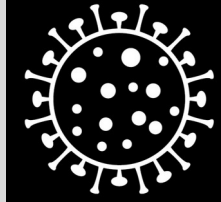


IEMAG briefing

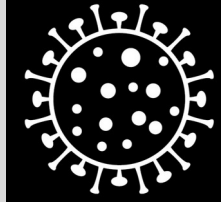
7 January 2021



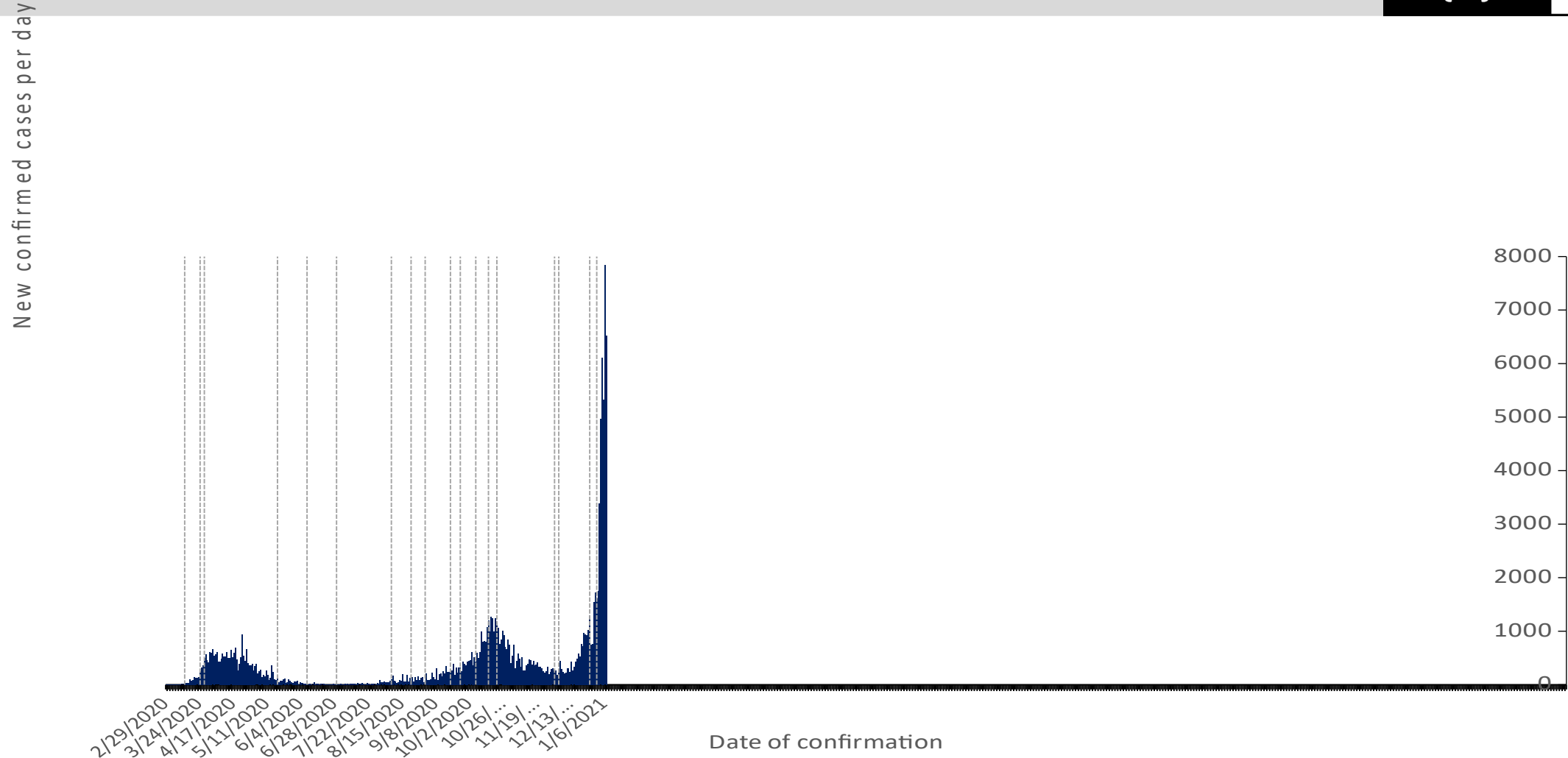
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Confirmed cases each day

Daily case count since the beginning of the epidemic



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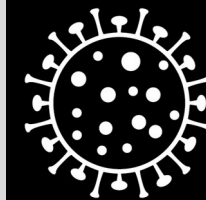
Daily count of the number of laboratory confirmed new cases by date on which they were confirmed by HPSC. Tests outsourced to German laboratory in April backdated, using the specimen collection date, to the date they would have been confirmed if tested in a timely manner. The vertical dashed lines indicate the dates of escalation and de-escalation of public health restrictions



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Cases, numbers in hospital and intensive care

Case numbers have risen very rapidly. The number of people in hospital and ICU, and the number of admissions per day, is also increasing very quickly. The number of deaths per day is increasing.



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	16 Apr	24 Jun	29 Jul	26 Aug	30 Sept	21 Oct	16 Dec	23 Dec	31 Dec	6 Jan	Daily count 7 Jan
Cases confirmed per day	547	10	18	117	356	1160	330	713	1243	4429	6521
14-day incidence <i>per 100,000 population</i>	157	4.0	5.6	32	92	288	88	153	297	819	936
Hospital in-patients	858	42	11	22	108	279	198	222	365	676	1022
<i>Hospital admissions per day</i>	56	2	2	3	10	23	14	22	43	94	131
ICU confirmed cases	147	15	5	6	18	32	33	29	31	63	95
<i>ICU admissions per day</i>	8	< 1	< 1	< 1	2	3	1	2	5	11	15
Deaths confirmed per day	32	< 1	< 1	< 1	1	5	5	6	7	11	

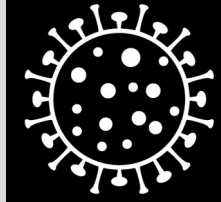
Data are 7-day averages (the indicated day and the preceding 6 days, rounded to the nearest whole number) with the exception of 14 day cumulative incidence, which is the total number of cases in the preceding 14 days per 100,000 population. NPHET monitors 5-day moving average and 14-day cumulative incidence on a day-by-day basis, as indicators of rate of change of incidence and overall burden of infection. 7-day averages are used here to limit day-of-week effects. The historic incidence data may change due to denotification of cases.



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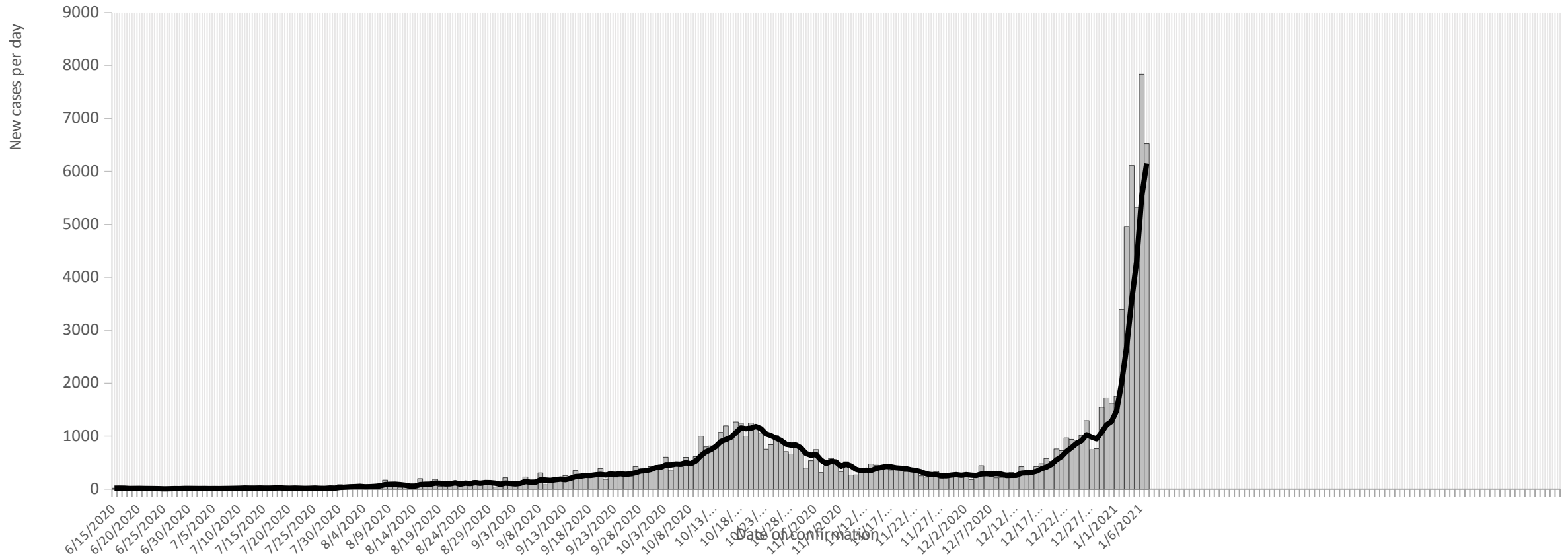
Confirmed cases each day

Daily and weekly count and 5-day rolling average. Case counts are much lower than in late October. The 5-day average peaked at 1186 on 21 October, reached a low of 251 on 28 November, and is now **6147**



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Cases per week	93	125	139	119	284	540	546	711	796	912	1303	1947	2060	3031	4458	7397	7073	4838	3424	2583	2580	1799	2028	1966	3368	6609	15671
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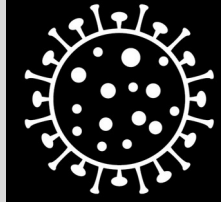
Daily count (bars) 5-day average (line) and weekly counts of the number of laboratory confirmed new cases by date on which they were confirmed by HPSC. Case counts may change due to denotification of cases. Weekly case counts are by event date from midnight Saturday to midnight Saturday.



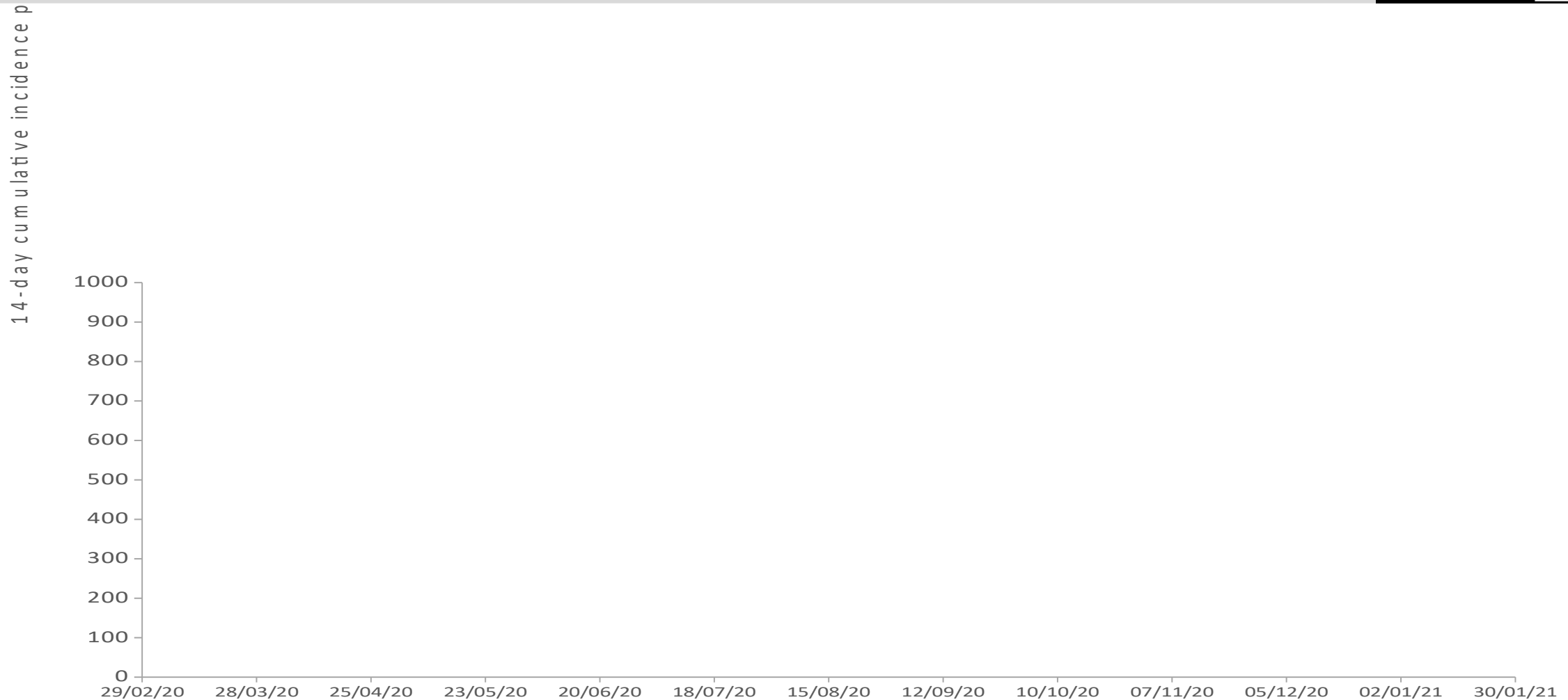
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14-day cumulative incidence

14-day cumulative incidence peaked at 170 per 100,000 in late April, declined to 3 per 100,000 in late June, peaked again on 26 October at 307 per 100,000, reached a low of 78 per 100,000 on 4 December, and is now **937 per 100,000**



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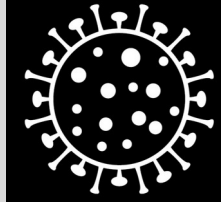
14-day cumulative incidence by date of confirmation. Tests outsourced to German laboratory in April backdated, using the specimen collection date, to the date they would have been confirmed if tested in a timely manner. The vertical dashed lines indicate the dates of escalation and de-escalation of public health restrictions



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Testing

The demand for tests is high, and positivity rate is increasing rapidly.



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7-day average	15 Apr	23 Jun	28 Jul	25 Aug	29 Sept	20 Oct	8 Dec	15 Dec	22 Dec	29 Dec	4 Jan
Tests done per day	5579	2607	6494	7742	12624	16030	11003	11870	14483	14814	23002
% tests positive	18%	0.5%	0.4%	1.7%	3.0%	7.1%	2.5%	2.8%	5.1%	10.9%	20.8%

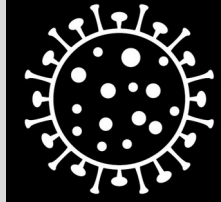
Data are 7-day averages (the indicated day and the preceding 6 days). The aggregate positivity rate should be interpreted with caution, as it includes community referrals, close contacts, mass and serial testing, and hospital testing, and changes in numbers of tests done in these different settings will alter the overall positivity rate.



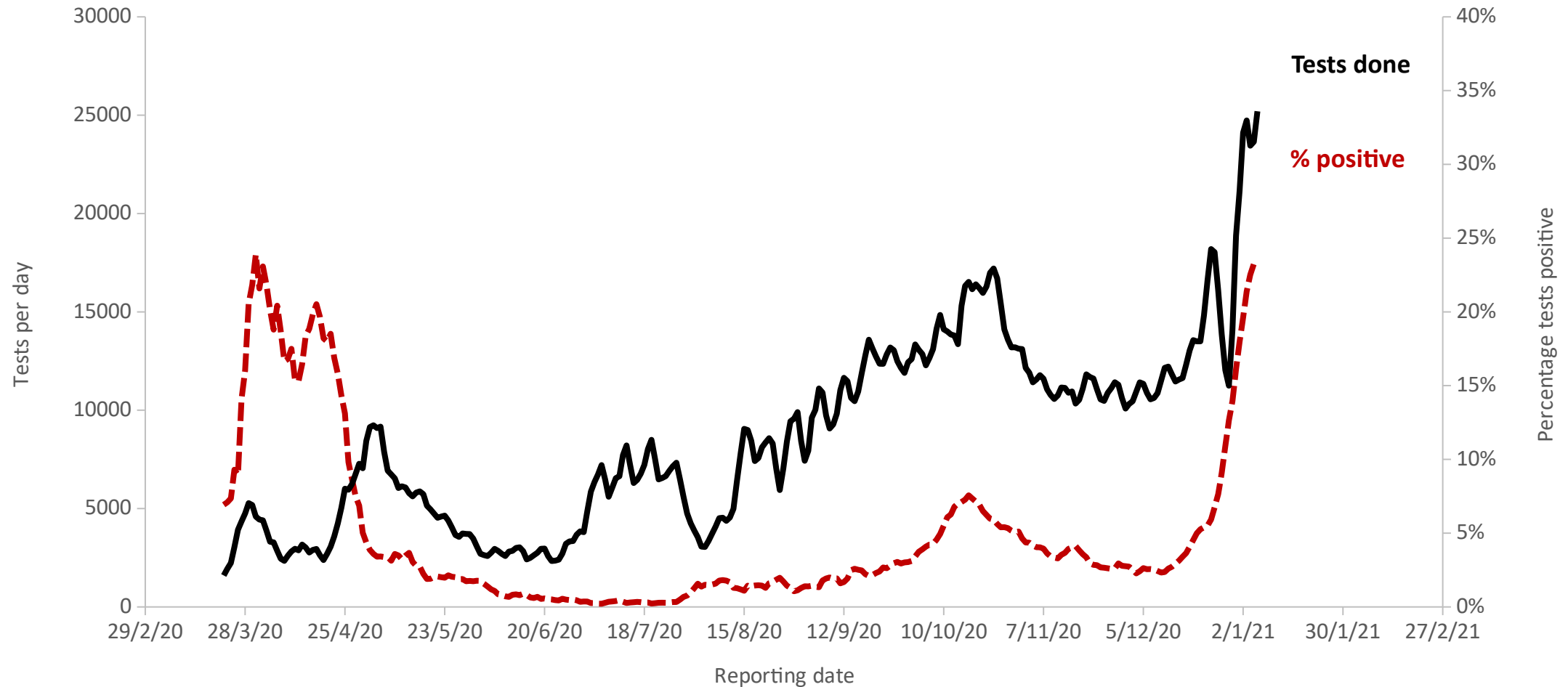
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Testing and test positive rate

The demand for tests is increasing, and positivity rate has increased sharply



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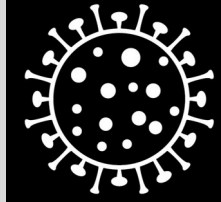
Data 5-day rolling averages, tests outsourced to German laboratory in April backdated using specimen collection date. The aggregate positivity rate should be interpreted with caution, as it includes community referrals, close contacts, mass and serial testing, and hospital testing, and changes in numbers of tests done in these different settings will alter the overall positivity rate.



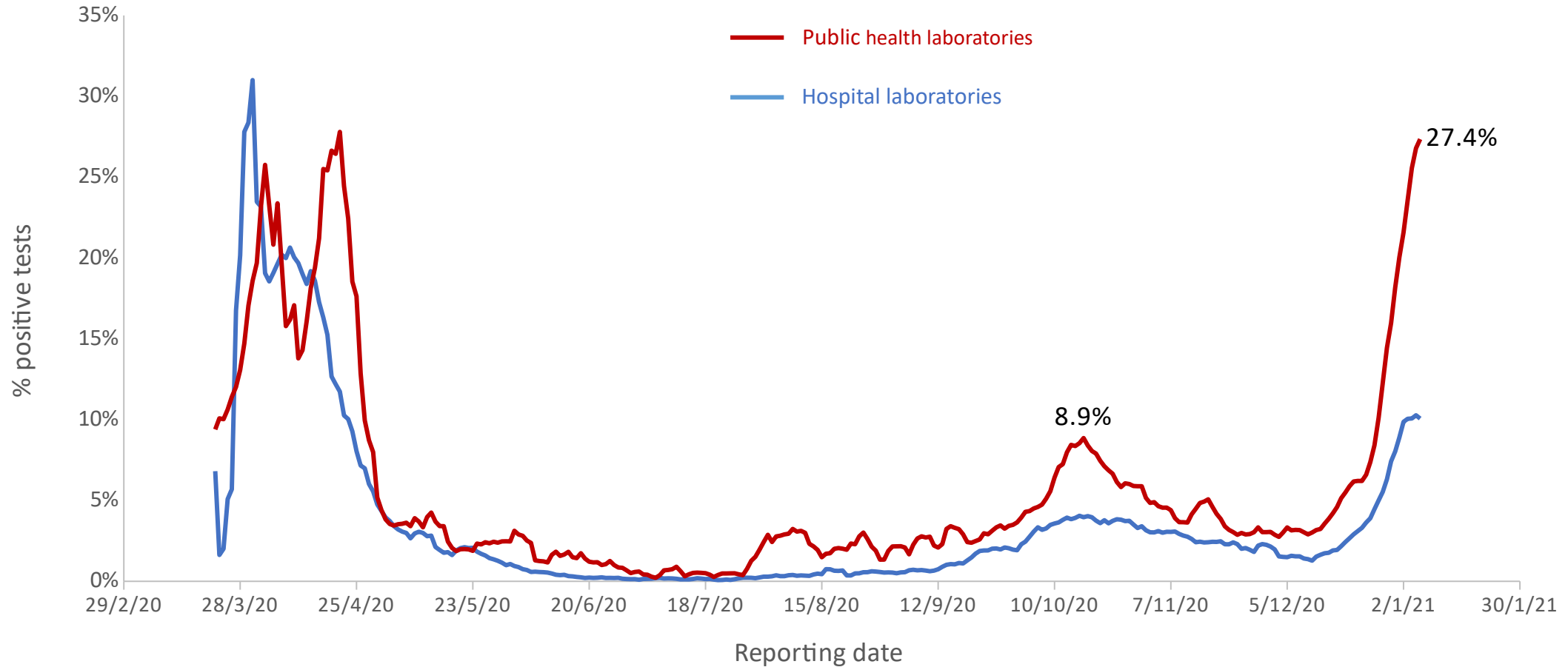
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Test positivity: public health laboratories

The positivity rate is higher for tests conducted in public health laboratories (NVRL, associated laboratories and Cherry Orchard) compared with tests conducted in hospitals. Positivity rates in public health laboratories have increased rapidly, and are now approaching the very high positivity rates seen with the constrained testing regimen of the first wave



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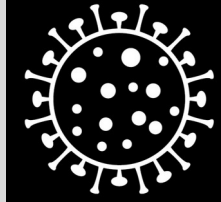
Data 5-day rolling averages of percentage of tests reported positive per day. NVRL+ is NVRL and associated laboratories, plus Cherry Orchard
Backlog tests outsourced to German laboratory in April are not backdated and are assigned to date reported



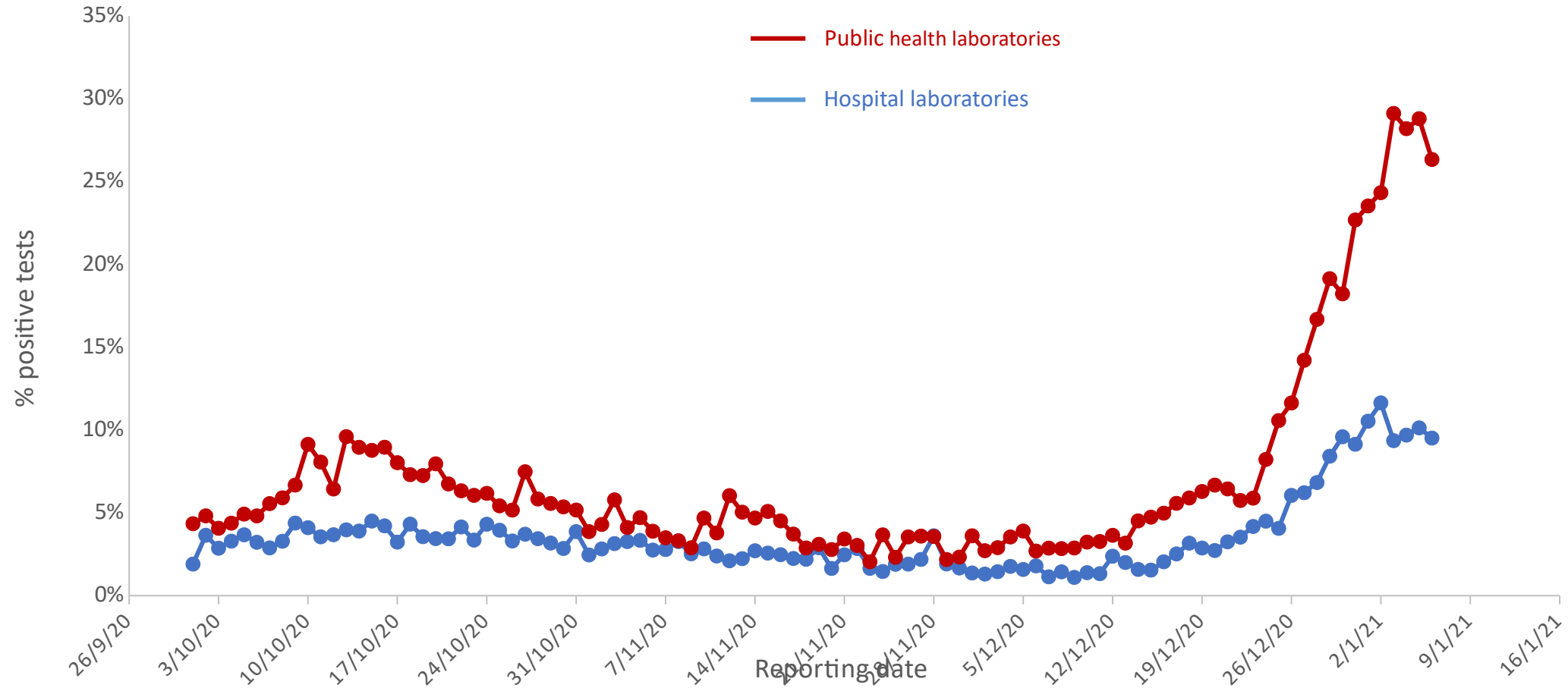
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Test positivity: public health laboratories

The positivity rate is higher for tests conducted in public health laboratories (NVRL, associated laboratories and Cherry Orchard) compared with tests conducted in hospitals. Positivity rates in public health laboratories have increased rapidly, but may now be stabilising



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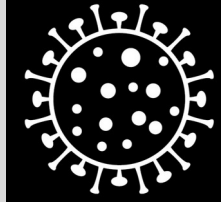
Data 5-day rolling averages of percentage of tests reported positive per day. NVRL+ is NVRL and associated laboratories, plus Cherry Orchard.



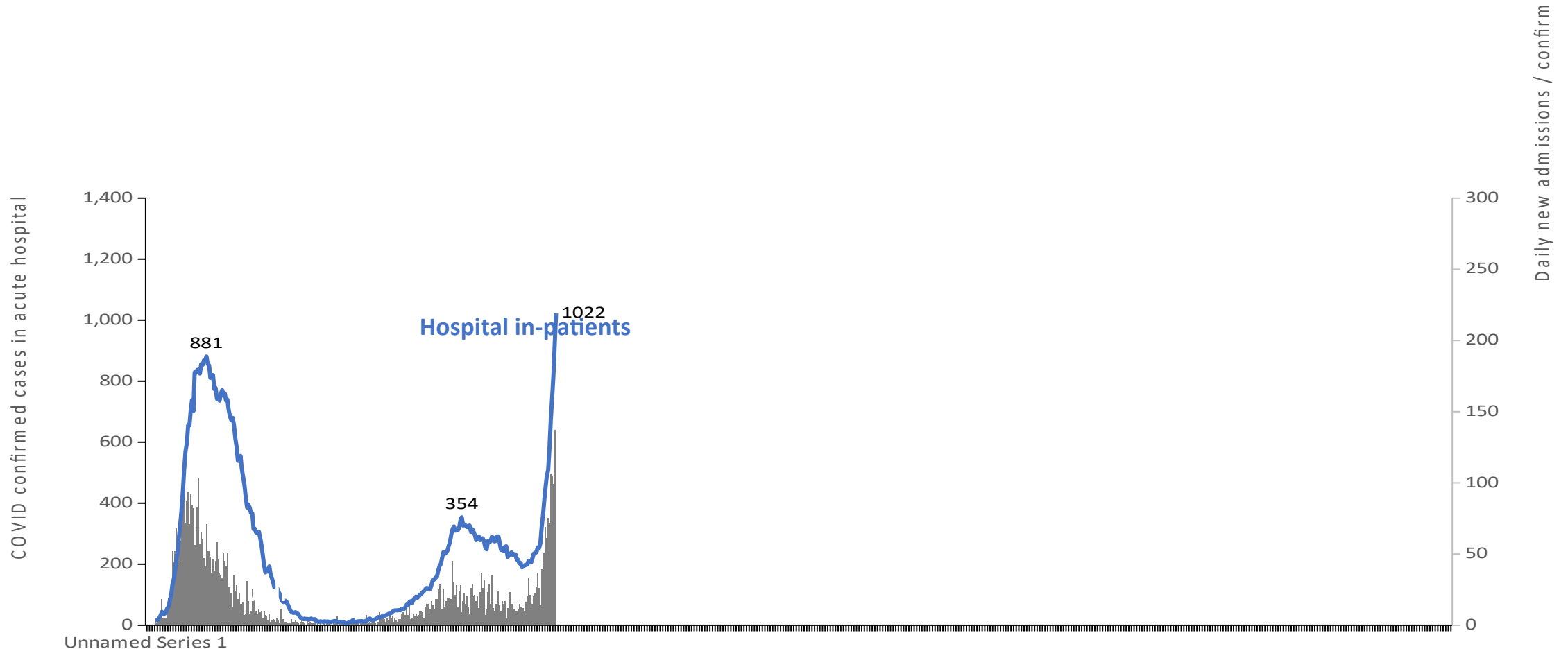
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Confirmed cases in acute hospitals

The number of people in hospital with confirmed SARS-CoV-2 infection is now increasing rapidly



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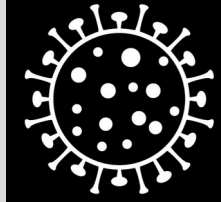
Hospital in-patients: Daily count of number of COVID-19 confirmed cases in acute hospitals. Daily admissions: New COVID-19 confirmed admissions and new laboratory confirmations of suspected cases in preceding 24 hours. Data from HSE PMIU-SDU, 8am census.



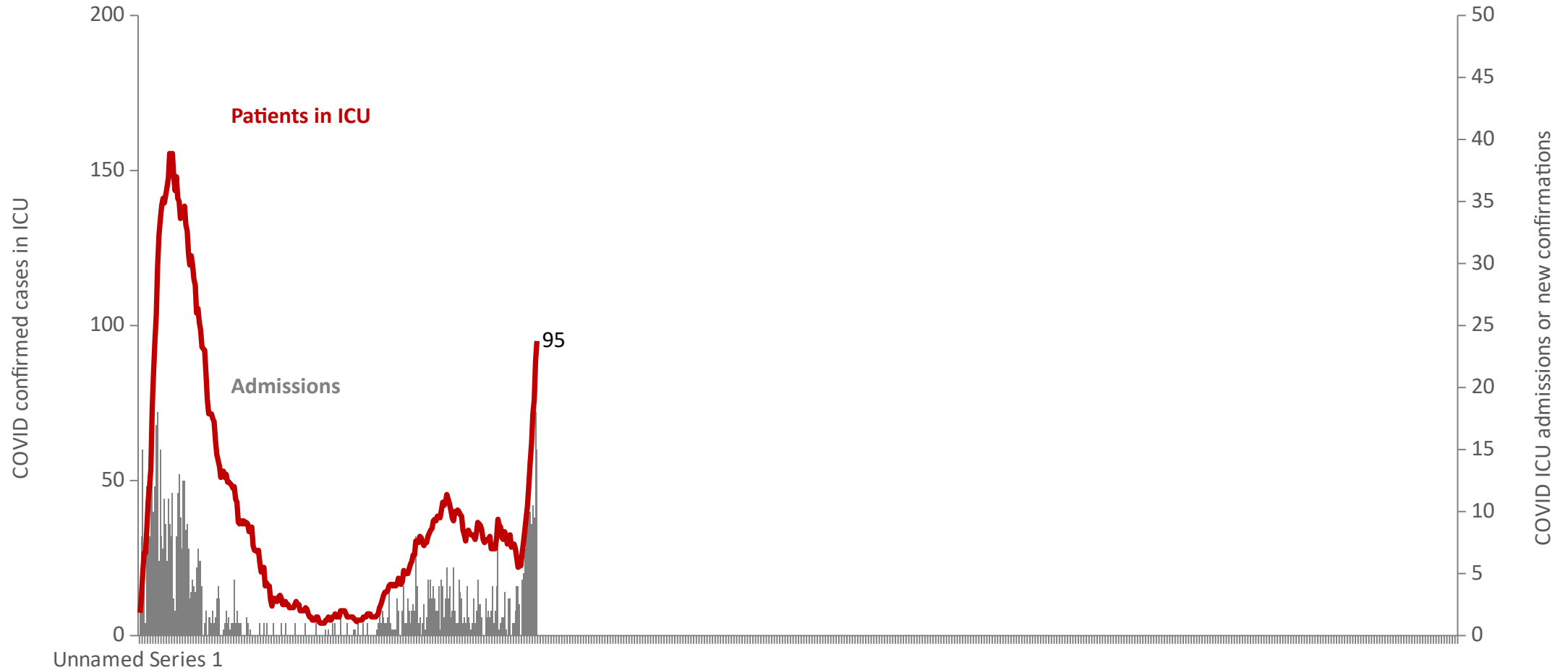
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Confirmed cases in intensive care

The number of people in ICU with confirmed SARS-CoV-2 infection is now increasing rapidly.



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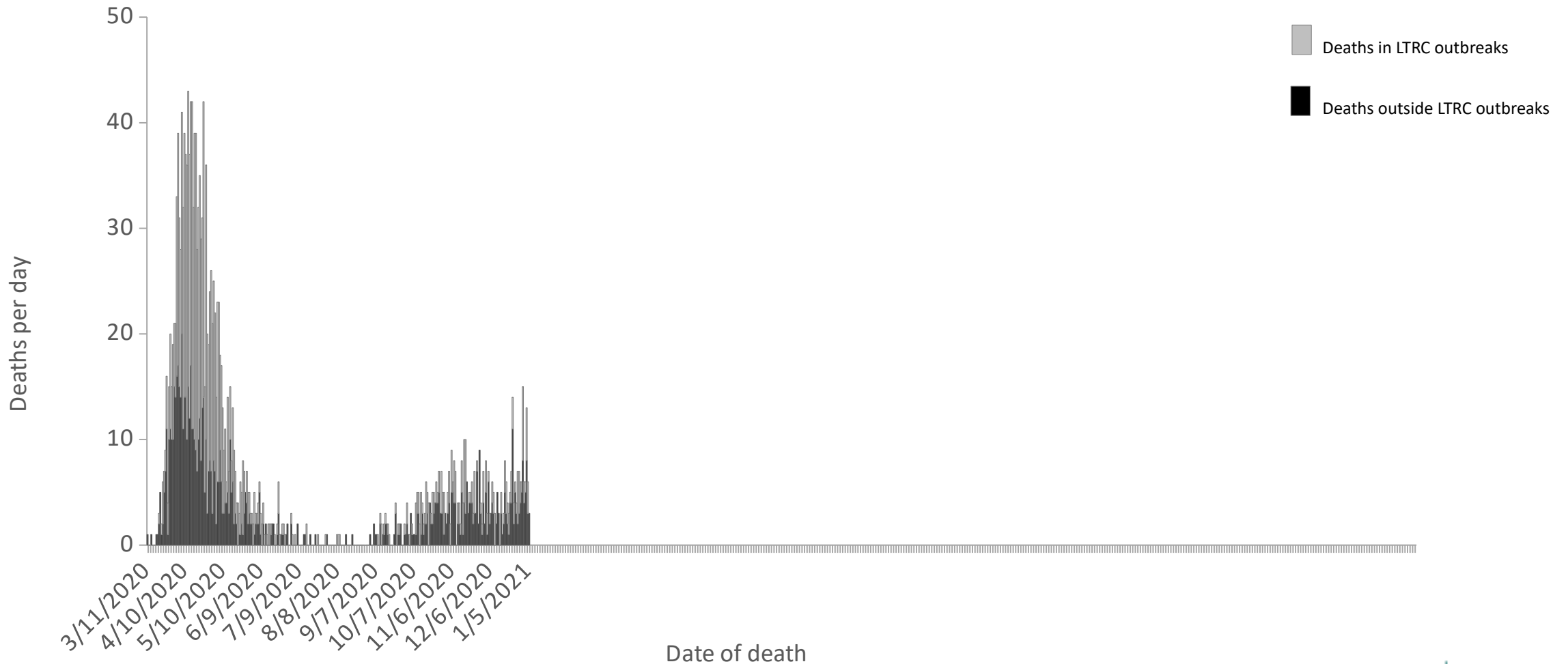


Patients in ICU: Daily count of number of COVID-19 confirmed cases in ICU. Daily admissions: new COVID-19 confirmed admissions to ICU and new laboratory confirmations of suspected cases in ICU. Average of morning and evening census from NOCA



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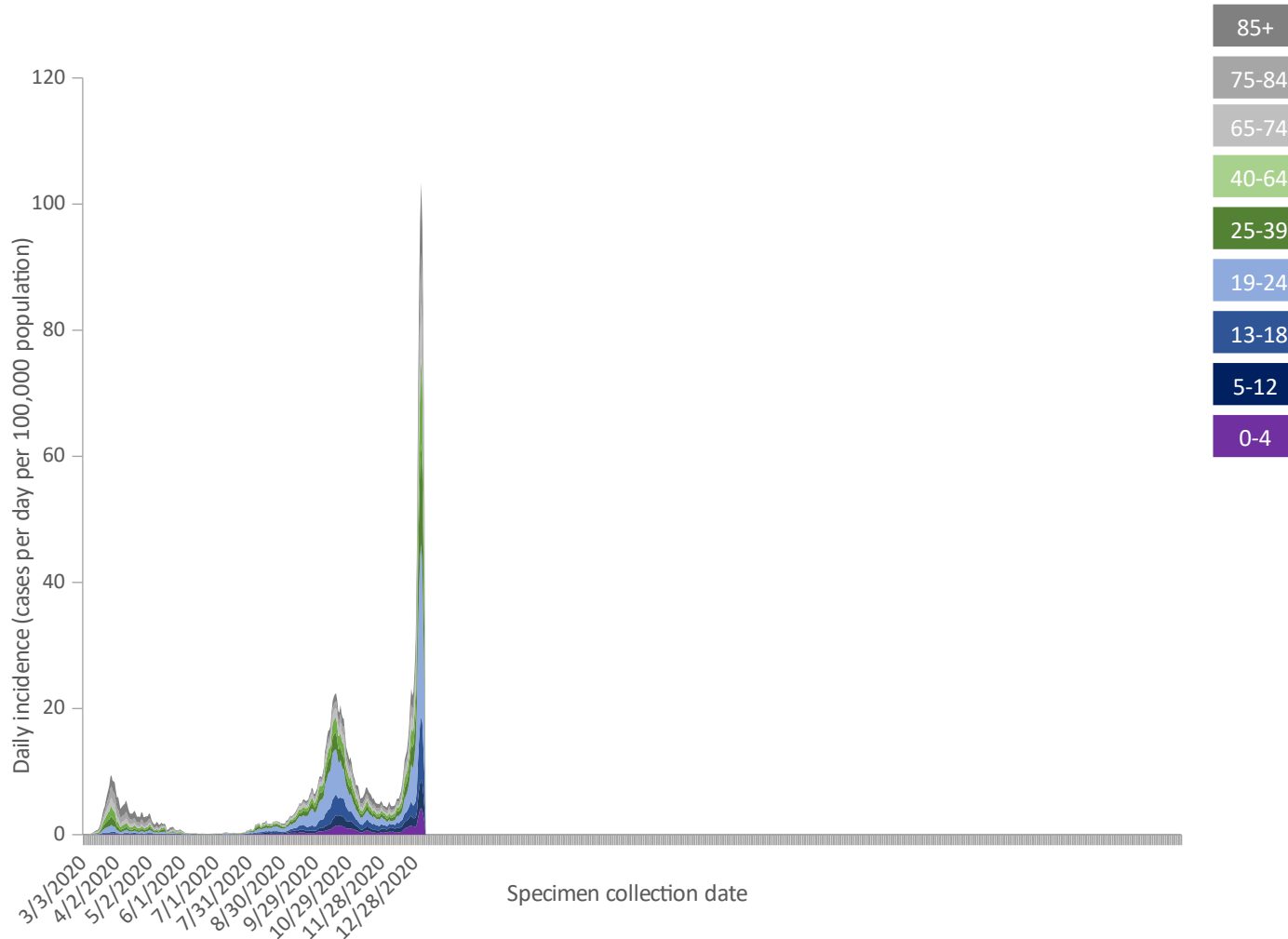
Deaths per day



Deaths per day, separated into those associated with outbreaks in long-term residential care and those not associated with such outbreaks. Deaths with laboratory confirmed SARS-CoV-2 only

Incidence across different age groups (excluding HCW and LTRC)

When incidence started to rise again in July, cases increased first in younger age groups, especially in the 19-24 age group, with a delayed increase in incidence in older (65+) adults. The current wave is different, with a rapid rise in incidence in all age groups, and a very concerning level of disease in those aged 65 and older. A number of cases in those aged 65 and older will be linked in the coming days to outbreaks in LTRC.

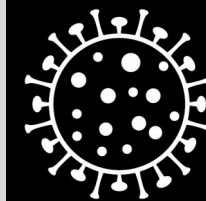


Week	Age band								
	0-4	5-12	13-18	19-24	25-39	40-64	65-74	75-84	85+
26	0.6	0.2	0.3	1.8	1.5	0.7	0.8	1.5	3.0
27	1.5	0.4	0.3	1.8	1.9	0.9	0.0	1.0	0.0
28	0.9	1.1	1.1	10.9	2.0	1.1	1.9	1.0	3.0
29	1.2	0.4	0.8	3.0	3.3	1.9	2.4	1.5	3.0
30	1.8	0.5	1.6	3.6	4.3	0.9	1.9	0.0	1.5
31	4.8	2.6	7.3	11.2	8.6	4.6	2.1	2.5	1.5
32	4.5	3.8	6.7	19.9	16.7	10.9	4.8	2.5	3.0
33	6.6	10.4	12.9	28.7	20.5	12.5	8.6	2.5	5.9
34	6.6	6.9	16.7	34.4	15.3	10.5	5.6	5.1	1.5
35	6.0	9.5	13.2	36.2	17.9	10.7	4.8	8.7	5.9
36	13.3	13.7	17.8	48.6	22.6	13.9	11.0	12.2	14.8
37	17.5	17.5	29.9	64.3	28.3	24.5	22.5	8.7	7.4
38	21.4	26.2	44.1	90.3	44.3	34.8	32.9	19.8	14.8
39	12.4	22.8	42.8	148.2	50.1	42.0	33.2	31.0	17.8
40	29.9	28.6	63.2	167.3	67.8	57.7	34.3	26.0	19.2
41	44.0	47.4	134.8	322.2	116.6	91.6	62.1	51.9	53.3
42	78.1	90.9	196.7	430.8	155.1	142.7	91.8	67.7	57.7
43	82.7	93.5	175.5	304.9	122.7	121.6	84.6	82.9	69.6
44	54.0	67.1	93.9	152.8	74.4	76.5	54.3	54.5	45.9
45	34.4	39.7	58.1	83.9	58.0	46.1	42.8	44.3	41.4
46	41.9	37.2	65.9	89.7	45.5	45.2	32.7	43.3	57.7
47	22.0	34.1	59.5	79.7	34.8	33.2	28.6	39.2	54.8
48	23.2	31.5	45.5	66.7	33.9	29.8	22.2	36.1	31.1
49	28.4	36.6	37.7	40.5	33.2	30.0	25.4	30.0	34.0
50	21.4	39.7	44.1	57.4	40.1	35.2	22.5	31.6	19.2
51	51.6	58.5	74.5	128.6	88.5	81.9	54.9	55.5	45.9
52	76.9	76.5	120.0	331.8	183.3	142.2	98.3	100.8	105.1
53	203.0	226.0	488.7	1396.7	784.1	672.2	426.5	378.6	484.1

Chart shows 5-day rolling average of total incidence (cases per day per 100,000 population) with coloured bands showing the contribution of each age cohort to the total incidence, having adjusted for the number of people in that age cohort (CSO 2016 census data). Heat map shows age-specific incidence (cases per week per 100,000 population) Healthcare workers and cases associated with outbreaks in long-term residential care are excluded, so that the analysis reflects the pattern of cases in the community. Cases dated by date of specimen collection.

Incidence across different age groups (excluding HCW and LTRC)

The current wave is different, with a rapid rise in incidence in all age groups, and a very concerning level of disease in those aged 65 and older
A number of cases in those aged 65 and older will be linked in the coming days to outbreaks in LTRC



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Week	Age band								
	0-4	5-12	13-18	19-24	25-39	40-64	65-74	75-84	85+
50	21.4	39.7	44.1	57.4	40.1	35.2	22.5	31.6	19.2
51	51.6	58.5	74.5	128.6	88.5	81.9	54.9	55.5	45.9
52	76.9	76.5	120.0	331.8	183.3	142.2	98.3	100.8	105.1
53	203.0	226.0	488.7	1396.7	784.1	672.2	426.5	378.6	484.1

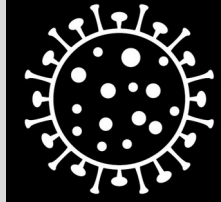
Heat map shows age-specific incidence (cases per week per 100,000 population) Healthcare workers and cases associated with outbreaks in long-term residential care are excluded, so that the analysis reflects the pattern of cases in the community. Cases dated by date of specimen collection.



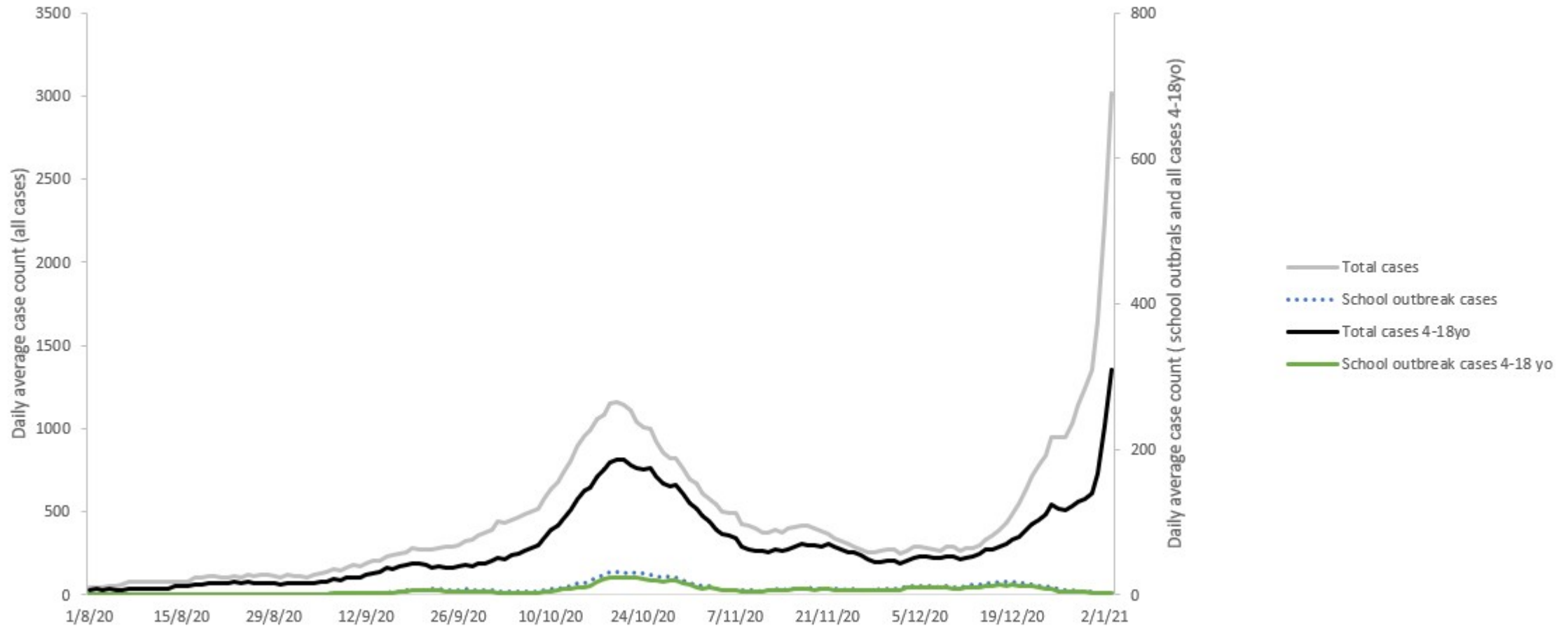
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Cases in school outbreaks

The number of cases associated with outbreaks in schools is very small, and is a small proportion of the cases amongst children of school-going age. The October wave led to a small number of cases in school outbreaks (on average 25 cases per day at peak) which was delayed relative to the overall rise in incidence, and made a relatively small contribution to the total number of cases in the 4-18 age group (on average 195 cases per day at peak).



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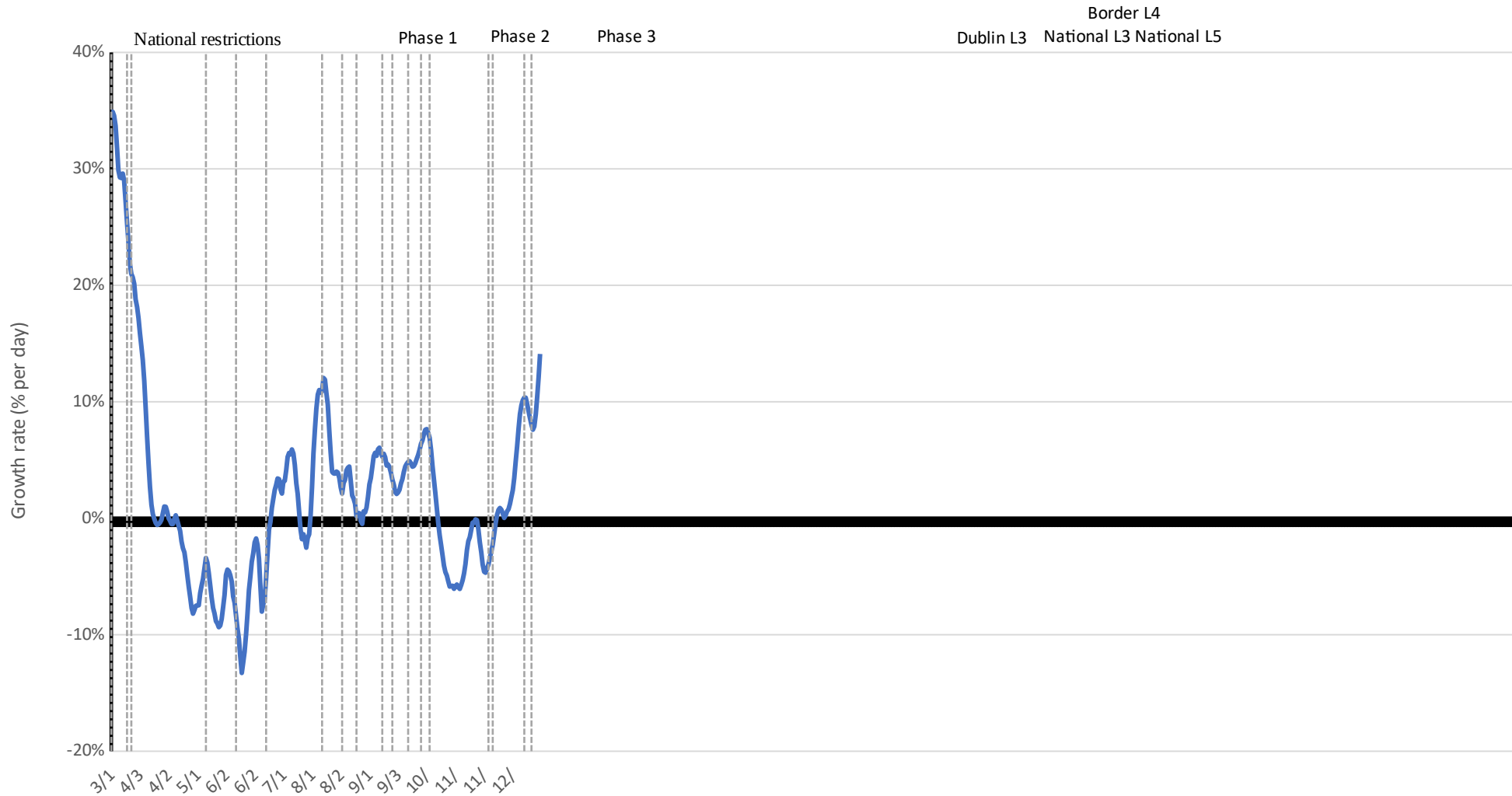
Daily average case counts for all cases (grey, primary y-axis), cases per day in school outbreaks (secondary y-axis) and all cases in those aged 4-18 years (secondary y-axis). Cases dated by notification (event creation) date.



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Growth rate for case numbers

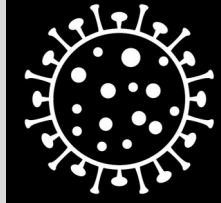
When the pandemic in Ireland grew very rapidly in early March, at over 30% per day. The national restrictions introduced in late March suppressed transmission, with daily incidence decreasing at -5% to -10% per day. This was sustained until the end of June, after which case numbers started to grow, on average at 4% to 5% per day. A period of very rapid growth can be seen in early August associated with the outbreaks in Kildare-Laois-Offaly. Level 3 measures in Dublin reduced growth rate to zero for a period (data not shown). Incidence decreased at -5% to -7% per day for the first three weeks of Level 5 measures, at a slower rate thereafter, and is now increasing by approximately 14% per day



Growth rate calculated as the average growth rate over a 14-day trailing window; cases dated by notification (event) date.

Estimates of effective reproduction number (R)

Reproduction number is extremely high, currently estimated at 2.4 to 3.0; it has increased significantly in the last week



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Method	Estimate	95% confidence interval
SEIR model-inferred	2.92	2.2 – 4.0
Bayesian model	2.95	2.14 – 4.10
Time-dependent R	1.64	1.50 – 1.80
GAM estimate 28 Dec 2020	1.96	1.64 – 2.28
GAM estimate 5 Jan 2021	2.44	1.85 – 3.02

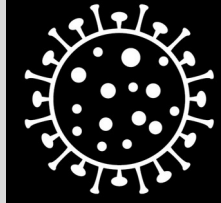
Estimates generated 6 January 2021, refer to IEMAG technical notes for methodology. Estimates are unreliable when case numbers are low or variable. SEIR-inferred estimate is slow to respond to changes in R. The time-dependent R estimate lags behind other estimates. These R estimates relate to viral transmissions and infections that occurred approximately 7-14 days ago. The estimate of R is influenced by different patterns of transmission in large outbreaks, smaller clusters, and individual transmission.



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New (B.1.1.7) variant – S gene target failure

S gene target failure (SGTF) is a marker for the new B.1.1.7 variant. The data are compatible with this variant being introduced, with a number of separate introductions in November and December, and spreading rapidly in late December, at which point it is likely to have begun to contribute to increased transmission



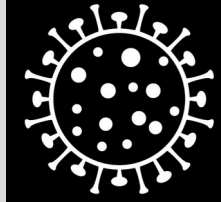
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Week (beginning)		SGTF proportion		Confidence interval
51	14-Dec	6/70	9%	3-18%
52	21-Dec	18/141	13%	8-19%
53	28-Dec	92/371	25%	21-30%

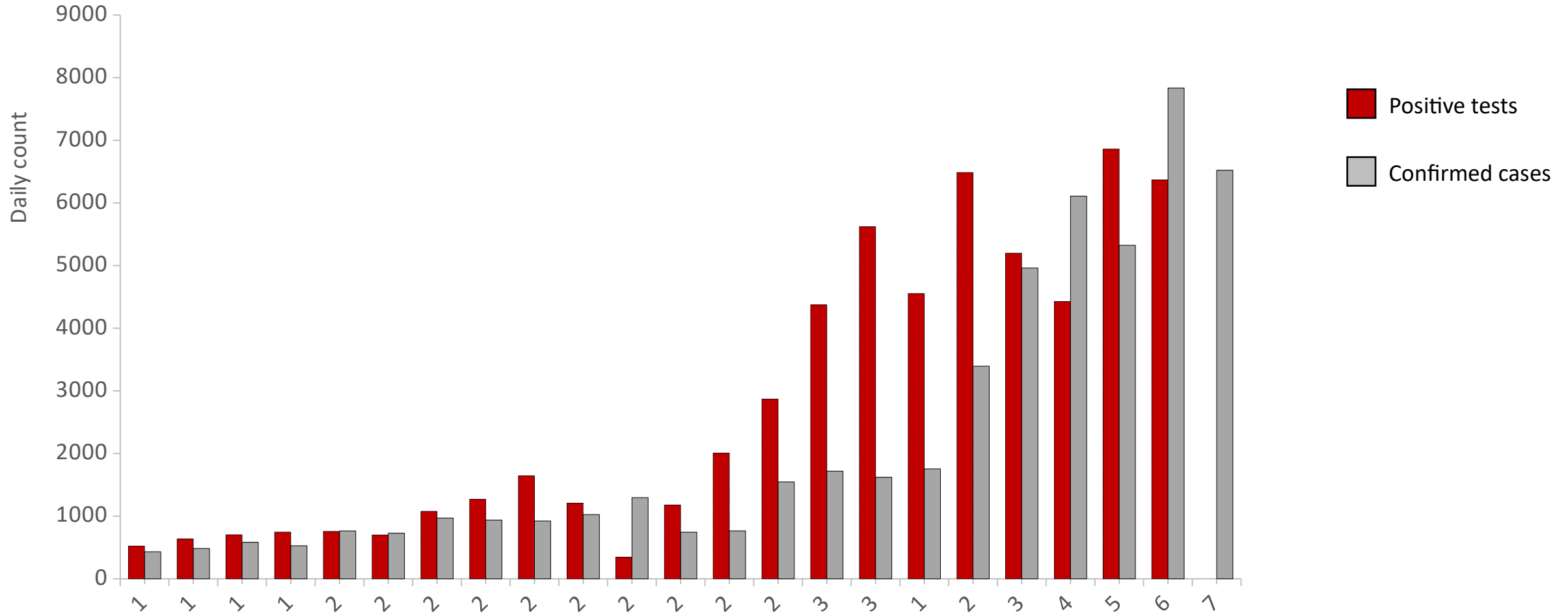


A large number of positive tests in recent days

Positive tests detected in laboratories require validation (to remove duplicates and other tests that do not create new cases) and transfer to the HPSC database before confirmation and reporting. A very large volume of positive tests in the days immediately after Christmas means there was a delay in formal reporting. The reporting delay does not affect case management or contact tracing, or our overall monitoring and modelling of the pandemic.



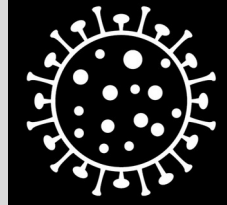
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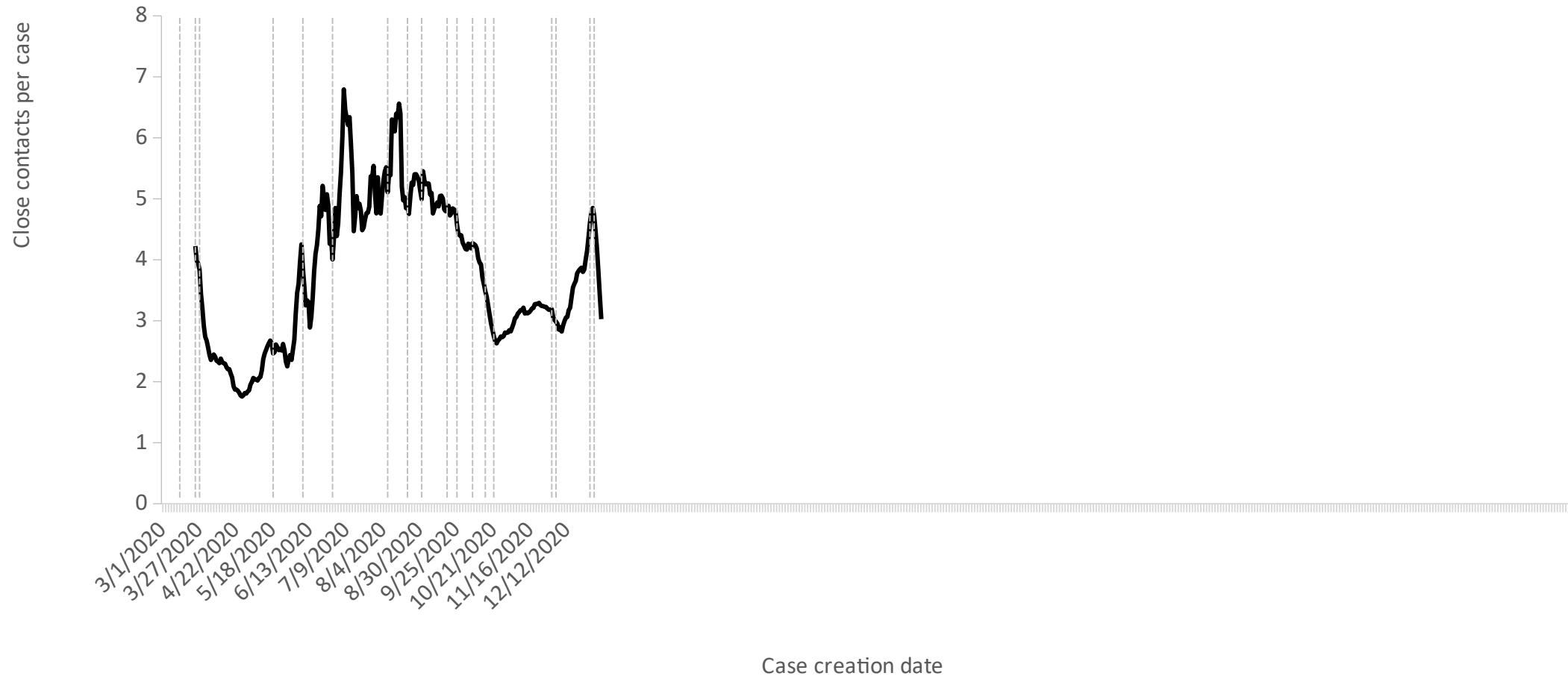
Positive tests: Total positive tests reported to HSE from all laboratories each day.
Confirmed cases: Cases confirmed by HPSC on each day .

Close contacts of adult confirmed cases

The mean number of close contacts per confirmed case. The number of contacts was very low (2 or less) during April, but increased to 5-6 per case during the summer. The progressive escalation of public health measures during October was associated with a progressive reduction in close contacts, to below 3. The number of close contacts remained below 3.3 on average until early December, rose to almost 5 on average by 28 December, and is now decreasing rapidly; it is currently 3.0

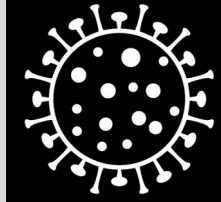


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The average number of close contacts per confirmed case. Data from COVID-19 Care Tracker (CCT). Cases dated by case creation date. Cases (but not contacts) aged 18 and younger are excluded. Data are 7-day trailing averages except for the months of June – August where a 21-day trailing average is used due to very low case counts.

Situation analysis 7 January 2021



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- The level of infection has **increased rapidly** in recent weeks
 - Cases (5-day average) **6147 cases per day**; 14-day incidence **936 per 100,000**
 - **Growth rate 12%-14%** per day over last 14 days
 - **Reproduction number 2.4 – 3.0**
 - Incidence very high across **all age groups, especially young adults**
 - Incidence in those 65 and older remains high and a cause for concern
 - Incidence in those aged 18 and younger remains at or below population average
- **Numbers in hospital and ICU increasing rapidly**
- Very high growth rates suggest B.1.1.7 (UK) variant now playing a role in accelerating transmission
- Scenario models raise the possibility of 1200-2200 people in hospital, and 200-400 people in ICU by mid-January, if we do not act to radically reduce transmission and incidence
- There is some evidence that the rate of growth may be slowing
 - The average number of **close contacts** of adult confirmed cases peaked at 4.7 on 28 December and is now **falling rapidly** (3.0 on 5 Jan)
 - Cases by specimen collection date or date of positive test
- This is a signal to maintain and redouble our efforts: we have some way to go, and we **must suppress transmission** to protect each other from serious illness, and to protect our health services and healthcare workers.