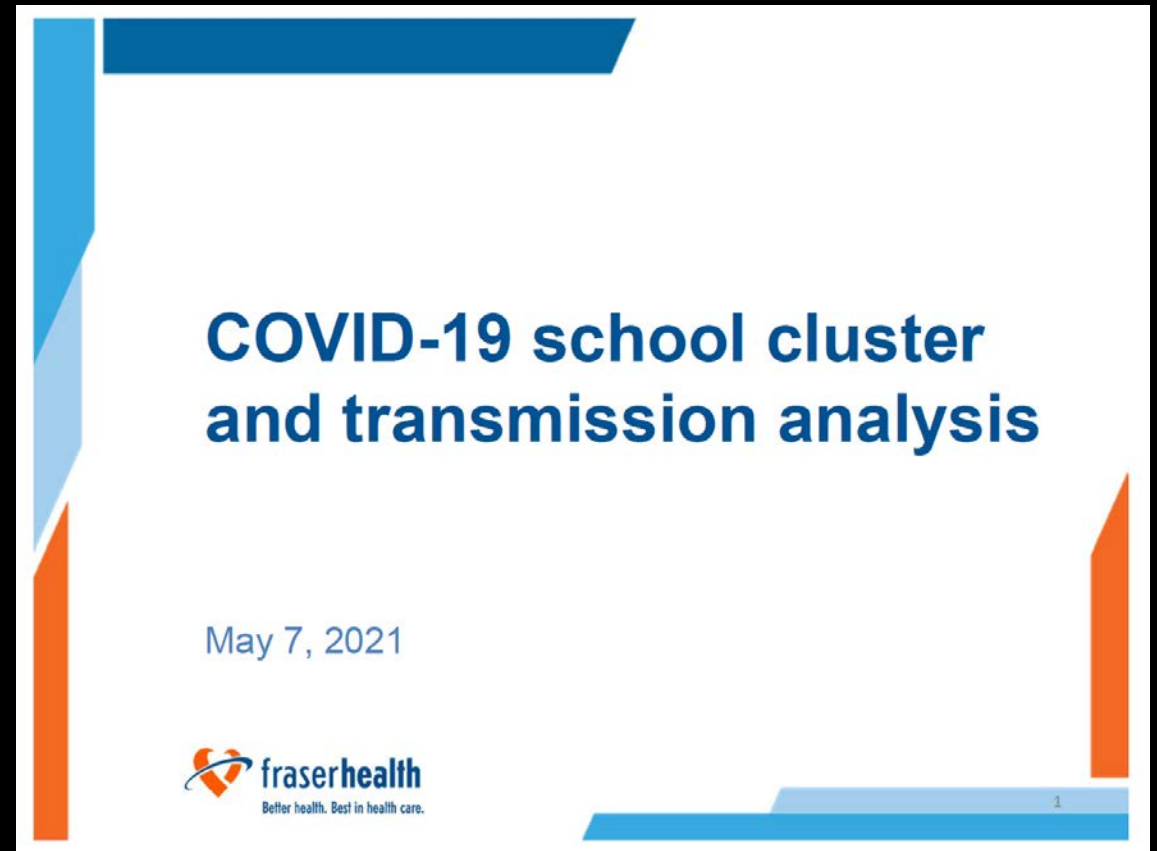


COVID Update

Fraser Health Report on COVID-19 Cluster and Transmission Analysis

The Report

- Released May 7th to all districts and Independent schools in Fraser Health.
- A follow up on the initial analysis done from January – March 2021.



The purpose

Criteria:

COVID-19 cases reported to Public Health between January 1st and March 7th, 2021 in students and staff who attended school (K-12 public/independent)

Purpose

Retrospective analysis of COVID-19 cases in K-12 school settings to determine clusters and transmission dynamics

Methods

- Identified all schools with >1 case within a 14-day period (excluding cases from the same household)
- Determined whether in-school transmission occurred based on standardized transmission/acquisition definitions
- Cases reviewed by team of epidemiologists, analysts and MHO over 6 week period
- MHO consulted for complex and ambiguous cases

Definitions

- **Suspect in-school acquisition/transmission** defined as:
 - Case attended school during acquisition period
 - Case has no known exposure to a household or community case with symptom onset two or more days earlier
- **Possible in-school acquisition/transmission event** defined as:
 - Suspect definition above AND
 - When 2 or more cases within the same classroom/admin areas/school bus/other school supervised venue or activity or with confirmed contact between cases in school based setting with similar symptom onset within 2 calendar day window without any other known acquisition
- **Likely in-school acquisition/transmission** defined as:
 - Suspect definition above AND
 - Acquisition period of case overlaps with infectious period of another case in the same classroom/admin areas/school bus/other school supervised venue or activity or with confirmed contact between cases in school based setting

*Does not include cases who were en route to school together (e.g. car-pooled or walking – excludes school bus use) as these are considered as community transmission and not issues with school based safety measures. Includes sporting events on school property and after-school programs that are operated by school or led by staff employed by school

Definitions

- **Confirmed cluster**

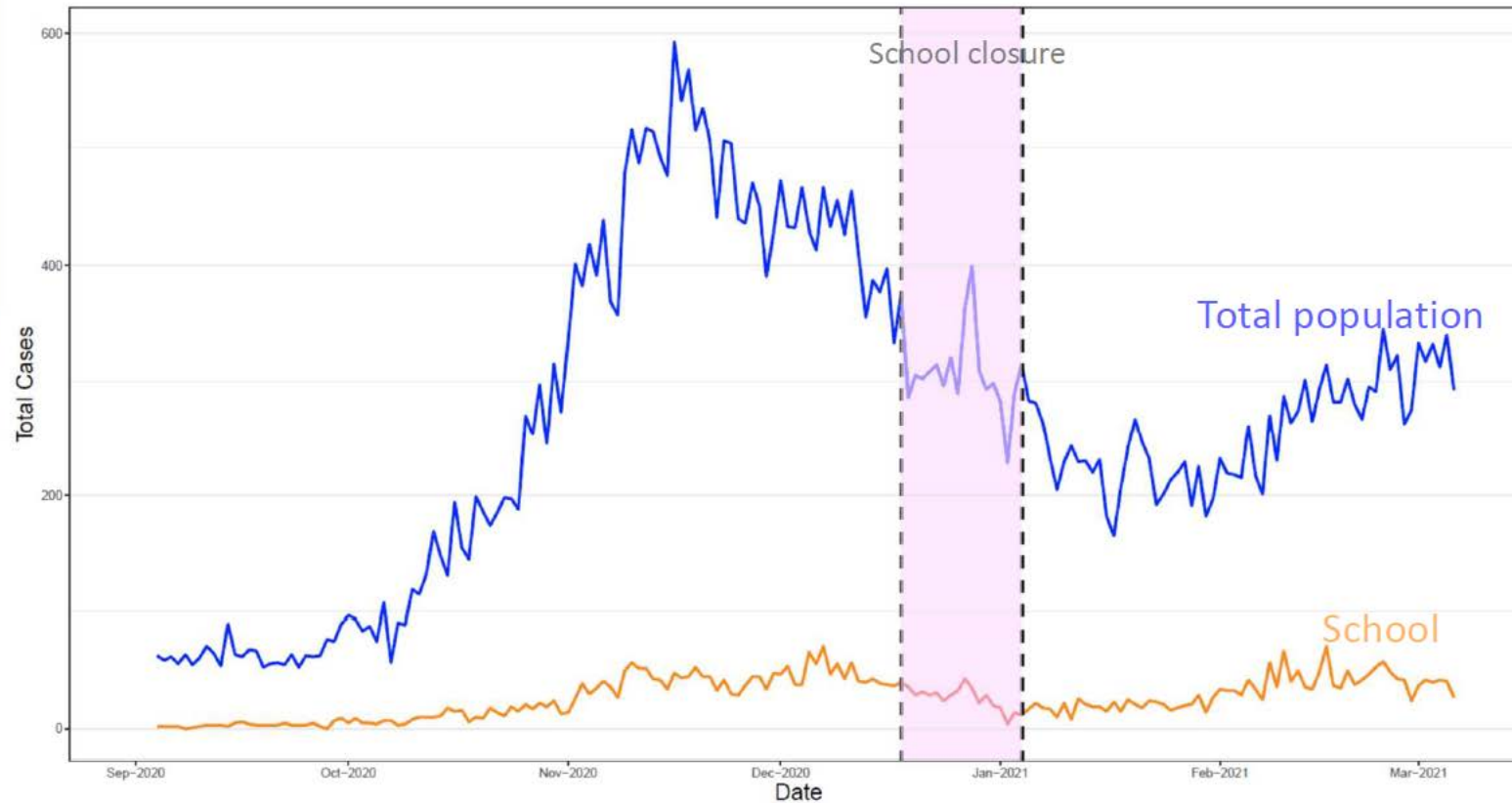
- At least one in-school transmission event (possible or likely) in a 14-day period

- **Declared outbreak**

- Cluster with evidence of ongoing transmission in multiple classrooms/admin areas¹

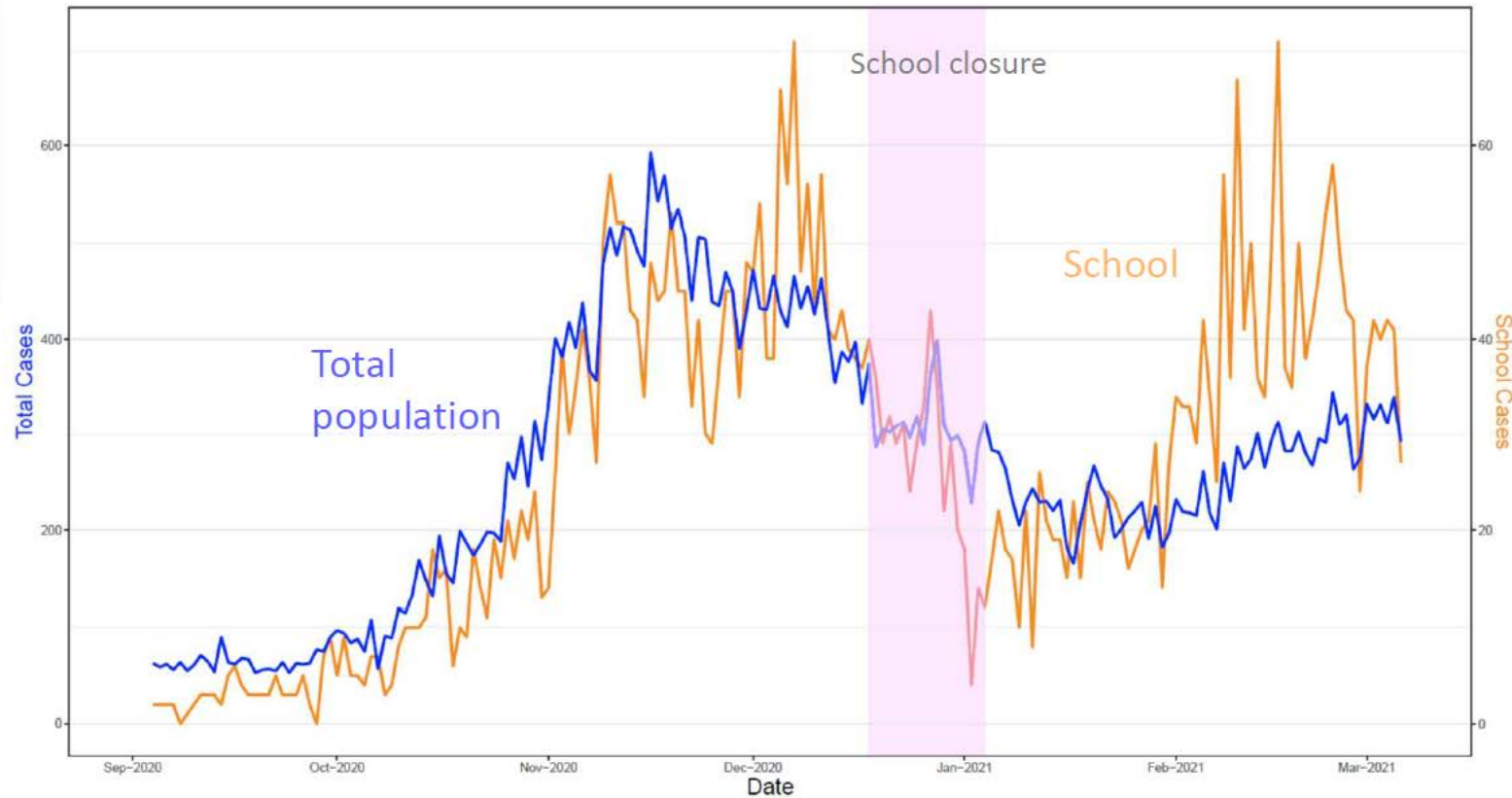
¹Outbreaks are declared at the MHO's discretion and are publicly posted when declared

Overall COVID-19 cases and school cases reported in Fraser Health between September 2020 and March 2021



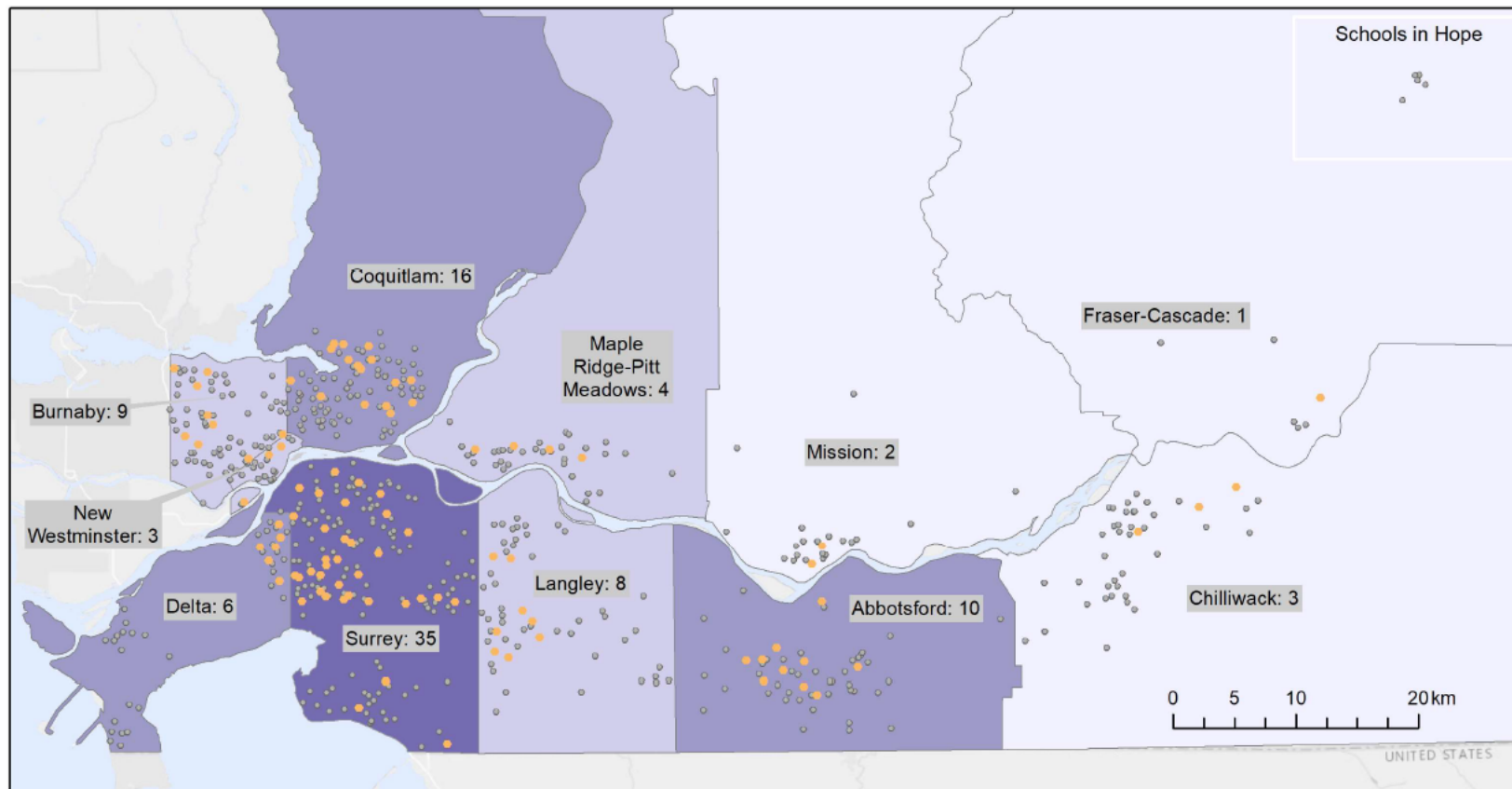
- Same scale used for total and school relationship, highlighting relative proportion of school to total population cases

Overall COVID-19 cases and school cases reported in Fraser Health between September 2020 and March 2021

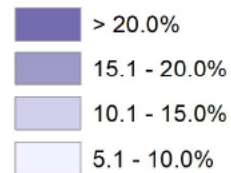


- Separate scales used for total and school relationship, highlighting similar temporal patterns in rise and fall of cases

Schools with confirmed COVID-19 clusters/outbreaks by School District Jan 1 - Mar 7, 2021



**Schools with confirmed clusters/
outbreaks (%) by School District:**



School sites

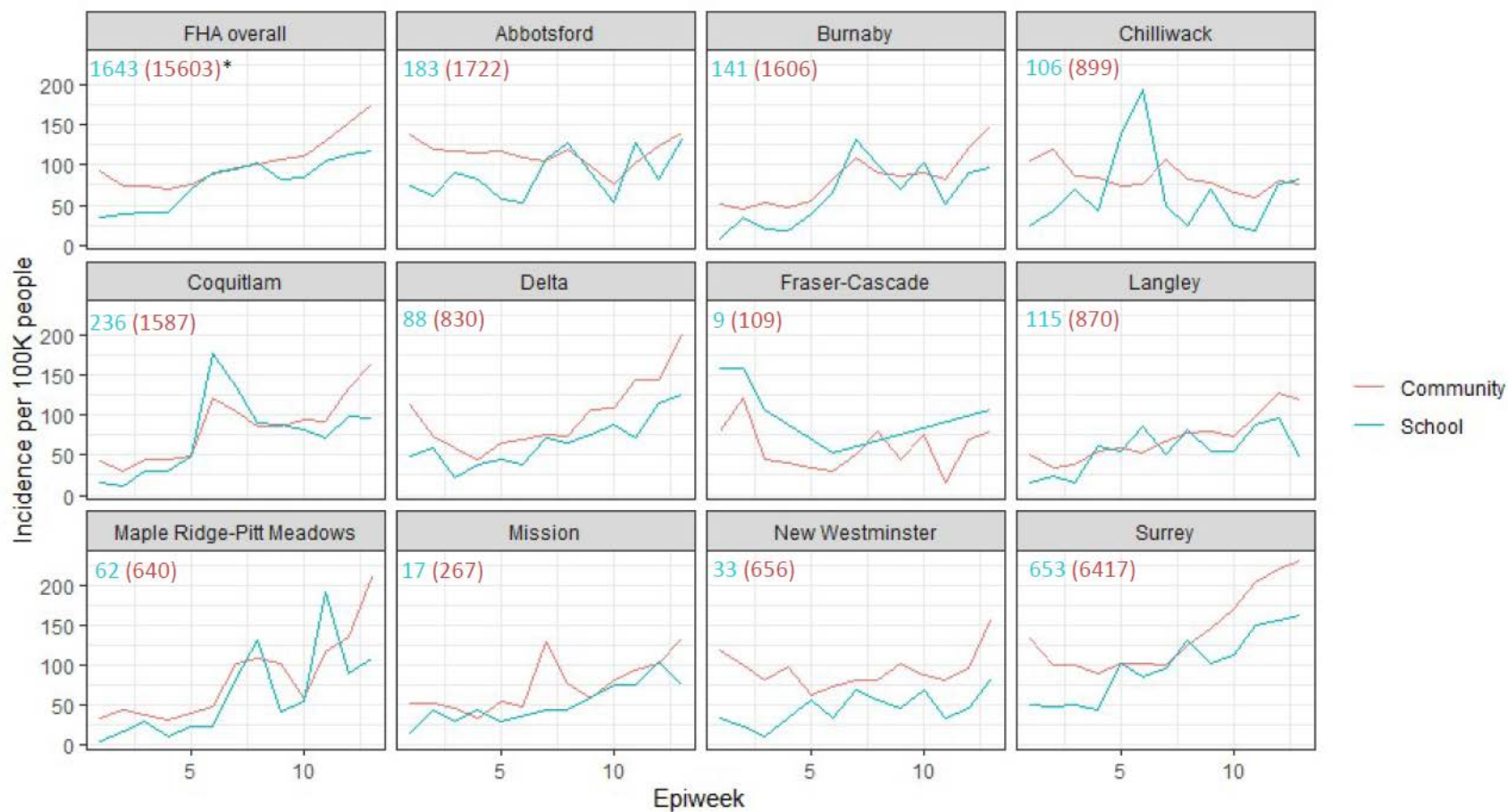
- School cluster/outbreak locations (total: 97)
- School locations (total: 639)

School district:
of school clusters

Data source: PARIS COVID-19 dataset
Base map: Esri World Light Gray Canvas
Projection: UTM Zone 10N
Prepared by: Population Health Observatory
Date: March 2021



Weekly Incidence Rate in community and student population by School District



* Cumulative number of cases with episode date between Jan 1 and March 7, 2021 for **students** and **community overall**.

- Includes students from public, Francophone and independent schools in the geographic boundary of the school district
- Smaller numbers in Fraser-Cascade may result in high variability

Geographical Distribution of Confirmed School Clusters and Outbreak

School District	Independent Schools (% of schools with confirmed clusters/ outbreaks in area)	Public Schools (% of schools with confirmed clusters/ outbreaks in area)	No. clusters/outbreaks (% of total clusters/ outbreaks)
Chilliwack	5 (100%)	-	5 (4.3%)
Abbotsford	4 (40%)	6 (60%)	10 (8.6%)
Langley	1 (11.1%)	8 (88.9%)	9 (7.8%)
Surrey	6 (13.6%)	38 (86.4%)	44 (37.9%)
Delta	-	7 (100%)	7 (6.0%)
New Westminster	-	3 (100%)	3 (2.6%)
Burnaby	3 (30%)	7 (70%)	10 (8.6%)
Maple Ridge-Pitt Meadows	-	4 (100%)	4 (3.4%)
Coquitlam	2 (9.5%)	19 (90.5%)	21 (18.1%)
Mission	-	2 (100%)	2 (1.7%)
Fraser-Cascade	1 (100%)	-	1 (0.9%)
Total clusters/ outbreaks	22 (19.0%)	94 (81.0%)	116 (100%)

Size of Confirmed School Clusters

	School Type		Total
	Public Schools	Independent	
Total number clusters	94	21	115
Size of cluster			
Min, Max	2, 11	2, 19	2, 19
Median	2	2	2
Mean	2.9	3.5	3.0
Index case role			
Student, n (VOC)	66 (8)	17 (1)	83 (9)
age 5 - 12, n (VOC)	36 (2)	7	43 (2)
age 13 - 18, n (VOC)	30 (6)	10 (1)	40 (7)
Staff, n (VOC)	24	2	26
Unknown index case*	4	2	6

*Missing data or transmission from undetected index case

- This and following slides focus on clusters. Single outbreak that occurred was excluded due to unique context of transmission.

Directionality of Known In-School Transmission Events within Confirmed Clusters

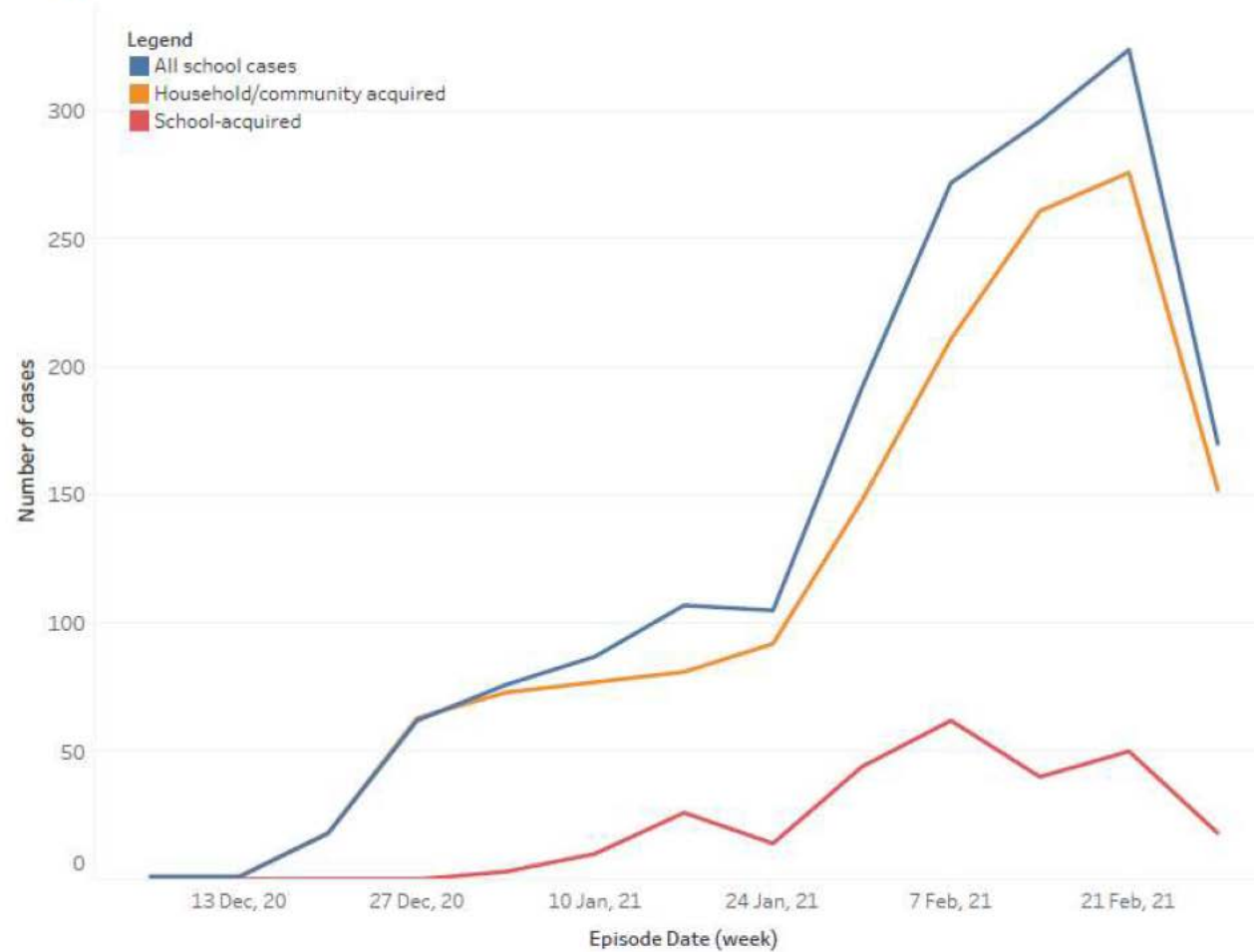
Direction of transmission	Non-VoC cases	VoC cases ¹	Total
<i>Student-student</i>	108 (45.4%)	17 (7.1%)	125 (52.5%)
<i>Student-staff</i>	26 (10.9%)	1 (0.4%)	27 (11.3%)
<i>Staff-staff</i>	22 (9.2%)	1 (0.4%)	23 (9.7%)
<i>Staff-student</i>	51 (21.4%)	-	51 (21.4%)
<i>Unclear direction/ Transmission from unknown index</i>	12 (5.0%)	-	12 (5.0%)
Total	219 (92.0%)	19 (8.0%)	238 (100%)

¹ Refers to the VoC status of the recipient for each transmission event

*Note that VOC testing strategy in BC has evolved between January and March where it began as targeted testing of returning travellers and random background sampling to now include VOC screening of all COVID positive results processed at BCCDC.

- There were an additional 333 cases with suspect acquisition in school that were not included in confirmed clusters as additional analysis is warranted to determine if linked or not to in-school acquisition

Cases with In-School vs Household/Community Acquisition



Summary the number of household/ community transmissions that resulted from cases that acquired from school

2049

cases examined



267 (13.0%)

likely or possibly acquired from school among confirmed clusters
(333 suspect unable to rule out in-school acquisition)

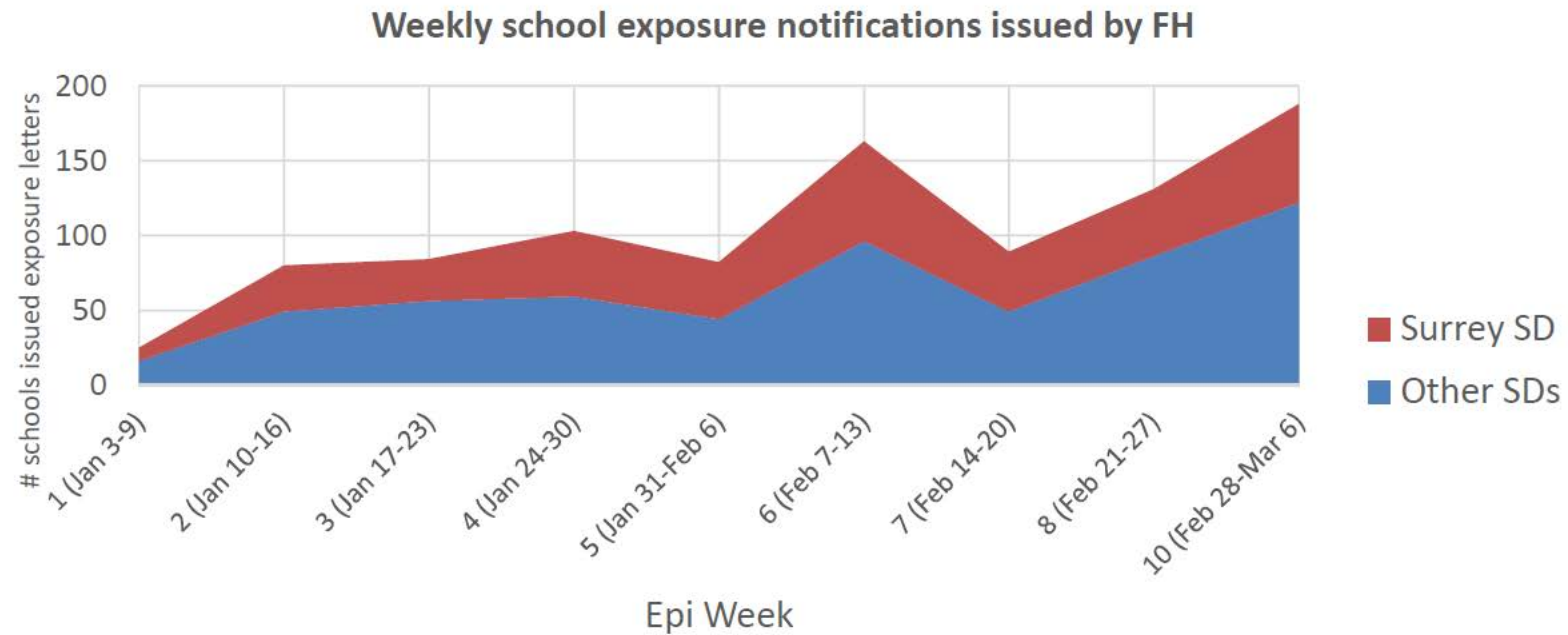


179 (67.0%) led to no household or community transmission

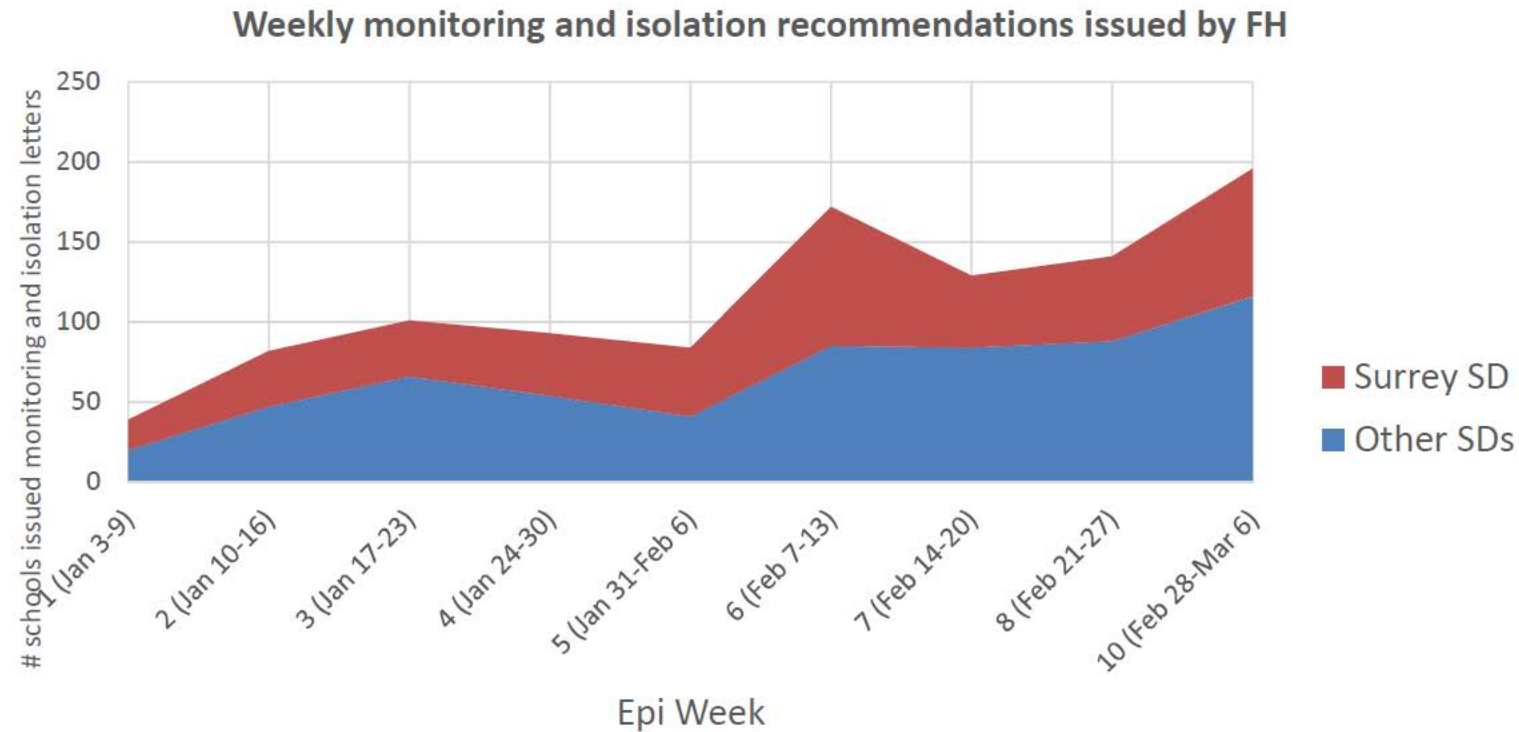
88 (33.0%) led to household and/or community transmission

- Any household: N = 86 (32.2%)
- Any community: N = 8 (3.0%)

Burden of exposure notifications and isolation orders over time that are issued by FH

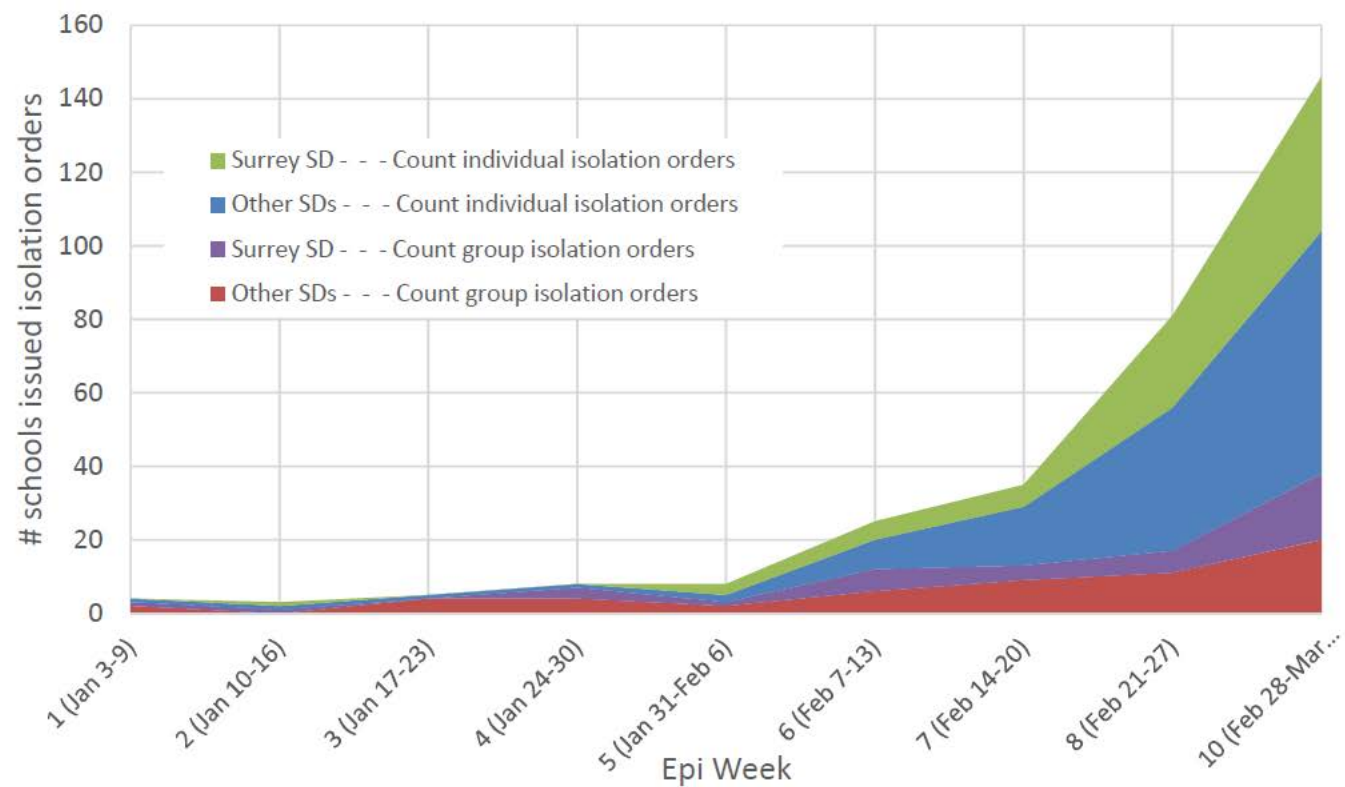


Burden of exposure notifications and isolation orders over time that are issued by FH



Burden of exposure notifications and isolation orders over time that are issued by FH

Isolation recommendations issued by FH



Key Findings (1)

- A total of 2049 school-associated cases were reported
 - This represents 0.65% of the total estimated staff and school population in Fraser region (approximately 315,000 staff and students)
- 19.6% were associated with a confirmed cluster or outbreak
 - 115 confirmed clusters in 96 schools involving 347 cases, with cluster size tending to be limited to 2 cases
 - 1 outbreak in one school involving 54 cases
 - There are approximately 640 K-12 schools in the Fraser region

Key Findings (2)

- 72.8% of clusters were attributed to introduction of COVID into schools by students
 - This was expected as students proportionately make up the majority of the school population
 - Staff are known to be involved in 42.4% of transmission events
 - Approximately 8% of in school transmission in confirmed clusters were associated with VOC cases
- Of the 267 cases (13% of all school-associated cases) who were likely/possibly acquired from school, 88 (4.3% of all school-associated cases) led to household/community transmission, and mostly within the household
 - Put another way, 87% of school-associated cases were acquired in the household/community

Limitations

- Study period reflects only the early stages of COVID-19 variant introduction into and spread within Fraser region communities and therefore their impact is not fully assessed in this study.
- Suspect in-school acquisitions (333 cases) are pending whole genome sequencing to determine if school-acquired. Current results reflect possible/likely in-school acquisition.

Directionality of Known In-School Transmission Events within Confirmed Clusters: Surrey School District only

Direction of transmission	Non-VoC cases	VoC cases ¹	Total
<i>Student-student</i>	25 (31.3%)	14 (7.5%)	39 (48.8%)
<i>Student-staff</i>	11 (13.8%)	1 (1.3%)	12 (15%)
<i>Staff-staff</i>	7 (8.75%)	1 (1.3%)	8 (10%)
<i>Staff-student</i>	17 (21.3%)	-	17 (21.3%)
<i>Unclear direction/ Transmission from unknown index</i>	4 (5%)	-	4 (5%)
Total	64 (80%)	16 (20%)	80 (100%)

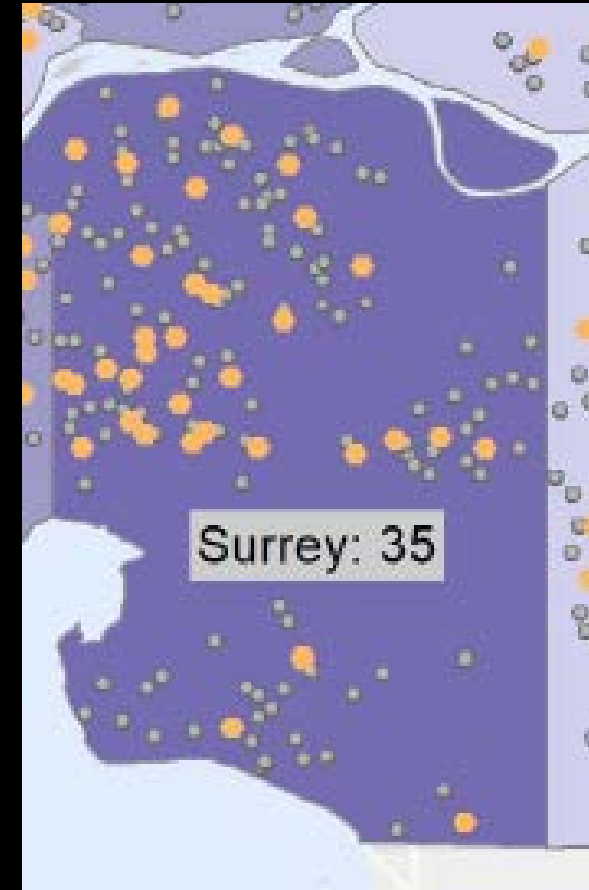
¹ Refers to the VoC status of the recipient for each transmission event

*Note that VOC testing strategy in BC has evolved between January and March where it began as targeted testing of returning travellers and random background sampling to now include VOC screening of all COVID positive results processed at BCCDC.

- Includes public and independent schools within school district boundaries

What does this all mean?

- First – this is a report from Fraser Health, I am not a health expert, just reporting out.
- This report really was pre-variant, so numbers changed after February. Health now assumes most cases are variants.
- School transmission mirrors community transmission.
- Surrey had 35 clusters/outbreaks between January 1st and March 7th.
- These were predominantly in the northwest quadrant of the City.



What does this all mean?

- Of the 1643 cumulative cases for students in the entire FH region, 653 of those were in Surrey.
- This is 40% of all FH school cases when Surrey represents about 30% of the total FH student population.
- There were 15603 total community cases in the entire FH region, 6417 of those were in Surrey.
- This is 41% of all cases.

What does this all mean?

- Surrey had 38% of all clusters/outbreaks.
- Of the directionality of transmission events:
 - 64% were student to student or student to staff;
 - 31% were staff to staff or staff to student; and
 - 5% direction was unclear.

Our intent today

- To share the report publicly.
- To provide this information to the Board with some context as we are able.
- We will be posting this FH report on our website under the COVID Health section.
- We want to thank Fraser Health for sharing this with us.