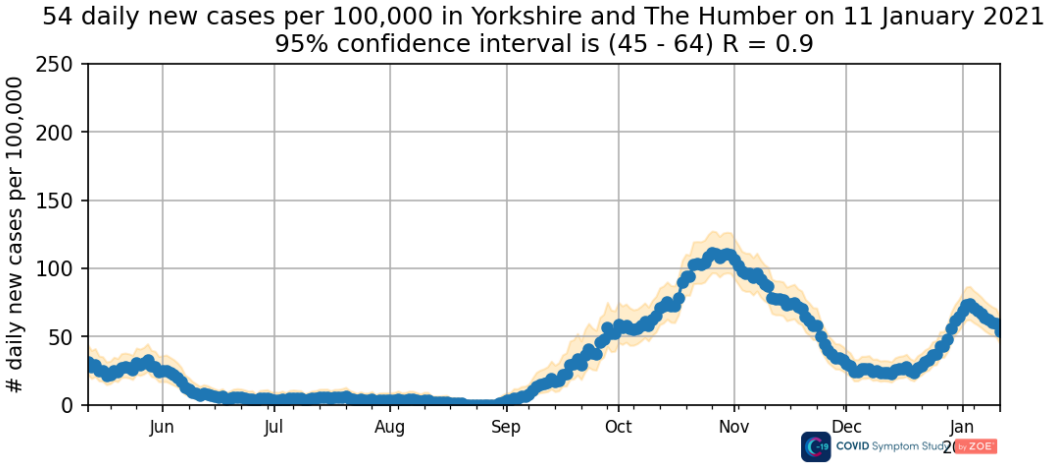
COVID Symptom Study by ZOE


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
daily new cases per 100,000
250
200
150
100
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0
Jun
Jul
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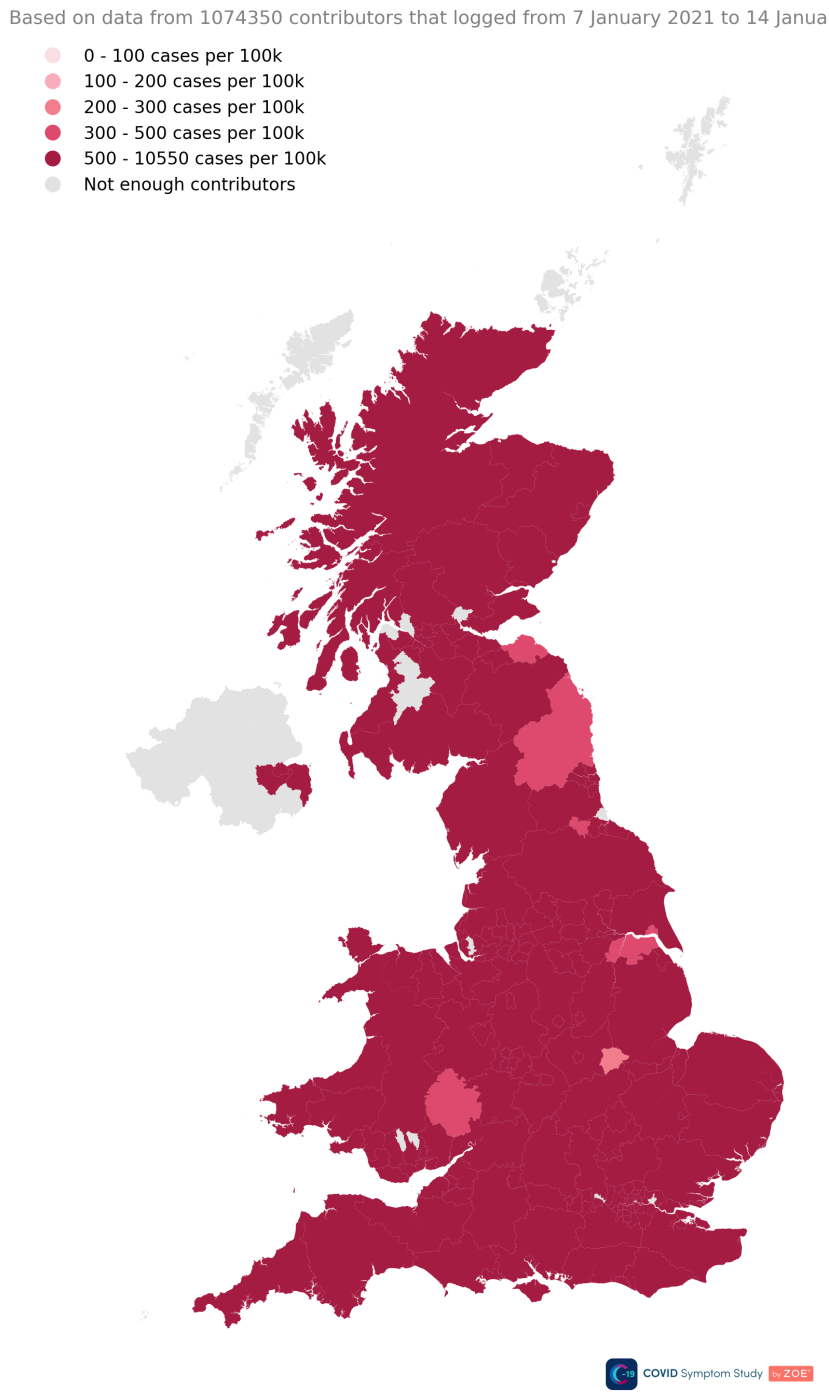
COVID Symptom Study by ZOE

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



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.

Region	Subregion	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+
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	●

Region	Subregion	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+
	Hertfordshire	5.0	1269	▼	621	▼
	Suffolk	5.0	1194	●	233	●
	Norfolk	5.0	983	●	294	●
	Cambridgeshire and Peterborough	5.0	932	▲	276	▲
South East	**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	▼
	Buckinghamshire	5.0	745	▼	404	▼
	Isle of Wight	5.0	missing	●	missing	●
	Slough	5.0	missing	●	missing	●
South West	**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. [2]

Region	Positivity rate	Incidence rate (per 100,000)	R rate	% hospital bed occupancy
South East	9.8 %	69.2	0.9	42.98 %
London	12.0 %	112.8	0.8	54.38 %
East of England	10.97 %	79.5	0.9	41.96 %
South West	8.37 %	55.4	1.0	22.99 %
North West	11.63 %	80.0	1.1	28.20 %
West Midlands	8.86 %	58.1	1.0	32.02 %
East Midlands	7.92 %	51.7	0.9	32.02 %
Yorkshire and The Humber	8.59 %	53.8	0.9	21.45 %
North East	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) and the overnight bed availability for acute and general cases (source: NHS 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
TOTAL	**787819**

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

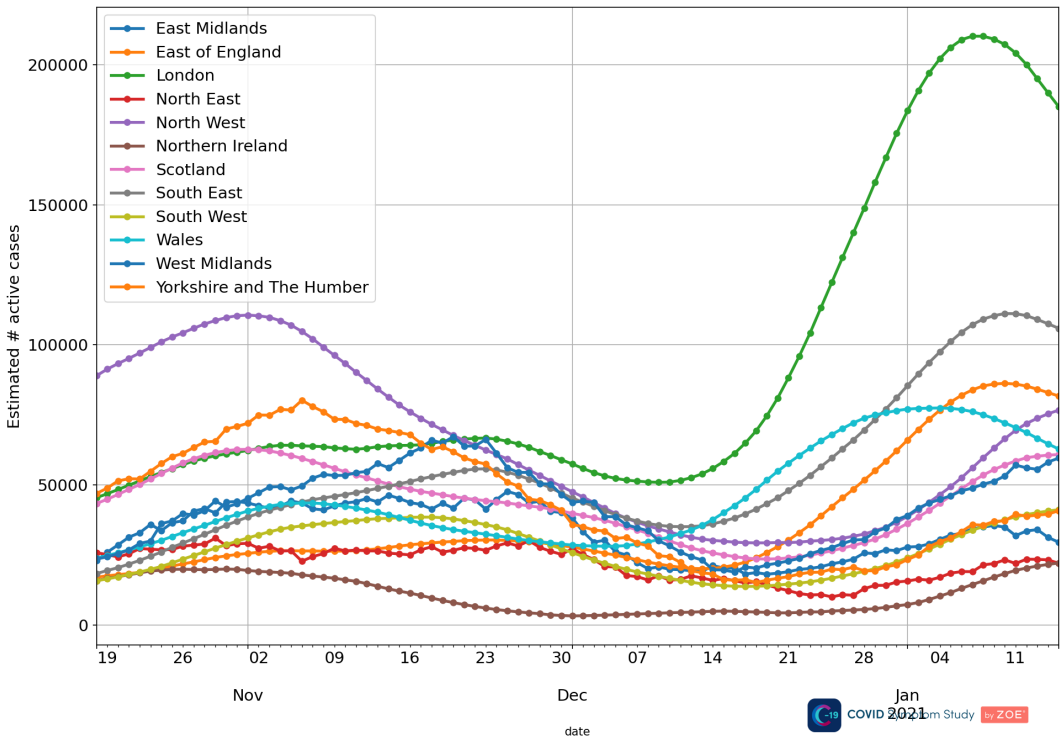
Symptomatic COVID by Socio-economic status (IMD)

	Symptomatic COVID cases per 100,000 people
LOW (1st - 3rd decile)	1551
MEDIUM (4th - 6th decile)	1169
HIGH (7th - 10th decile)	946
TOTAL	**1197**

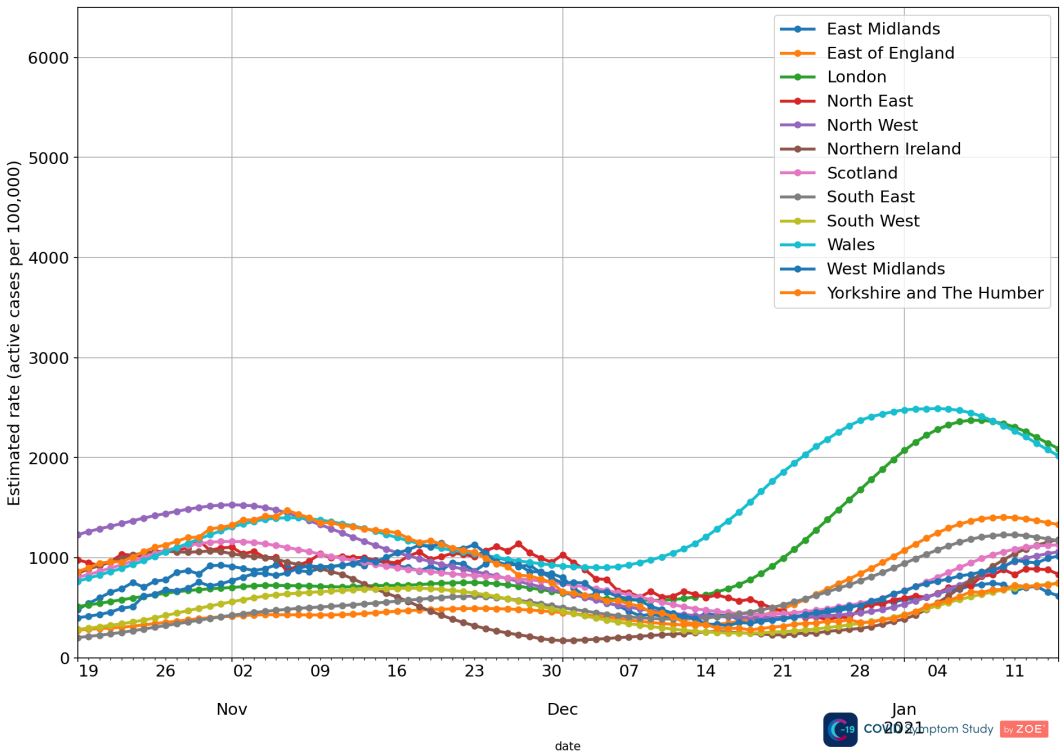
Symptomatic COVID by Age

	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
TOTAL	**1197**

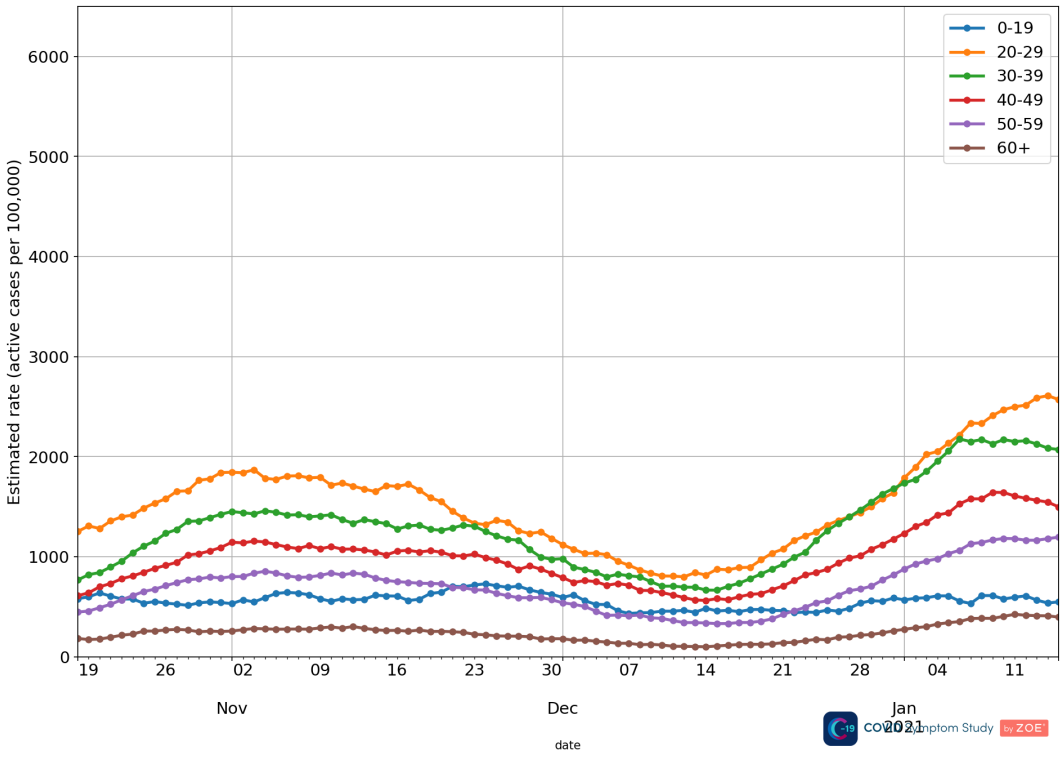
Estimate of people with Symptomatic COVID across Nations and Regions



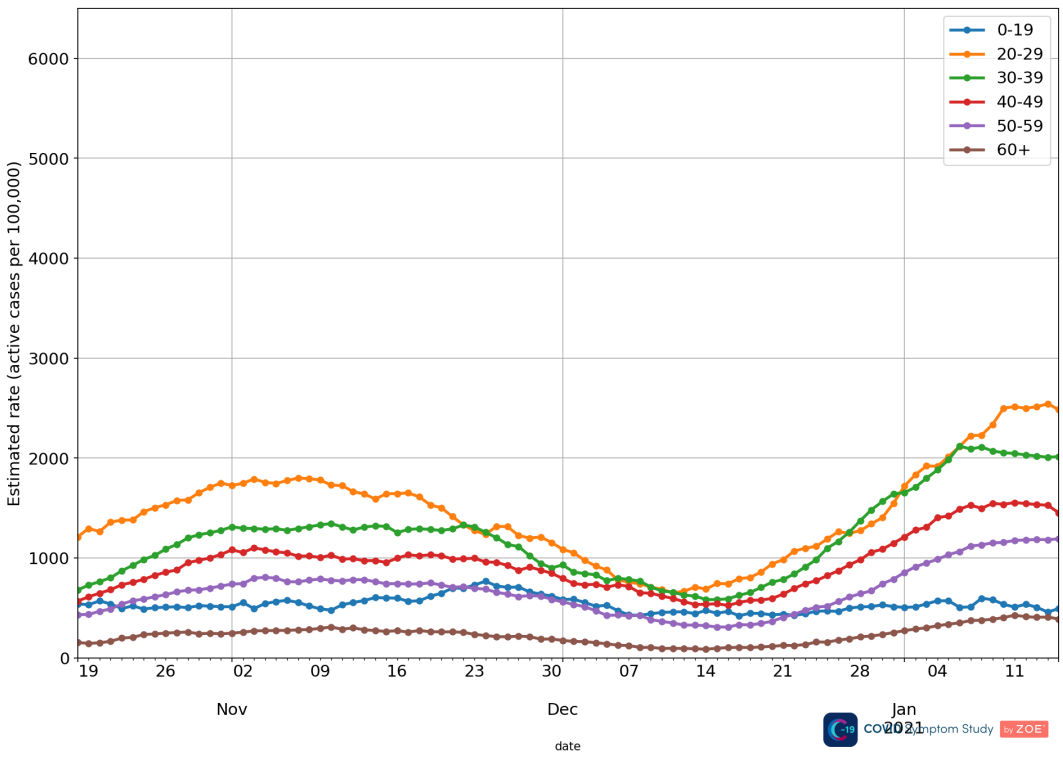
Estimated rate of people with Symptomatic COVID across Nations and Regions



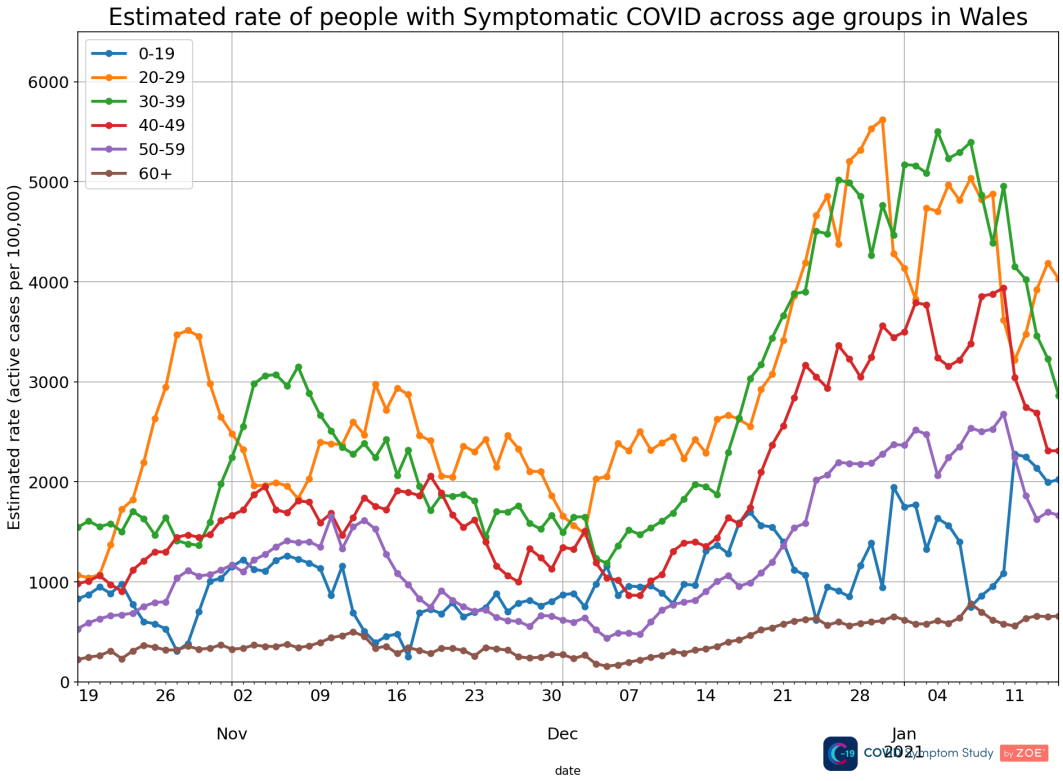
Estimated rate of people with Symptomatic COVID across age groups in the UK

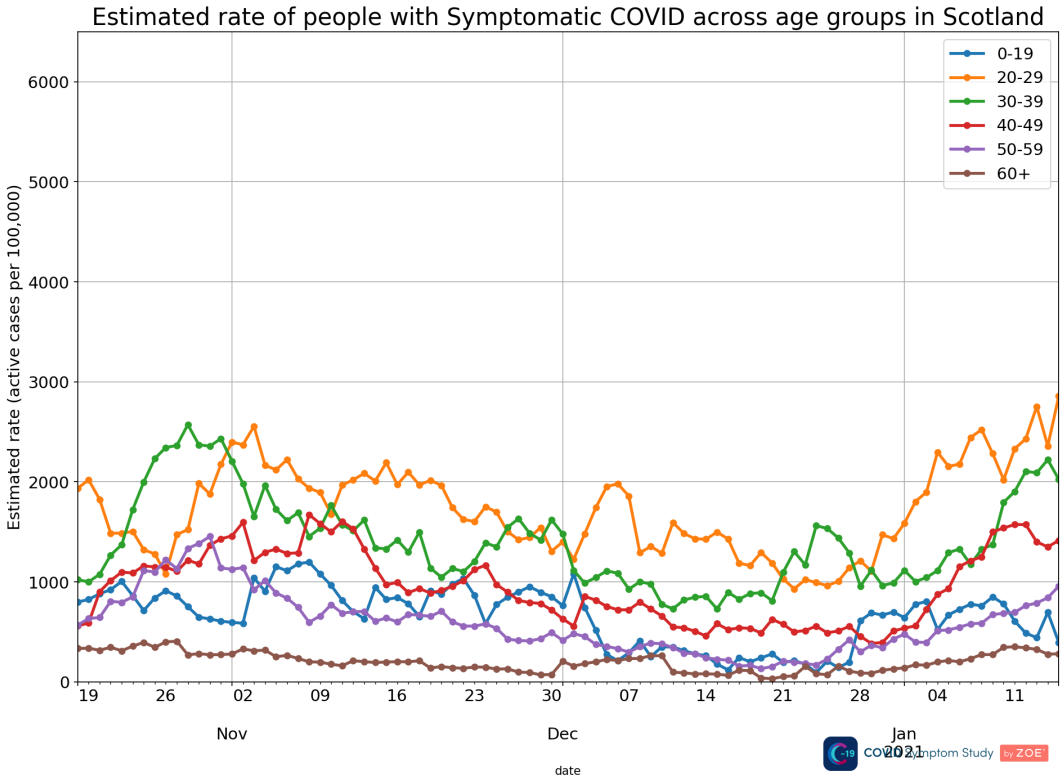


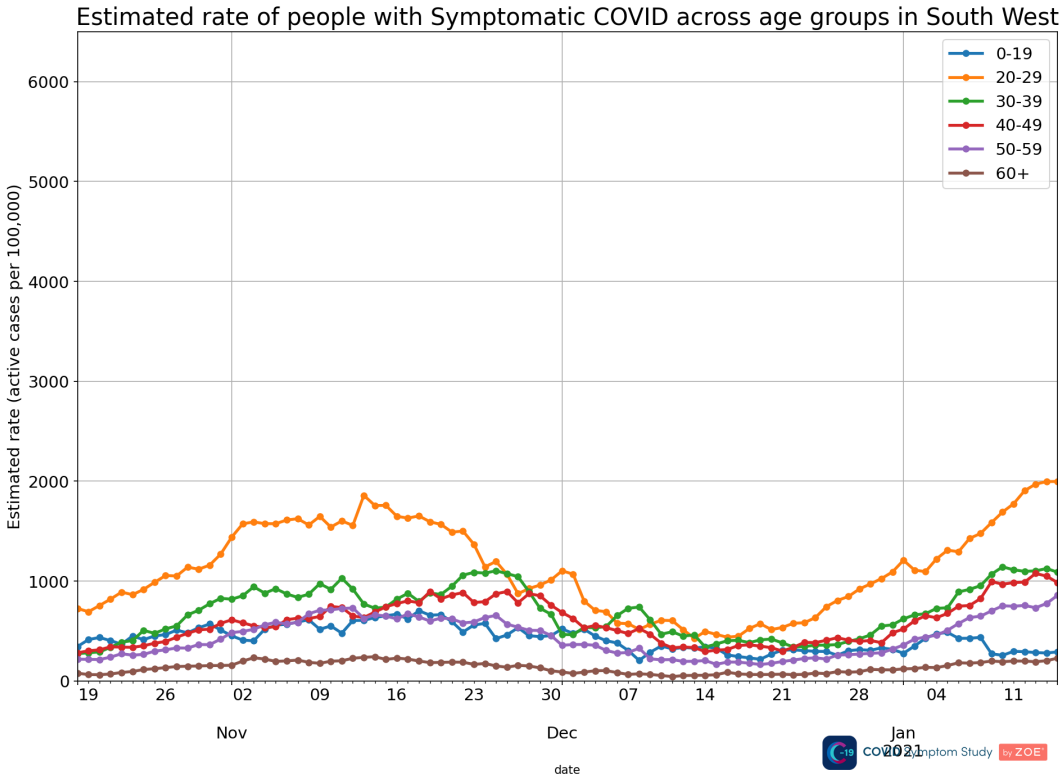
Estimated rate of people with Symptomatic COVID across age groups in England



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 (active cases per 100,000)
0
1000
2000
3000
4000
5000
6000
0-19
20-29
30-39
40-49
50-59
60+
19
26
02
09
16
23
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07
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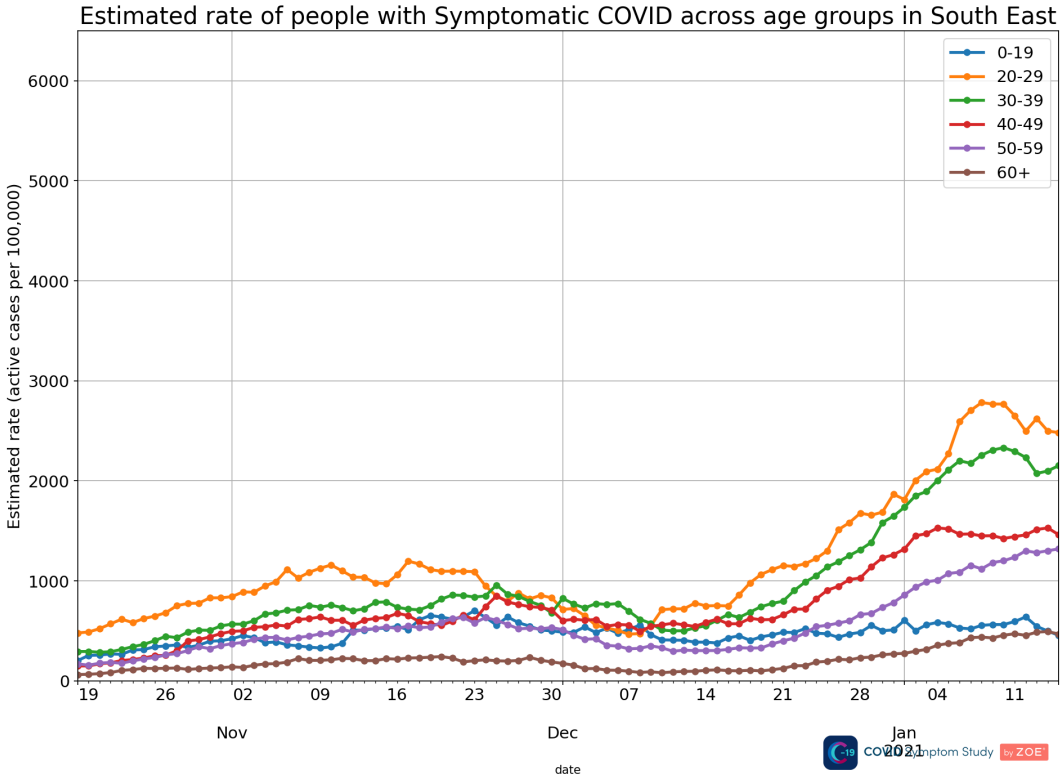
Dec
Jan
2021
date
COVID Symptom Study
by ZOE


Estimated rate of people with Symptomatic COVID across age groups in South East
Estimated rate (active cases per 100,000)
0
1000
2000
3000
4000
5000
6000
0-19
20-29
30-39
40-49
50-59
60+
19
26
02
09
16
23
30
07
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11
Nov
Dec
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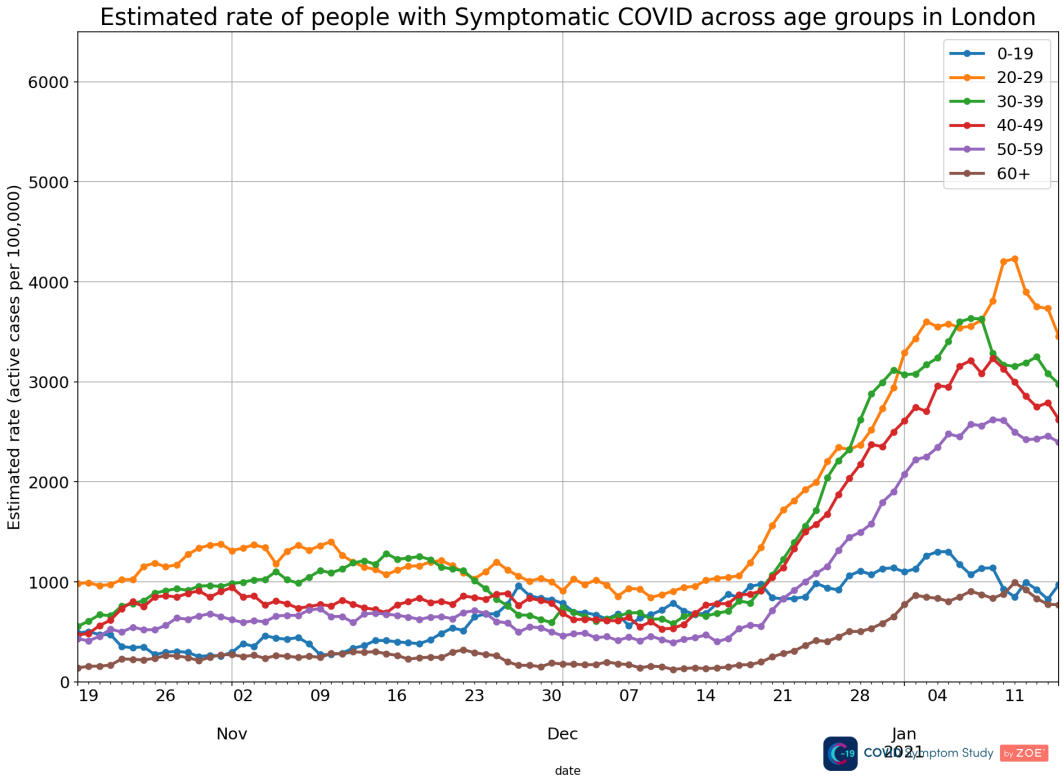
2021
date
COVID Symptom Study
by ZOE


Estimated rate of people with Symptomatic COVID across age groups in London
Estimated rate (active cases per 100,000)
0
1000
2000
3000
4000
5000
6000
0-19
20-29
30-39
40-49
50-59
60+
19
26
02
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2021
date
COVID Symptom Study
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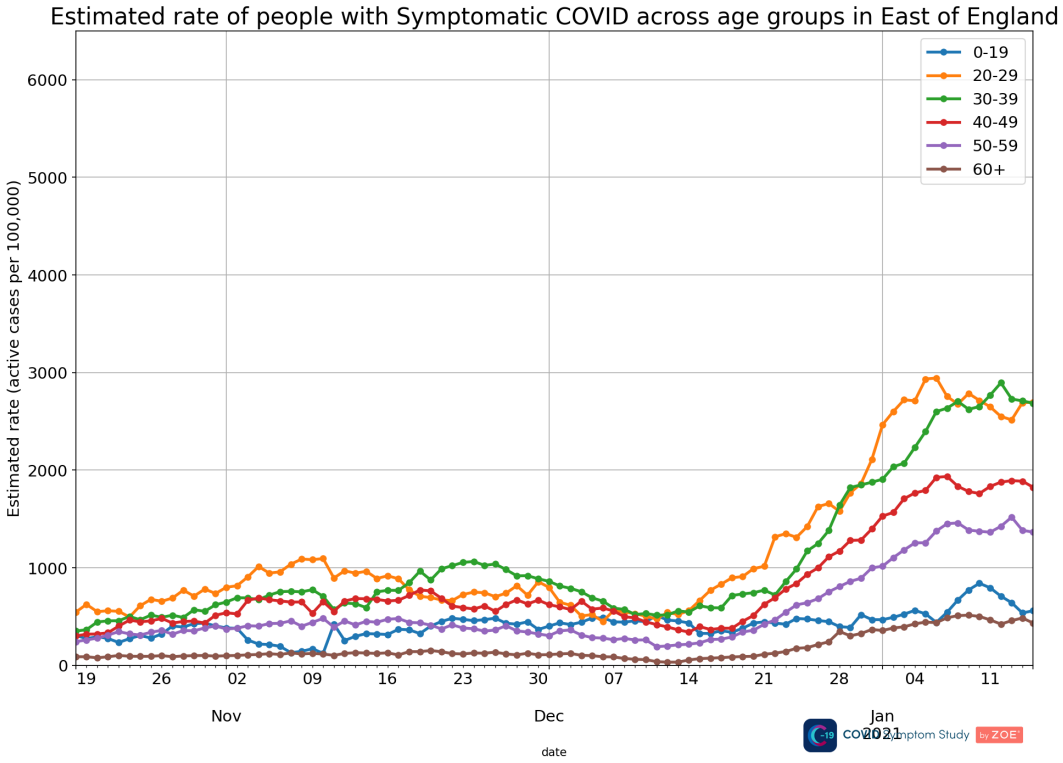
Estimated rate of people with Symptomatic COVID across age groups in East of England
Estimated rate (active cases per 100,000)
0
1000
2000
3000
4000
5000
6000
0-19
20-29
30-39
40-49
50-59
60+
19
26
02
09
16
23
30
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14
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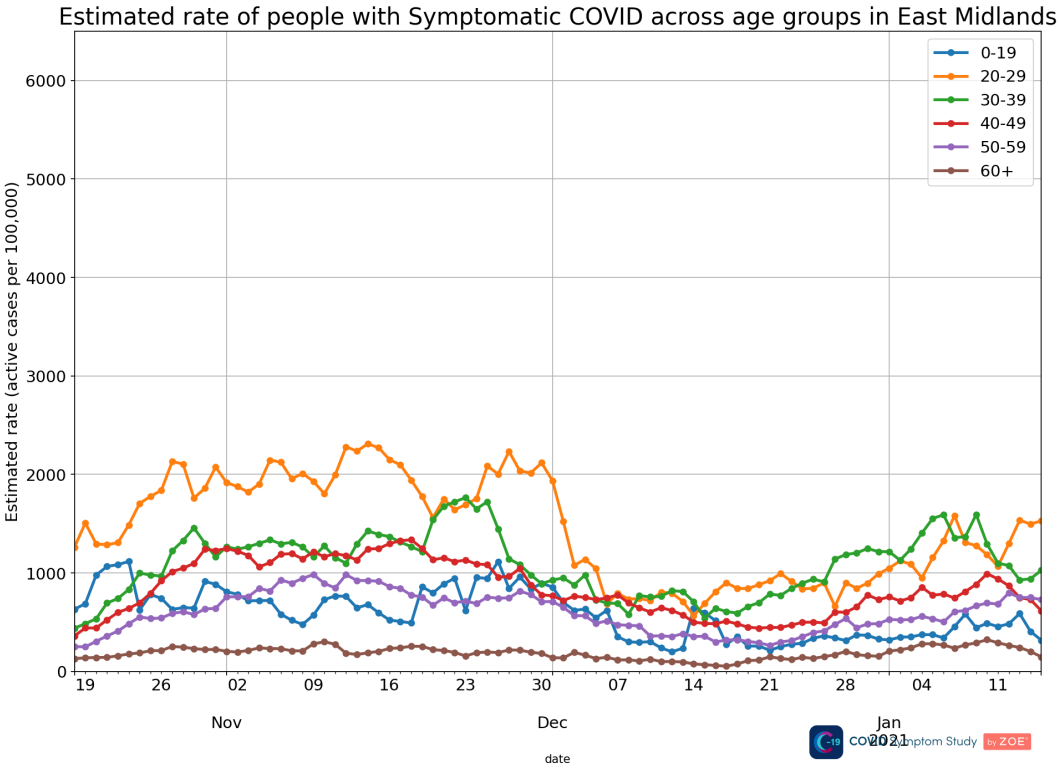
28
04
11
Nov
Dec
Jan
2021
date
COVID Symptom Study
by ZOE


Estimated rate of people with Symptomatic COVID across age groups in East Midlands
Estimated rate (active cases per 100,000)
0
1000
2000
3000
4000
5000
6000
0-19
20-29
30-39
40-49
50-59
60+
19
26
02
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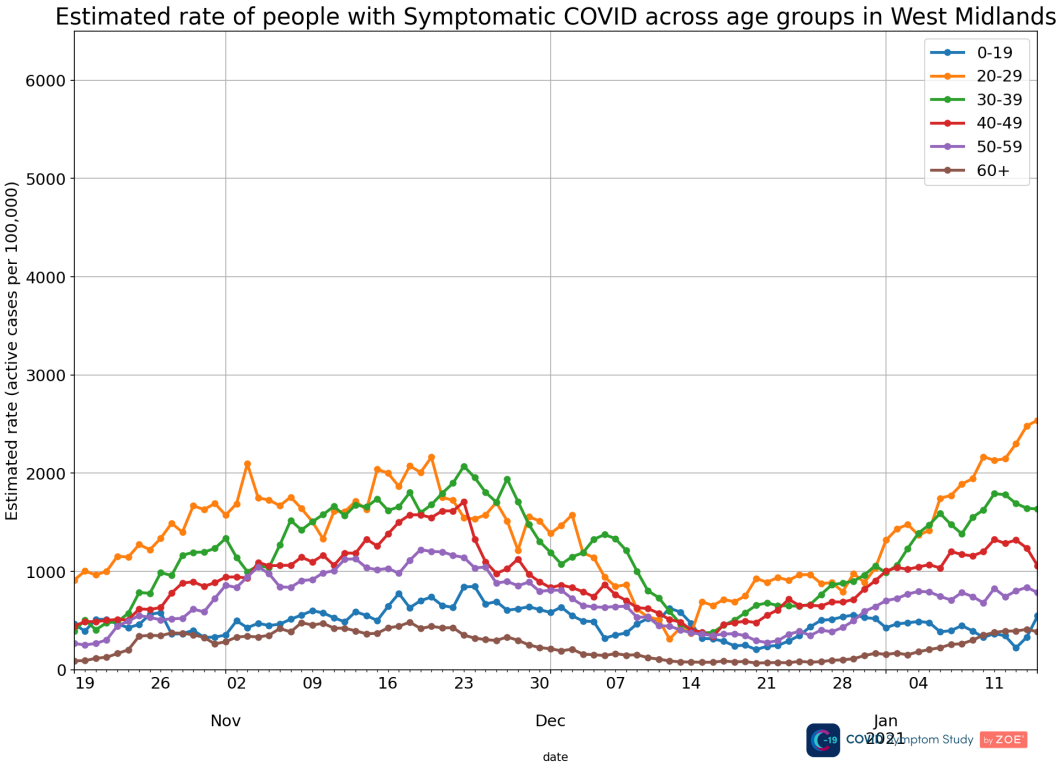
16
23
30
07
14
21
28
04
11
Nov
Dec
Jan
2021
date
COVID Symptom Study
by ZOE


Estimated rate of people with Symptomatic COVID across age groups in West Midlands
Estimated rate (active cases per 100,000)
0
1000
2000
3000
4000
5000
6000
0-19
20-29
30-39
40-49
50-59
60+
19
26
02
09
16
23
30
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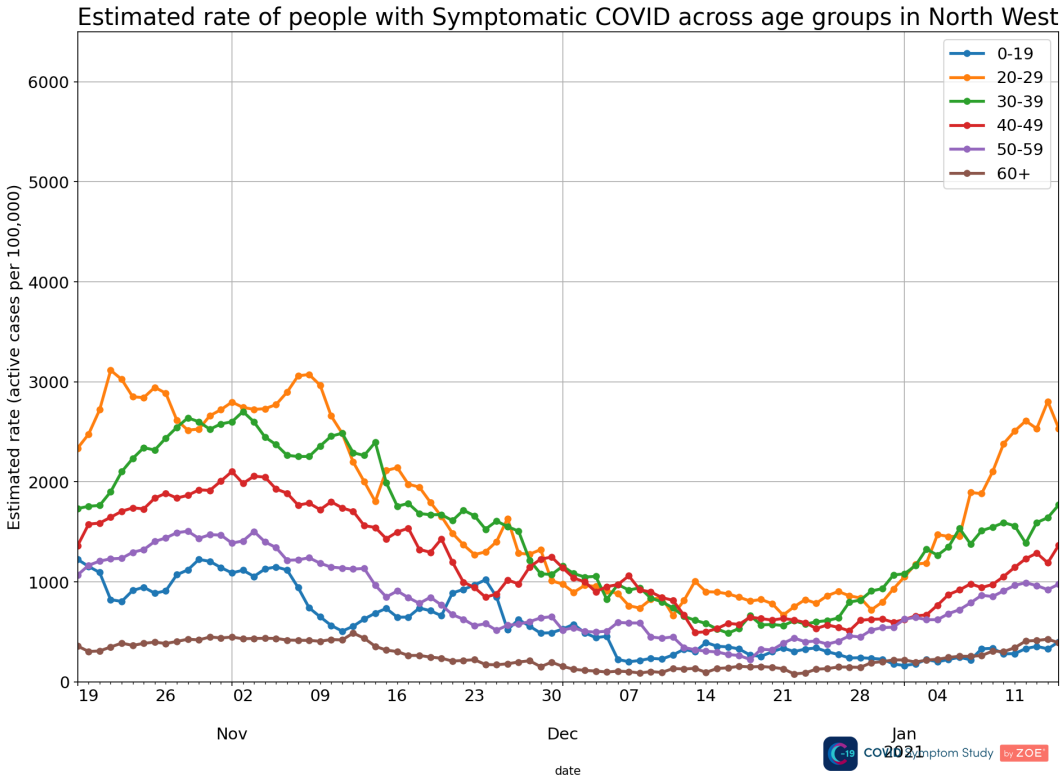
11
Nov
Dec
Jan
2021
date
COVID Symptom Study
by ZOE


Estimated rate of people with Symptomatic COVID across age groups in North West
Estimated rate (active cases per 100,000)
0
1000
2000
3000
4000
5000
6000
0-19
20-29
30-39
40-49
50-59
60+
19
26
02
09
16
23
30
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28
04
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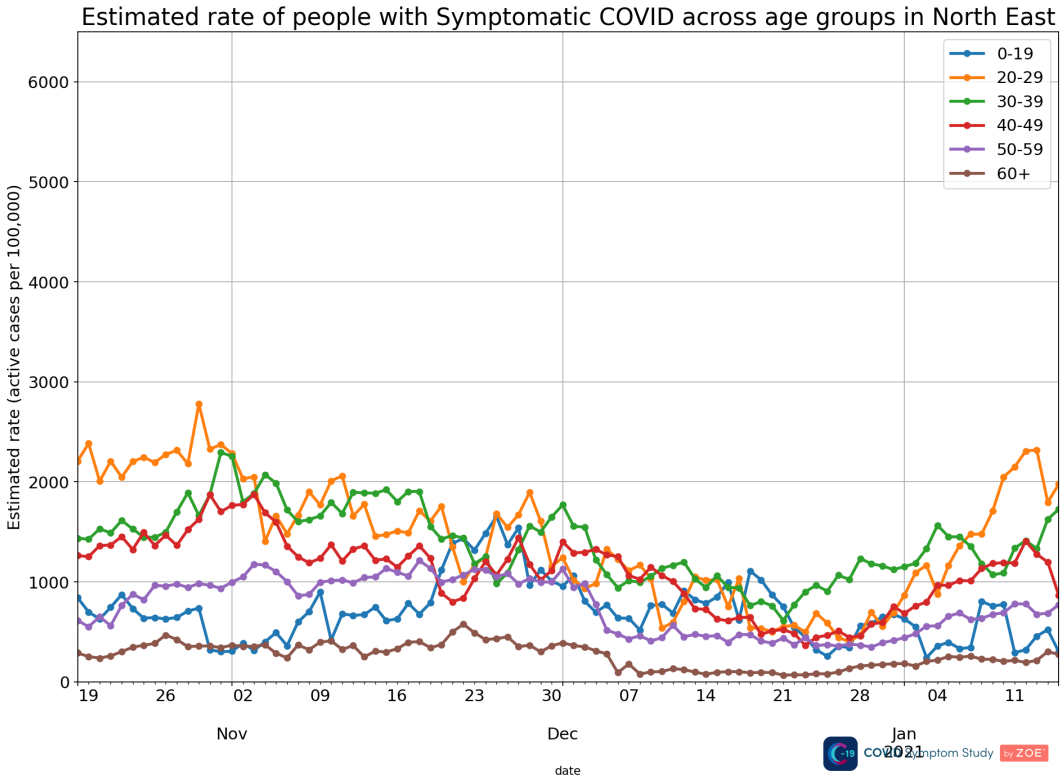
Nov
Dec
Jan
2021
date
COVID Symptom Study
by ZOE


Estimated rate of people with Symptomatic COVID across age groups in North East
Estimated rate (active cases per 100,000)
0
1000
2000
3000
4000
5000
6000
0-19
20-29
30-39
40-49
50-59
60+
19
26
02
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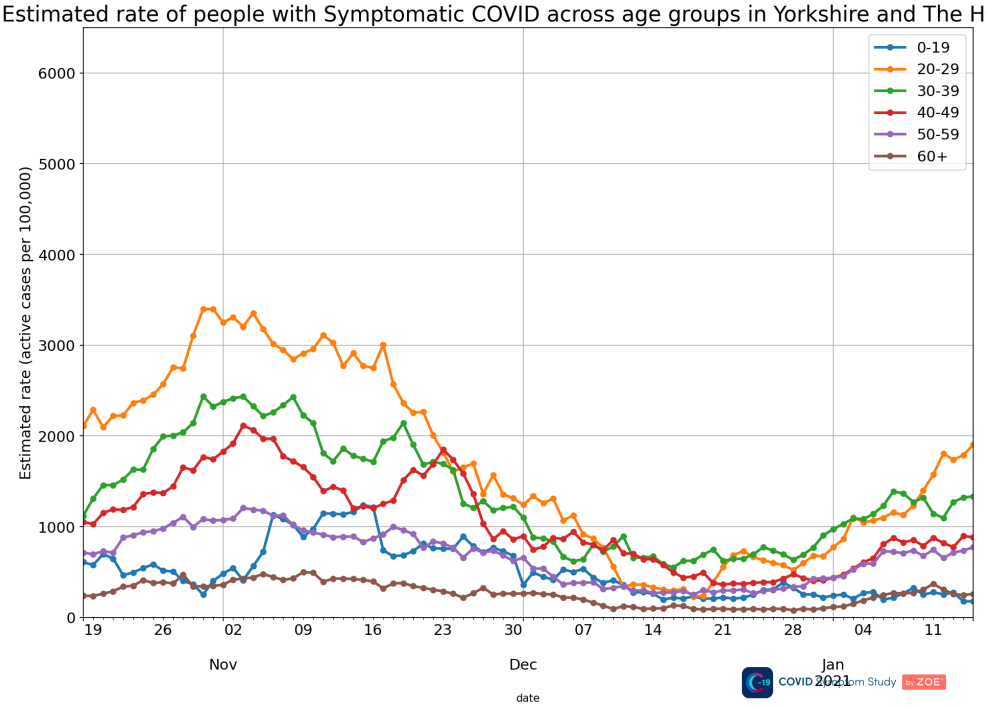
2021
date
COVID Symptom Study
by ZOE

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



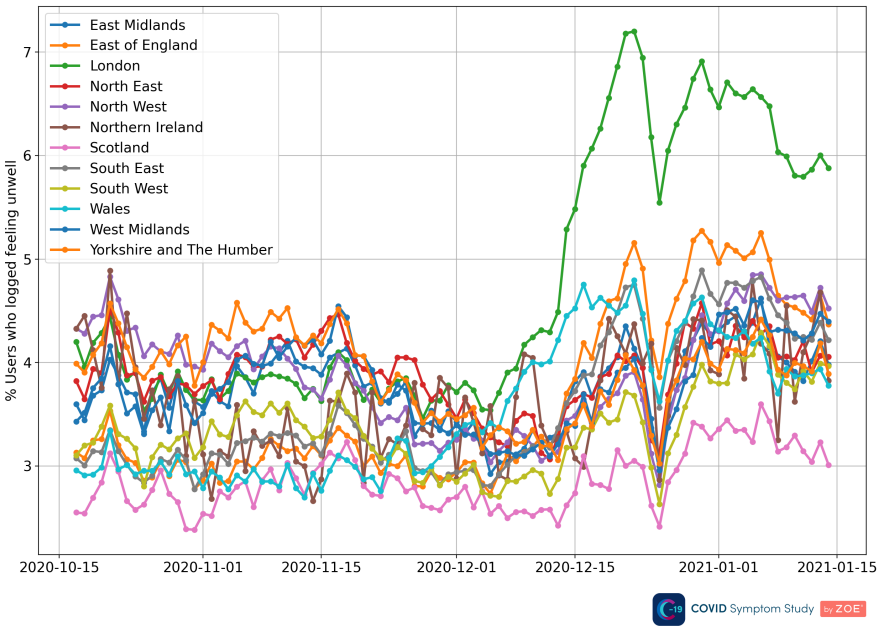
Raw Data (up to 14 January 2021)

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 %

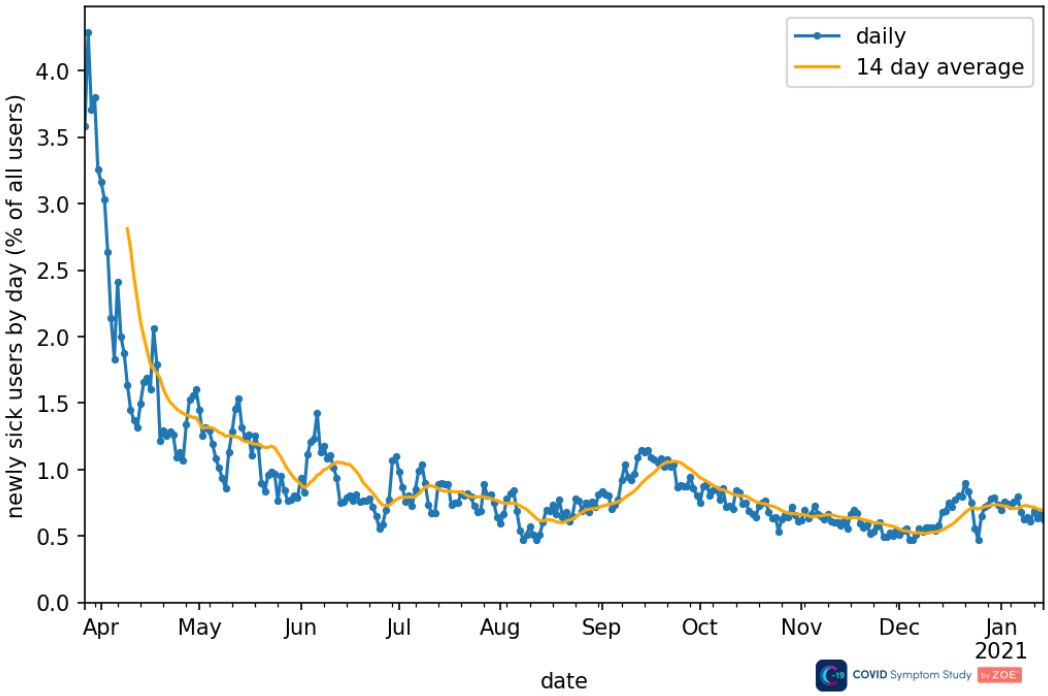
Users who logged feeling unwell by day



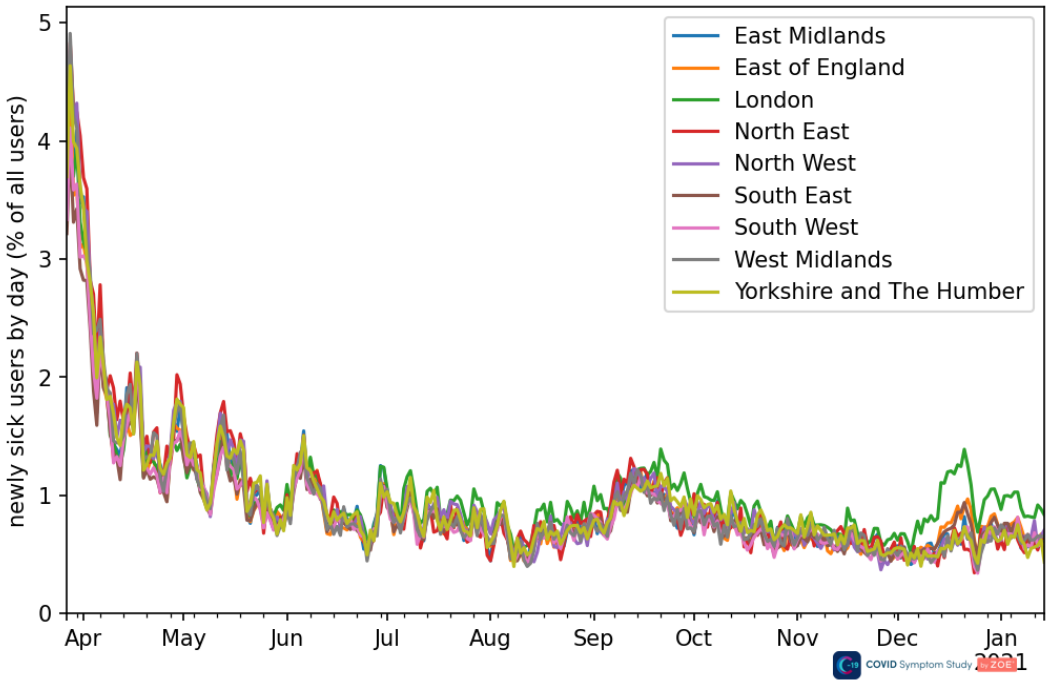
Newly Sick Users by Day (% of Active Users)

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)