IEMAG briefing

22 October 2020

Coronavirus
COVID-19
Public Health
Advice

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Cases, numbers in hospital and intensive care

Case numbers have been increasing since late June. Hospitalisations have increased rapidly over the last five weeks, and we have seen increasing admissions to ICU in the last three weeks. The number of deaths is increasing.

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	16 Apr	24 Jun	29 Jul	16 Sept	23 Sept	30 Sept	7 Oct	14 Oct	21 Oct
Cases confirmed per day	551	9	18	233	274	359	493	809	1176
14-day incidence *per 100,000 population*	157	3.8	5.7	56	75	93	125	192	291
Hospital in-patients	858	42	11	57	84	108	136	204	279
Hospital admissions per day	*56*	*2*	*2*	*7*	*7*	*10*	*14*	*19*	*23*
ICU confirmed cases	147	15	5	10	16	18	22	30	32
ICU admissions per day	*8*	*< 1*	*< 1*	*1*	*1*	*1*	*2*	*3*	*3*
Deaths confirmed per day	32	2	< 1	1	1	2	2	3	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.

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Testing

The numbers of tests remains high, the positivity rate is increasing but may have started to stabilise

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7-day average	15 Apr	23 Jun	28 Jul	15 Sept	22 Sept	29 Sept	6 Oct	13 Oct	20 Oct
Tests done per day	5579	2610	6494	11104	12996	12624	12924	14486	16002
% tests positive	18%	0.5%	0.4%	2.2%	2.2%	3.0%	4.0%	6.3%	7.1%

Data are 7-day averages (the indicated day and the preceding 6 days)

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Cases and test positivity

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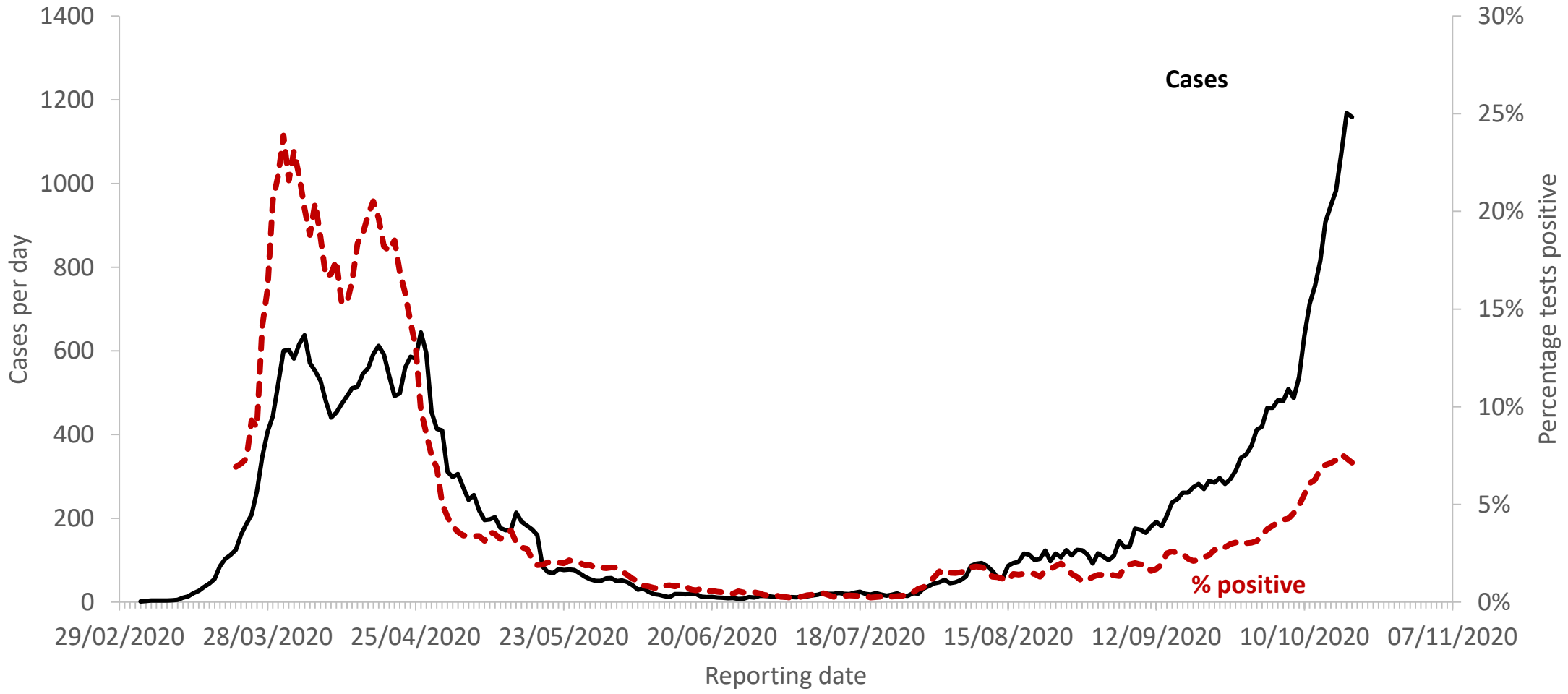

Data 5-day rolling averages, tests outsourced to German laboratory in April backdated

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Confirmed cases each day

Daily and weekly count and 5-day rolling average – case counts have been increasing; the 5-day average is now 1205.

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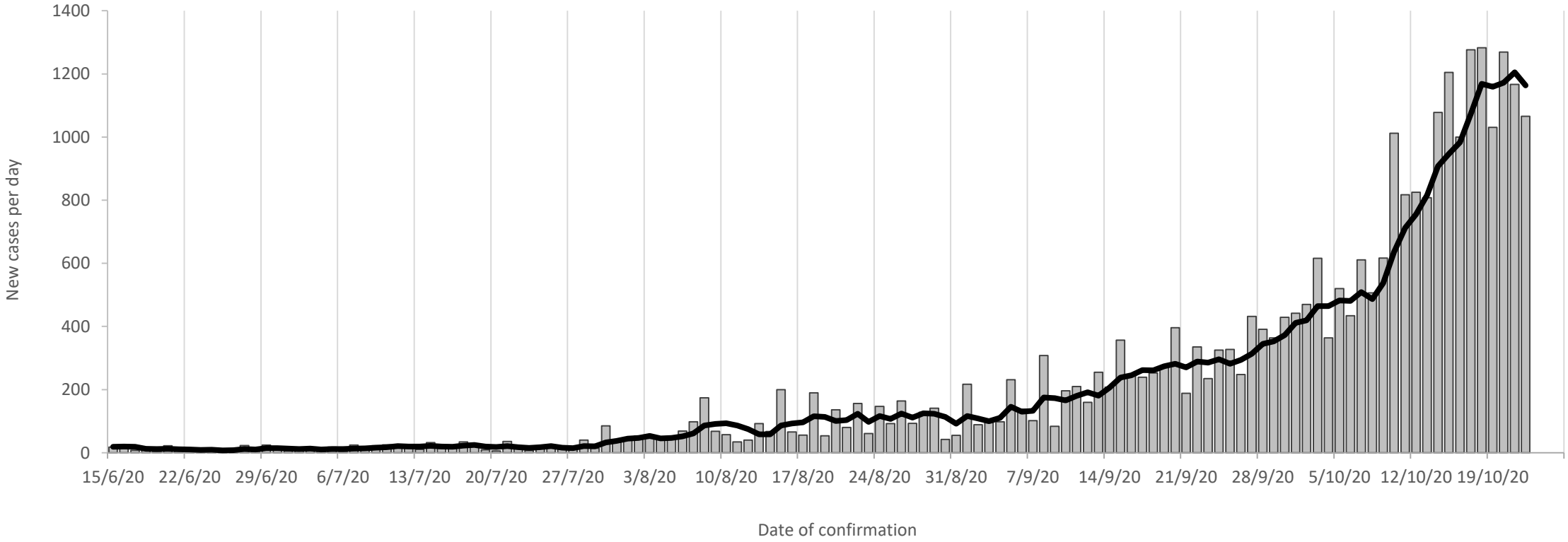
Cases confirmed each week	95	61	93	125	140	119	284	540	546	711	796	912	1304	1948	2060	3036	4480	7467
	25%	41%	39%	30%	46%	30%	18%	8%	26%	17%	19%	19%	22%	18%	19%	20%	25%	42%



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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Confirmed cases each day

Daily case count and 5-day rolling average for Dublin alone and for the other 25 counties. Case counts appeared to stabilise in Dublin w/b 5/10/20 but recent high case counts a major concern; note also periods of apparent stability 24/8/20-4/9/20 and 17/9/20-27/9/20. Cases are growing exponentially across the rest of the country at a very high growth rate

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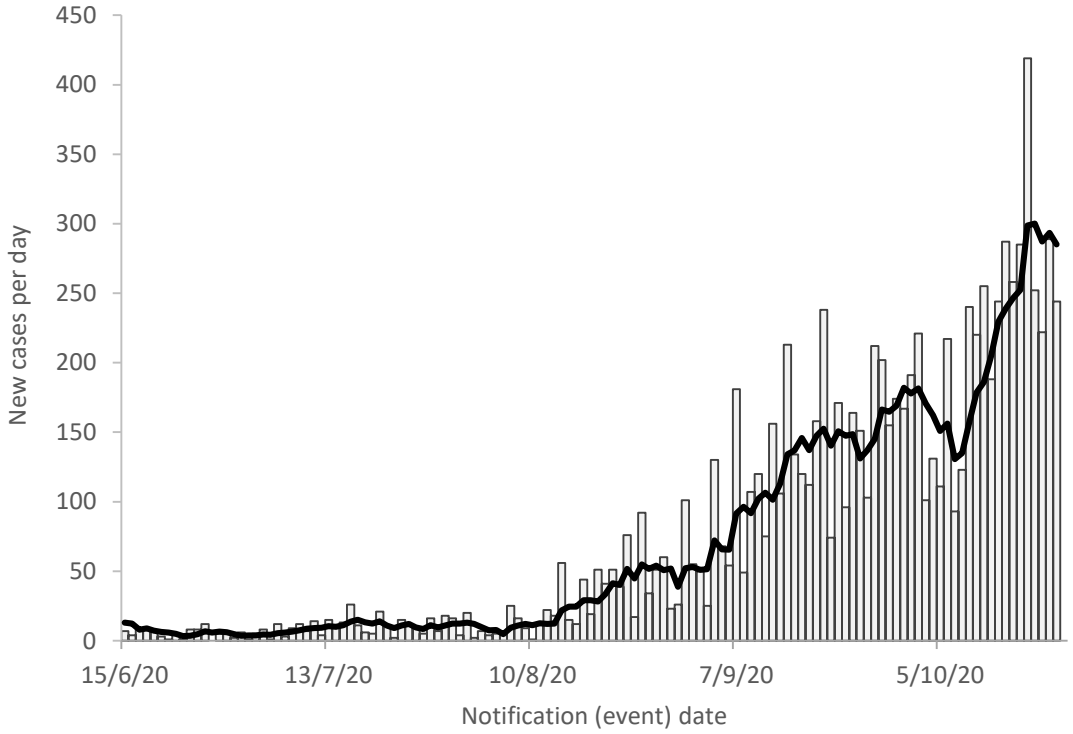
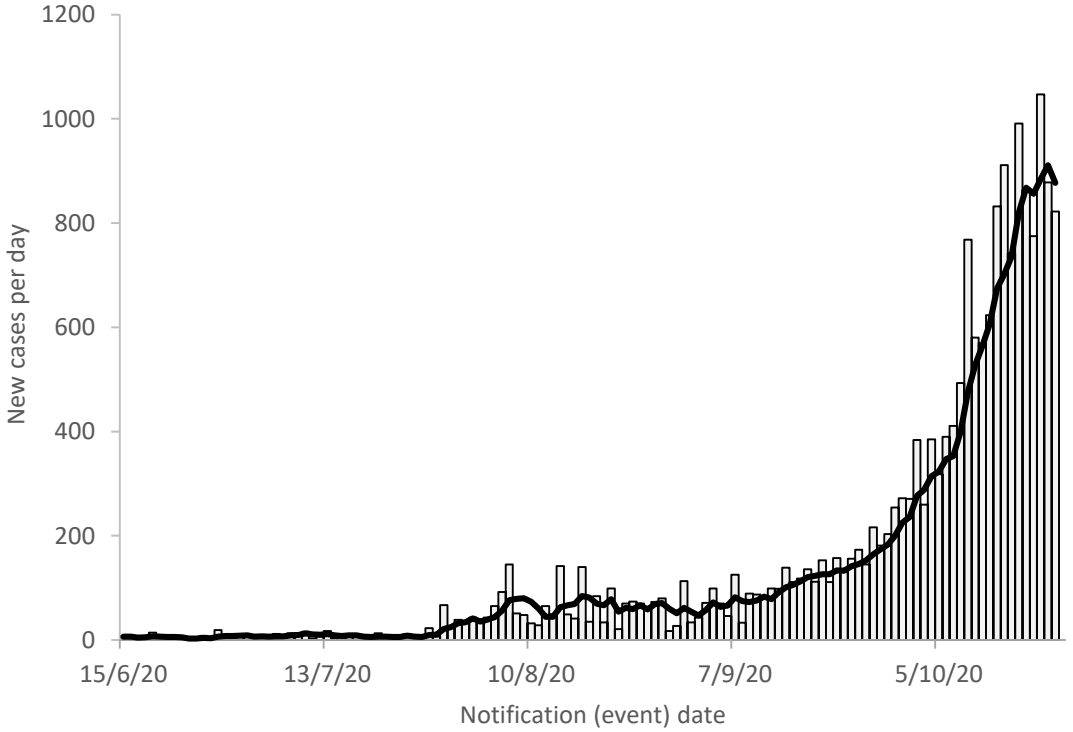
Dublin



25 counties



Daily count (bars) 5-day average (line) and weekly counts of the number of laboratory confirmed new cases by date on which they were notified to HPSC and created as an event on the CIDR database

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Incidence across different age groups (excl. HCW and LTRC)

When incidence started to rise again July, cases increased first in the 0-19 and 20-39 age group; the former relates to increased detection in children in household outbreaks, the latter due to younger workers in workplace outbreaks. There has been a major increase in incidence in recent weeks. Incidence in older age groups has started to rise and there has been a marked increase in incidence in the 19-24 age group. The incidence in the 0-18 age group, as a proportion of the overall incidence, is stable or decreasing.

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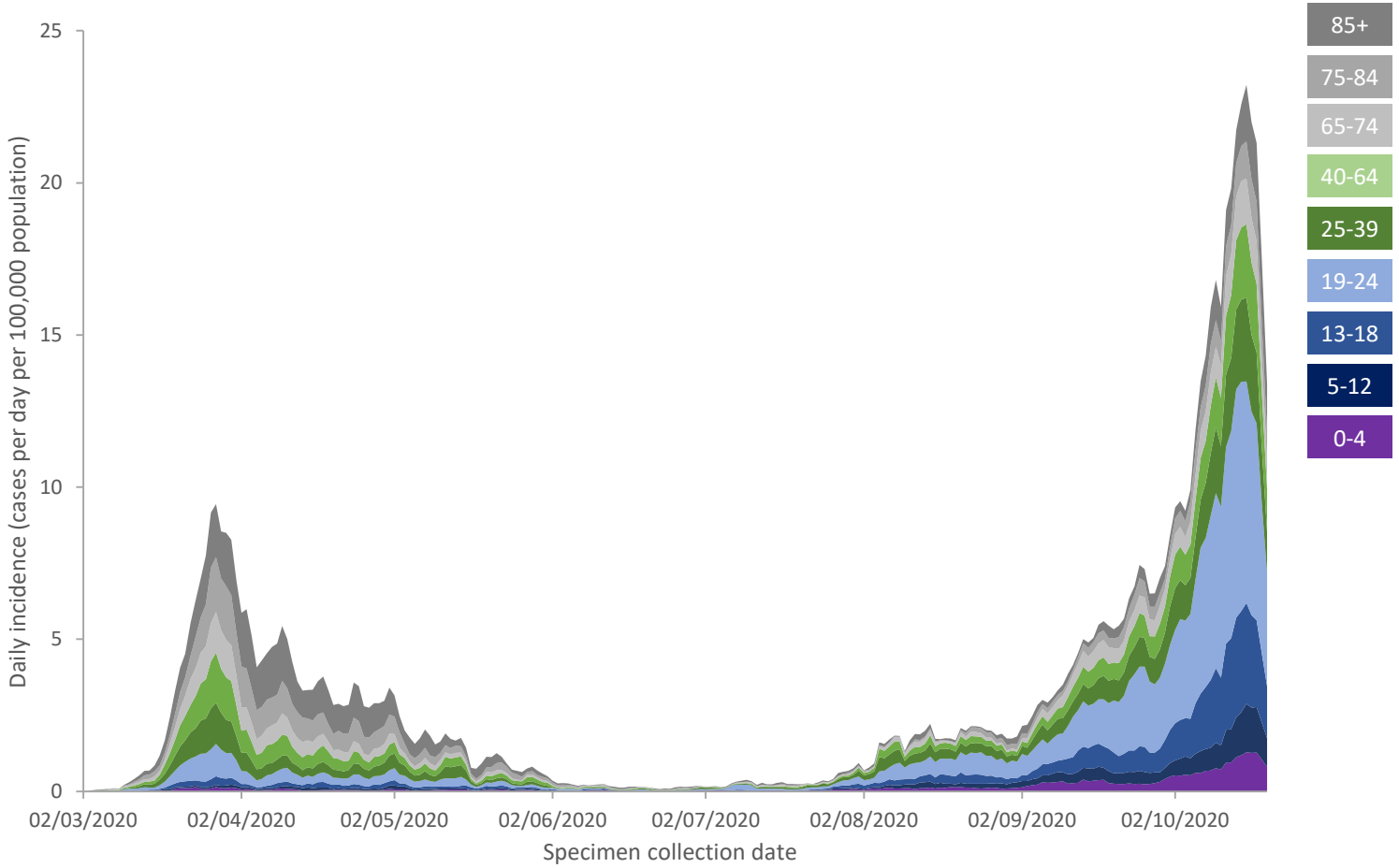

Heat map of 7-day incidence by age

Week	Age band								
	0-4	5-12	13-18	19-24	25-39	40-64	65-74	75-84	85+
9	0.0	0.0	0.3	0.0	0.1	0.1	0.0	0.0	0.0
10	0.0	0.2	0.3	0.0	0.2	0.7	0.5	1.0	0.0
11	0.6	0.2	0.5	5.4	5.0	4.4	4.6	6.6	5.9
12	4.5	2.4	7.5	23.6	27.8	31.2	25.4	25.4	28.1
13	6.9	4.2	14.5	58.0	73.4	86.6	72.6	88.5	84.4
14	4.5	4.4	6.7	28.1	40.3	50.9	51.1	92.1	109.5
15	5.7	5.6	9.1	32.0	29.3	47.7	46.9	71.8	108.1
16	3.0	5.3	10.8	18.7	20.8	32.0	28.4	50.4	69.6
17	3.3	4.2	7.8	21.1	23.7	26.6	21.2	50.4	60.7
18	4.5	6.4	9.4	20.2	26.0	21.0	18.7	37.1	44.4
19	2.1	2.7	4.8	13.3	15.3	14.6	10.4	18.8	31.1
20	3.6	1.6	4.8	12.1	16.4	11.9	6.7	9.2	10.4
21	3.3	2.7	4.6	8.5	6.3	8.2	7.5	15.3	20.7
22	2.1	2.4	2.2	4.2	5.1	6.8	4.0	4.6	4.4
23	1.2	0.5	1.3	3.0	0.7	1.9	1.6	5.6	3.0
24	2.7	0.7	1.3	1.5	1.4	1.4	1.6	2.0	1.5
25	0.0	0.4	0.5	1.8	1.4	1.0	0.8	0.5	1.5
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	11.0	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	34.7	15.3	10.5	5.6	5.1	1.5
35	6.3	9.7	13.5	37.4	18.6	11.2	4.8	9.2	5.9
36	13.0	13.5	17.5	47.7	22.3	13.5	11.0	11.7	16.3
37	17.5	17.5	29.9	64.0	28.4	24.9	22.8	8.7	7.4
38	21.4	26.2	44.1	90.6	44.3	34.9	32.9	19.8	14.8
39	12.4	22.8	42.8	148.2	50.7	42.5	33.2	31.0	17.8
40	30.2	29.0	63.2	173.9	69.4	59.6	34.3	28.5	25.2
41	43.7	47.2	136.7	324.9	119.0	94.1	63.5	52.4	60.7
42	62.1	76.7	170.1	379.2	139.5	124.5	77.9	59.0	60.7

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.

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Incidence across different age groups (excl. HCW and LTRC)

When incidence started to rise again July, cases increased first in the 0-19 and 20-39 age group; the former relates to increased detection in children in household outbreaks, the latter due to younger workers in workplace outbreaks. There has been a major increase in incidence in recent weeks. Incidence in older age groups has started to rise and there has been a marked increase in incidence in the 19-24 age group. The incidence in the 0-18 age group, as a proportion of the overall incidence, is stable or decreasing.

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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	11.0	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	34.7	15.3	10.5	5.6	5.1	1.5
35	6.3	9.7	13.5	37.4	18.6	11.2	4.8	9.2	5.9
36	13.0	13.5	17.5	47.7	22.3	13.5	11.0	11.7	16.3
37	17.5	17.5	29.9	64.0	28.4	24.9	22.8	8.7	7.4
38	21.4	26.2	44.1	90.6	44.3	34.9	32.9	19.8	14.8
39	12.4	22.8	42.8	148.2	50.7	42.5	33.2	31.0	17.8
40	30.2	29.0	63.2	173.9	69.4	59.6	34.3	28.5	25.2
41	43.7	47.2	136.7	324.9	119.0	94.1	63.5	52.4	60.7
42	62.1	76.7	170.1	379.2	139.5	124.5	77.9	59.0	60.7

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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Confirmed cases in acute hospitals

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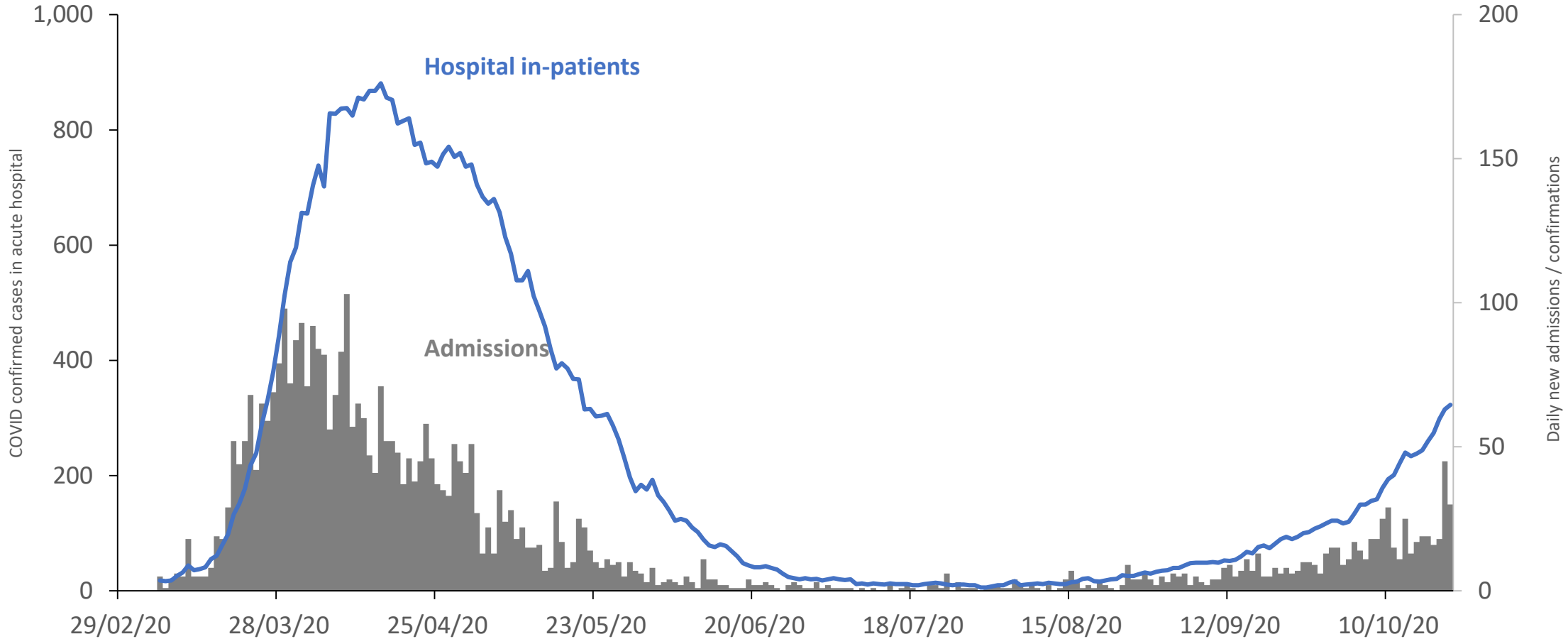

Hospital in-patients: Daily count of number of COVID-19 confirmed cases in acute hospitals. Daily admissions: New COVID-19 confirmed admissions and new laboratory confirmations of suspected cases in preceding 24 hours. Data from HSE PMIU-SDU, 8am census.

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Confirmed cases in intensive care

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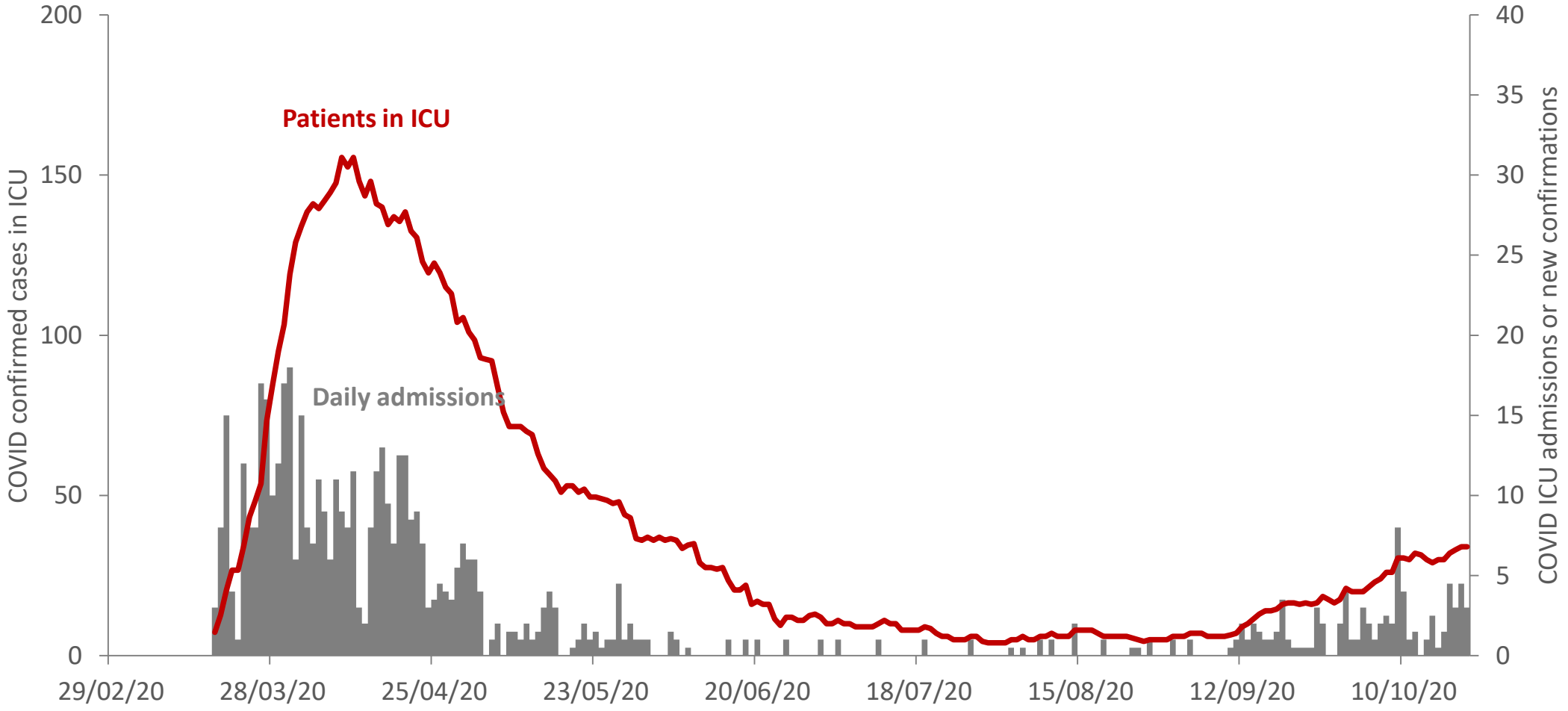

Patients in ICU: Daily count of number of COVID-19 confirmed cases in ICU. Daily admissions: new COVID-19 confirmed admissions to ICU and new laboratory confirmations of suspected cases in ICU. Average of morning and evening census from NOCA

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Deaths per day

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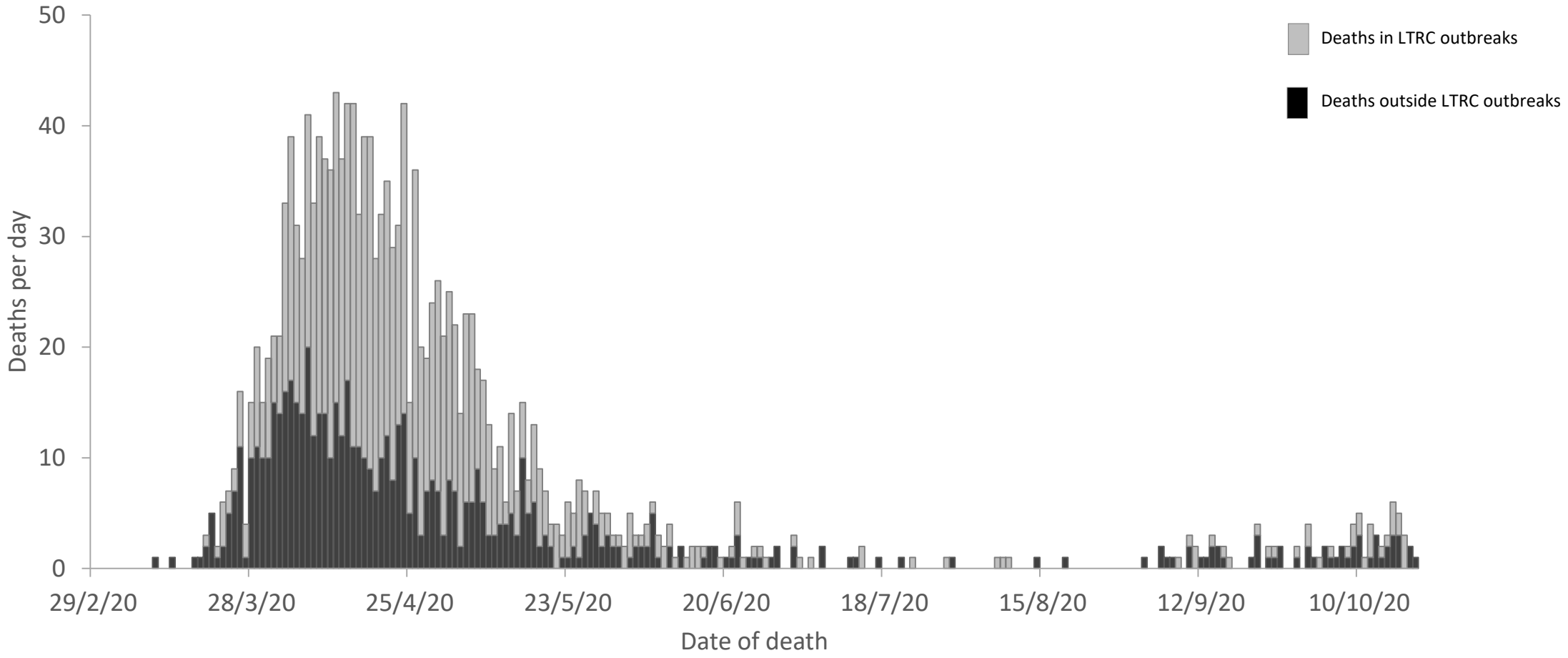

Deaths per day, separated into those associated with outbreaks in long-term residential care and those not associated with such outbreaks. Deaths with laboratory confirmed SARS-CoV-2 only

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Expected severity and mortality by age cohort

Given the hospital admission and mortality rates experienced from July to September 2020, we can project likely hospitalisation and mortality rates for every 1000 cases by age cohort. Given the current age mix, for every 1000 cases confirmed at present we should expect 35-45 hospital admissions, 5-7 ICU admissions, and 4-6 deaths.

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Age cohort	for every 1000 cases		
	Hospital admissions	ICU admissions	Deaths
< 45	12	1	rare*
45-64	50	10	3
≥ 65**	180	30	30

* We have had 11 deaths in 26,661 cases (excl HCW and LTRC) to midnight 15 October in this cohort; we are likely to see 1 death for every 5000-7000 cases. We have, thus far in October, had 7105 cases notified in this age cohort, of whom 90 were admitted to hospital, 4 to ICU and one died

** There were 605 cases notified in September in this cohort, with 112 admitted to hospital, 20 to ICU and 19 deaths; there have been 756 cases aged 65 and older notified thus far in October

The percentage of those with confirmed SARS-CoV-2 infection who are likely to be 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.

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14-day cumulative incidence by county

A heat map of 14-day cumulative incidence by county.

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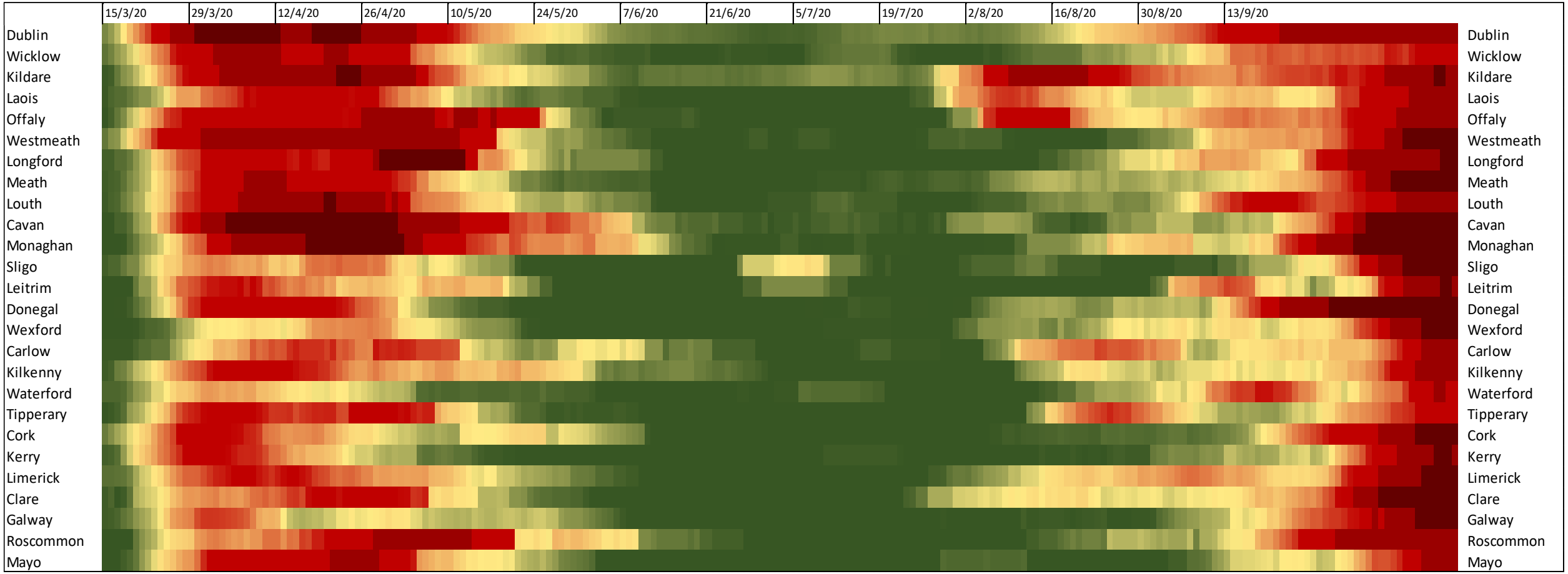

3 5 10 20 30 50 75 100 150 250

Scale: 14-day cumulative incidence per 100,000 population, cases dated by date of specimen collection.

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14-day cumulative incidence by local electoral area

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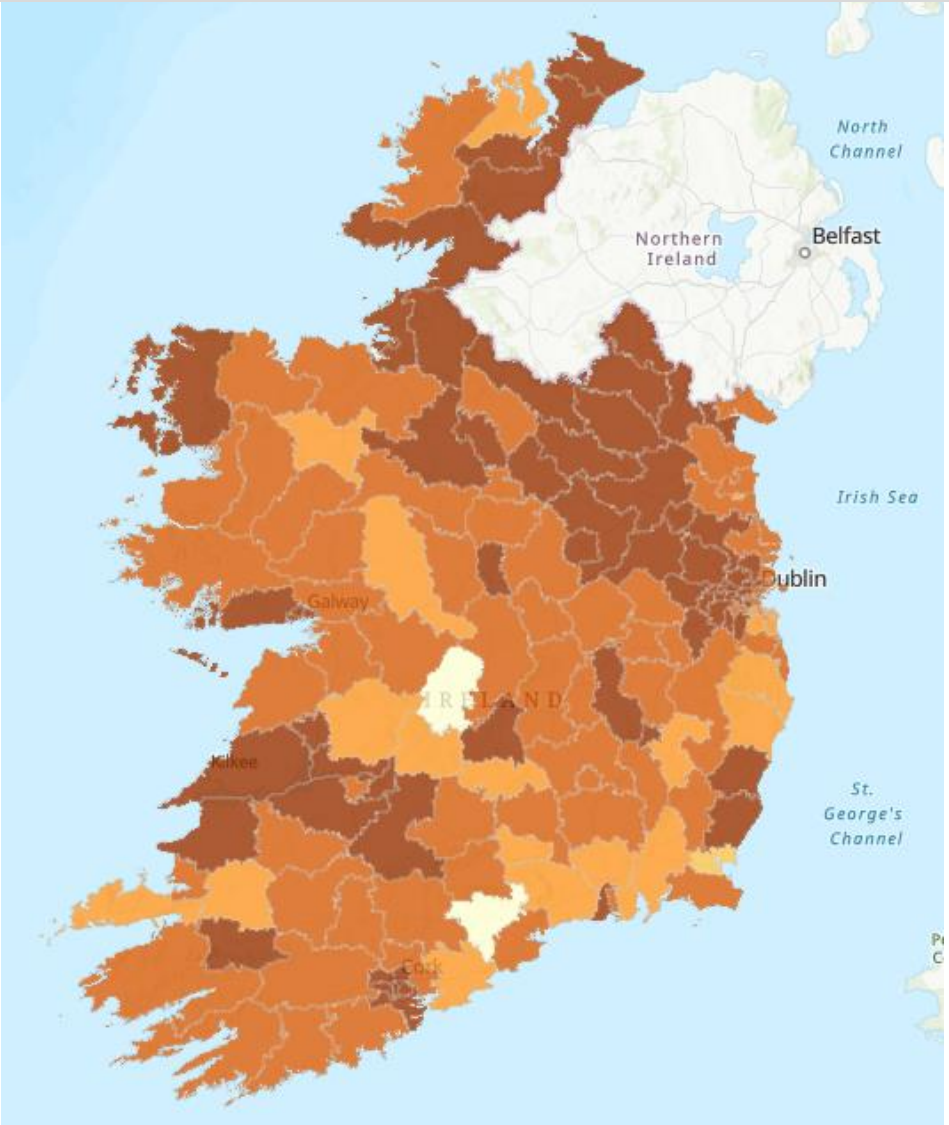

14-day cumulative incidence to midnight 19 October 2020

- > 240 cases per 100k
- > 120 – 240 cases per 100k
- > 60 – 120 cases per 100k
- > 20 – 60 cases per 100k
- Up to 20 cases per 100k
- 14-day incidence rate not shown as number of cases <5 (0-4)

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Growth rate for key metrics

The epidemic grew at approximately 20% per day in March, giving a doubling time of 3.5 days. The strict public health measures of April to June were associated with a reduction in cases, decreasing at about 5% or more per day. Cases are now growing at 5-7% per day, giving a doubling time of 10-14 days.

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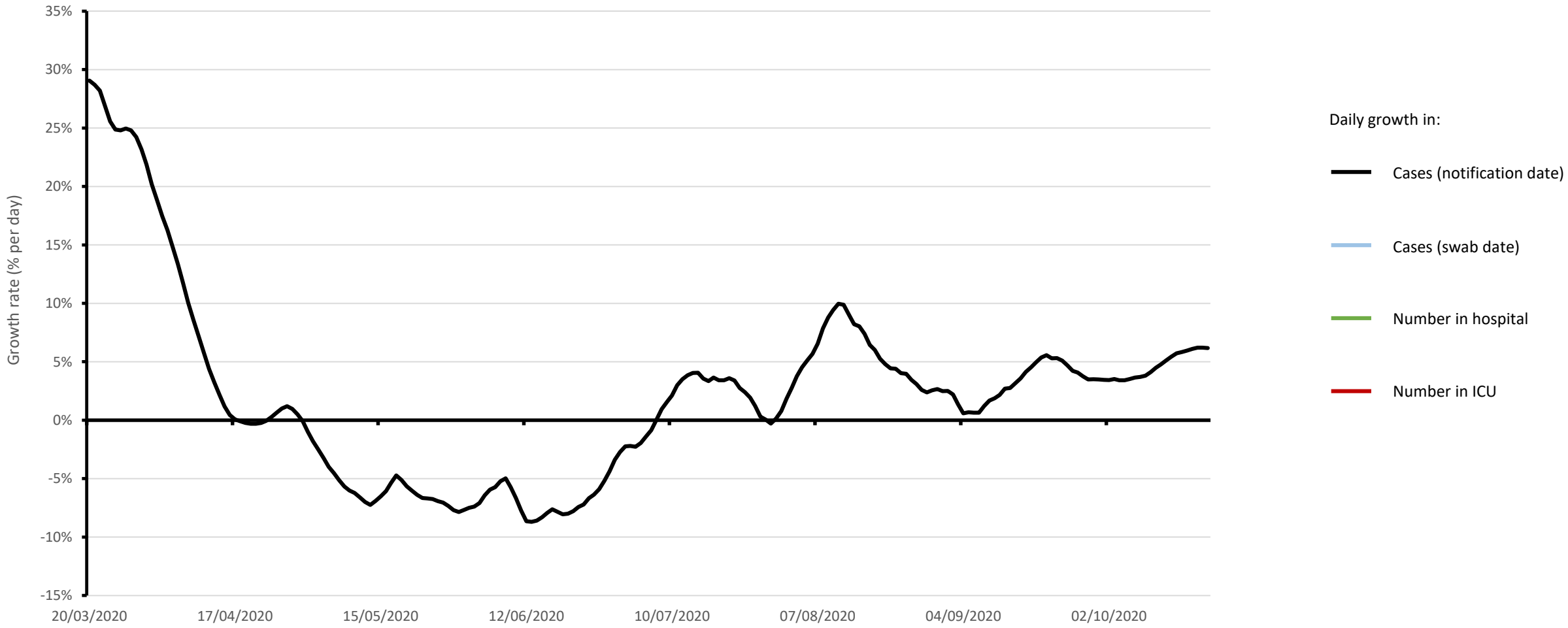

Growth rate calculated as the average growth rate over a 21-day trailing window; cases dated by notification (event) date.

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Estimates of effective reproduction (R)

Reproduction number and growth rate appear to be increasing, especially outside Dublin. Our best estimate at this time Is that R for the country as a whole is approximately 1.3-1.4. It is possible that reproduction number for Dublin is lower, about 1.2-1.3, but that reproduction number for the rest of the country is higher, perhaps as high as 1.4-1.6

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Method	Estimate	95% confidence interval
SEIR model-inferred	1.81	1.58 – 2.11
Bayesian model	1.49	0.54 – 3.17
Time-dependent R	1.42	1.31 – 1.52
GAM estimate 13 Oct 2020	1.32	1.07 – 1.55
GAM estimate 20 Oct 2020	1.33	0.96 – 1.71

Estimates generated 21 October 2020, refer to IEMAG technical notes for methodology. Estimates are unreliable when case numbers are low or variable. Time-dependent R estimates relate to infectious events approximately two weeks ago. GAM is best estimate for current R. The estimate of R is influenced by different patterns of transmission in large outbreaks, smaller clusters, and individual transmission.

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Situation analysis 21 October 20

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- Case numbers have been growing exponentially
  - Growth rate approximately 5-8% per day
  - Doubling time 9-14 days
  - R estimated at 1.3-1.4
- Hospitalisations also increasing exponentially (growth rate 5% per day)
- Intensive care admissions increasing (growth rate 3% per day)
- A countrywide concern
  - Growth rate in Dublin has increased in the last week (3% per day) but still below national average
  - Growth rate outside Dublin significantly higher, at close to 10% per day
  - R closer to 1.2-1.3 in Dublin and may be increasing
  - R could be as high as 1.4-1.6 across the rest of the country
- Disease concentrated in 19-24 y.o. cohort but incidence rising in those aged 65 and older; increasing case numbers in nursing homes

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