



Impact of school closures on learning, child & family well-being

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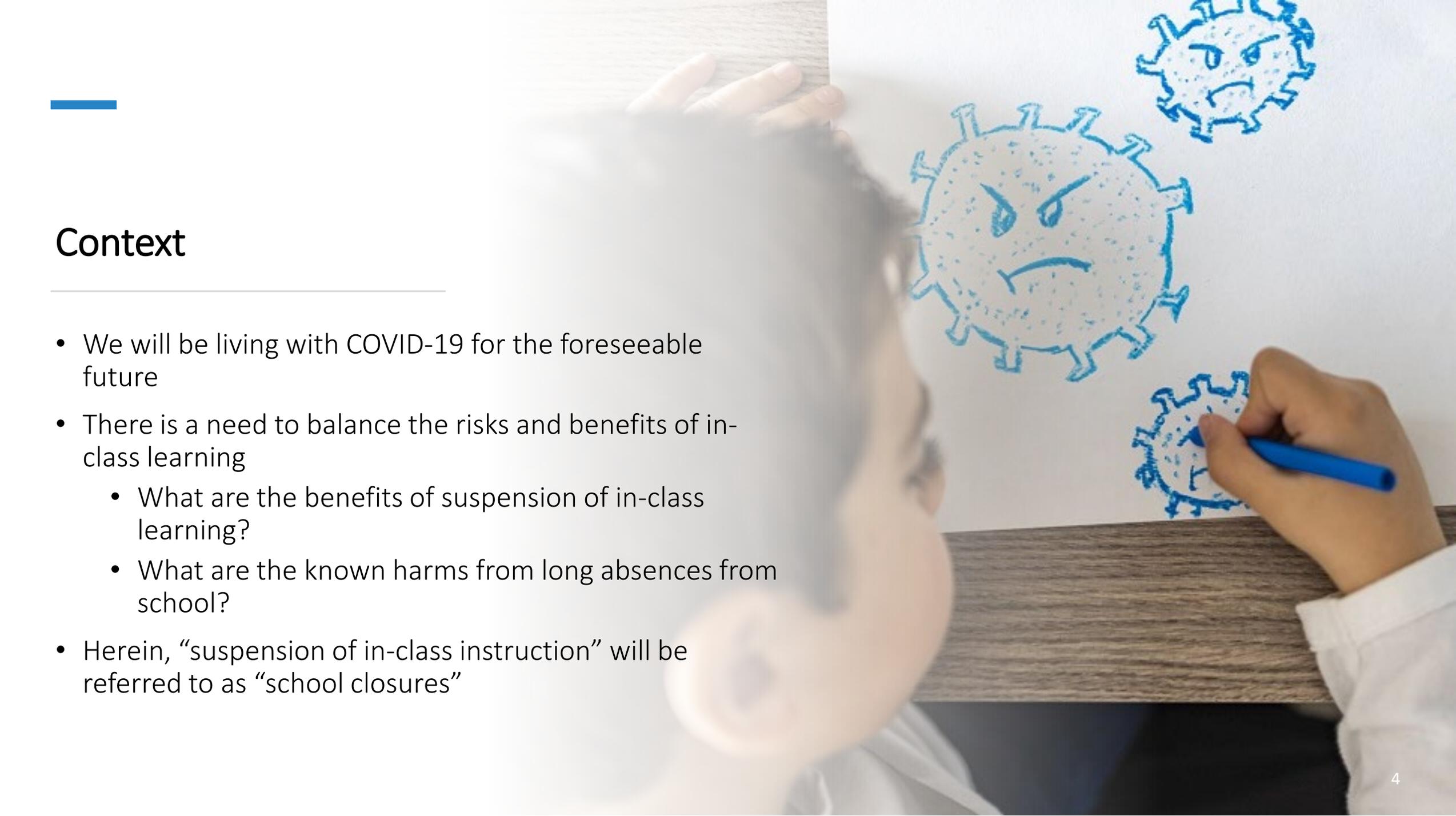
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Land Acknowledgement

We respectfully acknowledge that we are on the unceded traditional territories of the Coast Salish peoples – Sk̓wx̓wú7mesh (Squamish), Se'íl'wítulh (Tseil-Waututh), and x̓^wməθk̓^wəy̓əm (Musqueam) Nations

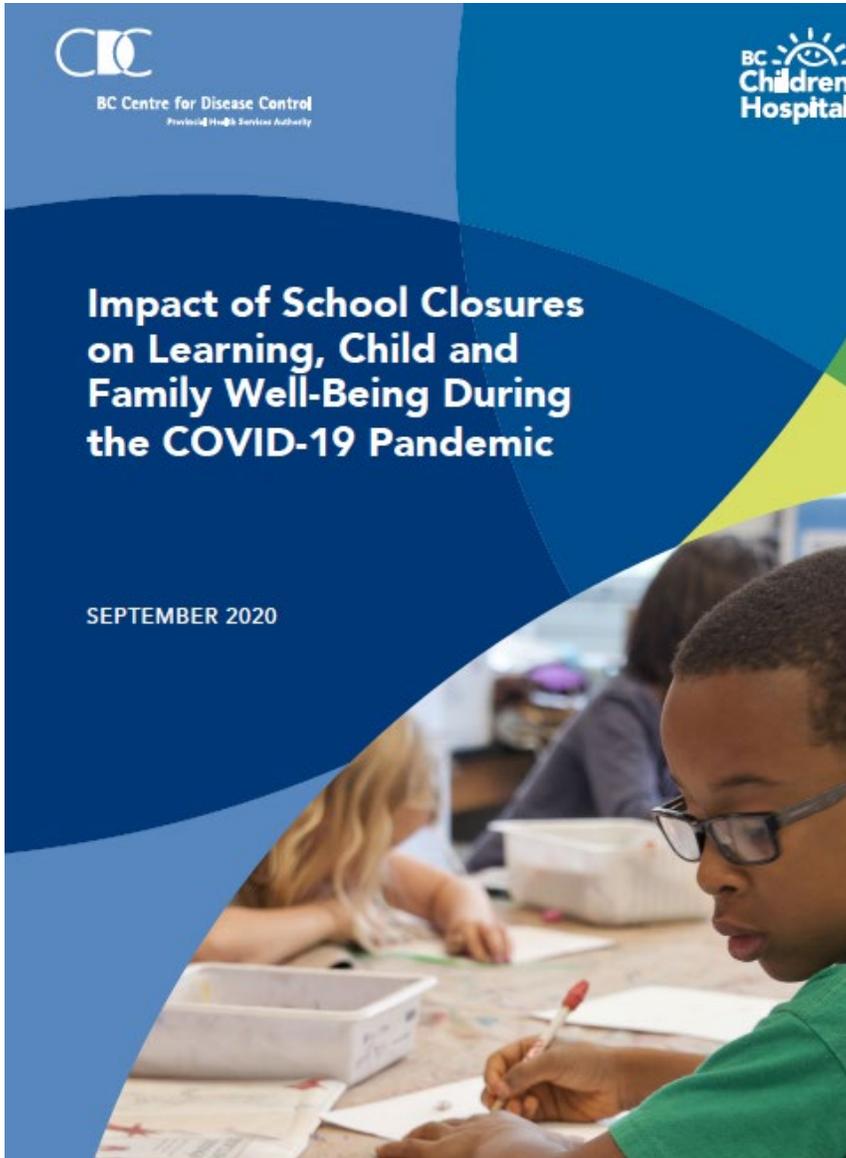
Context for Evidence Review

- 70% of children in 153 countries impacted by school closures in spring 2020
 - On March 17, 2020, the BC PHO provided advice to the BC Ministry of Education that suspending in-class instruction was appropriate in the circumstances then existing.
- Concerns of the impact of suspension of in-class learning on students and parents
 - On March 27, 2020, the BC PHO advised school districts to provide in-class instruction for children of essential service workers. Over following weeks, the advice evolved to include in-class instruction for student subject to social vulnerabilities and those requiring additional supports.
 - On June 1, 2020, a voluntary partial return to in-person schooling started across school districts for children of non-essential workers for the remainder of the school year.
- In preparation for the 2020/21 school year, an evidence review was requested by Office of the PHO to inform recommendations

A child is shown from the side, sitting at a wooden desk and drawing on a whiteboard with a blue marker. The whiteboard has three drawings of angry-looking virus particles with spiky edges and angry faces. The child's hand is visible, holding the marker and drawing one of the particles. The background is a plain white wall.

Context

- We will be living with COVID-19 for the foreseeable future
- There is a need to balance the risks and benefits of in-class learning
 - What are the benefits of suspension of in-class learning?
 - What are the known harms from long absences from school?
- Herein, “suspension of in-class instruction” will be referred to as “school closures”



Endorsements

- BC Children's Hospital
- BC Centre for Disease Control
- BC Public Health Leadership committee

- Sponsored by the Office of the Provincial Health Officer of BC,
Dr. Bonnie Henry

Reviewing the evidence for COVID-19 school closures

- Synthesis of global evidence and available BC data as of August 18, 2020
- Objectives of the review:
 - i. Explore effectiveness of school closures on reducing community transmission of COVID-19
 - ii. Assess how children and youth are affected by COVID-19 and understand their role in transmission and experiences with school re-openings.
 - iii. Describe consequences of school closures for health and well-being of children and families

*Not intended to assess the evidence of relative merits of varied approaches in infection control hierarchy or to provide guidance regarding risk mitigation strategies for school re-opening



Epidemiology of COVID-19 Among Children & Youth



Effectiveness of school closures for prevention

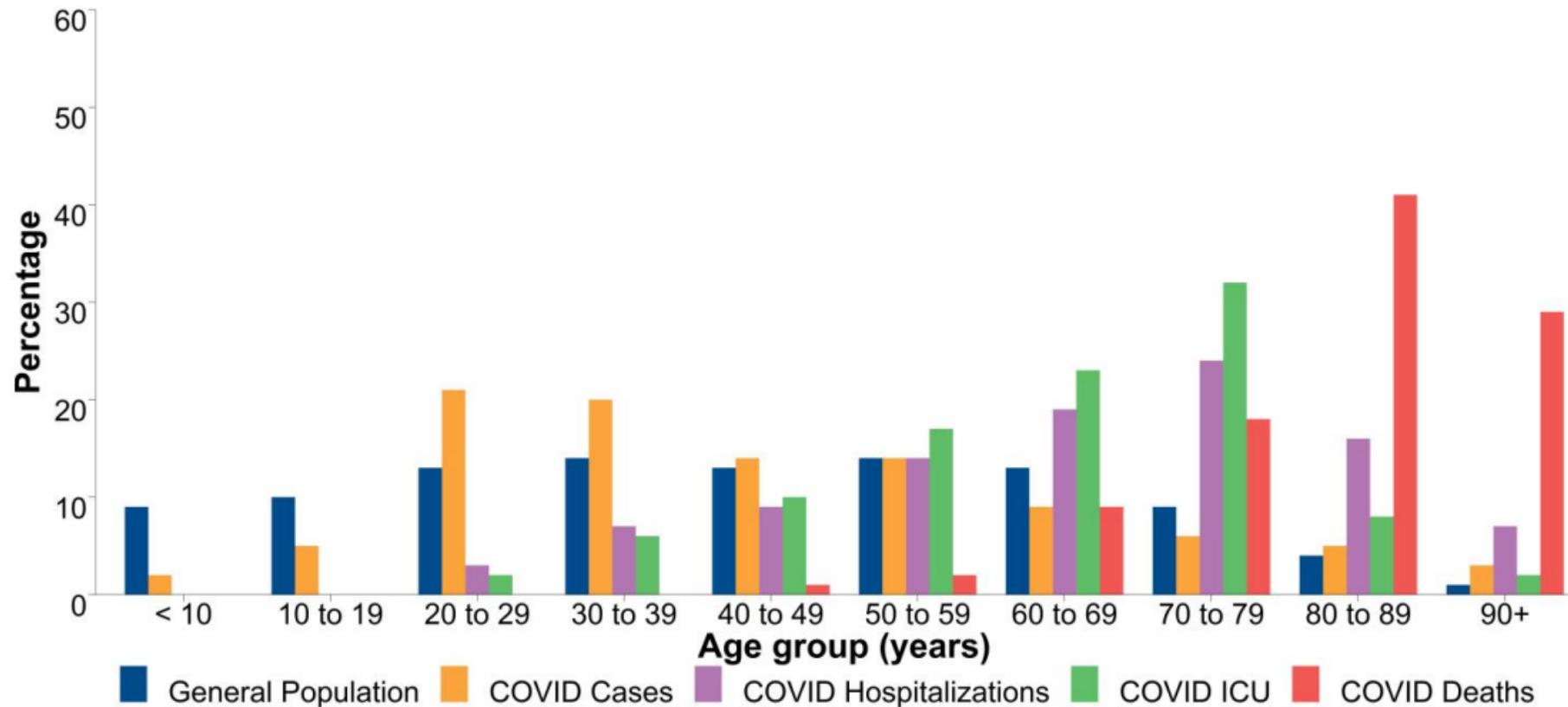
- School closures were a common global measure at the start of COVID-19 pandemic as it was a novel pathogen with rapid community spread
 - Decision was based on information available then about COVID-19 and based on assumptions from prior influenza outbreaks
- School closures recommended as best practice for influenza outbreaks
 - Based on modelling that closures will delay and reduce outbreak peak in community
 - In literature, effectiveness is not clear and in practice schools are not routinely closed
- May not be as effective for coronavirus outbreaks
 - Accumulating evidence suggests COVID-19 transmission dynamics in children differ from influenza and may impact [effectiveness of school closures for prevention](#)
 - Systematic review found [insufficient data to assess efficacy](#) of school closures during coronavirus outbreaks

Children have a lower burden of COVID-19 infection with predominantly mild illness

- A systematic review of 45 studies found that children < 19 years account for 1-5% of diagnosed COVID-19 cases, often have mild illness and mortality is rare
 - In BC, 11% of all lab confirmed cases and <2% of severe cases of COVID-19 are among children < 20 years despite comprising ~20% of the population
- The largest case series to date of over 2000 pediatric patients found that 90% had asymptomatic, mild, or moderate presentations; with 0.6% having critical illness
- Multi-system inflammatory syndrome in children (MIS-C) is rare
 - There have been 10 confirmed case in BC from Jan 2020 to March 2021 (0.9 per 1,000 cases who are 0-18 years)
- There is an age gradient to children's susceptibility and ability to transmit the virus

Children consistently represent a small proportion of total cases, and are less likely to have symptomatic or severe illness

Distribution of cases by degree of severity in BC, January-August 2020 (N~5,300)



Similar patterns are seen in other jurisdictions, with lower rates of hospitalisation and ICU admission in children compared with adults

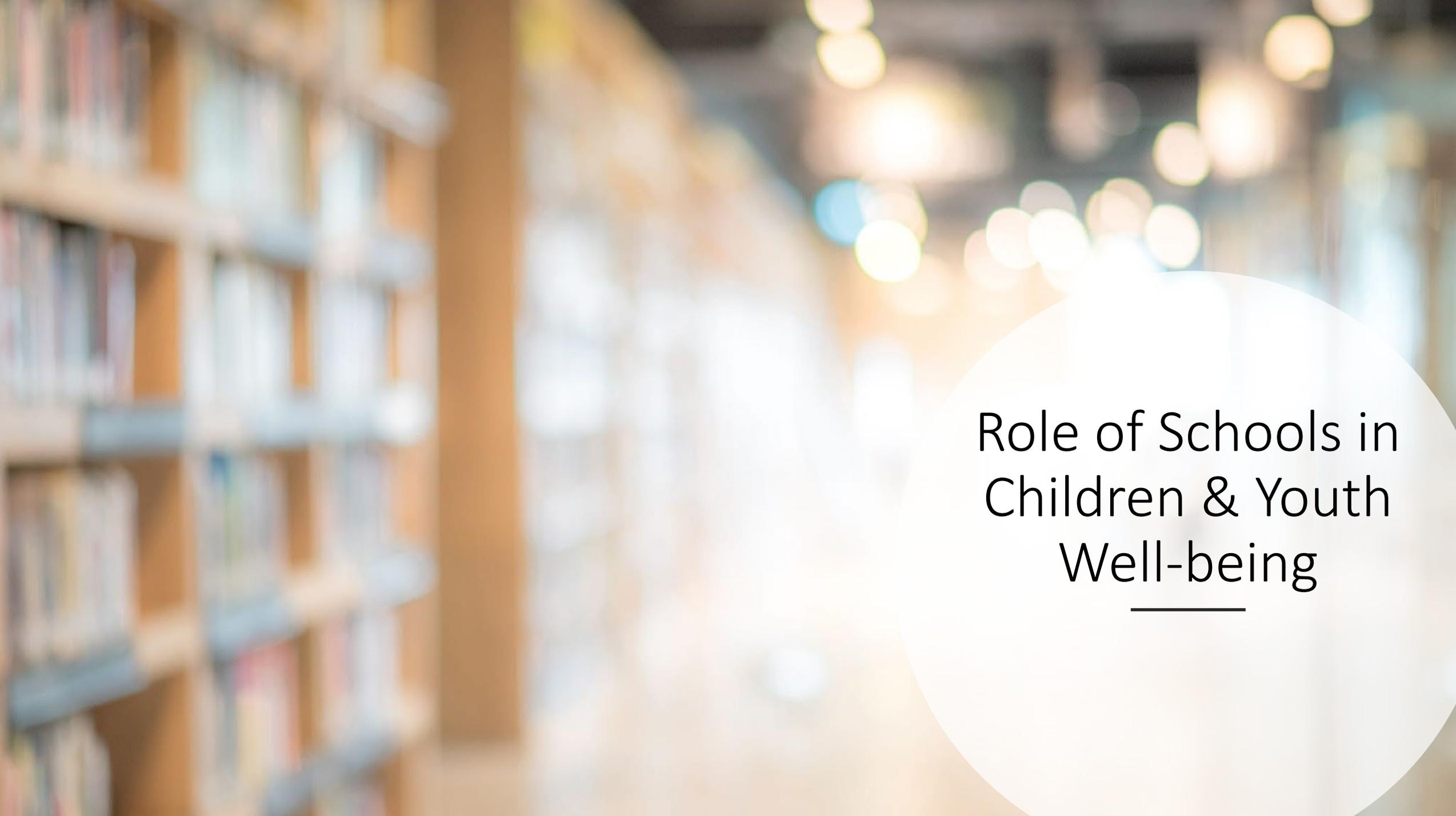
*Only cases with age information available are included.

† PEOPLE2019-2020 population estimates

Note: COVID hospitalizations have been reported in the <10y and 10-19y age groups but represent <1% of hospitalizations and are therefore not visible.

Children do not appear to be a major source of COVID-19 transmission in households or schools

- Virus transmission from children to adults in households is less common
 - Transmission among children or from children to adults is rare
 - Transmission tends to be within people of the same age, or from adults to children
 - Children can become infected but it's not common
- Schools have not been a major source of outbreaks globally, with data from 4 studies of school exposures suggesting a 0.01% attack rate
 - A review of 33 studies determined a consistently lower prevalence of infection in younger children than among adults working in school settings
 - Schools that remained open or re-opened have consistently not demonstrated increased transmission in school settings (e.g. Australia, Sweden, Denmark, Finland, Norway)
 - Increased cases in schools have been reported (e.g. Portugal, Israel, UK, US, New Zealand, Quebec) however often occurs when community transmission has increased



Role of Schools in
Children & Youth
Well-being

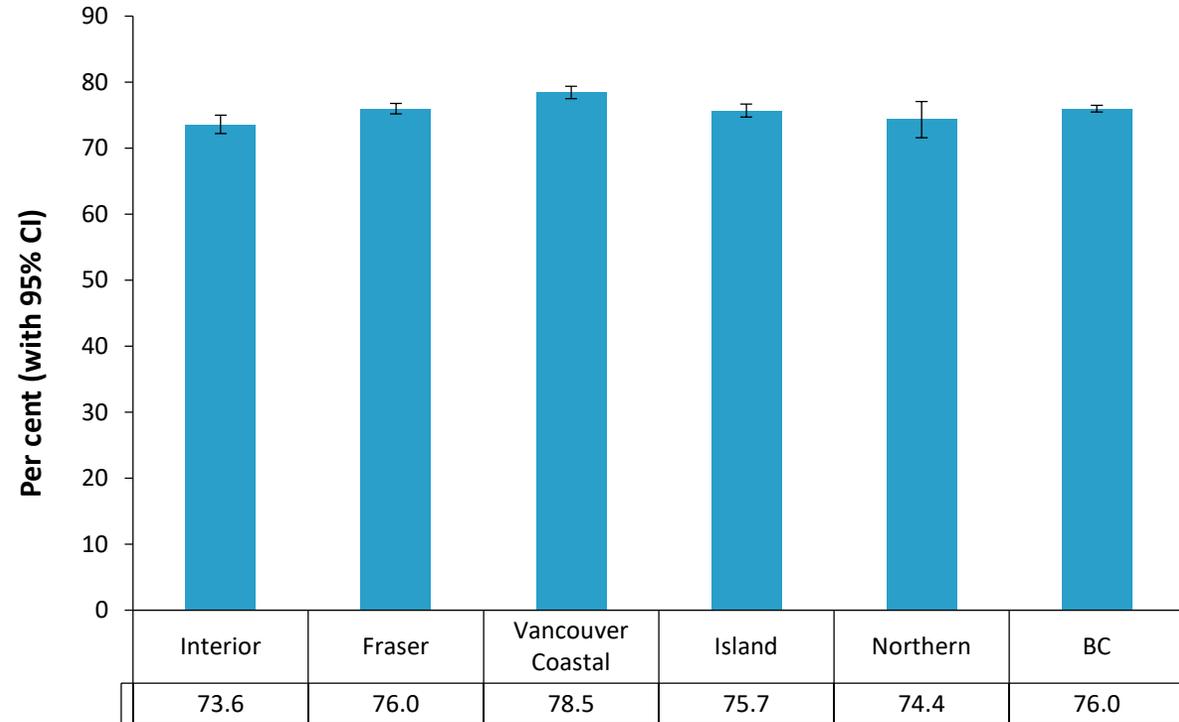
Schools support the learning, health, and development of children and youth and provide valuable resources for families

- Educational attainment is an important determinant of health, positive well-being and future socio-economic outcomes
- Families and children rely on schools for social engagement, opportunities for physical activity, food access, access to some health services and psychosocial support, enabling time for working parents to balance work & caregiving demands
- Up to 80% of children with disabilities, neurodevelopmental, mental, and behavioural health needs rely heavily on school services and may be affected by a loss of resources, specialized educators, and structured learning environments

School closures have had significant impacts on children's learning in BC

- 76.0% (95% [CI]: 75.5%, 76.5%) of BC families reported impaired learning for children during COVID-19
- School closures and the shift to distance learning may result in uneven educational opportunities
 - Up to 30% of families surveyed by school districts in BC have access to no technology at all
- Existing vulnerabilities in educational attainment and development vary by socioeconomic status, gender and geographic area

Figure 1: Percentage of Household* Children Experiencing Impaired Learning as a Result of COVID-19 by Health Authority BC, 2020



* Among households with school-aged children.

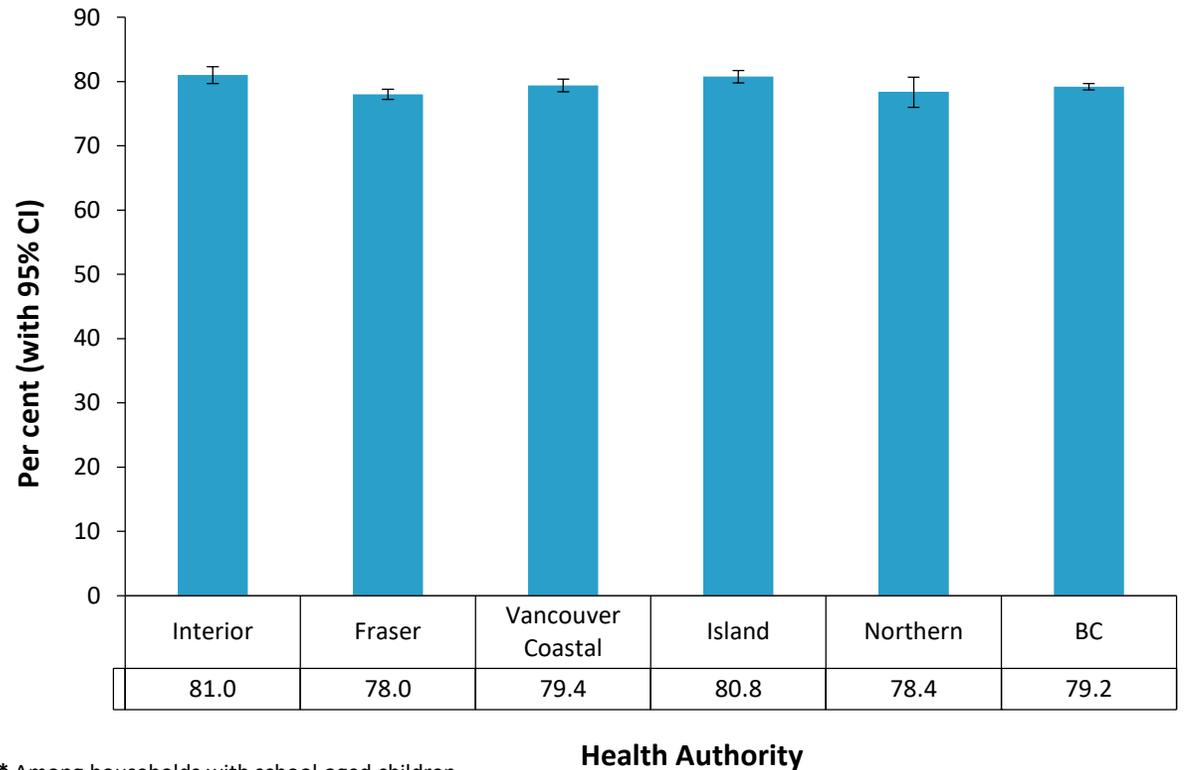
Notes: Responses were weighted using 2016 National Household Survey data by age, sex, and Local Health Area.

Source: BC COVID Population Health Survey. Prepared by BC COVID-19 SPEAK Analysis Group, June 2020; Population

Children and youth report decreased connection during pandemic school closures

- 79.2% (95% CI: 59.7%, 60.9%) of BC respondents report children have decreased connection with friends during COVID-19
- School connectedness is associated with numerous benefits for students including higher self-esteem and life satisfaction, lower rates of substance use and violence, participation in fewer risk-taking behaviours, increased likelihood of completing secondary school, and greater feelings of positive mental health

Figure 3: Percentage of Household* Children With Decreased Connection With Friends as a result of COVID-19 by Health Authority, BC, 2020



* Among households with school-aged children.

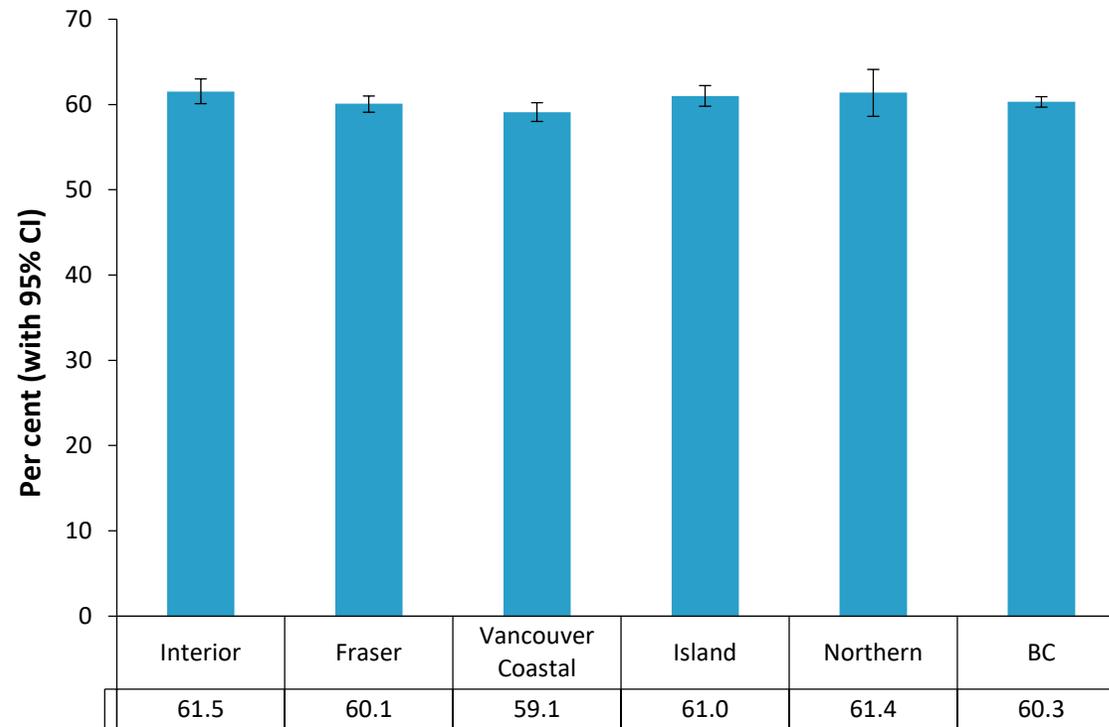
Notes: Responses were weighted using 2016 National Household Survey data by age, sex, and Local Health Area.

Source: BC COVID Population Health Survey. Prepared by BC COVID-19 SPEAK Analysis Group, June 2020; Population

Children and families in BC have experienced greater stress and isolation in COVID-19

- 60.3% of BC respondents report increased stress for school age children
- Increased stress and decreased connection for children and youth during the pandemic may be important contributors to future mental health conditions and are key to prevent and monitor

Figure 2: Percentage of Households* With Increased Child Stress as a Result of COVID-19 by Health Authority BC, 2020



* Among households with school-aged children.

Notes: Responses were weighted using 2016 National Household Survey data by age, sex, and Local Health Area.

Source: BC COVID Population Health Survey. Prepared by BC COVID-19 SPEAK Analysis Group, June 2020; Population

Children's mental health and well-being may be declining with school closures and social isolation

- School closures and distancing may result in increased loneliness in children and youth, correlated with mental health effects including anxiety & depression in a review of 63 studies
- A recent review found declining mental health for children and youth during COVID-19, highlighting trends in heightened anxiety, however studies are mainly cross-sectional studies with unclear long-term effects
- Trends in mental health disorders and perceived need for services for children and youth have increased over recent decades and are a key predictor of future mental health outcomes in the absence of early identification and intervention

Schools are important settings for mental well-being promotion and access to mental health services

- Teachers, school counsellors and social workers are an important source of emotional and mental health support for students
 - In 2018 in BC, 55% of students had asked a teacher for help, 31% had asked a school counsellor and 23% had asked other school staff.
- School closures may result in barriers to mental health resources and services usually accessed through schools
- Social and emotional learning curricula in schools fosters positive personal attitudes, relationships, school connection, and improved academic performance, while reducing emotional distress and conduct problems
 - Recent new funding was announced in BC for student mental health; school closures may result in a loss of momentum, delaying work that parents and families had identified as critical

For some students, school attendance can be a source of stress and anxiety

- In 2018 a significant proportion of BC students (86%) reported feeling stressed in the past month, including 12% who report being so stressed that they could not function properly
- While 78% of BC youth rated mental health as good or excellent, rates had declined from 2013, and 15% reported missing classes in the past month due to mental health problems
- Emergency mental health and substance use related visits to the BC Children's Hospital ED between 2017 to 2019 varied from an average of 94 visits per month during the holiday period to 136 visits per month during the school year ($p < 0.0001$)
- An association between psychiatric crises and school days compared to holidays and weekends has been observed for school age children, disappearing in young adulthood
- Student mental health needs will be important to monitor proactively when schools resume, as stress and mental health effects may be more pronounced for some students.

School closures occurring in the context of pandemic measures may compound stress for some families

- A recent review of 38 studies showed families with children are under considerable strain during COVID-19 and have greater fear and anxiety
- A Spanish survey found a higher level of pandemic related psychological distress in families with affected working situations with children under age 16
- Females with school aged children disproportionately experienced reduced hours, job losses, and a greater caregiving burden, increasing the gender work gap by 20-50%
- Single mothers, Indigenous households, and recent immigrants are among those most likely to experience greater stress due to work interruption and the effect on regular earnings needed for financial stability
- A lack of respite care for families of youth with special needs has been identified a key source of stress for many families

Food insecurity has surged during the COVID-19 pandemic, with greater impacts on some families

- Global reports suggest food insecurity has surged during the pandemic
- Food insecurity and hunger are associated with impaired learning and poor health outcomes, including risk to physical and mental health in children
- During the COVID-19 pandemic:
 - Almost 1 in 7 (14.6%) Canadian households reported food insecurity in the past 30 days, with 2% reporting severe food insecurity, compared to pre-pandemic levels of 10.5%
 - More likely to occur in households with children (19.2%) compared to without children (12.2%)
 - Canadians who were employed but absent from work more likely to be food insecure (28.4%)
- 75% of school districts in BC have a meal program in at least one school
 - The number of BC families accessing food programming increased considerably during pandemic closures, with 75,000 meals delivered to 16,000 families every week

Food insecurity will disproportionately impact families who are already at risk

- Food insecurity is heavily influenced by social determinants
- Many families face numerous barriers to access healthy, culturally appropriate foods (e.g. poverty, lack of stable housing, lack of transportation to food stores/markets)
- Geographic factors affect food access (e.g. distance to food sources, rural and remoteness, cost of food)
- In 2018, 1 in 10 students in BC [went to bed hungry](#)

Family violence may leave some children vulnerable during COVID-19

- Global and national reports suggest [family violence has intensified](#) by ~20-30% in the pandemic
- Effects compounded by social isolation and economic recession
 - Financial strain, isolation and substance use are well known [risk factors for family violence](#) that may be exacerbated in the current pandemic
 - The last economic recession demonstrated increases in [child maltreatment](#)
- Teachers and support staff play a valuable role in protecting vulnerable children
 - BC's Ministry of Child and Family Development received 23% [fewer child protection reports](#) in May/June 2020 compared to 2019, with 75% fewer protection reports from schools
- Certain children may be at a greater risk of violence during the pandemic
 - [Vulnerable children](#) may include those with behavioural health needs or disabilities, [children in care](#) or at risk for maltreatment and families experiencing social inequalities

Previous research indicates that adverse childhood experiences can have consequences across the life course

- Family violence and child abuse has significant deleterious health and social sequelae well into the future, including enduring metabolic, emotional and immunologic illness
- Data from 2013 suggest 29.4/1000 children and youth in BC are exposed to neglect or abuse
- In BC in 2018, 14% of Grade 7-12 students reported physical abuse and 11% reported sexual abuse, more likely among females and non-binary youth
- Priorities for action to recognize and prevent adverse child experiences (ACE) include: advocating for childhood trauma prevention and improved screening and services for those affected by ACE

The loss of routine and structure with school closures and pandemic restrictions have substantially impacted children's health behaviours

- [Physical activity](#), [sleep duration](#) & [healthy eating](#) are key for children's physical & mental health
- Children obtain most [daily physical activity](#) through travel to school, physical education, recess, organized sports and playground time, with more sedentary behaviour at home and in summer
- School closures and home confinement can lead to a loss of structure and routine, decreased recreation opportunities and increased [sedentary activities](#)
- Global studies show COVID-19 restrictions had drastic impacts on health behaviours, including:
 - A national survey found only 4.8% (2.8% girls, 6.5% boys) of children and 0.6% (0.8% girls, 0.5% boys) of youth met combined [movement behaviour guidelines](#) (physical activity, sleep and sedentary behaviour)
 - A survey of 1,000 Chinese school aged children found widespread [smartphone and social media use](#), with problematic internet behaviours predictive of psychological distress
- Over time, effects of reduced physical activity, poor nutrition and excess screen time may be contributors to [adolescent depression](#), [anxiety](#) and other negative [health effects](#)

Families with fewest resources are likely to experience the most disadvantage related to school closures

- Schools are important settings for health promotion, provide structure and supportive routines, as well as resources and opportunities, for those who may experience disadvantage at home
- Social determinants, such as poverty & racism, have a significant influence on health outcomes and mediate the relationship between health and individual lifestyle behaviours
- BC has the second highest child poverty rate in Canada, with 1 in 5 children living in poverty
- Families with fewest resources and greatest stress may be most at risk of detrimental educational, social, and health ramifications related to extended school closures

Listening to Indigenous voices is essential to Truth & Reconciliation

- No studies of the effect of school closures on Indigenous children and families were found.
- Effects of the pandemic may be disproportionately experienced by Indigenous children, families and communities, due to ongoing experiences of racism, social exclusion, and structural violence
- Indigenous peoples are resilient and have drawn on their collective strength and connectedness to buffer adversity of the pandemic
- Respecting Indigenous ways of knowing and being and listening to the experiences of Indigenous children and families in rural, remote and urban settings regarding the effects of school closures and the pandemic more broadly is needed to direct future work.

Schools are essential for children's health and well-being and can be re-opened safely when community transmission is low

- Burden of COVID-19 among children and youth is low
- Evidence so far suggests that children do not play a significant role in community transmission
- Closing schools was an exceptional measure and does not appear to be an effective to halt community transmission of COVID-19
- Prolonged school absences have detrimental and accumulating effects on the health and well-being of children and families across multiple domains
- Schools, particularly with in-person attendance, are a key mechanism to reduce inequities
- Attention to prevention measures within schools can reduce transmission risk. Secondary schools may require different public health measures.
- Continuing adherence to public health measures in the community to keep transmission low is important to re-open our schools safely

In summary

- COVID-19 is a fact of life for the foreseeable future.
- Schools are important settings for resources, services & support, structure, routine and learning
- School closures are societally unsustainable in the long term due to accruing detrimental effects
- Negative effects of prolonged school closures are substantial, particularly for those already subject to social inequities
- Returning to school, while posing some risk, is likely to offer greater societal and individual benefits than keeping schools closed.





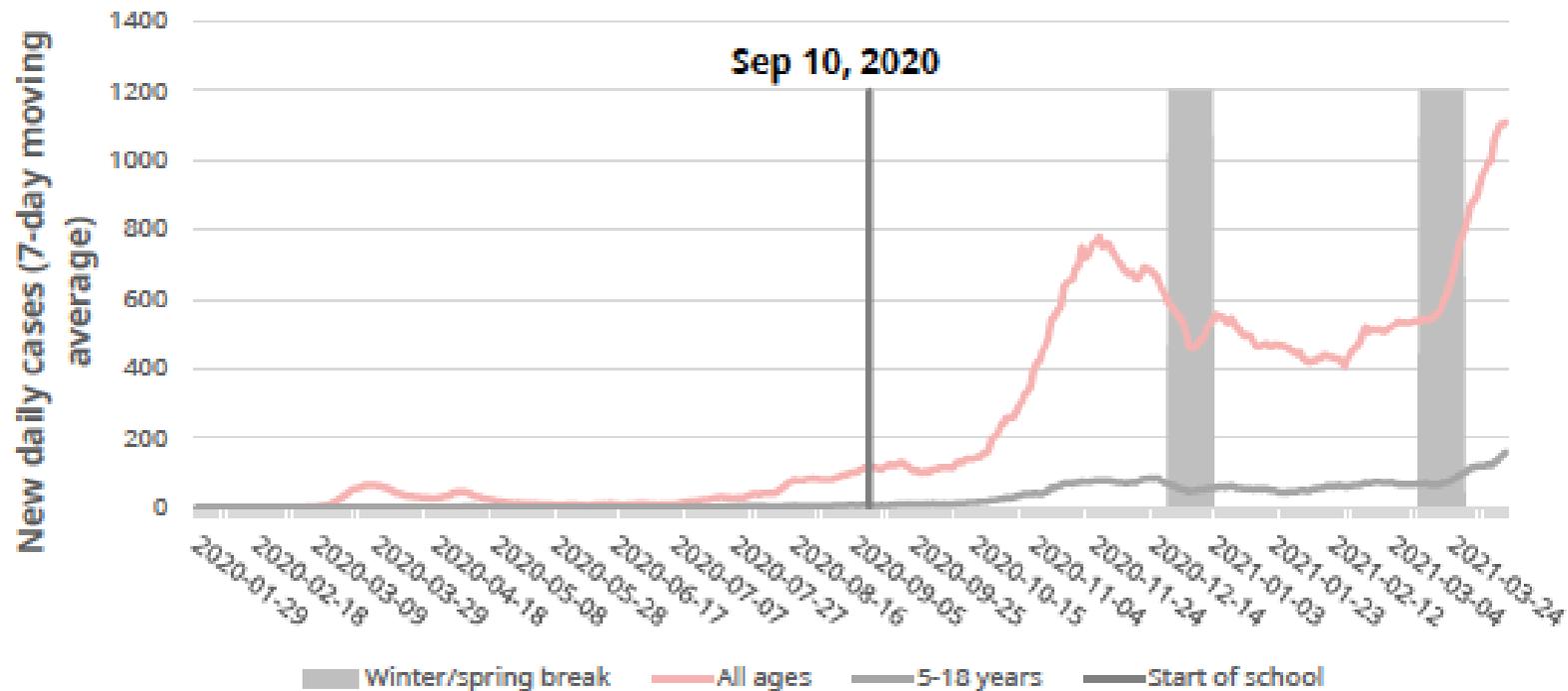
Reflections on the
2020/21 School Year

2020/21 School Year - Global Context

- [European Centre for Disease Control](#) (December 2020)
 - Return to school of children ~ mid-August 2020 coincided with a relaxation of other measures and does not appear to have been a driving force in the upsurge in cases observed in many EU Member States from Oct. 2020.
 - Trends in case *notification* rates observed since August 2020 for children aged 16-18 years most closely resemble those of adults aged 19-39 years.
 - Transmission of SARS-CoV-2 can occur within school settings and clusters have been reported in preschools, primary and secondary schools.
 - Incidence in schools appear to be impacted by level of community transmission.
 - Transmission in schools has accounted for a minority of COVID-19 cases in each country.
 - Education staff and adults within schools are generally not at a higher risk of infection than other occupations, although educational roles with frequent contact with older children and/or adults may be associated with higher risk.
 - The hierarchy of infection controls in school settings is effective in reducing risk of transmission

British Columbia

The start of school sessions do not appear to result in significant increases in community transmission of COVID-19 at the provincial level in BC



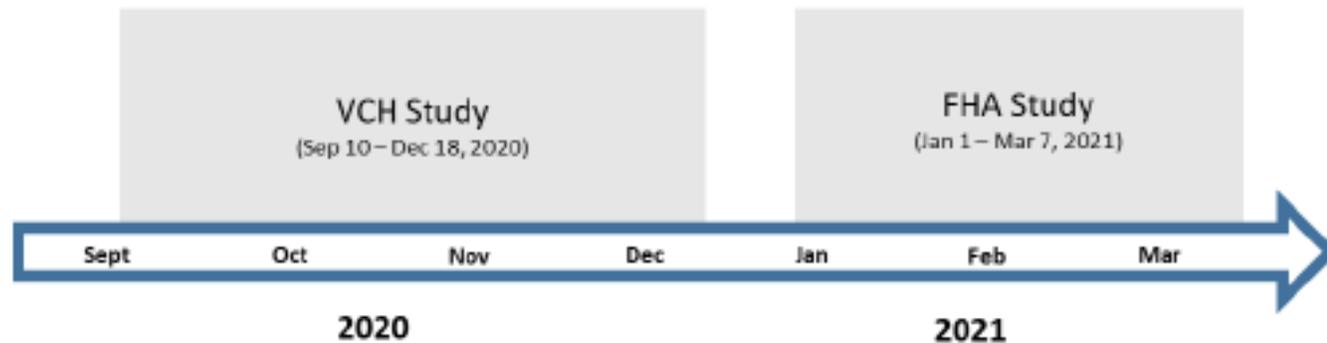
COVID-19 Virus Has a Relatively Low Infection Rate Among School-Aged Children (5 to 18 Years) in BC, From September 7, 2020 to April 9, 2021

Age Groups	Number of Cases	Percent of Cases	Percent of Population
0 – 4 Years	2113	2.07	4.41
5 – 12 Years	5468	5.37	7.65
13 – 18 Years	6350	6.23	6.16
19+ Years	87941	86.32	81.79

- No deaths among school age children due to COVID-19
- Less than 1 in 200 school aged children with COVID-19 hospitalized, which is considerably lower than adults 19+ years (1 in 20)

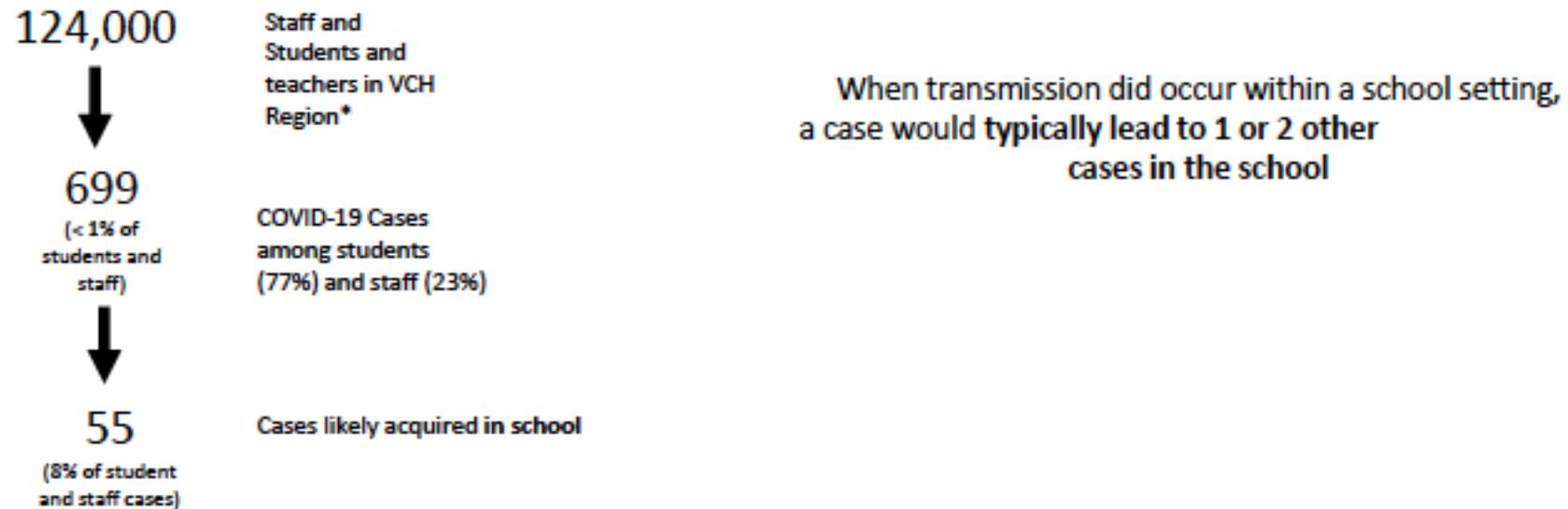
VCH and FHA School Transmission Studies

- In-depth reviews of COVID-19 cases among students and staff in K-12 schools within the Health Authorities help us understand what transmission looks like in the school setting.
- Identified cases where transmission likely occurred in school through review of contact tracing records.



Vancouver Coastal Health

Findings from the VCH Study (Sept 10 – Dec 18, 2020)



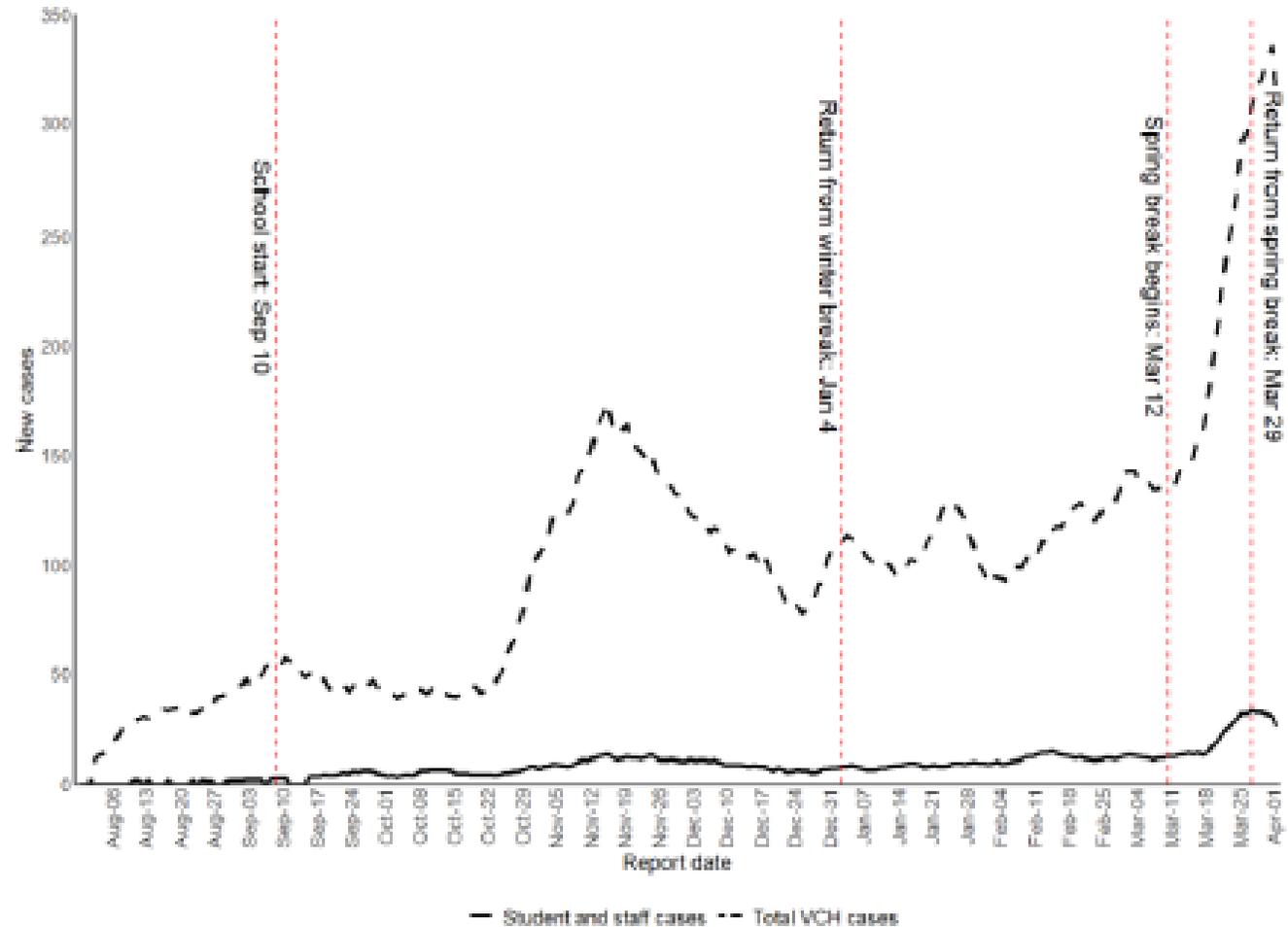
During this time period there were a total of 8,746 cases reported in the VCH Region

**Approximate estimate based on those attending schools in person during this time period*

Vancouver Coastal Health

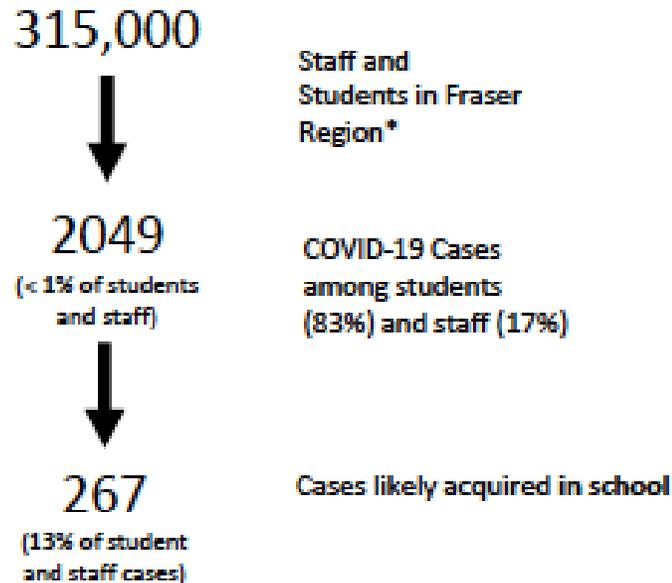
Student and Staff Cases make up a small proportion of overall cases in VCH

School closures during holidays do not appear to lead to reductions in overall cases among students and staff.



Fraser Health

Findings from the Fraser Health Study (Jan 1 – Mar 7, 2021)



- When transmission did occur within a school setting, a case would **typically lead to 1 other case in the school**
- No transmission was identified in approximately **85%** of schools in the Fraser region during this time period

During this time period there were a total of 16,053 cases reported in the Fraser Region

**Approximate estimate based Ministry of Education data*

Fraser Health

Student and Staff Cases make up a small proportion of overall cases in Fraser Health

Student and staff cases follow community trends – they are a reflection of community COVID-19 activity.



Thoughts from Pediatricians

- Learning online may have been preferred by some students (e.g. neurodevelopmental disabilities, anxiety disorders)
 - Majority of students seemed to have done better with in-person education
- Risk communications are key, including
 - Public health messaging about the risk of COVID-19
 - Protective measures in place
- (Pro)active engagement and knowledge translation could help deliver the messages more broadly



Questions

Thank you!

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Slide credit:

- Thanks to Drs. Quynh Doan, Trevor Corneil and Kate Smolina for their development and contribution of slides

Evidence Review: School Closures Impact on Learning, Child & Family Well-being

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