IEMAG briefing

17 December 2020

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Cases, numbers in hospital and intensive care

Case numbers are less than 30% of what they were in late October, but now appear to be rising again. The number of people in hospital is decreasing slowly, numbers in ICU and deaths per day are not decreasing.

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	16 Apr	24 Jun	29 Jul	26 Aug	30 Sept	21 Oct	18 Nov	25 Nov	2 Dec	9 Dec	16 Dec
Cases confirmed per day	547	10	18	117	356	1160	412	303	273	269	331
14-day incidence *per 100,000 population*	157	4.0	5.6	32	92	288	120	105	85	80	88
Hospital in-patients	858	42	11	22	108	279	270	284	244	228	198
Hospital admissions per day	*56*	*2*	*2*	*3*	*10*	*23*	*20*	*18*	*14*	*14*	*14*
ICU confirmed cases	147	15	5	6	18	32	34	33	32	31	33
ICU admissions per day	*8*	*< 1*	*< 1*	*< 1*	*2*	*3*	*2*	*2*	*2*	*3*	*1*
Deaths confirmed per day	32	< 1	< 1	< 1	1	5	6	6	7	4	5

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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Testing

The demand for tests is increasing, and positivity rate may be increasing.

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7-day average	15 Apr	23 Jun	28 Jul	25 Aug	29 Sept	20 Oct	17 Nov	24 Nov	1 Dec	8 Dec	15 Dec
Tests done per day	5579	2607	6494	7742	12624	16030	11042	11119	10663	11003	11870
% tests positive	18%	0.5%	0.4%	1.7%	3.0%	7.1%	3.8%	2.7%	2.7%	2.5%	2.8%

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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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 387

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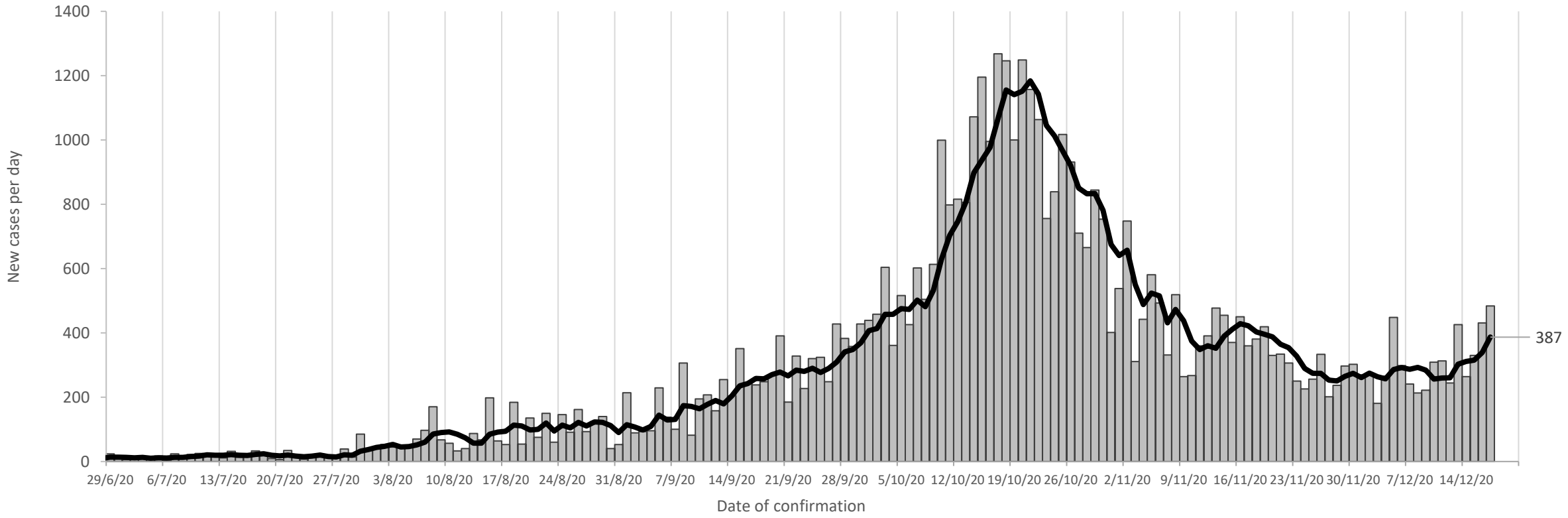
Cases per week	93	125	140	119	284	540	546	711	796	912	1303	1947	2060	3031	4458	7400	7090	4843	3426	2584	2580	1800	2034	1978



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.

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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 94 per 100,000

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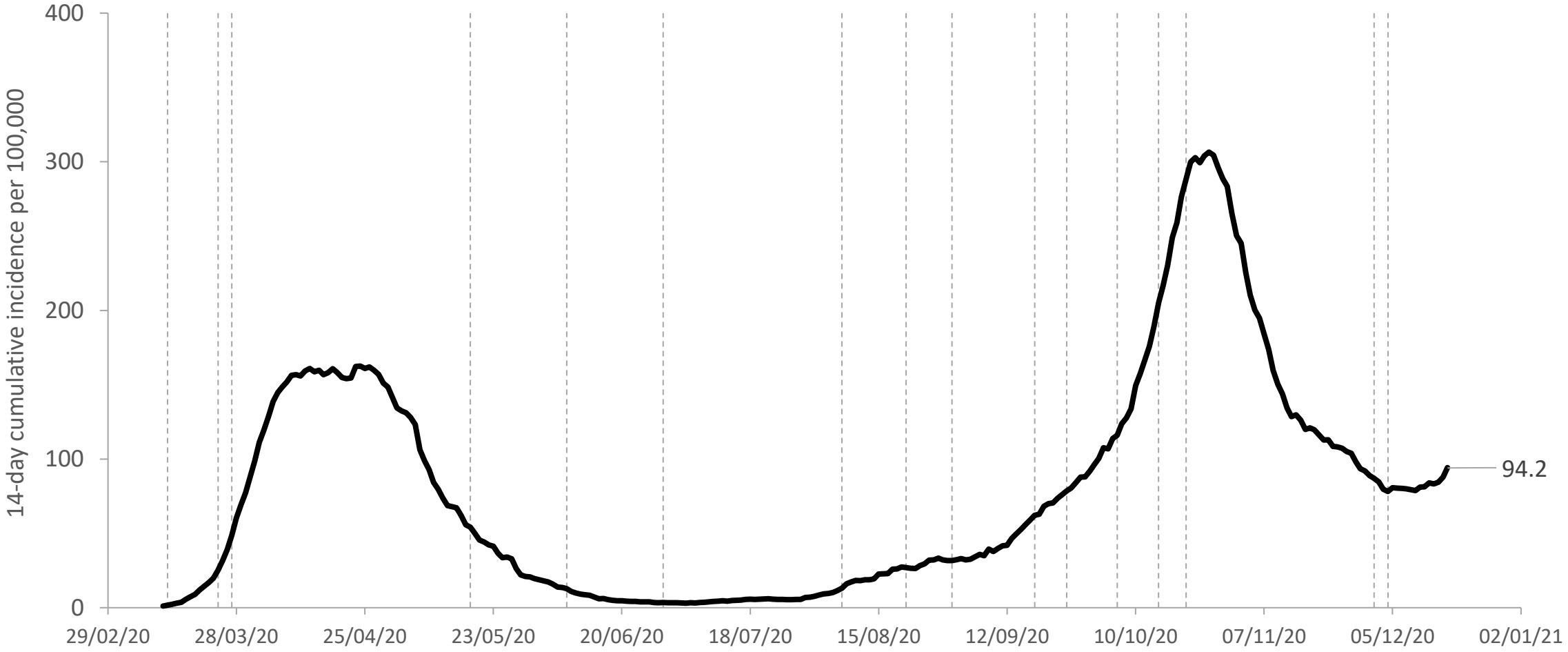

14-day cumulative incidence by date of confirmation. Tests outsourced to German laboratory in April backdated, using the specimen collection date, to the date they would have been confirmed if tested in a timely manner. The vertical dashed lines indicate the dates of escalation and de-escalation of public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

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Testing and test positive rate

The demand for tests is increasing, and positivity rate may be increasing

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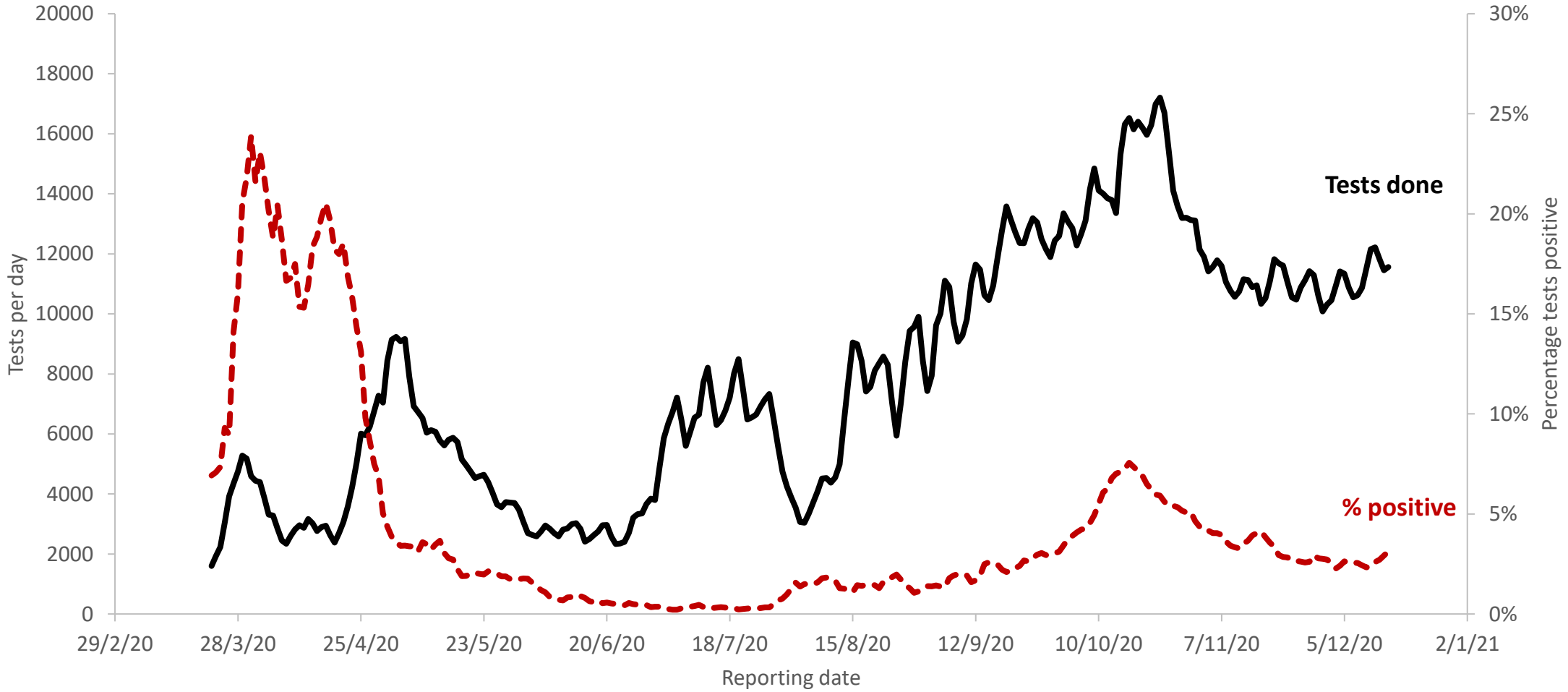

Data 5-day rolling averages, tests outsourced to German laboratory in April backdated using specimen collection date. The aggregate positivity rate should be interpreted with caution, as it includes community referrals, close contacts, mass and serial testing, and hospital testing, and changes in numbers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

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Test positive rates: 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 are decreasing. Tests conducted as part of serial testing are not yet separated out in this analysis

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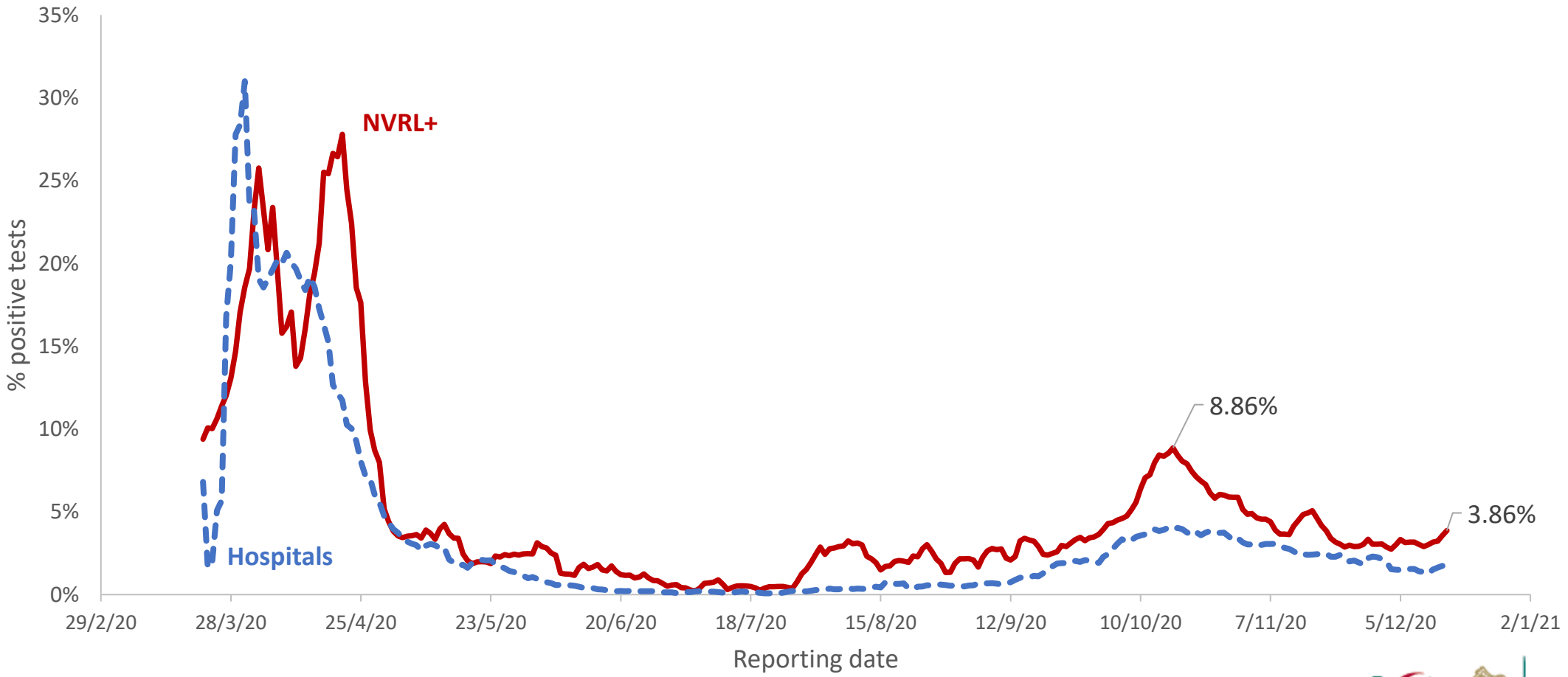

Data 5-day rolling averages of percentage of tests reported positive per day. NVRL+ is NVRL and associated laboratories, plus Cherry Orchard
Backlog tests outsourced to German laboratory in April are not backdated and are assigned to date reported

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Confirmed cases in acute hospitals

The number of people in hospital with confirmed SARS-CoV-2 infection is decreasing slowly

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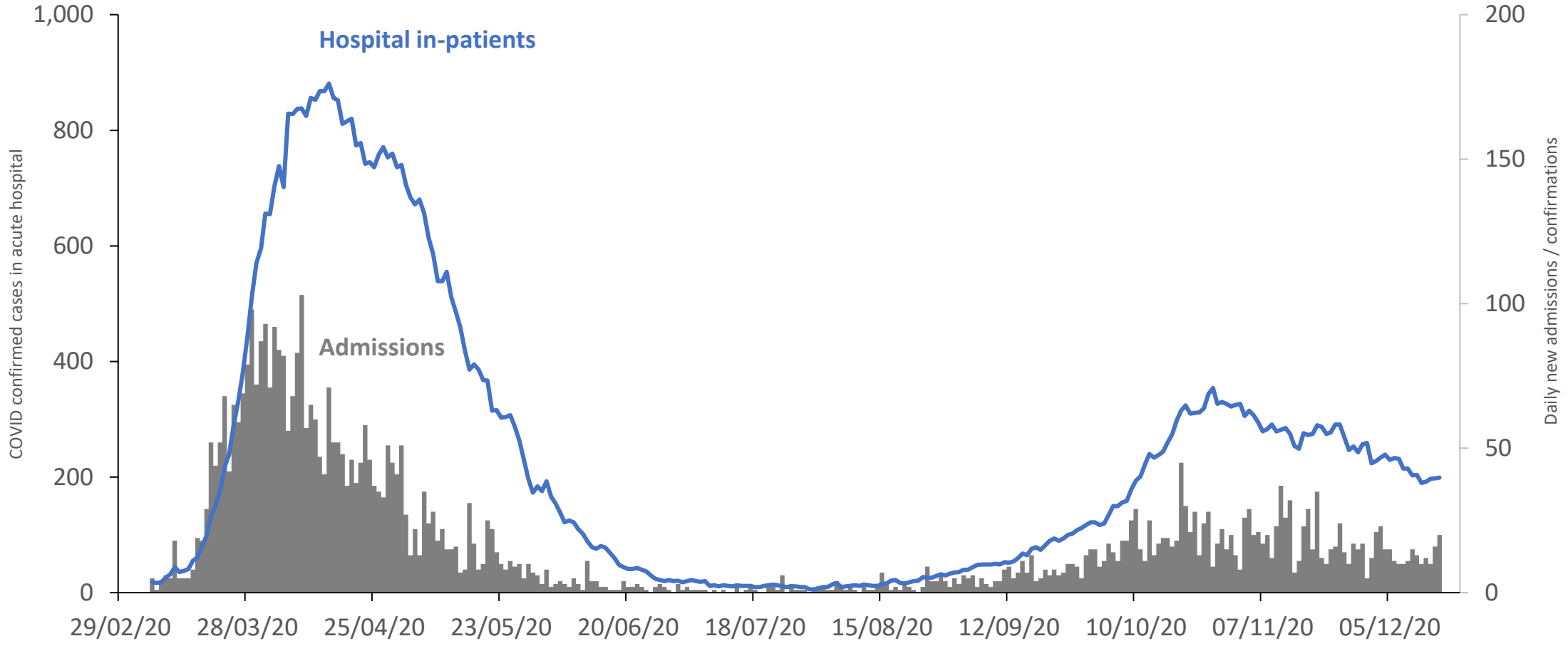

Hospital in-patients: Daily count of number of COVID-19 confirmed cases in acute hospitals. Daily admissions: New COVID-19 confirmed admissions and new laboratory confirmations of suspected cases in preceding 24 hours. Data from HSE PMIU-SDU, 8am census.

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Confirmed cases in intensive care

The number of people in ICU with confirmed SARS-CoV-2 infection is static or decreasing very slowly.

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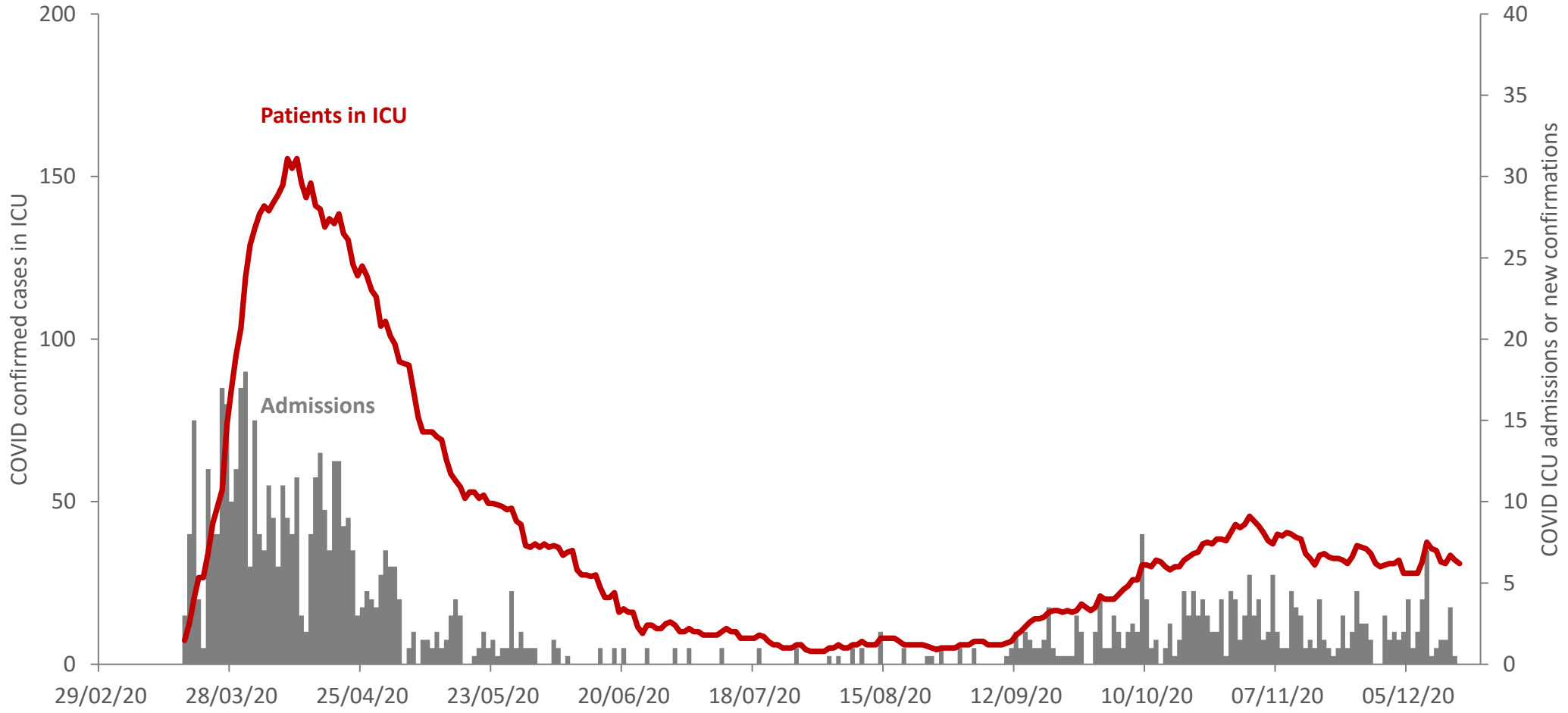

Patients in ICU: Daily count of number of COVID-19 confirmed cases in ICU. Daily admissions: new COVID-19 confirmed admissions to ICU and new laboratory confirmations of suspected cases in ICU. Average of morning and evening census from NOCA

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Deaths per day

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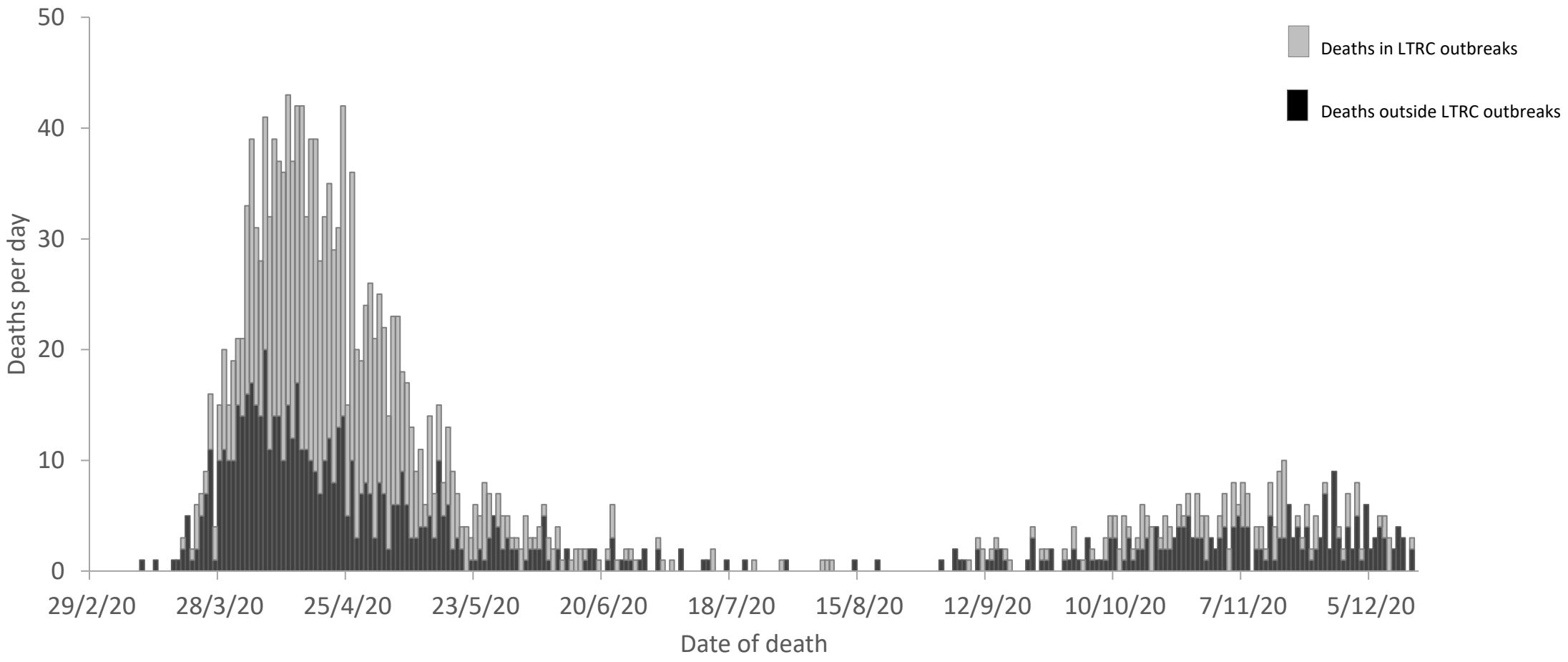

Deaths per day, separated into those associated with outbreaks in long-term residential care and those not associated with such outbreaks. Deaths with laboratory confirmed SARS-CoV-2 only

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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. There has been a very significant decrease in incidence across all age groups in recent weeks. Incidence has increased in the last week in young and working age adults.

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Heat map of 7-day incidence by age

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	67.9	57.8	34.3	26.0	19.2
41	44.0	47.4	134.8	322.2	116.7	91.6	62.1	51.9	53.3
42	78.1	90.9	196.7	430.8	155.2	142.9	92.1	67.7	57.7
43	82.7	93.5	176.0	305.5	122.9	121.7	84.9	82.9	69.6
44	54.0	67.1	93.9	153.7	74.3	76.4	54.3	54.5	45.9
45	34.4	39.7	58.1	83.9	57.9	46.1	42.8	44.3	41.4
46	41.9	37.2	65.9	90.0	45.5	45.3	32.7	43.3	57.7
47	22.0	34.1	59.5	79.7	34.8	33.2	28.6	39.7	54.8
48	23.2	31.5	45.5	66.7	33.9	29.9	22.2	36.1	32.6
49	28.4	36.6	37.7	40.5	33.4	30.4	25.7	30.5	37.0
50	21.1	39.9	44.1	57.4	39.9	35.0	22.5	32.1	25.2

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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Severity and fatality increase steeply with age

The percentage of those with confirmed SARS-CoV-2 infection who were admitted to hospital, admitted to intensive care, and who died, for cases notified 1 July 2020 to 22 November 2020.

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Age (years)	Admitted to Hospital	Admitted To Intensive Care	Died
0-19	1.0%	0.05%	<0.01%
20-39	1.5%	0.07%	<0.01%
40-59	3.4%	0.4%	0.1%
60-64	7.4%	1.1%	0.5%
65-69	11%	2.4%	1.2%
70-74	21%	4.6%	3.8%
75-79	32%	4.3%	5.9%
80-84	41%	1.2%	8.7%
85+	47%	0.5%	14.9%
All ages	**4.1%**	**0.4%**	**0.49%**

The percentage of those with confirmed SARS-CoV-2 infection notified 1 July 2020 to 22 November 2020 who were admitted to hospital, admitted to intensive care, and who died. This analysis excludes healthcare workers and those cases associated with outbreaks in long-term residential care, in order to be representative of the wider population. This analysis based on CIDR extract of 09.15 15 December 2020.

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Close contacts

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 period immediately after the mid-term break was associated with an increase in close contacts. The number of close contacts per case has increased significantly over the last week

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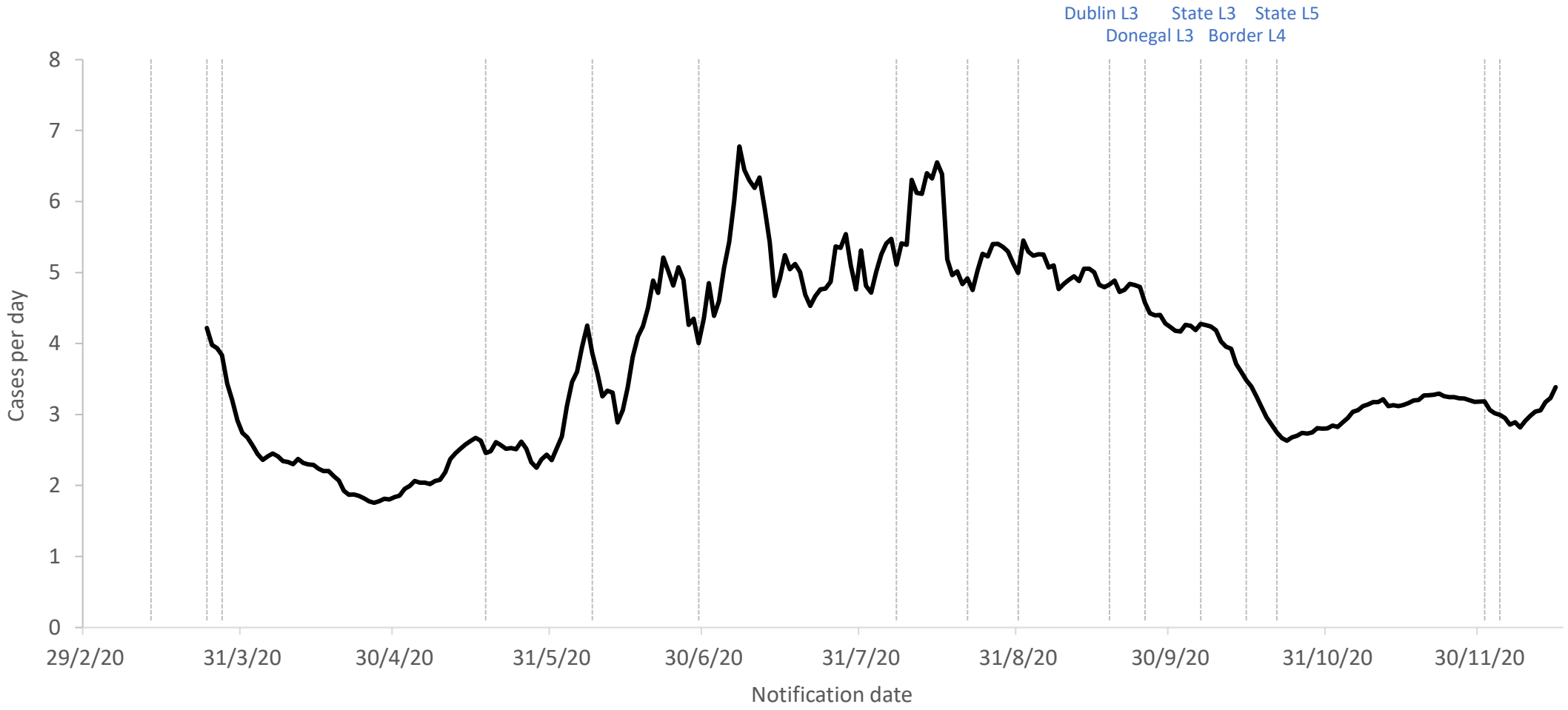

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Growth rate for case numbers

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% oer day for the first three weeks of Level 5 measures, at a slower rate thereafter, and ins now increasing by at least 1.5% to 2% per day

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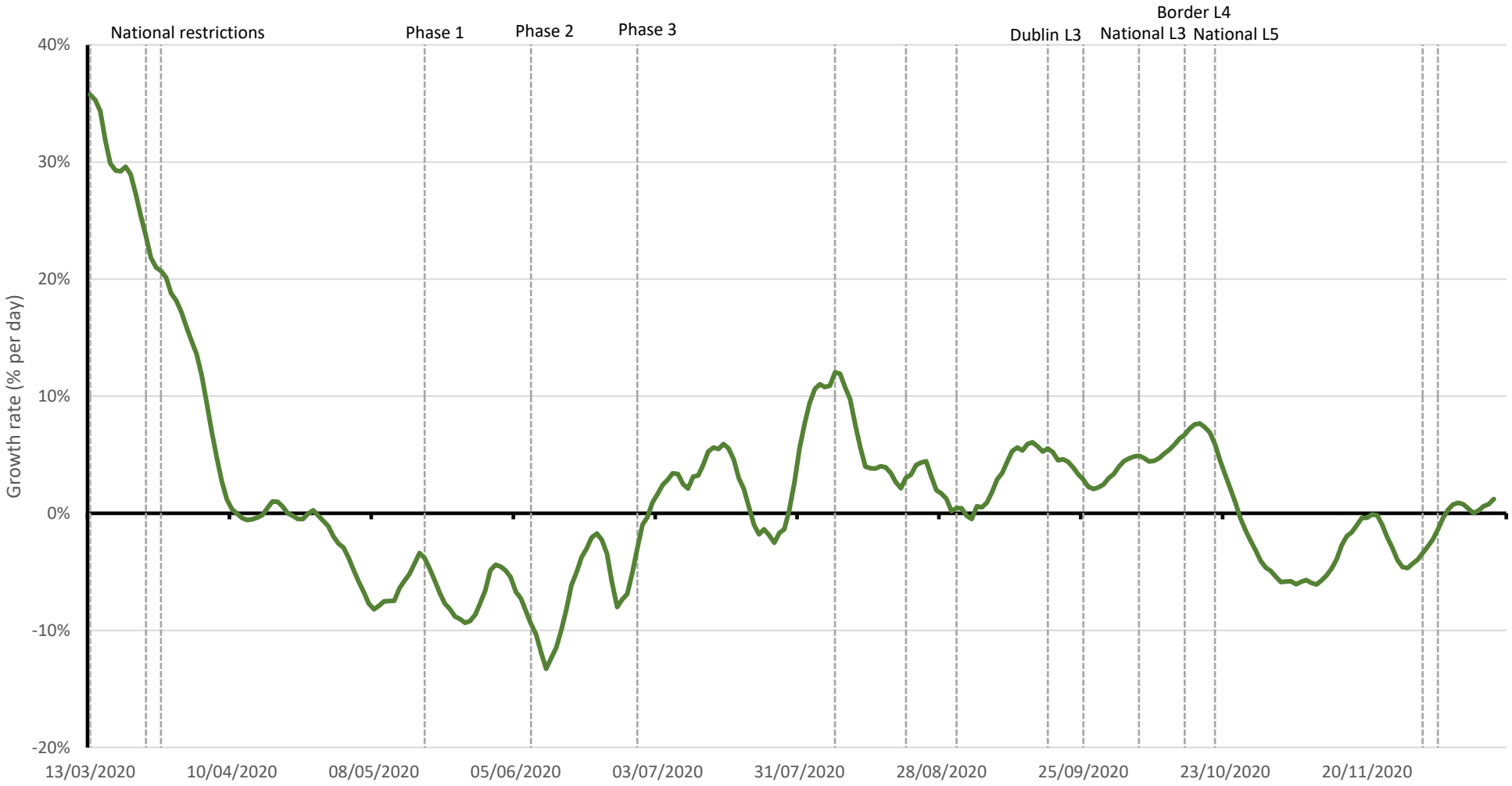

Growth rate calculated as the average growth rate over a 14-day trailing window; cases dated by notification (event) date.

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Estimates of effective reproduction number (R)

Reproduction number is difficult to estimate as the situation is changing – it is currently estimated at 1.1 to 1.3.

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Method	Estimate	95% confidence interval
SEIR model-inferred	1.25	1.06 – 1.48
Bayesian model	1.25	0.69 – 1.98
Time-dependent R	0.75	0.59 – 0.90
GAM estimate 8 Dec 2020	1.07	0.88 – 1.26
GAM estimate 15 Dec 2020	1.18	0.88 – 1.47

Estimates generated 16 December 2020, 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. 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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What do our models tell us?

Model calibrated to case data until *9 December 2020* and varies over a wide range thereafter.

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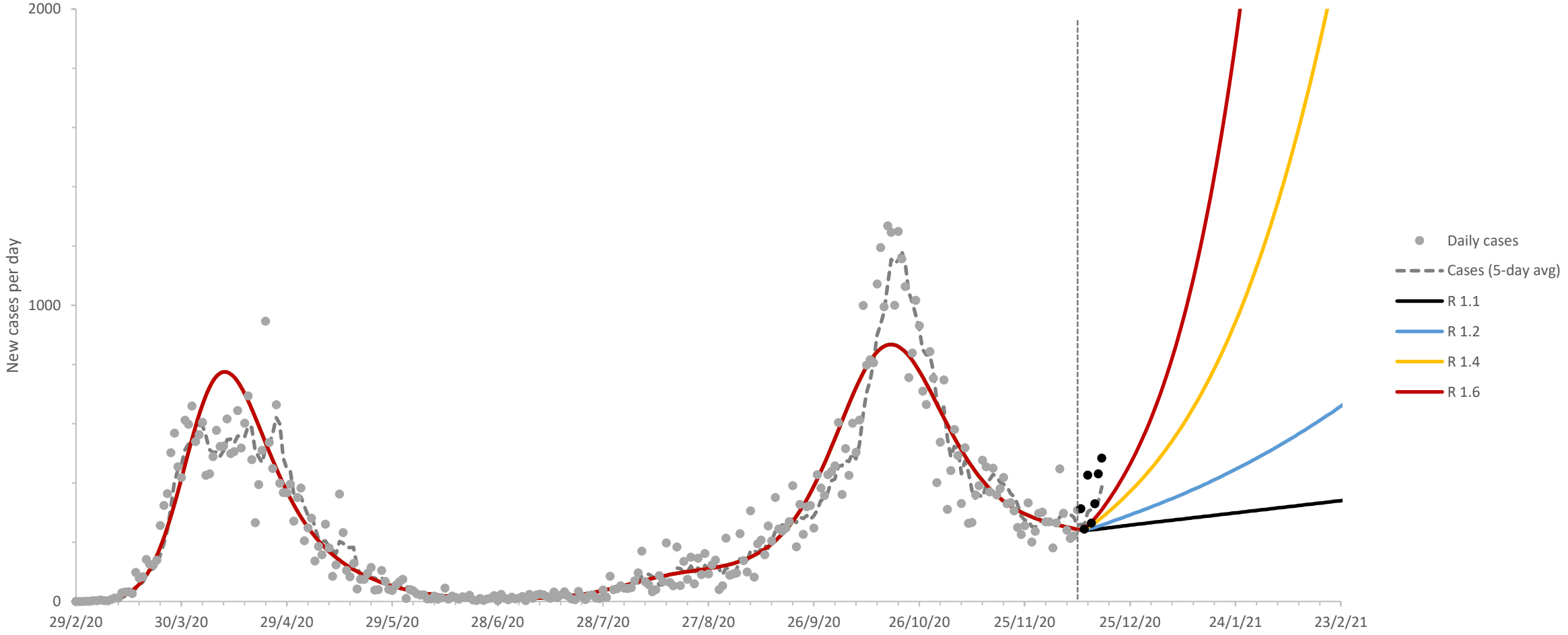

Model projections of the number of new cases per day. The model is calibrated with daily case counts to 9 December 2020; R varies between 1.1 and 1.6 thereafter. This is a scenario model only. It is not a forecast, nor does it imply or anticipate any future policy decision.

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Situation analysis 17 December 2020

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- The level of infection has started to increase again
  - Incidence increasing in young and working age adults
  - growth rate estimated to be at least 1.5% - 2.0%
  - R estimated at 1.1 – 1.3
    - caution in interpreting R number – it's an *estimate* that *lags* changes in viral transmission
    - limited data on current trends = this may be an underestimate
- Lead indicators (GP consultations, test referrals, test positivity, ILI rate) all increasing
- Measures of mobility and the number of close contacts per case have increased
- Numbers in hospital decreasing slowly, numbers in intensive care and deaths per day are not yet decreasing
- We are now at high risk of surge in January with older and vulnerable adults a key concern
- Remain extremely cautious, limiting our number of contacts per week, and taking every precaution during such contacts
  - leave several days between contacts, limit numbers and duration, hand hygiene, distance, masks, ventilation
  - self isolate and seek referral for test immediately if symptomatic