

2023/24 Viral Respiratory Reporting Season Summary

Epidemiological weeks 35 – 17 (August 27, 2023 – April 27, 2024)

October 17, 2024

Acknowledgements

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Highlights

Changes in Surveillance and Reporting

- ***NEW*** One new wastewater site in Northern Health (Prince George) was added; there are now 12 wastewater sites across BC, representing all regional health authorities.
- ***NEW*** Viral loads for influenza A, influenza B, and respiratory syncytial virus (RSV) were added at all wastewater sites across BC.
- ***NEW*** A new dashboard was developed to monitor the proportion of emergency department visits for respiratory illness.
- ***NEW*** Nowcasting estimates for COVID-19 in BC were added to the Genomic Surveillance dashboard. These estimates are model-based projections of SARS-CoV-2 variant distribution.

SARS-CoV-2 / COVID-19

SARS-CoV-2 and COVID-19 indicators fluctuated throughout the 2023/24 respiratory reporting season. An increase in SARS-CoV-2/COVID-19 activity started in late August 2023 and peaked in late September 2023. A second peak in activity was observed in most wastewater treatment plants in January/February 2024. Overall, COVID-19 activity remained lower than the previous season and did not show a clear pattern of seasonality.

Influenza

Influenza A activity began to increase in early November 2023 (similar to pre-pandemic historical activity) with a prominent peak at the end of December 2023. Influenza A(H1N1) represented 83% of influenza A samples with a known subtype. Influenza B was detected starting in late January 2024 and peaked in mid-March 2024. There was an increase in influenza B activity compared to the 2022/23 reporting season.

Four pediatric influenza deaths were reported this season. In all cases, influenza A (H1N1) was detected. All of these children had either a co-infection or secondary bacterial infection.

Respiratory Syncytial Virus

Respiratory syncytial virus (RSV) activity among children began to increase in October 2023 and peaked in December 2023. Among adults, RSV activity began to increase in November 2023 and peaked in January 2024. Overall, there was less RSV activity in 2023/24 compared to 2022/23.

Vaccines

Seasonal influenza and COVID-19 vaccinations were recommended and offered free of charge to all those in BC aged 6 months and older. As of April 7, 2024, over 1.5 million influenza vaccine doses were administered by public health clinics and community pharmacists (as recorded in the ImmsBC system). From September 25, 2023 to March 31, 2024, 27% of the BC population aged 6 months and older received a new dose of XBB.1.5 COVID-19 vaccine(s), including 59% of individuals aged 80 years and older.

Introduction

The BC Centre for Disease Control (BCCDC) conducts routine surveillance to monitor key respiratory virus trends in British Columbia (BC). In the 2023/24 respiratory reporting season from August 27, 2023 - April 27, 2024 (epidemiological weeks 35 to 17) data were reported publicly weekly on the BCCDC [website](#).

Information was presented and summarized for indicators related to:

- wastewater
- laboratory diagnostic testing
- laboratory genomic testing
- severe outcomes (hospitalization, critical care admissions and deaths)
- facility outbreaks
- healthcare visits (primary care and emergency department visits), and
- vaccination coverage

Information gathered across the provincial surveillance system focused on respiratory viruses that circulated with the highest prevalence in the province (i.e., influenza, respiratory syncytial virus (RSV), and SARS-CoV-2) and was used to inform public reporting and associated public health action. In addition, four special reports were developed during the reporting season.

- [Respiratory Surveillance Bulletin: Southern Hemisphere 2023](#)
- [Influenza Strain Characterization in Preparation for the 2023/24 Influenza Season](#)
- [Enterovirus-Fall 2023 Surveillance Bulletin](#)
- [Influenza Strain Characterization: update for the 2023/24 influenza season](#)

SARS-COV-2 / COVID-19

SARS-CoV-2 / COVID-19 activity was lower in the 2023/24 viral respiratory reporting season compared to previous seasons and did not show a clear trend of seasonality. Wastewater levels, laboratory detections, severe outcomes, and facility outbreaks peaked at the end of September 2023. A second peak in most wastewater treatment plants was seen in January 2024, but this was not associated with a similar peak in clinical indicators (e.g., detections, hospitalizations, and deaths).

Wastewater

SARS-CoV-2 viral loads began increasing at most wastewater treatment plants in mid-August 2023 (Figure 1). Although viral loads fluctuated by site and across the season, most sites observed an initial peak in October/November 2023, followed by a second peak in January/February 2024. Overall, SARS-CoV-2 wastewater viral loads were lower during the 2023/24 reporting season compared to loads observed at the same sites in 2022/23.

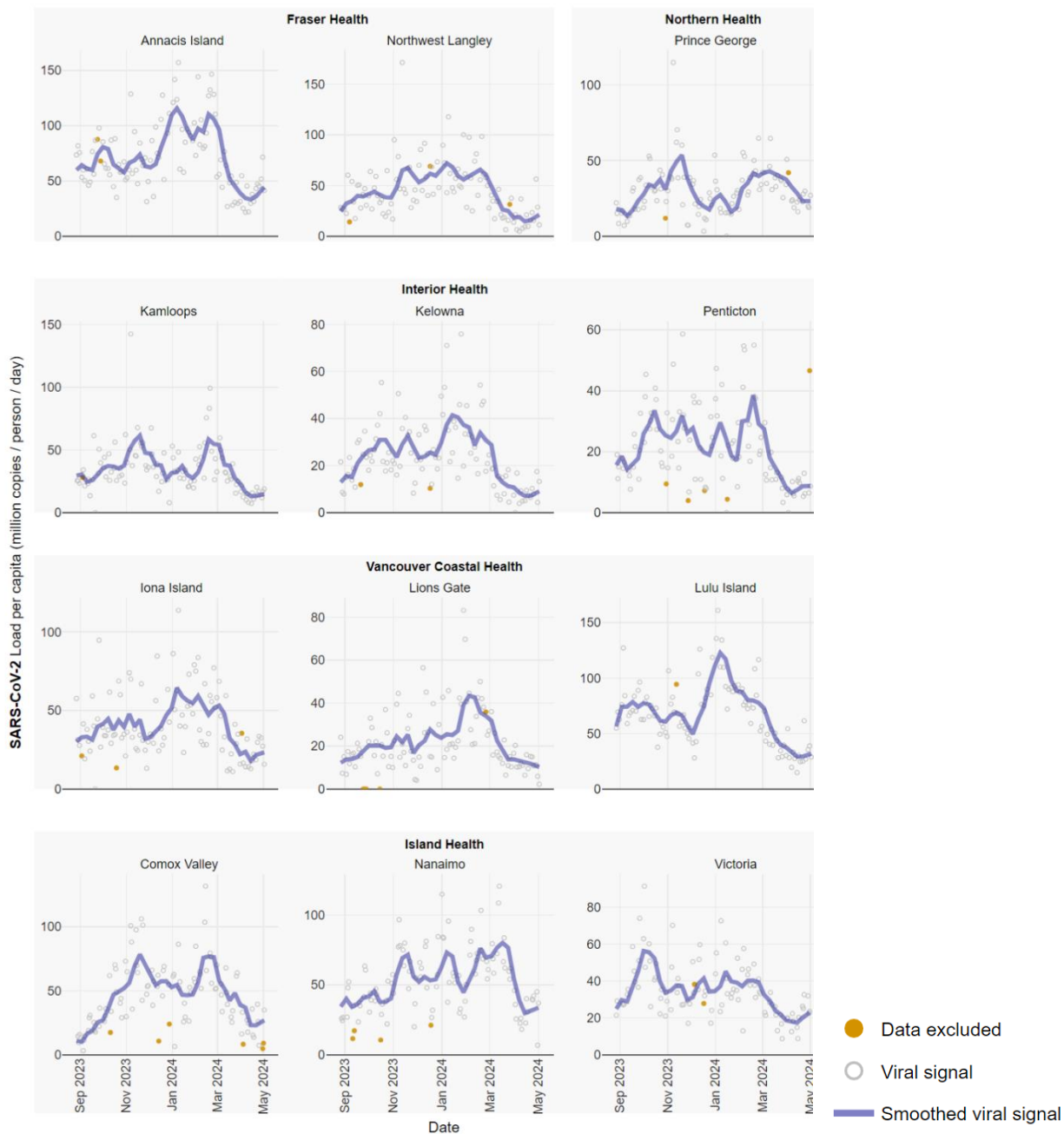


Figure 1. SARS-CoV-2 load per capita in BC wastewater sites across the 2023/24 respiratory virus season.

Pathogen Characterization

Overall, SARS-CoV-2 detections and percent positivity started to increase in mid-August 2023, following a period of low activity in the summer (Figure 2). In epi-week 39 (September 24-30, 2023), peaks in positive detections (n=893) and percent positivity (23%) were observed, followed by decreases in these indicators to mid-December 2023. From January to April 2024, the number of detections per week fluctuated at moderate levels, with percent positivity around 12%.

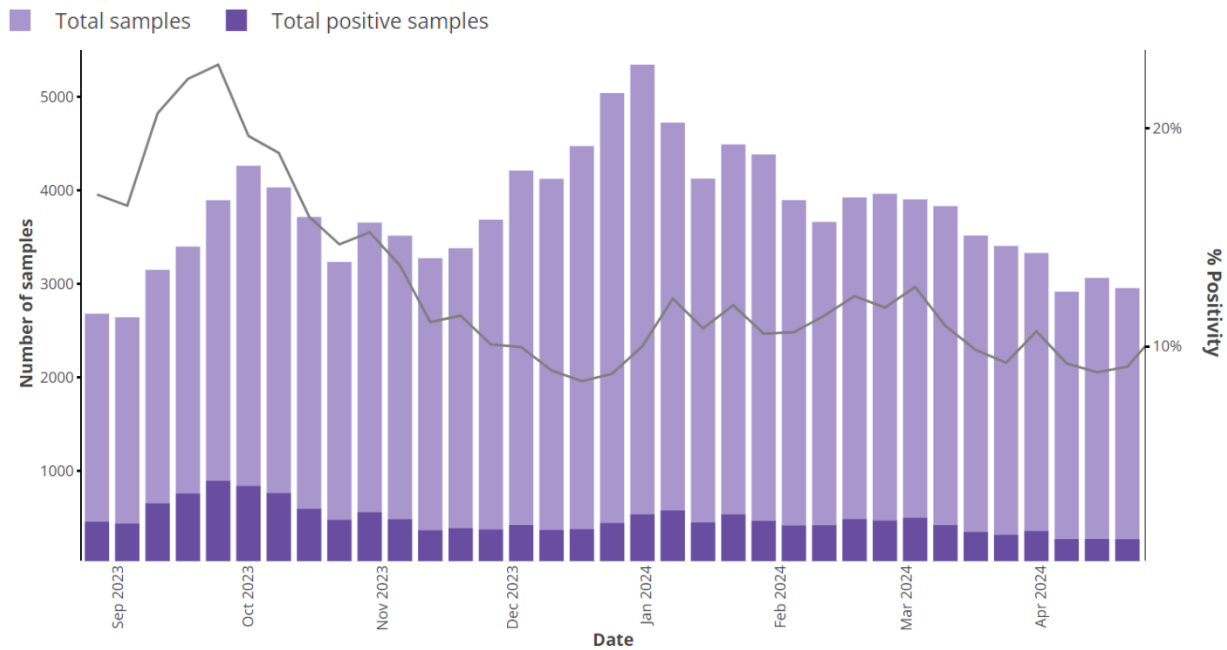
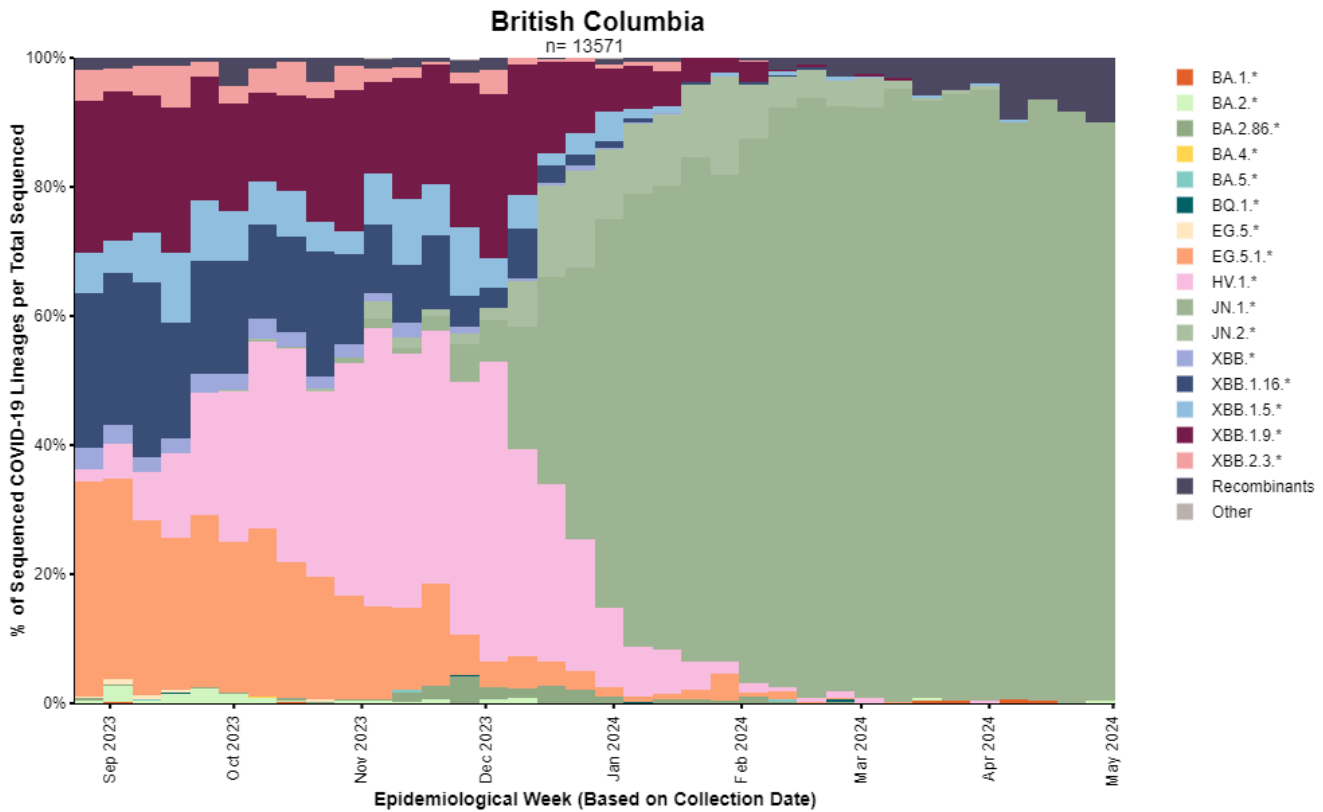


Figure 2. Weekly number of positive detections (dark purple), samples (light purple) and percent positivity (grey line) for SARS-CoV-2 in BC during the 2023/24 reporting season.

Genomic Surveillance

The 2023/24 reporting season was marked by the continued dominance of several SARS-CoV-2 Omicron sublineages (Figure 3). Early in the reporting season there was a co-dominance of EG.5.*, and recombinants XBB.1.9.*, XBB.1.16.*. From October 2023 to December 2023, there was a surge of HV.1.*, which was subsequently outcompeted by the predominant JN.1.* from January 2024 until the end of the reporting season. JN.1.* is made up of a large number of sublineages, including the following which were most prevalent during this period: JN.1, JN.1.4, JN.1.8.1, and JN.1.1.



*For sublineage information refer to the **Lineage Table** below.
Pangolin version: 4.3.1, Usher version: 0.6.2, Pango version: 1.28.*

Figure 3. Longitudinal SARS-CoV-2 lineage abundance in BC during the 2023/24 reporting season.

Severe Outcomes

Severe outcomes for COVID-19 started increasing in the fall, following low activity in the summer (Figure 4). Hospital admissions peaked at 341 in epi-week 40 (October 1-7), followed by a decline in late October. The majority (84%) of COVID-19 hospital admissions were among individuals greater than 60 years old.

Critical care admissions among individuals testing positive for SARS-CoV-2 were low and stable throughout the reporting season.

To monitor deaths related to COVID-19, we count individuals who died within 30 days of a positive laboratory test for SARS-CoV-2. In addition, we retrospectively use information on COVID-19 recorded as the underlying cause of death to get a sense of the proportion of those individuals who died with COVID-19 as the underlying factor. Deaths within 30 days of a positive SARS-CoV-2 test peaked in epi-week 42 (October 15-21). There were 18% fewer deaths reported in 2023/24 compared to the previous

season and 93% of deaths were among individuals aged ≥ 60 years. COVID-19 was the underlying cause of death in 39% of these individuals.

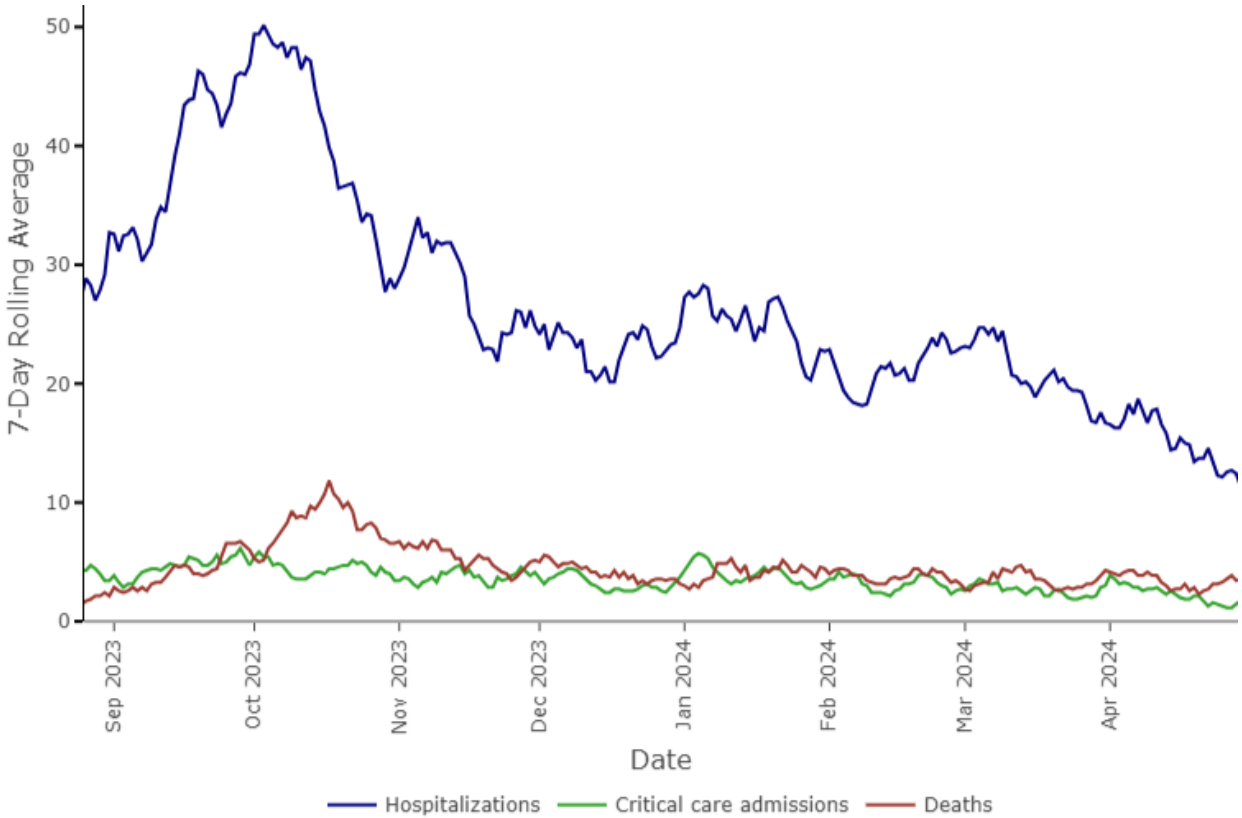


Figure 4. COVID-19 hospital admissions, critical care admissions, and deaths in BC during the 2023/24 reporting season.

Influenza

The 2023/24 viral respiratory reporting season was characterized by a predominately influenza A(H1) peak in the winter and an influenza B peak in early spring that was higher than levels seen in prior years post-COVID-19.

Wastewater

Influenza A viral loads began to increase in November 2023, with most sites having a single prominent peak in late December/early-January. This was followed by decreasing viral loads, with low levels at most wastewater sites by late April. Influenza B viral loads started increasing in late January and February, with most peak levels observed in late March and early-April (Figures 5-6).

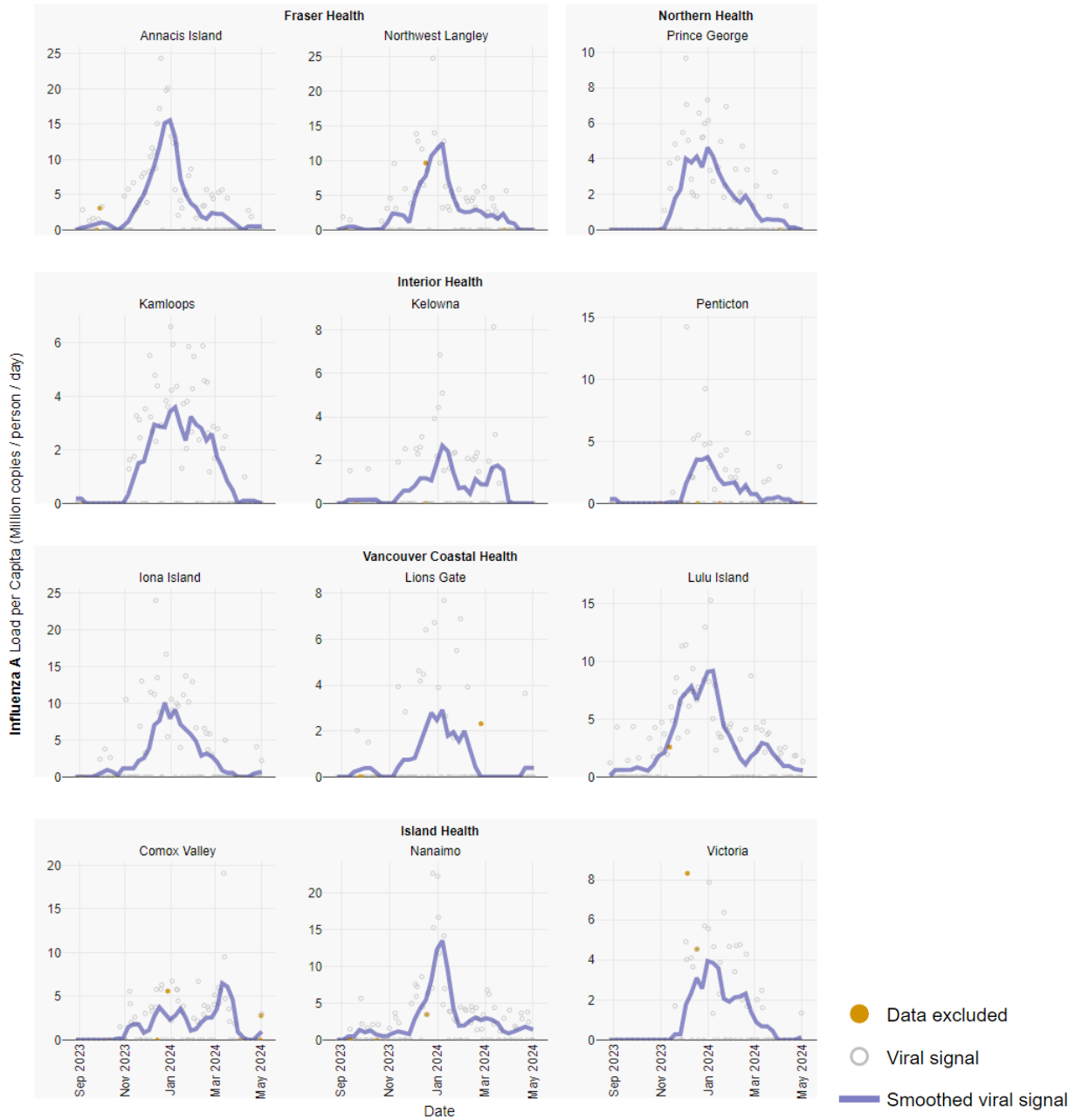


Figure 5. Influenza A viral load per capita in BC wastewater sites across the 2023/24 respiratory season.

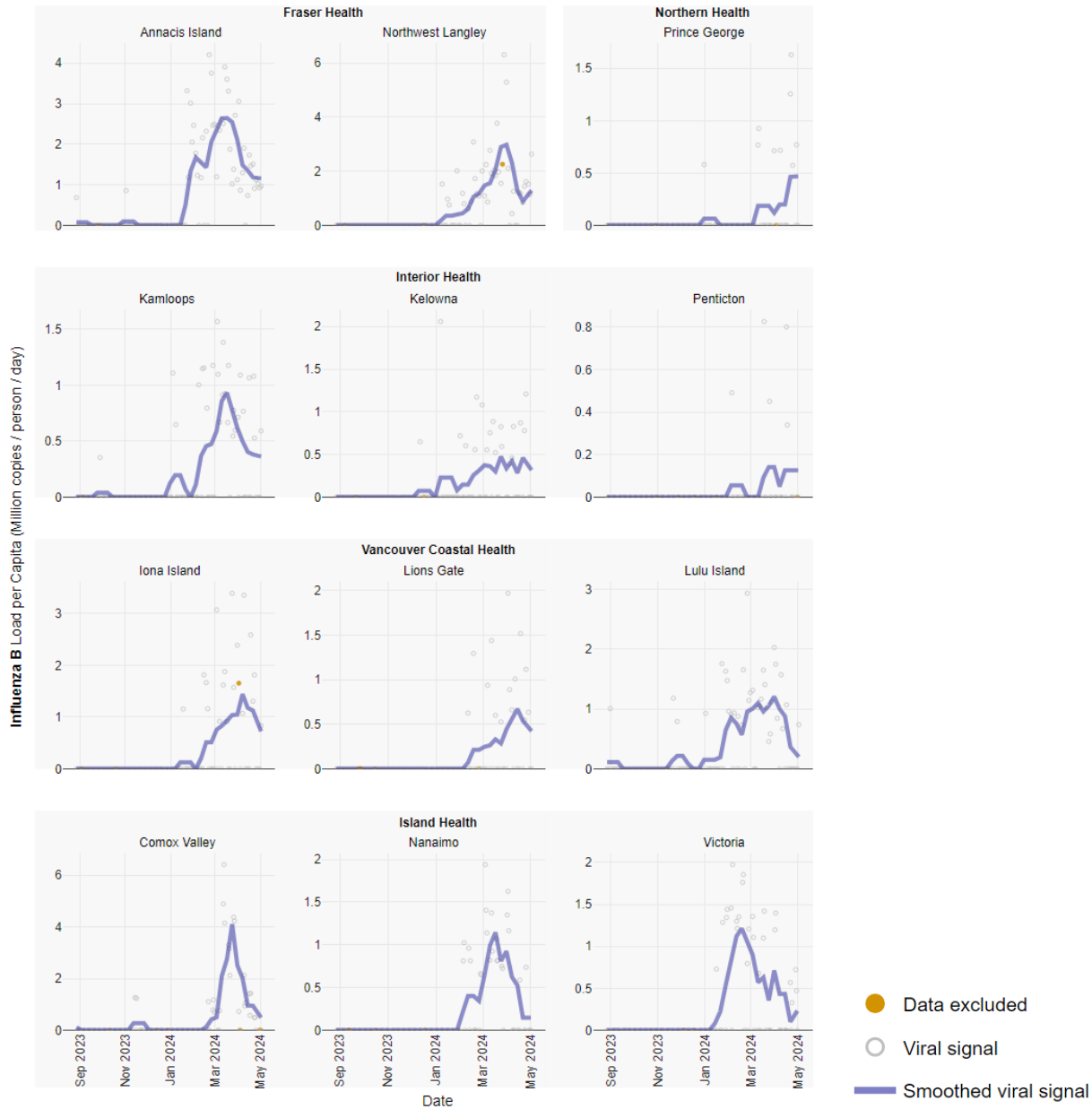


Figure 6. Influenza B viral load per capita in BC wastewater sites in the 2023/24 reporting season.

Pathogen Characterization

Influenza A detections and percent positivity started increasing in early November and peaked at 1036 positive samples and 20% positivity in epi-week 52 (December 24-30, 2023) decreasing to low activity in the spring. Influenza A(H1), accounted for 83% of influenza A virus samples with a known subtype, while influenza A(H3) accounted for 17%. The 2023/24 season peaked about one month later than the 2022/23 season, more like pre-pandemic influenza seasons (2014/15 to 2018/19). Relative to the 2022/23 season, influenza A activity did not have as high of a peak, but activity was sustained for

longer. Influenza B detections started increasing in late January, with a peak of 153 positive samples in epi-week 11 (March 10-16), followed by moderate levels of detections in April. Test positivity also started increasing in epi-week 5 (January 28 – February 3) and peaked at 3.8% in epi-week 11, before decreasing to 2.8% in epi-week 17 (April 21-27). Influenza B virus detections were higher than the 2022/23 reporting season (Figure 7).

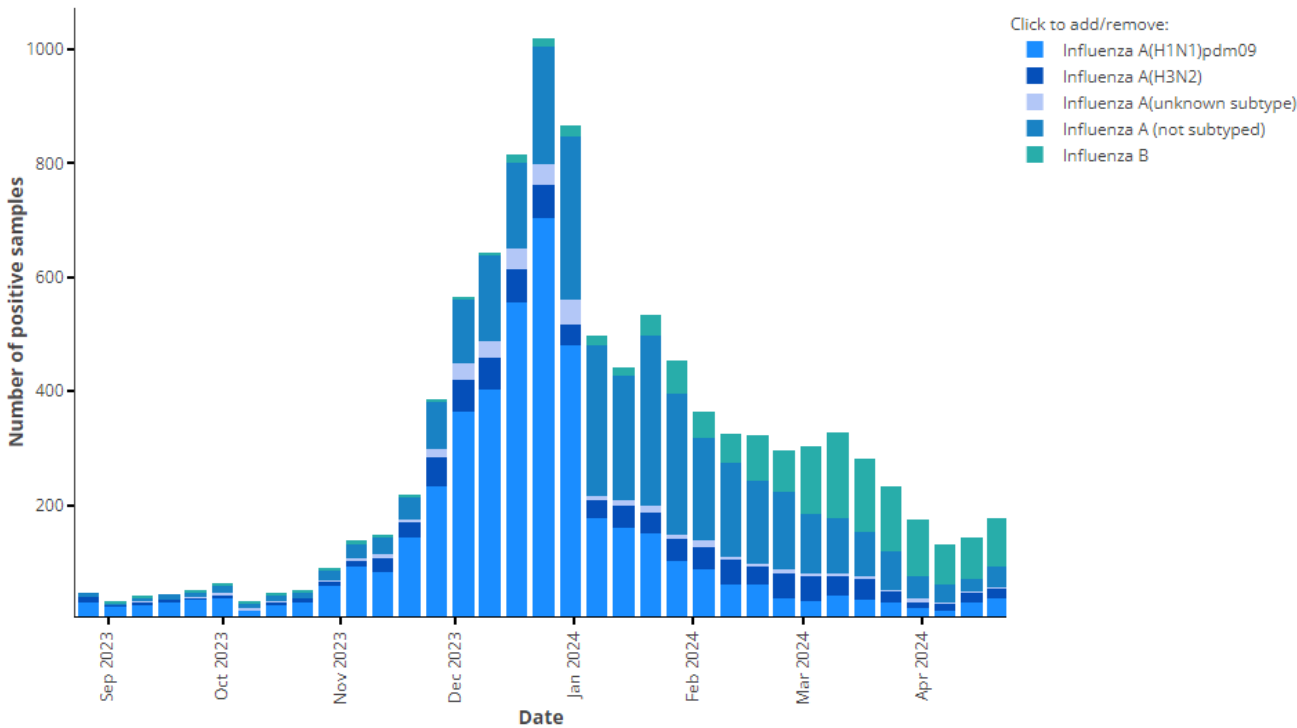


Figure 7. Number of positive laboratory samples for influenza A and B in BC during the 2023/24 reporting season.

Severe Outcomes

This season, there were 4 influenza A(H1) associated pediatric deaths reported to the BCCDC. One death was in a child aged < 5 years, and three in children aged 5-9 years. Three of the children had coinfection with Group A streptococcus.

Facility Outbreaks

There were 79 influenza outbreaks reported in LTCFs and 15 reported in acute care facilities this season. The highest number of facility outbreaks was reported in epi-week 52 (December 24-30, 2023). Outbreak activity was sustained later in the season compared to 2022/23, but overall, the number of outbreaks was comparable to prior years (2015/16 to 2018/19 and 2022/23 seasons). All facility outbreaks were influenza A, except for one with influenza B. Among LTCF influenza outbreaks with a known subtype, 42 were attributed to A(H1) and 9 to A(H3).

Respiratory Syncytial Virus

In the 2023/24 reporting season, there was a peak of respiratory syncytial virus (RSV) activity in late December, overlapping with influenza A activity.

Wastewater

RSV viral load began increasing at most sites in late October and early November with peak activity observed in late December and early January (Figure 8). This was followed by decreasing viral loads, with sporadic signals observed by late April. Overall, RSV viral loads were lower during the 2023/24 season compared to the previous season.

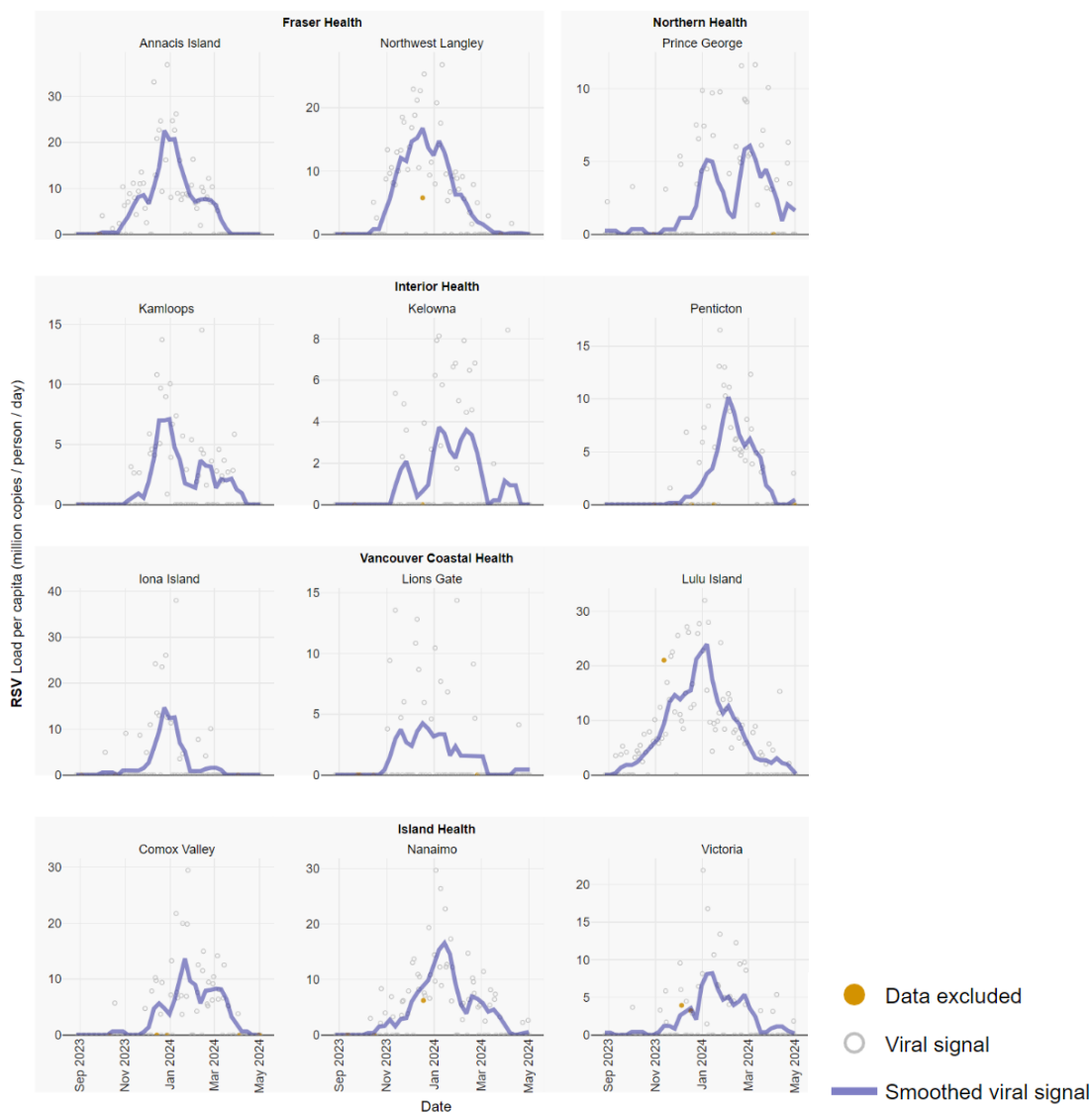


Figure 8. Respiratory syncytial virus load per capita in BC wastewater sites in the 2023/24 reporting season.

Pathogen Characterization

RSV detections and percent positivity increased in late October and peaked in epi-week 1 (December 31, 2023 – January 6, 2024) (n=538, 10%), decreasing to low activity in late April (Figure 9). The peak number of RSV detections was lower than the previous season; however, the timing of the peaks was similar.

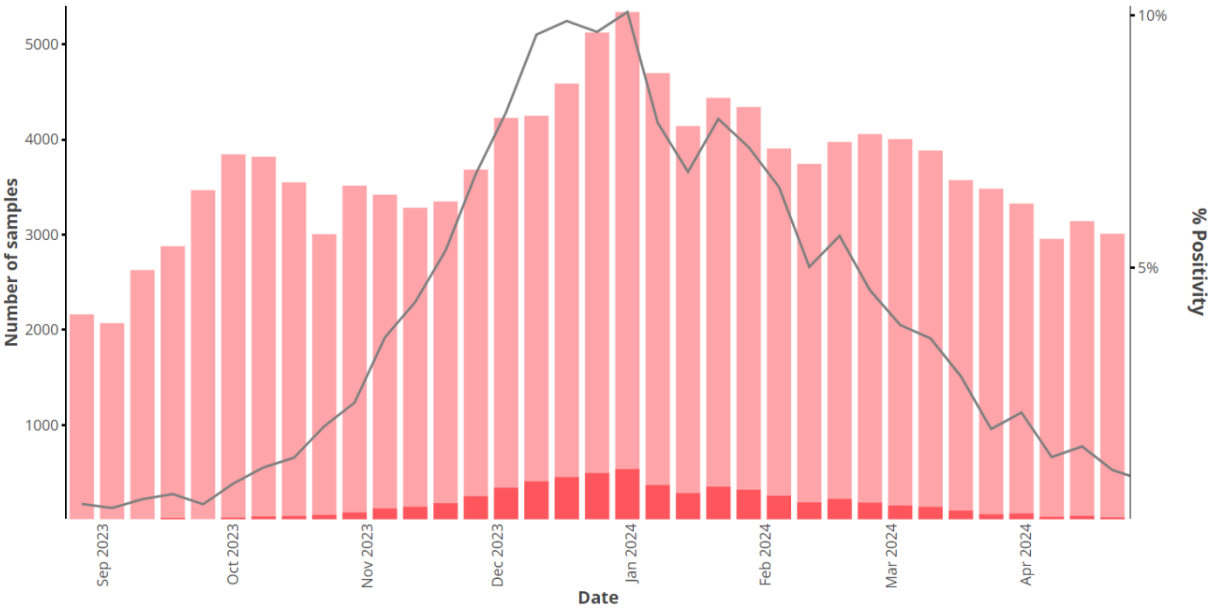


Figure 9. Weekly number of positive detections, samples and percent positivity for respiratory syncytial virus in BC during the 2023/24 reporting season.

Health Care Visits for Respiratory Illness

During the 2023/24 viral respiratory reporting season, the proportion of primary care visits and emergency department visits for respiratory illness were reported. These are called syndromic indicators because they rely on diagnostic codes from family practice billing codes and presenting complaint codes in emergency departments, both of which are based primarily on symptoms and not confirmed by laboratory testing at the time of record. This season there was a small peak in September coinciding with COVID-19 indicators, and a more prominent peak in late December coinciding with influenza A and RSV peaks.

Primary Care Visits for Respiratory Illness

The proportion of visits to primary care for symptoms of respiratory illness peaked in late December for both adults and children (Figure 10).

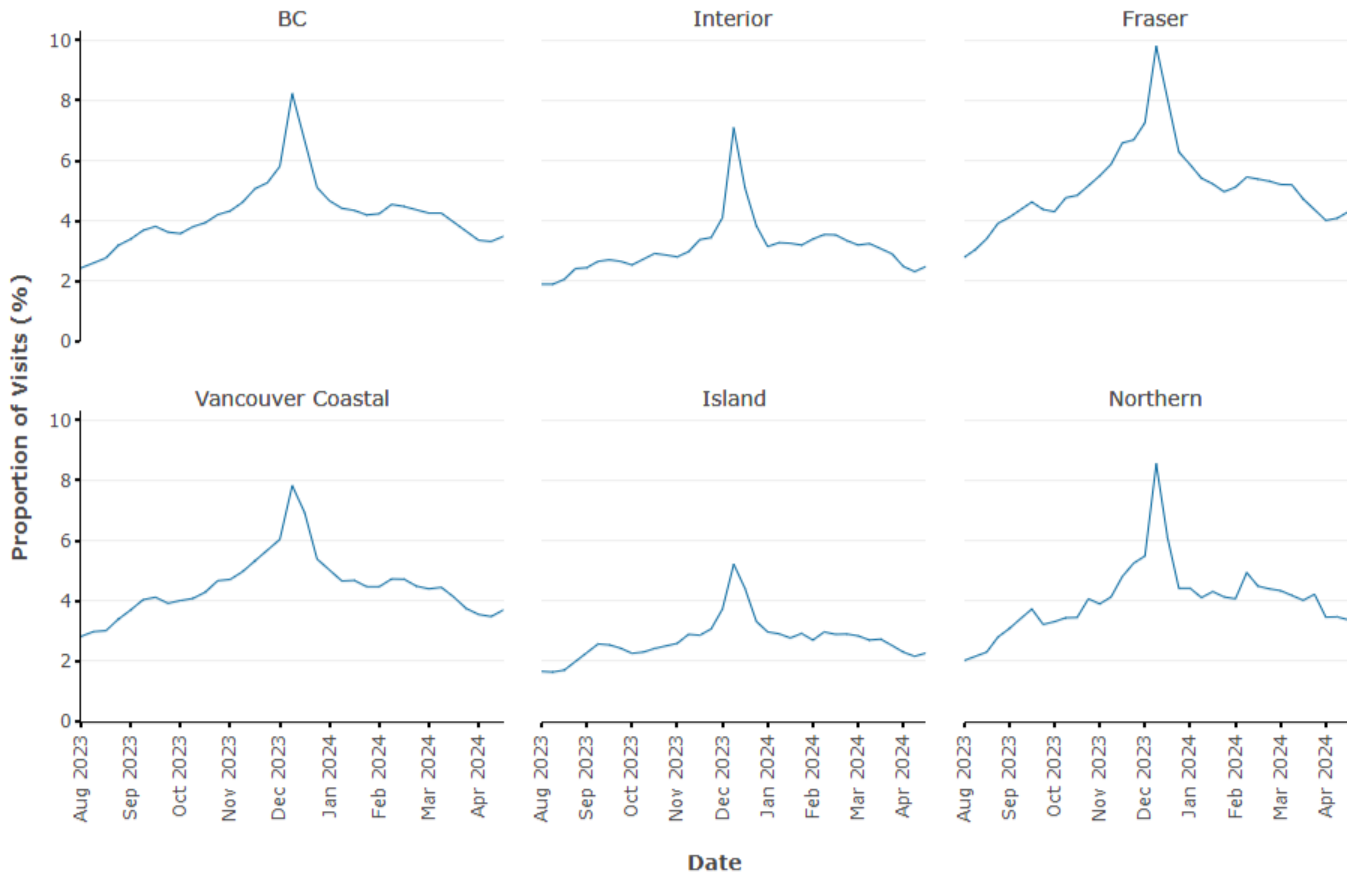


Figure 10. Proportion of visits to primary care for respiratory illness related symptoms from August 27 – April 27 (epi-week 35 to epi-week 17) of the 2023/24 reporting season by health authority.

Emergency Department Visits for Respiratory Illness

The proportion of emergency department visits for symptoms related to respiratory illness peaked in late December for both adults and children, approximately a month later than the previous reporting season (Figure 11).

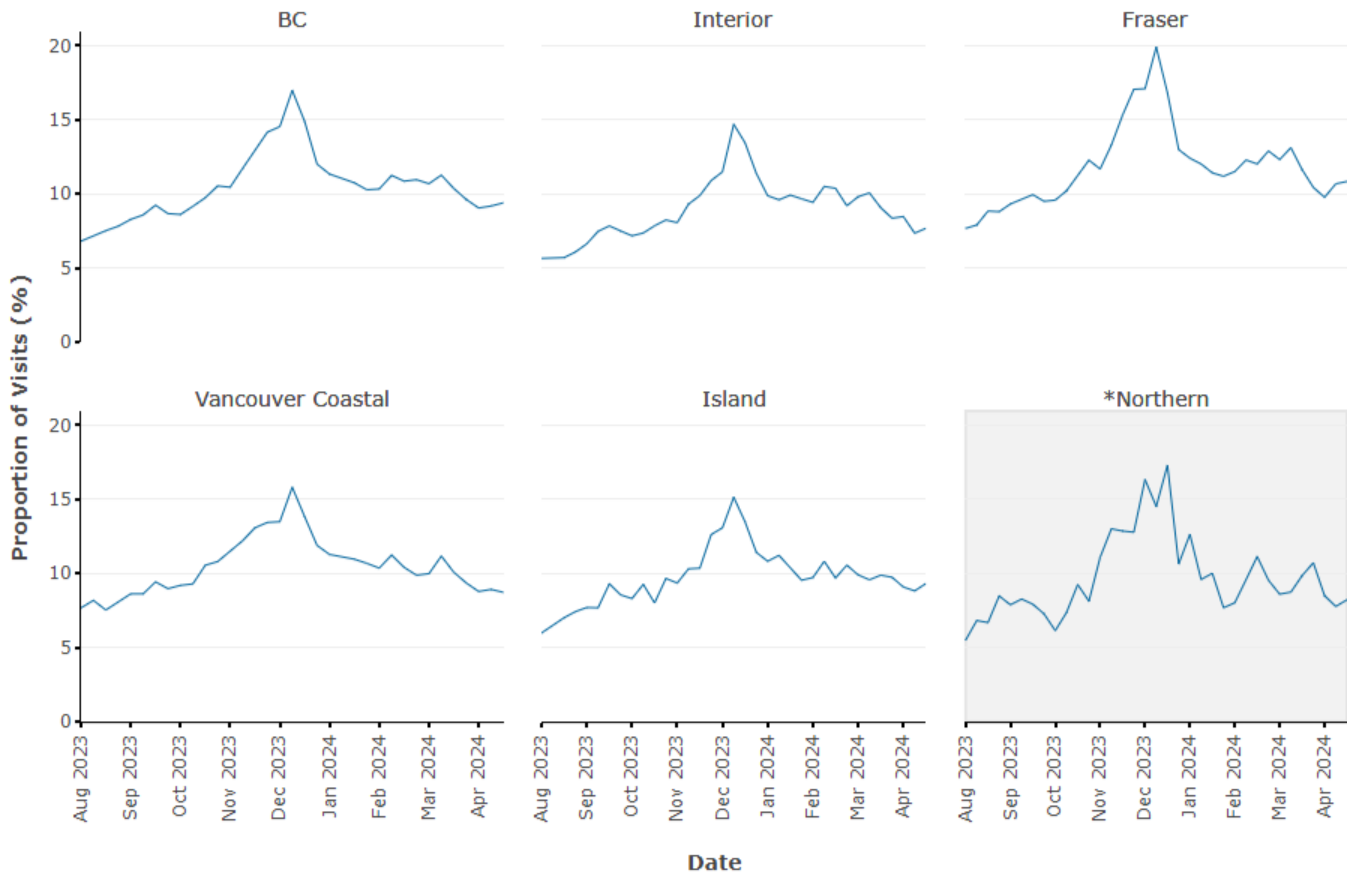


Figure 11. Proportion of visits to the emergency department for respiratory illness related symptoms from August 27, 2023 – April 27, 2024 (epi-week 35 to epi-week 17) of the 2023/24 reporting season by health authority. Grey shaded: Northern Health includes both emergency department and acute care visits at this time.

Children and Youth (< 19 years)

Viral respiratory patterns were different among children and youth compared to adults.

Among tested samples, SARS-CoV-2 detections were low in children and youth. In contrast, enterovirus/rhinovirus was more commonly detected in children and youth and only minimally detected in adults (Figure 12). RSV detections started to increase and peak about one month earlier (October/December) in children and youth compared to adults (November/January). Influenza A detections increased and peaked at similar times in children and youth and adults. For children and youth, influenza A and RSV had a similar burden, whereas in adults, influenza A detections were much more common than RSV. Influenza B started increasing at similar times across age groups, but

detections were higher in children and youth. Among the other viruses that we monitor, there were a larger number of positive samples in children and youth for adenovirus, human metapneumovirus, parainfluenza and seasonal human coronavirus (Figure 13).

As expected, given fewer competing chronic and acute conditions in children, the proportion of emergency department and primary visits for respiratory illness among children and youth was higher than in adults. The proportion of visits for children peaked approximately one month later than the previous reporting season.

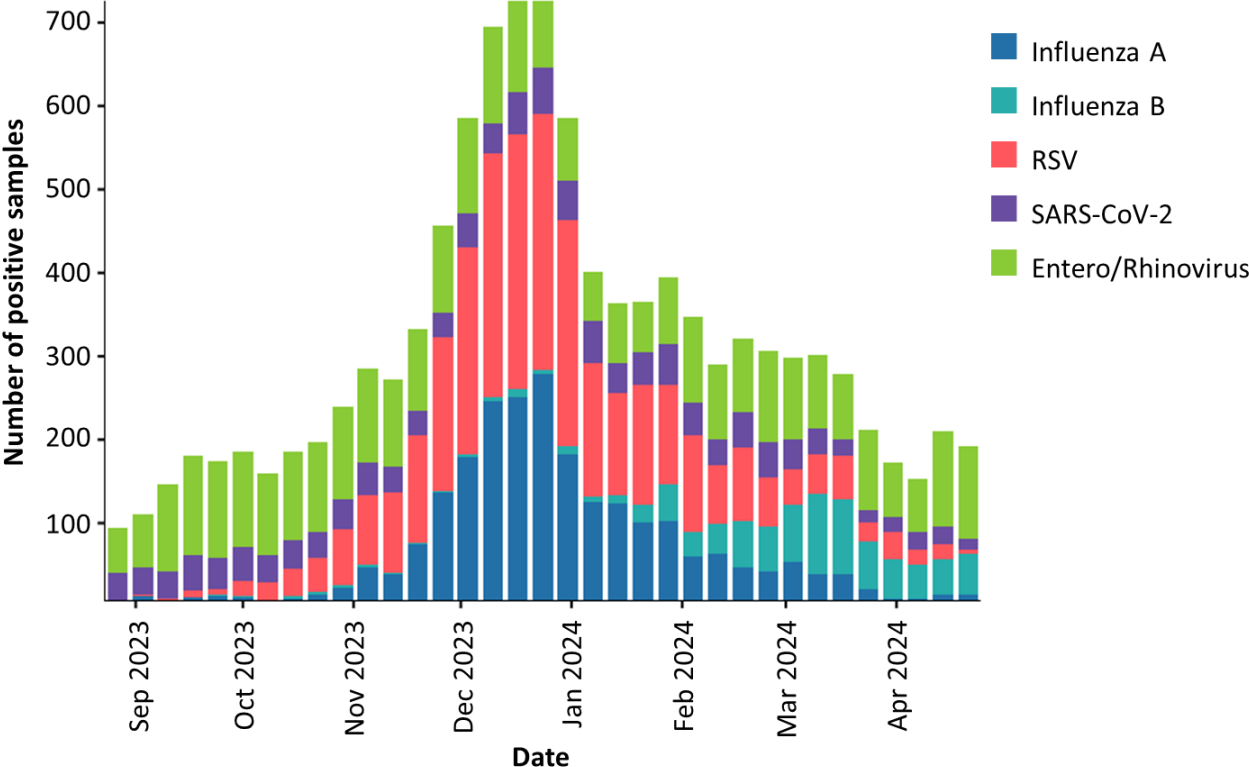


Figure 12. Number of positive laboratory samples among children and youth (age <19 years) for entero/rhinovirus, SARS-CoV-2, respiratory syncytial virus, influenza A and B in BC during the 2023/24 reporting season.

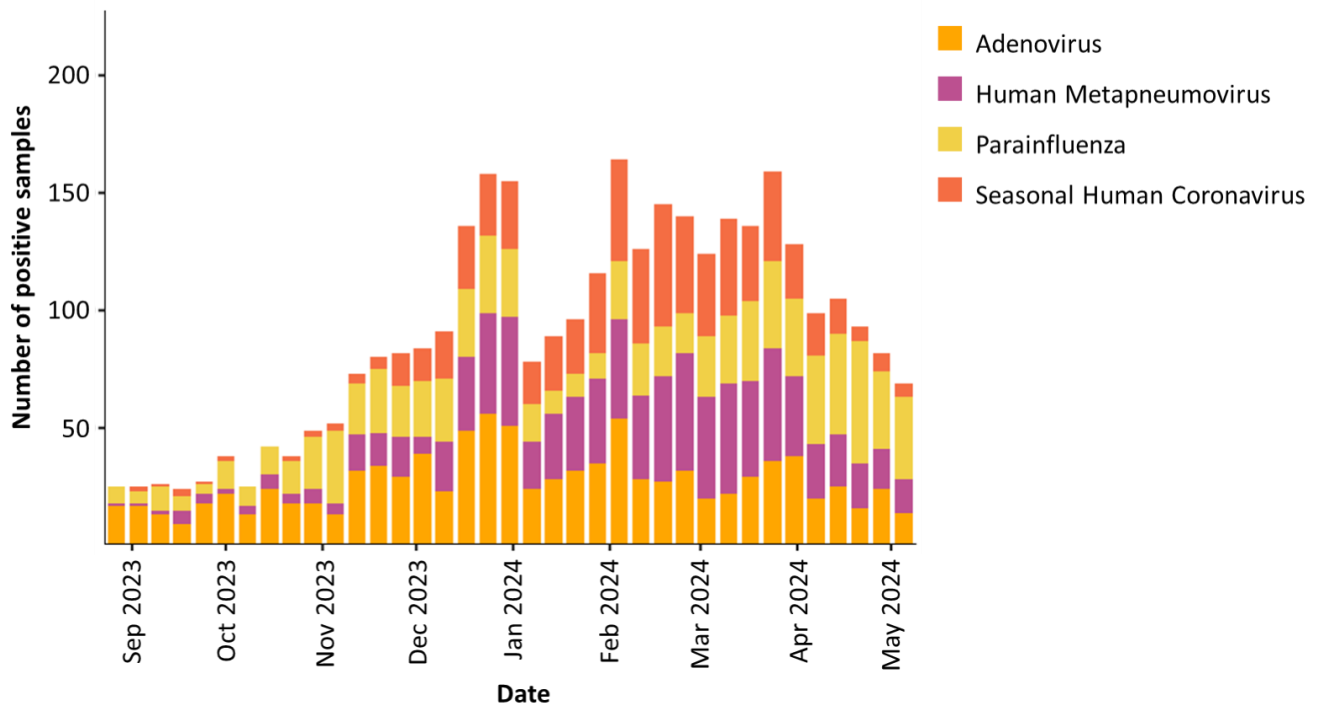


Figure 13. Number of positive laboratory samples among children and youth (age <19 years) for adenovirus, human metapneumovirus, parainfluenza and seasonal human coronavirus in BC during the 2023/24 reporting season.

Vaccines

Influenza

Seasonal influenza vaccination was offered free of charge to all residents of BC older than 6 months between October 2023 and April 2024. As of April 7, 2024, over 1.5 million influenza vaccine doses were administered by public health clinics and community pharmacists (as recorded in the ImmsBC system). Note that not all influenza vaccines administered in BC are captured in the ImmsBC system as it is not used by family physicians and other immunizers.

COVID-19

COVID-19 vaccination has been offered free of charge to those in BC aged 6 months and older. Since fall 2023, everyone 6 months and older has been recommended to get at least one dose of the XBB.1.5 COVID-19 vaccine. For more information on COVID-19 vaccines, see [here](#).

From September 25, 2023, to March 31, 2024, 27% of the general BC population aged 6 months and older received a new dose of COVID-19 vaccine(s). This includes 59% of individuals aged 80 years and above. During this period, 45% of individuals who are immunocompromised (severe or moderate immunosuppression from conditions such as haematological malignancies on active treatment or solid organ transplantation) and 40% of individuals who are not immunocompromised but considered at high risk of complications from COVID-19, received an additional vaccine dose. For more information, visit the [archived BCCDC Fall 2023 COVID-19 Campaign Vaccination Coverage dashboard](#).

Vaccine effectiveness estimates

Estimates by the BCCDC-led [Canadian Sentinel Practitioner Surveillance Network \(SPSN\)](#) indicate that between November 2023 and May 2024, the 2023/24 seasonal influenza vaccine reduced the risk of medically-attended illness due to influenza by about half overall in vaccinated compared to unvaccinated individuals: by about half for A(H1N1)pdm09 viruses, one-third for A(H3N2) and nearly two-thirds for influenza B. The Canadian SPSN further reported that the Omicron XBB.1.5 vaccine reduced the risk of medically-attended COVID-19 by about half overall (DM Skowronski, personal communication, July 16, 2024). Further details including clade- and period-specific variation awaits peer-reviewed publication of end-of-season estimates (pending). Earlier mid-season estimates of the Canadian SPSN, inclusive of influenza and COVID-19, have been published [here](#); historic estimates of the SPSN are available [here](#).

Resources

Data Notes and Definitions

Please refer to the Supplementary Information section of each dashboard for details.

- [Viral Respiratory Outcomes](#)
- [Viral Pathogen Characterization](#)
- [Wastewater Surveillance](#)
- [Health Care Visits for Respiratory Illness](#)
- [Facility Outbreaks](#)
- [Genomic Surveillance](#)

Provincial

- [Respiratory Virus Data](#), BC Centre for Disease Control
- [Emerging Respiratory Viruses](#), BC Centre for Disease Control
- [BC COVID-19 Resources](#), BC Centre for Disease Control
- [COVID-19 Vaccination Coverage](#), BC Centre for Disease Control
- [Influenza Sentinel Practitioner Surveillance Network \(SPSN\)](#), BC Centre for Disease Control

National

- [Coronavirus disease \(COVID-19\)](#), Public Health Agency of Canada
- [FluWatch Surveillance](#), Public Health Agency of Canada
- [Respiratory Virus Detections in Canada](#), Public Health Agency of Canada
- [Human Emerging Respiratory Pathogens Bulletin](#), Public Health Agency of Canada

International

- [COVID Data Tracker](#), US Centre for Disease Control and Prevention
- [Weekly U.S. Influenza Surveillance Report](#), US Centre for Disease Control and Prevention
- [Respiratory Illnesses Data Channel](#), US Centre for Disease Control and Prevention
- [European Respiratory Virus Surveillance Summary](#), European Centre for Disease Prevention and Control