IEMAG briefing

20 October 2021

Coronavirus
COVID-19
Public Health
Advice

Cases, numbers in hospital and intensive care

After a period of stability, there was a sudden increase in the number of daily cases and the numbers in hospital and ICU; all indicators are continuing to deteriorate

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	Apr 2020	Summer 2020	Oct 2020	Dec 2020	Jan 2021	Jun 2021	29 Sept	6 Oct	13 Oct	20 Oct	Daily count 20 Oct
Cases confirmed per day	859 18-04	8.7 25-06	1158 21-10	262 12-12	6516 10-01	308 19-06	1329	1138	1631	1889	2148
14-day incidence *per 100,000 population*	212 19-04	3.0 04-07	306 26-10	79 09-12	1528 15-01	91 20-06	394	362	407	518	
Hospital in-patients	862 17-04	9 02-08	333 01-11	198 16-12	1949 24-01	43 29-06	296	321	379	444	464
Hospital admissions per day	*85* *04-04*	*<1* *10-07*	*27* *26-10*	*11* *13-12*	*158* *15-01*	*6* *27-06*	*39*	*38*	*49*	*57*	54
ICU confirmed cases	150 14-04	4 04-08	43 04-11	26 27-12	217 28-01	13 27-06	63	62	72	74	86
ICU admissions per day	*14* *31-03*	*<1* *03-06*	*4* *03-11*	*1* *16-12*	*20* *17-01*	*<1* *02-07*	*5*	*5*	*5*	*7*	14

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. The highest and lowest values of each indicator are given for each wave of the pandemic, along with the date on which that value was recorded, as well as the data for recent weeks. The historic incidence data may change due to denotification of cases.

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Confirmed cases each day

Daily count and 7-day rolling average. Case numbers have increased rapidly over the last 14 days: the 7-day average is now **1889,** up from **1631** seven days ago and **1138** two weeks ago.

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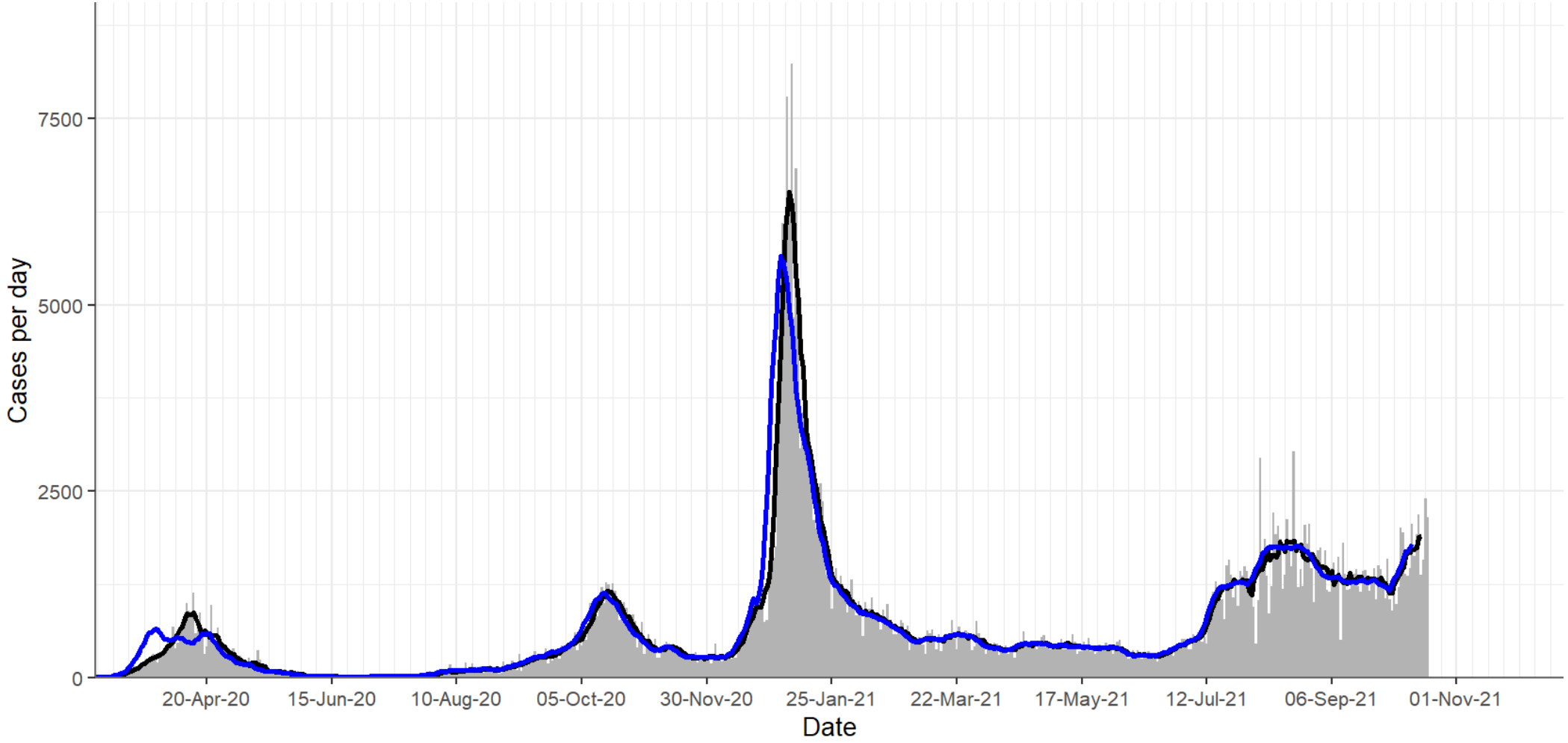

Daily cases by notification date (bars) and 7-day average case count by notification date (black line) and specimen collection date (blue line)
CIDR data to midnight Tue 19 Oct 2021. Data by specimen collection date truncated 4 days before report.

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Confirmed cases each day

Daily count and 7-day rolling average. Case numbers have increased rapidly over the last 14 days: the 7-day average is now **1889,** up from **1631** seven days ago and **1138** two weeks ago.

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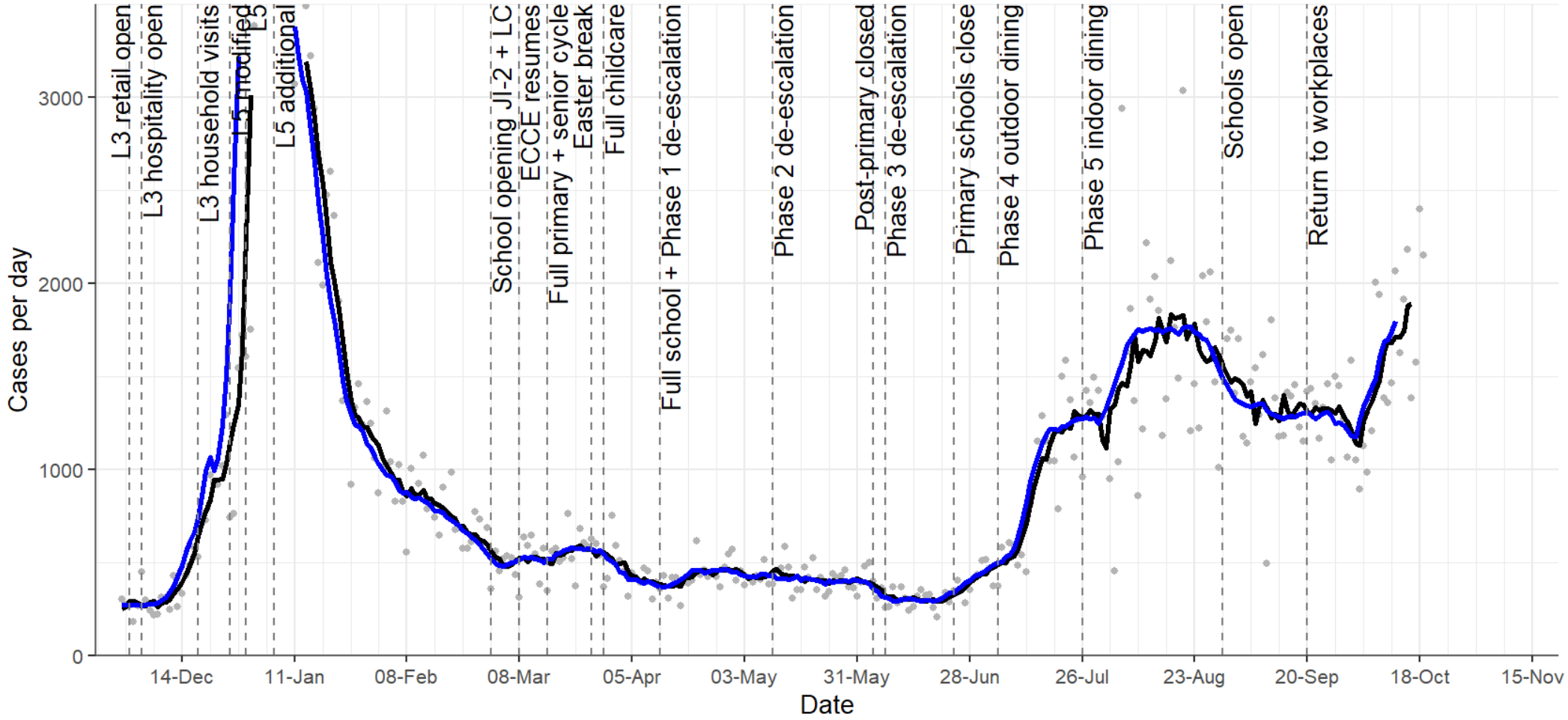

Daily cases by notification date (points) and 7-day average case count by notification date (black line) and specimen collection date (blue line)
Vertical dashed lines mark escalation and de-escalation of public health measures.
CIDR data to midnight Tue 19 Oct 2021. Data by specimen collection date truncated 4 days before report.

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Age-specific incidence

The delta variant drove a very large wave of infection in unvaccinated young adults in July 2021 (1). This force of infection caused a smaller wave across all age groups (vaccinated older adults and children) through August 2021 (2) which was suppressed by the vaccination of 16-30 year olds (3). The reopening of schools was associated with a transient increase in cases in children (4) followed by a significant fall (despite ongoing high levels of testing). Cases are now increasing at the same time and at similar nrates across all age groups, suggesting that it is due more to increased social contact and force of infection than to waning immunity.

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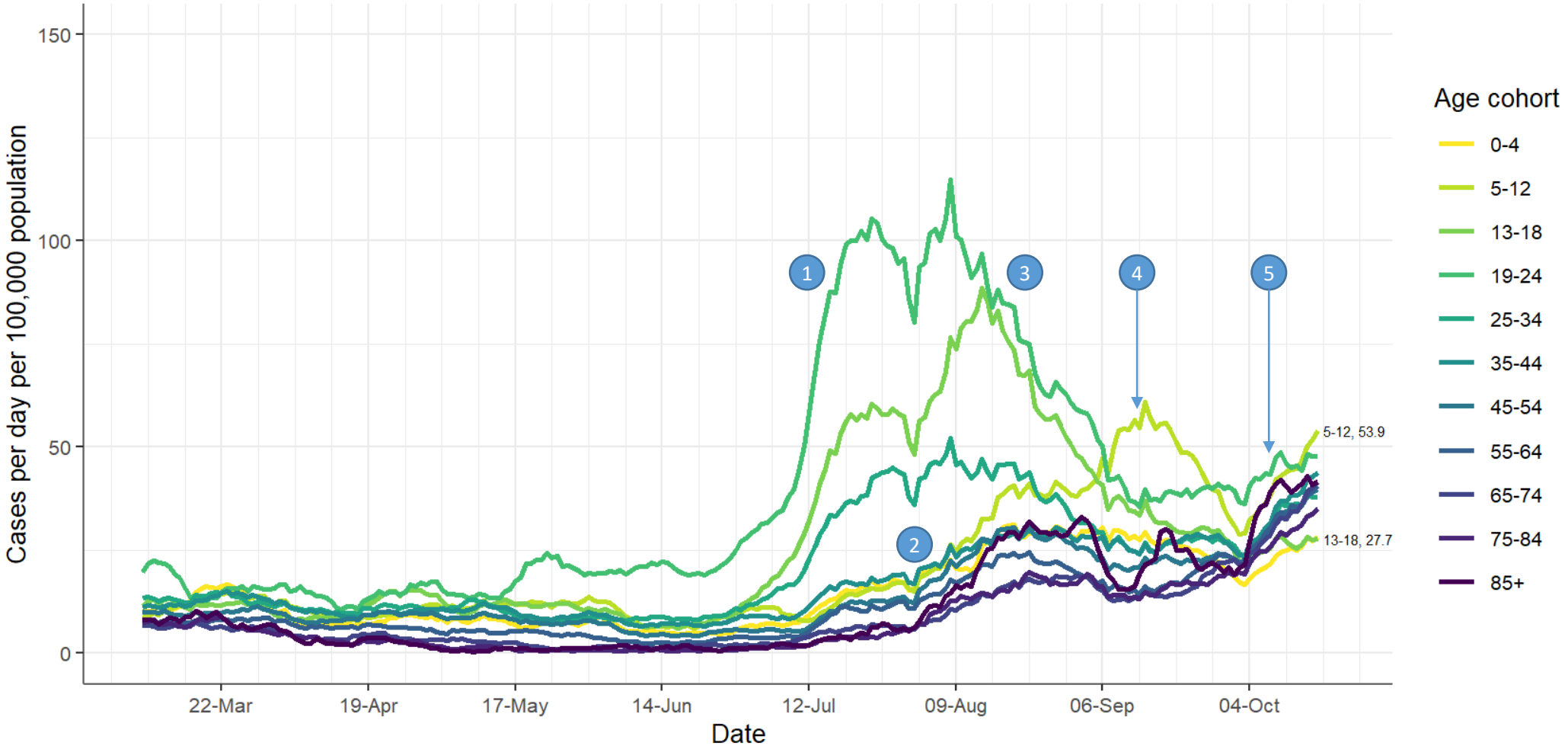

Age-specific incidence (cases per day per 100,000 population). 7-day moving average.
CIDR data to midnight Tue 19 Oct 2021. Cases dated by date notified to HPSC (event creation date).

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Age-specific incidence (excl LTRC and hospital outbreaks)

LTRC and hospital outbreaks account for the volatility in age-specific incidence in those aged 85 and older; the removal of these cases reveals the underlying upward trend.

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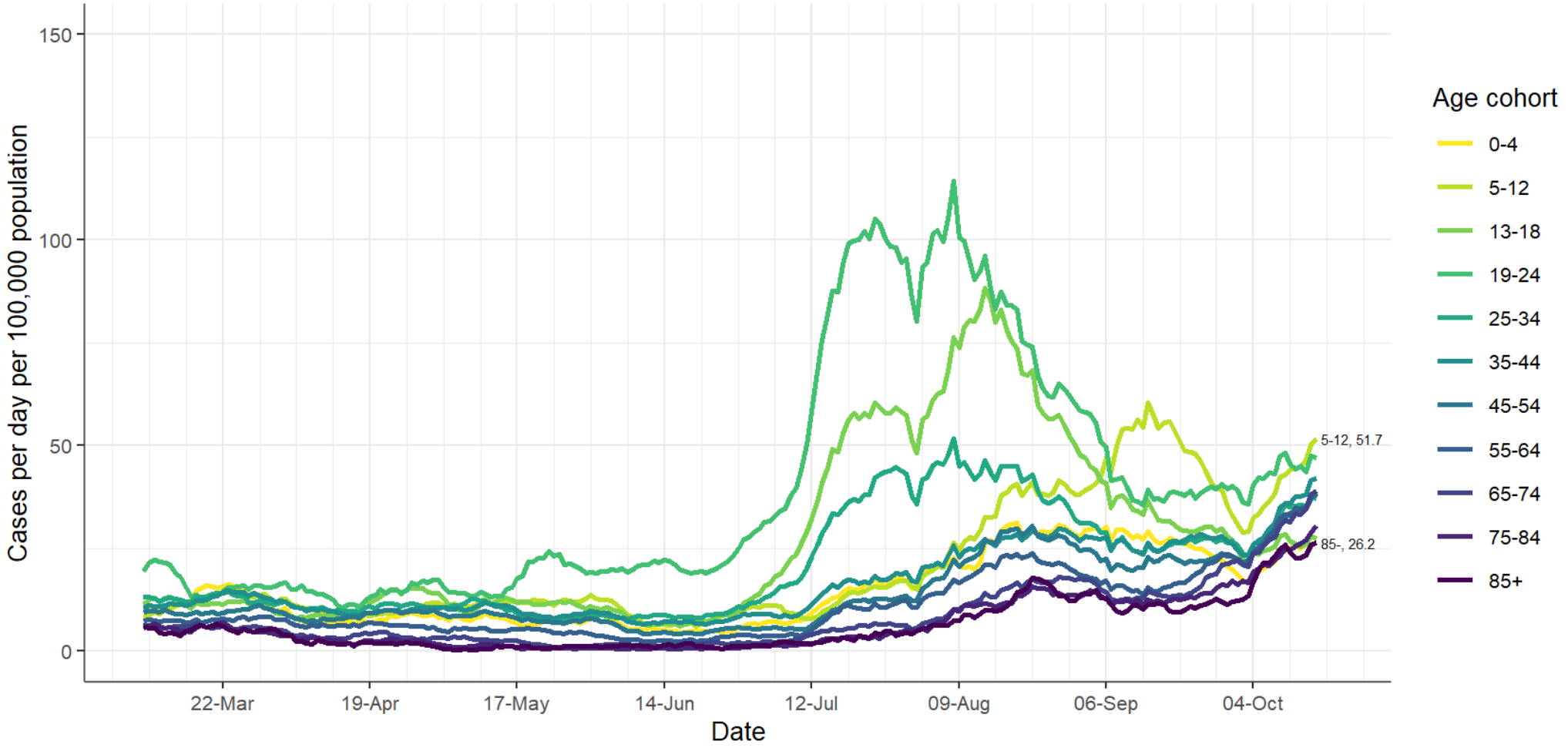

Age-specific incidence (cases per day per 100,000 population). 7-day moving average.
CIDR data to midnight Tue 19 Oct 2021. Cases dated by date notified to HPSC (event creation date).
Cases linked to outbreaks in LTRC and hospitals excluded

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Tests and test positivity

The demand for testing is high, and increasing. Test positivity is increasing also at approximately 12% for public health laboratories, and increasing also for tests conducted in hospital laboratories.

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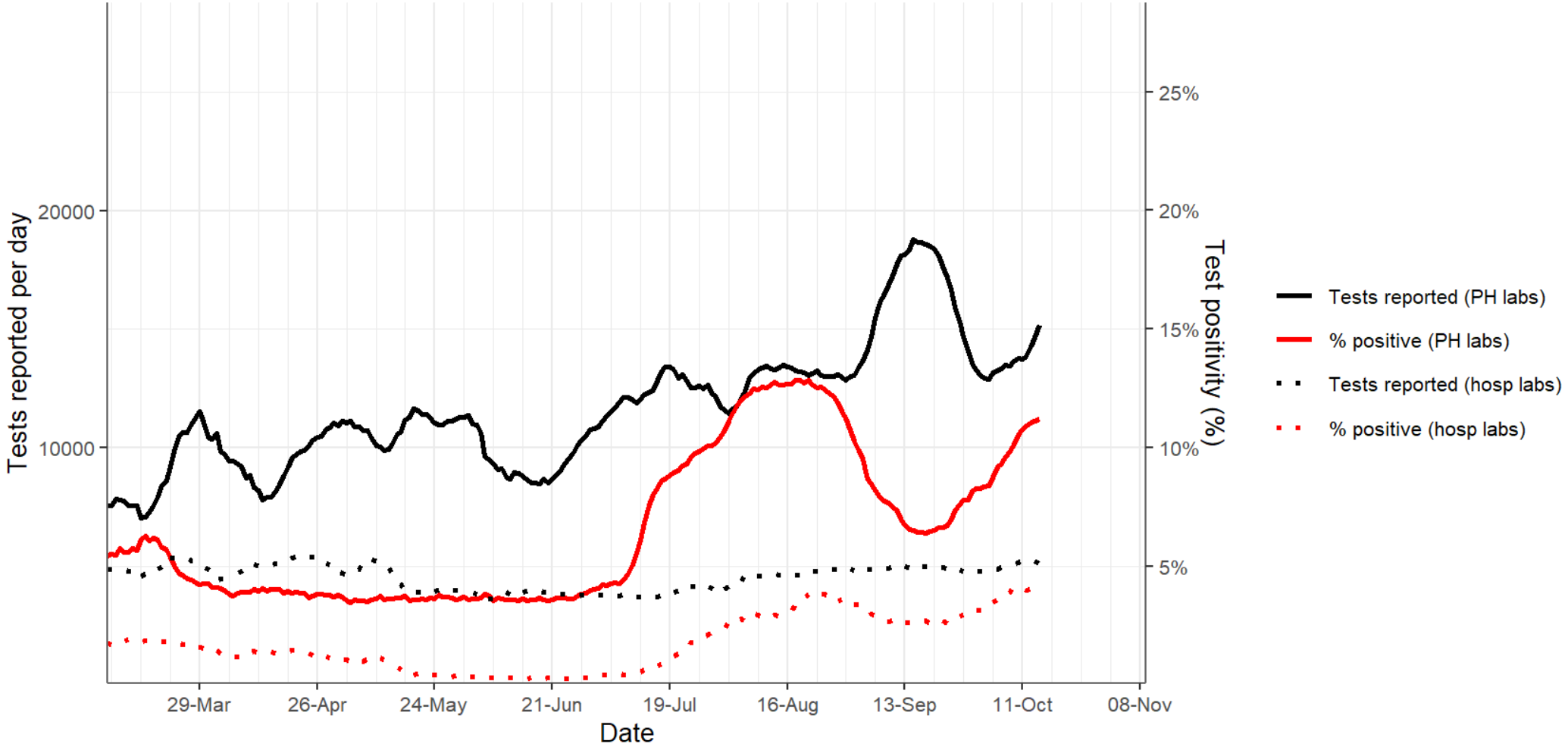

Total tests reported per day (black) and % of tests reported positive (red) for tests conducted in public health laboratories (NVRL and Cherry Orchard, solid lines) and tests conducted in hospital laboratories (dotted lines). 7-day moving averages.

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Test positivity by age

Test positivity is increasing rapidly across all age groups except those aged 0-4 years.

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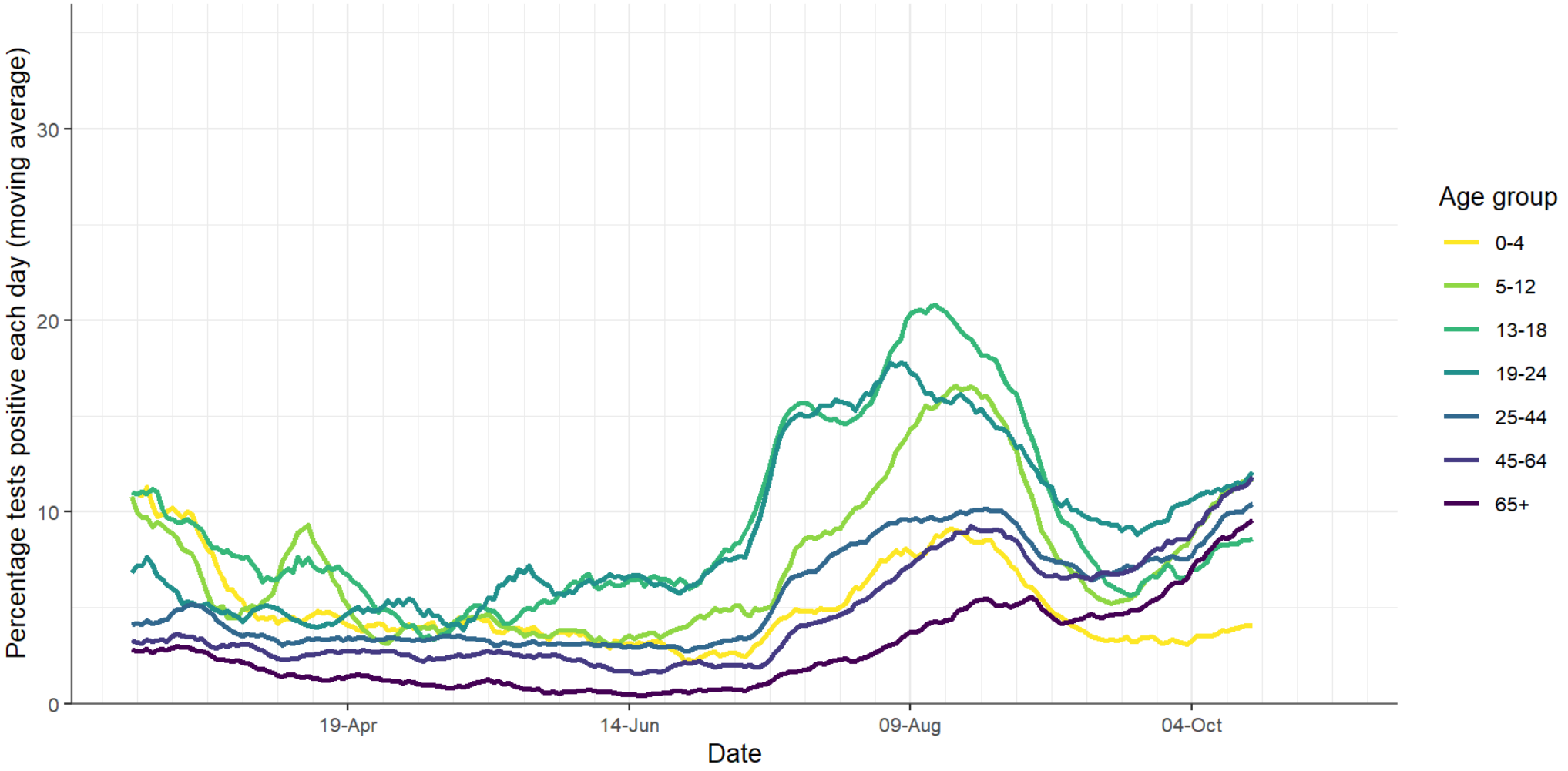

Percentage of tests each day reported as positive (7-day moving average) by age group. Laboratory testing data to Tue 19 Oct 2021.

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Incidence by county

The geography of the disease has shifted, from a position where incidence was high in border counties, to a more uniform distribution marked by high incidence in small counties with complex outbreaks.

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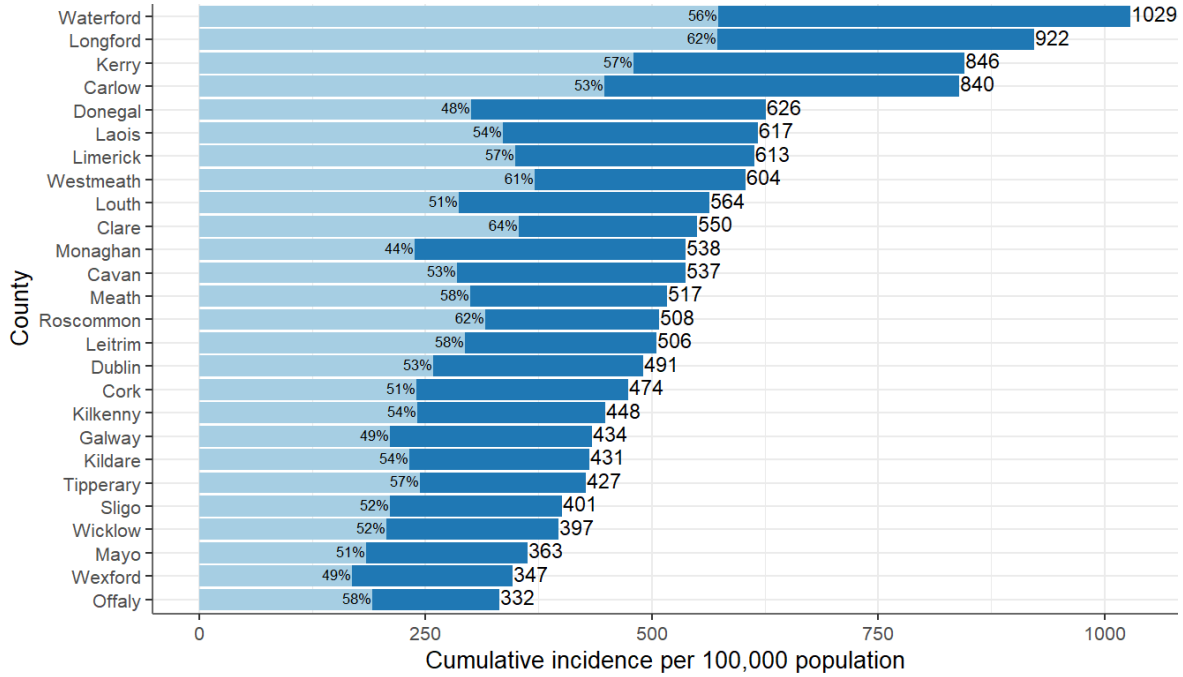
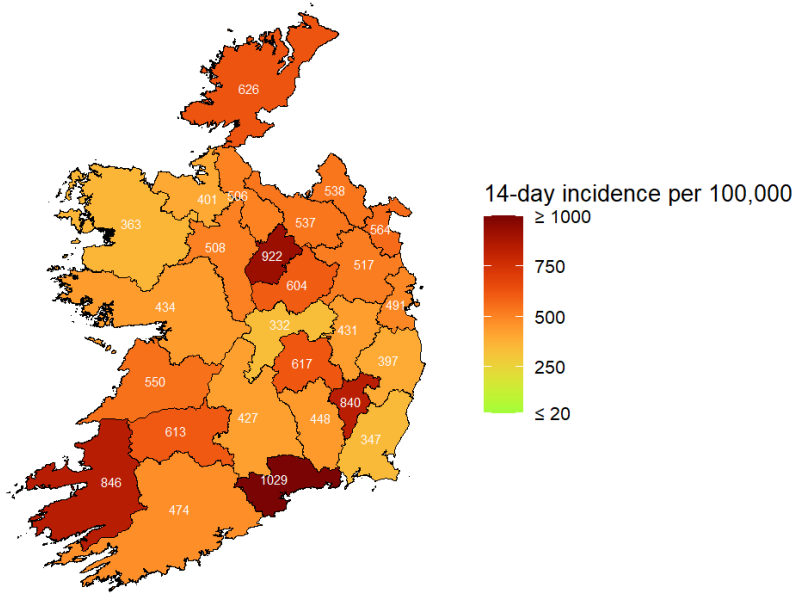


14-day and 7-day cumulative incidence per 100,000 population by county. Data labels are 14-day cumulative incidence, and 7-day cumulative incidence as a percentage of 14-day cumulative incidence.
CIDR data to midnight Tue 19 Oct 2021. Cases dated by date notified to HPSC (event creation date).

14 day cumulative incidence per 100,000 population by county



14-day cumulative incidence per 100,000 population for each county.
Colour scale truncated at 20 and 1000 cases per week per 100,000 population.
CIDR data to midnight Tue 19 Oct 2021. Cases dated by date notified to HPSC (event creation date).

Admissions

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Incidence by county

The geography of the disease has shifted, from a position where incidence was high in border counties, to a more uniform distribution marked by high incidence in small counties with complex outbreaks.

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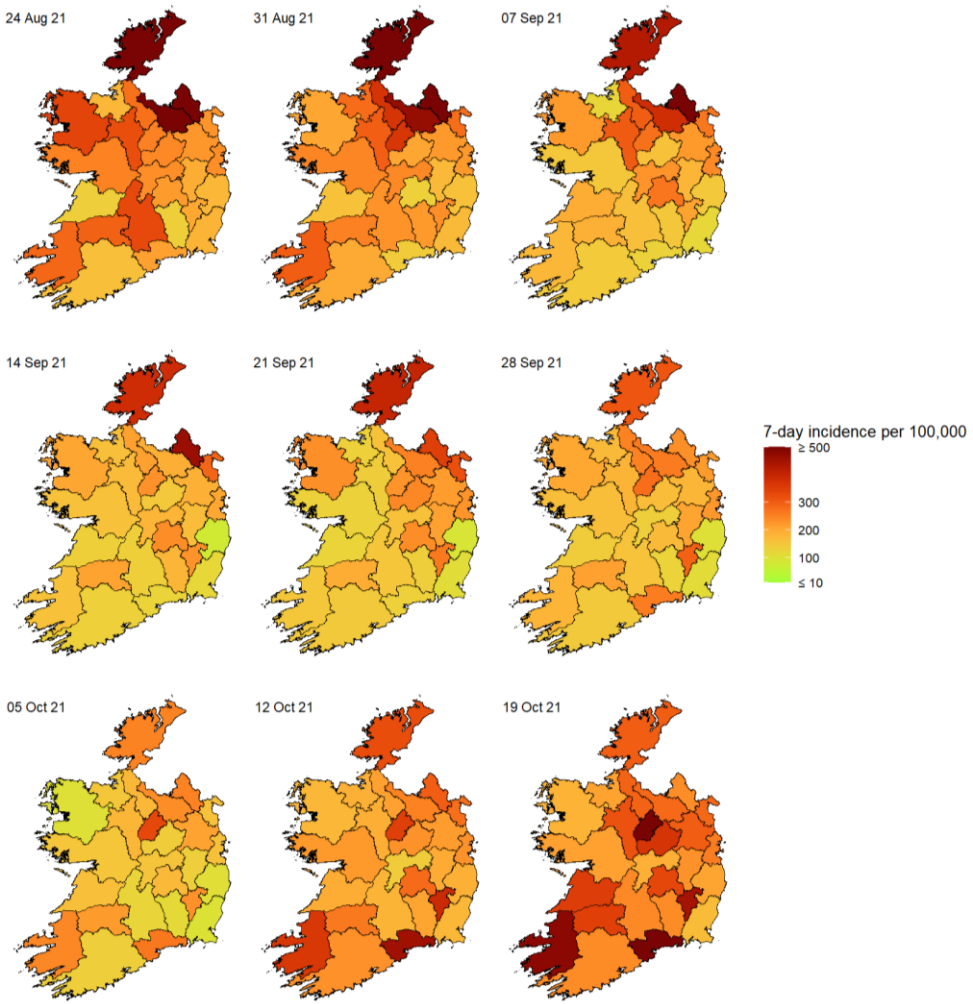
7 day cumulative incidence per 100,000 population by county



7-day cumulative incidence per 100,000 population for each county.
Colour scale truncated at 10 and 500 cases per week per 100,000 population.
CIDR data to midnight Tue 19 Oct 2021. Cases dated by date notified to HPSC (event creation date).

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Vaccination regimen completion by age

While vaccine coverage exceeds 90% for those aged 45 yeas and older, it ranges from 78% to 88% for those aged 16 to 44 years, and stands at 60% for those aged 12-15 years.

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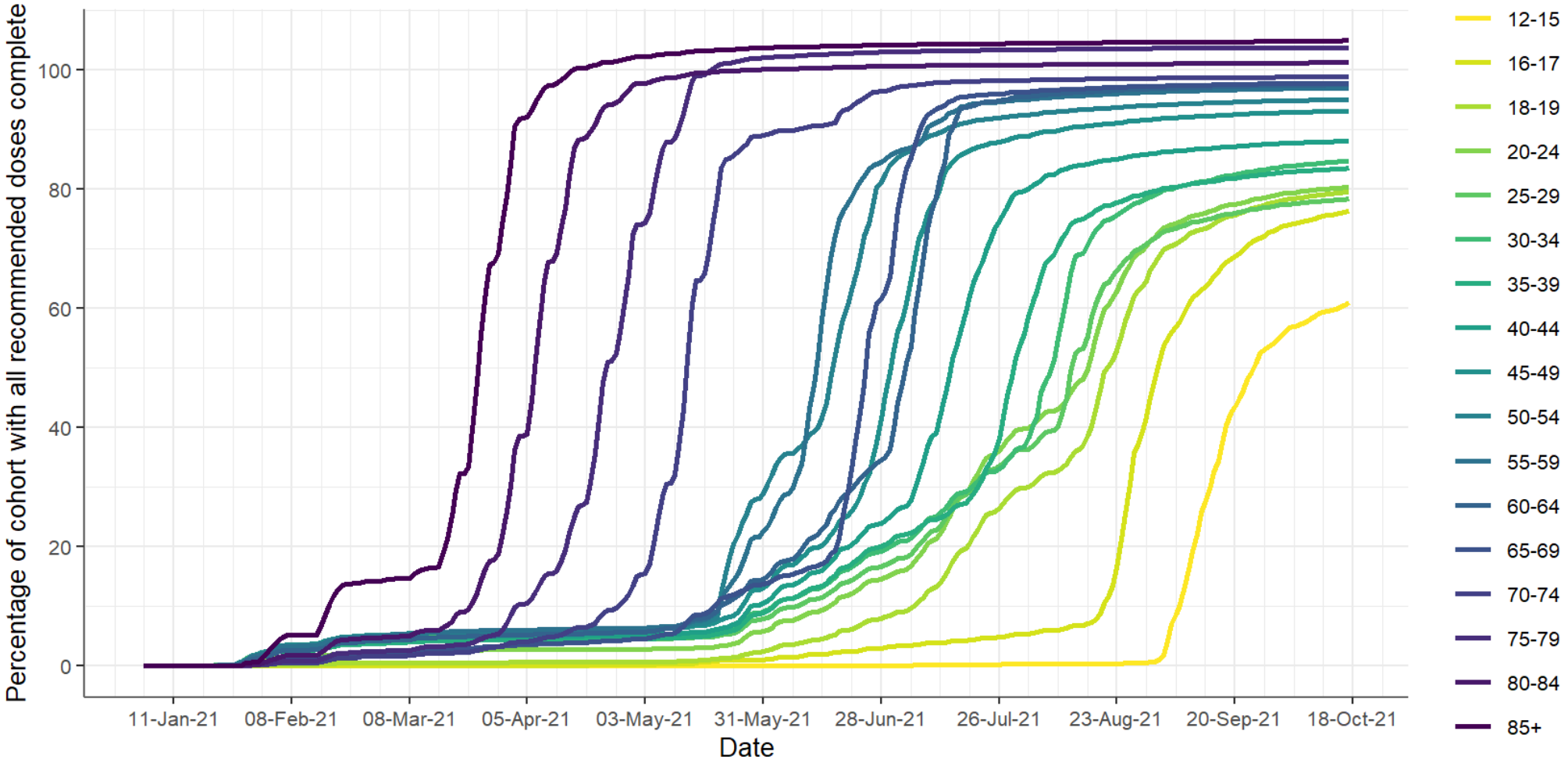

Percentage of each age cohort with all recommended doses of vaccine administered.
Data from COVAX to Sun 17 Oct 2021

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Confirmed cases in acute hospitals

The number of people in hospital with confirmed SARS-CoV-2 infection. The number of people in hospital has increased over the last four weeks and is now **464**. The number of admissions and newly confirmed cases in hospital per day has increased to an average of **57 per day**.

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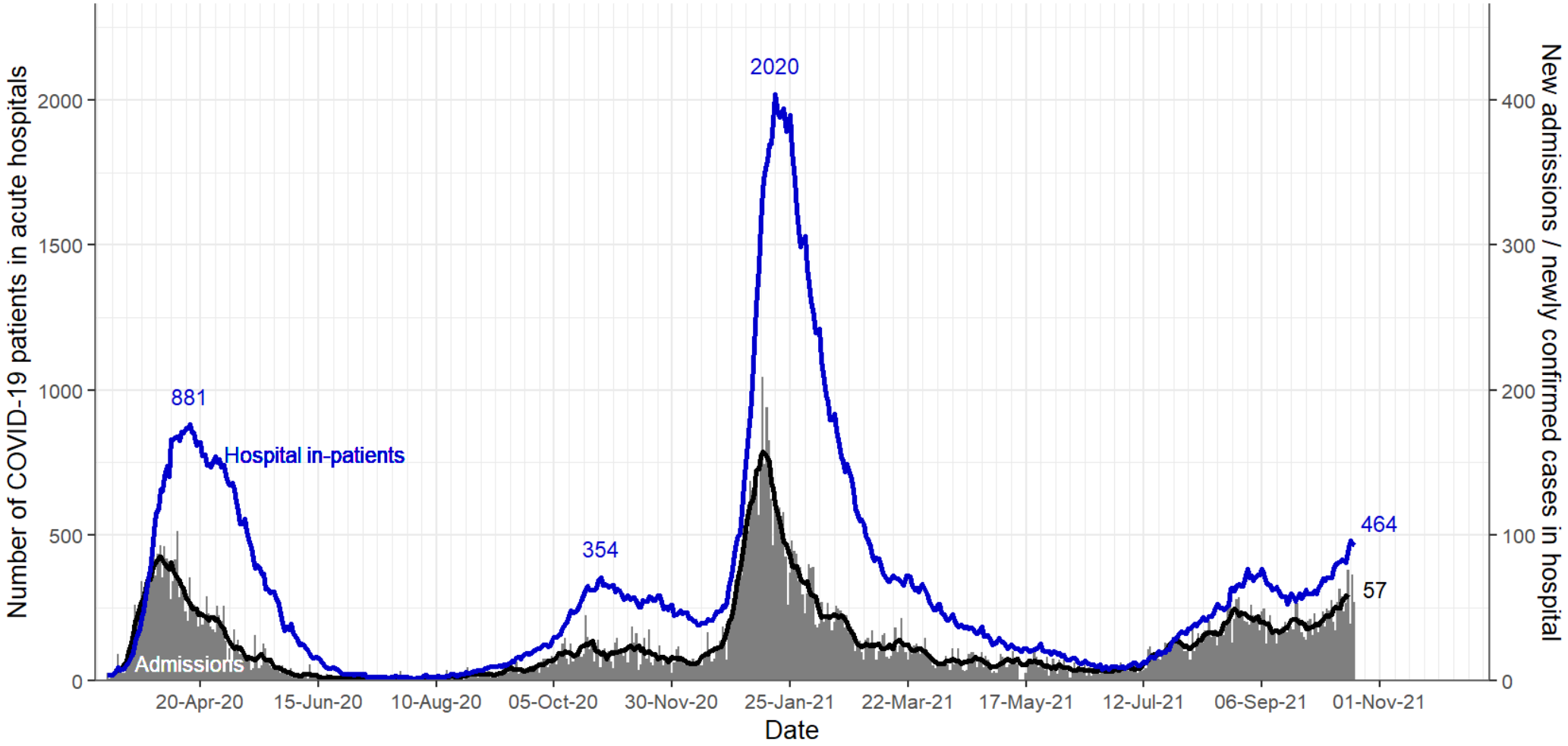

Number of in-patients with COVID-19 (blue line) and number of newly admitted or newly confirmed cases per day(columns, with 7-day moving average, black line, secondary y-axis) on HSE acute hospital sites. HSE PMIU-SDU data to Wed 20 Oct 2021.

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Confirmed cases in intensive care

The number of people in ICU with confirmed SARS-CoV-2 infection and the number requiring mechanical ventilation have increased significantly over the last two weeks. **86** people in ICU, **52** mechanically ventilated, average **7** admissions per day.

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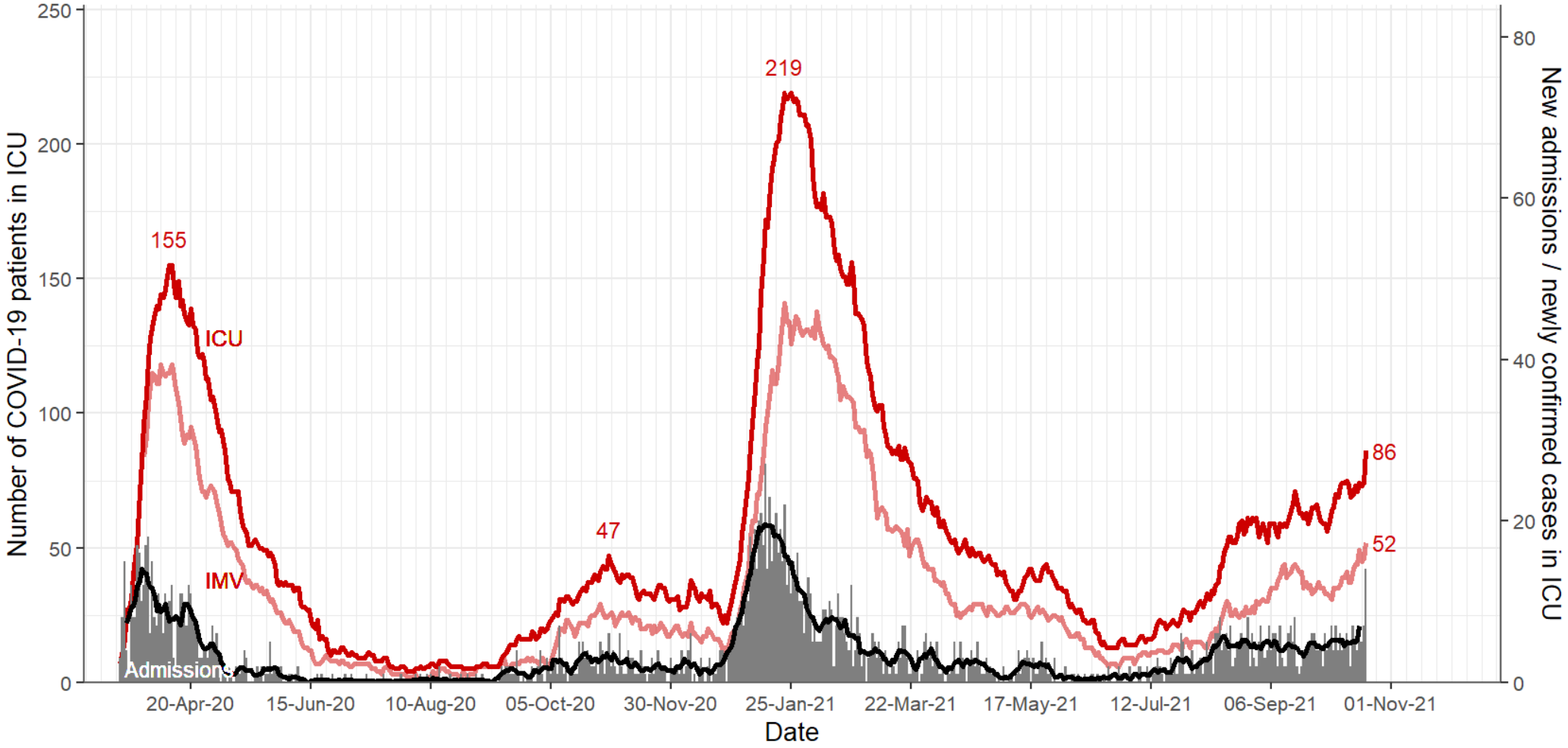

Number of in-patients with COVID-19 in ICU (solid red line) number requiring mechanical ventilation (IMV, pale red line), and number of new admissions per day (columns, with 7-day moving average, black line, secondary y-axis). NOCA ICU-BIS data to Wed 20 Oct 2021.

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Deaths

Deaths per day are relatively constant at approximately 5 per day, or 150 deaths per month. This is likely to increase in the coming weeks.

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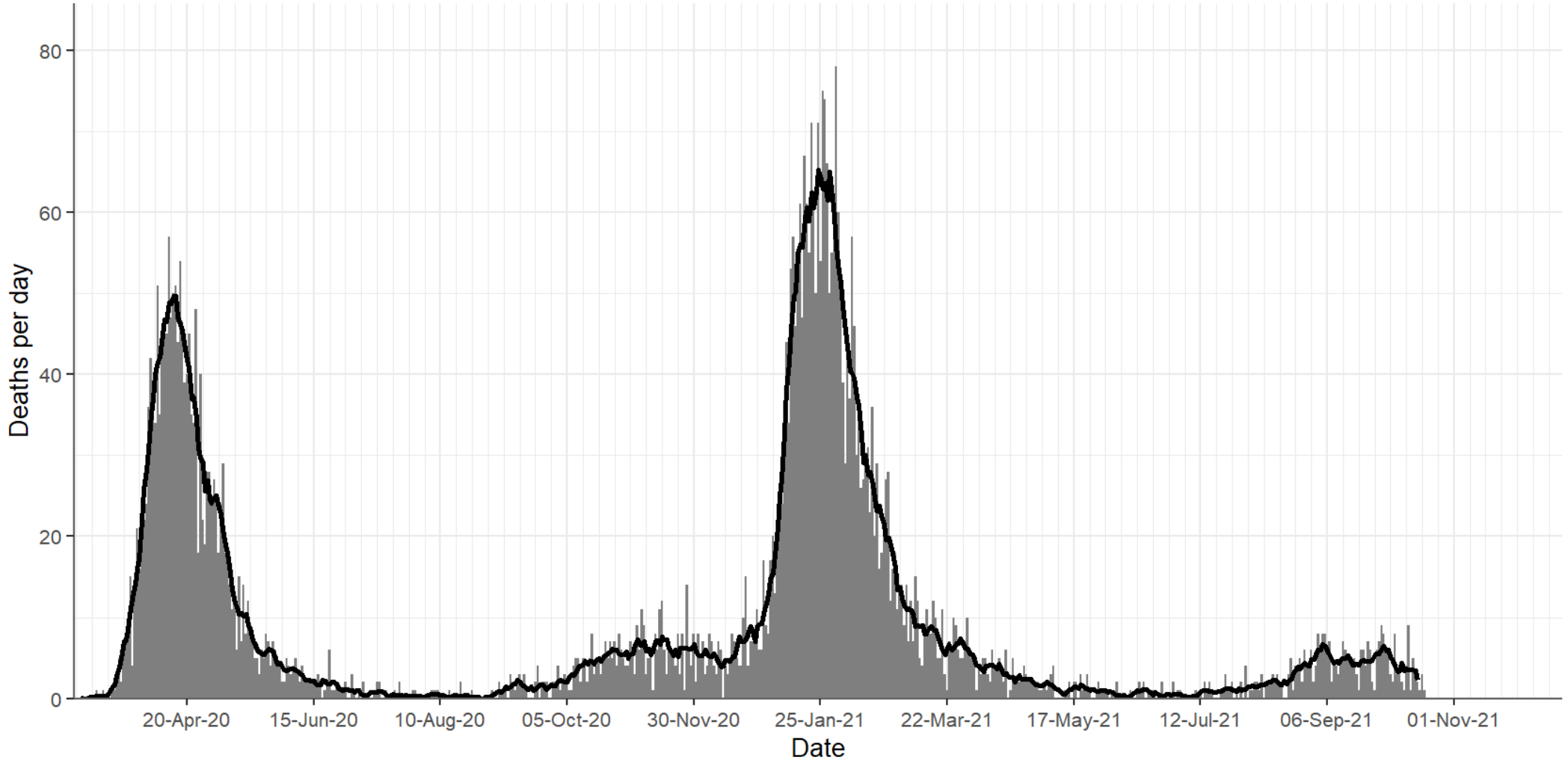

Deaths each day (bars) by date of death, with 7-day moving average (line). CIDR data to midnight Tue 19 Oct 2021.

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Percentage of hospitalisations by age group

When cases were largely in younger adults, during summer 2021, 75% of hospitalisations were under 65 years of age, with shorter lengths of stay. Now, with relatively even distiribution of vaccination, infections are more evenly distributed across the population, and 50% of hospitalisations are aged 65 years and older.

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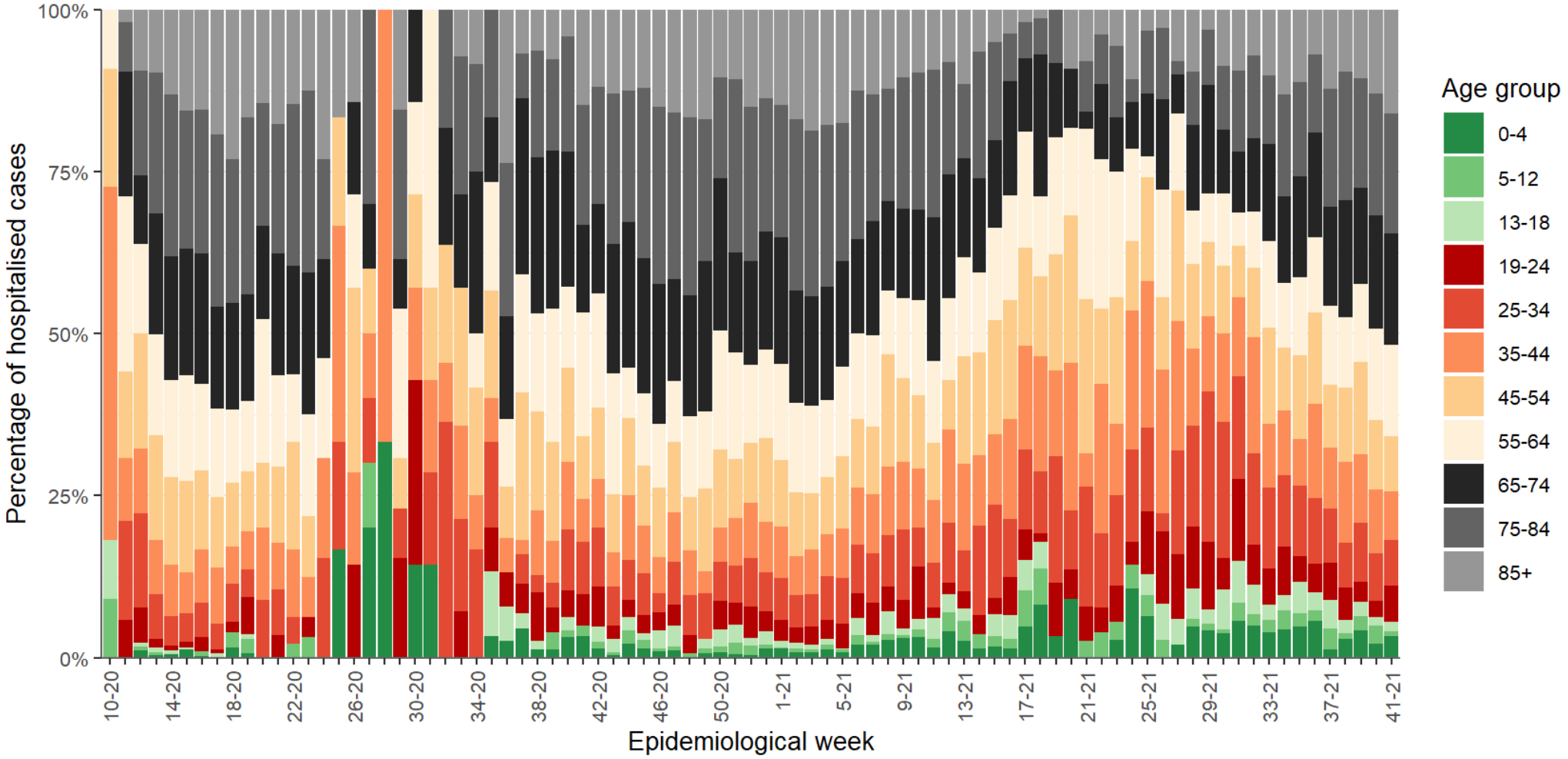

Weekly cases admitted to hospital: percentage in each age band. Cases assigned to the week they were notified not the week of admission.
CIDR data to midnight Tue 19 Oct 2021.

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Cases, hospitalisations and admission to ICU

The July 2021 wave of delta infections (1) caused a subsequent increase in numbers of people in hospital (2). However, in September, numbers in hospital increased (3) *before* an increase in cases (4). This is because the age mix of cases changed in September, with a greater proportion of cases in older people more likely to require hospital care with longer lengths of stay. The full effect of the recent increase in cases (4) on numbers in hospital will be seen over the next 10 days.

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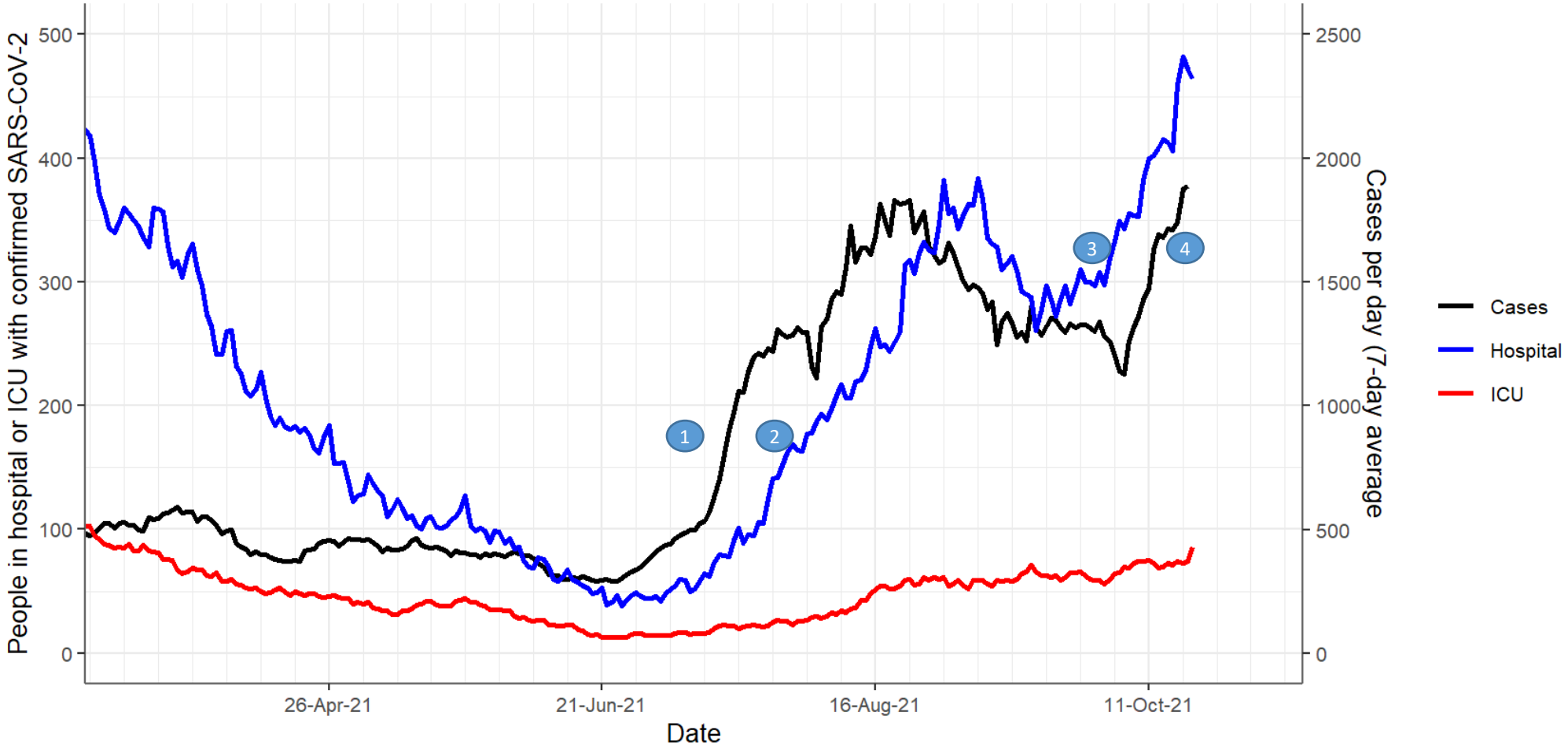

Cases per day (7-day average) and number of people with confirmed SARS-CoV-2 infection in hospital and in ICU.
CIDR data to midnight Tue 19 Oct 2021. HSE PMIU-SDU data to Wed 20 Oct 2021. NOCA ICU-BIS data to Wed 20 Oct 2021.

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Growth rate

Growth rate for cases is 2.3% per day (-0.3% – +5.0%) over a 14-day window and 3.3% per day (1.8% - 4.8%) over a 21-day window. The number of people in hospital is growing at 2.4% (2.0% - 2.9%) per day over a 14-day window. This growth rate compares with growth rates of 4-5% per day in September and October 2020 and July 2021, and in excess of 10% per day in January 2021.

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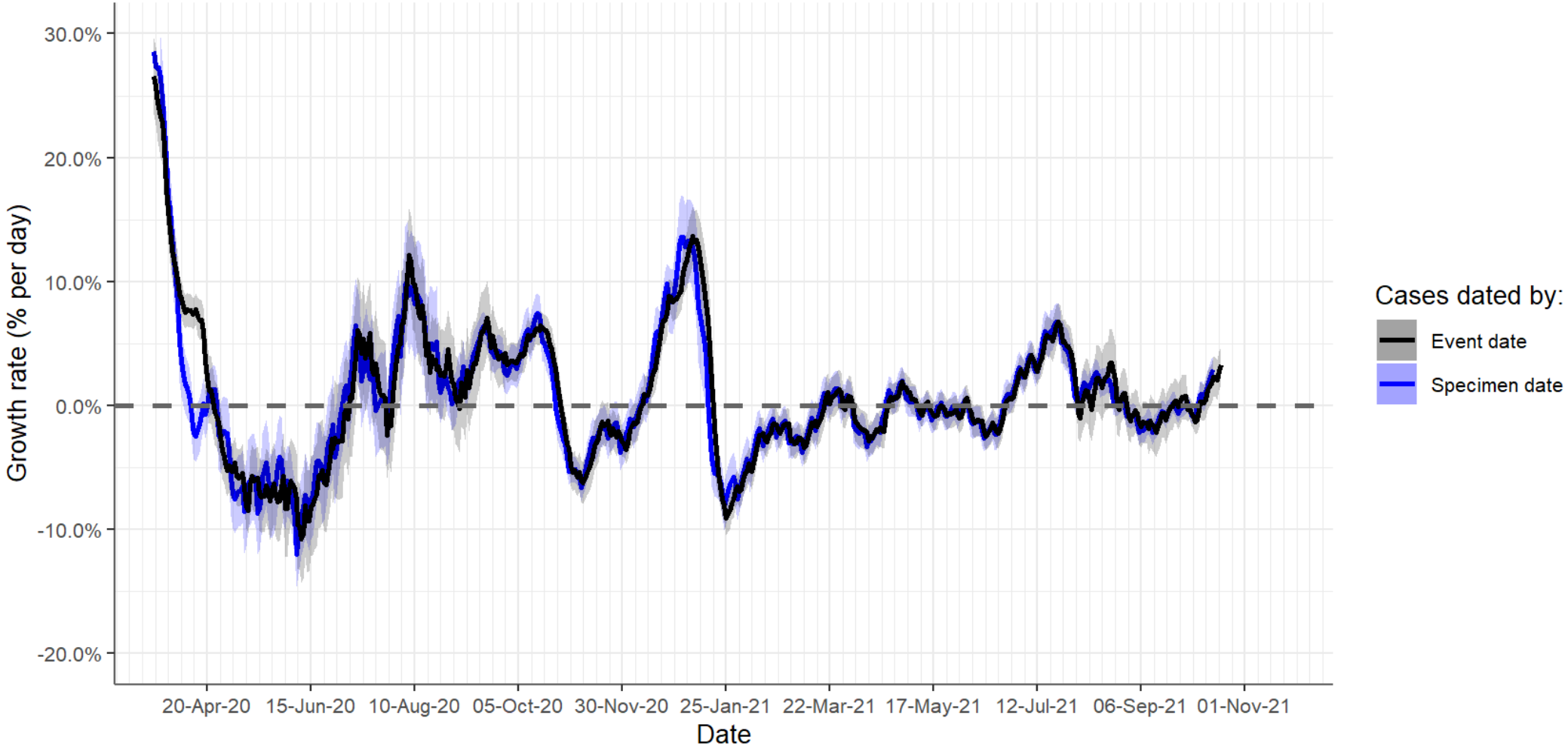

Growth rate in case counts using a 21-day window. Mean and 95% confidence intervals.
CIDR data to midnight Tue 19 Oct 2021. Cases dated by date specimen collected or date notified to HPSC (event date)

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Incidence

Incidence in Ireland compared to the EU and UK.

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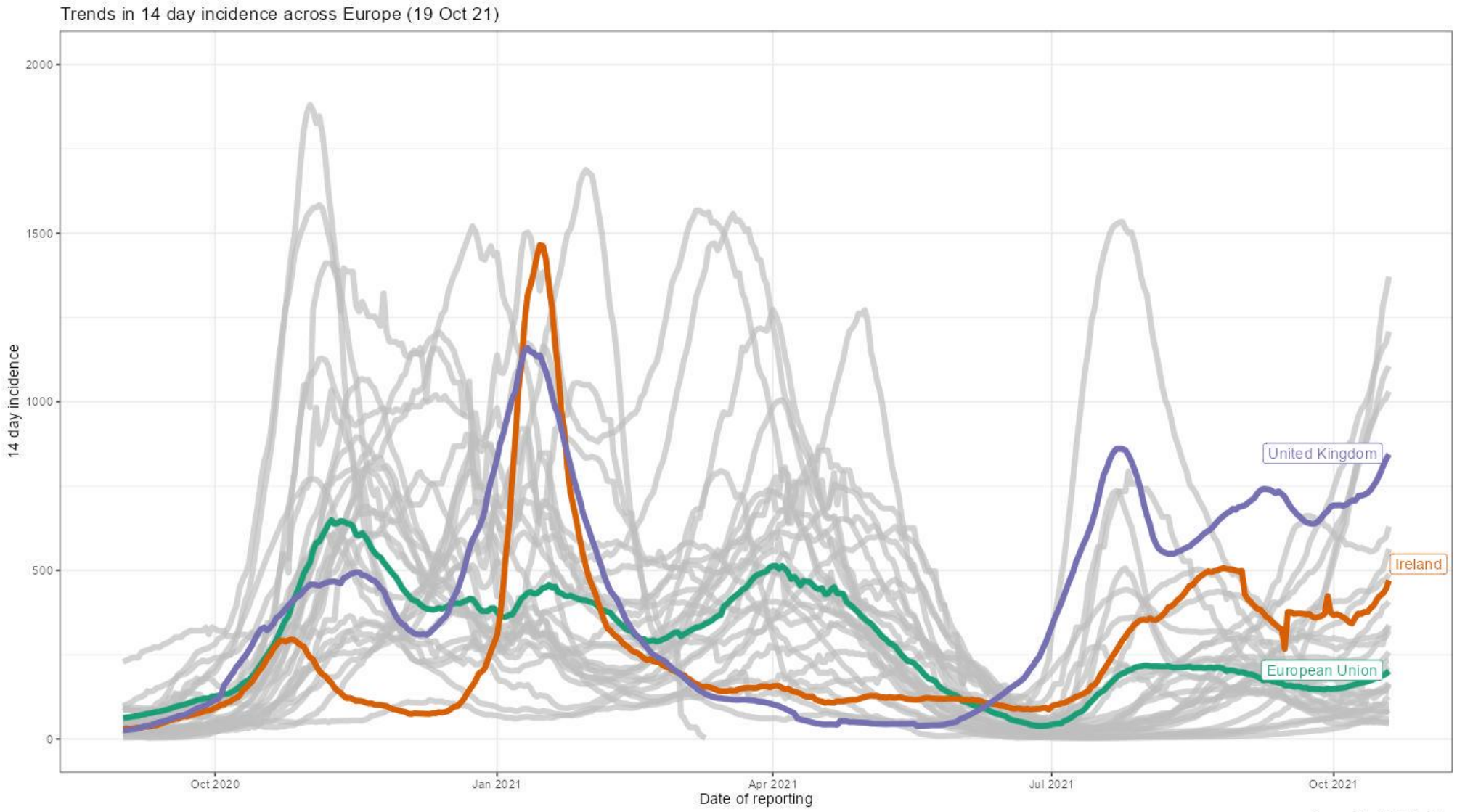

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Norovirus activity is currently at a medium level

Source: HPSC

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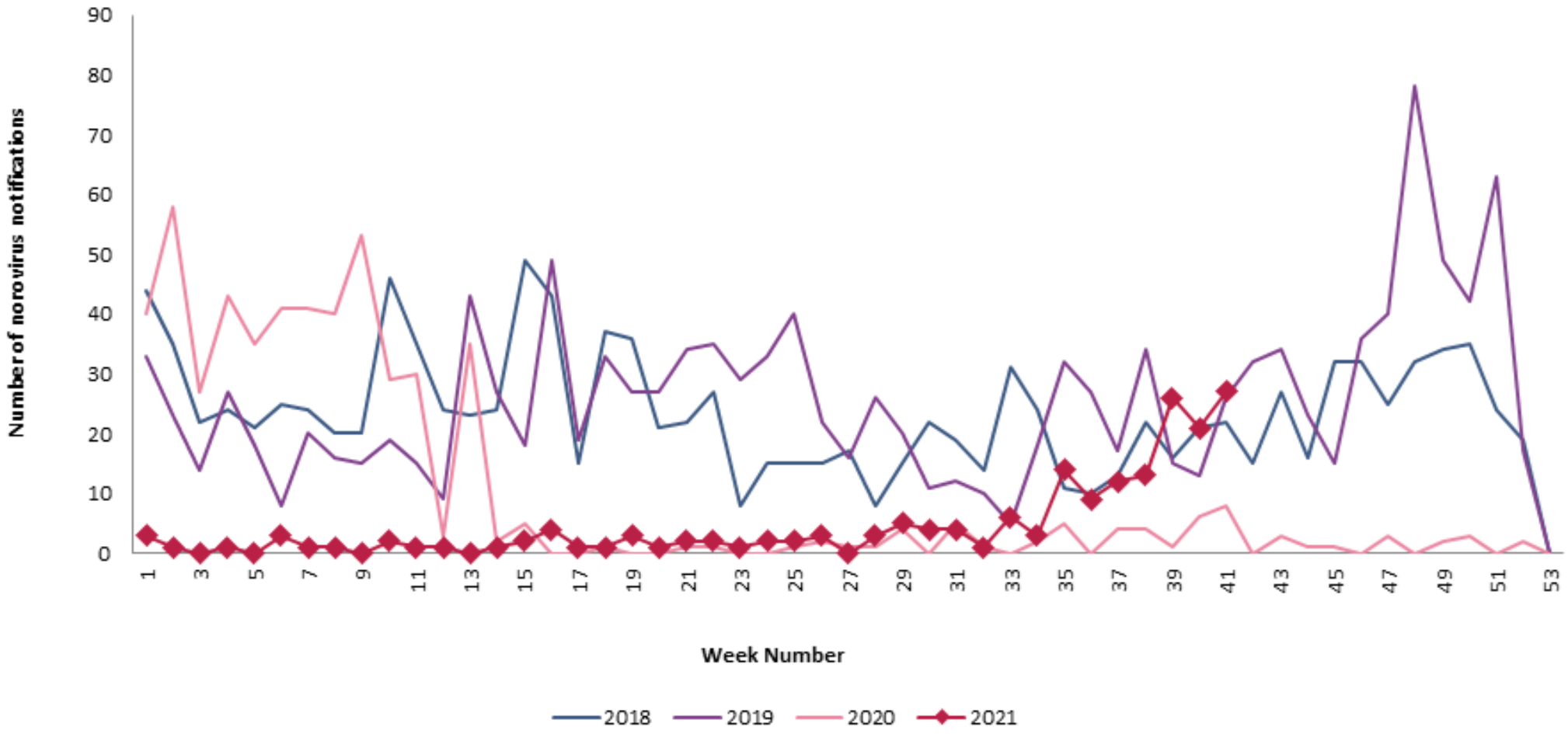

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Why is incidence high and increasing?

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- Incidence before completion of vaccination programme was relatively high
  - alpha variant followed by delta variant
- Population age structure and population density
- Vaccination offers very high protection against severe disease, but incomplete protection against infection and onward transmission
- Mobility and effective social contact have increased since end-September
  - increased social contact
  - reduced risk mitigation
  - move indoors

Model projections July 2021

Homogeneous population SEIR model run on 9 July 2021. Cases, hospitalisations, admissions to ICU and deaths between 1 July 2021 and 30 September 2021 for each model scenario, compared to actuals.

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Revised scenarios 9 July 2021	Cases	Hospital admissions	ICU admissions	Deaths	
Minimal change	62,000	1185	160	210	Minimal additional social mixing, alpha 27% more transmissible, delta 55% more transmissible than alpha
Optimistic	105,000	1,985	260	335	Moderate social mixing, alpha 27% more transmissible, delta 55% more transmissible than alpha
Actual	**118,794**	**2,755**	**309**	**298**	
Central 1	185,000	3,455	445	550	Higher social mixing, alpha 27% more transmissible, delta 55% more transmissible than alpha
Central 2	379,000	6,505	915	1,150	Moderate social mixing, alpha 27% more transmissible, delta 55% more transmissible than alpha
Pessimistic	566,000	10,730	1,390	1,760	Higher social mixing, alpha 50% more transmissible, delta 60% more transmissible

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Age-cohorted SEIR model – case numbers

Model run on 25 August 2021, with black points being actual case numbers since the model was run. The level of infection has followed the 'low child transmission' scenario. However, since early October, case numbers are tracking the more pessimistic scenario, indicating the level of social contact is high, and mitigation measures to reduce transmission not sufficently effective to suppress transmission.

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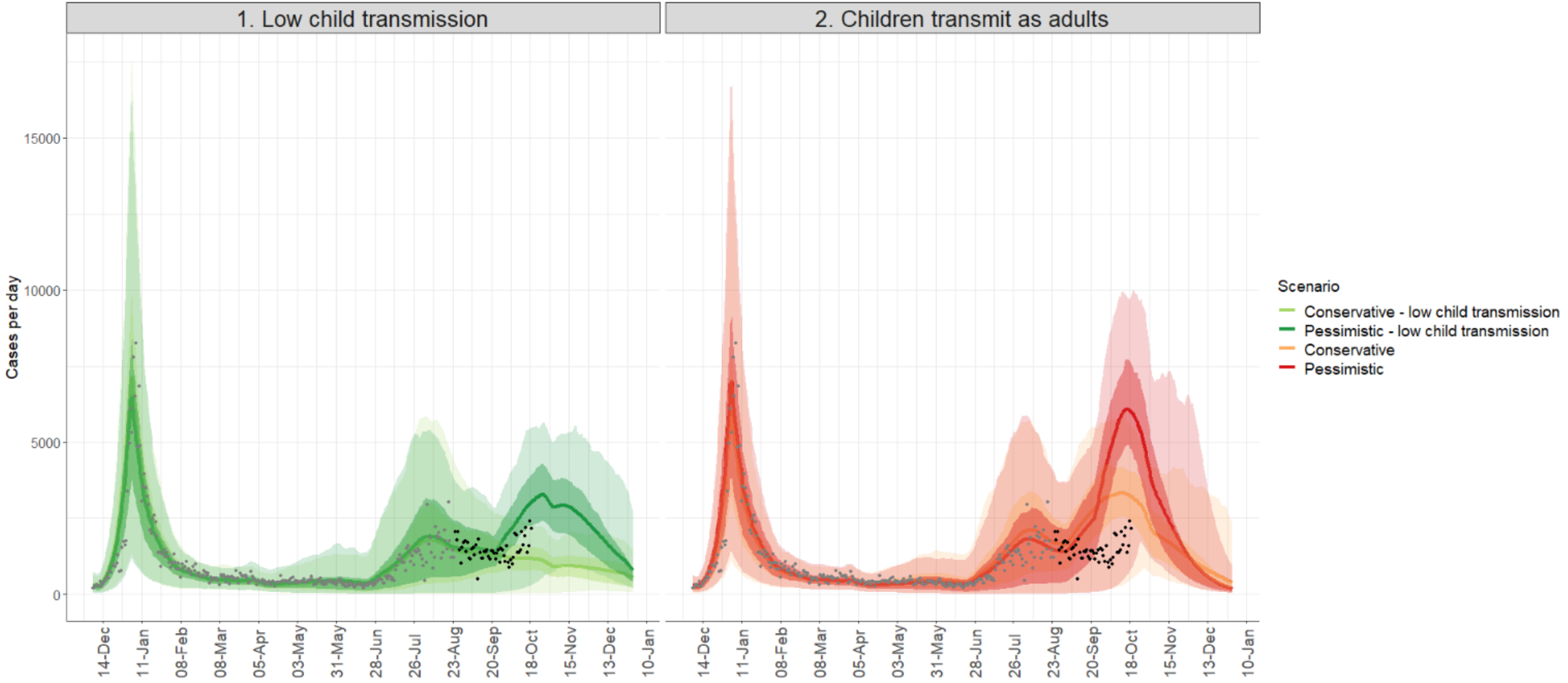

Age-cohorted SEIR model scenario estimates of new cases per day, run on 25 August 2021. Confidence intervals generated by stochastic variation in contact rates. The solid line is the ensemble average of all runs, dark ribbon the interquartile range, and the light ribbon the 2.5 and 97.5 percentiles. Grey points are actual case counts to calibration date, black points are case counts since the model was run. The effect of vaccination included according to latest vaccination data. Delta variant replaces alpha in July 2021, accounting for 70% of transmissions by 18 July 2021. Delta transmission advantage 1.97 over ancestral. School-children switch between out-of-school and in-school contact patterns based on the standard school year. Effective social contact increases in steps on 30/8/21 where school-children switch to in-school contact patterns, 20/9/21 , 4/10/21 and 25/10/21. The level of effective social contact at this point, in the conservative scenario is equivalent to that seen in December 2020, with basic non-pharmaceutical measures interrupting about 30% of transmissions; in the pessimistic scenario it is equivalent to a freely mixing society with no mitigation measures. Low child transmission scenarios assume children under 12 years of age to be 50% as likely to transmit the infection as adults.

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Age-cohorted model – general hospital care

If case numbers continue to track the 'pessimistic – low child transmission' scenario we could have 800-1000 people in hospital at a peak in mid-November, 150-200 requiring critical care and 700-800 requiring general hospital care.

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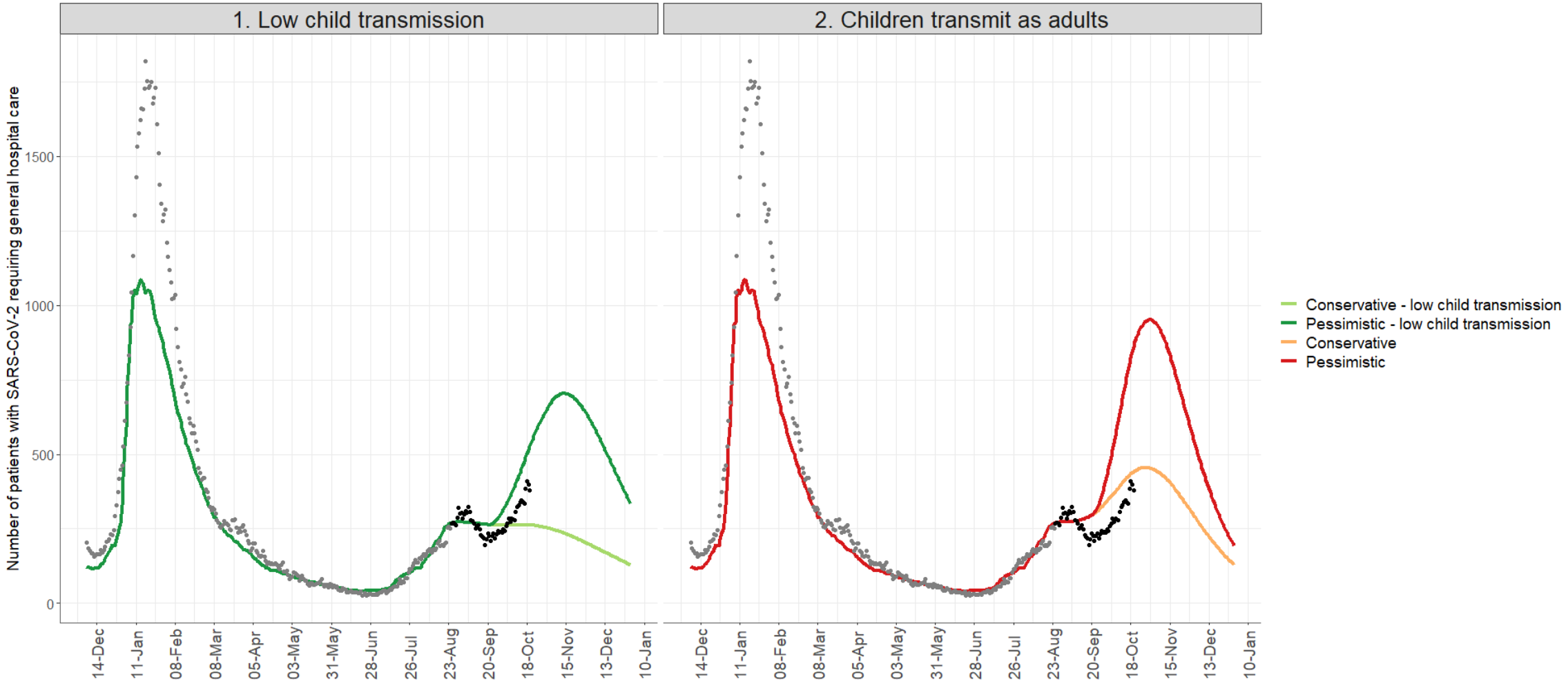

Estimates of numbers of people requiring hospital care in general hospital beds (excluding those requiring critical care) based on the mean estimated daily cases from the age-cohorted SEIR model. Model run on 25 August 2021. Vaccination reduces the risk that symptomatic infection will lead to severe disease; vaccine effectiveness in preventing severe disease is assumed to be 95%. The risk of severe disease and the effectiveness of vaccines in preventing severe disease are assumed to be similar for alpha and delta variants. Grey points are actual numbers in hospital (excluding those in critical care) to calibration date, black points are actuals since the model was run.

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Age-cohorted SEIR model – critical care

If case numbers continue to track the 'pessimistic – low child transmission' scenario we could have 150-200 requiring critical care at a peak in mid-November.

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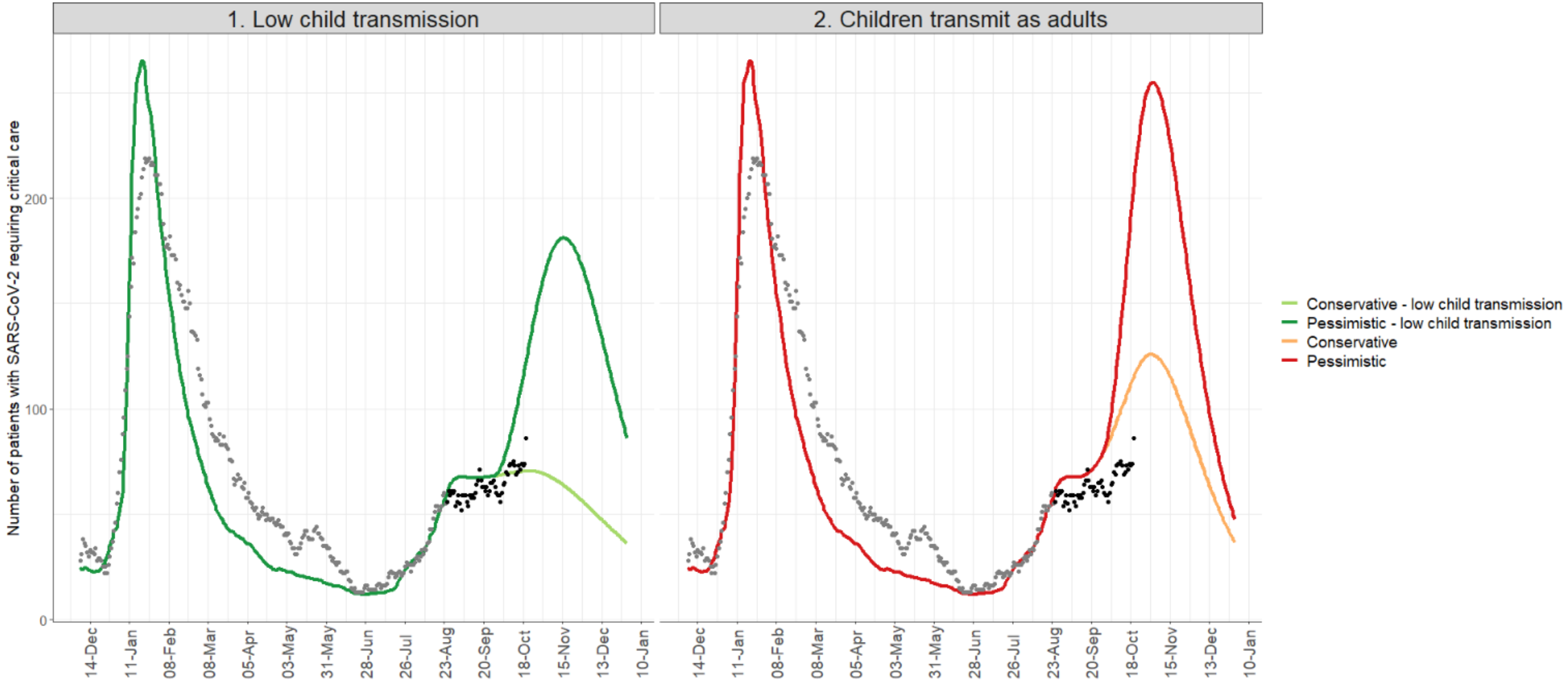

Estimates of numbers of people requiring critical care, based on the mean estimated daily cases from the age-cohorted SEIR model. Model run on 25 August 2021. Vaccination reduces the risk that symptomatic infection will lead to severe disease; vaccine effectiveness in preventing severe disease is assumed to be 95%. The risk of severe disease and the effectiveness of vaccines in preventing severe disease are assumed to be similar for alpha and delta variants. Grey points are actual numbers in critical care to calibration date, black points are actuals since the model was run.

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Situation analysis 20 October 2021

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- Incidence high and increasing
  - Cases (7-day average) 1889, up from 1631 one week ago, and 1138 two weeks ago
  - 14-day incidence 518 per 100,000
  - Incidence increasing across all age groups
  - 464 in hospital, 86 in ICU, 52 ventilated
  - Test positivity increasing across all age groups
- Growth rate
  - Cases: +2.7% (0% to +6%) per day
  - Numbers in hospital: +2.4% (+2.0% to +2.9%) per day
- Risk now evenly distributed across age groups
  - Increase in median age of cases
  - 35 hospitalisations per 1000 cases, up from 15-20 per 1000 cases
- Future trajectory very uncertain – significant risk to health service operations
- Individual, institutional and sectoral attention to risk mitigation