

BCCDC Data Summary

1 October 2021

Purpose

The surveillance deck is a summary of COVID-19 related indicators that can help inform the pandemic response in British Columbia. This surveillance monitoring constitutes the medical chart for population health assessment that guides the public health community of practice. As such this is a working document that reflects a snapshot in time and may differ from other published reports.

Data Sources

The collection, use and disclosure of case data is subject to the Public Health Act. COVID-19 cases are reported under the Public Health Act to the health authority of residence. Public health case notification, clinical management, contact tracing and follow-up contributes surveillance data for regional and provincial COVID-19 monitoring. Each regional health authority have their own workflows and information systems for capture of relevant data. This data foremost serves the public health and clinical management of the case and their contacts.

Disclaimer

- Data and key messages within these documents are not finalized and considered to be work in progress that is subject to retroactive changes as more data and information become available.
- Accurate interpretation of figures may be difficult with the limited inclusion of data notes and methodology descriptions in this document.

Table of Contents

Overall Summary4

Surveillance5

 BC Epidemiology.....5

 Outcomes by vaccine status.....16

 Vaccinations.....30

 Labs/Genomics.....35

Modelling.....46

Additional Resources.....54

Overall Summary for surveillance data to Sept 28

- The majority of new cases (7 in 10) and hospitalizations (4 in 5) are among unvaccinated individuals.
- New hospitalizations are elevated and stable provincially; hospital/critical care census is stable provincially, but there is variation across BC; new deaths are low but slowly increasing.
- Hospitalization rates among children continue to remain very low.
- Case rates are increasing in NH and FH, stable and elevated in IH, and stable in VCH and VIHA.
- Test positivity among public tests is stable (~7% provincially), and high but declining in IH (10%) and NH (17%).
 - Testing rates are high and continue to increase in children (<18 years) and adults 30-44 years.
- Vaccine coverage in BC, 28 Sep, 1 dose (2 doses): 78% (72%) of total population, 88% (81%) of 12+ eligible population. Lower vaccine coverage in Interior and Northern and among younger individuals.
- The Delta variant continues to account for ≈100% of all positive tests in BC.

Sep 23 to Sep 28: BC COVID-19 Profile



186,245 total cases
5,308 new this week



1,953 total deaths
43 new this week

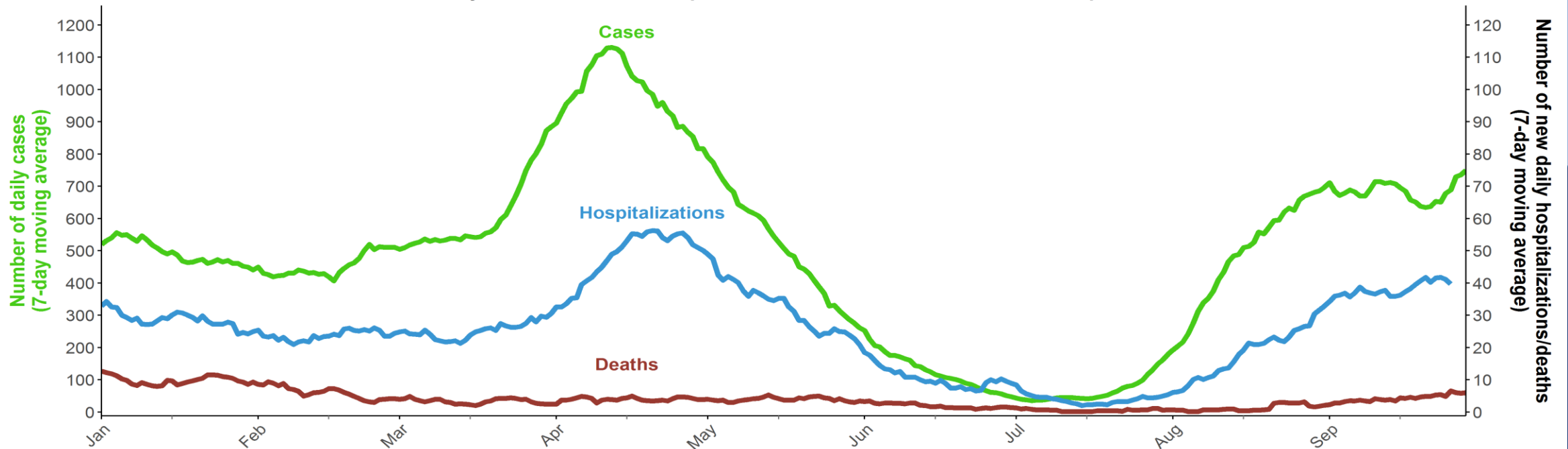


9,873 ever hospitalized
283 new this week



177,729 removed from isolation
4,514 new this week

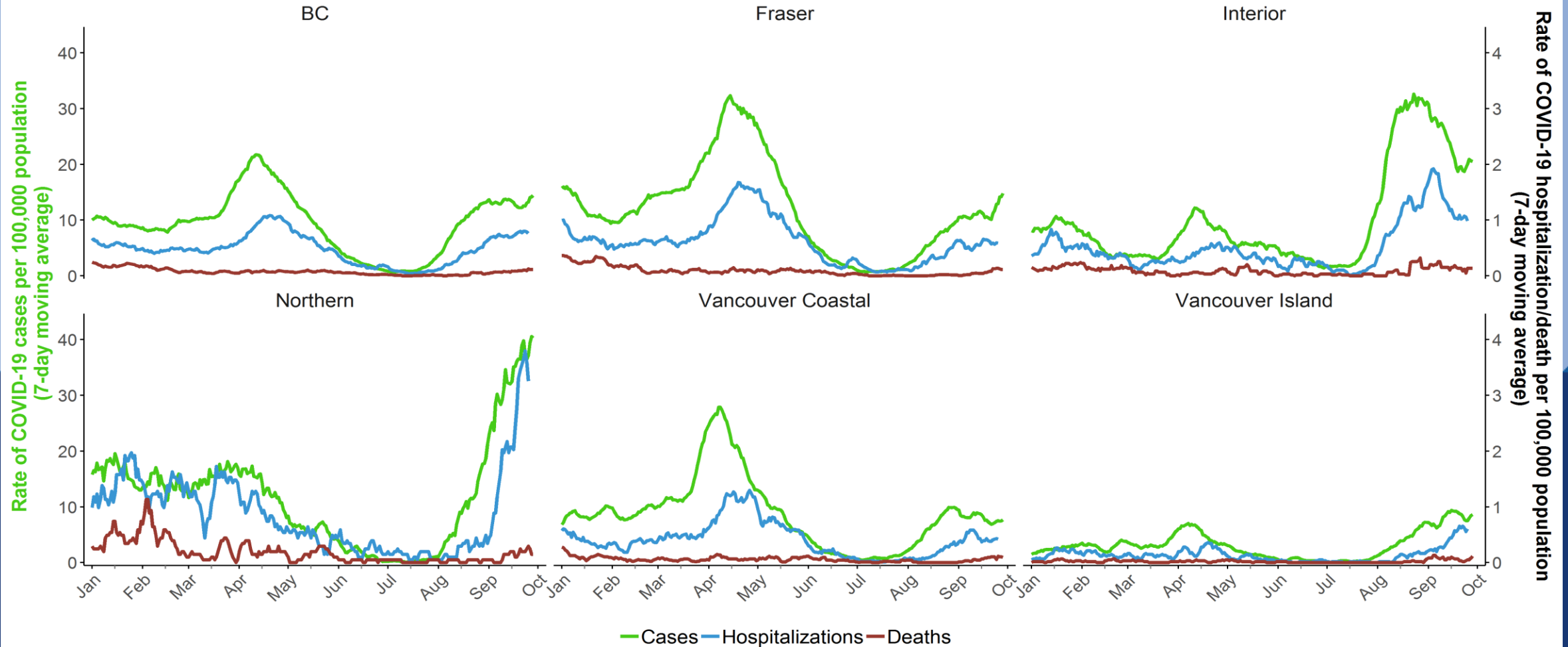
New daily COVID-19 cases, hospitalizations and deaths, Jan 01 2021 - Sep 28 2021



* Data are by surveillance date for cases and deaths, and admission date for hospitalizations
Data source: PHRDW Sep-29-2021

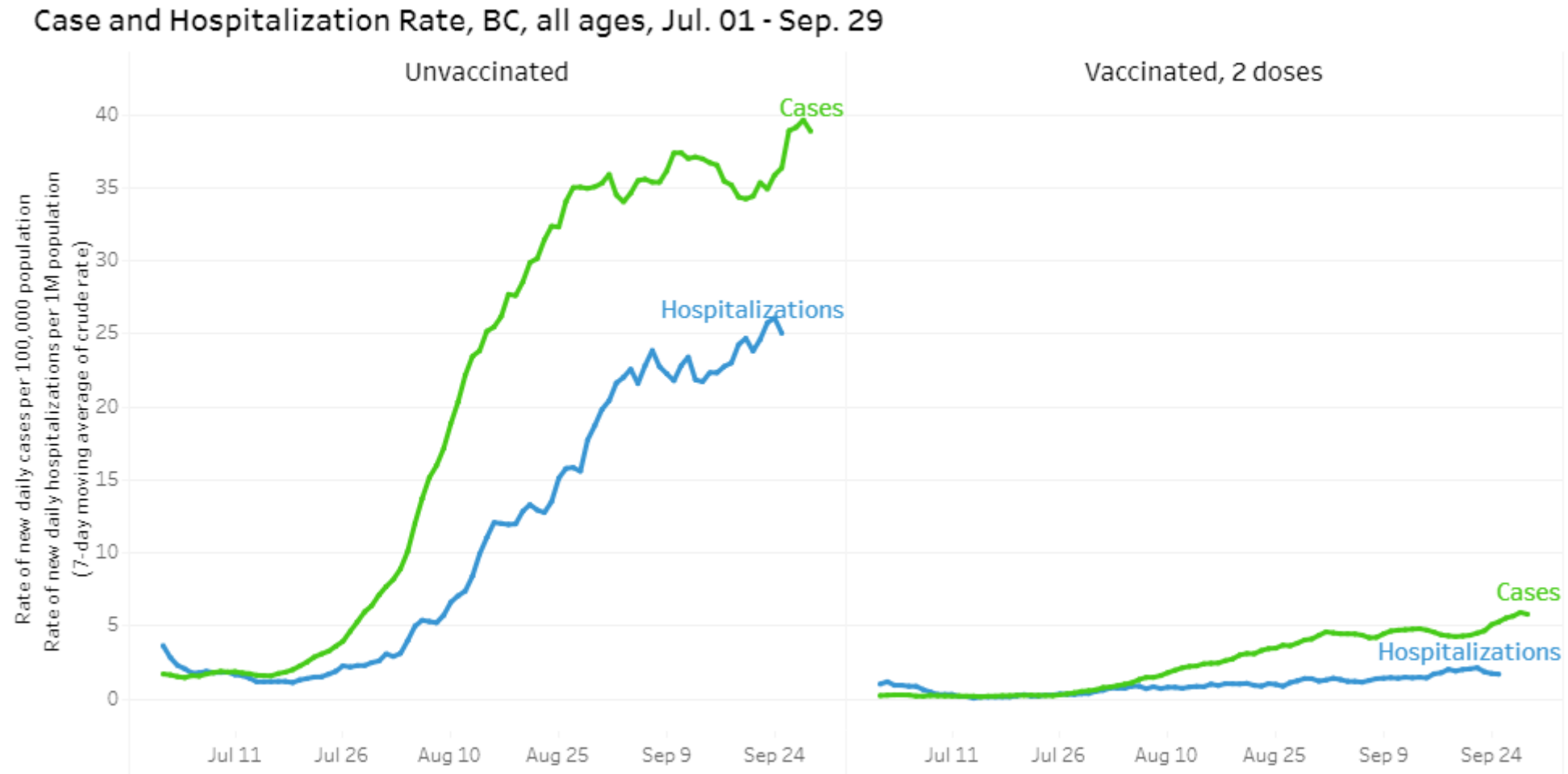
Case rates and new hospitalizations are elevated and stable at provincial level, but trends differ by HA (increasing in NH and FH, stable in IH, VCH and VIHA); new deaths are low but slowly increasing.

Rate of COVID-19 case, hospitalization and death, Jan 01 2021 - Sep 28 2021

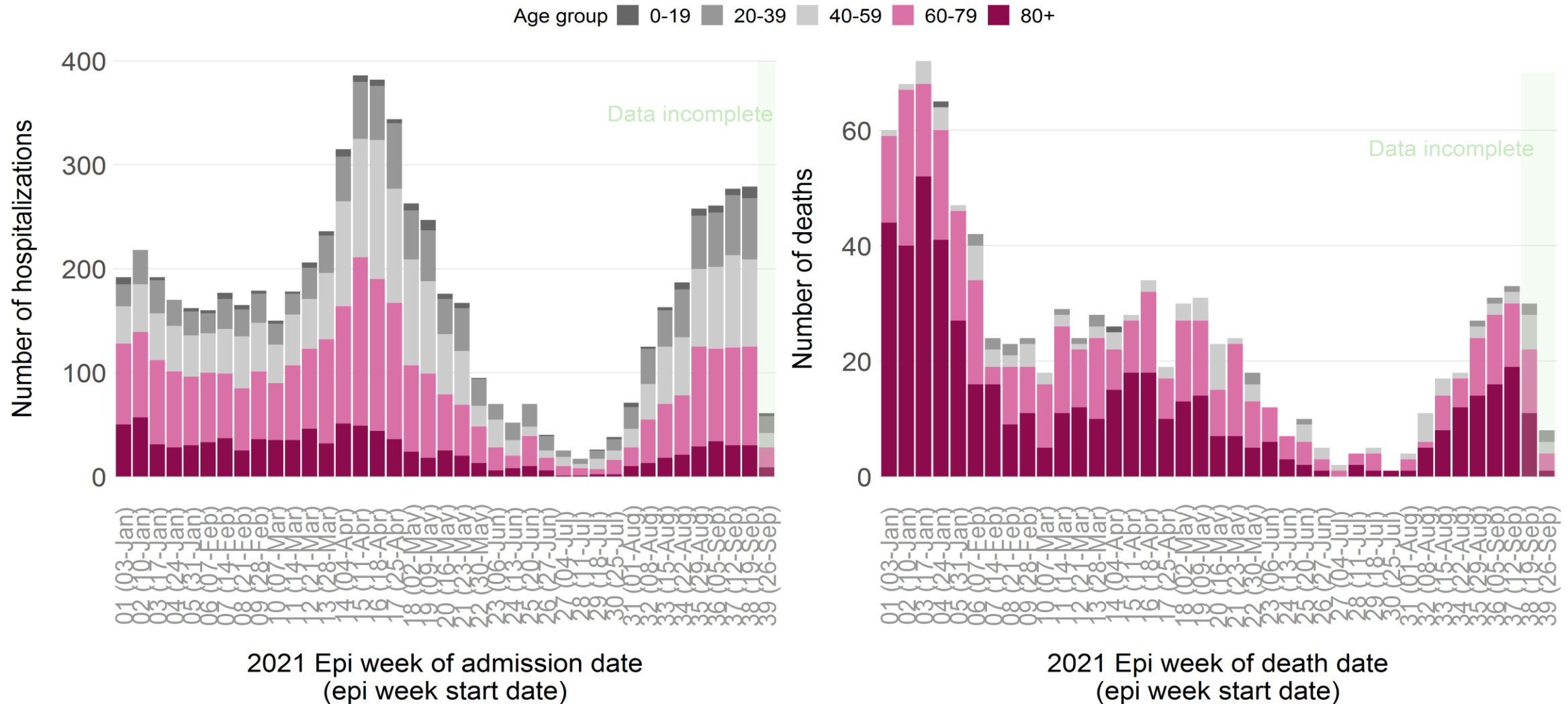


* Data are by surveillance date for cases and deaths, and admission date for hospitalizations
Data source: PHRDW Sep-29-2021

The majority of new cases and hospitalizations continue to be among unvaccinated individuals

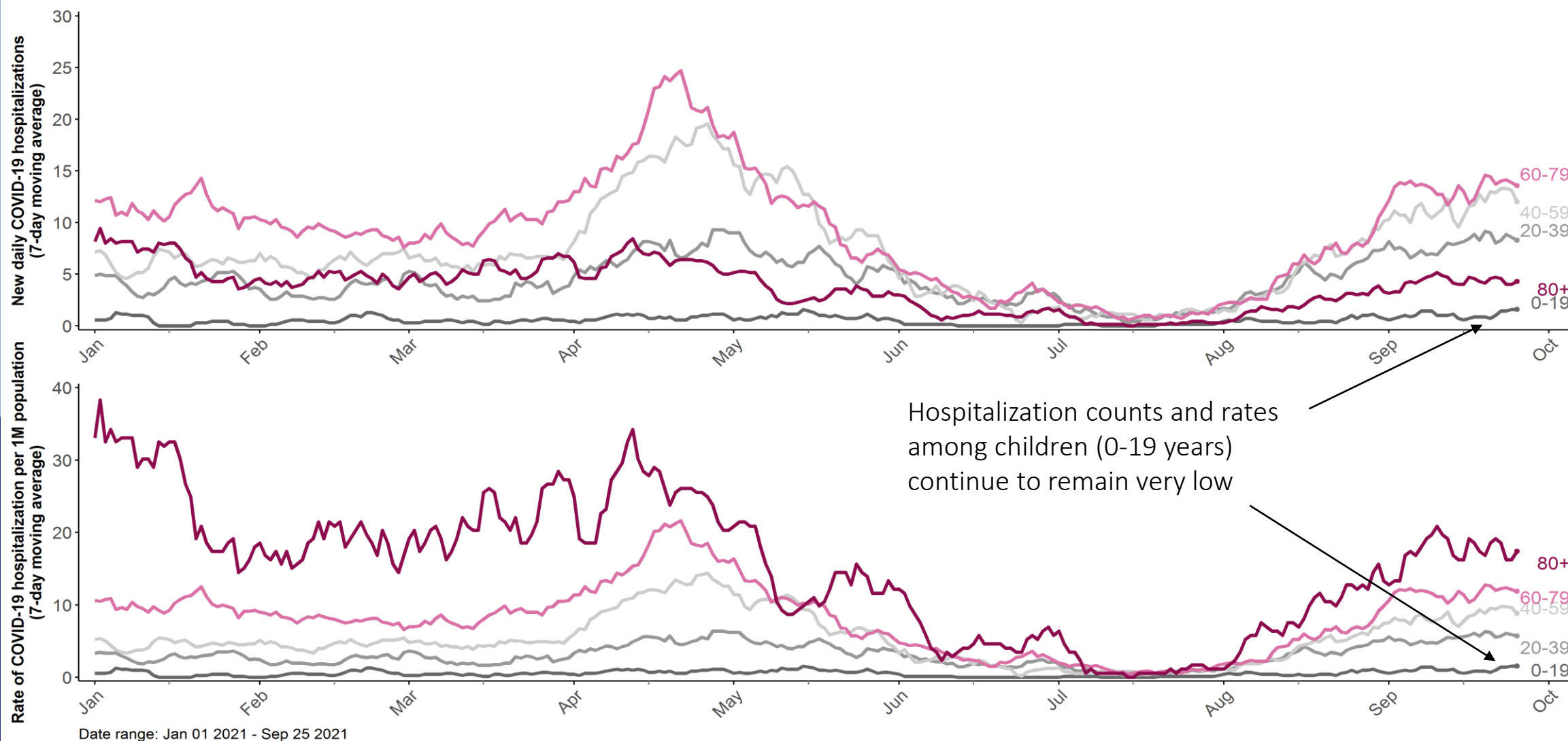


Number of new hospital admissions elevated and relatively stable. Deaths are low, but increasing- the majority are among individuals aged ≥ 60 years.



Data extracted on 2021-09-29; hospitalization and death data from health authority case line list data

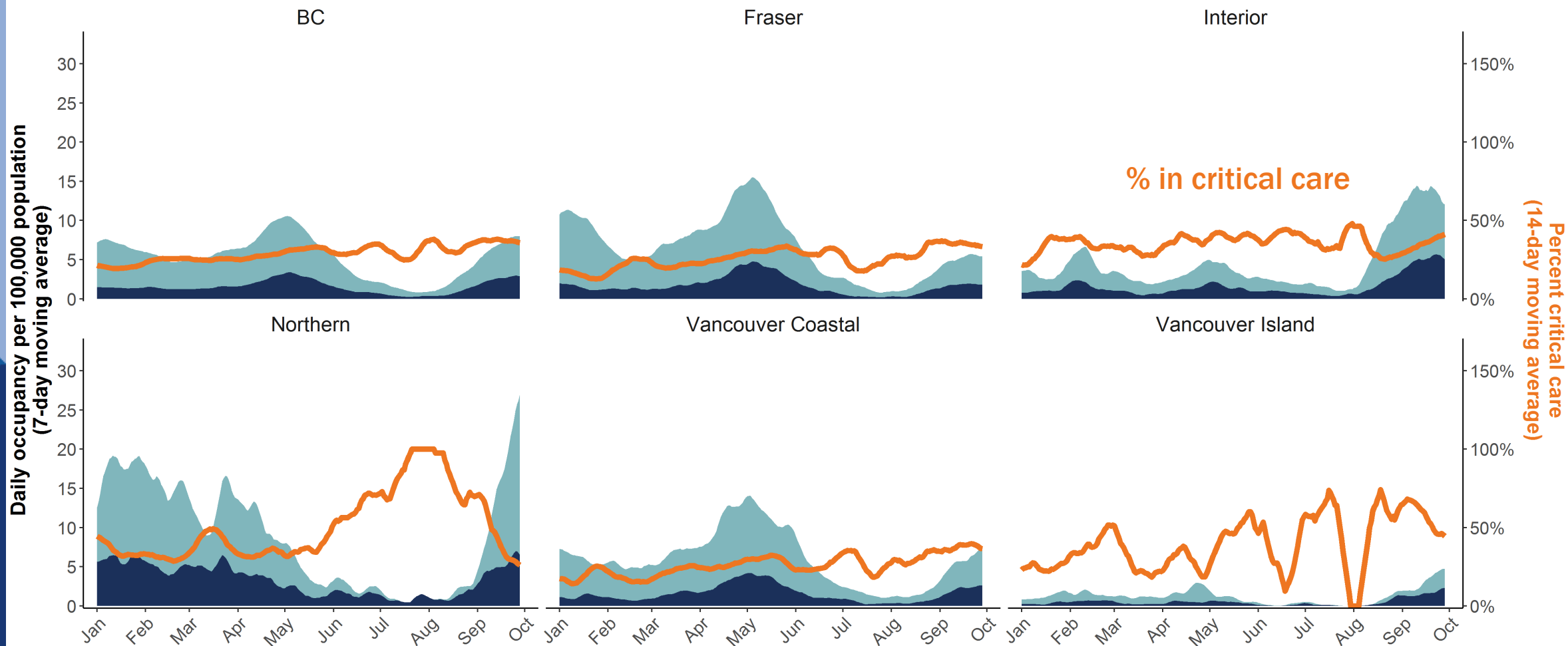
Trends in number and rate of new hospitalizations by age group, BC, 1 Jan – 25 Sept 2021



Hospital and critical care census is increasing in NH, VCH and VIHA; stable in IH and FH

Current COVID-19 hospitalizations in BC, Jan 01 2021 - Sep 28 2021

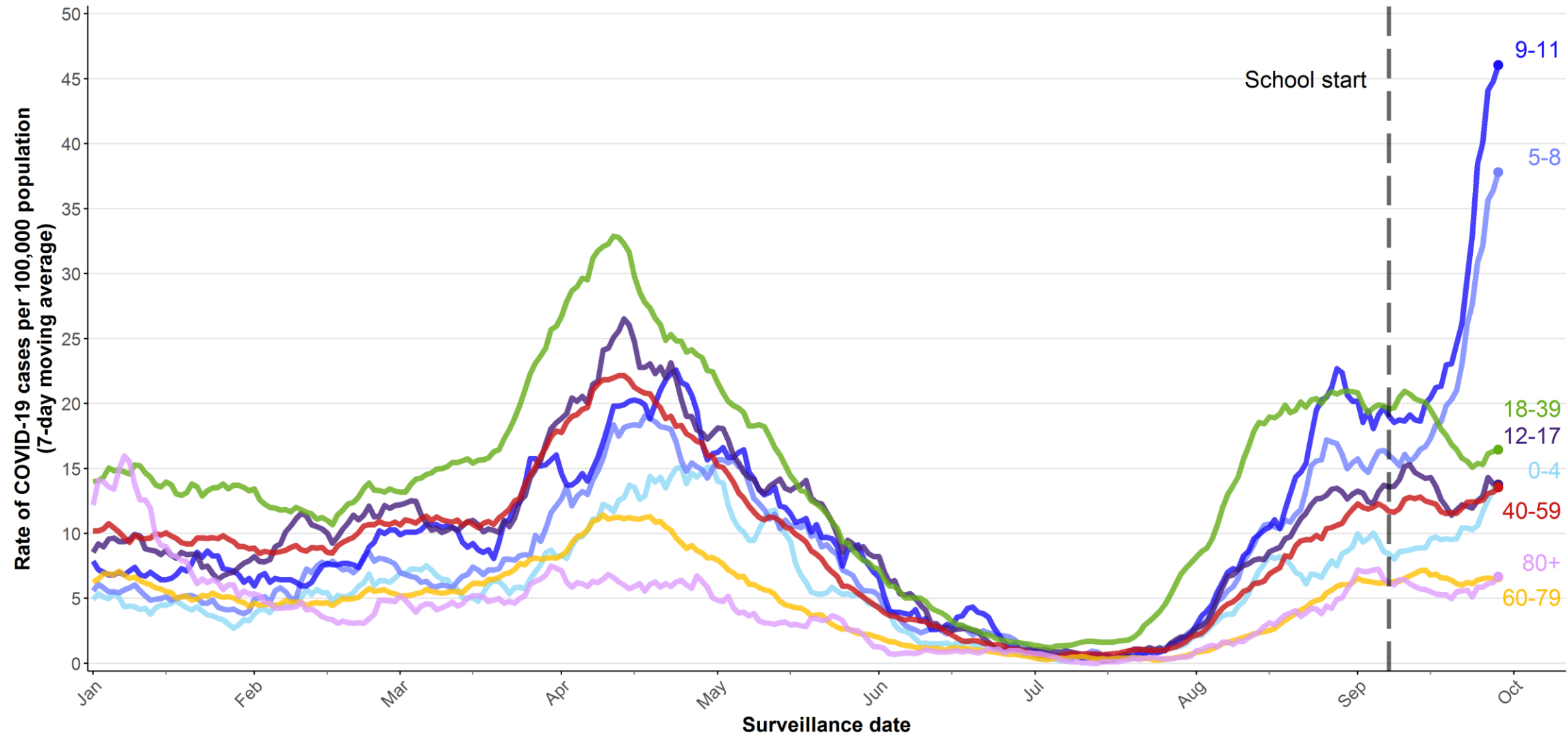
■ In the hospital but not in critical care ■ In critical care



* Data are by census date for hospitalizations

Data source: PHSA Provincial COVID19 Monitoring Solution (PCMS) Sep-29-2021

Reported case rate among 0-11 year olds continues to increase. Note: testing rates among children are very high, see slides 42/43

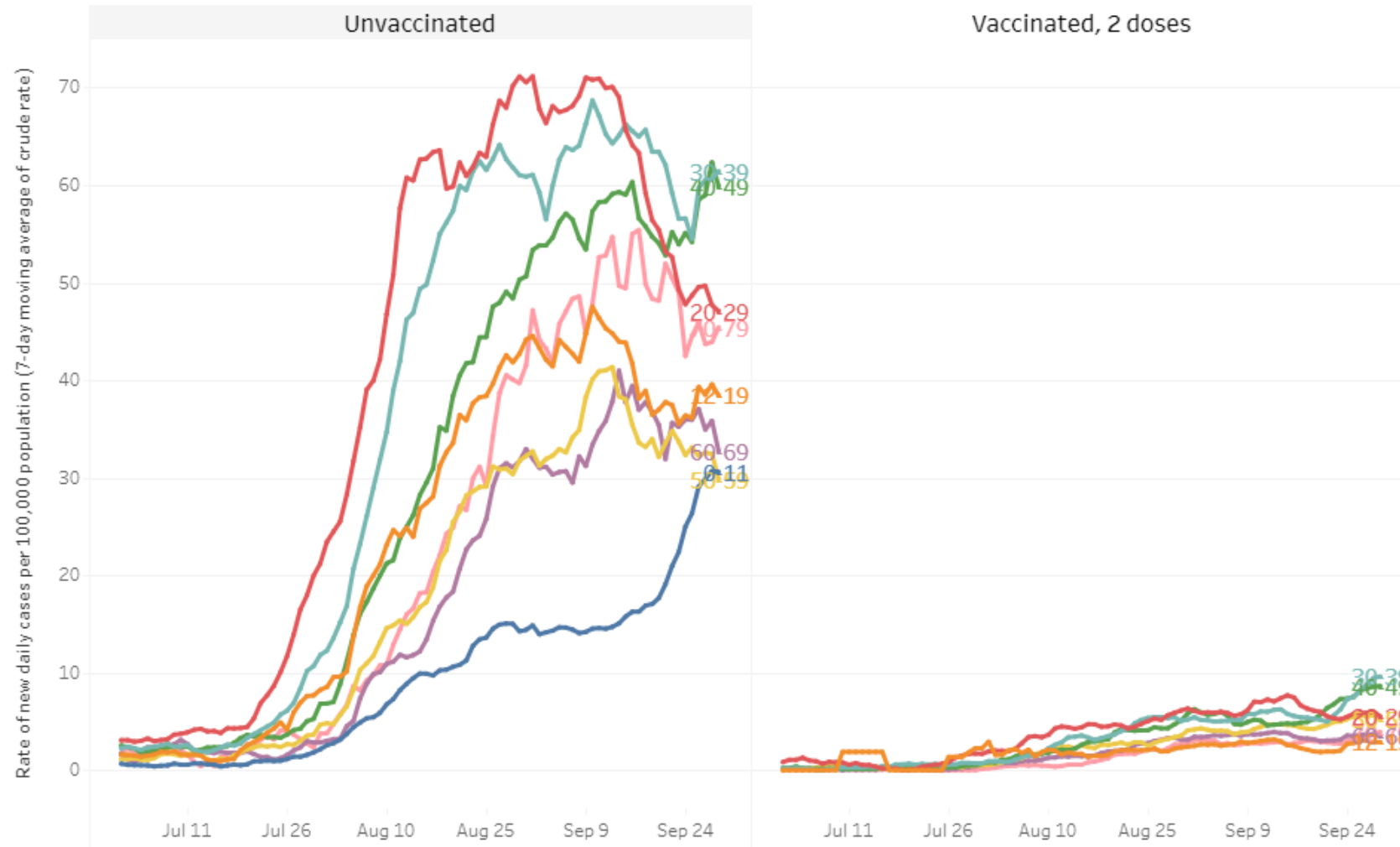


* Data based on surveillance date (i.e. lab result date, or when not available, date reported to public health)
Data range: Jan 01 2021 - Sep 28 2021

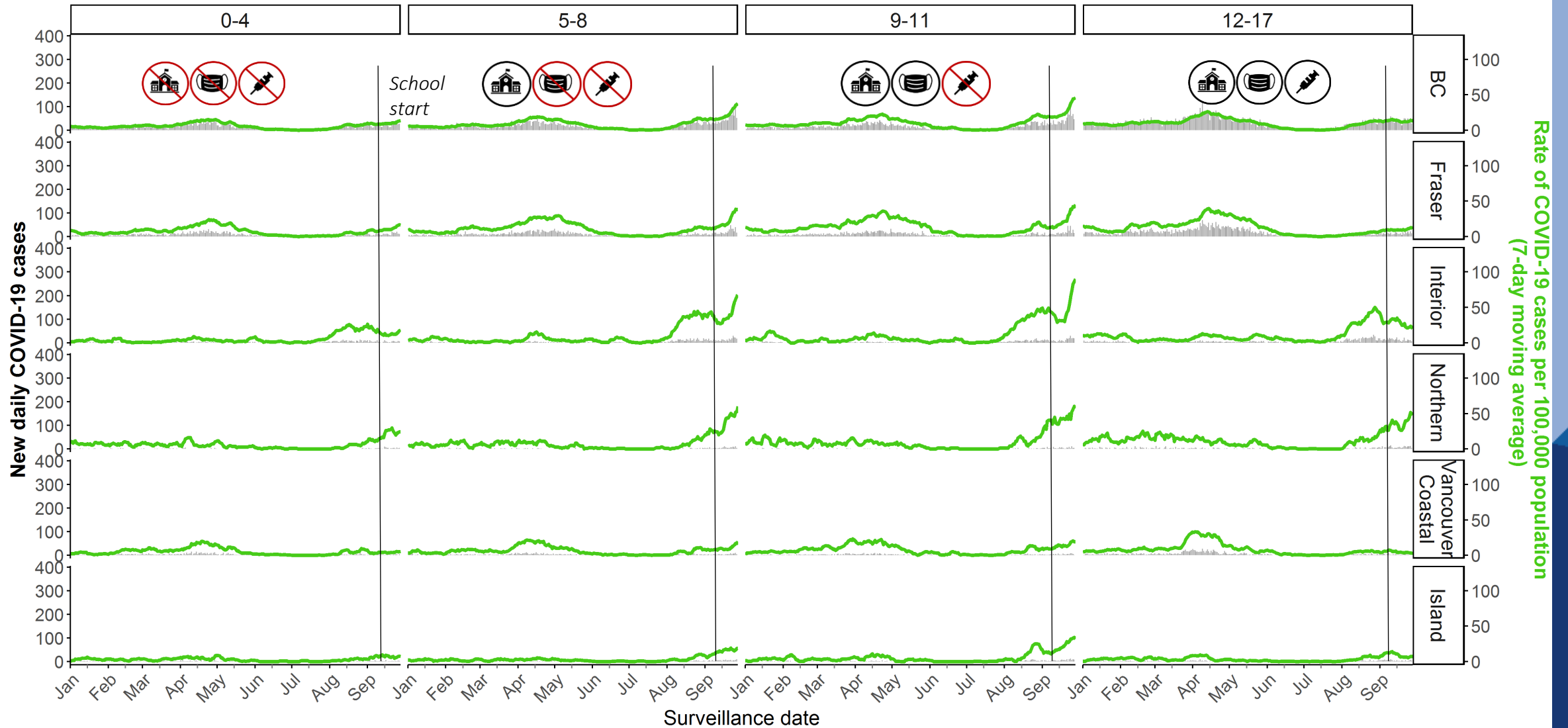
For all age groups, those who are vaccinated have very low case rates. Among those unvaccinated, case rate is the lowest in the 0-11 age group even with higher testing rates.

Case Rate by Age Group, Jul. 01 - Sep. 29

BC



In regions with highly vaccinated adult populations, incidence is lower in children. Some of the recent increase in incidence among <17 years started before schools opened.

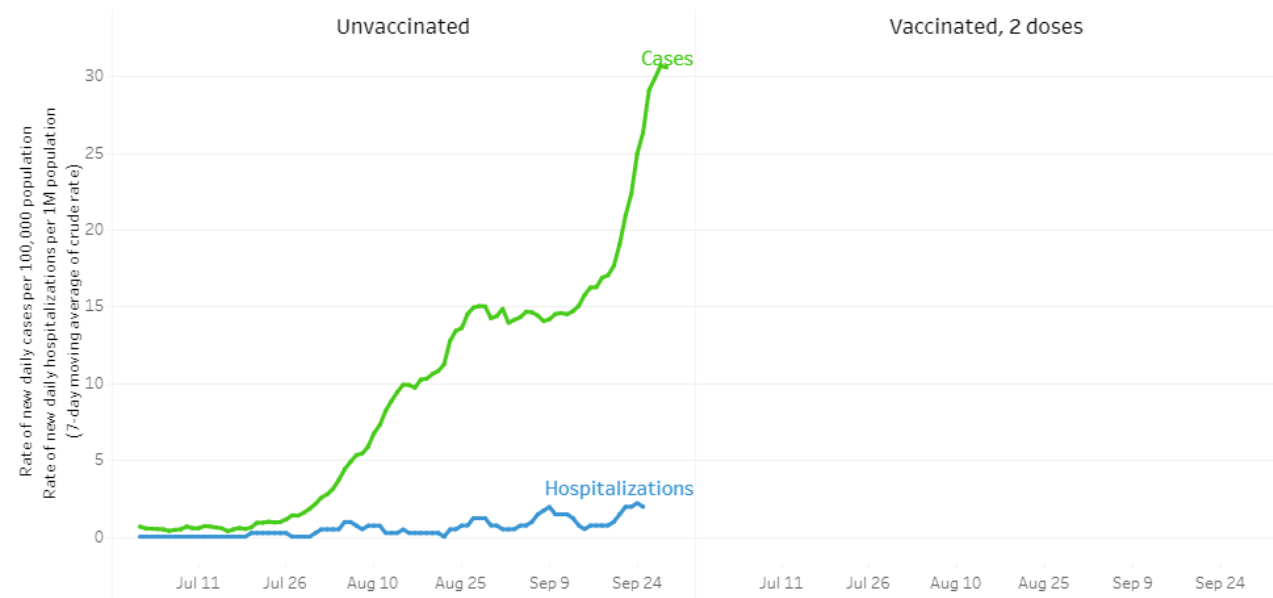


Date range: Jan 01 2021 - Sep 28 2021
Data source: PHRDW Sep-29-2021

Rising case rates in children and youth have not translated into more hospitalizations

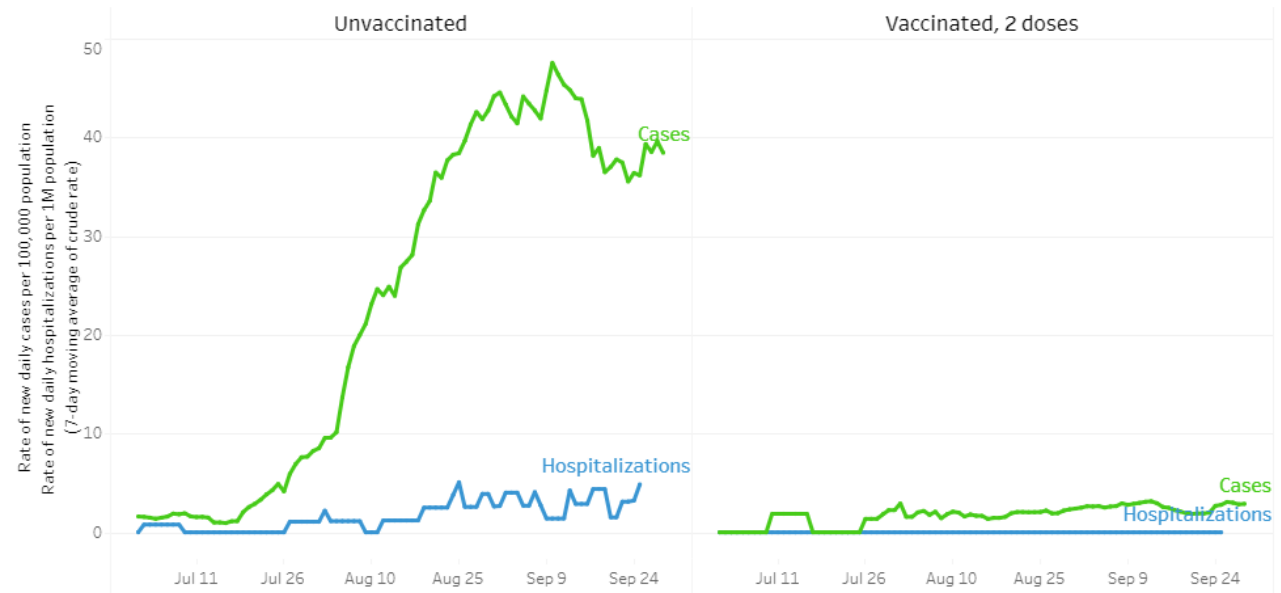
0-11 years

Case and Hospitalization Rate, BC, 0-11, Jul. 01 - Sep. 29



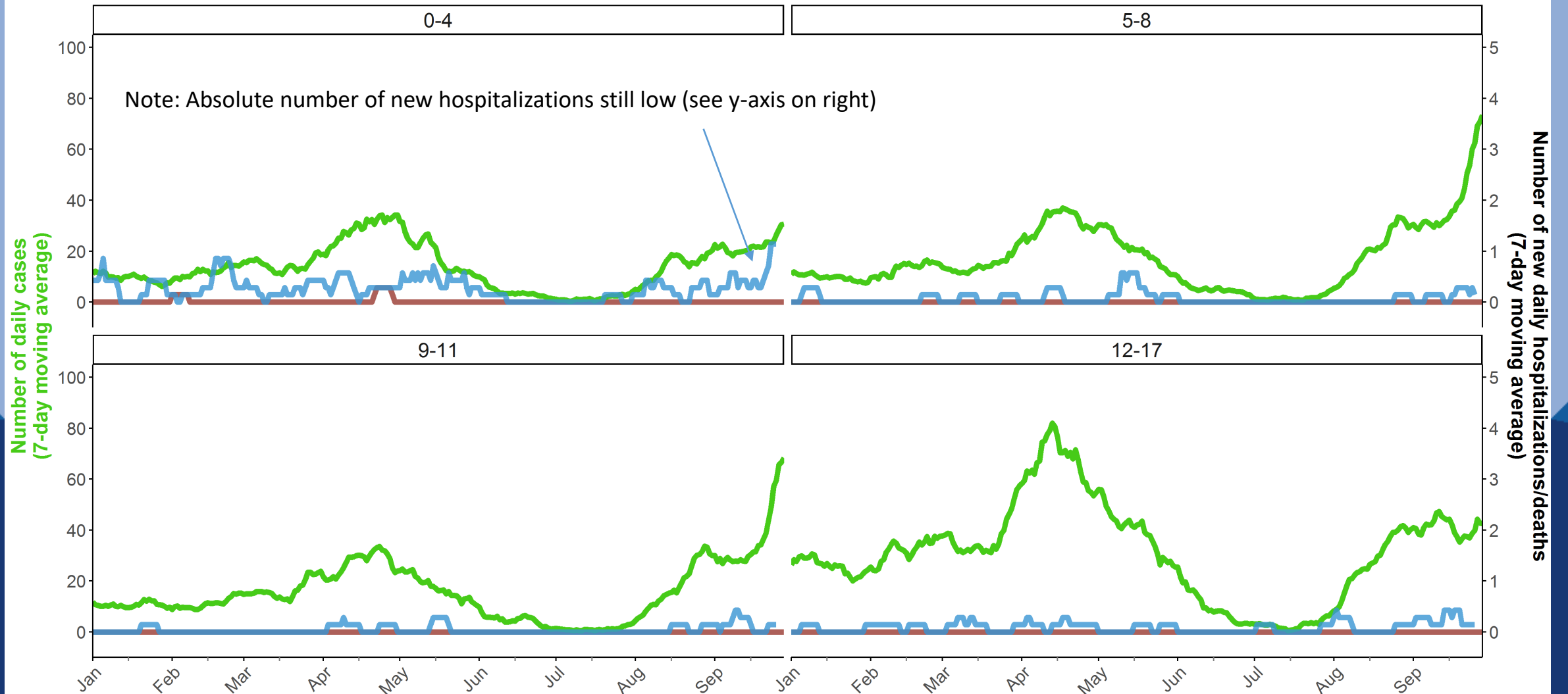
12 to 19 years

Case and Hospitalization Rate, BC, 12-19, Jul. 01 - Sep. 29



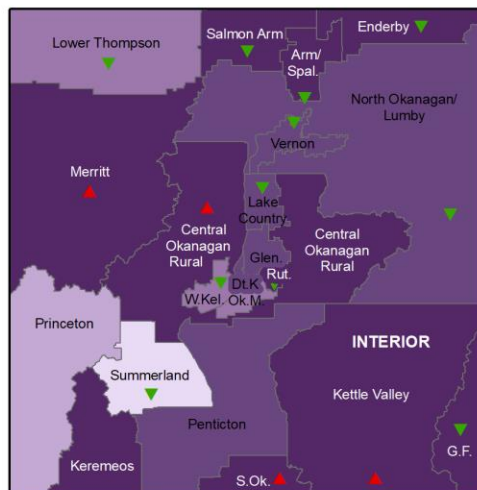
Hospitalization rates remain very low and stable; deaths are extremely rare

New daily COVID-19 cases, hospitalizations and deaths, Jan 01 2021 - Sep 28 2021

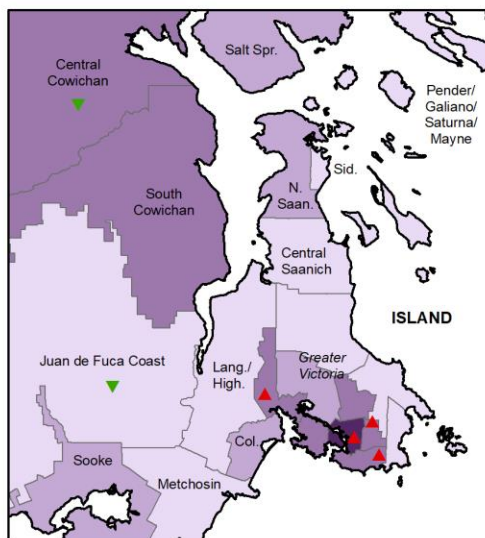


* Data are by surveillance date for cases and deaths, and admission date for hospitalizations
Data source: PHRDW + BCCW Sep-29-2021

Okanagan Inset
(Community Health Service Areas)



Greater Victoria Inset
(Community Health Service Areas)



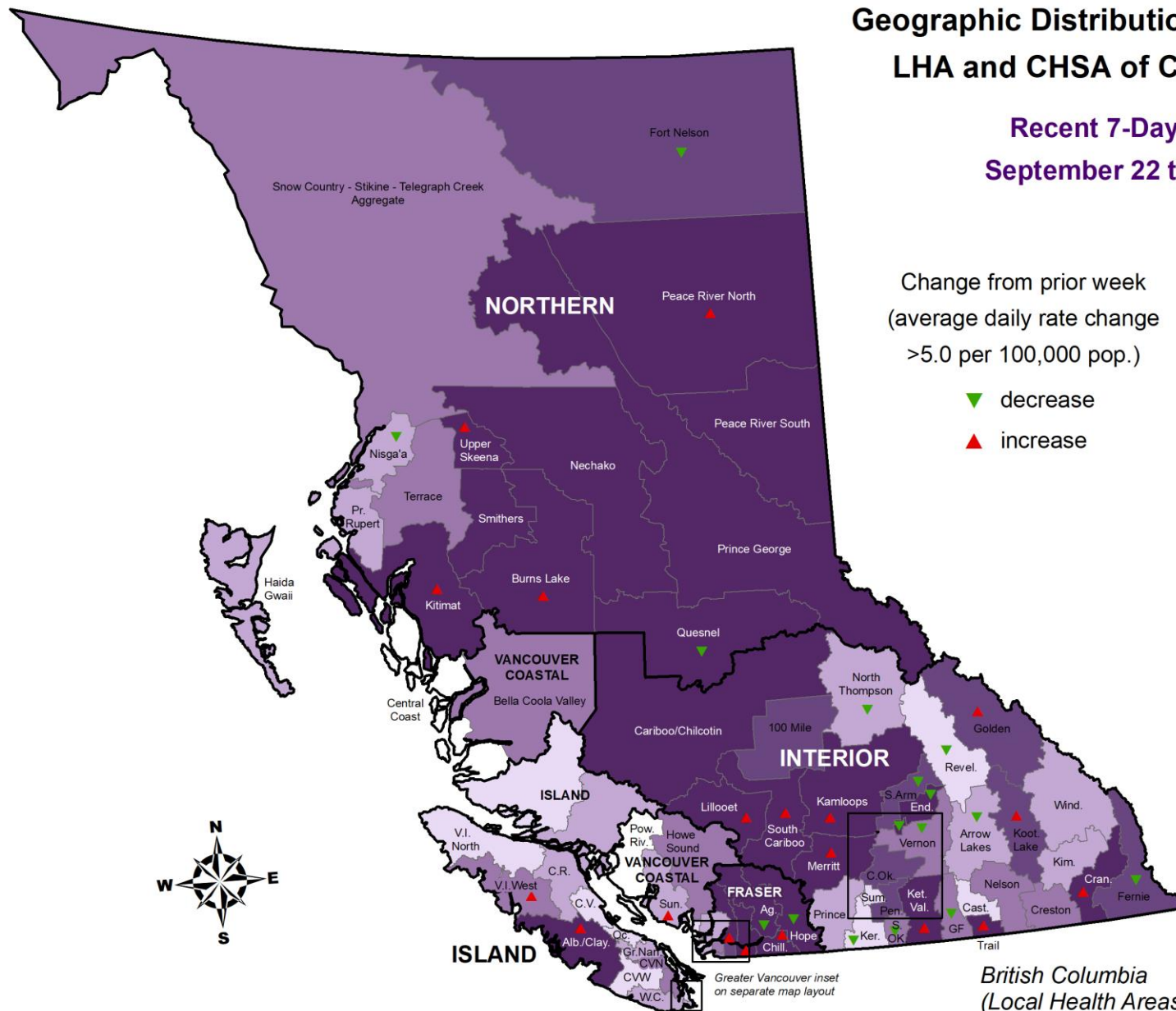
Geographic Distribution of COVID-19 by LHA and CHSA of Case Residence

Recent 7-Days Cases
September 22 to 28, 2021

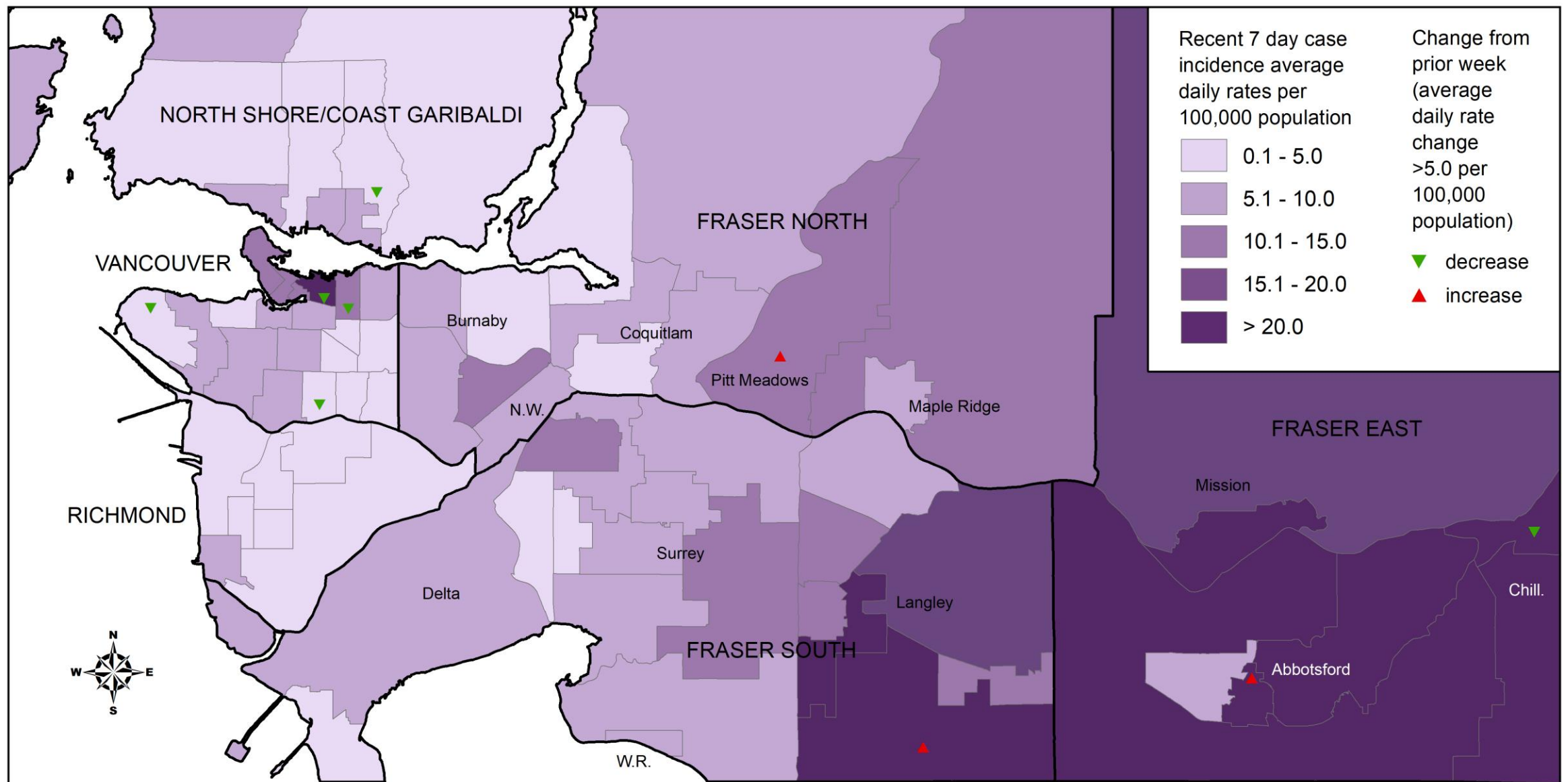
Change from prior week
(average daily rate change
>5.0 per 100,000 pop.)

- ▼ decrease
- ▲ increase

Average daily rate per
100,000 population

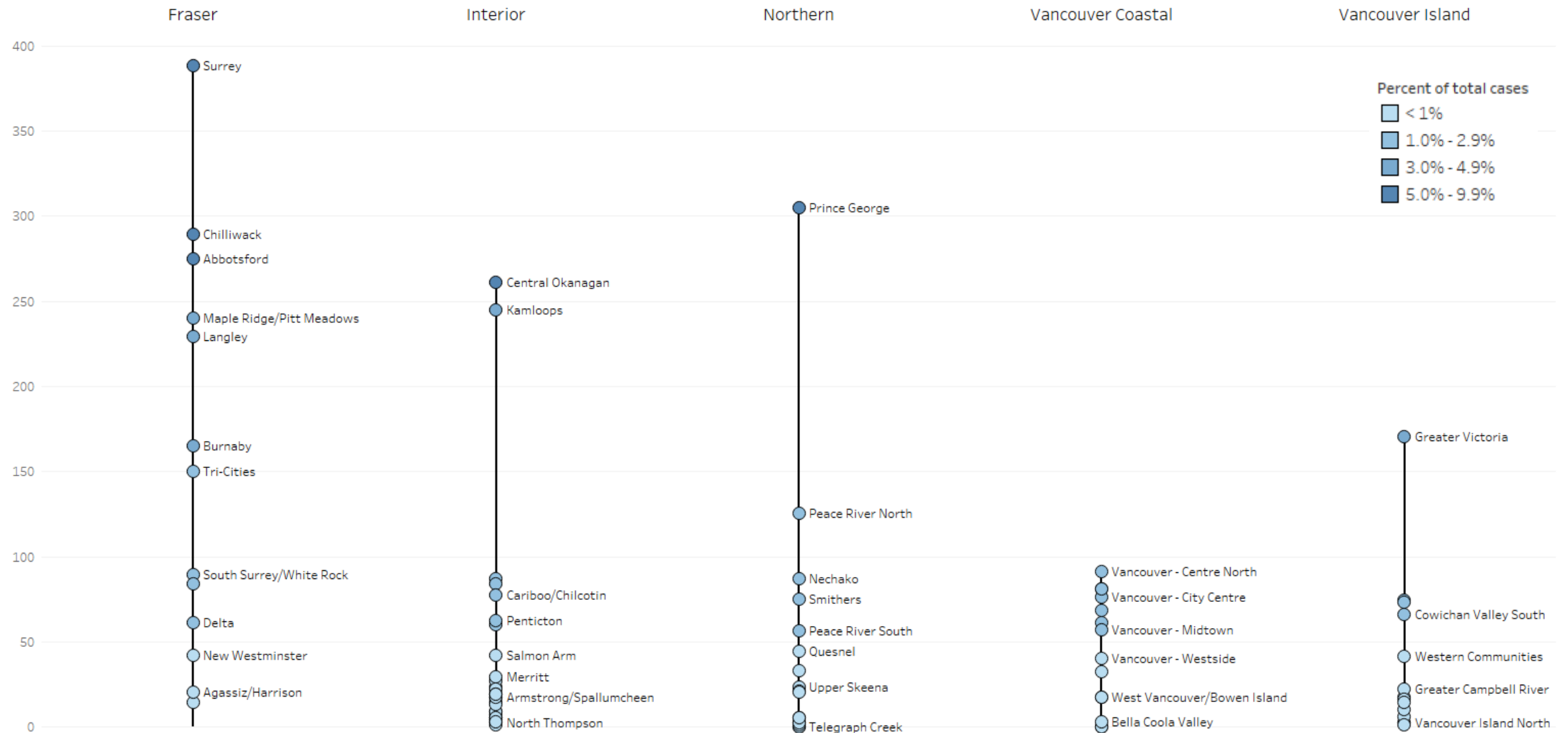


Data source: Public Health Reporting Data Warehouse (PHRDW) integrated COVID dataset; we operate in a live database environment and case information is updated as it becomes available. Cases are mapped by location of residence; cases with unknown residence and from out of province are not mapped. Data are by date of first positive test, or date reported to public health for epi-linked cases. Population denominator from BC Stats PEOPLE estimates for 2021.

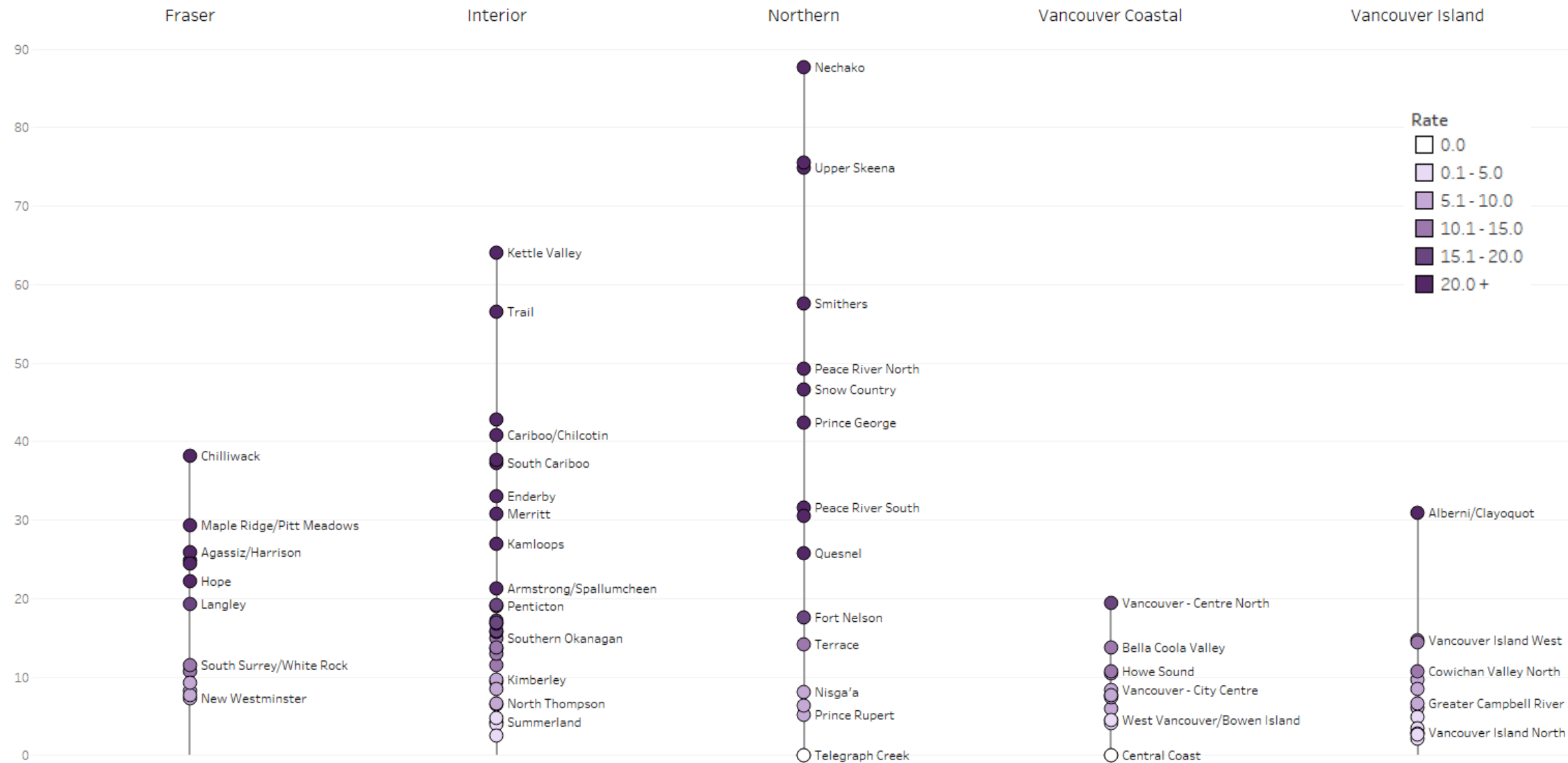


COVID-19 Recent 7-Day Case Incidence Rates by CHSA (September 22 to 28, 2021)

Total cases by local health area, Sep 22 - Sep 28, 2021



Average daily **rate** of new cases per 100,000 population, by local health area, Sep 22 - Sep 28, 2021

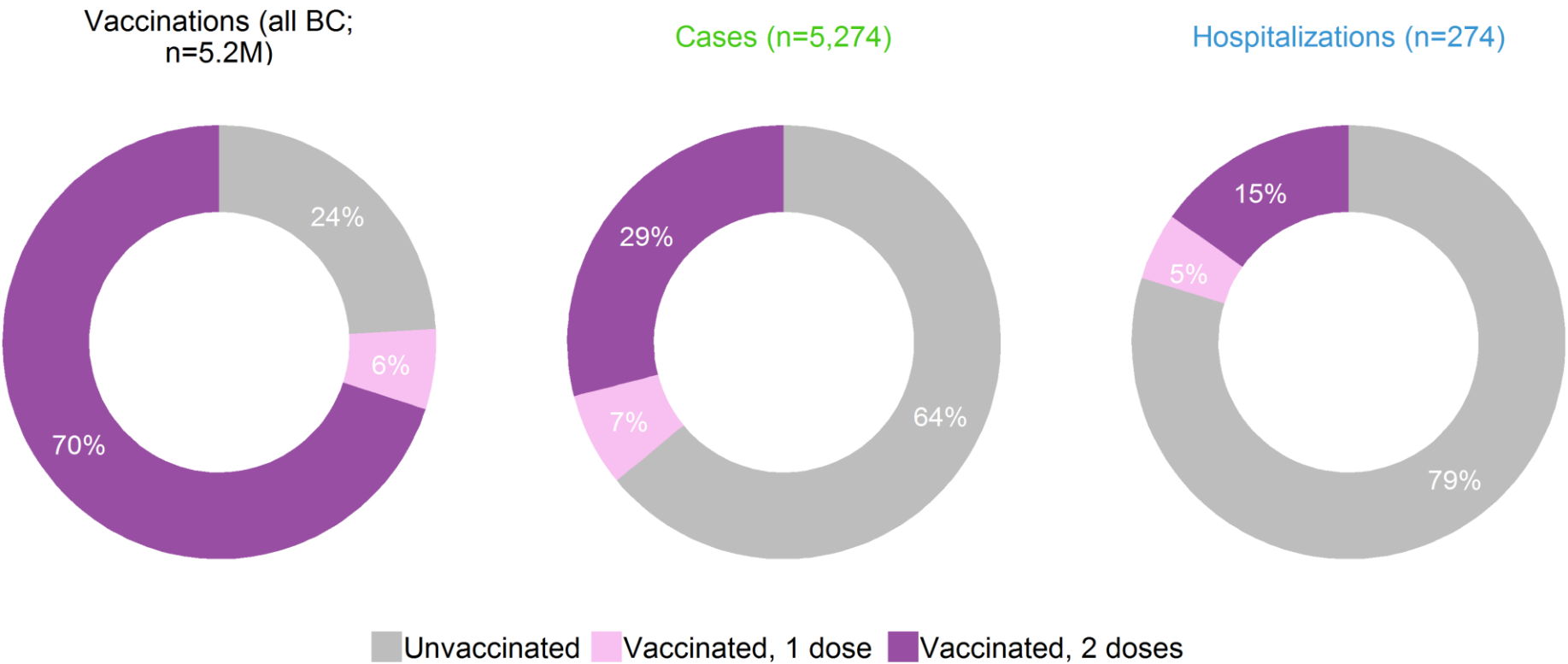


Key messages – Outcomes by vaccine status

- Most of the recent cases and hospitalizations continue to be among unvaccinated individuals
- Based on last month's data, compared with fully vaccinated individuals and after adjusting for age differences, unvaccinated individuals are
 - $\approx 11x$ more likely to become a case
 - $\approx 58x$ more likely to be hospitalized
 - $\approx 53x$ more likely to die
 - NB: relative rates fluctuate over time and do not represent vaccine effectiveness
- Hospitalization rates among children continue to remain very low
- Unvaccinated: no dose or not yet protected (<3 weeks since receipt of 1st dose; $<10\%$ of unvaccinated cases)
- Partially vaccinated = 1 dose: ≥ 3 weeks since receipt of 1st dose and <2 weeks after 2nd dose
- Fully vaccinated = 2 doses: 2 weeks or more after receipt of 2nd dose

Over the past week, fully vaccinated individuals represented 70% of BC’s total population, but accounted for only 29% of cases and 15% of hospitalizations.

These % fluctuate over time. There are many more vaccinated individuals than unvaccinated individuals, and thus it is important to take the denominator into account. These figures do not represent vaccine effectiveness.

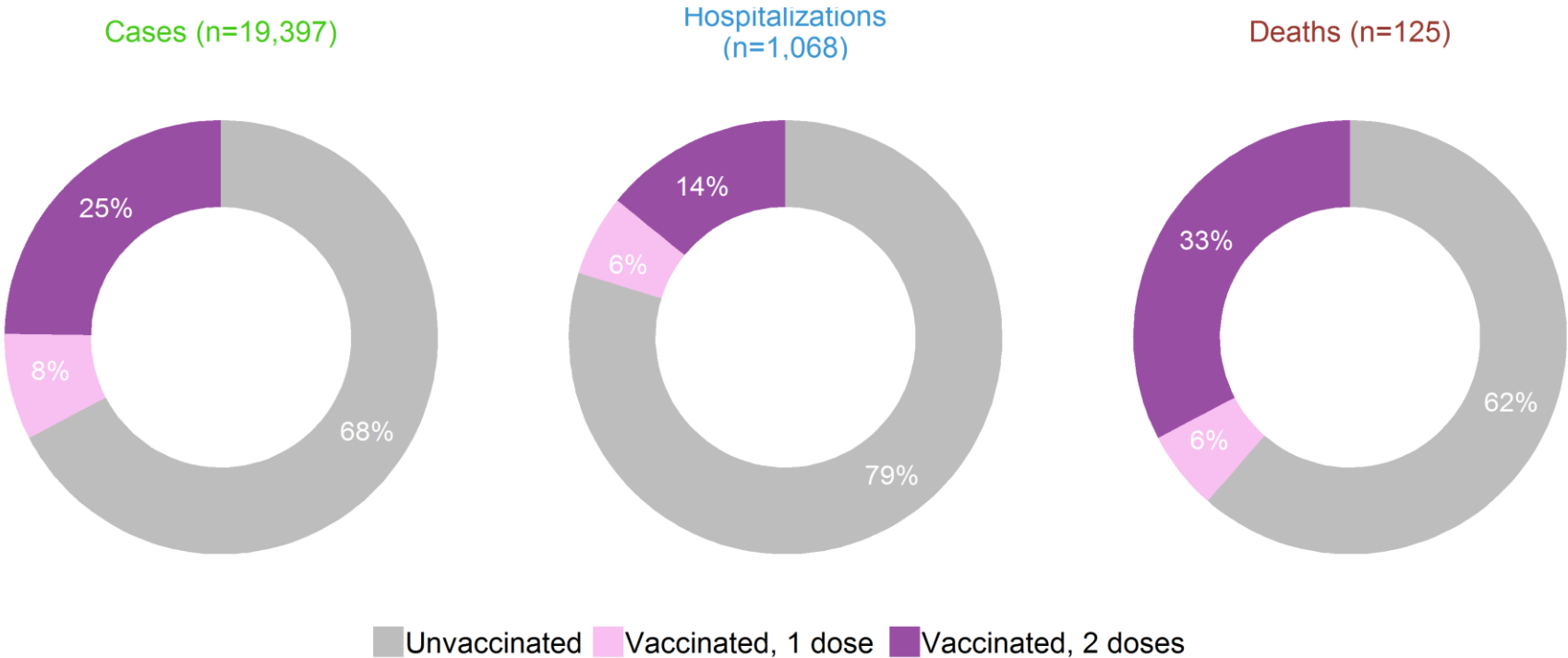


Data include cases from Sep 22-Sep 28, and hospitalizations from Sep 19-Sep 25, 2021

We operate in a live database environment and data get updated retrospectively. These figures were run on Tuesday Sep 21st and may differ slightly from previously reported counts. Cases are captured based on surveillance date. Hospitalizations are by admission date. Please note that there is often a multiple-days lag in recording hospitalizations, e.g. some hospital admissions that occurred on Sept 21st may not be captured by our surveillance system until Sept 25th.

Over the past month, fully vaccinated individuals accounted for 25% of cases and 14% of hospitalizations.

These % are expected to increase over time as more people get fully vaccinated and there are fewer unvaccinated people. If 100% of population gets fully vaccinated (which is almost the case for many long term care residents for example), then any new cases, hospitalizations, or deaths will be among vaccinated people.



Data include cases from Sep 01-Sep 28. and hospitalizations from Aug 29-Sep 25. 2021

We operate in a live database environment and data get updated retrospectively. These figures were run on Sept 21st and thus will differ slightly from previously reported counts. Cases are captured based on surveillance date. Hospitalizations are by admission date. Deaths are by date of death. Please note that there is often a multiple-days lag in recording hospitalizations and deaths, e.g. some hospital admissions that occurred on Sept 21st may not be captured in our surveillance system until Sept 25th.

COVID-19 health outcomes by vaccination status and age, BC, Sept 1 – Sept 28, 2021

Trend in % total population vaccinated with at least 1 dose



Vaccinations (all BC; n=5.2M)



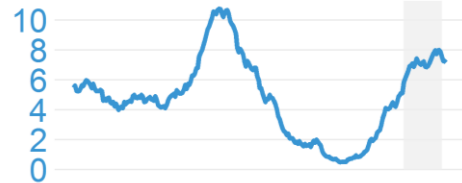
Trend in daily cases per 1M



Cases (n=19,397)



Trend in daily hospitalizations per 1M



Hospitalizations (n=1,068)



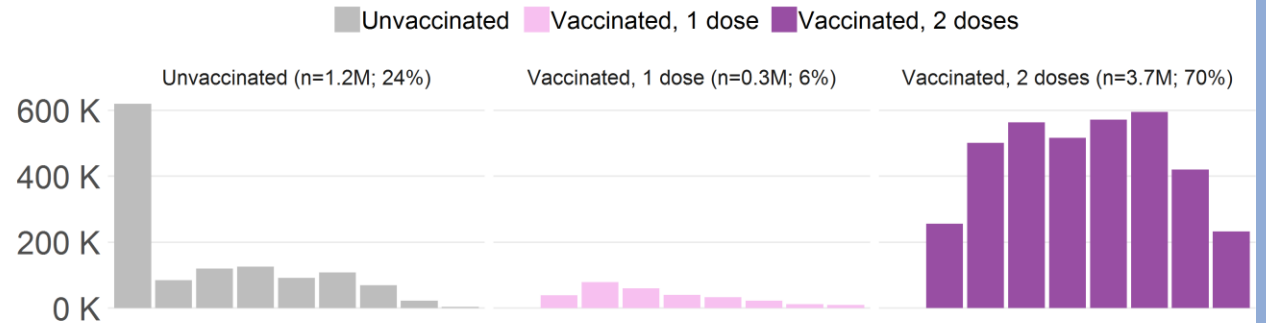
Trend in daily deaths per 1M



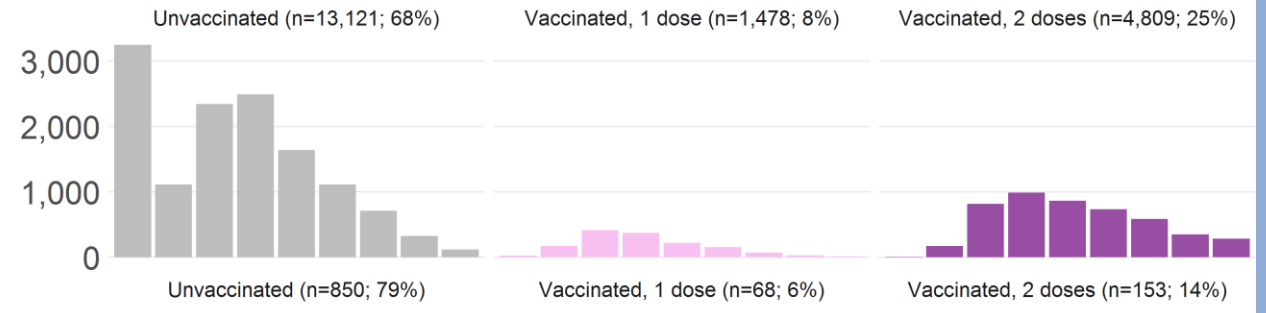
Deaths (n=125)



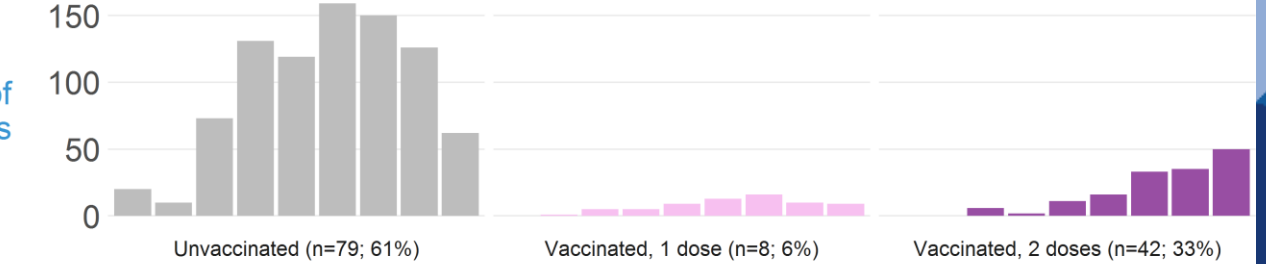
Number of people



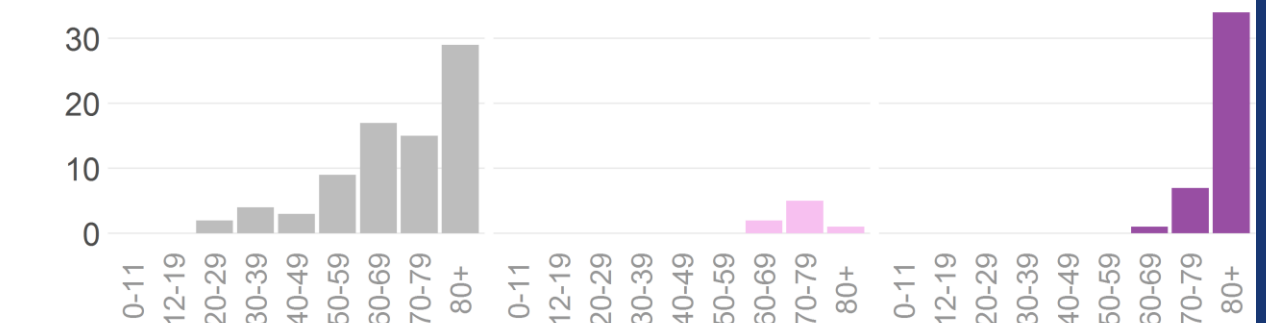
Number of cases



Number of hospitalizations

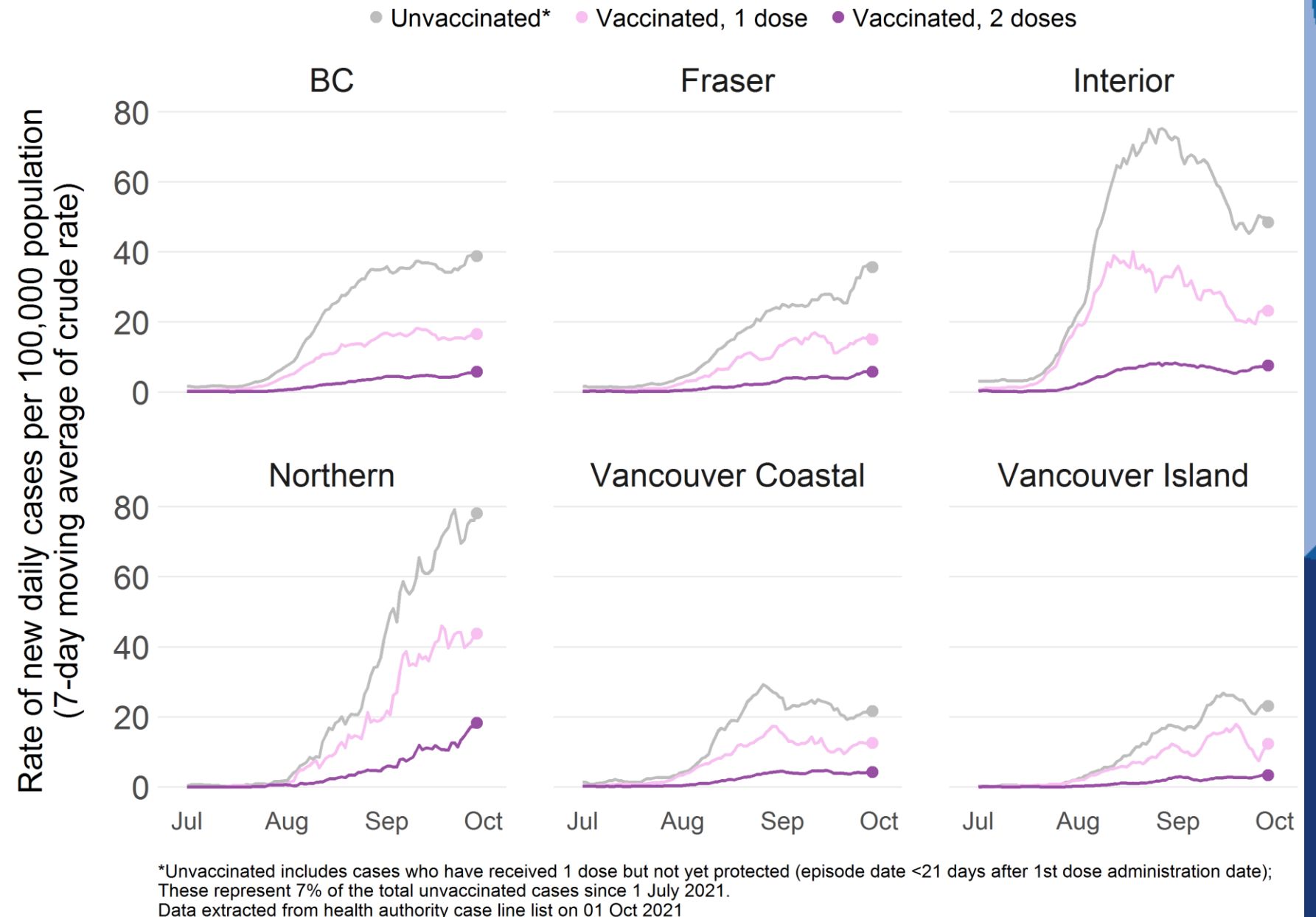


Number of deaths



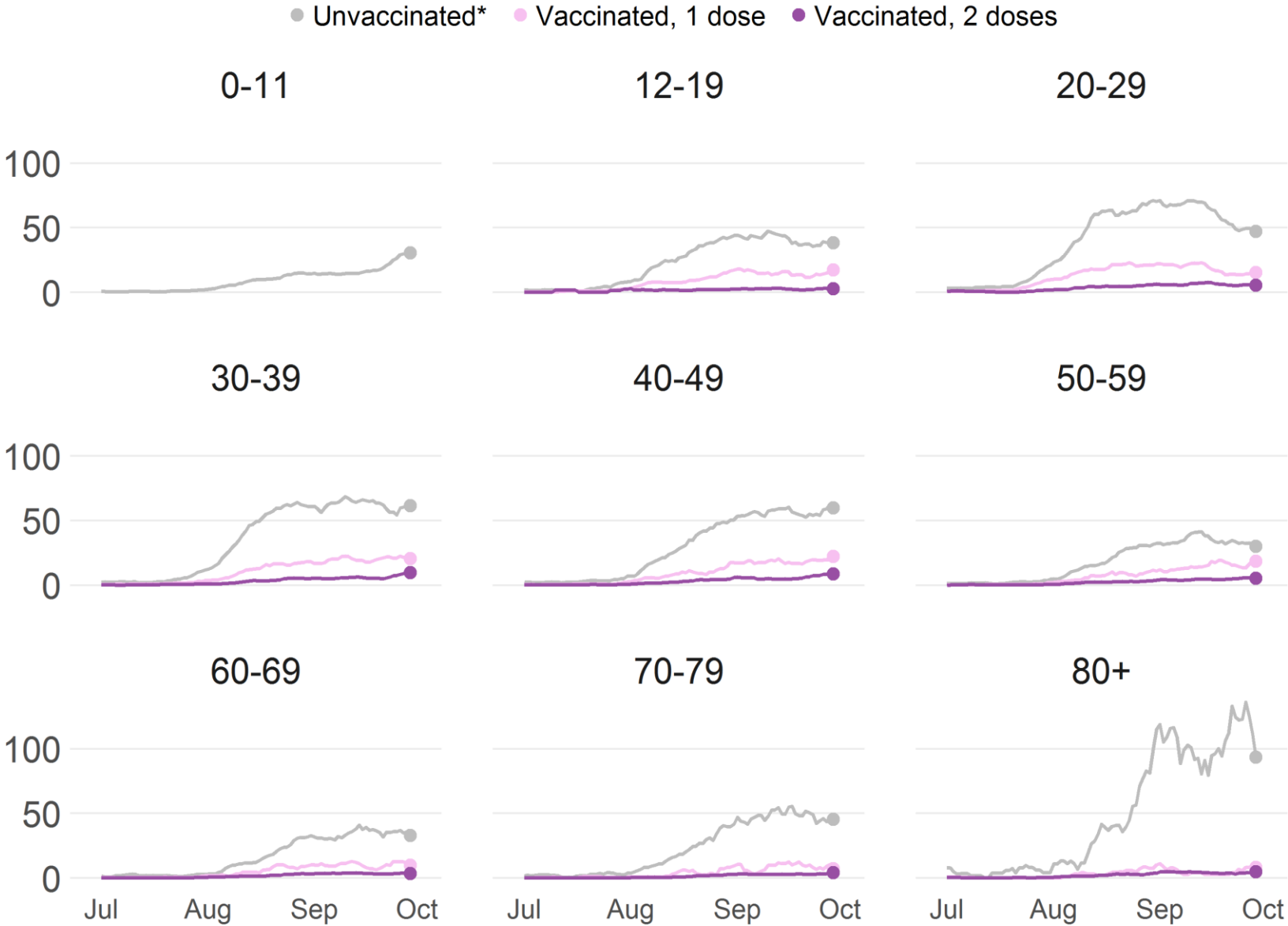
COVID-19 **case** rate by vaccination status and Health Authority, July 1 – Oct 1, 2021

Denominators for each vaccine status group are dynamic and change daily as people flow from being unvaccinated to protected by 1 dose to protected by 2 doses. Therefore, the denominators are different across groups and over time.



COVID-19 **case** rate by vaccination status and age, July 1 – Oct 1, 2021

Rate of new daily cases per 100,000 population (7-day moving average of crude rate)

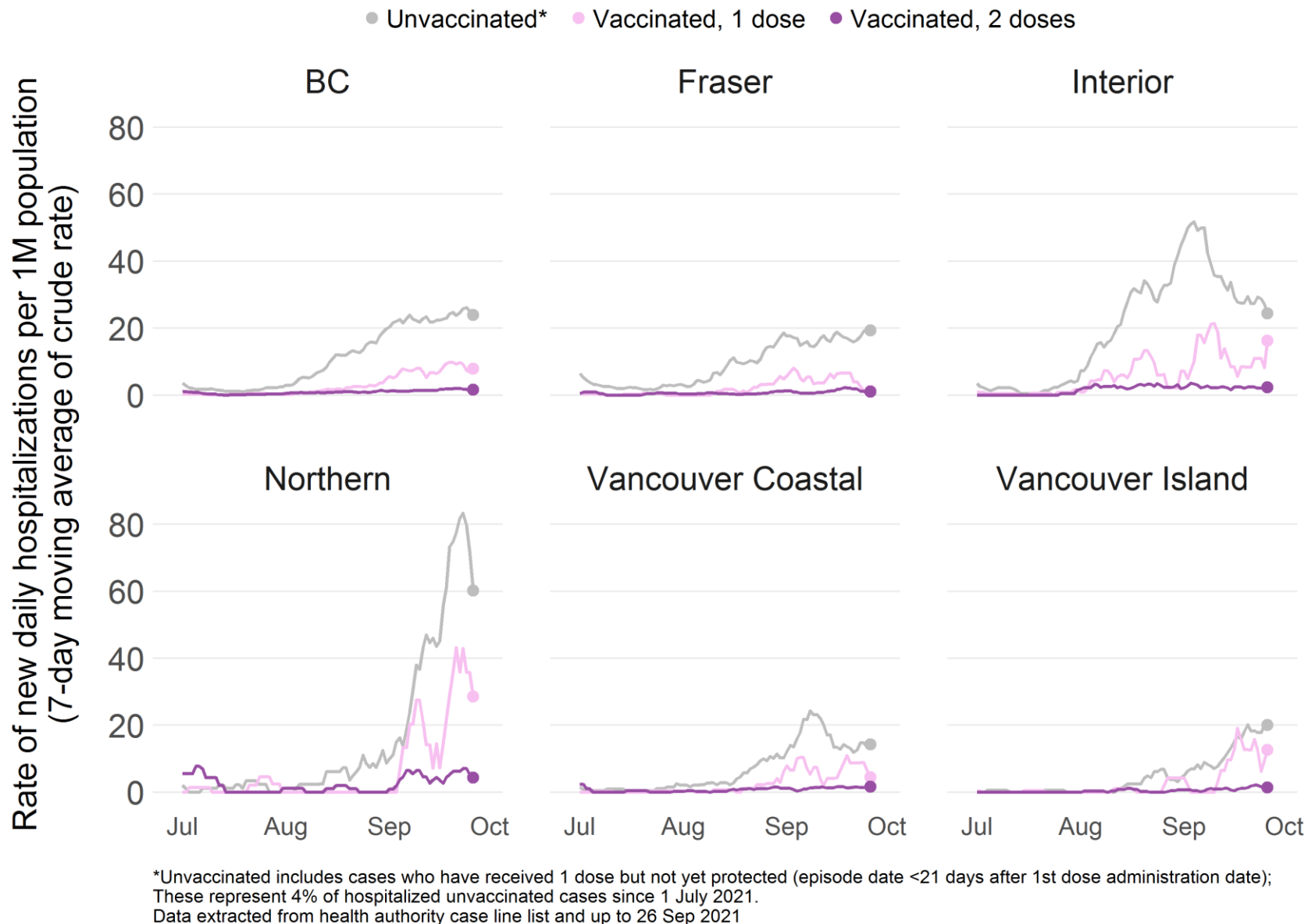


Denominators for each vaccine status group are dynamic and change daily as people flow from being unvaccinated to protected by 1 dose to protected by 2 doses. Therefore, the denominators are different across groups and over time.

*Unvaccinated includes cases who have received 1 dose but not yet protected (episode date <21 days after 1st dose administration date); These represent 7% of the total unvaccinated cases since 1 July 2021.
Data extracted from health authority case line list on 01 Oct 2021

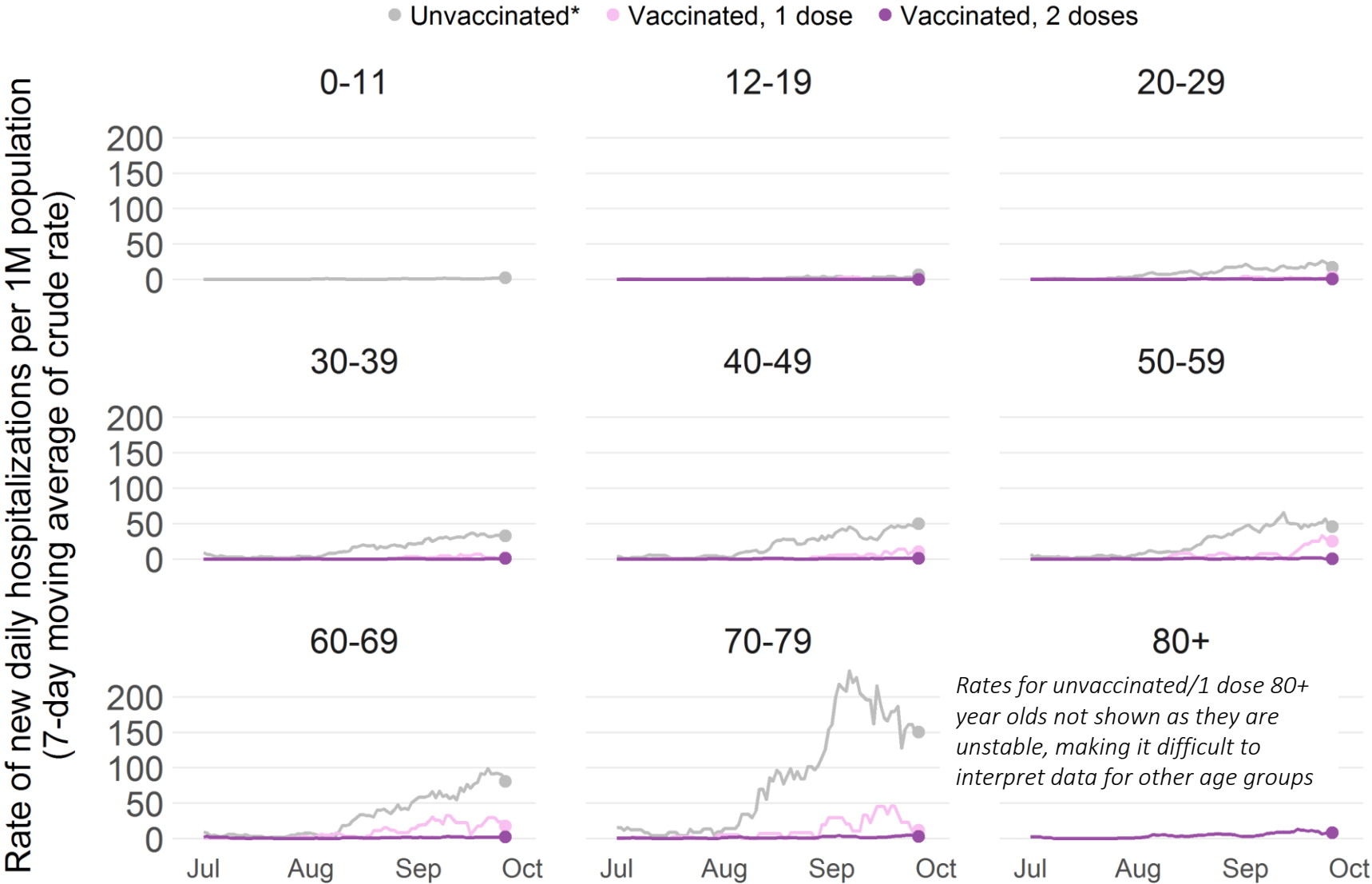
COVID-19 hospitalization rate by vaccination status and Health Authority, July 1 – Sept 26, 2021

Data by hospital admission date. Denominators for each vaccine status group are dynamic and change daily as people flow from being unvaccinated to protected by 1 dose to protected by 2 doses. Therefore, the denominators are different across groups and over time.



COVID-19 hospitalization rate by vaccination status and age, July 1 – Sept 26, 2021

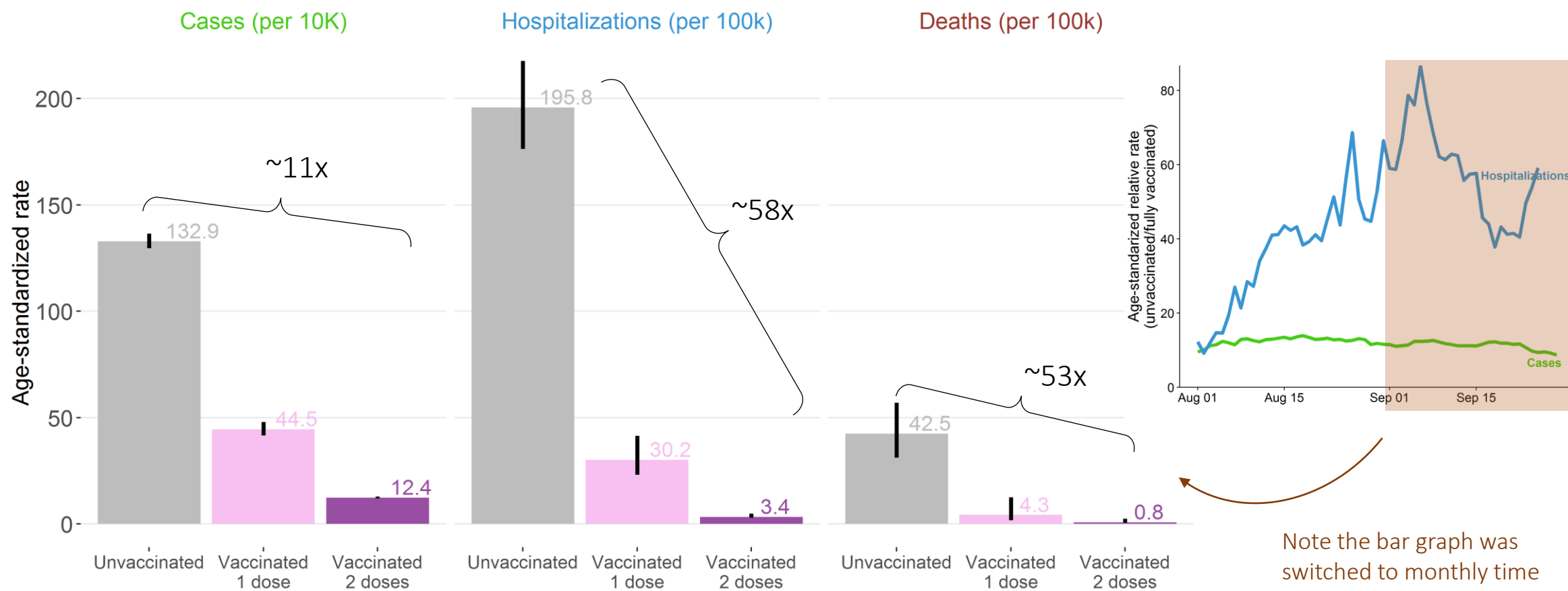
Denominators for each vaccine status group are dynamic and change daily as people flow from being unvaccinated to protected by 1 dose to protected by 2 doses. Therefore, the denominators are different across groups and over time.



*Unvaccinated includes cases who have received 1 dose but not yet protected (episode date <21 days after 1st dose administration date); These represent 4% of hospitalized unvaccinated cases since 1 July 2021.
Data extracted from health authority case line list and up to 26 Sep 2021

After adjusting for age, unvaccinated individuals continue to be at a significantly higher risk of infection, hospitalization, and death from COVID-19 compared with fully vaccinated

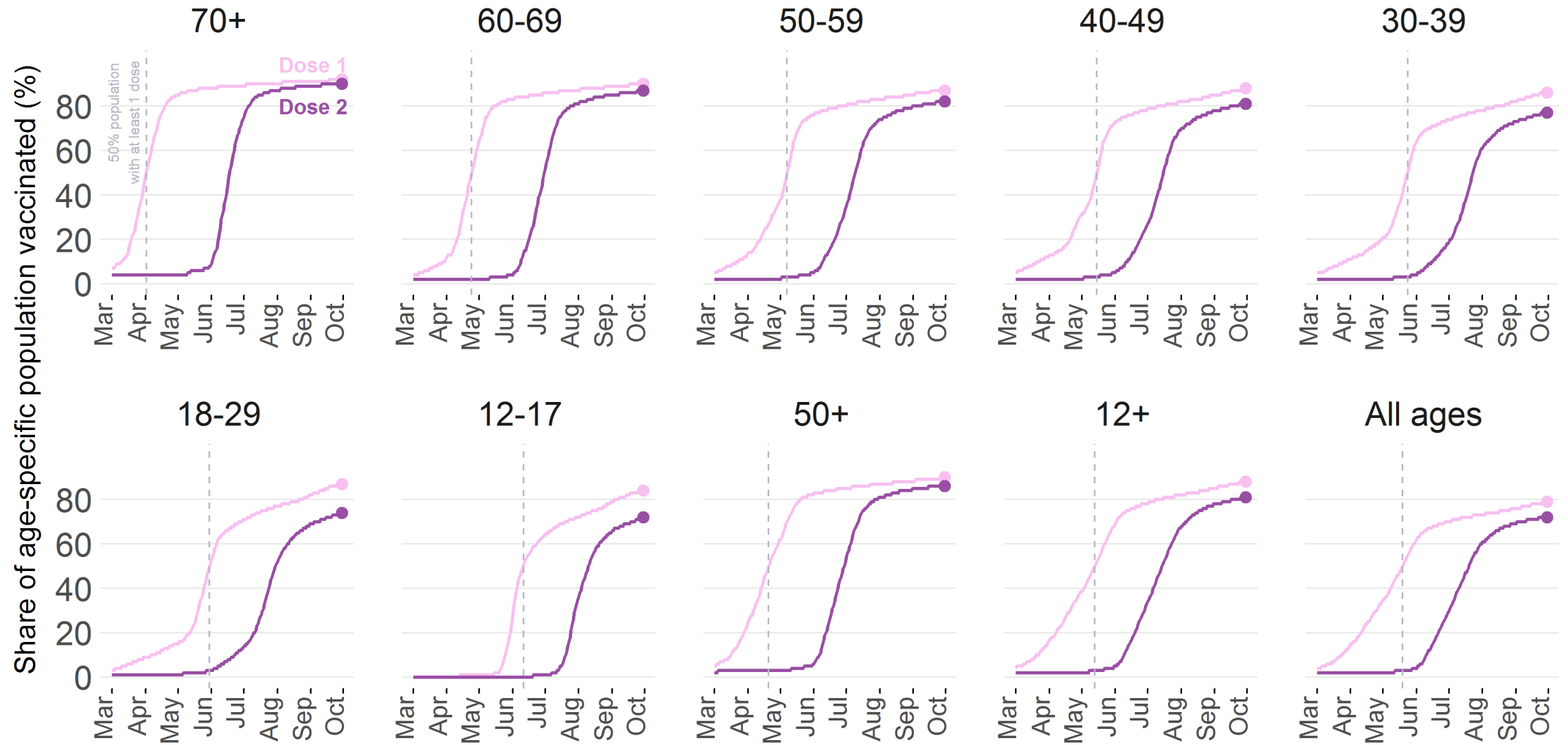
Relative rate fluctuates over time (see graph to the right). These figures do not represent vaccine effectiveness.



Data include cases from Sep 01-Sep 28, and hospitalizations and deaths from Aug 29-Sep 25, 2021

Note the bar graph was switched to monthly time frame and now includes confidence intervals

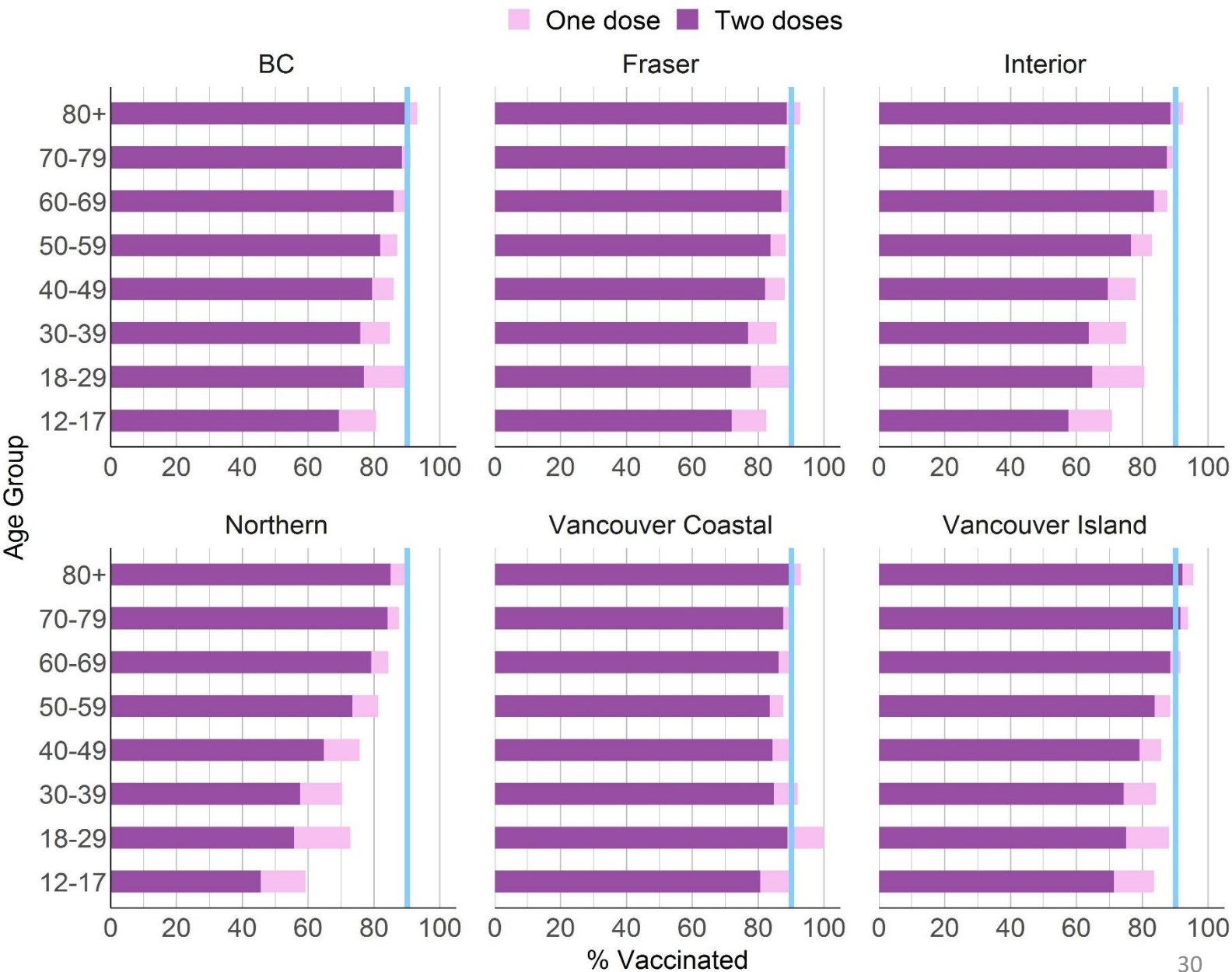
Vaccination progress in BC over time by age group and dose number up to Oct. 1, 2021



Data updated 2021-10-01
Data Source: Provincial Immunization Registry, PHSA

Vaccination progress in BC and by Health Authority as of Sept 28, by age group and dose number (%)

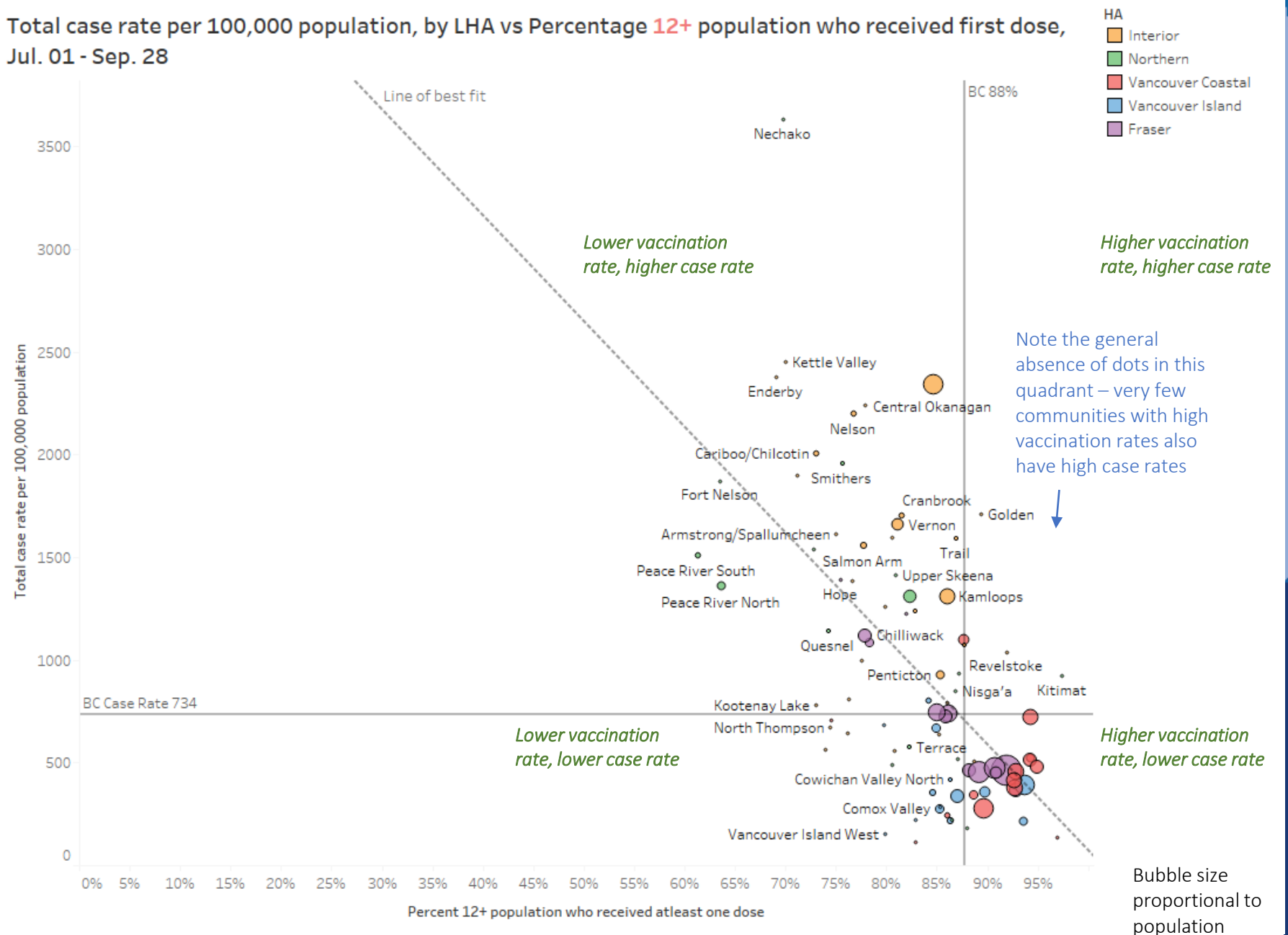
Denominator for this graph is Client Roster maintained by the BC Ministry of Health. Client Roster population data are sourced from a list of all residents registered with Medical Services Plan as of March 12, 2021. Since this date, people may have moved, permanently or temporarily, and have been vaccinated or reported their vaccination status. As a result, there are areas in BC where there will be more people vaccinated than there were living in that area in March 2021. The Client Roster likely underrepresents new arrivals into a region such as young adults relocating to attend post-secondary institutes and workers at major construction project areas. An alternative denominator would be based on projections derived from Census 2016, which is also not representative of the current BC population. There is no perfect denominator.

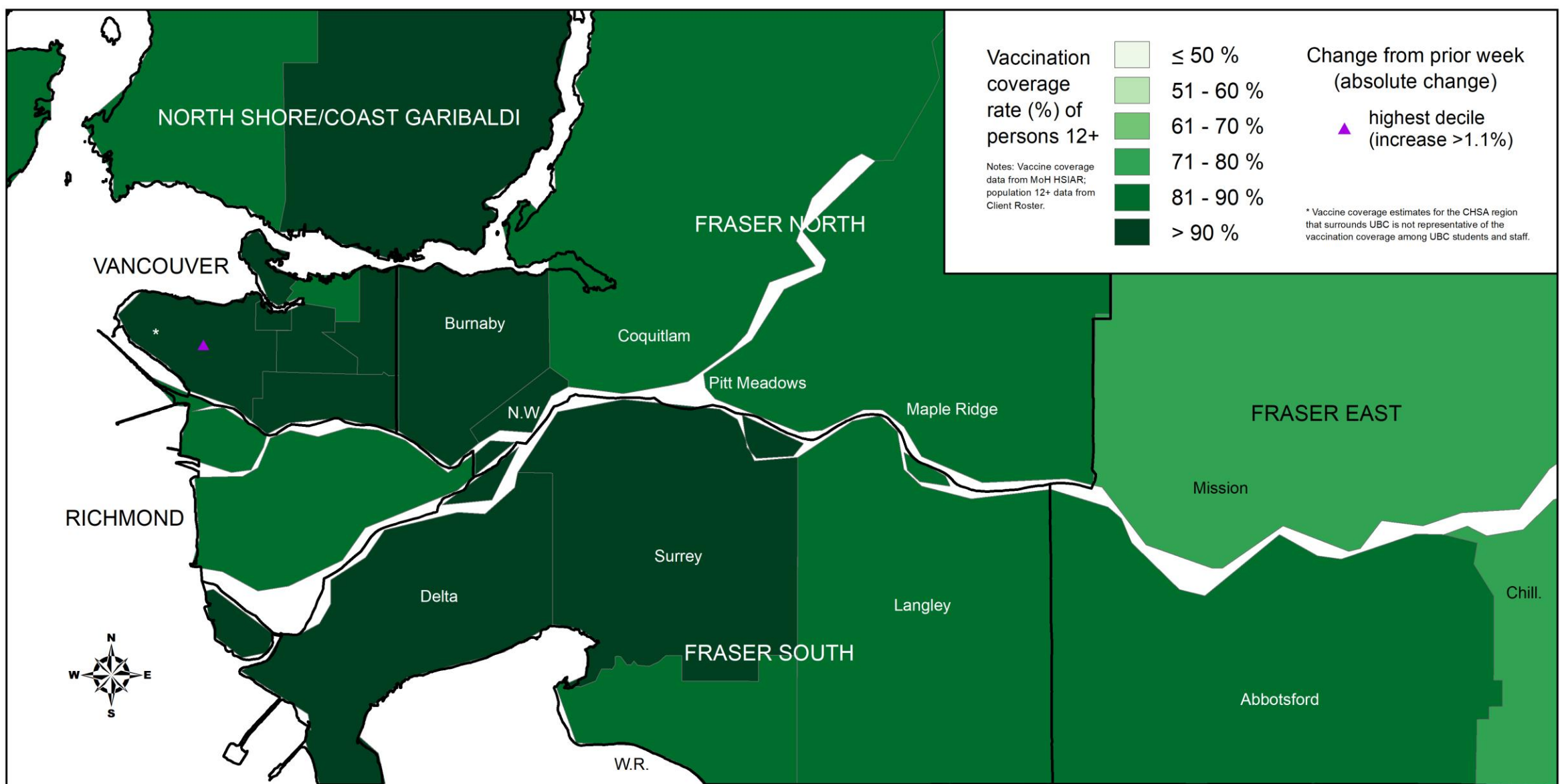


Data updated 2021-09-28
Data Source: Ministry of Health

BC communities with higher vaccination rates generally had lower total number of cases per capita between July 1 and Sep 28

Total case rate per 100,000 population, by LHA vs Percentage 12+ population who received first dose, Jul. 01 - Sep. 28

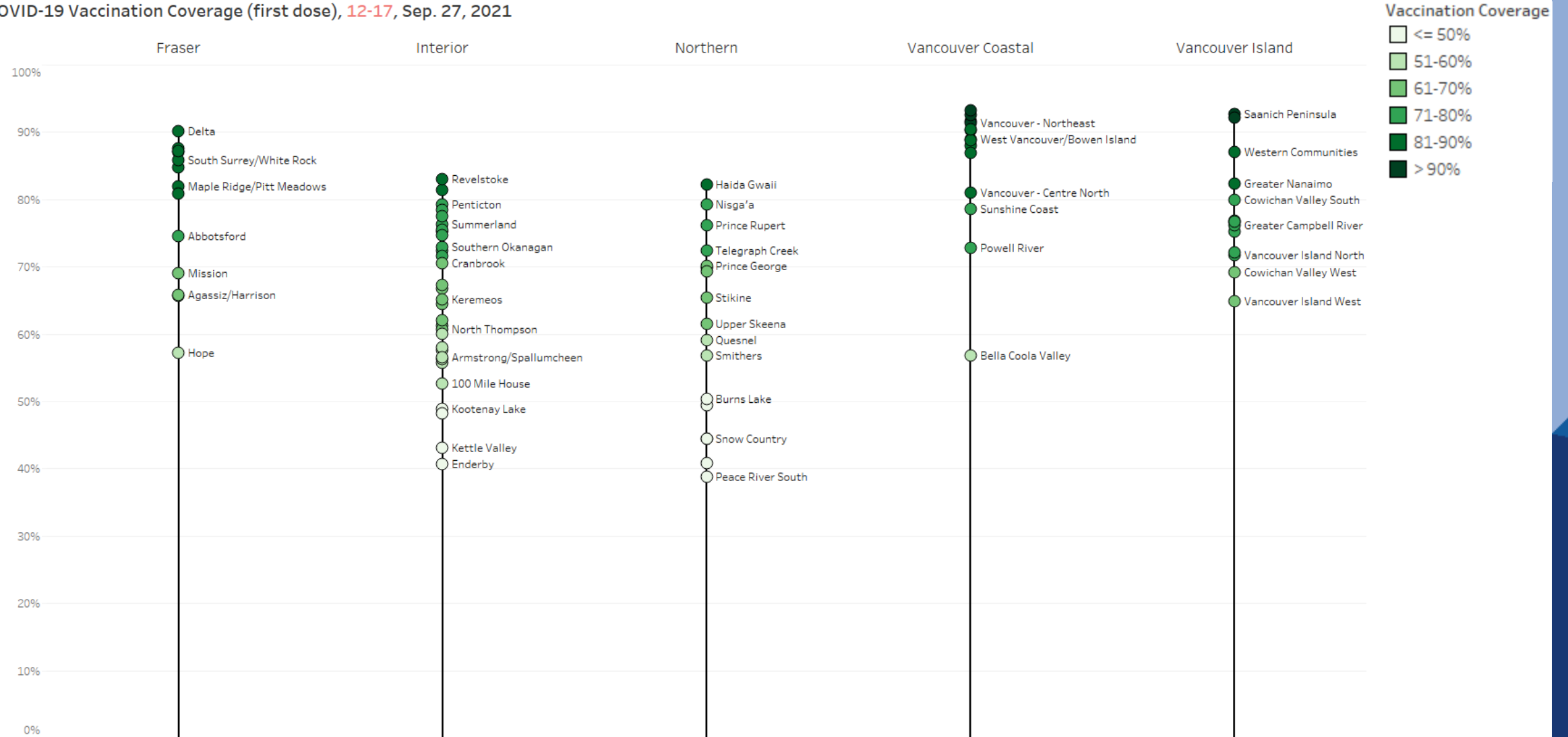




COVID-19 Vaccination Coverage by CHSA: Ages 12+ 1st Dose (up to September 27, 2021)

COVID-19 vaccination coverage with 1st dose among 12-17 year olds, by Local Health Area, up to Sept 27, 2021: there is more variation in this age group compared with older age groups

COVID-19 Vaccination Coverage (first dose), 12-17, Sep. 27, 2021



Lab - Key Messages

- **Test positivity** among publicly funded tests is stable ~7%
 - Test positivity varies by HA, ranging from 4.7% in VCH to 16.8% in NH.
 - Test positivity is high in Fraser East and most HSDAs in NH and IH
- Publicly funded **testing rates** were stable this week
 - Testing rates increasing in children (<19 years)
- The provincial weekly median **turnaround time** (time from specimen collection to lab result) remains low, at 14 hours indicating good testing capacity; 3 in 4 tests took ≤ 26 hours to result.
- **Delta** is the most prevalent COVID-19 variant in BC representing ~100% of all sequenced specimens in most recent week.
- Wastewater samples can act as a population-level sentinel surveillance tool
 - Viral signals in Metro Vancouver wastewater plants have plateaued or are declining slowing, consistent with case-counts in these regions

Weekly Summary of ALL lab tests performed

3,794,298	total specimens tested
98,958	new this epi week
194,313	total positive specimens
5,264	new positive this epi week
19 hr	mean turnaround time (TAT)
18 [11-26]	Median [Q1 – Q3] TAT

↑ **14%** relative to last week

↓ **5.3%** positivity
↓ **0.2%** absolute change from last week

↑ **25%** TAT relative to last week

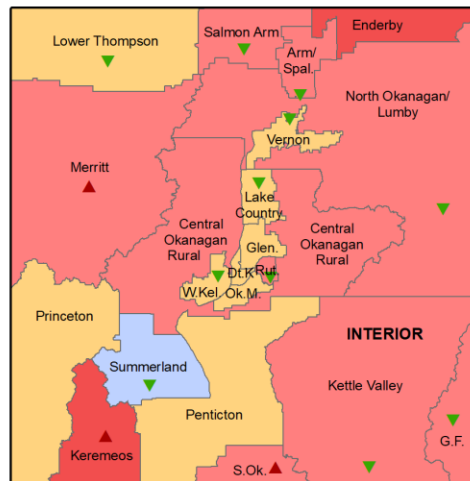
Weekly Summary of Lab tests paid Publicly

2,869,409	total specimens tested
74,386	new this epi week
191,907	total positive specimens
5,186	new positive this epi week

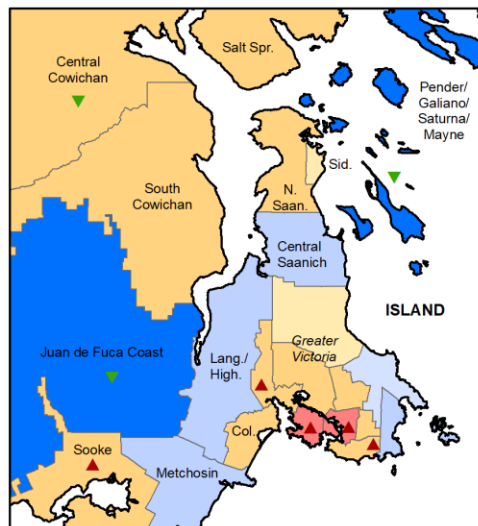
↑ **23%** relative to last week

↓ **7.0%** positivity
↓ **0.8%** absolute change from last week

Okanagan Inset
(Community Health Service Areas)



Greater Victoria Inset
(Community Health Service Areas)



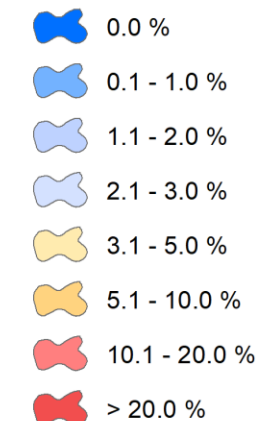
Geographic Distribution of COVID-19 Testing Positivity by LHA and CHSA

Recent 7-Days Testing
September 22 to 28, 2021

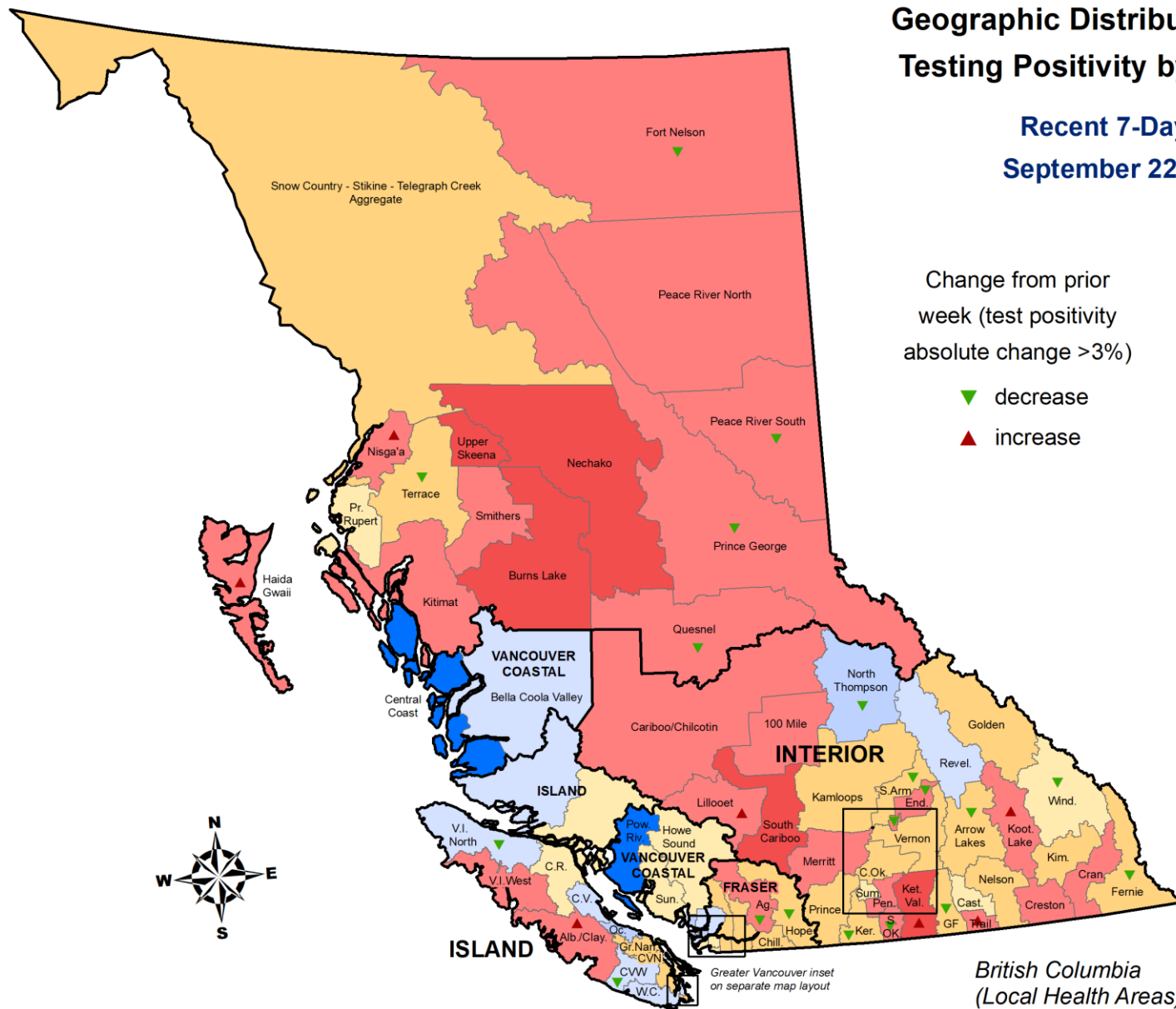
Change from prior
week (test positivity
absolute change >3%)

▼ decrease
▲ increase

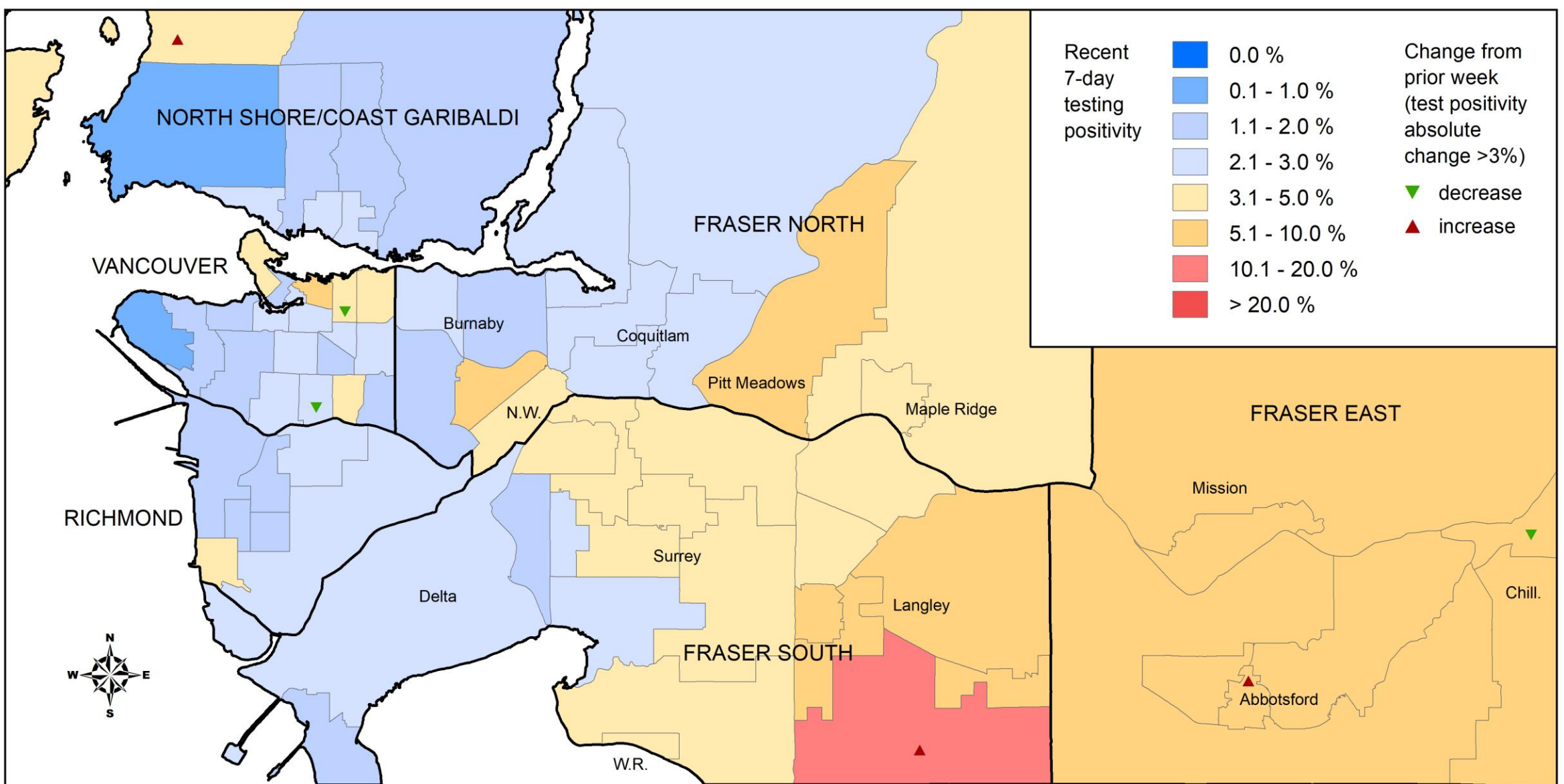
Test positivity rate



Data source: BCCDC Public Health Laboratory PLOVER system (all tests performed). Data are by testing result date, and location of client's residence or if missing, physician's address.



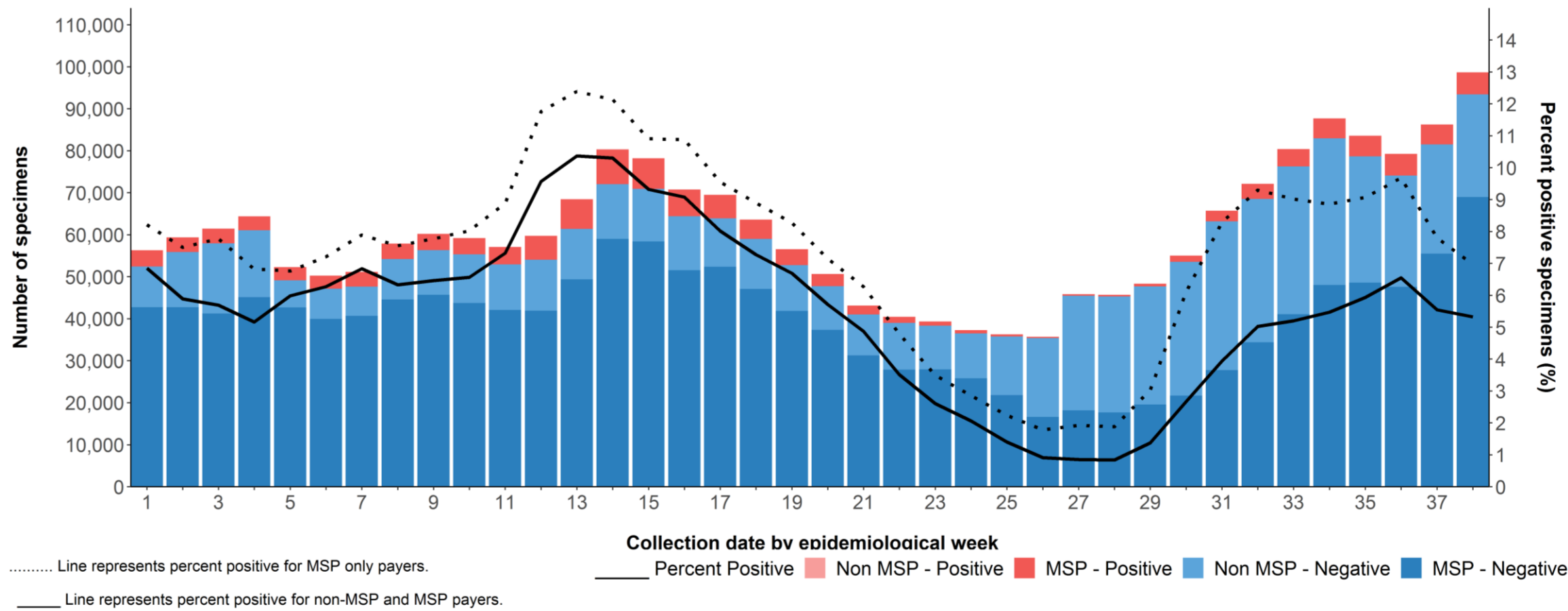
British Columbia
(Local Health Areas)



COVID-19 Recent 7-Day Test Positivity by CHSA (September 22 to 28, 2021)

Includes all tests

Percent positivity decreased slightly in the most recent week (~8%), in parallel with an increase in the number of publicly funded specimens tested.

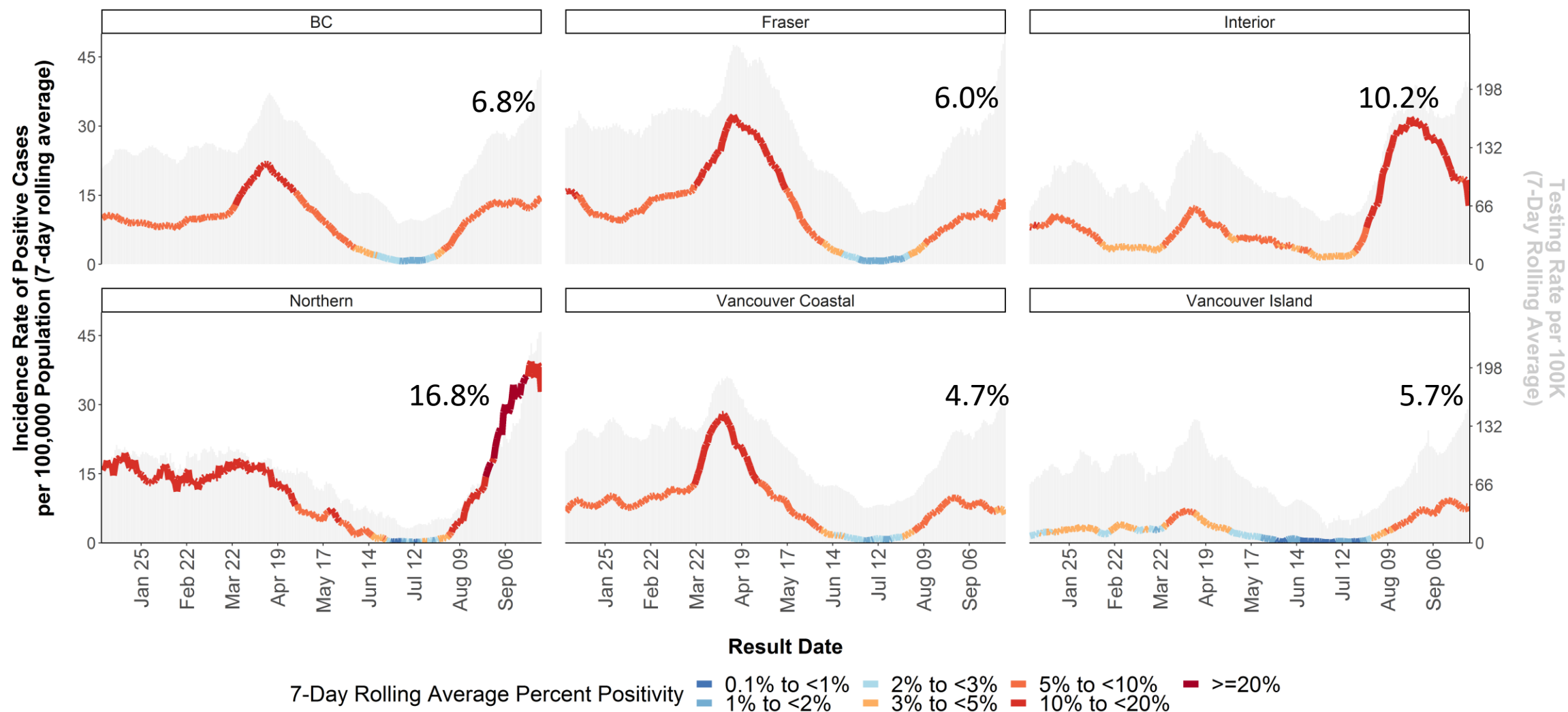


Note: Invalid (n = 1487) and indeterminate (n = 5810) results have been excluded

Data source: PLOVER 29-Sep-2021

Test positivity remains high in NH and IH

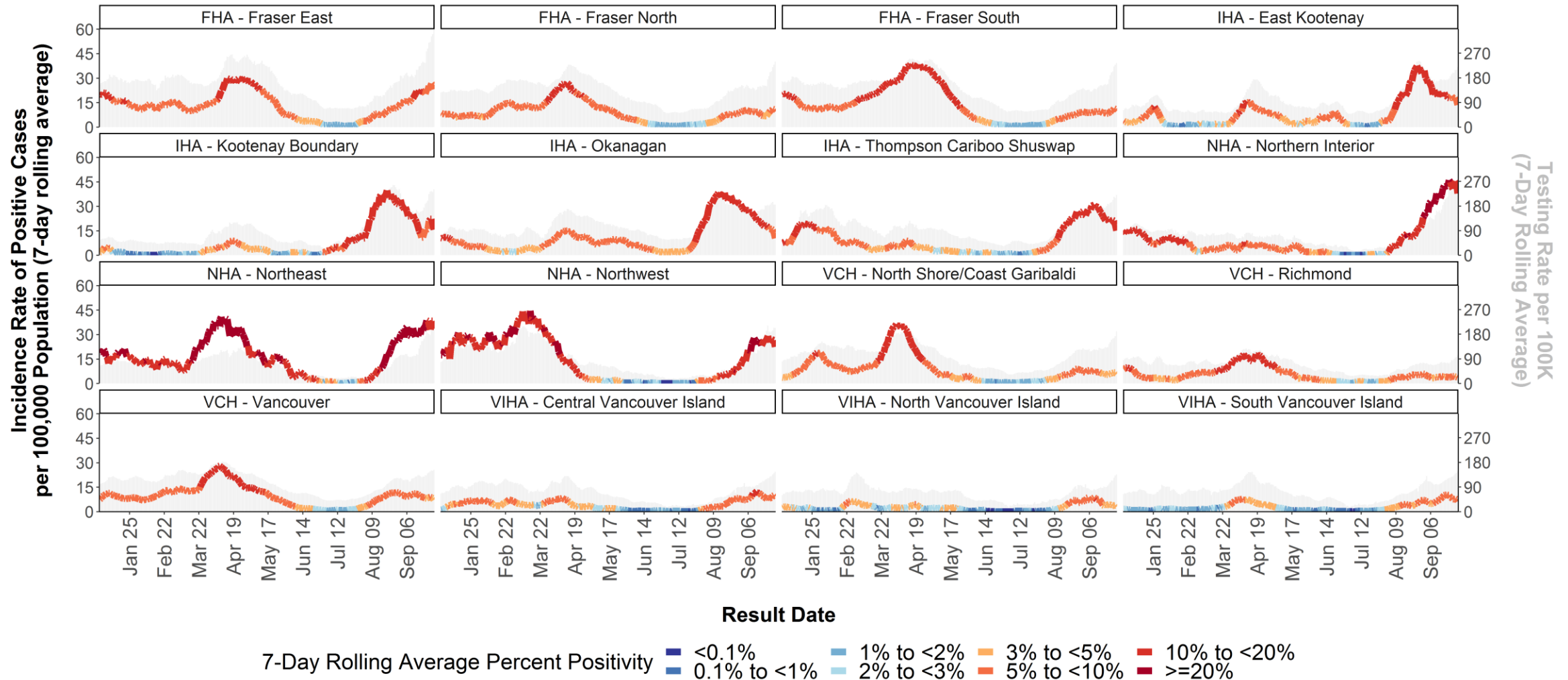
Case incidence rate, test percent positivity, and testing rate (Public Payers Only). Jan 1 2020 - Sep 28, 2021.



Data source: PLOVER 28-Sep-2021

Test positivity high in NH and Kootenay Boundary; incidence is increasing in Fraser East and Kootenay Boundary and remains elevated in Interior Health, NH and Fraser East.

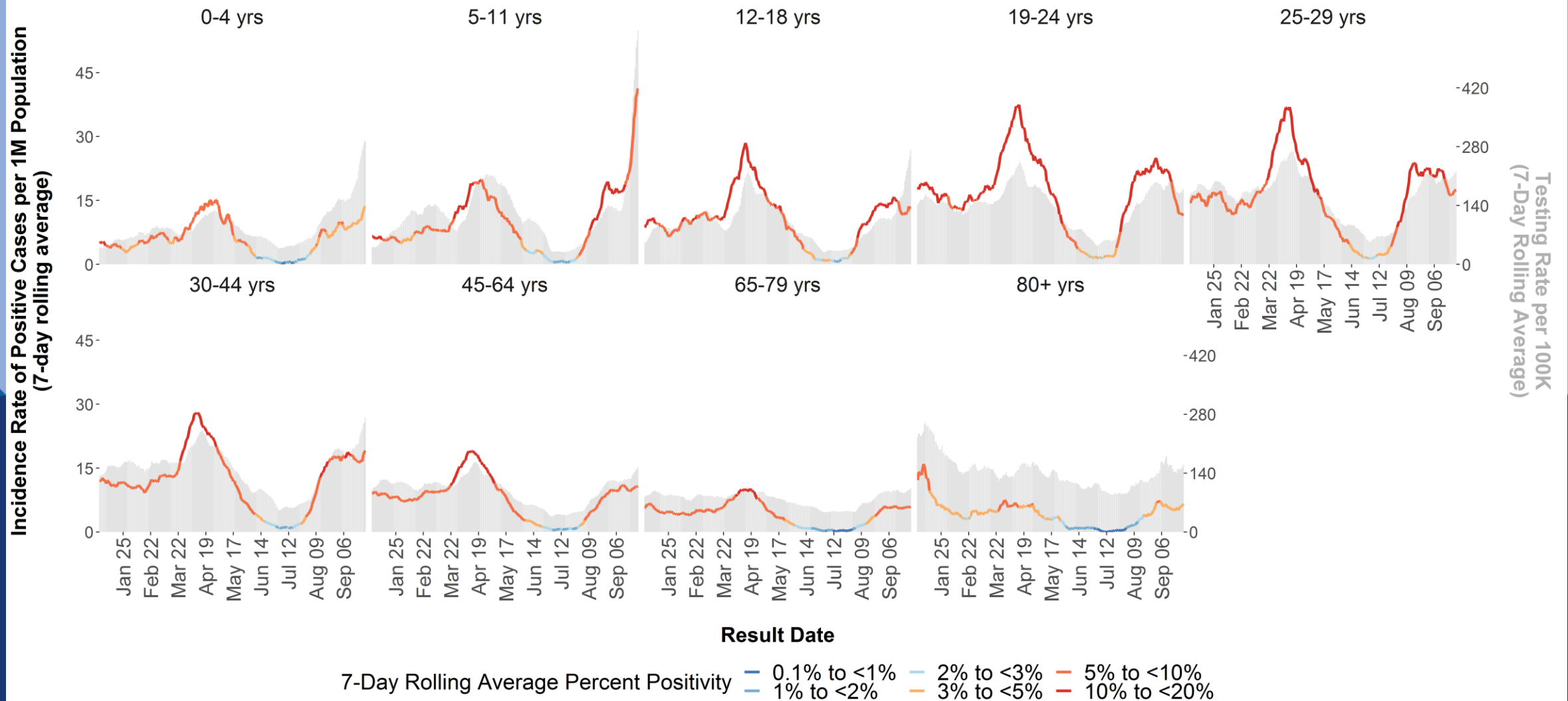
Case incidence rate, test percent positivity, and testing rate by HSDA (Public Payers Only).
Jan 1 2021 - Sep 28, 2021.



Data source: PLOVER 28-Sep-2021

Testing rates continue to increase for individuals <19 years, and individuals 30-44 years.

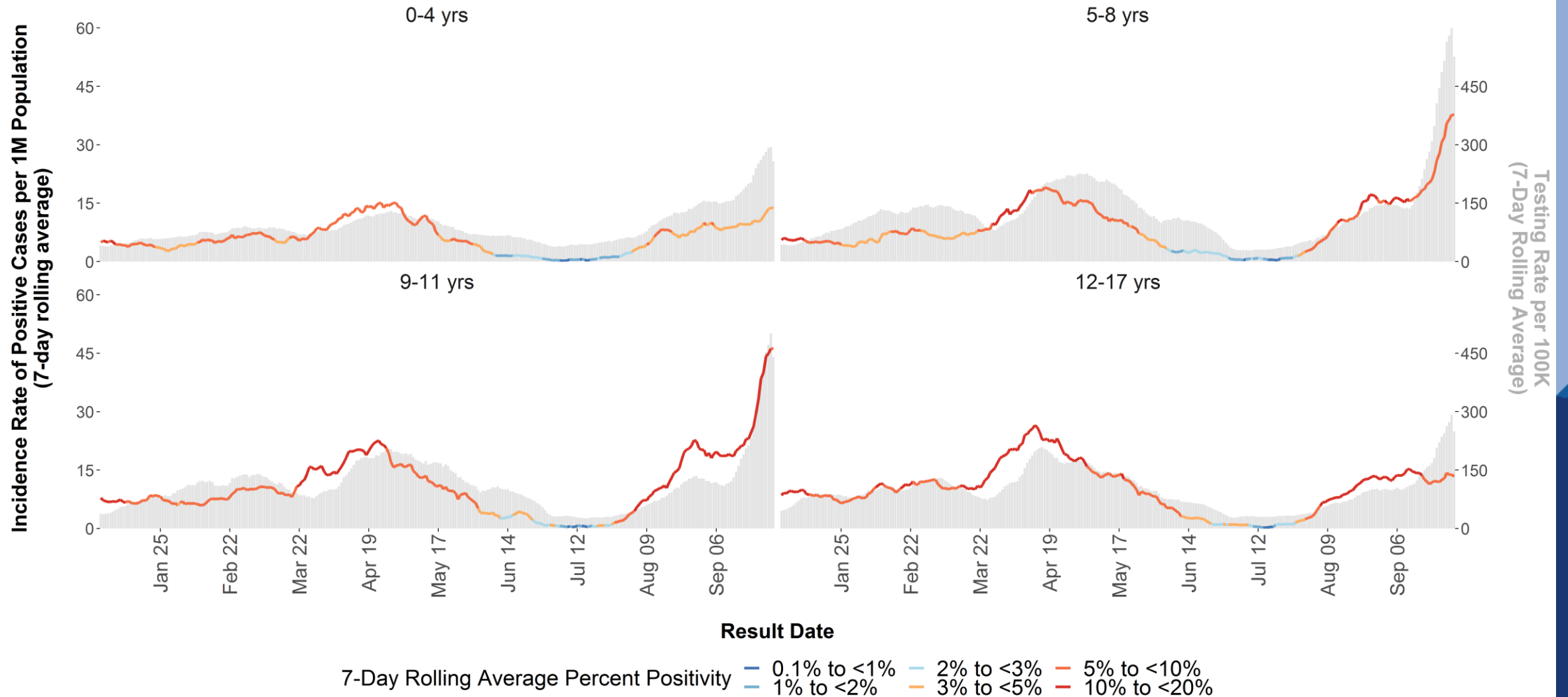
Case incidence rate, test percent positivity, and testing rate by age (Public Payers Only). Jan 1 2020 - Sep 28, 2021.



Data source: PLOVER 28-Sep-2021

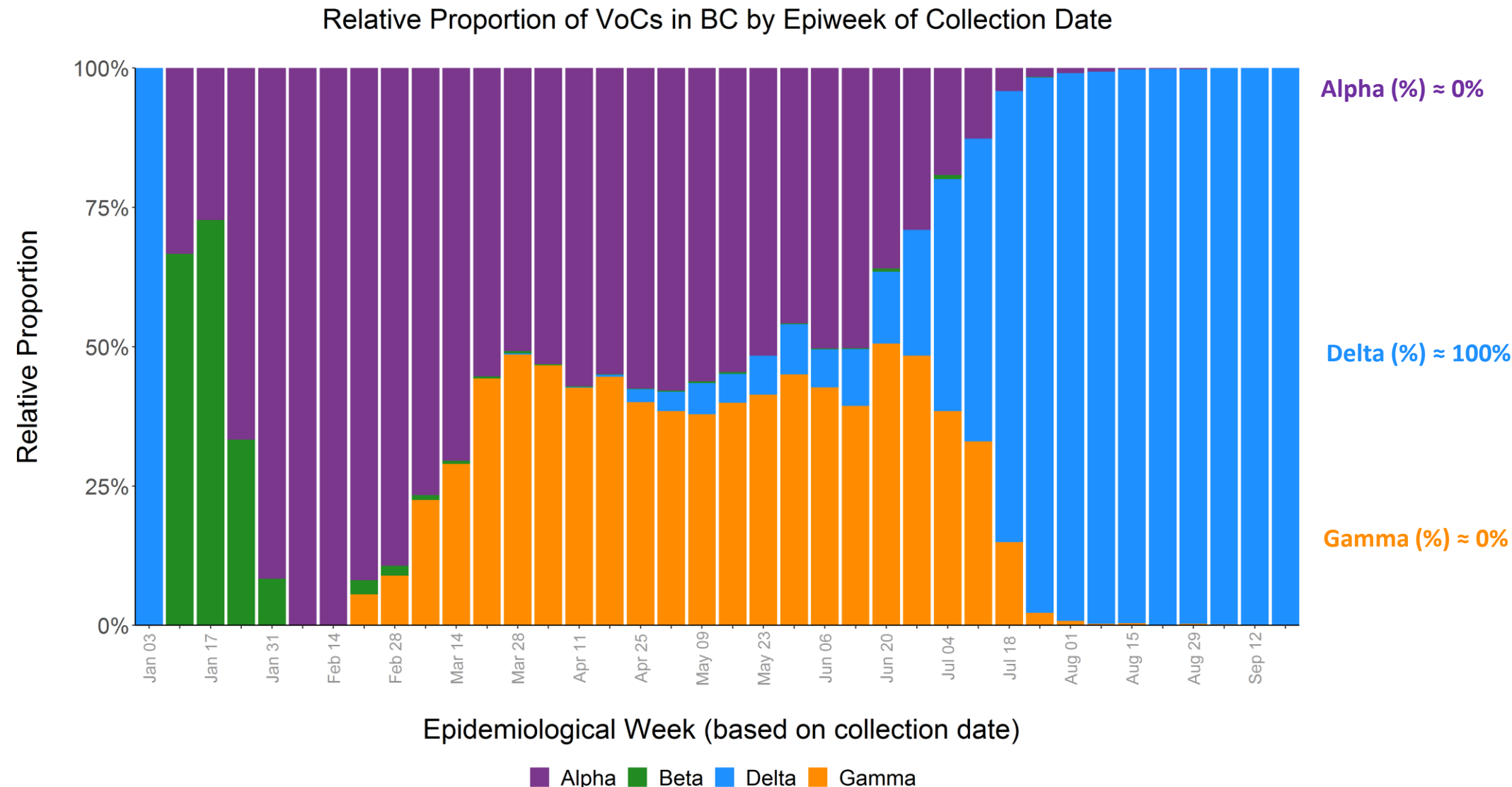
Increase in testing is seen in all **pediatric** age groups

Case incidence rate, test percent positivity, and testing rate by age (Public Payers Only). Jan 1 2020 - Sep 29, 2021.



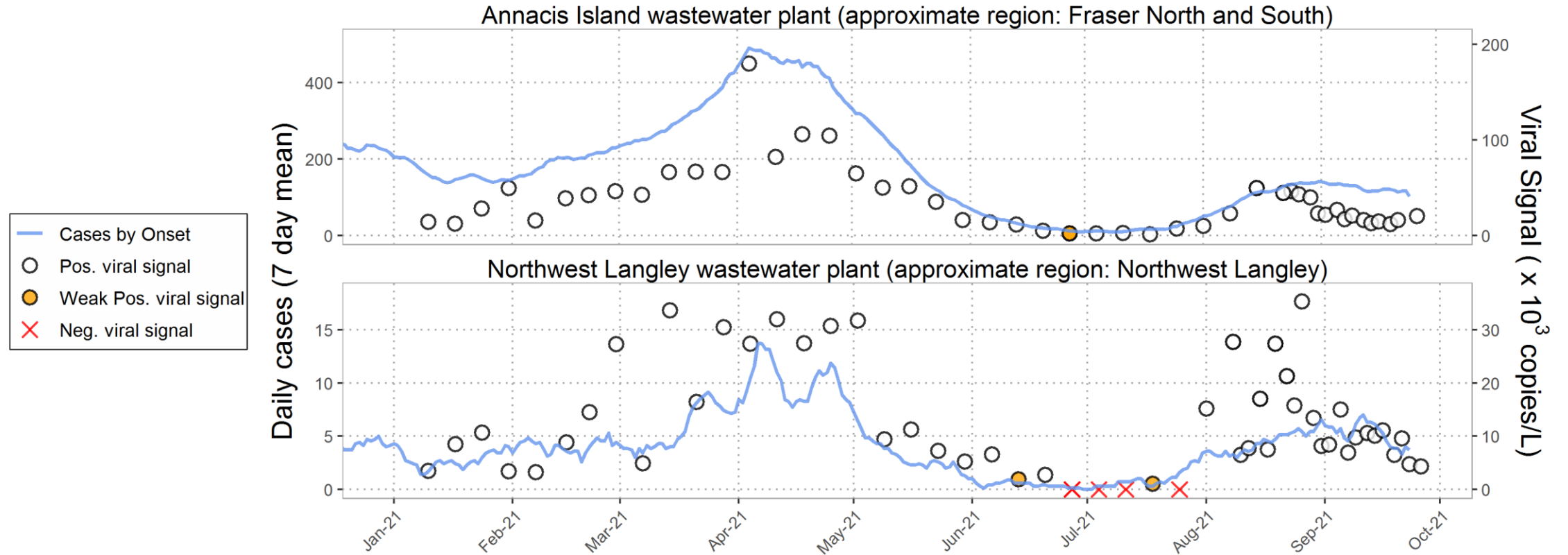
Data source: PLOVER 29-Sep-2021

Among sequenced VOC samples provincially based on information for September 19 to 25, the dominant VOC continues to be Delta ~100%



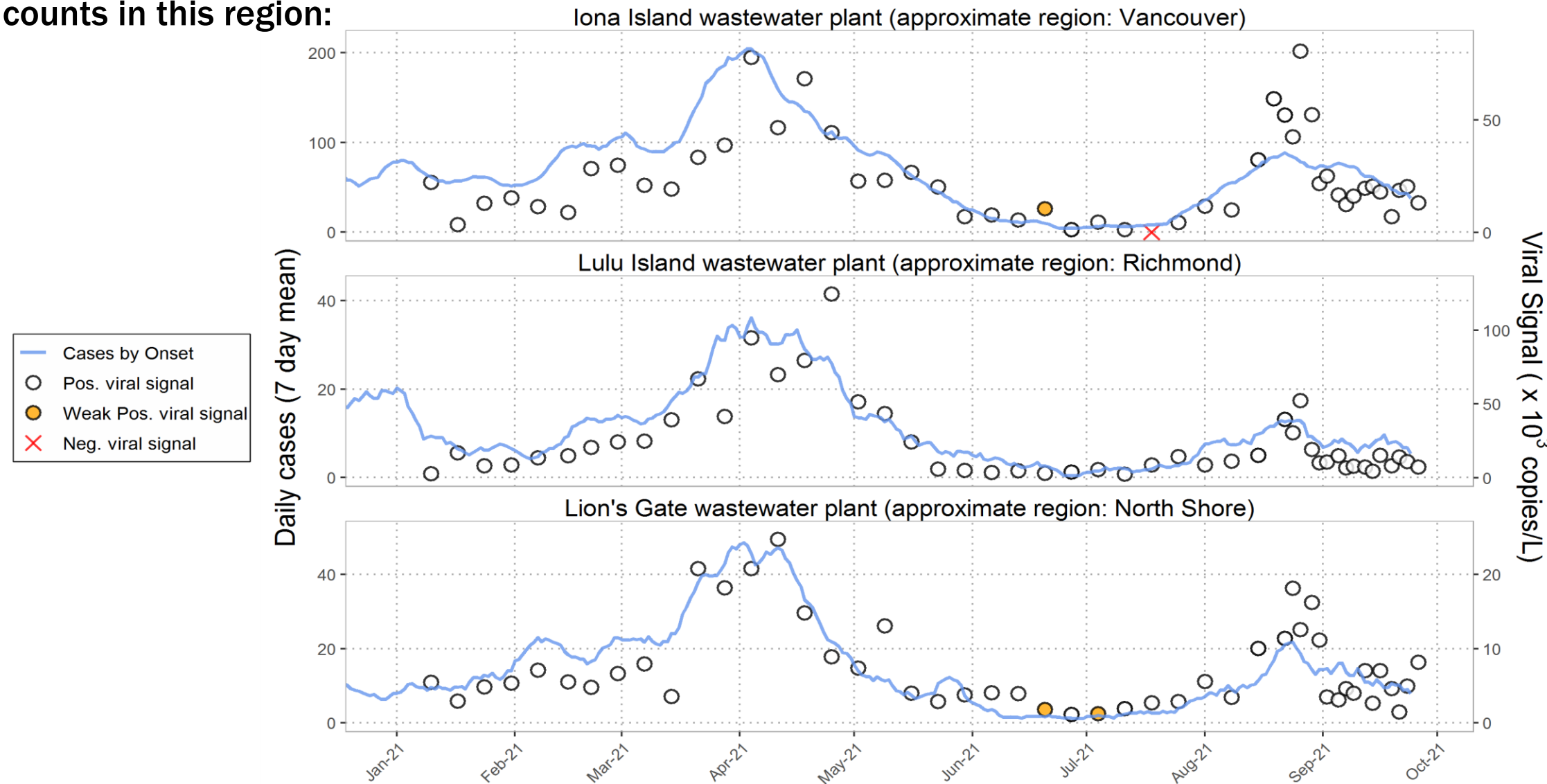
Wastewater samples can act as a population-level sentinel surveillance tool- viral signals found in wastewater are highly correlated with disease incidence in population.

In these regions of Fraser Health, the viral signal from wastewater reflects the trends in case counts in this region:



Time-series plots show weekly or bi-weekly viral signals from each wastewater plant (right y-axis), overlaid with rolling 7-day mean of daily new cases within wastewater catchment area (left y-axis). Plot title shows wastewater plant name, followed by approximate catchment area.

In these regions in VCH, the viral signal from wastewater reflects the declining trends in case counts in this region:



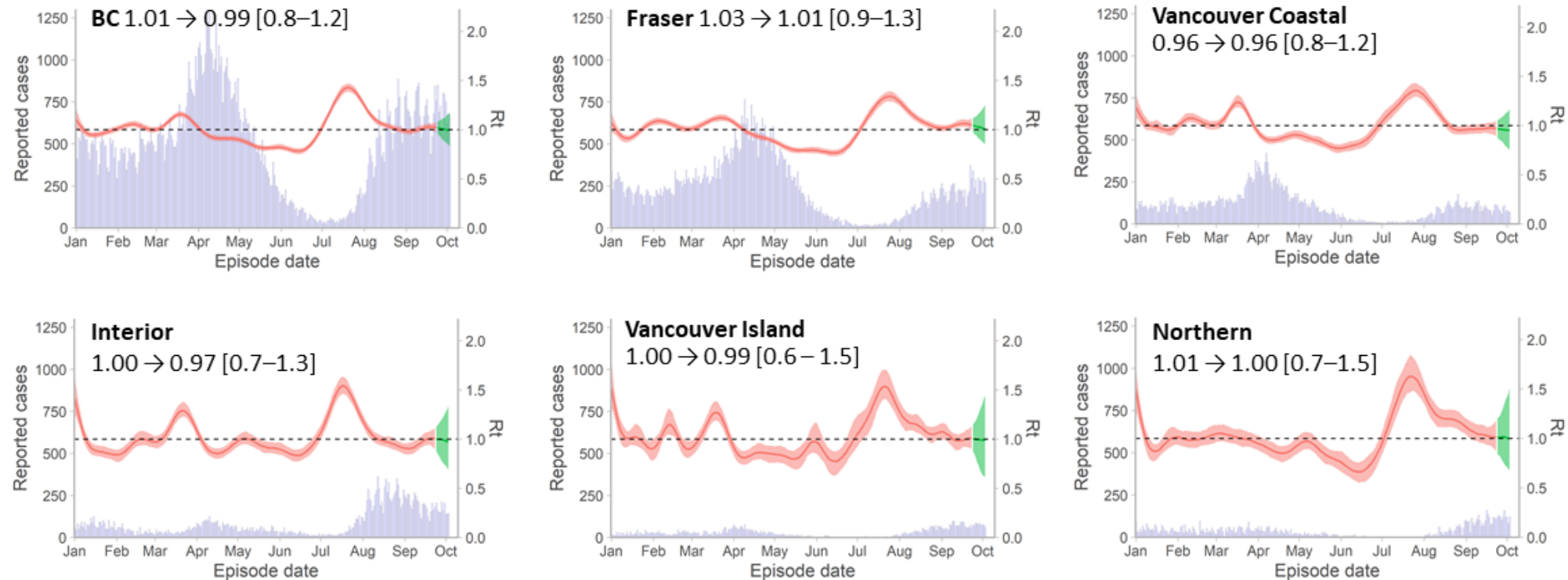
Time-series plots show weekly or bi-weekly viral signals from each wastewater plant (right y-axis), overlaid with rolling 7-day mean of daily new cases within wastewater catchment area (left y-axis). Plot title shows wastewater plant name, followed by approximate catchment area.

Modelling – Key messages

- Recent modeling indicates a stable period of cases with an R_t close to 1 in all regions.
- Short-term modelling indicates small increases in vaccination coverage can further decrease cases incidence and subsequent hospitalizations.
- Projected rates of hospitalizations are expected to remain at current or similar rates in most scenarios.
- Compared with no vaccination, modelling indicates that vaccination is providing a large amount of protection against hospitalizations and cases.
- Please note that model outputs are not predictions of what will happen, they are scenarios of what could happen under certain conditions. We present scenarios that are, in our judgement, appropriate to explore, given the context of public health in BC and the available epidemiological data.

Dynamic modeling: recent trends

Modelling indicates that R_t has remained near 1 in all regions. Estimates are shown for last week → this week, with 90% range of possible values given next to most recent estimate.



Solid line: median R_t , modeled using all reported cases up to Oct 3, 2021; Red band: 5%-95% credible interval; Green band: estimate based on partial data – each week, current estimates are updated with new data to provide a clearer understanding of the trend. Purple bars: all reported cases. Recent trend shown comparing median R_t estimate from (last week → this week; 5% - 95% credible interval). Only January 2021 onward shown here. Data source: BCCDC HA linelist.

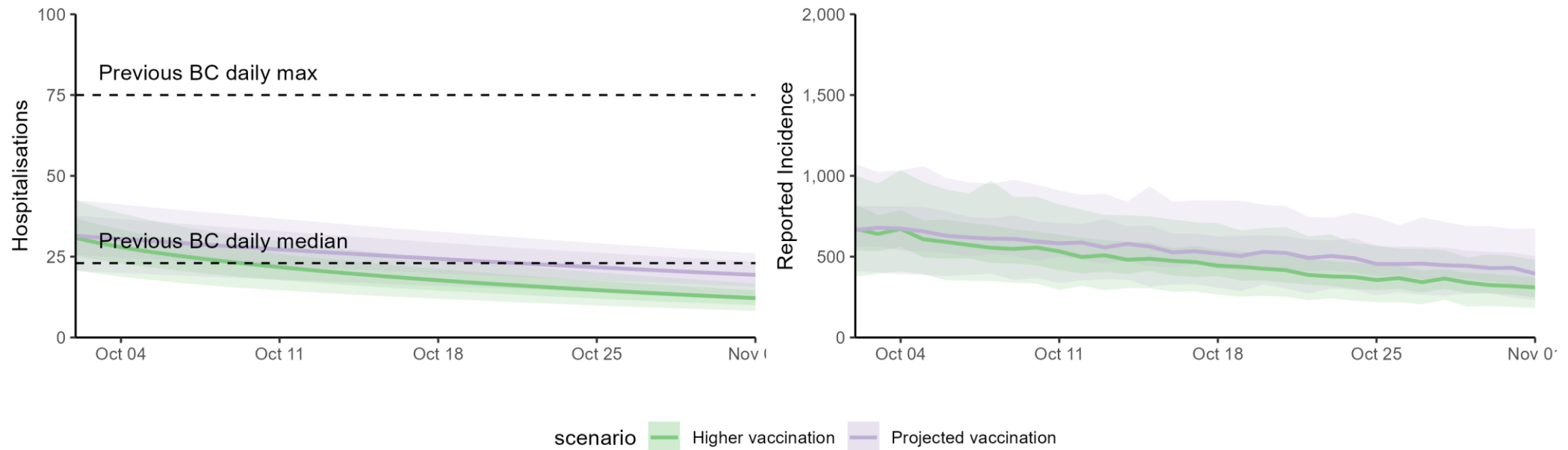
Modeling scenarios - overview

- All scenarios begin October 1st, 2021 with a one-month time horizon. Output is limited to short-term projections only because uncertainty increases greatly over time and it is unrealistic to assume no changes to policies or behaviour.
- Three transmission scenarios are shown based on most recent estimates and range of R_t for BC. A projection of the current vaccination rate is compared to a potential higher vaccination rate for each scenario. Importantly, *recent public health measures may further reduce transmission and decrease the likelihood of the upper range scenario*
- Model scenarios are based on a plausible range of vaccine effectiveness including reduction in risk of infection, reduction in risk of onward transmission if infected, and reduction in risk of hospitalization.
- It is assumed that all eligible and willing individuals will have completed their two-dose vaccination schedule and sufficient time has passed such that they are fully immunized.
- Reduction in infection due to vaccination is 80%, reduction in onward transmission ranges from 40-45%, and reduction in hospitalization ranges from 95-99%. Additionally, the increased severity of the delta variant ranges from 0-125%. Initial number of infections also varies over a plausible range. Reduction in reporting infection due to vaccination ranges from 80-95%. Vaccination parameters are comparable with other established models [\[1\]](#), [\[2\]](#), [\[3\]](#)
- Projected vaccination coverage scenarios were compared to where coverage in each age group is additionally increased by a level consistent with individual hesitancy derived from the COVID SPEAK survey, and an additional counterfactual scenario which considers if none of the population were vaccinated.

Scenario	12 - 17	18 - 24	25 - 34	35 - 44	45 - 54	55 - 64	65 - 74	> 75
Projected vaccination	84%	85%	88%	87%	87%	88%	91%	92%
Higher vaccination	87%	87%	88%	87%	89%	95%	98%	99%

Lower range scenario

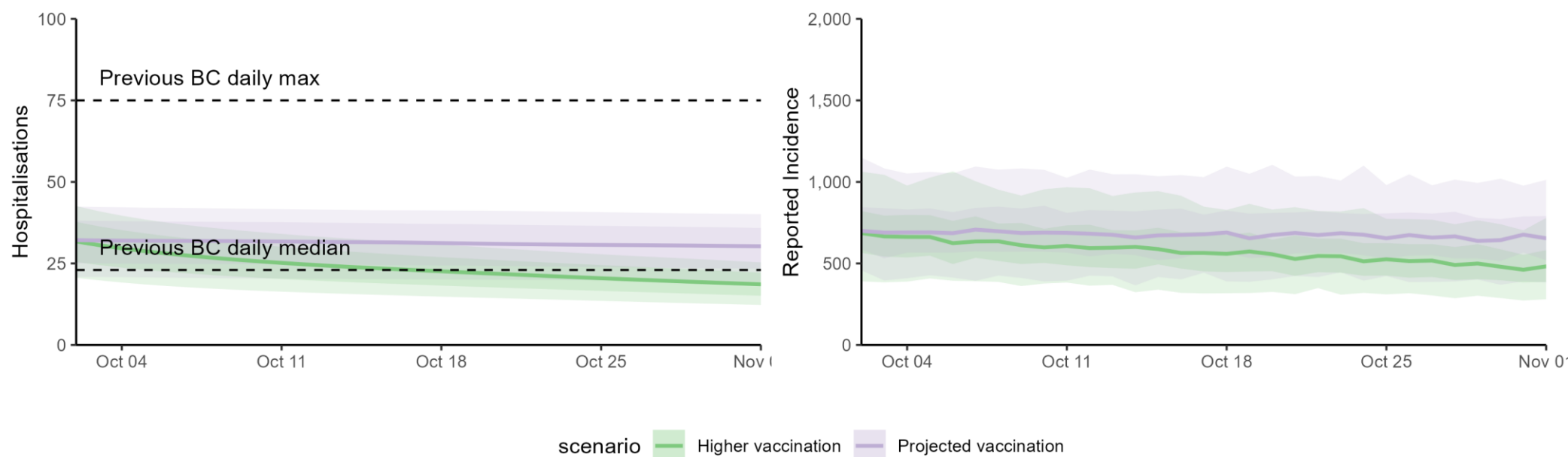
Scenario: lower transmission levels, equivalent to an initial $R_t = 0.84$ in the projected vaccination scenario and $R_t = 0.77$ in the potential (higher) vaccination scenario. Currently, R_t for BC is 0.99 (0.84 - 1.2).



Shading indicates uncertainty due to effectiveness of vaccination, showing 90% and 50% confidence intervals.

Mid-range scenario

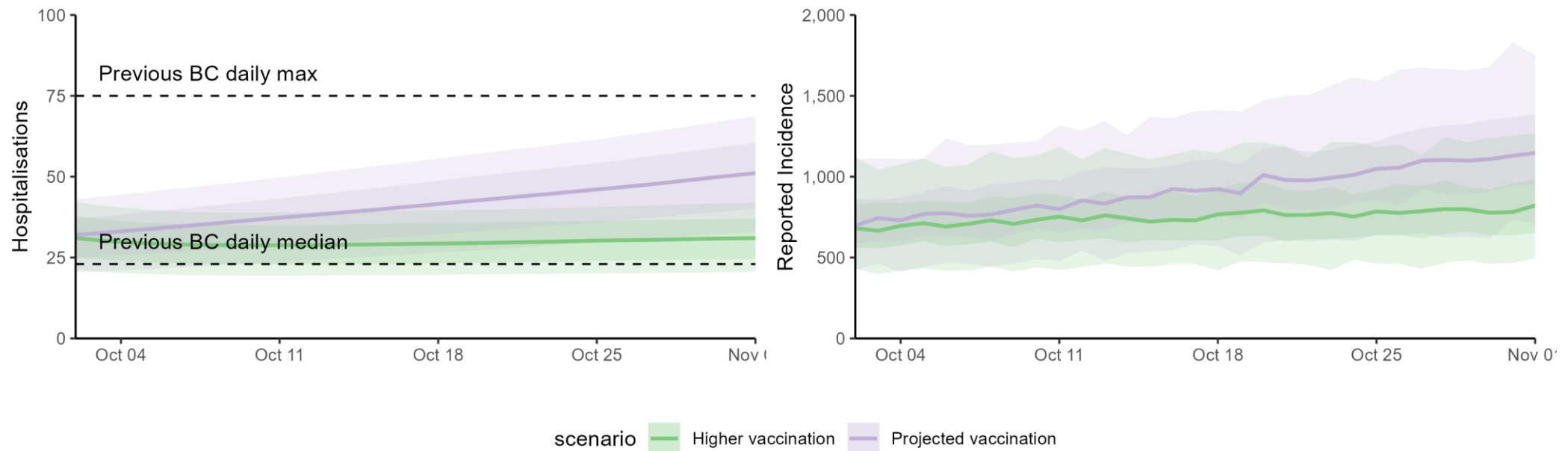
Scenario: moderate transmission levels, equivalent to an initial $R_t = 0.99$ in the projected vaccination scenario and $R_t = 0.91$ in the potential (higher) vaccination scenario. Currently, R_t for BC is 0.99 (0.84 - 1.2).



Shading indicates uncertainty due to effectiveness of vaccination, showing 90% and 50% confidence intervals.

Upper range scenario

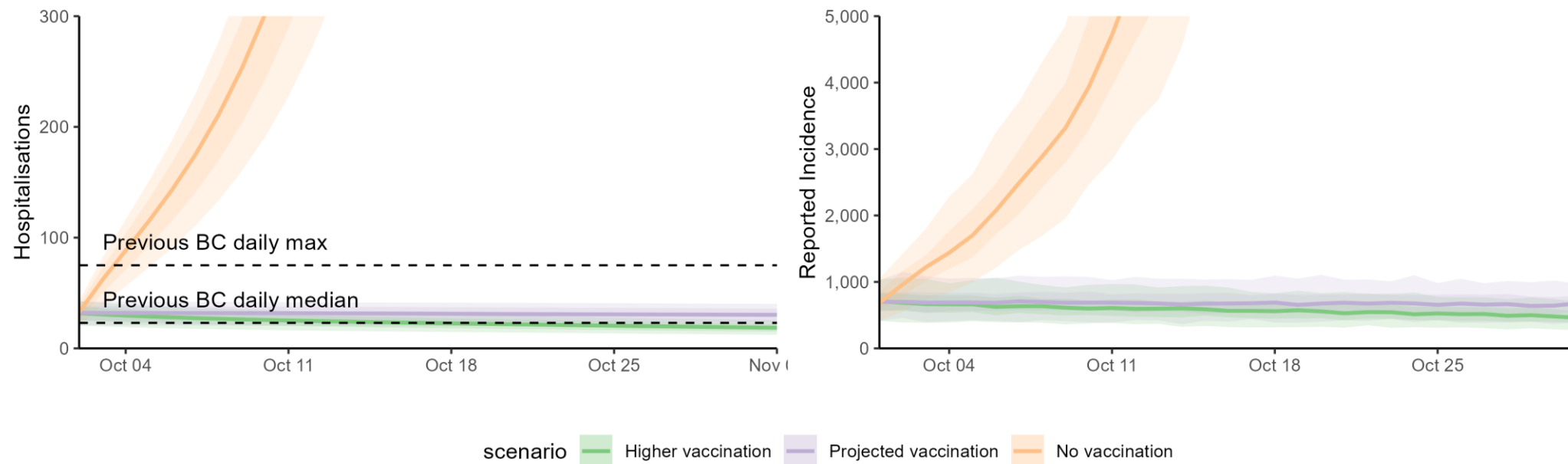
Scenario: moderate transmission levels, equivalent to an initial $R_t = 1.2$ in the projected vaccination scenario and $R_t = 1.1$ in the potential (higher) vaccination scenario. Currently, R_t for BC is 0.99 (0.84 - 1.2). **Note: scenarios do not include further public health measures that may be implemented to reduce transmission.**



Shading indicates uncertainty due to effectiveness of vaccination, showing 90% and 50% confidence intervals.

Mid-range scenario - comparison to no vaccine

Scenario: Comparing mid-range transmission scenario to a no-vaccination scenario (equivalent to an $R_t = 3.02$). **Note: scenarios do not include further public health measures that may be implemented to reduce transmission.**



Shading indicates uncertainty due to effectiveness of vaccination, showing 90% and 50% confidence intervals.

Additional Resources

- BCCDC COVID-19 Regional Surveillance Dashboard showing maps, vertical plots, and trends by LHA can be found [here](#)
- More BC COVID-19 data, including the latest Situation Report, maps, and BC COVID-19 public dashboard, can be found [here](#)
- For more information on variants of concern and whole genome sequencing, the latest report is posted [here](#)
- To put BC provincial, Health Authority, and HSDA trajectories into national and international context, see [BCCDC COVID-19 Epidemiology app](#)
- [COVID SPEAK 2020 Round 1 Survey results](#)
- Slides for previous public and modelling briefings by Dr. Bonnie Henry can be found [here](#)
- PHAC's COVID-19 Epidemiology update can be found [here](#)