IEMAG briefing

15 October2020

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 considerably 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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	15 Apr	23 Jun	28 Jul	8 Sept	15 Sept	22 Sept	29 Sept	6 Oct	14 Oct
Cases confirmed per day	537	10	19	151	210	276	332	468	809
14-day cumulative incidence *per 100,000 population*	155	4.2	5.6	41	54	71	89	116	192
Hospital in-patients	856	45	11	46	55	80	103	131	204
Hospital admissions per day	*63*	*2*	*2*	*4*	*7*	*7*	*9*	*13*	*18*
ICU confirmed cases	149	17	6	6	9	15	17	21	30
ICU admissions per day	*8*	*< 1*	*< 1*	*< 1*	*1*	*1*	*1*	*2*	*3*
Deaths confirmed per day	30	2	< 1	< 1	1	1	2	2	3

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 slowly

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COVID-19
Public Health
Advice

7-day average	14 Apr	22 Jun	27 Jul	7 Sept	14 Sept	21 Sept	28 Sept	5 Oct	13 Oct
Tests done per day	5842	2634	6477	9780	10891	12922	12533	12739	14068
% tests positive	17%	0.5%	0.3%	1.7%	2.1%	2.2%	2.8%	3.9%	6.2%

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

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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 947.

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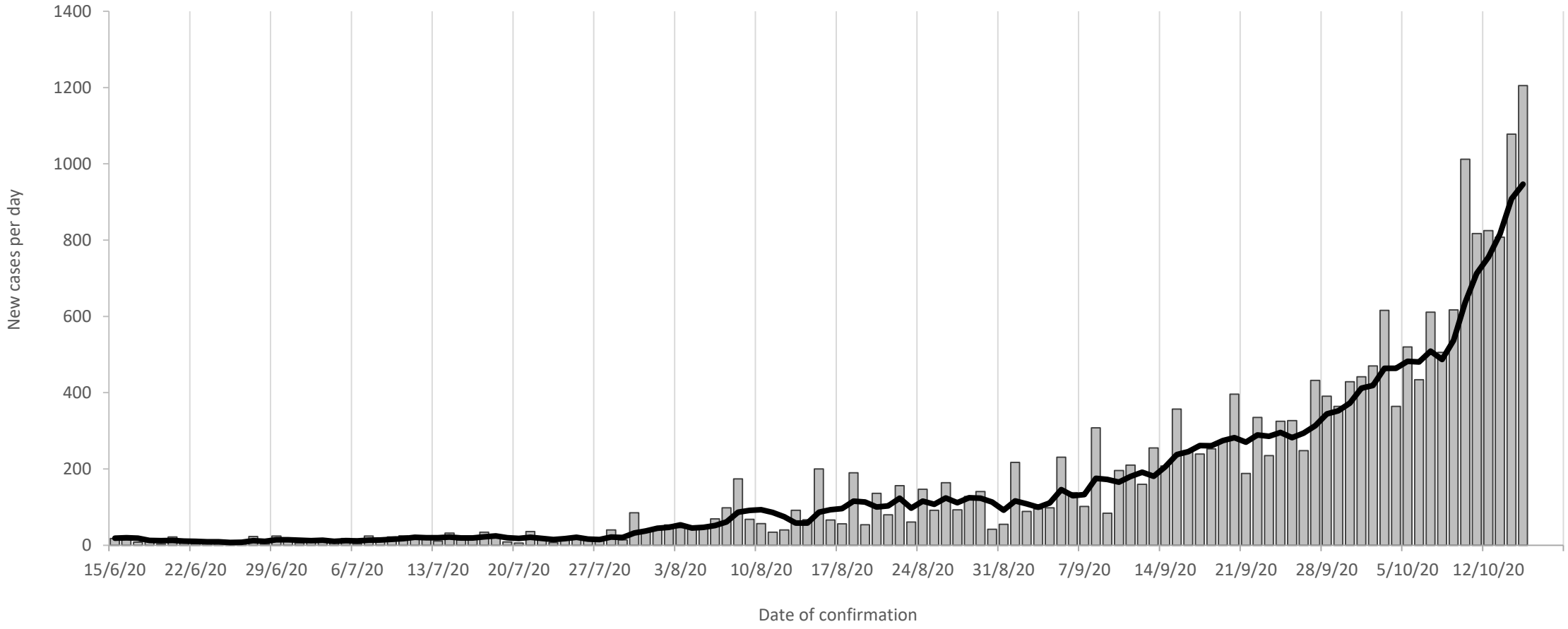
Cases confirmed each week	95	61	93	125	140	119	285	540	546	711	796	912	1304	1948	2062	3045	4495



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 by county

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

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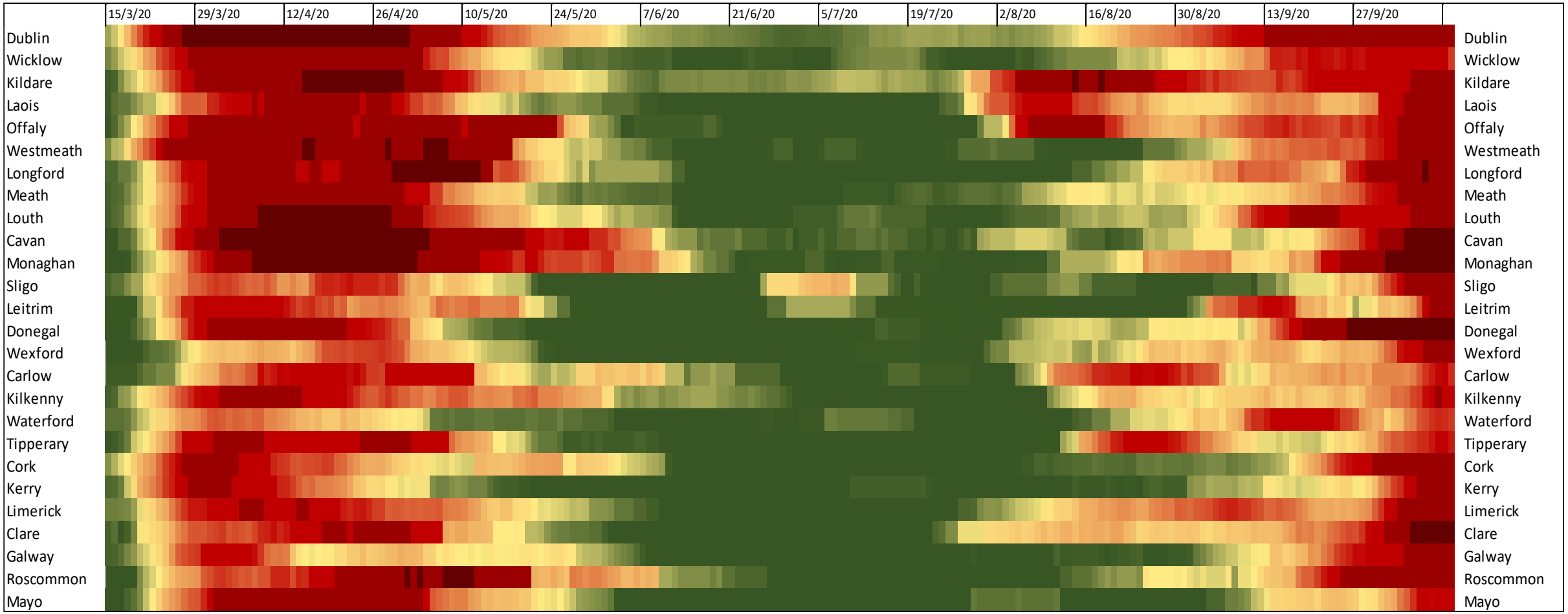

3	5	10	20	30	40	50	75	100	200

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

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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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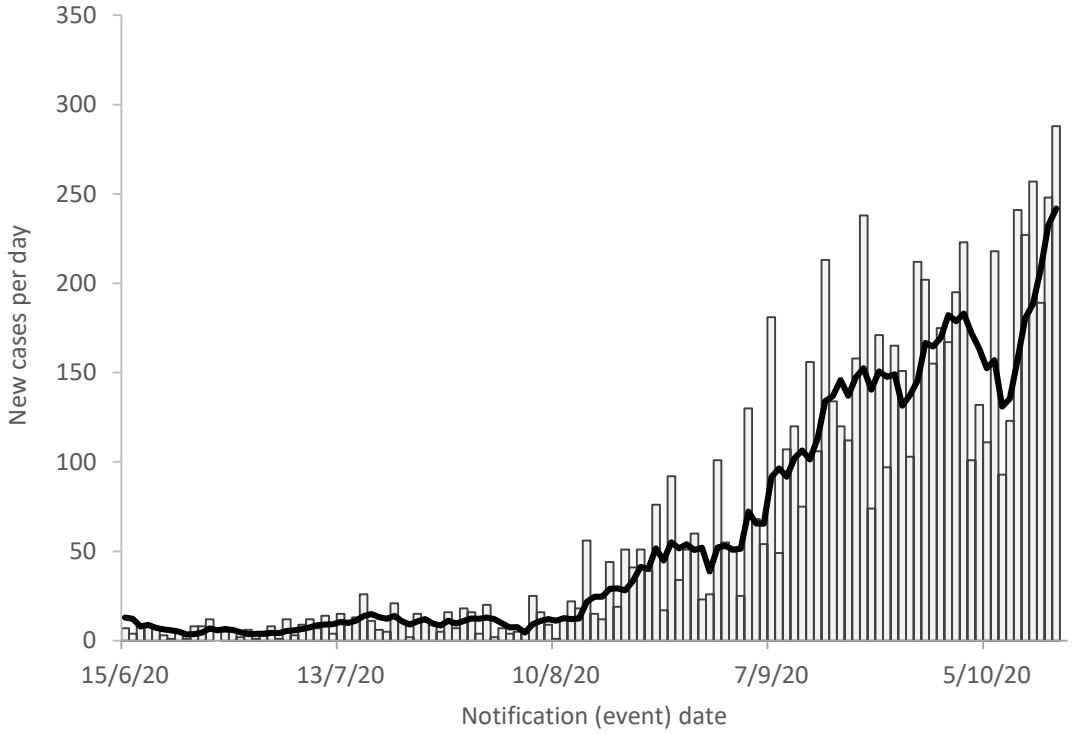
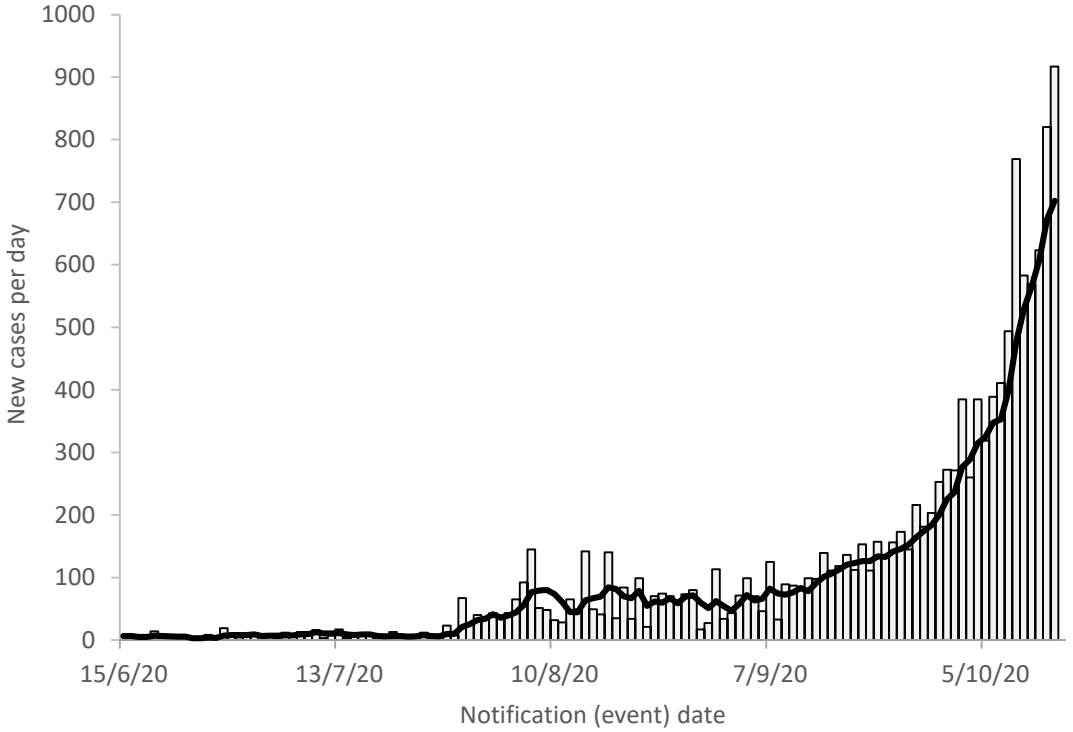
Dublin



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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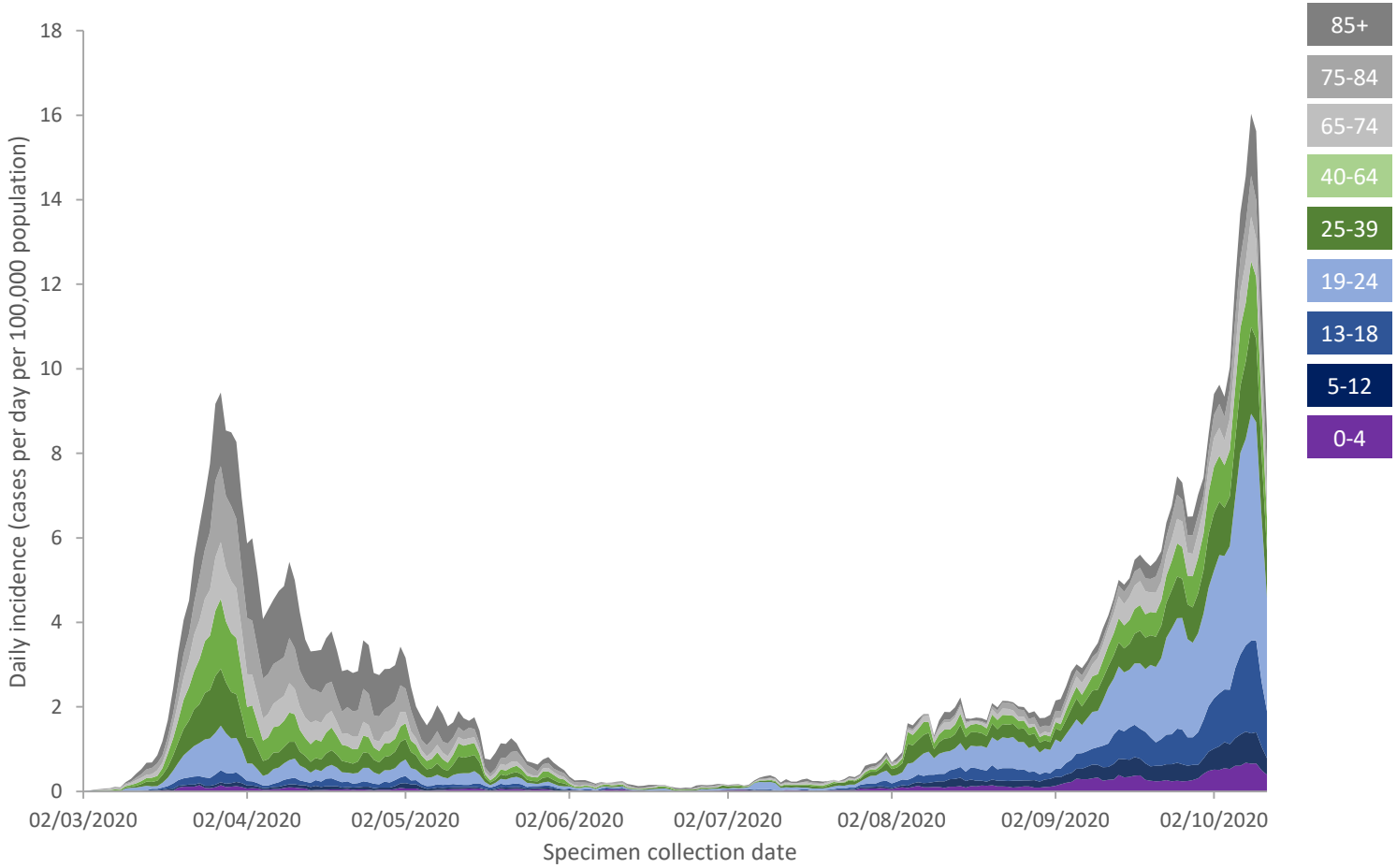

Heat map of 7-day incidence by age

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	47.6	46.9	71.8	108.1
16	3.0	5.3	10.8	18.7	20.8	32.1	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	26.1	21.0	18.7	37.1	45.9
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	148.5	50.8	42.5	33.5	31.0	17.8
40	30.2	29.2	63.2	174.2	69.6	59.8	34.8	29.0	25.2
41	40.4	44.5	127.3	303.7	113.4	87.4	59.4	56.0	77.0

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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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 1.4. It is possible that reproduction number for Dublin is closer to 1.0, but that reproduction number for the rest of the country is significantly higher, perhaps as high as 1.6 and 1.8

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Method	Estimate	95% confidence interval
SEIR model-inferred	1.84	1.58 – 1.2.16
Bayesian model	1.32	0.70 – 2.86
Time-dependent R	1.33	1.23 – 1.42
GAM estimate 6 Oct 2020	1.38	1.10 – 1.66
GAM estimate 13 Oct 2020	1.41	0.99 – 1.83

Estimates generated 13 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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What do our models tell us?

Model calibrated to case data until *9 October 2020*. R varies over a wide range thereafter; given that R is estimated at 1.4, if there is no change in the rate of viral transmission we could have over 2200 cases per day by 7 November

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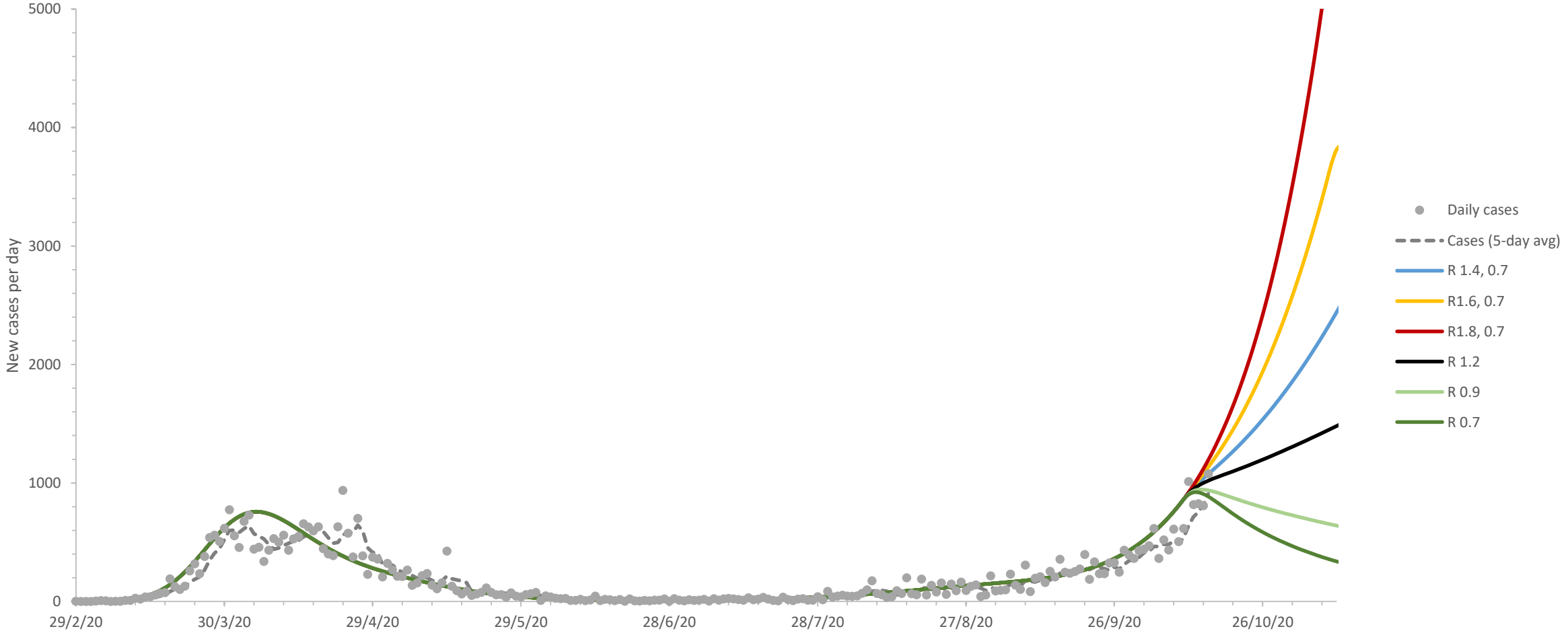

Model projections of the number of new cases infections per day. The model is calibrated with daily case counts to 28 September 2020, and run with R between 0.7 and 1.8. It is assumed that strict public health restrictions are re-introduced, to bring R below 1.0, 6 weeks later for R = 1.4, and 4 weeks later for R = 1.8. This is a scenario model only. If is not a forecast, nor does it imply or anticipate any future policy decision.

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Situation analysis 15 October 20

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Public Health
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- Case numbers growing exponentially and possibly accelerating
  - Growth rate approximately 5-6% per day
  - Doubling time 12-14 days
  - R estimated at 1.4
- Hospitalisations also increasing exponentially
- Intensive care admissions and deaths increasing
- A countrywide concern
  - Growth rate in Dublin is lower (about 1% per day over the last 14 days) but recent sharp increase in cases is a major concern
  - Growth rate outside Dublin significantly higher, at least 6-7% per day
  - R closer to 1.0 in Dublin and may be increasing
  - R could be as high as 1.6-1.8 across the rest of the country
- Continued increase in incidence in 19-24 yo cohort; sudden further increase in incidence in those aged 65 and older; increasing case numbers in nursing homes
- The effect of the move to Level 3 will start to become apparent over the coming week
- If we fail to reduce viral transmission nationwide immediately, now on track see 1800 – 2500 cases per day and over 400 people in hospital by 31 October 2020

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