# IS "GOOD", GOOD ENOUGH?

## THE HEALTH & WELL-BEING OF CHILDREN & YOUTH IN BC

BRITISH COLUMBIA | Office of the Provincial Health Officer

CHILD HEALTH BC

LEAD BENEFACTOR save on foods

**VISIT THE ONLINE REPORT AT:**
**www.ChildHealthIndicatorsBC.ca**

**PROVINCIAL HEALTH OFFICER'S ANNUAL REPORT**

# IS "GOOD", GOOD ENOUGH?

## THE HEALTH & WELL-BEING OF CHILDREN & YOUTH IN BC

BRITISH COLUMBIA | Office of the Provincial Health Officer

CHILD HEALTH BC

LEAD BENEFACTOR save on foods

**VISIT THE ONLINE REPORT AT:**
**www.ChildHealthIndicatorsBC.ca**

**PROVINCIAL HEALTH OFFICER'S ANNUAL REPORT**

Ministry of Health
Victoria, BC

November, 2016

The Honourable Terry Lake
Minister of Health

Sir:

I have the honour of submitting the next Provincial Health Officer's Annual Report.

P.R.W. Kendall
OBC, MBBS, MHSc, FRCPC
Provincial Health Officer

# TABLE OF CONTENTS

TABLE OF CONTENTS

# LIST OF FIGURES & TABLES

## CHAPTER 1 | CHILD & YOUTH HEALTH & WELL-BEING IN BC



## CHAPTER 2 | PHYSICAL HEALTH & WELL-BEING

## CHAPTER 3 | MENTAL & EMOTIONAL HEALTH & WELL-BEING

## CHAPTER 4 | SOCIAL RELATIONSHIPS

## CHAPTER 5 | ECONOMIC & MATERIAL WELL-BEING

## CHAPTER 6 | COGNITIVE DEVELOPMENT

# ACKNOWLEDGEMENTS

This baseline report represents the work of a large-scale, collaborative initiative that involved many individuals from organizations and agencies across BC, and multiple government ministries.

## Report Oversight Committee

**Dr. Bonnie Henry** – *Executive Lead (PHO)*
Deputy Provincial Health Officer
Office of the Provincial Health Officer
BC Ministry of Health

**Mike Pennock**
Population Health Epidemiologist
Office of the Provincial Health Officer
BC Ministry of Health

**Dr. Eric Young**
*(former)* Deputy Provincial Health Officer
Office of the Provincial Health Officer
BC Ministry of Health

**Dr. Maureen O'Donnell** – *Executive Lead (CHBC)*
Executive Director
Child Health BC

**Jennifer Scarr**
Provincial Lead
Health Promotion, Prevention and Primary Care
Child Health BC

**John Greschner**
*(former)* Deputy Representative for Children and Youth
BC Office of the Representative for Children and Youth

The BC Provincial Health Officer, Dr. Perry Kendall, Child Health BC, and the entire Oversight Committee are grateful to the many experts, analysts, and contributors that made this report possible. They would especially like to thank the following individuals for their contributions and assistance in its development:

## Joint Report Team: Child Health BC and PHO Office

**Adrienne Bonfonti** – *Project Manager (PHO)*
Manager, Project Research Reporting Initiatives
Office of the Provincial Health Officer
BC Ministry of Health

**Sophia Baker-French** – *Research and editing*
Manager, Projects and Strategic Initiatives
Office of the Provincial Health Officer
BC Ministry of Health

**Barb Callander** – *Copy editing and referencing*
Manager, Projects and Strategic Initiatives
Population and Public Health
BC Ministry of Health

**Wendy Vander Kuyl** – *Data analysis*
Research Assistant
Office of the Provincial Health Officer
BC Ministry of Health

**Jennifer Scarr** – *Project Manager (CHBC)*
Provincial Lead
Health Promotion, Prevention and Primary Care
Child Health BC

**Jacquie Innes** – *Project Assistant*
Administrative Assistant
Child Health BC

**Richard Mercer** – *Data analysis*
Research Officer
Office of the Provincial Health Officer
BC Ministry of Health

## Report Advisory Committee (Alphabetical)

**Tavinder Ark**
Data Analytic Director
Human Early Learning Partnership
School of Population and Public Health
University of British Columbia

**Dr. Wilma Arruda**
Medical Director, Child, Youth and Family Health
Island Health Authority

**Adrienne Bonfonti**
Manager, Project Research Reporting Initiatives
Office of the Provincial Health Officer
BC Ministry of Health

**Deborah Chaplain**
Director, Child, Youth and Family Health
Vancouver Island Health Authority

**Dr. Jana Davidson**
Clinical Professor, Psychiatry
University of British Columbia; and
Psychiatrist-in-Chief
BC Children's Hospital

**Dr. Naomi Dove**
*(former)* Public Health Physician
Health Promotion and Disease Prevention
First Nations Health Authority

**Lydia Drasic**
*(former)* Executive Director, Operations and Chronic Disease Prevention
BC Centre for Disease Control

**Dr. Allison Eddy**
Head, Department of Pediatrics
University of British Columbia; and
Chief, Pediatric Medicine
BC Children's and Women's Hospital

**Michael Egilson**
Chair, Child Death Review Unit
BC Coroners Service
Ministry of Public Safety and Solicitor General

**Colleen Ellis**
Executive Director, Monitoring
BC Office of the Representative for Children and Youth

**Joan Geber**
*(former)* Executive Director, Women's Health Directorate
Population and Public Health
BC Ministry of Health

**Corey Green**
*(former)* Surveillance Manager, Health Services
First Nations Health Authority

**James Haggerstone**
Regional Manager, Health Information Analysis
Northern Health Authority

**Dr. Anne Junker**
Associate Professor, Allergy and Immunology
Department of Pediatrics
University of British Columbia; and
Co-Chair, Canadian Child and Youth Health Coalition

**Adam King**
Director, Provincial Health Promotion
Disease Prevention and Primary Care
Perinatal Services BC

**Jennifer May-Hadford**
*(former)* Epidemiologist
Office of the Medical Health Officer
Interior Health Authority

**Joanne Nelson**
*(former)* Epidemiologist
Community Health and Wellness Services
First Nations Health Authority

**Dr. Sue Pollock**
Medical Health Officer
Communicable Disease Unit and Child Health Services
Interior Health Authority

**Dr. Aven Poynter**
President
BC Pediatric Society

**Ian Rongve**
*(former)* Assistant Deputy Minister
Knowledge Management and Accountability
BC Ministry of Education

**Pippa Rowcliffe**
Deputy Director
Human Early Learning Partnership
School of Population and Public Health
University of British Columbia

**Dr. Elizabeth Saewyc**
Research Director
McCreary Centre Society; and
Professor, School of Nursing
University of British Columbia

**Kayla Serrato**
Team Lead, Maternal, Child and Youth Health and Wellness
First Nations Health Authority

**Carla Springinotic**
*(former)* Manager, Child Health
Population and Public Health
BC Ministry of Health

**Dr. Richard Stanwick**
Chief Medical Health Officer
Island Health Authority

**Duncan Stewart**
BC Adolescent Health Survey Coordinator; and Research Associate
McCreary Centre Society

**Darlene Therrien**
Executive Director, Knowledge Management
BC Ministry of Education

**Rachel Yeung Thompson**
Research Officer
BC Office of the Representative for Children and Youth

**Yasmin Tuff**
*(former)* Manager, Children and Youth Ambulatory Programs
Island Health Authority

**Dr. Shannon Waters**
*(former)* Director, Health Surveillance
First Nations Health Authority

**Kim Williams**
Provincial Executive Director
Perinatal Services BC

**Martin Wright**
Executive Director, Modelling, Analysis and Information Management
BC Ministry of Children and Family Development

**Michelle Wong**
*(former)* Director, Evaluation and Strategic Directions
BC Office of the Representative for Children and Youth

## Other Contributors (Alphabetical)

**Margaret Case**
Manager, Projects and Strategic Initiatives
Population and Public Health
BC Ministry of Health

**Melanie Foster**
Senior Policy Analyst, Early Childhood Health
Population and Public Health
BC Ministry of Health

**Kit Krieger**
Executive Director
BC Principals' and Vice-Principals' Association

**Dr. Nicolette McGuire**
*(former)* Director, Clinical Prevention and Evaluation
Population and Public Health
BC Ministry of Health

**Dr. Ian Pike**
Director
BC Injury Research and Prevention Unit

**Dr. Colleen Poon**
Research Associate
McCreary Centre Society

**Gerald Morton**
Director, Applied Research & Evaluation
Analytics and Governance Division
BC Ministry of Education

**Suud Nahdi**
Healthcare Consultant
Child Health BC

A special thanks also goes to the youth from BC's "Student Voice" group who participated enthusiastically in this work. We are grateful for their openness in sharing their experiences and their thoughts on our findings, and for allowing us to include their voices in this report. Thanks also to the BC Principals' and Vice-Principals' Association for their support.

# HIGHLIGHTS

# SUMMARY OF KEY FINDINGS

This baseline report explores the health and well-being of children and youth in BC through a suite of 51 indicators identified in the report from the Office of the Provincial Health Officer and the Canadian Institute for Health Information in 2013. This report provides a holistic view of health focusing on the contributing factors, modifiable conditions, and actions that can make a difference to child and youth health and well-being outcomes.

This report is divided into the critical dimensions of health and well-being that together play a significant role in a child's life: **Physical Health & Well-being**; **Mental & Emotional Health & Well-being**; **Social Relationships**; **Economic & Material Well-being**; and **Cognitive Development**. For each dimension, population data and current evidence are presented for the related indicators. The analyses presented explore indicators by age, sex or gender, and/or geography (health authority and health service delivery area). The report concludes with five recommendations.

## Physical Health & Well-being

The indicators for physical health and well-being reflect a life course approach to examining child and youth health in BC.

### *Infants*

- In BC, the proportion of low birth weight babies has remained stable over the past several years.
- The percentage of mothers who reported smoking during pregnancy decreased; however, there is a considerable range in the percentage of smoking during pregnancy based on geography.
- In this report, binge drinking among women in their reproductive years is used to explore alcohol consumption during pregnancy. Over the last 11 years, binge drinking among women of reproductive age in BC has increased.
- The infant mortality rate in BC has decreased over the last 30 years.
- In BC in 2012, approximately 40 per cent of mothers exclusively breastfed their babies for the first six months, which is high compared to other provinces, but there is still room for improvement, especially in northern BC.

### *Young Children*

- Almost all children age 0–3 in BC are screened for hearing, and supports are offered in a timely way.
- There has been an overall decrease in the number of children with visible tooth decay in BC, but again there are geographic disparities, with children in northern BC not faring as well as other children.
- While there is evidence that most parents believe that vaccines are safe, effective, and important to children's health,[1] it is concerning that almost one-third of BC children are not up-to-date in their immunizations by the time they turn seven.
- There has been no improvement over time in kindergarten children's fine and gross motor skills.

### *Children and Youth*

- A high percentage of BC students reported eating fruits or vegetables; nevertheless, there is still room for improvement, as 6 per cent reported that they had not eaten any fruits or vegetables the previous day.

- One in four students has an unhealthy weight based on their self-reported height and weight.
- Most youth rated themselves as having "good" or "excellent" health.
- Geographic differences in BC indicate that a higher percentage of students participate in daily physical activity in rural areas as compared to more urban areas, and there is a striking difference in physical activity rates between sexes.
- The percentages of BC youth who have ever used tobacco, consumed alcohol, or used marijuana have decreased. Additionally, the percentages of youth who use tobacco daily, who binge drink, and who use marijuana on a regular basis have also decreased.
- While youth tobacco use is decreasing overall, there are substantial geographic differences in its use.
- Given that the incidence of chlamydia is an indicator of risky sexual activity, it is concerning that there has been little progress in this area over the last 10 years.
- There has been a substantial decrease in teen pregnancy since 1989; however, for the health authorities, there is a five-fold difference between the highest rate (Northern Health) and the lowest rate (Vancouver Coastal Health).
- The prevalence of asthma, which is an indicator of chronic disease in childhood, remains essentially unchanged over the last decade, at one in 10 children in BC.
- Serious injuries among children and youth show a downward trend, but there is an almost two-fold difference across the geographic areas in the province.

## Mental & Emotional Health & Well-being

- Overall, BC youth have a positive view of themselves and their lives; however there are differences between sexes across indicators. Compared to males, fewer females reported positive self-esteem, positive self-rated mental health, and positive life satisfaction.
- Females considered suicide and attempted suicide at a higher rate than males; however, males had a higher suicide mortality rate. It is further troubling that there are clear geographic differences for these indicators.

## Social Relationships

- Social connections with one's family, school, and community are known to be protective factors that foster healthy development, decision-making, and behaviours.[2–5] While it is encouraging that youth in BC are reporting a higher level of family connectedness than in the past, it is concerning that an increasing number of youth report not having an adult they can talk to if they have a serious problem.
- Youth also report a higher level of school connectedness than in previous years.
- Community connectedness is not as strong for youth, and only 40 per cent of youth in BC reported a sense of belonging to their community. Less than 60 per cent of female youth reported feeling safe in their neighbourhoods at night.
- Many youth across BC report participation in activities outside of school such as sports, art, music, and drama, and sports or exercise classes with or without an instructor. The participation rate across the province is moderately high and is

consistent over time, except for participation without an instructor, which has decreased. There is geographic variation in the rates of participation in activities based on the type of activity.

- More males than females experienced discrimination on the basis of race, ethnicity, or skin colour; however, the percentage of males who experienced this has decreased in recent years. There has been an overall increase in children and youth who experience discrimination based on sexual orientation, with the largest increase seen among females. There are geographic differences in rates of discrimination based on race and ethnicity, and based on sexual orientation.
- The percentage of BC youth who report being bullied remains high and has increased slightly over the past 10 years, with more females reporting being bullied. Cyberbullying has decreased over the same time.
- Geographic differences in abuse and neglect are important, with children and youth living in northern BC being much more likely to be abused or neglected than children and youth elsewhere in the province.
- There appears to be an emerging slight downward trend in the percentage of youth who have experienced sexual abuse, with females being three times more likely than males to have experienced sexual abuse.
- There are large geographic differences in the rate of children and youth in care.
- The overall rate of youth in the BC justice system declined substantially over the 10 years presented.

## Economic & Material Well-being

- The percentage of people with unmet core housing needs in BC was highest among the Canadian provinces by a substantial margin, with Vancouver having the highest rate among three urban centres in the province.
- While the unmet food needs of youth have decreased, more than 7 per cent of youth report going to bed hungry, with higher rates in some regions of BC.
- Among Canadian provinces, BC had the second highest percentage of persons under age 18 living in low-income households. This high percentage was driven by rates as high as 20 per cent in some regions of the province.
- The percentage of families with an unemployed parent in BC was lower than the national percentage before 2008; however, in 2014 BC was close to the Canadian average.
- The percentage of BC youth who were not in education, employment, or training was consistently higher than the national average, and there were significant geographic differences across the province.

## Cognitive Development

### *Young Children*

- Over the past 10 years in BC there has been a decrease in the percentage of kindergarten children who require additional support and care in their language and cognitive development in order to avoid future challenges in school and society. The percentage of children requiring similar support for their communication skills and

general knowledge has remained relatively stable. This is generally a success, as it indicates that children are arriving at school more prepared than in the past from a literacy and numeracy perspective; however, there are geographic differences across the province.

- The percentage of kindergarten children who require additional support and care in the area of social competence and emotional maturity has increased. Since mental wellness and illness in later life is rooted in childhood, the increasing vulnerability in social competence and emotional maturity is a concern. There are also geographic differences across the province identified in these data.

### *Children and Youth*

- While the indicators for academic performance have been relatively steady over the years in BC overall, there are clear geographic differences in educational achievement. For example, across several measures (reading and numeracy sections of the Foundation Skills Assessment, and English and Math Provincial Examinations), schools within Vancouver Coastal Health Authority performed substantially better than schools within Northern Health Authority.

- While most of the indicators for academic performance have remained steady over the years, high school completion across BC increased. Among the health authorities, the percentage of students who graduated high school is highest in Fraser Health, followed by Vancouver Coastal Health by a very small margin, while Northern Health had the lowest percentage of students graduating high school, trailing Fraser Health by 18 percentage points.

## DISCUSSION & RECOMMENDATIONS

The information presented in this report shows that overall the health and well-being of youth and children in BC is reasonably good, particularly when compared to other jurisdictions in Canada. But is "good", good enough? Some indicators are stable and not showing improvement, meaning a portion of children and youth are continually left behind in health and wellness. Additionally, for many indicators there are substantial disparities based on sex/gender, and based on geography.

To address the disparities in child and youth health and wellness in BC, the Provincial Health Officer and Child Health BC conclude this report by offering five recommendations for collective action among communities, health authorities, school boards, ministries, and children, youth, and families. These include creating a provincial-level inter-ministerial leadership committee to support action resulting from this report; committing to addressing and conducting further analyses of the health disparities based on sex/gender and on geography; developing mechanisms to share best practice programs and initiatives; developing a coordinated approach to ongoing data collection and reporting; and creating an ongoing forum to engage BC youth with community stakeholders to plan and undertake actions that enhance child and youth health and well-being throughout BC.

## REFERENCES

[1] Statistics Canada. Childhood National Immunization Coverage Survey, 2013. The Daily. Ottawa, ON: Statistics Canada; 2015 Jul 21 [cited 2016 Apr 6]. Available from: http://www.statcan.gc.ca/daily-quotidien/150721/dq150721c-eng.htm.

[2] Saewyc E, Tonkin R. Surveying adolescents: focusing on positive development. Paediatric Child Health. 2008 Jan;13(1):43-7.

[3] Shonkoff J, Phillips D. From neurons to neighborhoods - the science of early childhood development. Washington, DC: National Academy Press; 2000.

[4] Resnick MD, Bearman PS, Blum RW, Bauman KE, Harris KM, Jones J, et al. Protecting adolescents from harm--findings from the National Longitudinal Study of Adolescent Health. JAMA. 1997 Sep 10;278(10):823-32.

[5] Federal, Provincial and Territorial Advisory Committee on Population Health. Toward a healthy future. Second report on the health of Canadians. Charlottetown, PE: Federal, Provincial and Territorial Advisory Committee on Population Health; 1999.

# CHILD & YOUTH HEALTH & WELL-BEING IN BC

## CHAPTER 1

# INTRODUCTION

## Child & Youth Health & Well-being

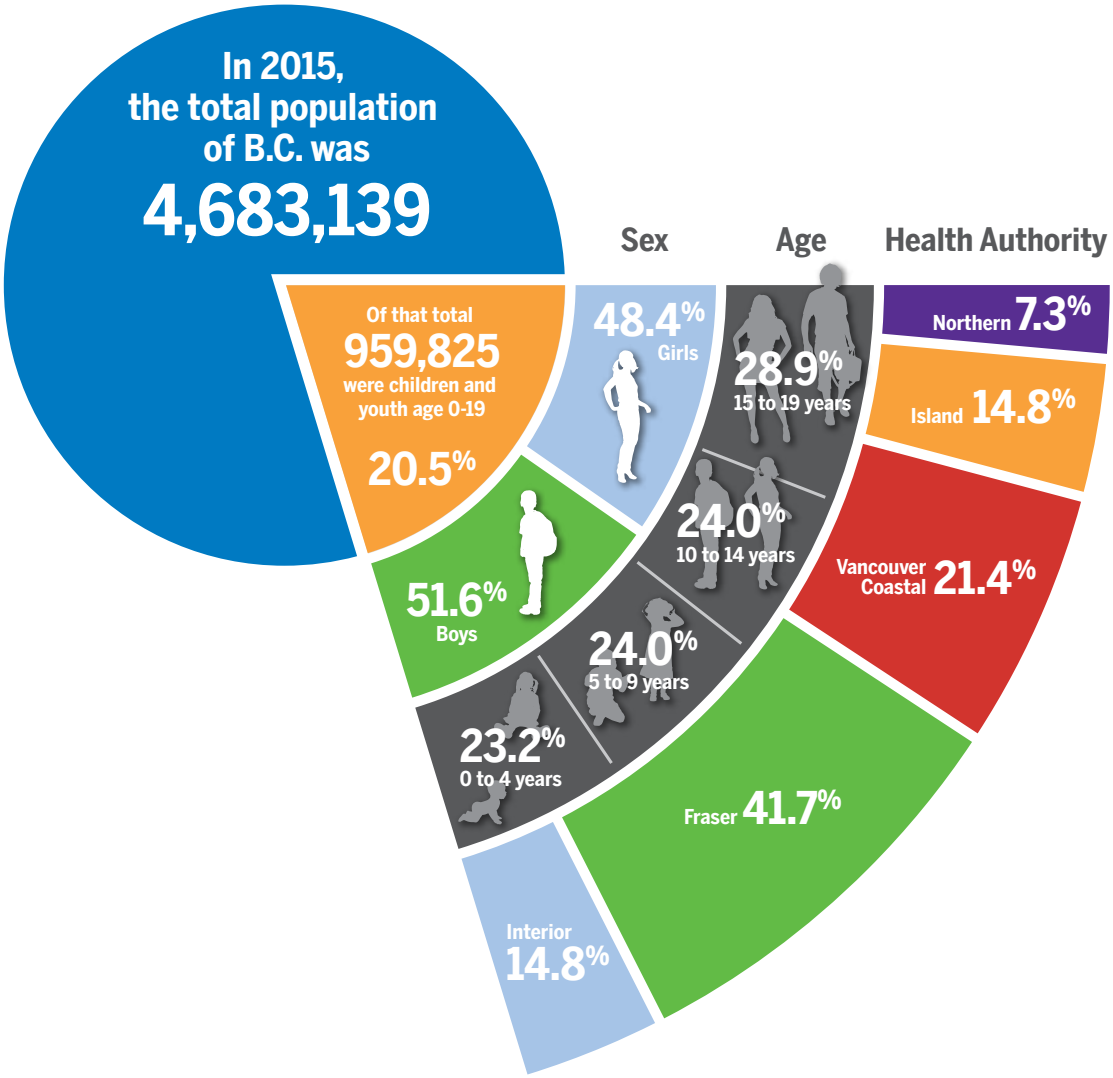
British Columbia is often considered to be the healthiest place in Canada. This was confirmed in a recent Conference Board of Canada report, which stated that BC was rated the top-ranked province for health in Canada and was third overall, behind Switzerland and Sweden, when compared to 16 similar high-income countries and the other Canadian provinces.[1] But how healthy are children and youth in BC? The answer to this question is important because the childhood years have the strongest impact on the rest of our lives and provide the greatest opportunity for positive influence on a number of immediate and long-term outcomes for health and well-being.[2] Healthy children and youth are more ready and able to learn and, in the longer term, are more likely to become healthy adults and productive citizens who support the continued vitality of society.[3] As shown in Figure A, of the approximately 4.7 million people living in BC in 2015, 959,825 (20.5 per cent of the population) were children and youth (0–19 years).[4] Figure B shows that the highest ratio of children to adults among health authorities was in Northern Health, where 25.0 per cent of the population were children, while the lowest ratio was in Vancouver Coastal Health, where 17.8 per cent of the population were children.[4]

The years between conception and age six are a particularly critical time when crucial physical and social development takes place.[5] The quality of interactions that children have with their environment in the first few years of life—and even before birth—play a vital role in shaping their brains, their stress systems, and consequently their behaviours, their capacity to learn, and their later health, emotional, and social outcomes.[6–10] Experiences in early life become biologically embedded, changing the way certain genes are expressed, which may result in chronic illness in mid-life and beyond.[5] Positive health-promoting influences can set in motion a beneficial and health-affirming cycle, leading to optimal health trajectories.[11] Protecting and promoting the well-being of children can positively influence health outcomes later in life and minimize the negative impact of adverse childhood events.[5]

Improving the lives of children and youth in this province is essential to the health and well-being of not only the child and youth population, but also the province as a whole. This report provides data, related literature, discussions, and recommendations for decision-makers, educators, planners, members of communities, and youth to make the changes that are needed to improve the health and well-being of all children and youth in BC.

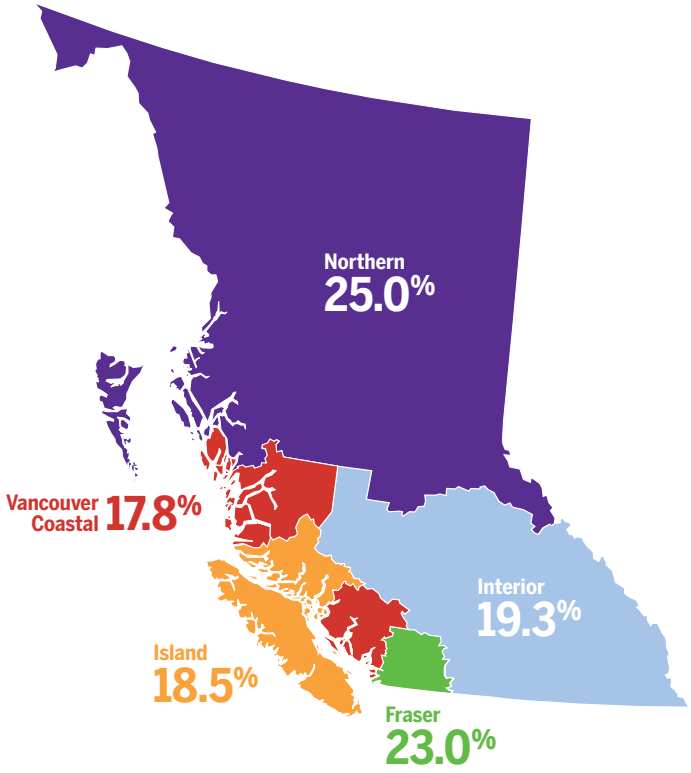
Supporting the health and well-being of children and youth through the social determinants of health is critical. The social determinants of health, such as housing, income, education, and employment, have a vital role in determining health outcomes. This report provides a holistic view of health and reflects the best and most current evidence on the contributing factors and modifiable conditions that truly make a difference to child and youth health and well-being outcomes.

**FIG A** Overview of the Child and Youth Population Age 0–19




**Source:** Reproduced with permission from the BC Office of the Representative for Children and Youth. 2015. *Growing Up in BC-2015*.[13] Data are from BC Stats, Population Estimates 2015.[4] Prepared by the Office of the Provincial Health Officer, Ministry of Health, 2016.

**FIG B** Proportion of BC Health Authority Population Age 0–19




**Source:** Reproduced with permission from BC Office of the Representative of Children and Youth. 2015. *Growing Up in BC-2015*.[13] Data are from BC Stats, Population Estimates 2015.[4] Prepared by the Office of the Provincial Health Officer, Ministry of Health, 2016.

## Background

In 2013, the Provincial Health Officer (PHO) undertook a process to produce a series of indicators for monitoring the health and well-being of children and youth in BC. The process to develop the indicators and the final suite of 51 indicators were published in 2013 in the report entitled *Child and Youth Health and Well-being Indicators Project: CIHI and B.C. PHO Joint Summary Report*.[12] This report identified modifiable indicators for which data can be collected and analyzed to define and track child and youth health and well-being in BC.

Building on this, Child Health BC partnered with the PHO to develop this baseline report on child and youth health and well-being. An extensive collaborative process brought together stakeholders from across the province to analyze the data and determine the key findings for each of the indicators, using an evidence-based population health approach. The resulting information can inform decision-making as it relates to the development of policy, programs, and services aimed at improving the lives of children and youth in BC. In addition, through BC Student Voice, a network of students from school districts across the province, youth provided input on some of the indicators and related data. Their comments and recommendations provide rich insight into these indicators and are highlighted in this report.

# DIMENSIONS OF HEALTH & WELL-BEING

This report is divided into the dimensions of health and well-being that together play a significant role in a child's or youth's life: **Physical Health & Well-being**; **Mental & Emotional Health & Well-being**; **Social Relationships**; **Economic & Material Well-being**; and **Cognitive Development**.

**Physical Health & Well-being** is more than the absence of disease. It includes having a healthy start (breastfeeding, immunizations, prenatal care), healthy weights, healthy eating, accessible preventive dental care, prevention of substance abuse and sexually transmitted infections, healthy development, safe enviroments, and more.

**Mental & Emotional Health & Well-being** refers to a range of personal characteristics, self-regulating abilities, capacity for connectedness, and freedom from anxiety and depression. It includes the presence of personal characteristics such as optimism, positive self-worth, emotional well-being and stability, and perceived safety and security.

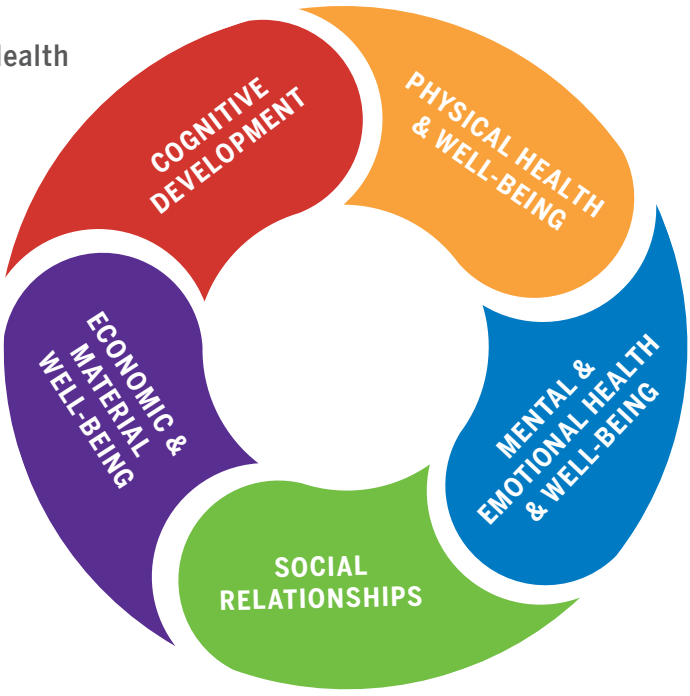
**Social Relationships** are key components of child and youth health and well-being. This includes relationships that are close, trusted, warm, caring, accepting, affirming, and reciprocal with parents, peers, teachers, coaches, and others.

**Economic & Material Well-being** is central to supporting healthy lifestyles needed for child and youth well-being. It includes access to nutritious food, adequate housing, and adequate household income and employment.

**Cognitive Development** refers to how children perceive, think about, and gain understanding of their world. Important aspects include the acquisition of age-appropriate reading, writing, and numeracy skills, as well as decision-making, critical thinking, problem-solving, and self-regulatory learning skills that prepare children and youth for healthy living and meaningful work in their adult years.

**A dynamic balance among the dimensions will support children and youth to reach their potential for their own benefit and that of their community.[12]**

**FIG C** Dimensions of Health and Well-being



## SELECTION OF THE CHILD & YOUTH HEALTH INDICATORS

This report is part of a larger project, which has been ongoing since approximately 2010, the goal of which is to develop and monitor indicators to measure the status of child and youth health and well-being in BC. The indicators and related summary report were developed by the Canadian Institute for Health Information (CIHI) and the Office of the PHO, with the support of many stakeholders and experts from multiple provincial government ministries and non-government organizations. These subject-matter experts formed three project groups: a Project Advisory Committee, a Technical Advisory Committee, and a Project Working Group.

Project activities to develop the indicators included the following:

- Completing a literature review to identify the range of issues and factors considered important, and developing a holistic framework and criteria to guide the identification and selection of indicators.
- Conducting a workshop with topic experts who assessed and validated the framework and selection criteria.
- Evaluating the relevance of the selected concepts and indicators.
- Developing methodology to evaluate the evidence for selected concepts and indicators in order to support their inclusion in the pending PHO report.
- Developing technical documentation for each indicator to provide guidance for ongoing data collection and measurement.

Through these processes, project partners selected specific indicators that were grouped into the five key headings: physical health and well-being; mental and emotional health and well-being; social relationships; economic and material well-being; and cognitive development. Within these five dimensions of health and well-being, the partners established a suite of 51 health indicators, and also identified 17 "gap indicators"—indicators with a lack of data availability.

Indicators were selected based on the following criteria:

1. Significance to the well-being of children and youth.
2. Relevance to policy.
3. Based on rigorous research methods.
4. Capable of producing estimates for key subgroups.
5. Easily understood by multiple stakeholders.
6. Amenable to common interpretation and comparability.

The goal was for the final suite of 51 indicators to form the basis for future PHO reports on child and youth health and well-being in BC, and to help inform health system decision-making and the development of policy, programs, and services benefitting children and youth in BC. The current report uses these 51 indicators to present a baseline report. See Table A for a summary of the final five dimensions and 51 indicators.

## TABLE A Dimensions and Indicators of Child and Youth Health and Well-being in BC

| PHYSICAL HEALTH & WELL-BEING | MENTAL & EMOTIONAL HEALTH & WELL-BEING | SOCIAL RELATIONSHIPS | ECONOMIC & MATERIAL WELL-BEING | COGNITIVE DEVELOPMENT |
|---|---|---|---|---|
| #1 Low Birth Weight | #22 Incidence & Prevalence of the Most Common Mental Health Disorders | #29 Positive Parent Relationship | #40 Children & Youth Living in Low-income Households | #45 Communication Skills |
| #2 Smoking during Pregnancy | #23 Positive Self-esteem | #30 Trusting Adult Relationship | #41 Parental Unemployment Rate | #46 Pro-social Behaviour Skills |
| #3 Alcohol Use during Pregnancy | #24 Positive Self-rated Mental Health | #31 School Connectedness Rate | #42 Children Living in Families with Poor Housing Conditions | #47 Child Literacy |
| #4 Breastfeeding | #25 Positive Life Satisfaction | #32 Community Connectedness Rate | #43 Unmet Food Needs | #48 Child Numeracy |
| #5 Fruit & Vegetable Consumption | #26 Considered Suicide | #33 Incidence of Abuse/ Neglect | #44 Youth Not in Education, Employment, or Training | #49 Grade 10 Literacy |
| #6 Vision Screening | #27 Suicide Rate | #34 Incidence of Sexual Abuse | | #50 Grade 10 Math |
| #7 Hearing Screening | #28 Most Common Prescription Mental Health Drugs | #35 Rate of Children in Care | | #51 High School Completion |
| #8 Dental Caries Prevalence | | #36 Discrimination Rate | | |
| #9 Percentage of Children with Healthy Weight | | #37 Bullying Rate | | |
| #10 Positive Self-rated Health | | #38 Youth Conviction Rate | | |
| #11 Youth Physical Activity Levels | | #39 After-school Activities | | |
| #12 Frequency of Tobacco Use | | | | |
| #13 Binge Drinking | | | | |
| #14 Marijuana Use | | | | |
| #15 Immunization Rates | | | | |
| #16 Asthma Prevalence | | | | |
| #17 Serious Injury among Children and Youth | | | | |
| #18 Chlamydia Incidence | | | | |
| #19 Teenage Birth Rate | | | | |
| #20 Physical Health and Well-being Skills | | | | |
| #21 Infant Mortality Rate | | | | |

## DATA SOURCES & METHODOLOGY

For each of the indicators, high-quality, reliable, and valid data were obtained from a variety of provincial and national sources. Sources of data used to examine the indicators include administrative databases from BC ministries of Health, Education, Justice, and Children and Family Development; the McCreary Centre Society's Adolescent Health Survey; the Human Early Learning Partnership's Early Development Instrument; Statistics Canada's Canadian Community Health Survey; and more. Since multiple sources of data were used, there is variation in the years available, and the ages of children and youth for which data were available. In addition, the sources use a variety of collection methods, such as administrative government data, self-reported responses on provincial and national surveys, and parent-reported responses. Much of the data in this report is self-reported.

Due to the comprehensive nature of the indicators and the variety of sources used to explore them, there were a few challenges in data availability and analyses. First, data were not consistently available across all of the dimensions. For example, data on some aspects of physical health and well-being were readily available in multiple forms, while data on the dimensions of mental and emotional health and well-being, and social relationships were not typically as available. Second, there were some challenges in data consistency across time periods. Consistency across time contributes to meaningful monitoring of performance measures. There have been changes to many major data sets in the last few years, most notably the Canadian long-form census. The federal government's decision to discontinue the mandatory long-form census in 2011 resulted in serious gaps in both demographic data and information on families living on low incomes. Data available from the voluntary National Household Survey, which replaced the long-form census, are not comparable over time and are generally much less reliable than previous census data. Overall, where high quality data were not available, the data were not included. Recommendations in this report identify some topic areas where more high-quality data is needed.

Bolded text throughout this report indicate glossary terms, which are defined in Appendix A: Glossary. For more information about data sources please see Appendix B: Data Sources.

## ORGANIZATION OF THIS REPORT

This report examines each of the 51 selected indicators, organized by their respective dimension of health and well-being. Chapter 2 presents the 21 indicators for physical health and well-being. Chapter 3 explores the seven indicators for mental and emotional health and well-being. Chapter 4 looks at the 11 indicators for social relationships. Chapter 5 presents the five indicators for economic and material well-being. Chapter 6 explores the seven indicators for cognitive development. Examination of each indicator includes a brief review of related literature, data figures where available, and a few observations of the trends and patterns shown in the data. Chapter 7 provides a summary and discussion of key findings among the indicators. It offers five recommendations that aim to help inform health system decision-making and the development of policy, programs, and services benefitting BC's children and youth, with the ultimate goal of improving child and youth health and well-being in BC.

## REFERENCES


[1] Conference Board of Canada. How Canada performs. Provincial and territorial ranking: health [Internet]. Ottawa, ON: Conference Board of Canada; 2015 Feb [cited 2016 Feb 26]. Available from: http://www.conferenceboard.ca/hcp/provincial/health.aspx.

[2] Chief Public Health Officer. Report on the state of public health in Canada 2009. Growing up well – priorities for a healthy future. Ottawa, ON: Chief Public Health Officer; 2009 [cited 2016 Feb 26]. Available from: http://www.phac-aspc.gc.ca/cphorsphc-respcacsp/2009/fr-rc/pdf/cphorsphc-respcacsp-eng.pdf.

[3] Committee on Evaluation of Children's Health, Board on Children, Youth and Families, Division of Behavioral and Social Sciences and Education, National Research Council, Institute of Medicine. Children's health, the nation's wealth: assessing and improving child health. Washington, DC: The National Academies Press; 2004.

[4] BC Stats. Population estimates [Internet]. Victoria, BC: BC Stats; [cited 2016 Jul 26]. Available from: http://www.bcstats.gov.bc.ca/StatisticsBySubject/Demography/PopulationEstimates.aspx.

[5] Royal College of Physicians and Surgeons of Canada. Early childhood development. Royal College position statement. Ottawa, ON: Royal College of Physicians and Surgeons of Canada; [released 2014 Jun 26].

[6] Hertzman C. Framework for the social determinants of early child development. Encyclopedia on early childhood development [Internet]. Montreal, QC: Centre of Excellence for Early Childhood Development; 2010 Nov. Available from http://www.child-encyclopedia.com/sites/default/files/textes-experts/en/669/framework-for-the-social-determinants-of-early-child-development.pdf.

[7] McCain M, Mustard J, McCuaig K. Early years study 3: making decisions, taking action. Toronto, ON: Margaret & Wallace McCain Family Foundation; 2011.

[8] World Health Organization. Closing the gap in a generation: health equity through action on the social determinants of health. Final report of the Commission on Social Determinants of Health. Geneva: World Health Organization; 2008 [cited 2016 Feb 26]. Available from: http://www.who.int/social_determinants/thecommission/finalreport/en/index.html.

[9] Wilkinson R, Marmot M, editors. Social determinants of health: the solid facts. 2nd ed. Cophenhagen: World Health Organization; 2003 [cited 2016 Feb 26]. Available from: http://www.euro.who.int/__data/assets/pdf_file/0005/98438/e81384.pdf.

[10] McCain M, Mustard JF. Reversing the real brain drain. Early years study. Toronto, ON: The Canadian Institute for Advanced Research; 1999.

[11] Halfon N, Larson K, Russ S. Why social determinants? Healthc Q. 2010;14 Spec No 1:8-20.

[12] Canadian Institute for Health Information. Child and youth health and well-being indicators project: CIHI and B.C. PHO joint summary report. Ottawa, ON: Canadian Institute for Health Information; 2013 Feb.

[13] BC Office of the Representative for Children and Youth and BC Office of the Provincial Health Officer. Growing up in B.C.- 2015. Victoria, BC: BC Office of the Representative for Children and Youth; 2015 [cited 2016 Aug 25]. Available from: http://www2.gov.bc.ca/assets/gov/health/about-bc-s-health-care-system/office-of-the-provincial-health-officer/reports-publications/special-reports/guibc-2015.pdf.

# PHYSICAL HEALTH & WELL-BEING

## CHAPTER 2

Physical health and well-being includes, but goes beyond, the absence of disease. Core markers of child and youth physical health and well-being include healthy starts (breastfeeding, immunizations, and prenatal care); healthy weights; healthy eating and sleeping habits; accessible preventive dental care; and developmental screening. Physical health also includes injury prevention and safe environments. A sense of vitality, opportunities for recreational activities, physical fun and challenges, and access to traditional food sources are also important.

# INDICATOR #1 Low Birth Weight

## DEFINITION

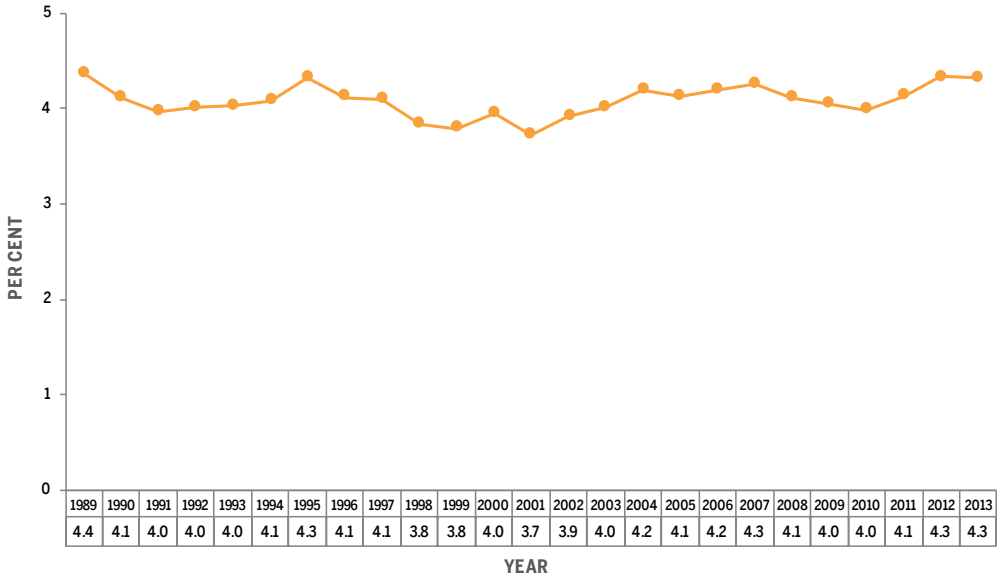
*INDICATOR #1* — The proportion of singleton births, including preterm births, with a low birth weight (less than 2,500 grams).[a,1]

## KEY MESSAGES

- **Low birth weight (LBW)** is defined as singleton births weighing less than 2,500 grams and including preterm births. It is used around the world as an indicator of the health status of newborns and as a predictor of health and developmental outcomes in later life.[2] **"Singleton"** means one child was carried and born with the pregnancy.[3] **"Preterm birth"** refers to an infant born before 37 weeks of pregnancy.[4]
- In Canada, the proportion of LBW babies increased slightly, from 5.7 per cent in 1994–98 to 6.0 per cent in 2004–08.[5] LBW is associated with a high maternal age (35 years or older[6]), low maternal pre-pregnancy weight, smaller maternal stature, and other factors.[1,7]
- Some modifiable predictors of LBW include low socio-economic status, poor maternal weight gain, smoking during pregnancy, consumption of alcohol and other drugs during pregnancy, overall maternal health, and experiencing abuse during pregnancy.[7]
- LBW births occur more frequently among vulnerable or disadvantaged subpopulations,[8] which makes LBW an important marker of population health disparities (i.e., differences in the health status among sub-populations).
- As shown in Figure 1.1, overall, the percentage of LBW infants among singleton births in BC has been relatively stable over the last 25 years.
- **High birth weight (HBW)** is defined as singleton births weighing more than 4,000 grams. HBW is associated with lower socio-economic status, lower level of education, and other factors, and is an issue that needs to be considered as it has implications for healthy development among children and youth (e.g., weight issues, diabetes).[9–11] HBW data are not presented here but will be considered in future updates and analyses.

[a]It should be noted that the original indicator was only inclusive of term births; however, evidence shows that low birth weight has implications for babies' health and well-being whether they were delivered at term or preterm.[1] As such, during the development of the current report the Advisory Committee revised the indicator to include all low birth weight singleton births (both term and preterm).

## FIG 1.1 Percentage of Low Birth Weight Babies among Singleton Births, BC, 1989 to 2013



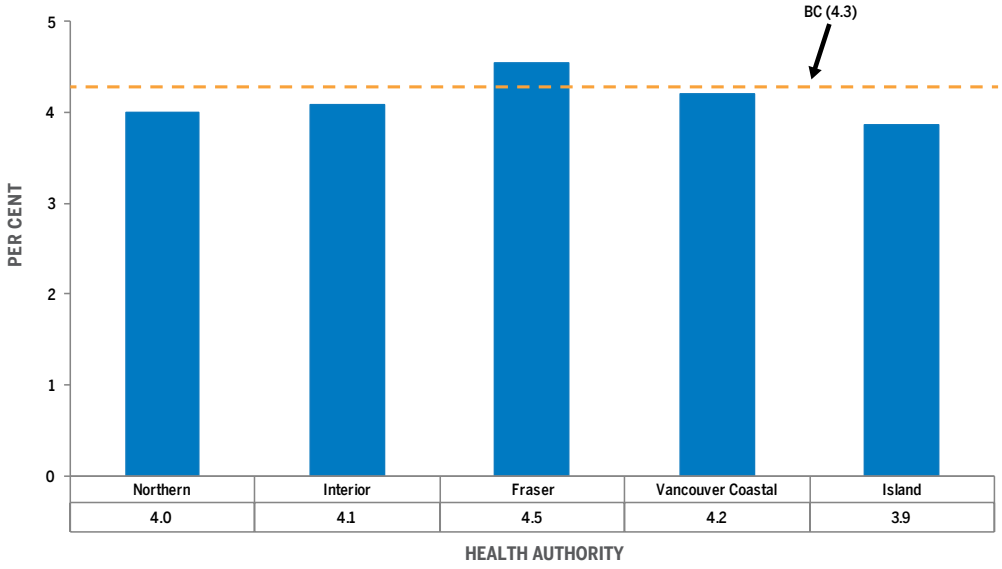

| 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4.4 | 4.1 | 4.0 | 4.0 | 4.0 | 4.1 | 4.3 | 4.1 | 4.1 | 3.8 | 3.8 | 4.0 | 3.7 | 3.9 | 4.0 | 4.2 | 4.1 | 4.2 | 4.3 | 4.1 | 4.0 | 4.0 | 4.1 | 4.3 | 4.3 |

YEAR

**Notes:** "Low birth weight" means live births of babies weighing less than 2,500 grams and includes preterm births (babies born before 37 weeks gestation). "Singleton" means one child carried and born. See Appendix B for more information about this data source.

**Source:** BC Vital Statistics Agency, 1989 to 2013 data. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 1.2 Percentage of Low Birth Weight Babies among Singleton Births, by Health Authority, BC, 2011-2013



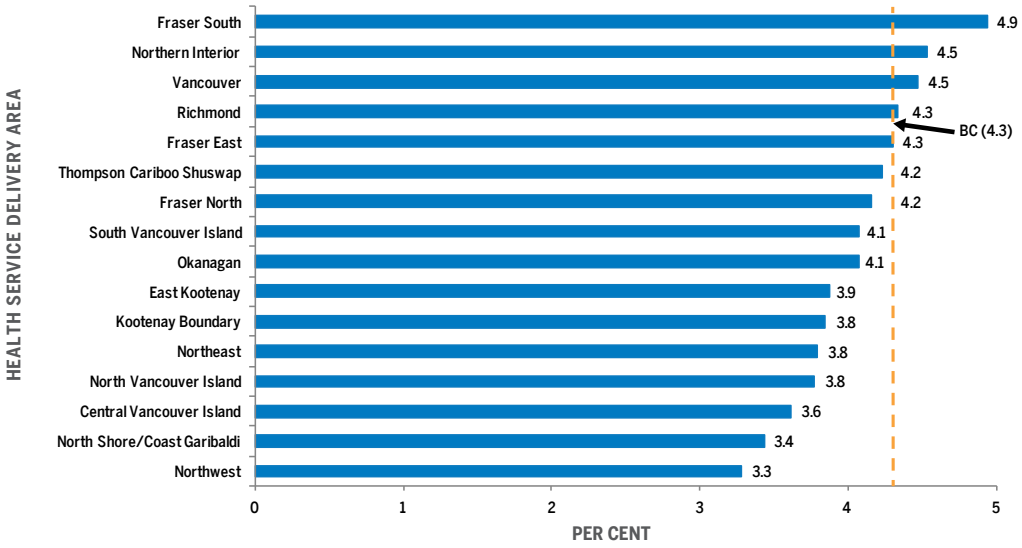

| Northern | Interior | Fraser | Vancouver Coastal | Island |
|---|---|---|---|---|
| 4.0 | 4.1 | 4.5 | 4.2 | 3.9 |

HEALTH AUTHORITY

**Notes:** : "Low birth weight" means live births of babies weighing less than 2,500 grams and includes preterm births (babies born before 37 weeks gestation). "Singleton" means one child carried and born. Health authority is based on the residence of the mother. See Appendix B for more information about this data source.

**Source:** BC Vital Statistics Agency, 2011-2013 data. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 1.3** Percentage of Low Birth Weight Babies among Singleton Births, by Health Service Delivery Area, BC, 2011-2013




**Notes:** : "Low birth weight" means live births of babies weighing less than 2,500 grams and includes preterm births (babies born before 37 weeks gestation). "Singleton" means one child carried and born. Health service delivery area is based on the residence of the mother. See Appendix B for more information about this data source.

**Source:** BC Vital Statistics Agency, 2011-2013 data. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES

[1] United Nations Children's Fund and World Health Organization. Low birthweight: country, regional and global estimates. New York: United Nations Children's Fund; 2004.

[2] Ashdown-Lambert JR. A review of low birth weight: predictors, precursors and morbidity outcomes. J R Soc Promot Health. 2005 Mar;125(2):76-83.

[3] Definition of *singleton* in English [Internet]. Oxford dictionaries. Oxford: Oxford University Press; 2016; [cited 2016 Jun 07]. Available from http://www.oxforddictionaries.com/definition/english/singleton.

[4] Definition of *preterm* in English [Internet]. Oxford dictionaries. Oxford: Oxford University Press; 2016; [cited 2016 Jun 07]. Available from http://www.oxforddictionaries.com/definition/english/preterm.

[5] Statistics Canada. Table 102-0701 Low birth weight babies (500 to less than 2,500 grams), by sex, five-year average, Canada and Inuit regions, every 5 years (table). CANSIM (database). Ottawa, ON: Statistics Canada; [modified 2012 Dec 10; cited 2016 Jun 28]. Available from: http://www5.statcan.gc.ca/cansim/a26?lang=eng&id=1020701.

[6] Johnson J, Tough S. Delayed child-bearing. J Obstet Gynaecol Can. 2012 Jan;34(1):80-93.

[7] Kramer MS. Determinants of low birth weight: methodological assessment and meta-analysis. Bull World Health Organ. 1987;65(5):663-737.

[8] H. Krueger & Associates. Child and youth health and well-being indicators project: appendix F – physical health and well-being evidence review [prepared for the Office of the Provincial Health Officer and the Canadian Institute for Health Information]. Ottawa, ON: Canadian Institute for Health Information; 2011.

[9] Harder T, Roepke K, Diller N, Stechling Y, Dudenhausen JW, Plagemann A. Birth weight, early weight gain, and subsequent risk of type 1 diabetes: systematic review and meta-analysis. Am J Epidemiol. 2009 Jun 15;169(12):1428-36.

[10] Oldroyd J, Renzaho A, Skouteris H. Low and high birth weight as risk factors for obesity among 4 to 5-year-old Australian children: does gender matter? Eur J Pediatr. 2011 Jul;170(7):899-906.

[11] Hemachandra AH1, Howards PP, Furth SL, Klebanoff MA. Birth weight, postnatal growth, and risk for high blood pressure at 7 years of age: results from the Collaborative Perinatal Project. Pediatrics. 2007 Jun;119(6):e1264-70.

# INDICATOR #2 Smoking during Pregnancy

## DEFINITION

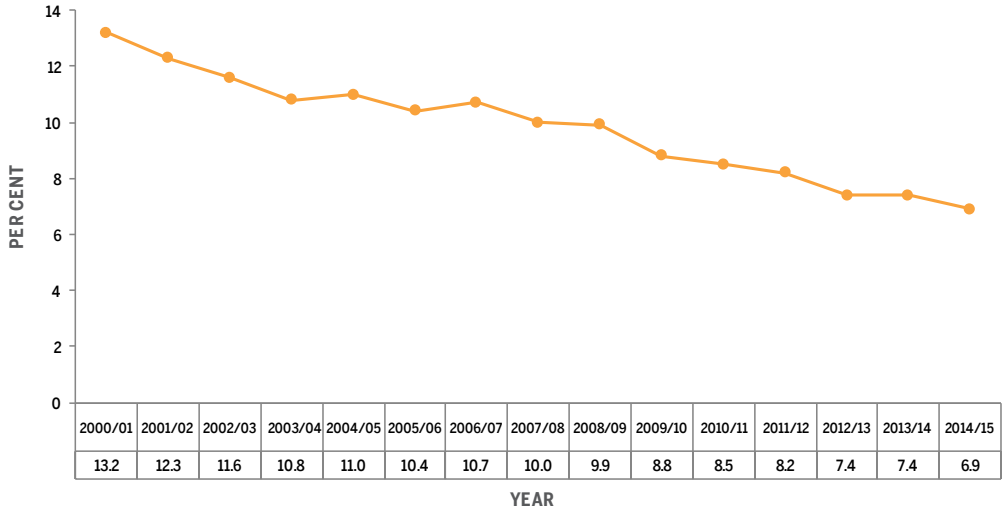
***INDICATOR #2 —*** Percentage of women who smoked during pregnancy.

## KEY MESSAGES

- Smoking during pregnancy has negative effects on child health and development that are well-established. Some of these effects include reduced fetal growth, increased risk of **asthma**, increased risk of **infant mortality**, and a higher incidence of sudden infant death syndrome.[1,2] Additionally, exposure of non-smoking pregnant women to second-hand smoke has been shown to have negative effects, including increased risk of **low birth weight**.[1]
- Surveillance data show that in BC, younger pregnant women smoke more than older pregnant women.[3]
- Data currently available do not allow for analyses of mothers who smoke e-cigarettes.
- As shown in Figure 2.1, the percentage of new mothers who report smoking during pregnancy decreased from 2000/01 to 2014/15, which is a positive change. This percentage includes mothers who reported smoking at any time during the current pregnancy, even if they quit during the pregnancy.[4,b]
- Figures 2.2 and 2.3 show that there is a considerable range in the percentage of smoking during pregnancy based on geography, from 1.7 per cent in Vancouver Coastal Health to 15.0 per cent in Northern Health, and similar variations by health service delivery area.

[b] The percentage is likely underreported due to societal stigma related to smoking during pregnancy. Approximately 50 per cent of mothers have incomplete information for this variable.

## FIG 2.1 Percentage of Mothers Who Reported Smoking during Pregnancy, BC, 2000/01 to 2014/15

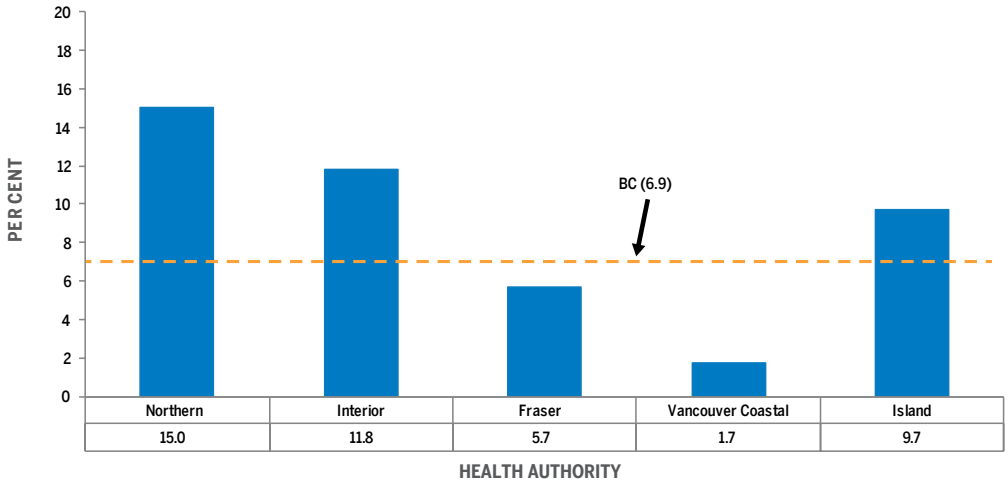



| 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | 2013/14 | 2014/15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 13.2 | 12.3 | 11.6 | 10.8 | 11.0 | 10.4 | 10.7 | 10.0 | 9.9 | 8.8 | 8.5 | 8.2 | 7.4 | 7.4 | 6.9 |

**Notes:** "Mothers" means women who have given birth in the fiscal year. Data includes all births (live births and stillbirths) that occurred in BC in hospital or at home with a registered midwife. It excludes late pregnancy terminations. "Reported smoking during pregnancy" means mothers who reported smoking at any time during the current pregnancy, even if they quit during the pregnancy. Never smokers, former smokers, and patients with unknown smoking status are considered non-smokers for the purposes of this analysis. Data do not account for second-hand smoke exposure or e-cigarette use. See Appendix B for more information about this data source.

**Source:** Perinatal Services BC. British Columbia Perinatal Data Registry [years provided: 2000/01 to 2014/15; resource type: tabulated data]; data provided 2016 Mar 30. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 2.2 Percentage of Mothers Who Reported Smoking during Pregnancy, by Health Authority, BC, 2014/15

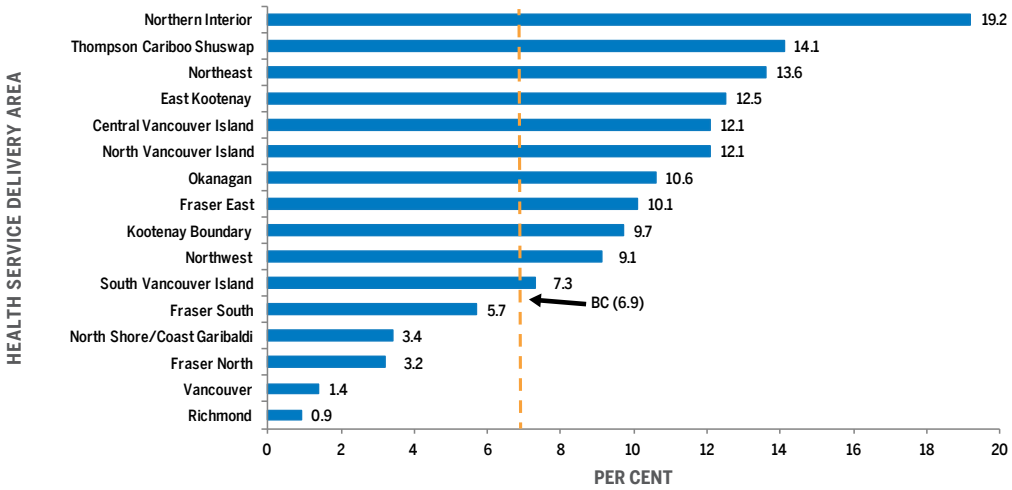



| Northern | Interior | Fraser | Vancouver Coastal | Island |
|---|---|---|---|---|
| 15.0 | 11.8 | 5.7 | 1.7 | 9.7 |

**Notes:** : "Mothers" means women who have given birth in the fiscal year. Data includes all births (live births and stillbirths) that occurred in BC in hospital or at home with a registered midwife. It excludes late pregnancy terminations. "Reported smoking during pregnancy" means mothers who reported smoking at any time during the current pregnancy, even if they quit during the pregnancy. Never smokers, former smokers, and patients with unknown smoking status are considered non-smokers for the purposes of this analysis. Data do not account for second-hand smoke exposure or e-cigarette use. Health authority is based on the residence of the mother. See Appendix B for more information about this data source.

**Source:** Perinatal Services BC. British Columbia Perinatal Data Registry [years provided: 2014/15; resource type: tabulated data]; data provided 2016 Mar 30. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 2.3** Percentage of Mothers Who Reported Smoking during Pregnancy, by Health Service Delivery Area, BC, 2014/15




**Notes:** "Mothers" means women who have given birth in the fiscal year. Data includes all births (live births and stillbirths) that occurred in BC in hospital or at home with a registered midwife. It excludes late pregnancy terminations. "Reported smoking during pregnancy" means mothers who reported smoking at any time during the current pregnancy, even if they quit during the pregnancy. Never smokers, former smokers, and patients with unknown smoking status are considered non-smokers for the purposes of this analysis. Data do not account for second-hand smoke exposure or e-cigarette use. Health service delivery area is based on the residence of the mother. See Appendix B for more information about this data source.

**Source:** Perinatal Services BC. British Columbia Perinatal Data Registry [years provided: 2014/15; resource type: tabulated data]; data provided 2016 Mar 30. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES

[1] Rogers JM. Tobacco and pregnancy. Reprod Toxicol. 2009 Sep;28(2):152-60.

[2] Public Health Agency of Canada. What mothers say: the Canadian Maternity Experiences Survey. Ottawa, ON: Public Health Agency of Canada; 2009 [modified 2014 Jan 15]. Available from: http://www.phac-aspc.gc.ca/rhs-ssg/survey-eng.php.

[3] Perinatal Services BC. Perinatal health report– deliveries in British Columbia, 2014/15. Vancouver, BC: Perinatal Services BC; 2016 Jun [cited 2016 Jul 04]. Available from: http://www.perinatalservicesbc.ca/health-professionals/data-surveillance/surveillance/perinatal-health-reports.

[4] Frosst G, Hutcheon J, Joseph KS, Kinniburgh B, Johnson C, Lee, L. Validating the British Columbia Perinatal Data Registry: a chart re-abstraction study. BMC Pregnancy Childbirth. 2015;15:123.

# INDICATOR #3 Alcohol Use during Pregnancy

## DEFINITION

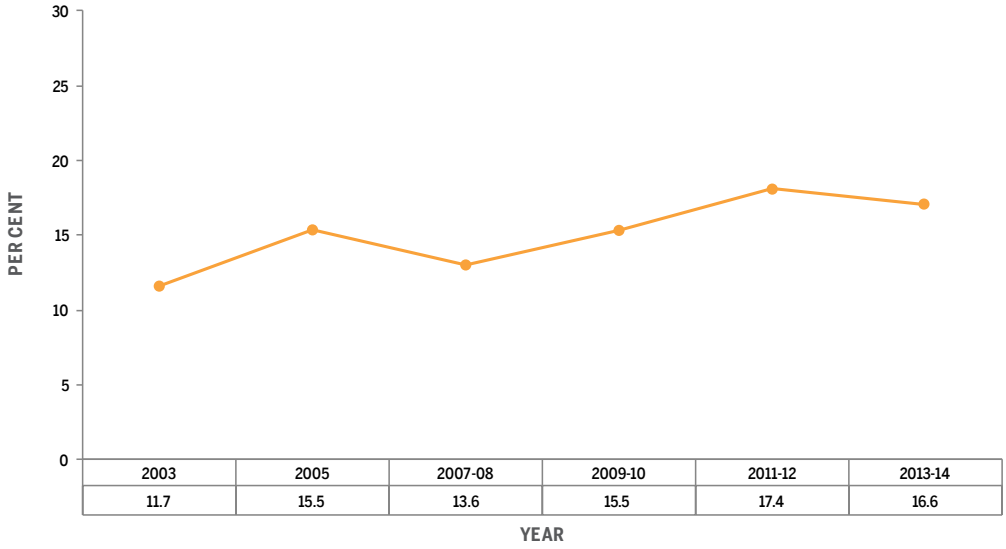
***INDICATOR #3 —*** Percentage of women who drank alcohol during pregnancy.

## KEY MESSAGES

- Alcohol use in pregnancy is an important health issue that can result in **Fetal Alcohol Spectrum Disorder (FASD)**. FASD describes the range of lifelong effects that can occur in an individual who was exposed to alcohol during pregnancy.[1] Effects associated with FASD can include characteristic physical abnormalities, and mental and behavioural deficits.[2–4]
- There are currently no confirmed statistics on the number of people in Canada who have FASD, yet it is considered to be the leading cause of developmental disability in Canada.[5–7]
- Research shows that moderate and high-risk drinking among women of childbearing years is a large and growing concern in Canada.[1] In 2009/10, 58 per cent of Canadian women age 18/19–24 and 45 per cent of Canadian women age 25–34 consumed alcohol at levels considered to be moderate or high-risk, and women in these age groups account for approximately 80 per cent of all live births in Canada.[1]
- Alcohol use in pregnancy is widely considered to be underreported, especially among women with middle and high levels of education,[c,8] making it a challenge to establish accurate data. However, **binge drinking** among women in their reproductive years can help us to understand the level of alcohol consumption among women in early stages of pregnancy, when many women do not yet know they are pregnant.
- Figure 3.1 shows that in the last 11 years, binge drinking among women of reproductive age in BC increased substantially.

[c] The standard prenatal clinical checklist asks about alcohol use during pregnancy, but practitioners report that the question often goes unanswered. This may be due to societal stigma about alcohol consumption during pregnancy, and/or due to fears about children being removed from the home.

**FIG 3.1** Percentage of Women of Reproductive Age Who Reported Binge Drinking in the Past Year, BC, 2003 to 2013-14




**Notes:** "Reproductive age" means women who are 15-44 years of age. "Binge drinking in the past year" means consuming five or more drinks on one occasion (except in 2013-14 when it means four or more drinks on one occasion), at least once a month during the 12 months prior to the survey. Due to the change in definition, the data from 2013-14 are not directly comparable to previous years. Data for 2004 and 2006 were unavailable. See Appendix B for more information about this data source.

**Source:** Statistics Canada, Canadian Community Health Survey (public-use microdata file), 2003 to 2013-14. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES

[1] Canada FASD Research Network. Annual report 2012-13. Vancouver, BC: Canada FASD Research Network; [cited 2016 Mar 21]. Available from: http://www.canfasd.ca/wp-content/uploads/2014/01/CanFASD_AnnualReport_2012-13_web.pdf.

[2] Welch-Carre E. The neurodevelopmental consequences of prenatal alcohol exposure. Adv Neonatal Care. 2005 Aug;5(4):217-29.

[3] Kodituwakku PW. Defining the behavioral phenotype in children with fetal alcohol spectrum disorders: a review. Neurosci Biobehav Rev. 2007;31(2):192-201.

[4] Nash K, Sheard E, Rovet J, Koren G. Understanding fetal alcohol spectrum disorders (FASDs): toward identification of a behavioral phenotype. ScientificWorldJournal. 2008 Sep 21;(8):873-82.

[5] Public Health Agency of Canada. Fetal alcohol spectrum disorder (FASD) – data collection and reporting [Internet]. Ottawa, ON: Public Health Agency of Canada; [cited 2010 Oct]. Available from: http://www.phac-aspc.gc.ca/fasd-etcaf/pdf/factsheet5-fasd-etcaf-eng.pdf.

[6] Guerri C, Bazinet A, Riley EP. Foetal alcohol spectrum disorders and alterations in brain and behaviour. Alcohol Alcohol. 2009 Mar-Apr;44(2):108-14.

[7] Niccols A. Fetal alcohol syndrome and the developing socio-emotional brain. Brain Cogn. 2007 Oct;65(1):135-42.

[8] BC Stats and Women's Healthy Living Secretariat. Healthy choices in pregnancy: results from the community health education and social services omnibus survey in British Columbia. April 2008 to March 2009 final report. Victoria, BC: BC Stats and Women's Healthy Living Secretariat; 2010 [cited 2016 Jul 12]. Available from: http://www.health.gov.bc.ca/library/publications/year/2010/bcstats-hcip-report.pdf.

# INDICATOR #4 Breastfeeding

## DEFINITION

***INDICATOR #4 —*** Percentage of infants who were exclusively breastfed for at least six months.

## KEY MESSAGES

- The World Health Organization advocates breastfeeding as the best nutrition source for optimal infant growth and development, and recommends breastfeeding within the first hour after birth and **exclusive breastfeeding** until six months of age. This is based on the recognition that breast milk not only optimizes infant development and provides health benefits to infants and nursing mothers, but is also convenient and low cost.[1]

- Exclusive breastfeeding is when an infant has received only breast milk since birth and has not received any other liquids or solids except any necessary medicines, oral rehydration solutions or drops/syrups containing vitamins, minerals and medicines.[2,3] Breast milk can include expressed milk and donor milk.

- Breast milk is good for babies because it is the safest, healthiest, and easiest to digest food. Breast milk and breastfeeding support an infant's physical, emotional, and intellectual development.[4,5] Breastfeeding promotes bonding between mother and baby. Breastfed babies have fewer infections—such as pneumonia, ear infections, and diarrhea—than babies who are not breastfed, and breastfed babies are less likely to die from sudden infant death syndrome (SIDS).[6]

- Breastfeeding also has important positive effects on a mother's health. Evidence from both high- and low-income countries supports the finding that breastfeeding lowers the risk of breast and ovarian cancer and diabetes in the mother.[7,8] Research also shows that women who breastfeed have a decreased incidence of postpartum depression.[8,9]

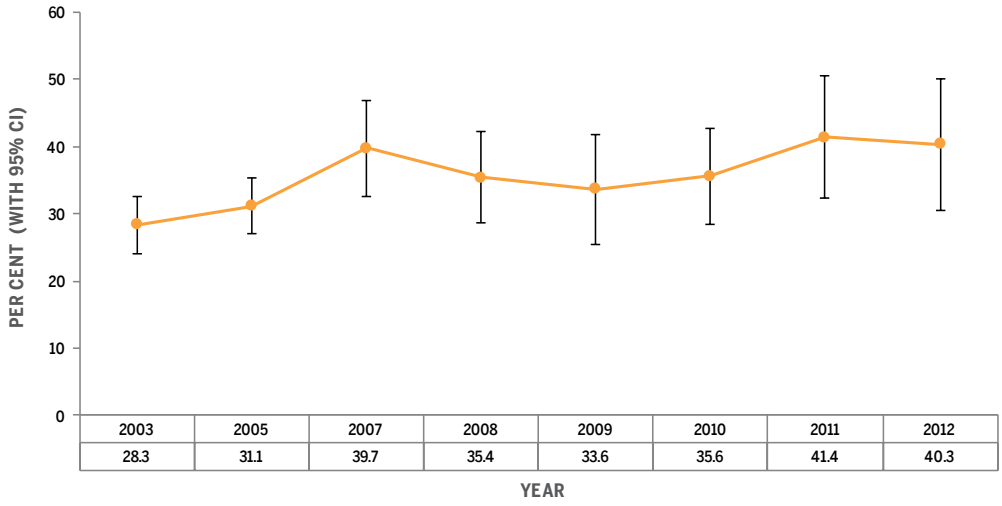
- Perinatal Services BC reports a **breastfeeding initiation**[d,3] rate of 73 per cent in BC.

- Many factors contribute to whether an infant continues to receive only breast milk after initiation.[10] As shown in Figure 4.1, according to the Canadian Community Health Survey, in BC, the rate of mothers who exclusively breastfed for the first six months increased from 28.3 per cent in 2003 to 40.3 per cent in 2012. Figure 4.2 shows that in 2011–12, BC had the highest percentage of exclusive breastfeeding for the first six months in Canada.

- Figure 4.3 shows that there is a geographic difference of 20 per cent across the health authorities for the rate of exclusive breastfeeding for the first six months: Vancouver Coastal Health had the highest rate at 49.0 per cent and Northern Health had the lowest at 29.0 per cent.

[d] The data for breastfeeding initiation includes mothers who breastfed or tried to breastfeed their last child even if only for a short time.

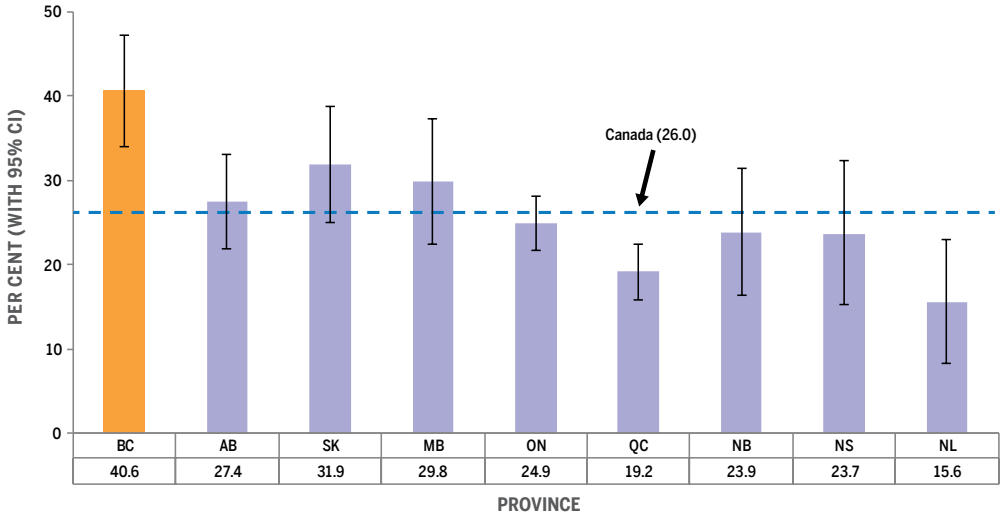
## FIG 4.1 Percentage of Mothers Who Exclusively Breastfed for the First Six Months, BC, 2003 to 2012




**Notes:** "Mothers" means women age 15-55 who gave birth in the last five years. "Exclusively breastfed" means the infant received only breast milk, without any additional liquid (even water) or solid food. Data for 2004 and 2006 were unavailable. See Appendix B for more information about this data source.

**Source:** Statistics Canada, Canadian Community Health Survey, 2003 to 2012. Table 105-0501, Health indicator profile, annual estimates, by age group and sex, Canada, provinces, territories, health regions (2013 boundaries) and peer groups, CANSIM database. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

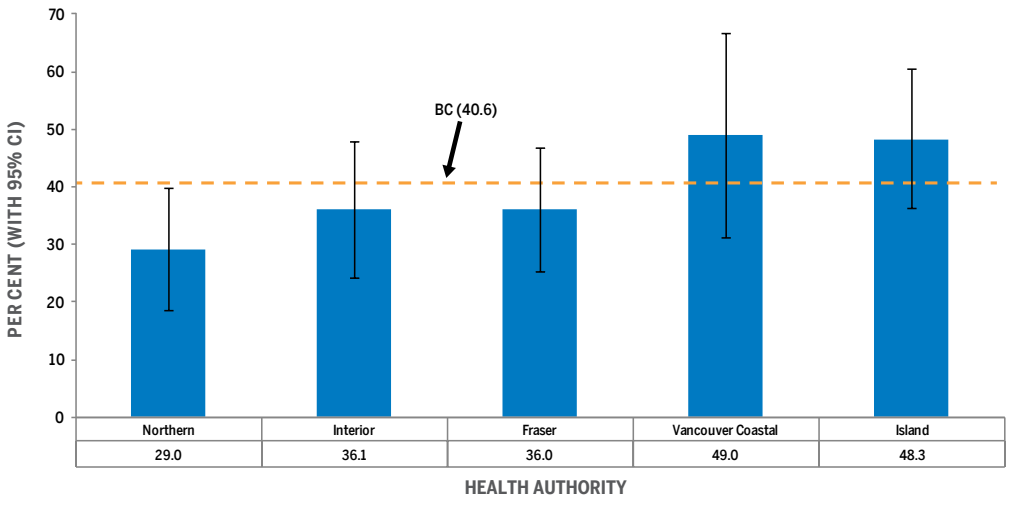
## FIG 4.2 Percentage of Mothers Who Exclusively Breastfed for the First Six Months, by Province, Canada, 2011-12




**Notes:** "Mothers" means women age 15-55 who gave birth in the last five years. "Exclusively breastfed" means the infant received only breast milk, without any additional liquid (even water) or solid food. Data are not available for PEI. See Appendix B for more information about this data source.

**Source:** Statistics Canada, Canadian Community Health Survey, 2011-12. Table 105-0501, Health indicator profile, two year period estimates, by age group and sex, Canada, provinces, territories, health regions (2013 boundaries) and peer groups, CANSIM database. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 4.3** Percentage of Mothers Who Exclusively Breastfed for the First Six Months, by Health Authority, BC, 2011-12




**Notes:** "Mothers" means women age 15-55 who gave birth in the last five years. "Exclusively breastfed" means the infant received only breast milk, without any additional liquid (even water) or solid food. Health authority is based on the residence of the mother. See Appendix B for more information about this data source.
**Source:** Statistics Canada, Canadian Community Health Survey, 2011-12. Table 105-0501, Health indicator profile, two year period estimates, by age group and sex, Canada, provinces, territories, health regions (2013 boundaries) and peer groups, CANSIM database. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES

[1] World Health Organization. Infant and young child nutrition: global strategy on infant and young child feeding [A55/15]. Geneva: World Health Organization; 2002 Apr 16 [cited 2016 Mar 20]. Available from: http://apps.who.int/gb/archive/pdf_files/WHA55/ea5515.pdf.

[2] World Health Organization, Division of Child Health and Development. Indicators for assessing breastfeeding practices. Geneva: World Health Organization; 1991 Jun 11-12 [cited 2016 Jun 10]. Available from: http://apps.who.int/iris/handle/10665/62134.

[3] Statistics Canada. Table 105-0502 Health indicator profile, two year period estimates, by age group and sex, Canada, provinces, territories, health regions (2013 boundaries) and peer groups, occasional (table). CANSIM (database). Ottawa, ON: Statistics Canada; [modified 2016 Mar 4; cited 2016 Jun 28]. Available from: http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=1050502&&pattern=&stByVal=1&p1=1&p2=-1&tabMode=dataTable&csid=.

[4] Wu TC, Chen PH. Health consequences of nutrition in childhood and early infancy. Pediatr Neonatol. 2009 Aug;50(4):135-42.

[5] Demmelmair H, von Rosen J, Koletzko B. Long-term consequences of early nutrition. Early Hum Dev. 2006 Aug;82(8):567-74.

[6] HealthLink BC. Breastfeeding [File # 70]. Victoria, BC: HealthLink BC; 2015 Jan [cited 2016 Mar 21]. Available from: http://www.healthlinkbc.ca/healthfiles/pdf/hfile70.pdf.

[7] Renfrew MJ, McCormick FM, Wade A, Quinn B, Dowswell T. Support for healthy breastfeeding mothers with healthy term babies. Cochrane Database Syst Rev. 2012 May 16;5:CD001141.

[8] Ip S, Chung M, Raman G, Chew P, Magula N, DeVine D, et al. Breastfeeding and maternal and infant health outcomes in developed countries. Evid Rep Technol Assess (Full Rep). 2007 Apr;(153):1-186.

[9] Bartick, M. Breastfeeding and health: a review of the evidence. J Women Polit Policy. 2013;34(4):317-29.

[10] Perinatal Services BC. Fact sheet: breastfeeding trends in British Columbia, 2004/05 to 2012/13. Vancouver, BC: Perinatal Services BC; 2014 Nov [cited 2016 Mar 21]. Available from: http://www.perinatalservicesbc.ca/Documents/Data-Surveillance/Reports/BreastfeedingFactSheet_2014.pdf.

# INDICATOR #5 Fruit & Vegetable Consumption

## DEFINITION

***INDICATOR #5 —*** Percentage of BC students in grades 7–12 who report having eaten fruits and/or vegetables the previous day.

## KEY MESSAGES

- One of the most important aspects of fostering healthy eating in childhood is the potential for developing lifelong habits that could positively impact health in later years. High vegetable and fruit consumption and reduced consumption of red and processed meat, refined carbohydrates, and dairy products in the adult years is associated with decreased rates of some cancers, as well as reductions in cardiovascular risk factors and actual incidence of coronary heart disease.[1–10] Fruit and vegetable consumption is a proxy measure for healthy eating overall.
- Fruit and vegetable consumption can be more challenging for residents in some areas of the province. Health regions with the lowest percentage of fruit and vegetable consumption are often the ones that have less access to fresh produce. Climate, remote geographic location, and cost are important factors. High food costs, loss of food skills (i.e., skills and knowledge for storing, handling, and preparing food), limited access and availability, and poor quality of produce in rural and remote communities can all lower fruit and vegetable consumption.[11]

*"Junk food is easier and cheaper."*

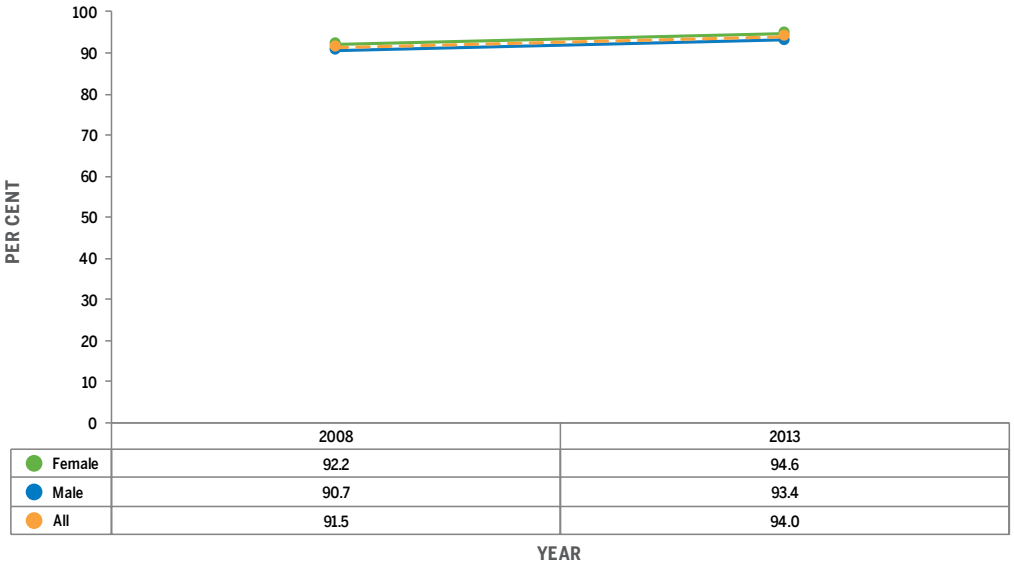
*"It is part of youth culture to drive to fast food stores and gas stations to get lunch."*

- Fruit and vegetable consumption can also be more challenging or more easily achieved based on the school a student attends. *The Guidelines for Food and Beverage Sales in B.C. Schools* is a health-promoting policy that includes a requirement for healthier foods in vending machines, canteens, and cafeterias in publicly funded schools.[12] Some schools have implemented this policy and therefore made healthy food the easy choice; however, many schools have not yet implemented this policy.
- As shown in Figure 5.1, from 2008 to 2013, the percentage of youth who reported eating vegetables and fruit the previous day increased by 2.5 percentage points; however, in 2013, 6.0 per cent of students still reported that they didn't eat any fruit or vegetables the previous day.

*"I think this mostly has to do with poverty. Because parents want their kids to have good food."*

*"Not even one fruit or vegetable in a day? I can't imagine my diet without them."*

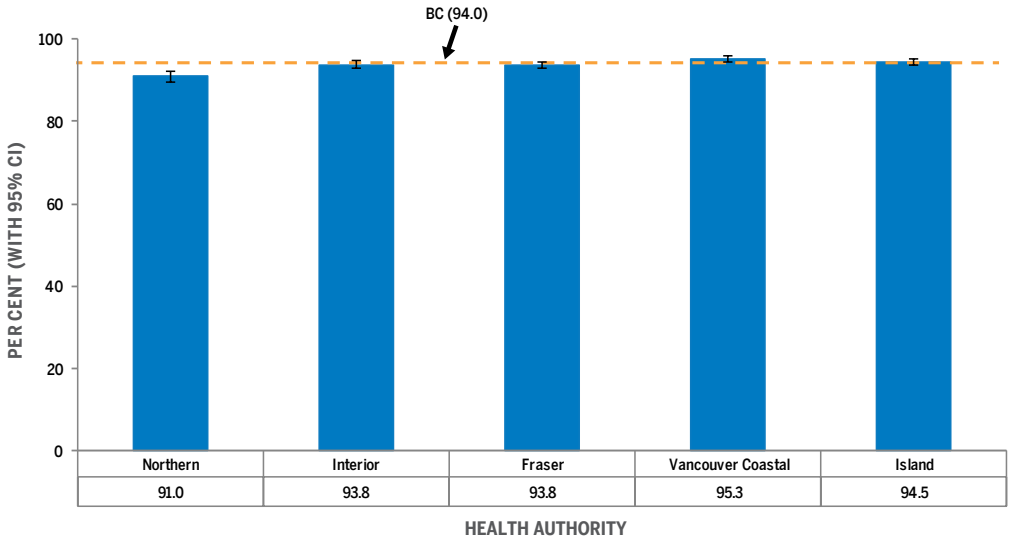
## FIG 5.1 Percentage of Students in Grades 7-12 Who Reported Consuming Fruits or Vegetables the Previous Day, by Sex, BC, 2008 and 2013




| | 2008 | 2013 |
|---|---|---|
| Female | 92.2 | 94.6 |
| Male | 90.7 | 93.4 |
| All | 91.5 | 94.0 |

**Notes:** The difference between 2008 and 2013 was statistically significant for all groups. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2008, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

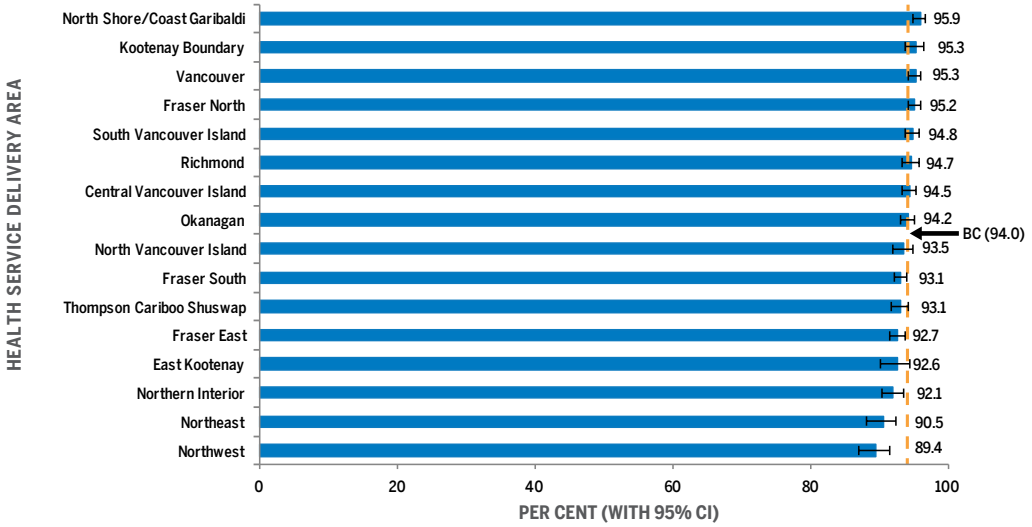
## FIG 5.2 Percentage of Students in Grades 7-12 Who Reported Consuming Fruits or Vegetables the Previous Day, by Health Authority, BC, 2013




| Northern | Interior | Fraser | Vancouver Coastal | Island |
|---|---|---|---|---|
| 91.0 | 93.8 | 93.8 | 95.3 | 94.5 |

**Notes:** Health authority is based on the location of the school. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 5.3** Percentage of Students in Grades 7-12 Who Reported Consuming Fruits or Vegetables the Previous Day, by Health Service Delivery Area, BC, 2013




**Notes:** Health service delivery area is based on the location of the school. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES


[1] Verberne L, Bach-Faig A, Buckland G, Serra-Majem L. Association between the Mediterranean diet and cancer risk: a review of observational studies. Nutr Cancer. 2010;62(7):860-70.

[2] Miller PE, Lesko SM, Muscat JE, Lazarus P, Hartman TJ. Dietary patterns and colorectal adenoma and cancer risk: a review of the epidemiological evidence. Nutr Cancer. 2010;62(4):413-24.

[3] Newmark HL, Heaney RP. Dairy products and prostate cancer risk. Nutr Cancer. 2010; 62(3):297-9.

[4] Steevens J, Schouten LJ, Goldbohm RA, van den Brandt PA. Vegetables and fruits consumption and risk of esophageal and gastric cancer subtypes in the Netherlands cohort study. Int J Cancer. 2011 Dec 1;129(11):2681-93.

[5] Oude Griep LM, Geleijnse JM, Kromhout D, Ocke MC, Verschuren WM. Raw and processed fruit and vegetable consumption and 10-year coronary heart disease incidence in a population-based cohort study in the Netherlands. PLoS One. 2010;5(10):e13609.

[6] Mirmiran P, Noori N, Zavareh MB, Azizi F. Fruit and vegetable consumption and risk factors for cardiovascular disease. Metabolism. 2009 Apr;58(4):460-8.

[7] Bendinelli B, Masala G, Saieva C, Salvini S, Calonico C, Sacerdote C, et al. Fruit, vegetables, and olive oil and risk of coronary heart disease in Italian women: the EPICOR Study. Am J Clin Nutr. 2011 Feb;93(2):275-83.

[8] Bouvard V, Loomis D, Guyton K, Groose Y, Ghissassi F, Tallaa-Benbrahim L, et al. Carcinogenicity of consumption of red and processed meat. Lancet Oncol. 2015 Dec;16(16):1599-600.

[9] International Agency for Research on Cancer, World Health Organization. Q&A on the carcinogenicity of the consumption of red meat and processed met. Lyon, France: International Agency for Research on Cancer; 2015 [cited 2016 Mar 21]. Available from: http://www.iarc.fr/en/media-centre/iarcnews/pdf/Monographs-Q&A_Vol114.pdf.

[10] International Agency for Research on Cancer, World Health Organization. IARC Monographs evaluate consumption of red meat and processed meat [Press Release No 240]. Lyon, France: International Agency for Research on Cancer; 2015 Oct 26 [cited 2016 Mar 21]. Available from: https://www.iarc.fr/en/media-centre/pr/2015/pdfs/pr240_E.pdf.

[11] Heart and Stroke Foundation of Canada. Position statement: vegetable and fruit consumption and heart disease and stroke. Ottawa, ON: Heart and Stroke Foundation of Canada; 2013 [cited 2016 Apr 3]. Available from: http://www.heartandstroke.com/atf/cf/%7B99452D8B-E7F1-4BD6-A57D-B136CE6C95BF%7D/VegandFruit-Eng-Screen.pdf.

[12] Ministry of Health. Guidelines for food & beverage sales in B.C. schools. Victoria, BC: Ministry of Health; 2013 [cited 2016 Apr 19]. Available from: http://www2.gov.bc.ca/assets/gov/education/administration/kindergarten-to-grade-12/healthyschools/2015_food_guidelines.pdf.

# INDICATOR #6 Vision Screening

## DEFINITIONS

***INDICATOR #6A*** — Percentage of BC kindergarten students who have been screened for vision problems.

***INDICATOR #6B*** — Percentage of BC kindergarten students who have been referred for further diagnostic testing after vision screening.

## KEY MESSAGES

- Eye-related disorders (e.g., amblyopia, strabismus, significant refractive error) are some of the most common impairments in children, occurring in an estimated 2–5 per cent of preschool children.[1]
- Routine eye examinations are a Medical Services Plan benefit for all children age 18 and younger, and are encouraged.
- A recent BC Government review found that while kindergarten screening for amblyopia (the most prevalent vision problem in early childhood) is clinically effective, it has very low population health impact and very high cost relative to its effectiveness.[2] Based on these findings, vision screening will no longer be included as an indicator among this suite of child and youth health indicators, and data on vision screening are not provided.

## REFERENCES

[1] Human Early Learning Partnership. BC early childhood vision screening program. Final evaluation report. Vancouver, BC: University of British Columbia; 2012 Aug [cited 2016 Jun 13]. Available from: http://www2.gov.bc.ca/assets/gov/health/managing-your-health/women-children-maternal-health/bc-early-childhood-vision-screening-program.pdf.

[2] Government of British Columbia, Child Health BC, Doctors of BC. The lifetime prevention schedule for children and youth. Establishing priorities among effective clinical prevention services in British Columbia for children and youth – summary and technical report, July 2014 update [prepared by H. Krueger & Associates Inc.]. Victoria, BC: Government of British Columbia; 2014 Jul [cited 2016 Jul 4]. Available from: http://www2.gov.bc.ca/assets/gov/health/about-bc-s-health-care-system/office-of-the-provincial-health-officer/lps-cy-report_2014.pdf.

# INDICATOR #7 Hearing Screening

## DEFINITIONS

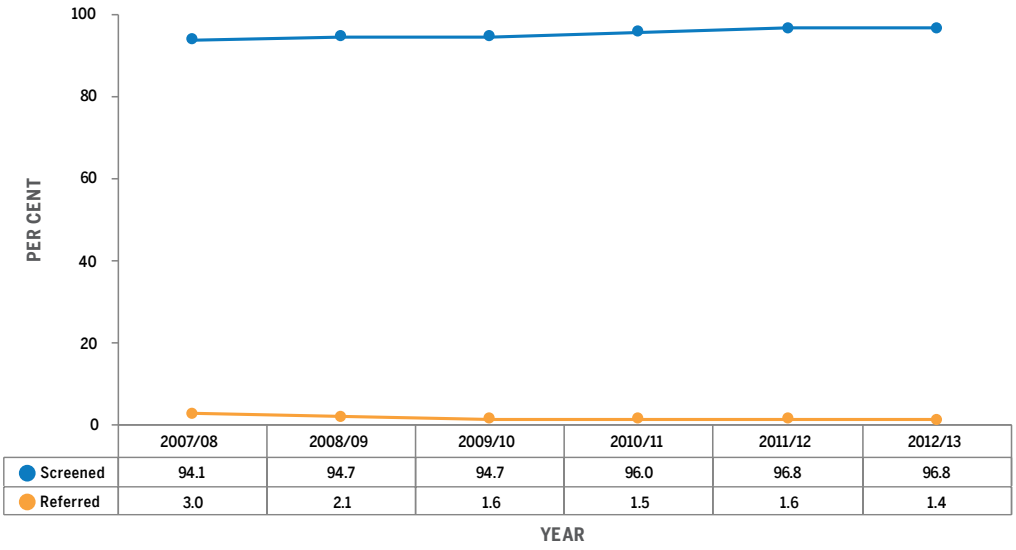
***INDICATOR #7A*** — Percentage of BC newborns who have been screened for hearing problems.

***INDICATOR #7B*** — Percentage of BC newborns who have been referred for further diagnostic testing after hearing screening.

## KEY MESSAGES

- Early childhood hearing screening helps to identify children who may have health issues leading to hearing impairment or loss, and who require treatment or extra support to develop to their full potential.[1]
- In the US, congenital hearing loss affects an estimated one to six babies per 1,000 births.[2] Most babies who are deaf or hard of hearing are born into families with no history of hearing loss.[3]
- Prior to the introduction of universal newborn hearing screening in BC, the average age of diagnosis for children with hearing impairment was 2.5 years.[4] Diagnosis of hearing loss should occur for healthy babies by three months of age, and hearing devices are usually fitted within one month of the confirmed diagnosis.[4] Universal screening in the first year of life can reduce this time by at least 75 per cent.[5]
- Evidence shows that detection of hearing loss and intervention by six months to nine months of age improves language development.[6] For children with more severe hearing impairment, early detection can allow earlier acquisition of adaptive abilities, including sign language.[7]
- The BC Early Hearing Program provides universal newborn hearing screening to all babies born in BC. Early hearing screening in postpartum units began in September 2007 and was fully implemented in all health authorities by January 2010.
- Figure 7AB.1 shows that since the program was implemented, the BC Early Hearing Program has screened more than 94 per cent of newborns in BC.

## FIG 7AB.1 Percentage of Children Age 0-3 Who Have Had Hearing Screening and Percentage Referred for Further Testing, BC, 2007/08 to 2012/13

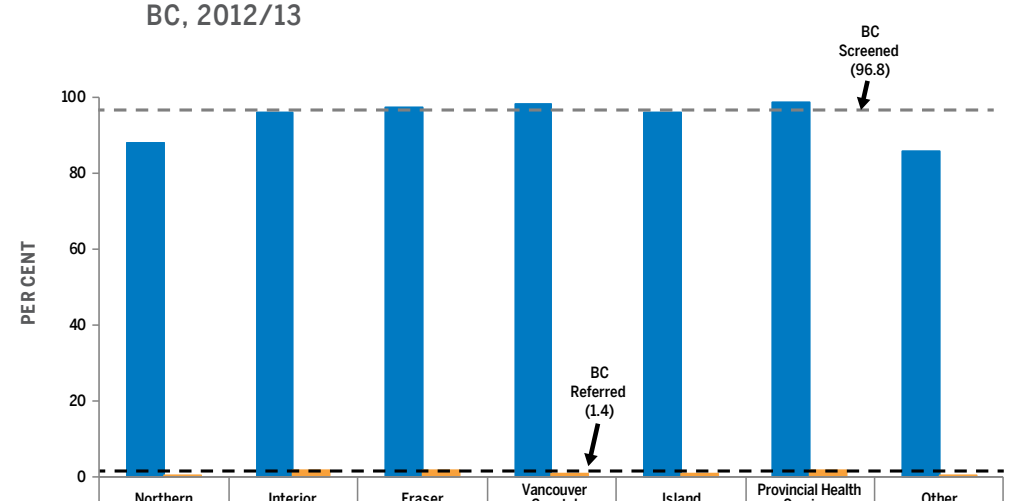



| | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 |
|---|---|---|---|---|---|---|
| Screened | 94.1 | 94.7 | 94.7 | 96.0 | 96.8 | 96.8 |
| Referred | 3.0 | 2.1 | 1.6 | 1.5 | 1.6 | 1.4 |

YEAR

**Notes:** Data were extracted starting one year post the last date of birth in the fiscal year. Data include midwife births at home and out-of-province births. See Appendix B for more information about this data source.
**Source:** Provincial Health Services Authority, BC Early Hearing Surveillance Tool, 2007/08 to 2012/13. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 7AB.2 Percentage of Children Age 0-3 Who Have Had Hearing Screening and Percentage Referred for Further Testing, by Health Authority, BC, 2012/13

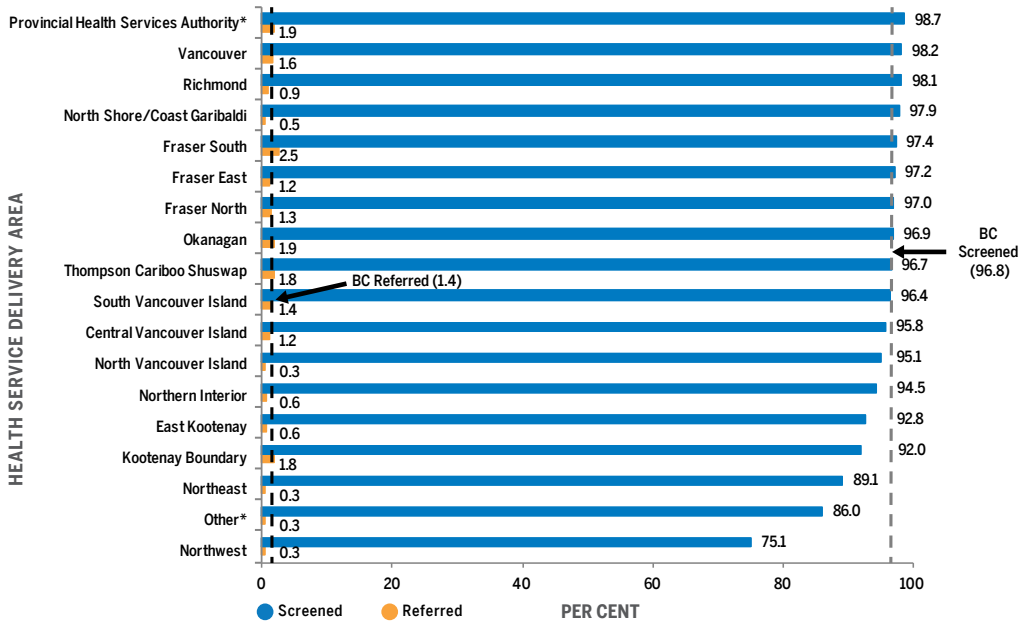



| | Northern | Interior | Fraser | Vancouver Coastal | Island | Provincial Health Services | Other |
|---|---|---|---|---|---|---|---|
| Screened | 88.1 | 95.9 | 97.2 | 98.1 | 96.0 | 98.7 | 86.0 |
| Referred | 0.4 | 1.7 | 1.8 | 1.0 | 1.2 | 1.9 | 0.3 |

HEALTH AUTHORITY

**Notes:** Data were extracted starting one year post the last date of birth in the fiscal year. Health authority is based on location of the screening service delivery. "Other" includes screenings and subsequent referrals for home births and out-of-province births. See Appendix B for more information about this data source.
**Source:** Provincial Health Services Authority, BC Early Hearing Surveillance Tool, 2012/13. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 7AB.3** Percentage of Children Age 0-3 Who Have Had Hearing Screening and Percentage Referred for Further Testing, by Health Service Delivery Area, BC, 2012/13




**Notes:** "*" indicates locations that are not health service delivery areas (HSDAs). "Other" includes screenings and subsequent referrals for home births and out-of-province births. Data were extracted starting one year post the last date of birth in the fiscal year. HSDA is based on location of the screening service delivery. See Appendix B for more information about this data source.

**Source:** Provincial Health Services Authority, BC Early Hearing Surveillance Tool, 2012/13. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES

[1] H. Krueger & Associates. Child and youth health and well-being indicators project: appendix F – physical health and well-being evidence review [prepared for the Office of the Provincial Health Officer and the Canadian Institute for Health Information]. Ottawa, ON: Canadian Institute for Health Information; 2011.

[2] American Speech-Language-Hearing Association. The prevalence and incidence of hearing loss in children. Rockville, MD: American Speech-Language-Hearing Association; [cited 2016 Mar 21]. Available from: http://www.asha.org/public/hearing/disorders/children.htm.

[3] Provincial Health Services Authority. BC Early Hearing Program [Internet]. Vancouver, BC: Provincial Health Services Authority; [cited 2016 Jun 23]. Available from: http://www.phsa.ca/our-services/programs-services/bc-early-hearing-program.

[4] Provincial Health Services Authority. BC Early Hearing Program information update for physicians, nurses and midwives. Vancouver, BC: Provincial Health Services Authority; 2009 [cited 2016 Jun 23]. Available from: http://www.phsa.ca/Documents/bcehp_physiciansinfofall09.pdf.

[5] Human Early Learning Partnership. BC Early Childhood Vision Screening Program: final evaluation report. Vancouver, BC: University of British Columbia; 2012 Aug [cited 2016 Mar 21]. Available from: http://earlylearning.ubc.ca/media/documents/vision_evaluation_report_update_01_09_13.pdf.

[6] Watkin P, McCann D, Law C, Mullee M, Petrou S, Stevenson J, et al. Language ability in children with permanent hearing impairment: the influence of early management and family participation. Pediatrics. 2007 Sep;120(3):e694-701.

[7] Kushalnagar P, Mathur G, Moreland CJ, Napoli DJ, Osterling W, Padden C, et al. Infants and children with hearing loss need early language access. J Clin Ethics. 2010 Summer;21(2):143-54.

# INDICATOR #8 Dental Caries Prevalence

## DEFINITION

***INDICATOR #8 —*** Prevalence of dental caries among BC kindergarten students.

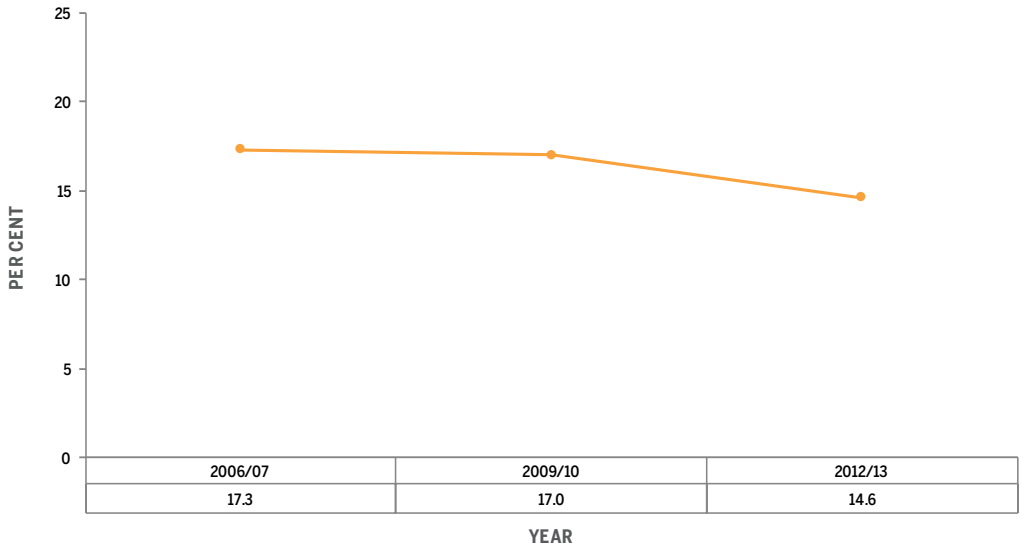
## KEY MESSAGES

- Dental health is an important health issue for children and youth,[1] and **early childhood caries** are one of the most common, preventable childhood diseases.[2,3]
- In studies of children under age six, early childhood caries have been linked to embarrassment, increased irritability, and fewer social interactions. Children's oral health impacts their social functioning, economic productivity, and health later in life.[4]
- Population groups recognized to be at higher risk for childhood caries include children living in low-income families, children with parents with less than grade 12 education, Aboriginal children, some children of new immigrants and refugees, and children living in rural and remote areas.[5,6]
- Access to preventive dental care and to treatment may be challenging for some families for a variety of reasons. People living in rural or remote communities have to travel farther to access care, or they may only receive preventive or treatment services when a health professional visits their community. Additionally, some families may find these services to be costly, as most dental services are provided by independent, private dentists remunerated on a fee-for-service basis and through private insurance. The BC Healthy Kids Program subsidizes the cost of basic dental care and other health needs for low-income families who qualify for Medical Services Plan (MSP) premium assistance.[7]
- Between 2010/11–2011/12 in British Columbia, 13.8 per 1,000 children age 1–5 required day surgery because of extensive dental caries.[6] Treatment of dental caries is the leading cause of day surgery using a general anesthetic for children age 1–5, and costs more than $3.5 million per year in BC.[6]
- The Provincial Kindergarten Dental Survey is conducted every three years across the province to estimate the prevalence of dental caries among children,[8] with the most recent survey conducted in 2012/13.[9] Trained staff visually assess a child's mouth to determine if there is "visible" untreated decay.[8,10] Some caries go unnoticed in a visual assessment, so the visible decay rate is a proxy for the prevalence of untreated caries.
- Figure 8.1 shows that from 2006/07 to 2012/13, the percentage of children in kindergarten with visible decay identified decreased, reflecting improvement across BC. This trend may be related to public health early intervention programs aimed

at improving the dental health of young children. Beginning in 2007/08, the Ministry of Health provided additional funding to health authorities to enhance early childhood dental health promotion initiatives and preventative services.[8]

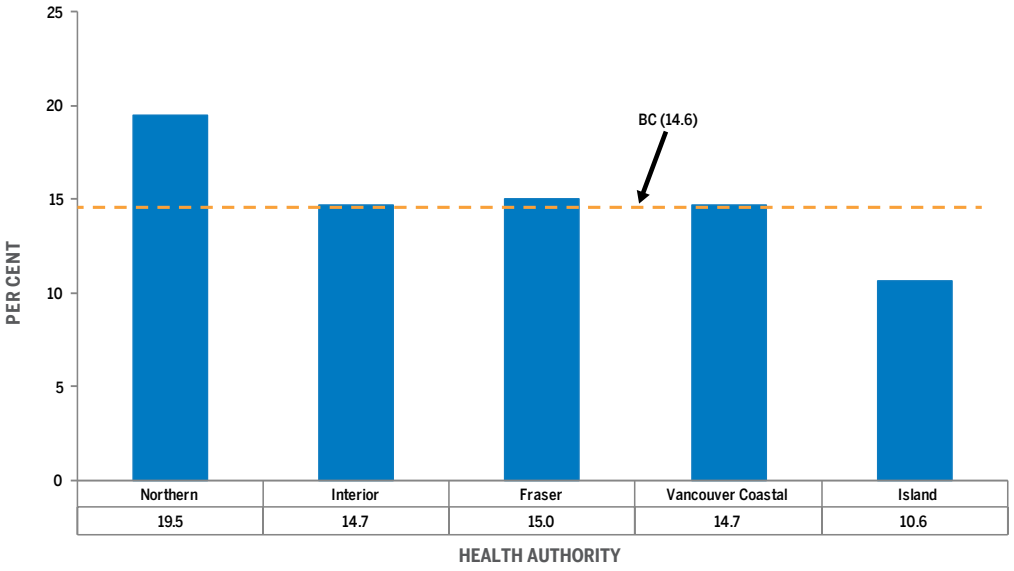
- Despite this overall improvement in results for kindergarten children, there are important geographic disparities. As shown in Figure 8.3, in 2012/13, the Northwest Health Service Delivery Area (HSDA) had the highest percentage of visible decay (23.5 per cent), followed by Richmond HSDA (21.5 per cent), and Fraser South HSDA (19.7 per cent). These percentages are considerably higher than the provincial average for visible decay (14.6 per cent).

**FIG 8.1** Percentage of Kindergarten Children Showing Visible Tooth Decay, BC, 2006/07, 2009/10, and 2012/13



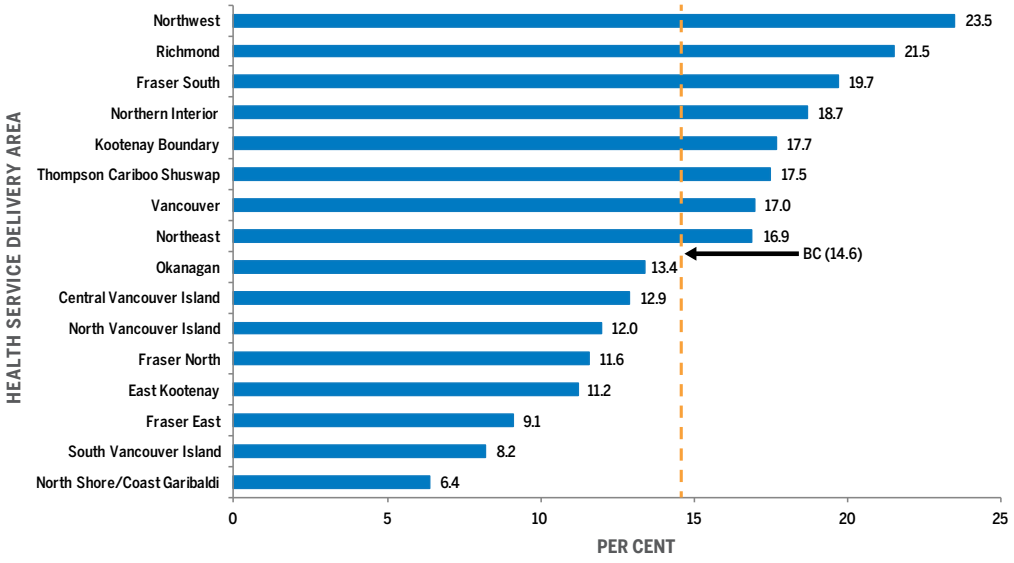

**Note:** Screening could have occurred at any time the child was age six or under.
**Source:** BC Ministry of Health, Population and Public Health. 2014. *Kindergarten Dental Screening 2012-13 Analysis.*[9] Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 8.2 Percentage of Kindergarten Children Showing Visible Tooth Decay, by Health Authority, BC, 2012/13




**Notes:** Screening could have occurred at any time the child was age six or under. Health authority is based on the location of the school district.
**Source:** BC Ministry of Health, Population and Public Health. 2014. *Kindergarten Dental Screening 2012-13 Analysis.*[9] Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 8.3 Percentage of Kindergarten Children Showing Visible Tooth Decay, by Health Service Delivery Area, BC, 2012/13




**Notes:** Screening could have occurred at any time the child was age six or under. Health service delivery area is based on the location of the school district.
**Source:** BC Ministry of Health, Population and Public Health. 2014. *Kindergarten Dental Screening 2012-13 Analysis.*[9] Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES


[1] Sheiham A. Oral health, general health and quality of life. Bull World Health Organ. 2005 Sep; 83(9):644.

[2] Canadian Dental Association. CDA position on early childhood caries. Ottawa, ON: Canadian Dental Association; 2010 Apr [cited 2016 Mar 21]. Available from: http://www.cda-adc.ca/_files/position_statements/earlyChildhoodCaries.pdf.

[3] H. Krueger & Associates. Child and youth health and well-being indicators project: appendix F – physical health and well-being evidence review [prepared for the Office of the Provincial Health Officer and the Canadian Institute for Health Information]. Ottawa, ON: Canadian Institute for Health Information; 2011.

[4] Scannapieco FA, Dasanayake AP, Chhun N. Does periodontal therapy reduce the risk for systemic diseases? Dent Clin North Am. 2010 Jan;54(1):163-81.

[5] National Collaborating Centre for Aboriginal Health. Early childhood tooth decay fact sheet. Prince George, BC: National Collaborating Centre for Aboriginal Health; 2013 [cited 2016 Apr 3]. Available from: http://www.nccah-ccnsa.ca/Publications/Lists/Publications/Attachments/95/Tooth_Decay_EN_web.pdf.

[6] Canadian Institute for Health Information. Treatment of preventable dental cavities in preschoolers: a focus on day surgery under general anesthesia. Ottawa, ON: Canadian Institute for Health Information; 2013 [cited 2016 Mar 21]. Available from: https://secure.cihi.ca/free_products/Dental_Caries_Report_en_web.pdf.

[7] Government of British Columbia. Basic dental care and eyeglasses [Internet]. Victoria, BC: Government of British Columbia; [cited 2016 Jun 28]. Available from: http://www2.gov.bc.ca/gov/content/health/managing-your-health/healthy-women-children/child-teen-health/dental-eyeglasses.

[8] Human Early Learning Partnership. Evaluation of BC early childhood dental programs: final report. Vancouver, BC: University of British Columbia; 2011 Jul [cited 2016 Jun 10]. Available from: http://earlylearning.ubc.ca/media/publications/evaluation_of_bc_early_childhood_dental_programs_final_aug_31_2011.pdf.

[9] Government of British Columbia. BC dental survey of kindergarten children 2012-2013: a provincial and regional analysis. Victoria, BC. Government of British Columbia; [cited 2016 Jul 19]. Available from: http://www.health.gov.bc.ca/library/publications/year/2014/provincial-kindergarten-dental-survey-report-2012-2013.pdf.

[10] Island Health. Dental program [Internet]. Victoria, BC: Island Health; [cited 2016 Jun 10]. Available from: http://www.viha.ca/prevention_services/dental_program.htm.

# INDICATOR #9 Percentage of Children with Healthy Weight

## DEFINITION

***INDICATOR #9 —*** Percentage of 18-month-old children and percentage of students in grades 7–12 in BC with healthy weights, as determined by World Health Organization age-/sex-specific growth charts (height and weight).[e]

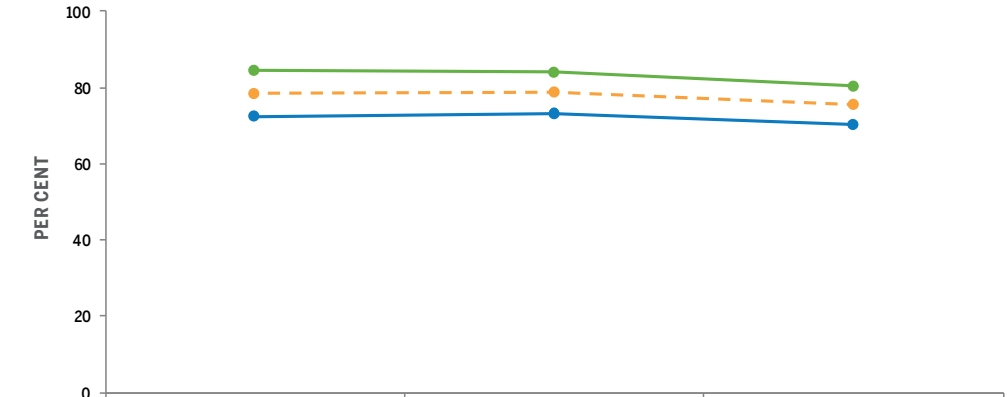
## KEY MESSAGES

- The World Health Organization specifies a healthy weight-for-length for children age 0–2 and a healthy weight relative to height or body mass index (BMI) (calculated as kg/m$^2$) for children and youth up to age 19 based on growth percentiles. Children between the ages of 2 and below 5 years have different healthy weight percentile guidelines than children and youth age 5–19. Based on these guidelines, a **healthy body weight** includes the following:
  - For children between the ages of 0 and below 2 years, having a weight-for-length at or above the 3rd percentile and at or below the 97th percentile.
  - For children between the ages of 2 and below 5 years, having a BMI at or above the 3rd percentile and at or below the 97th percentile.
  - For children and youth age 5–19, having a BMI at or above the 3rd percentile and at or below the 85th percentile.[1]
- Unhealthy weights include both **overweight/obese** and **underweight**, and predispose children and youth to long-term physical and mental health concerns.[1–3]
- There is an increased risk for overweight or obese youth to remain overweight or obese in adulthood.[4] The relationships between obesity, illness, and mortality in adults have been well-established,[5,6] and there is good evidence for an association between childhood obesity and poor physical health outcomes.[7,8]
- There is a complex relationship between obesity and socio-economic status; however, evidence shows that in developed countries obesity is higher among some groups with lower socio-economic status.[9,10]
- Eating disorders are conditions that cause a person to have unhealthy thoughts, feelings, and behaviours related to food and body image. Eating disorders are most common in teenage girls and young women, but they can occur at any age and in both sexes. People who have eating disorders may develop health problems, such as dehydration and malnutrition. Eating disorders also increase a person's risk of other health problems related to a poor diet, including menstrual period changes, thinning of the bones, and in severe cases, heart and other organ problems.[11–13]

[e] Only the body mass index of students in grades 7–12 are being measured and reported on in this report. Future reports may also be able to capture 18-month-old children.

- Figure 9.1 shows that the percentage of youth who report being at a healthy weight has remained relatively stable since 2003, and approximately 25 per cent of youth report not having a healthy weight. There is a 10 per cent difference between males and females, with males being less likely to report being at a healthy weight.
- There are geographic differences identified in Figures 9.2 and 9.3; for example, in 2013 there was more than a 10 per cent difference between Northern Health (66.9 per cent) and Vancouver Coastal Health (78.1 per cent) in the percentage of youth in grades 7–12 who reported being at a healthy weight.

**FIG 9.1** Percentage of Students in Grades 7-12 Who Reported Being at a Healthy Body Weight, by Sex, BC, 2003, 2008, and 2013



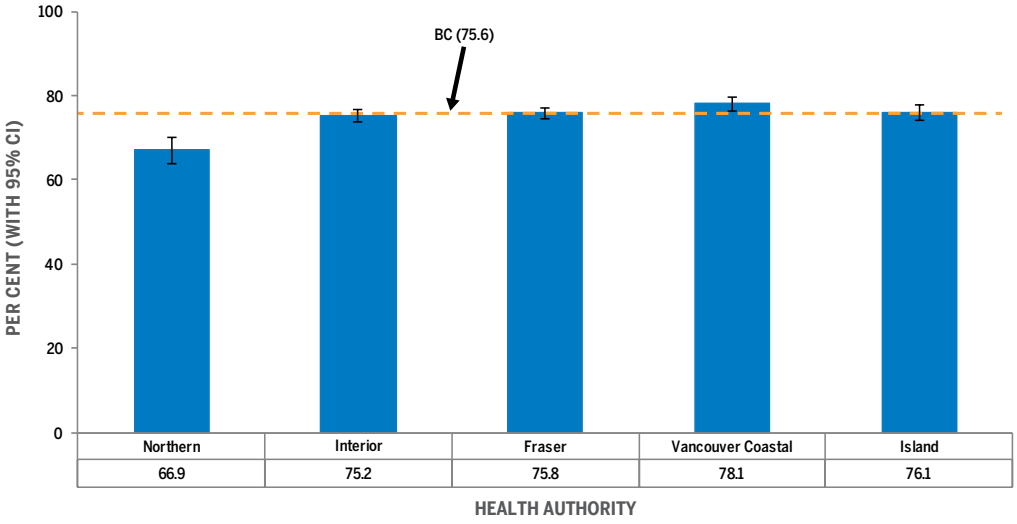

| | 2003 | 2008 | 2013 |
|---|---|---|---|
| Female | 84.3 | 84.0 | 80.7 |
| Male | 72.4 | 73.2 | 70.3 |
| All | 78.3 | 78.7 | 75.6 |

YEAR

**Notes:** "Healthy body weight" means having a body mass index (BMI) at or above the 3rd percentile and at or below the 85th percentile based on the 2007 World Health Organization guidelines for children and youth age 5-19. BMI was calculated using self-reported height and weight. The differences between 2003 and 2013 and between 2008 and 2013 were statistically significant for all groups. The difference between sexes was statistically significant for all years. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2003, 2008, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

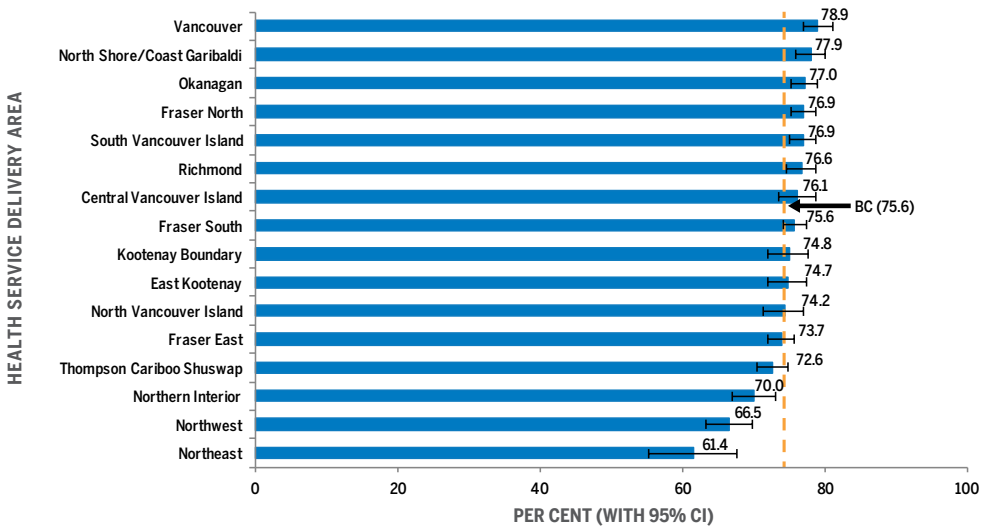
## FIG 9.2 Percentage of Students in Grades 7-12 Who Reported Being at a Healthy Body Weight, by Health Authority, BC, 2013




**Notes:** "Healthy body weight" means having a body mass index (BMI) at or above the 3rd percentile and at or below the 85th percentile based on the 2007 World Health Organization guidelines for children and youth age 5-19. BMI was calculated using self-reported height and weight. Health authority is based on the location of the school. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 9.3 Percentage of Students in Grades 7-12 Who Reported Being at a Healthy Body Weight, by Health Service Delivery Area, BC, 2013




**Notes:** "Healthy body weight" means having a body mass index (BMI) at or above the 3rd percentile and at or below the 85th percentile based on the 2007 World Health Organization guidelines for children and youth age 5-19. BMI was calculated using self-reported height and weight. Health service delivery area is based on the location of the school. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES


[1] Dietitians of Canada, Canadian Paediatric Society, The College of Family Physicians of Canada, Community Health Nurses of Canada. Promoting optimal monitoring of child growth in Canada: using the new World Health Organization growth charts [Internet]. Ottawa, ON: Dietitians of Canada and Canadian Paediatric Society; 2010 [cited 2016 Jun 13]. Available from: http://www.dietitians.ca/Downloads/Public/tcg-position-paper.aspx.

[2] US Centers for Disease Control and Prevention. Childhood obesity causes and consequences [Internet]. Atlanta, GA: US Centers for Disease Control and Prevention; [cited 2016 Jun 13]. Available from: http://www.cdc.gov/obesity/childhood/causes.html.

[3] US Centers for Disease Control and Prevention. About child and teen BMI [Internet]. Atlanta, GA: US Centers for Disease Control and Prevention; [cited 2016 Jun 13]. Available from: http://www.cdc.gov/healthyweight/assessing/bmi/childrens_bmi/about_childrens_bmi.html.

[4] Herman KM, Craig CL, Gauvin L, Katzmarzyk PT. Tracking of obesity and physical activity from childhood to adulthood: the Physical Activity Longitudinal Study. Int J Pediatr Obes. 2009;4(4):281-8.

[5] Health Canada. Canadian guidelines for body weight classification in adults [Internet]. Ottawa, ON: Health Canada; [modified 2015 Jan 19; cited 2016 Jun 13]. Available from: http://www.hc-sc.gc.ca/fn-an/nutrition/weights-poids/guide-ld-adult/index-eng.php.

[6] US Centers for Disease Control and Prevention. The health effects of overweight and obesity [Internet]. Atlanta, GA: US Centers for Disease Control and Prevention; [cited 2016 Jun 13]. Available from: http://www.cdc.gov/healthyweight/effects/.

[7] Schuster DP. Changes in physiology with increasing fat mass. Semin Pediatr Surg. 2009 Aug;18(3):126-35.

[8] Wills M. Orthopedic complications of childhood obesity. Pediatr Phys Ther. 2004 Winter;16(4):230-5.

[9] Provincial Health Services Authority. Technical report. From weight to well-being: time for a shift in paradigms? Vancouver, BC: Provincial Health Services Authority; 2013 [cited 2016 Apr 6]. Available from: http://www.phsa.ca/population-public-health-site/Documents/W2WBTechnicalReport_20130208FINAL.pdf.

[10] Public Health Agency of Canada. Obesity in Canada – a joint report from the Public Health Agency of Canada and the Canadian Institute for Health Information. Ottawa, ON: Public Health Agency of Canada; 2011.

[11] Gucciardi E, Stewart DE, Celasun N, Ahmad F. Eating disorders. In: Desmeules M, Stewart DE, Kazanjian A, Maclean H, Payne J, Vissandjee B, editors. Women's health surveillance report: a multidimensional look at the health of Canadian women. Ottawa, ON: Canadian Institute for Health Information; 2003.

[12] Keel PK, Dorer DJ, Eddy KT, Franko D, Charatan DL, Herzog DB. Predictors of mortality in eating disorders. Arch Gen Psychiatry. 2003 Feb;60(2):179-83.

[13] Krueger H, Williams D, Kaminsky B, McLean D. The health impacts of smoking and obesity and what to do about it. Toronto, ON: University of Toronto Press; 2007.

# INDICATOR #10 Positive Self-rated Health

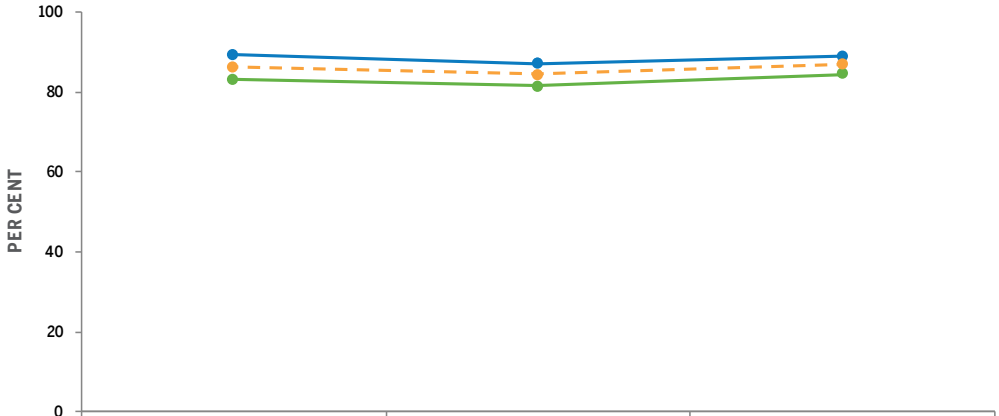
## DEFINITION

***INDICATOR #10 —*** Percentage of BC students in grades 7–12 who report good or excellent self-rated health.

## KEY MESSAGES

- Among youth—as with adults—good health is not limited to physical health status, but also includes personal, socio-environmental, and behavioural factors. Self-rated health may be most useful as a measure of the *overall* health and well-being of children and youth, with good evidence supporting it as an indicator of healthy behaviours, and psychological and emotional well-being.[1,2]
- Self-rated health and healthy behaviours, rather than the presence of disease, are important measures of health.[3] Self-rated health is strongly correlated with quality of life indicators, healthy behaviours, and a sense of self in populations of youth and adults, and as such, can be used to monitor quality of life among various population groups.[2]
- As shown in Figures 10.1 to 10.3, most youth rate themselves as having good or excellent health. There is about a 5 per cent difference between males and females, with males being more likely to report having good or excellent health.

## FIG 10.1 Percentage of Students in Grades 7-12 with Positive Self-rated Health, by Sex, BC, 2003, 2008, and 2013



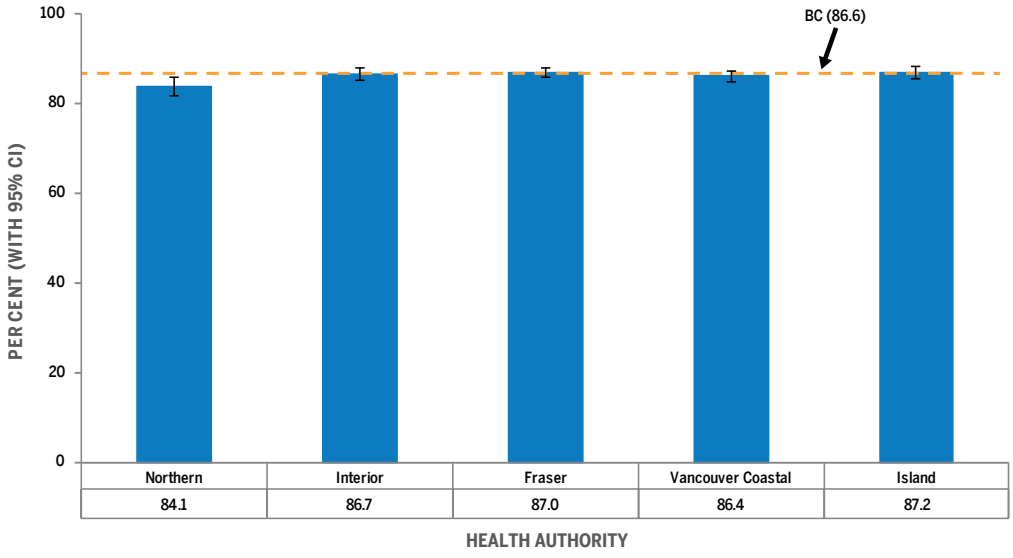

| | 2003 | 2008 | 2013 |
|---|---|---|---|
| Female | 83.1 | 81.5 | 84.5 |
| Male | 89.2 | 87.1 | 88.9 |
| All | 86.1 | 84.1 | 86.6 |

YEAR

**Notes:** "Positive self-rated health" means the student reported his/her own health to be either "good" or "excellent". The differences between 2003 and 2008 and between 2008 and 2013 were statistically significant for all groups. The difference between sexes was statistically significant for all years. The difference between 2003 and 2013 was statistically significant for females only. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2003, 2008, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 10.2 Percentage of Students in Grades 7-12 with Positive Self-rated Health, by Health Authority, BC, 2013



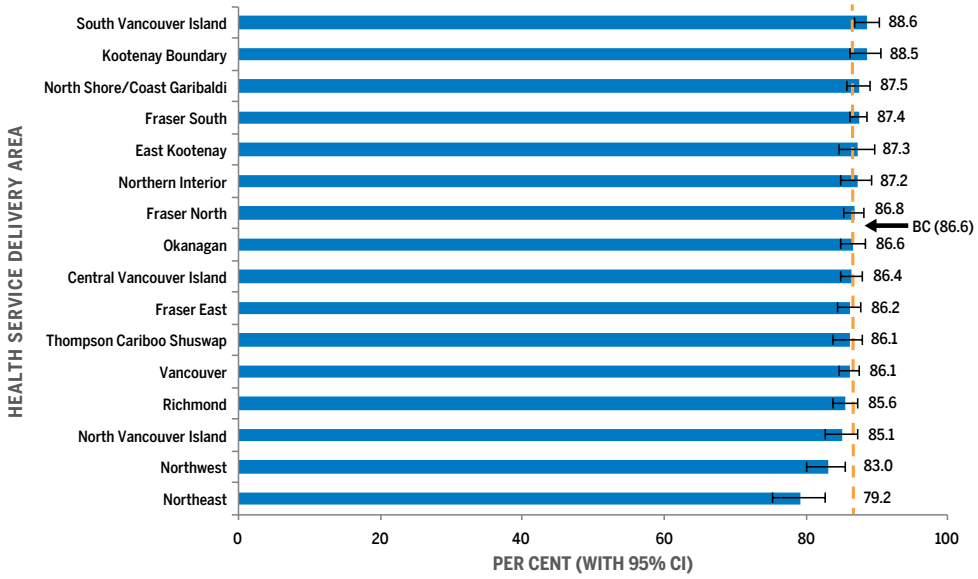

| Northern | Interior | Fraser | Vancouver Coastal | Island |
|---|---|---|---|---|
| 84.1 | 86.7 | 87.0 | 86.4 | 87.2 |

HEALTH AUTHORITY

**Notes:** "Positive self-rated health" means the student reported his/her own health to be either "good" or "excellent." Health authority is based on the location of the school. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 10.3** Percentage of Students in Grades 7-12 with Positive Self-rated Health, by Health Service Delivery Area, BC, 2013




**Notes:** "Positive self-rated health" means the student reported his/her own health to be either "good" or "excellent". Health service delivery area is based on the location of the school. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES

[1] Goodwin DK, Knol LL, Eddy JM, Fitzhugh EC, Kendrick OW, Donahue RE. The relationship between self-rated health status and the overall quality of dietary intake of US adolescents. J Am Diet Assoc. 2006 Sep;106(9):1450-3.

[2] Vingilis ER, Wade TJ, Seeley JS. Predictors of adolescent self-rated health. Analysis of the National Population Health Survey. Can J Public Health. 2002 May-Jun;93(3):193-7.

[3] Burstrom B, Fredlund P. Self rated health: is it as good a predictor of subsequent mortality among adults in lower as well as in higher social classes? J Epidemiol Community Health. 2001 Nov;55(11):836-40.

# INDICATOR #11 Youth Physical Activity Levels

## DEFINITION

***INDICATOR #11 —*** Percentage of BC students in grades 7–12 participating in physical activity for at least 60 minutes per day, seven days per week.

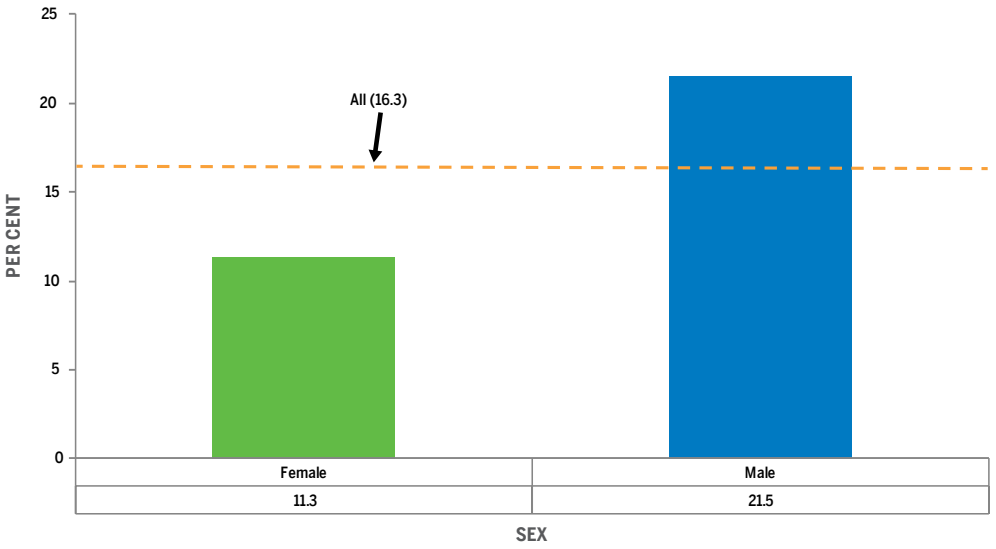
## KEY MESSAGES

- The multiple benefits of physical activity are well documented. Physical activity is good for the health and well-being of individuals, families, and communities, as well as for the environment and the economy. It is an important part of overall health, contributing to good mental health, healthy weight, disease prevention, and sound sleep.[1]
- Participation in physical activities including sport, active recreation, exercise, play, and dance can contribute to a child's physical literacy. Physical literacy is "the motivation, confidence, physical competence, knowledge, and understanding to value and take responsibility for engagement in physical activities in life."[2] It is key to enjoying lifelong participation in physical activity. Ideally, physical literacy development begins in early childhood[3,4] and can be learned at any age.
- Physical activity enhances healthy growth and development in children.[5] Additionally, there is evidence to suggest a positive relationship between physical activity and positive body image, lower levels of depression and anxiety, positive **self-esteem**, and ability to concentrate in class.[5]
- This indicator was measured based on self-reports of whether students in grades 7–12 participated in an activity that made them sweat, breathe hard, or be "out of breath". Figure 11.1 shows that there was a substantial difference—a range of 10 percentage points—between the physical activity levels of males and females: 21.5 per cent of males and 11.3 per cent of females reported participating in at least 60 minutes of physical activity seven days per week.
- Figures 11.2 and 11.3 show that students reported higher rates of physical activity in rural areas. In the Northern Interior Health Service Delivery Area (HSDA), 20.7 per cent of students in grades 7–12 reported getting at least 60 minutes of physical activity per day, compared to 11.0 per cent in the Richmond HSDA.

*"There are more outdoor things to do in rural communities, like more opportunities for walking and biking. In bigger cities gyms are busy and memberships are expensive."*

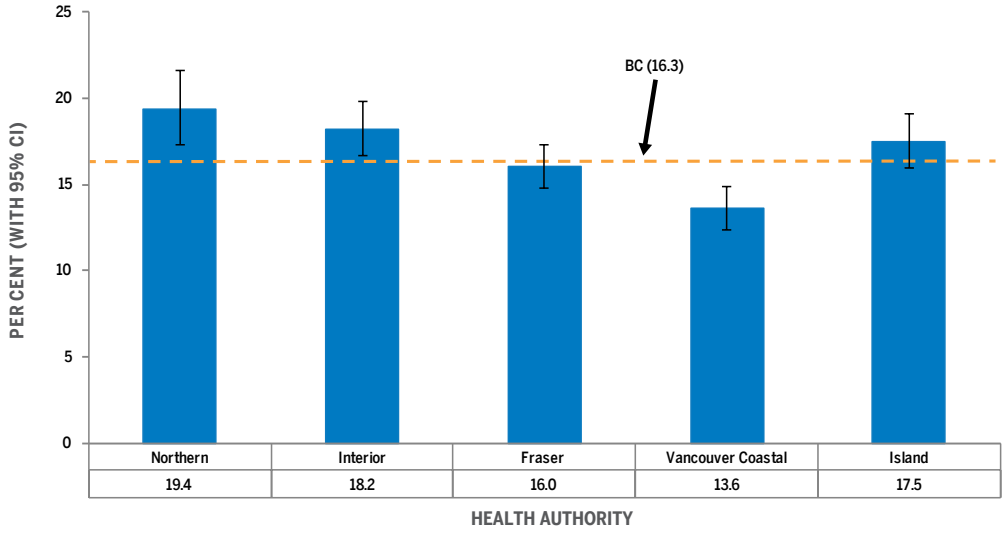
*"Social expectations are different for guys and girls. Guys are more encouraged to go into sports. Girls don't get as many chances for sports. Also girls are expected to look their best all the time and not be gross after gym class."*

**FIG 11.1** Percentage of Students in Grades 7-12 Who Reported at Least 60 Minutes of Physical Activity on Each of the Past Seven Days, by Sex, BC, 2013



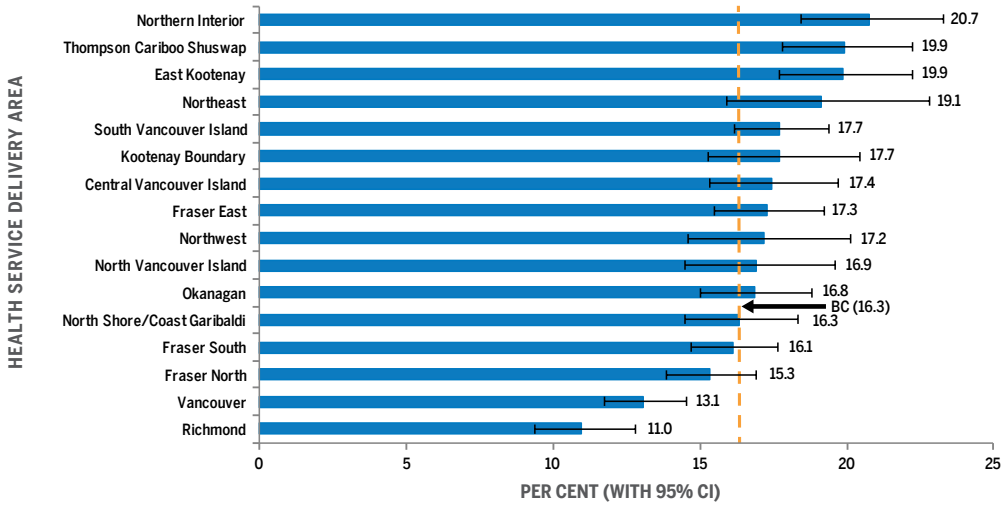

**Notes:** "Physical activity" means activity that made the student sweat, breathe hard, or be "out of breath". Data are not available for 2003 and 2008. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 11.2** Percentage of Students in Grades 7-12 Who Reported at Least 60 Minutes of Physical Activity on Each of the Past Seven Days, by Health Authority, BC, 2013




**Notes:** "Physical activity" means activity that made the student sweat, breathe hard, or be "out of breath". Health authority is based on the location of the school. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 11.3** Percentage of Students in Grades 7-12 Who Reported at Least 60 Minutes of Physical Activity on Each of the Past Seven Days, by Health Service Delivery Area, BC, 2013




**Notes:** "Physical activity" means activity that made the student sweat, breathe hard, or be "out of breath". Health service delivery area is based on the location of the school. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

*"The measurement using 'physical activities at least sixty minutes, seven days per week' is an unreasonable expectation. Five days a week would be more realistic. Seven days is too many and rest days are important for health as well."*

## REFERENCES

[1] Ekeland E, Heian F, Hagen KB. Can exercise improve self esteem in children and young people? A systematic review of randomised controlled trials. Br J Sports Med. 2005 Nov; 39(11): 792–8.

[2] Whitehead M, editor. Physical literacy throughout the life course. International Studies in Physical Education and Youth Sport. New York: Routledge; 2010. Cited by International Physical Literacy Association. [homepage on the Internet]. Plymouth, UK: International Physical Literacy Association; 2016 [cited 2016 Apr 6]. Available from: https://www.physical-literacy.org.uk/.

[3] Physical & Health Education Canada. Physical literacy. Why is it important? [Internet]. Ottawa, ON: Physical & Health Education Canada; 2016 [cited 2016 Mar 3]. Available from: http://www.phecanada.ca/programs/physical-literacy/what-physical-literacy/why-it-important.

[4] Sport for Life Society. Physical literacy [Internet]. Victoria, BC: Sport for Life Literacy; [cited 2016 Mar 3]. Available from: http://canadiansportforlife.ca/learn-about-canadian-sport-life/physical-literacy.

[5] H. Krueger & Associates. Child and youth health and well-being indicators project: appendix F – physical health and well-being evidence review [prepared for the Office of the Provincial Health Officer and the Canadian Institute for Health Information]. Ottawa, ON: Canadian Institute for Health Information; 2011.

# INDICATOR #12 Frequency of Tobacco Use

## DEFINITIONS

The original established indicator is the percentage of youth age 15 to 19 who report smoking occasionally or every day. In the interest of more fully understanding the level of tobacco use among youth, this indicator will be explored here and in future reports as two measures, specified below as Indicators 12A and 12B.

***INDICATOR #12A*** — Percentage of BC students in grades 7–12 who report having ever tried smoking tobacco.

***INDICATOR #12B*** — Percentage of BC students in grades 7–12 who report using tobacco daily, during the past 30 days.

## KEY MESSAGES

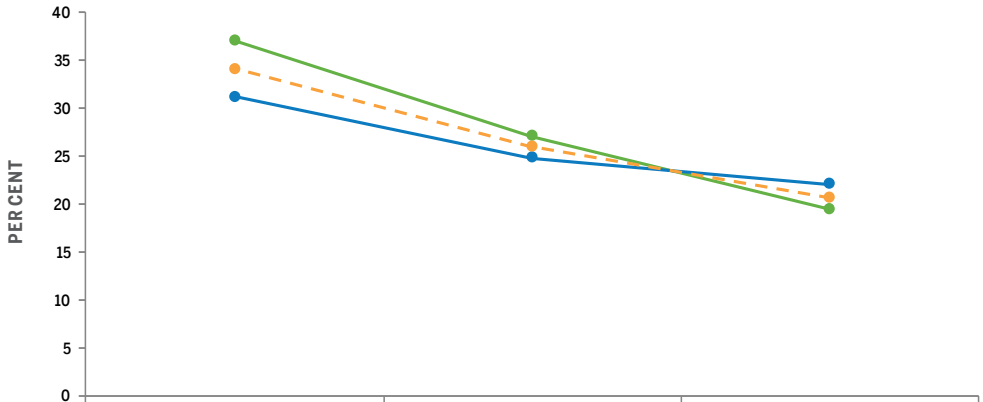
- There are many adverse short- and long-term health effects of tobacco use among children and youth. Evidence has found that children and youth who smoke are less physically fit, experience more respiratory illnesses, and their lung function declines faster than their non-smoking peers.[1] Mental health problems, difficulties at school, crime, and early parenthood have also been associated with tobacco use at a young age.[2,3]
- Youth tobacco use is also important because of the high likelihood that those who initiate smoking in adolescence will become dependent and continue smoking into adulthood. The adverse health effects of tobacco smoking in adults are well-established and include a range of cancers, cardiovascular diseases, and respiratory conditions.[2,4,5]
- Tobacco smoking is the leading cause of preventable death in BC. In fact, over 6,000 deaths in the province each year are attributed to tobacco smoking, killing more people than all other drugs, motor vehicle crashes, murder, suicide, and HIV/AIDS combined.[6]
- Health care costs for treatment of tobacco-related illness are estimated to be $2.3 billion each year.[7]
- The BC government has implemented and advanced a series of policies and programs that provide a degree of protection from second-hand smoke and disincentives for smokers by reducing opportunities to smoke.[8]

*"My friends just think smoking is highly unattractive. Generally smoking is considered nasty and gross."*

- Figure 12A.1 shows that the percentage of youth who report ever having tried smoking tobacco decreased from 2003 to 2013. Figure 12B.1 reveals that the percentage who report smoking daily also decreased over these 10 years.

- Figure 12B.2 shows geographic differences by health authority. They illustrate that in 2013, the percentage of youth who reported smoking tobacco every day during the past 30 days was much higher in Interior and Northern Health than in Fraser and Vancouver Coastal Health Authorities.

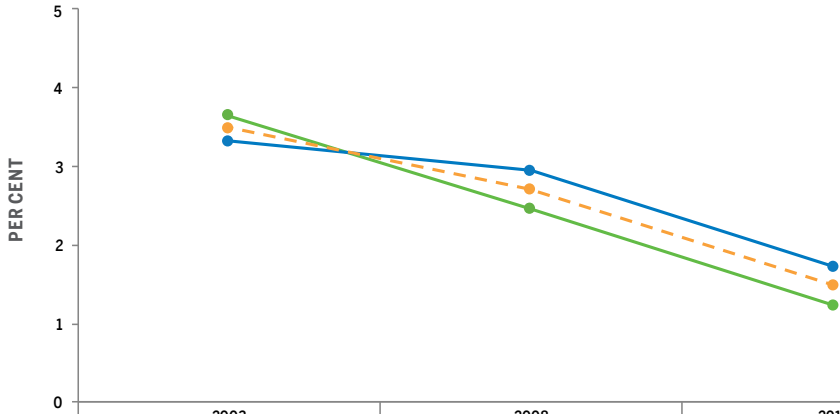
**FIG 12A.1** Percentage of Students in Grades 7-12 Who Reported Ever Trying Smoking Tobacco, by Sex, BC, 2003, 2008, and 2013




| | 2003 | 2008 | 2013 |
|---|---|---|---|
| Female | 37.1 | 27.0 | 19.4 |
| Male | 31.2 | 24.8 | 22.0 |
| All | 34.1 | 26.0 | 20.7 |

**Notes:** "Ever trying smoking" means youth who reported ever smoking a cigarette, cigar, or cigarillo, including a few puffs, in their lifetime. It does not include the use of ceremonial tobacco. The differences between years were statistically significant for all groups. The difference between sexes was statistically significant for all years. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2003, 2008, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 12B.1 Percentage of Students in Grades 7-12 Who Reported Using Tobacco Daily, by Sex, BC, 2003, 2008, and 2013

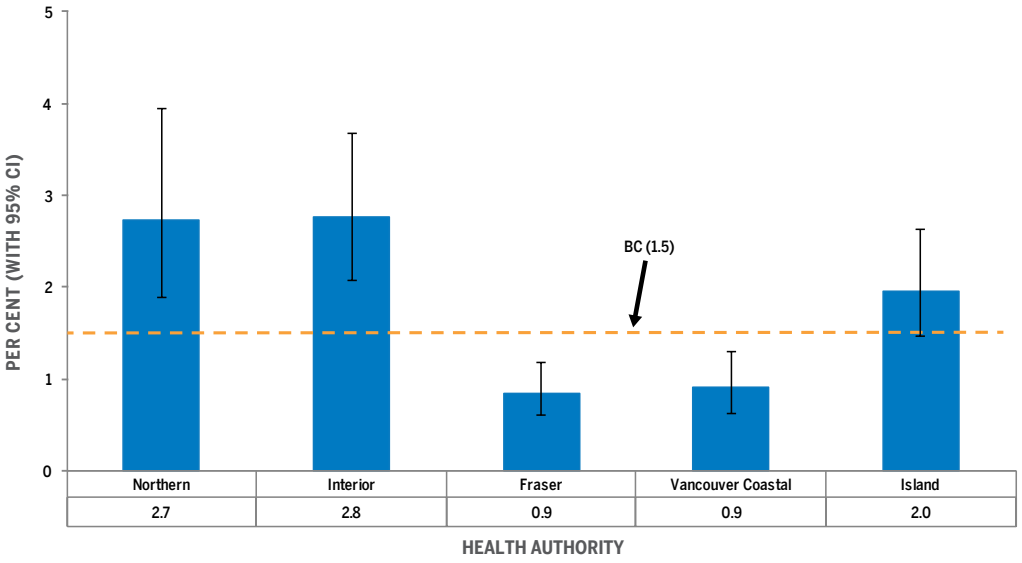



| | 2003 | 2008 | 2013 |
|---|---|---|---|
| Female | 3.7 | 2.5 | 1.2 |
| Male | 3.3 | 3.0 | 1.7 |
| All | 3.5 | 2.7 | 1.5 |

YEAR

**Notes:** "Using tobacco daily" means the youth reported smoking tobacco every day during the past 30 days. It does not include the use of ceremonial tobacco. The differences between 2003 and 2013 and between 2008 and 2013 were statistically significant for all groups. The difference between 2003 and 2008 was statistically significant for females only. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2003, 2008, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 12B.2 Percentage of Students in Grades 7-12 Who Reported Using Tobacco Daily, by Health Authority, BC, 2013

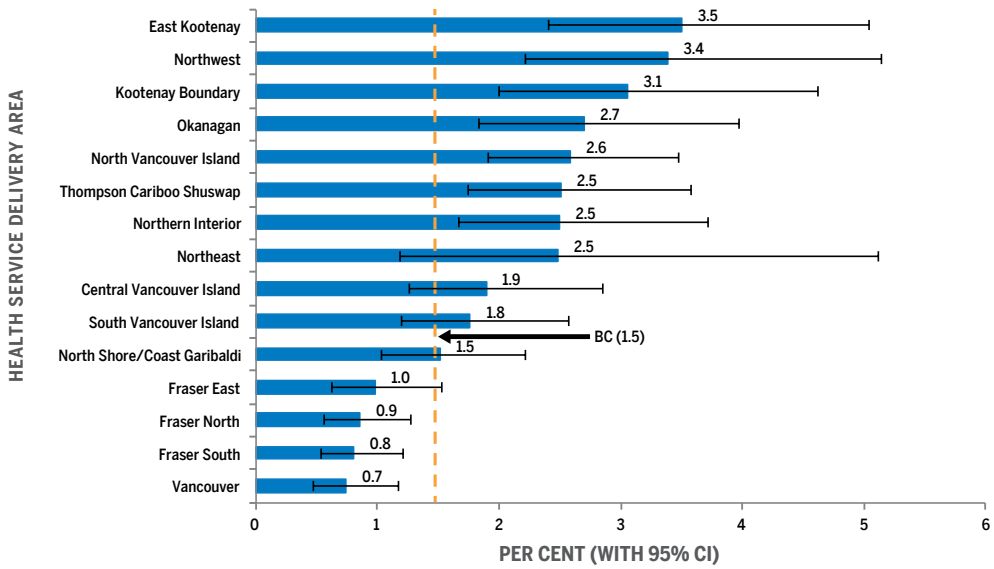



| Northern | Interior | Fraser | Vancouver Coastal | Island |
|---|---|---|---|---|
| 2.7 | 2.8 | 0.9 | 0.9 | 2.0 |

HEALTH AUTHORITY

**Notes:** "Using tobacco daily" means the youth reported smoking tobacco every day during the past 30 days. It does not include the use of ceremonial tobacco. Health authority is based on the location of the school. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016

**FIG 12B.3** Percentage of Students in Grades 7-12 Who Reported Using Tobacco Daily, by Health Service Delivery Area, BC, 2013




**Notes:** "Using tobacco daily" means the youth reported smoking tobacco every day during the past 30 days. It does not include the use of ceremonial tobacco. Health service delivery area is based on the location of the school. The data for Richmond have been suppressed due to small numbers in order to preserve confidentiality. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES


[1] H. Krueger & Associates. Child and youth health and well-being indicators project: appendix F – physical health and well-being evidence review [prepared for the Office of the Provincial Health Officer and the Canadian Institute for Health Information]. Ottawa, ON: Canadian Institute for Health Information; 2011.

[2] Mathers M, Toumbourou JW, Catalano RF, Williams J, Patton GC. Consequences of youth tobacco use: a review of prospective behavioural studies. Addiction. 2006 Jul;101(7):948-58.

[3] Propel Centre for Population Health Impact. 2012/2013 youth smoking survey: results profile for British Columbia. Waterloo, ON: University of Waterloo; 2014 [cited 2016 Apr 6]. Available from: https://uwaterloo.ca/canadian-student-tobacco-alcohol-drugs-survey/sites/ca.canadian-student-tobacco-alcohol-drugs-survey/files/uploads/files/yss12_bc_provincial_profile_final_en_20150304.pdf.

[4] Lenney W, Enderby B. "Blowing in the wind": a review of teenage smoking. Arch Dis Child. 2008 Jan;93(1):72-5.

[5] Statistics Canada. Table 105-0501 Health indicator profile, annual estimates, by age group and sex, Canada, provinces, territories, health regions (2013 boundaries) and peer groups, occasional (table). CANSIM (database). Ottawa, ON: Statistics Canada; 2016 [cited 2016 Apr 6]. Available from: http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=1050501&&pattern=&stByVal=1&p1=1&p2=-1&tabMode=dataTable&csid=.

[6] BC Vital Statistics Agency. Selected vital statistics and health status indicators. One hundred and fortieth annual report 2011. Victoria, BC: BC Vital Statistics Agency.

[7] Rehm J, Baliunas D, Brochu S, Fischer B, Gnam W, Patra J, et al. The costs of substance abuse in Canada 2002. Highlights. Ottawa, ON: Canadian Centre on Substance Abuse; 2006 [cited 2016 Apr 6]. Available from: http://www.ccsa.ca/Resource%20Library/ccsa-011332-2006.pdf.

[8] Government of British Columbia. Tobacco control program [Internet]. Victoria, BC: Government of British Columbia; [cited 2016 Jun 15]. Available from: http://www2.gov.bc.ca/gov/content/health/managing-your-health/mental-health-substance-use/quitting-smoking-tobacco-use/tobacco-control-program.

# INDICATOR #13 Binge Drinking

## DEFINITIONS

The original established indicator is the percentage of BC students in grades 7–12 who report having engaged in binge drinking in the past 30 days. In the interest of more fully understanding binge drinking among youth, this indicator will be explored here and in future reports as two measures, specified below as Indicators 13A and 13B.

***INDICATOR #13A*** — Percentage of BC students in grades 7–12 who report ever having a drink of alcohol.[f]

***INDICATOR #13B*** — Percentage of BC students in grades 7–12 who report binge drinking (consuming five or more drinks of alcohol within a couple of hours) at least once in the past 30 days.

## KEY MESSAGES

- Data show that alcohol is a leading contributor to injury among youth, and there is strong evidence that alcohol consumption, and especially **binge drinking**, is a risk factor for various negative health-related outcomes.[1–3]
- Studies of adolescent brain development over the last decade indicate that alcohol exposure could result in behavioural and cognitive deficits.[1,4]
- Research also shows that starting to consume alcohol at a younger age is highly associated with risk of drinking problems later in life, such as alcohol dependence and alcohol-related cancers.[1,5]
- Canada's Low-Risk Alcohol Drinking Guidelines suggest that if youth decide to drink, they should never have more than one to two drinks per occasion and never drink more than one or two times per week.[6]
- On January 31, 2014, the Government of BC announced full support for all recommendations from the *BC Liquor Policy Review Final Report*, including Recommendation #1: "Government should expand public education about health and safety risks related to alcohol use, with particular emphasis on the harmful effects of binge drinking by youth and post-secondary students."[7]
- Other recent changes in alcohol access and availability policy,[8] such as liquor being available in grocery stores, may affect youth alcohol consumption behaviours, and it will be important to monitor data concerning this issue.
- Figure 13A.1 shows that the percentage of students in grades 7–12 who report having ever tried alcohol decreased from 2003 to 2013.

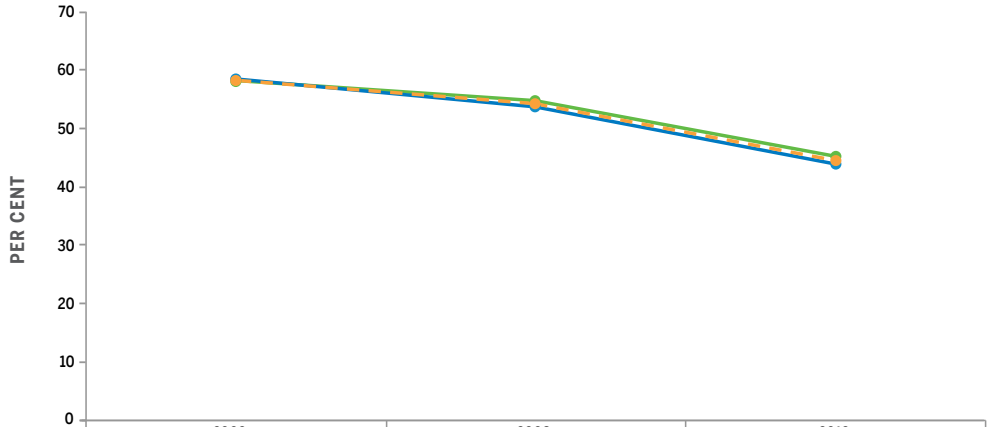
[f] "A drink of alcohol" means one standard drink: 12 oz. beer, 5 oz. wine, or 1.5 oz. hard liquor.

- Similarly, Figure 13B.1 shows a slightly declining trend for participation in binge drinking among students in grades 7–12 during this time period; however, it is still an important issue, with 17.3 per cent of students reporting binge drinking in the past 30 days.
- There are geographic differences across health authorities and health service delivery areas (HSDAs) that should also be considered. For example, students in Richmond HSDA reported the lowest percentage of participation in binge drinking (10.5 per cent), while students in Kootenay Boundary HSDA reported the highest (28.2 per cent) (Figure 13B.3).

*"We have grade sevens who are drinking and smoking in our change rooms – the very first year that they are in high school! Our experience in grade seven? We were like hiding out in the classrooms playing on the computer."*

*"Binge drinking is not considered cool, people talk about getting their stomachs pumped – they tell horror stories about it."*

**FIG 13A.1** Percentage of Students in Grades 7-12 Who Reported Ever Having a Drink of Alcohol, by Sex, BC, 2003, 2008, and 2013

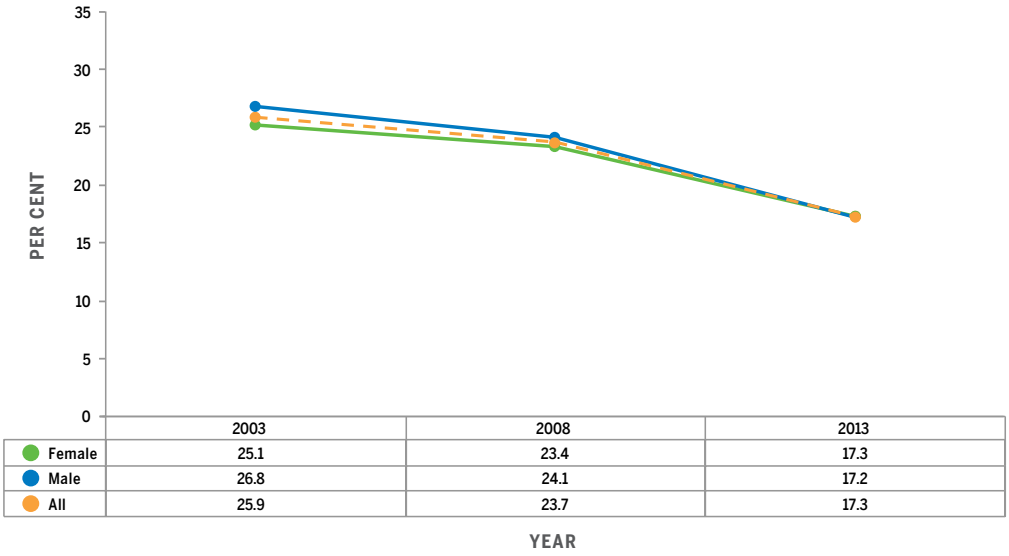



| | 2003 | 2008 | 2013 |
|---|---|---|---|
| Female | 58.1 | 54.8 | 45.2 |
| Male | 58.5 | 53.8 | 43.8 |
| All | 58.3 | 54.3 | 44.5 |

**Notes:** "A drink of alcohol" means one standard drink: 12 oz. beer, 5 oz. wine, or 1.5 oz. hard liquor. The differences between all years were statistically significant for all groups. The difference between sexes was not statistically significant for any years. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2003, 2008, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

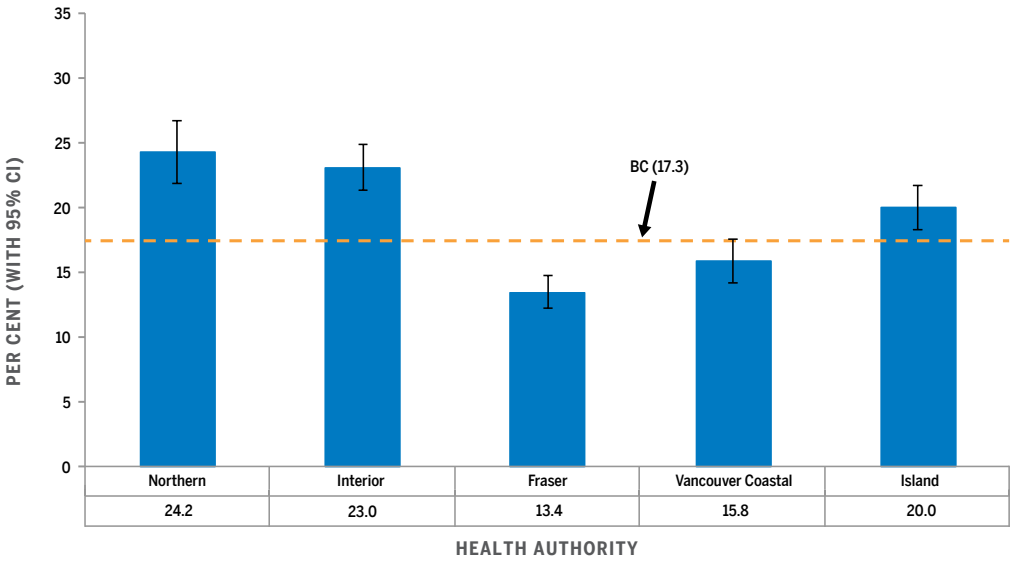
## FIG 13B.1 Percentage of Students in Grades 7-12 Who Reported Binge Drinking, by Sex, BC, 2003, 2008, and 2013




| | 2003 | 2008 | 2013 |
|---|---|---|---|
| Female | 25.1 | 23.4 | 17.3 |
| Male | 26.8 | 24.1 | 17.2 |
| All | 25.9 | 23.7 | 17.3 |

**Notes:** "Binge drinking" means having five or more drinks of alcohol within a couple of hours at least once during the previous 30 days. The differences between 2003 and 2013 and between 2008 and 2013 were statistically significant for all groups. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2003, 2008, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

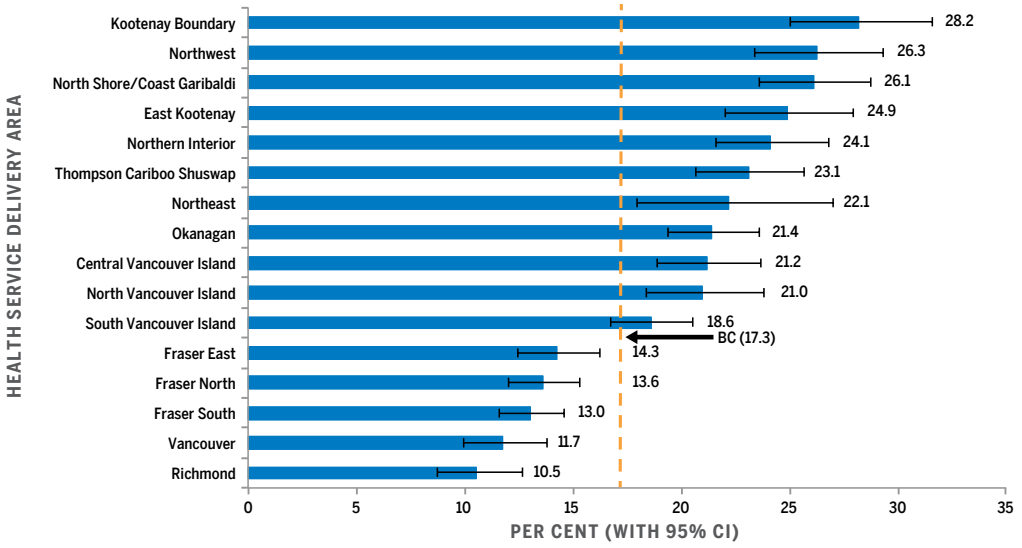
## FIG 13B.2 Percentage of Students in Grades 7-12 Who Reported Binge Drinking, by Health Authority, BC, 2013




| Northern | Interior | Fraser | Vancouver Coastal | Island |
|---|---|---|---|---|
| 24.2 | 23.0 | 13.4 | 15.8 | 20.0 |

**Notes:** "Binge drinking" means having five or more drinks of alcohol within a couple of hours at least once during the previous 30 days. Health authority is based on the location of the school. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 13B.3** Percentage of Students in Grades 7-12 Who Reported Binge Drinking, by Health Service Delivery Area, BC, 2013




**Notes:** "Binge drinking" means having five or more drinks of alcohol within a couple of hours at least once during the previous 30 days. Health service delivery area is based on the location of the school. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES

[1] Guerri C, Pascual M. Mechanisms involved in the neurotoxic, cognitive, and neurobehavioral effects of alcohol consumption during adolescence. Alcohol. 2010;44(1):15-26.

[2] Stolle M, Sack PM, Thomasius R. Binge drinking in childhood and adolescence: epidemiology, consequences, and interventions. Dtsch Arztebl Int. 2009 May;106(19):323-8.

[3] Courtney KE, Polich J. Binge drinking in young adults: data, definitions, and determinants. Psychol Bull. 2009 Jan; 135(1):142-56.

[4] Maldonado-Devincci AM, Badanich KA, Kirstein CL. Alcohol during adolescence selectively alters immediate and long-term behavior and neurochemistry. Alcohol. 2010;44(1):57-66.

[5] Grant BF, Dawson DA. Age at onset of alcohol use and its association with DSM-IV alcohol abuse and dependence: results from the National Longitudinal Alcohol Epidemiologic Survey. J Subst Abuse. 1998;10(2):163-73.

[6] Butt P, Beirness D, Gliksman L, Paradis C, Stockwell T. Alcohol and health in Canada: a summary of evidence and guidelines for low risk drinking. Ottawa, ON: Canadian Centre on Substance Abuse; 2011 [cited 2016 Mar 21]. Available from: http://www.ccsa.ca/Resource%20Library/2011-Summary-of-Evidence-and-Guidelines-for-Low-Risk%20Drinking-en.pdf.

[7] BC Ministry of Justice. B.C. liquor policy review final report. Victoria, BC: BC Ministry of Justice; [cited 2016 Mar 21]. Available from: http://www2.gov.bc.ca/local/haveyoursay/Docs/liquor_policy_review_report.pdf.

[8] BC Ministry of Justice. B.C. outlines balanced plan for grocery store liquor sales [Internet]. Victoria, BC: BC Ministry of Justice; 2014 Mar 6 [cited 2016 Jun 21]. Available from: https://news.gov.bc.ca/stories/bc-outlines-balanced-plan-for-grocery-store-liquor-sales.

# INDICATOR #14 Marijuana Use

## DEFINITIONS

The original established indicator is the percentage of BC students in grades 7–12 who report having used marijuana in the past 30 days. In the interest of more fully understanding the level of marijuana use among youth, this indicator will be explored here and in future reports as two measures, specified below as Indicators 14A and 14B.

***INDICATOR #14A*** — Percentage of BC students in grades 7–12 who report having ever tried marijuana.

***INDICATOR #14B*** — Percentage of BC students in grades 7–12 who report having used marijuana in the past 30 days.

## KEY MESSAGES

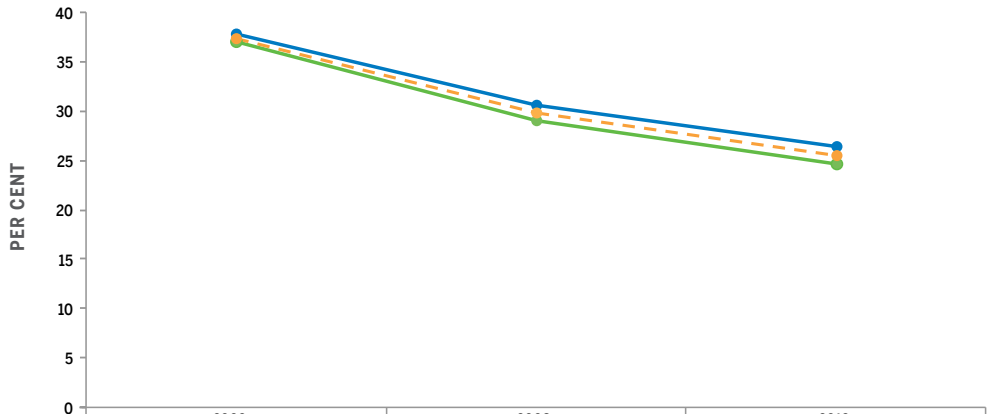
- In Canada, marijuana is the most commonly used illicit drug.[1]
- Canadian youth have the highest rate of marijuana use in the world.[2]
- There is concern that substance use, including marijuana use, may permanently harm developing adolescent brains.[3,4] Frequent use of marijuana during adolescence can result in reduced cognitive functioning, limited educational attainment, and marijuana dependence. Research has found that daily users are at the highest risk of experiencing negative outcomes.[4]
- Marijuana use also has negative effects on lung health.[5]
- Figure 14A.1 shows that in 2013, approximately one-quarter of youth surveyed (25.5 per cent) reported having ever used marijuana. This was a decrease from the 37.4 per cent who reported this in 2003.
- Figure 14B.1 shows a decrease between 2008 and 2013 in the percentage of youth who reported using marijuana at least once in the past 30 days, with a slightly larger decrease among males that resulted in the gap between sexes narrowing slightly by 2013.
- Figures 14B.2 and 14B.3 reveal geographic differences among youth who reported using marijuana at least once in the past 30 days; for example, Figure 14B.2 shows an approximately 8 percentage point difference between the lowest health authority (Fraser Health at 11.6 per cent) and the highest (Northern Health at 19.4 per cent).
- Due to the changing nature of methods through which youth are consuming marijuana, future reports will include data on marijuana use through other means such as edibles and vaporizers.

*"Marijuana use has gone up because it is just really popular. Marijuana is so much easier to get now."*

*"It is very confusing to hear that marijuana is bad for you and then hear about adults who use medical marijuana and how it does wonders for them. With such a positive side to it and such a negative side to it, it is really hard to tell kids 'no it is bad for you' and then tell others 'you need it to get rid of this arthritis pain'."*

*"Some kids believe if you smoke marijuana and study then you will ace the test. Like how is that possible? It's not like that – it doesn't work that way."*

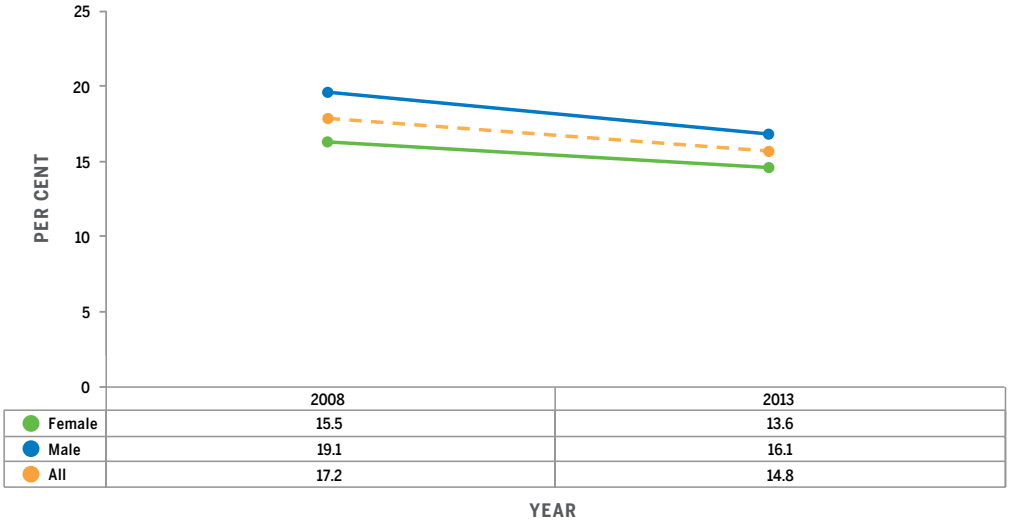
**FIG 14A.1** Percentage of Students in Grades 7-12 Who Reported Ever Using Marijuana, by Sex, BC, 2003, 2008, and 2013




| | 2003 | 2008 | 2013 |
|---|---|---|---|
| Female | 37.0 | 29.1 | 24.6 |
| Male | 37.8 | 30.5 | 26.4 |
| All | 37.4 | 29.8 | 25.5 |

**Notes:** The differences between years were statistically significant for all groups. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2003, 2008, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

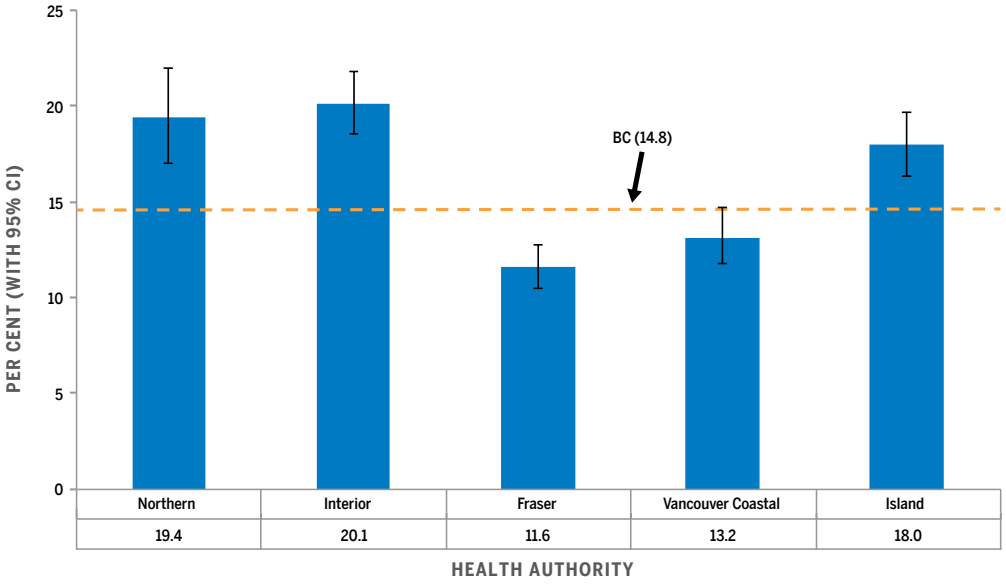
## FIG 14B.1 Percentage of Students in Grades 7-12 Who Reported Using Marijuana in the Last 30 Days, by Sex, BC, 2008 and 2013




| | 2008 | 2013 |
|---|---|---|
| Female | 15.5 | 13.6 |
| Male | 19.1 | 16.1 |
| All | 17.2 | 14.8 |

**Notes:** The difference between 2008 and 2013 was statistically significant for all groups. The difference between sexes was statistically significant for all years. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2008, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

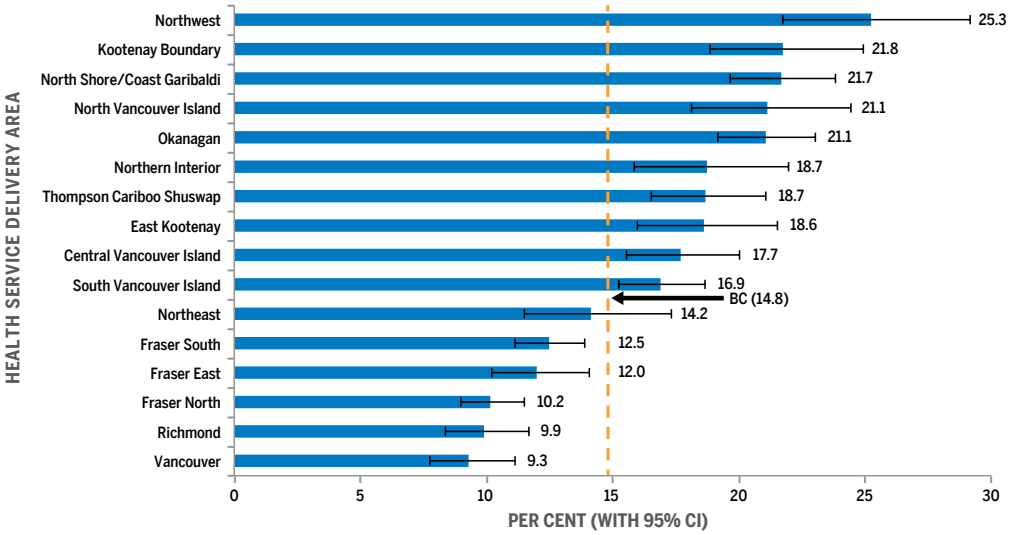
## FIG 14B.2 Percentage of Students in Grades 7-12 Who Reported Using Marijuana in the Last 30 Days, by Health Authority, BC, 2013




| Northern | Interior | Fraser | Vancouver Coastal | Island |
|---|---|---|---|---|
| 19.4 | 20.1 | 11.6 | 13.2 | 18.0 |

**Notes:** Health authority is based on the location of the school. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 14B.3** Percentage of Students in Grades 7-12 Who Reported Using Marijuana in the Last 30 Days, by Health Service Delivery Area, BC, 2013




**Notes:** Health service delivery area is based on the location of the school. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES

[1] Pirie T, Simmons M. Cannabis use and risky behaviours and harms: a comparison of urban and rural populations in Canada. Ottawa, ON: Canadian Centre on Substance Abuse; 2014 Feb [cited 2016 Mar 21]. Available from: http://www.ccsa.ca/Resource%20Library/CCSA-Cannabis-use-Risky-behaviours-and-Harms-2014-en.pdf.

[2] UNICEF Office of Research. Child well-being in rich countries: a comparative overview. Innocenti report card 11. Florence: UNICEF Office of Research; 2013 [cited 2016 Mar 21]. Available from: http://www.unicef-irc.org/publications/pdf/rc11_eng.pdf.

[3] H. Krueger & Associates. Child and youth health and well-being indicators project: appendix F – physical health and well-being evidence review [prepared for the Office of the Provincial Health Officer and the Canadian Institute for Health Information]. Ottawa, ON: Canadian Institute for Health Information; 2011.

[4] George T, Vaccarino F, editors. Substance abuse in Canada: the effects of cannabis use during adolescence. Ottawa, ON: Canadian Centre on Substance Abuse; 2015 [cited 2016 Mar 21]. Available from: http://www.ccsa.ca/Resource%20Library/CCSA-Effects-of-Cannabis-Use-during-Adolescence-Report-2015-en.pdf.

[5] Diplock J, Plecas D. Clearing the smoke on cannabis; respiratory effects of cannabis smoking. Ottawa, ON: Canadian Centre on Substance Abuse; 2009 [cited 2016 Apr 6]. Available from: http://www.ccsa.ca/Resource%20Library/ccsa-11797-2009.pdf.

# INDICATOR #15 Immunization Rates

## DEFINITIONS

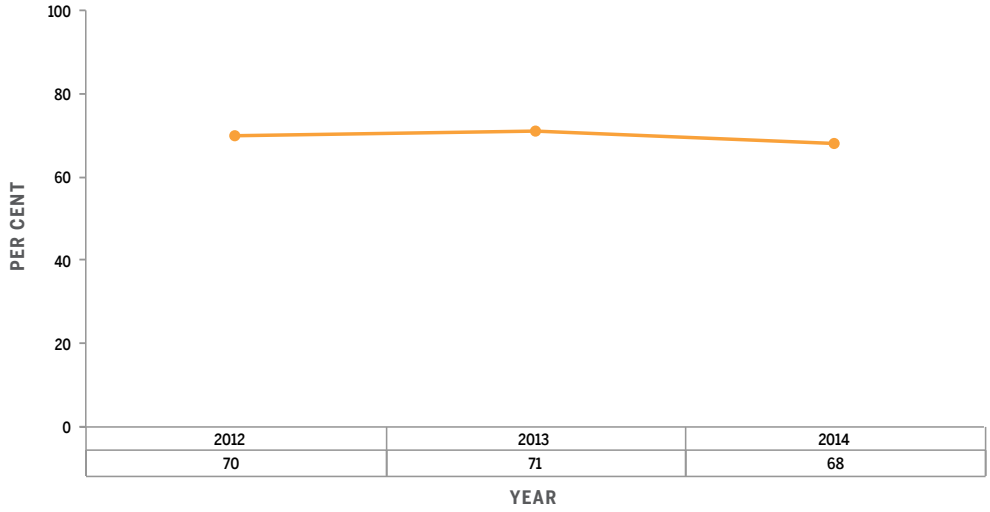
***INDICATOR #15A*** — Percentage of children who are up to date with immunizations by their seventh birthday.

***INDICATOR #15B*** — Percentage of students in grade 9 with up-to-date immunizations.

## KEY MESSAGES

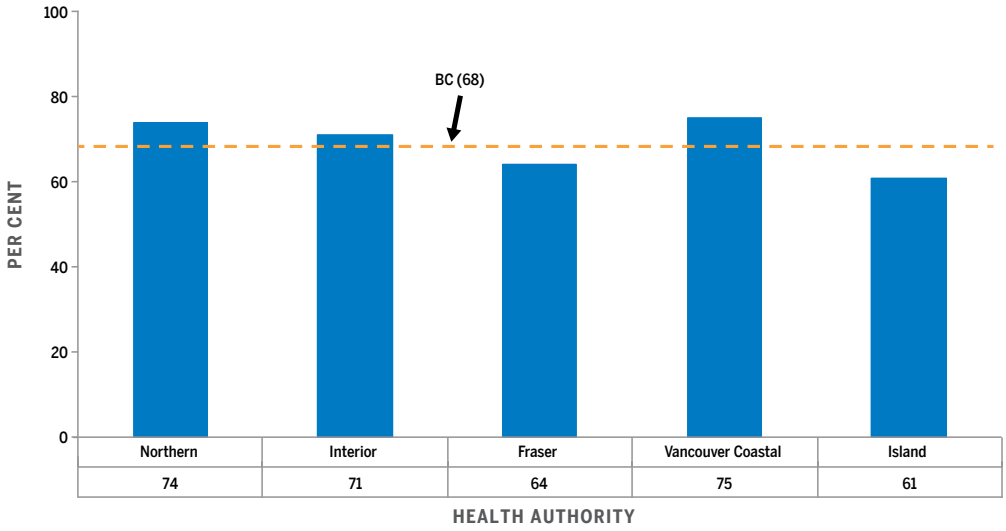
- **Immunization** is one of the most important measures available to monitor the prevention of illness and health complications in childhood—it is often described as one of the most successful and cost-effective health interventions.[1,2]
- Immunizations provide individual protection, as well as more broad protection of a population, from illnesses that have historically caused devastating outbreaks (e.g., measles, polio). High levels of immunization in the population are needed to protect those who are not able to receive the vaccine due to age or illness.
- Most parents interviewed in a recent Canadian survey (the Childhood National Immunization Coverage Survey) thought that childhood vaccines are safe. Similarly they believed that vaccines are effective and important for children's health.[3]
- At the current time, data are only available for Indicator 15A; future reports will include Indicator 15B as well, pending data availability.
- Figure 15A.1 shows that many children had up-to-date immunizations by age 7 from 2012 to 2014, but almost one-third did not. There are currently concerns among health care providers that increasing numbers of children are not up-to-date for all the vaccines they need in BC.[4,5]
- Figures 15A.2 and 15A.3 reveal that many of the 7-year-old children without up-to-date immunizations are from Island Health and Fraser Health.

## FIG 15A.1 Percentage of Seven-Year-Old Children with Up-to-Date Immunizations, BC, 2012 to 2014



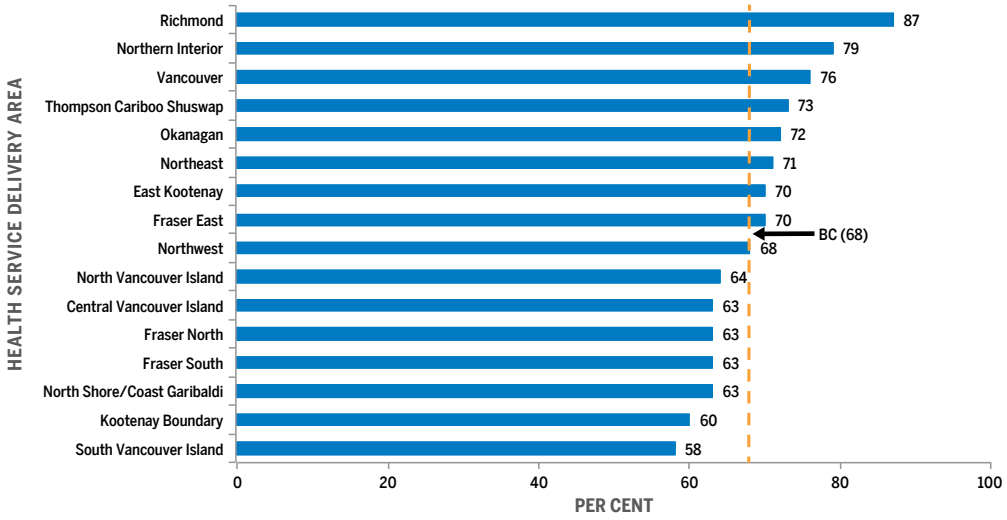

**Sources:** BC Centre for Disease Control, Immunization Programs and Vaccine Preventable Disease Service. Immunization data are from Panorama, BC Centre for Disease Control, 2014; the Public Health Information System, BC Centre for Disease Control, 2012 to 2014; Primary Access Regional Information System, Vancouver Coastal Health Authority, 2012 to 2014. School enrolment data are from the BC Ministry of Education, 2012 to 2014. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 15A.2 Percentage of Seven-Year-Old Children with Up-to-Date Immunizations, by Health Authority, BC, 2014




**Notes:** Health authority is based on the residence of the child.
**Sources:** BC Centre for Disease Control, Immunization Programs and Vaccine Preventable Disease Service. Immunization data are from Panorama, BC Centre for Disease Control, 2014; the Public Health Information System, BC Centre for Disease Control, 2014; Primary Access Regional Information System, Vancouver Coastal Health Authority, 2014. School enrolment data are from the BC Ministry of Education, 2014. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 15A.3** Percentage of Seven-Year-Old Children with Up-to-Date Immunizations, by Health Service Delivery Area, BC, 2014




**Notes:** Health service delivery area is based on the residence of the child. See Appendix B for more information about this data source.
**Sources:** BC Centre for Disease Control, Immunization Programs and Vaccine Preventable Disease Service. Immunization data are from Panorama, BC Centre for Disease Control, 2014; the Public Health Information System, BC Centre for Disease Control, 2014; Primary Access Regional Information System, Vancouver Coastal Health Authority, 2014. School enrolment data are from the BC Ministry of Education, 2014. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES

[1] World Health Organization. WHO global health days. Campaign essentials [Internet]. Geneva: World Health Organization; [cited 2016 Jul 14]. Available from: http://www.who.int/campaigns/immunization-week/2013/campaign_essentials/en/.

[2] Canadian Public Health Association. Fighting the good fight: taking on the anti-vaccine movement and public apathy [Internet]. Ottawa, ON: Canadian Public Health Association; [cited 2016 Jul 14]. Available from: http://www.cpha.ca/en/programs/history/achievements/12-v/public.aspx.

[3] Statistics Canada. Childhood National Immunization Coverage Survey, 2013. The Daily. Ottawa, ON: Statistics Canada; 2015 Jul 21 [cited 2016 Apr 6]. Available from: http://www.statcan.gc.ca/daily-quotidien/150721/dq150721c-eng.htm.

[4] Naus, M. Personal communication. BC Centre for Disease Control; 2014 Sep.

[5] BC Centre for Disease Control. Immunization uptake in children by the seventh birthday, 2012-2015. Vancouver, BC: BC Centre for Disease Control; [cited 2016 Apr 6]. Available from: http://www.bccdc.ca/resource-gallery/Documents/Statistics%20and%20Research/Statistics%20and%20Reports/Immunization/Coverage/7_Year_Old_Coverage_2007_Birth_Cohort.pdf.

# INDICATOR #16 Asthma Prevalence

## DEFINITION

***INDICATOR #11 —*** Asthma prevalence, by age and sex, expressed as a percentage.[g]

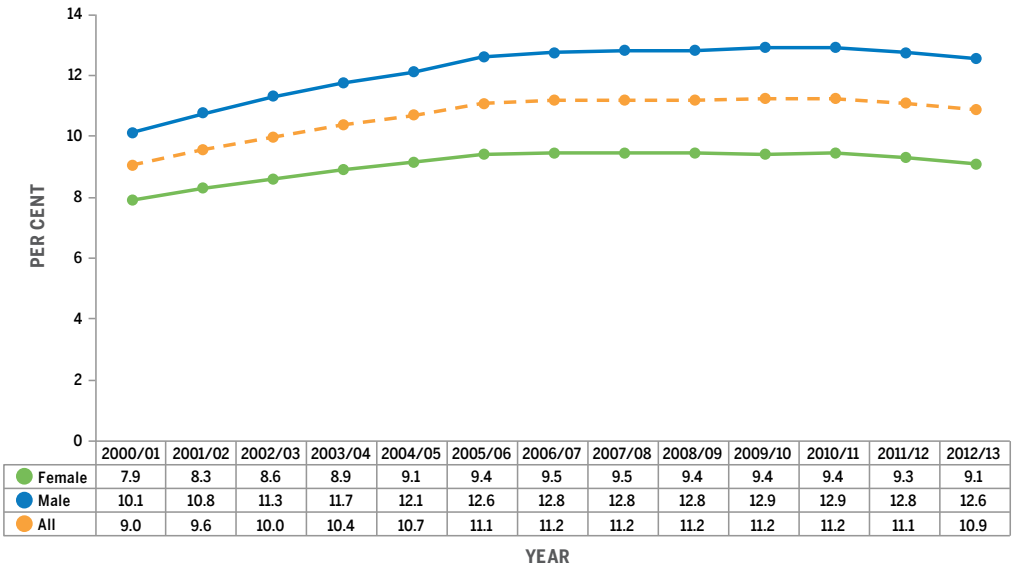
## KEY MESSAGES

- **Asthma** is a "chronic inflammatory disease of the airway" that causes symptoms including shortness of breath, tightness in the chest, coughing, and wheezing.[1]
- Asthma is the most common chronic disease in children[2] and is a leading cause of missed school days and hospital visits.[3]
- Asthma symptoms and episodes of severe shortness of breath can be triggered by exposure to allergens, environmental irritants, viral infections, exercise, and strong emotions.[3–5]
- Poor asthma control[h,6,7] can negatively impact a person's overall quality of life, impacting their ability to participate in sports, school, and other recreational activities.[4,8]
- In Canada in 1998/99, there was a higher percentage of asthma among children age 0–19 compared to adults, as well as a higher percentage seen in male children age 0–19 compared to female children the same age.[4]
- The overall average asthma prevalence for Canada is 8 per cent for youth age 12 and up.[9]
- Figure 16.1 shows that in BC, the total prevalence rate for asthma among children and youth age 5–19 for 2012/13 was 10.9 per cent, which is a decline from a persistent peak of 11.2 per cent from 2006/07 to 2010/11.
- Figures 16.2 and 16.3 show variation by health authority and health service delivery area.

[g] While the original indicator specified analyses by age, this indicator has been examined for age 5–19 as a group at this time. Future analyses may further explore the impact of age within this indicator.

[h] According to the Canadian Thoracic Society 2012 guideline update, whether asthma is being controlled depends upon a person's frequency of symptoms, his/her ability to participate in physical activity, the frequency of exacerbations, days missed at school or work, and measure of lung function.[6] Other definitions also include future risk for asthma symptoms or progression of loss of pulmonary function.[7]

## FIG 16.1 Percentage of Children and Youth Age 5-19 with Asthma, by Sex, BC, 2000/01 to 2012/13



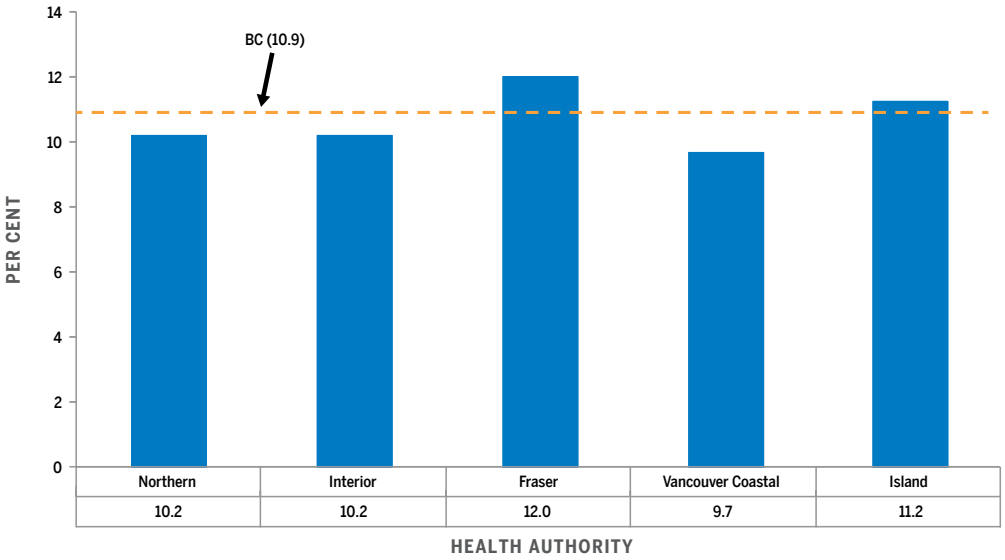

| | 2000/01 | 2001/02 | 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Female | 7.9 | 8.3 | 8.6 | 8.9 | 9.1 | 9.4 | 9.5 | 9.5 | 9.4 | 9.4 | 9.4 | 9.3 | 9.1 |
| Male | 10.1 | 10.8 | 11.3 | 11.7 | 12.1 | 12.6 | 12.8 | 12.8 | 12.8 | 12.9 | 12.9 | 12.8 | 12.6 |
| All | 9.0 | 9.6 | 10.0 | 10.4 | 10.7 | 11.1 | 11.2 | 11.2 | 11.2 | 11.2 | 11.2 | 11.1 | 10.9 |

YEAR

**Note:** See Appendix B for more information about this data source.

**Source:** BC Ministry of Health, Population Health Surveillance and Epidemiology, Chronic Disease Registry, 2000/01 to 2012/13. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 16.2 Percentage of Children and Youth Age 5-19 with Asthma, by Health Authority, BC, 2012/13



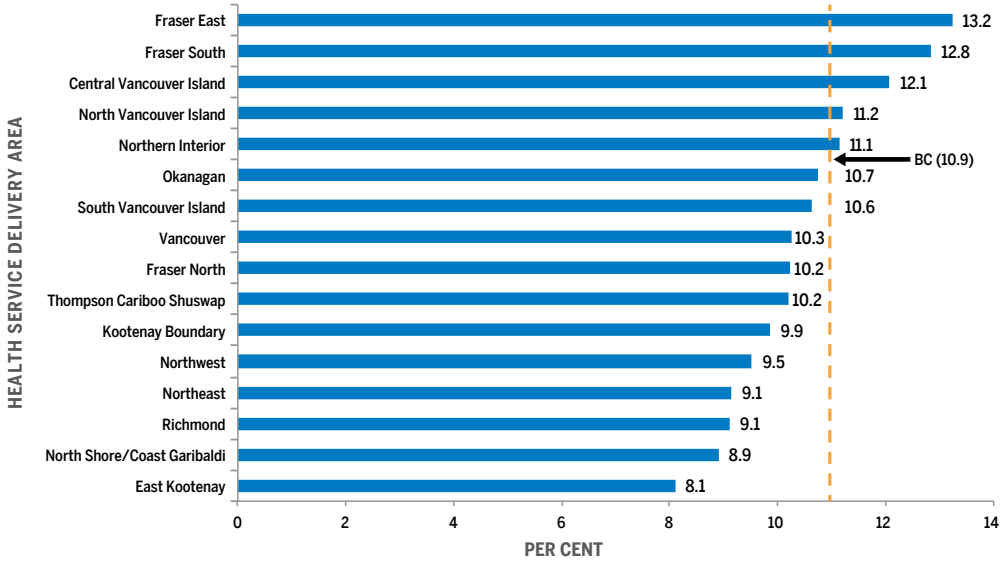

| Northern | Interior | Fraser | Vancouver Coastal | Island |
|---|---|---|---|---|
| 10.2 | 10.2 | 12.0 | 9.7 | 11.2 |

HEALTH AUTHORITY

**Notes:** Health authority is based on the residence of the child. See Appendix B for more information about this data source.

**Source:** BC Ministry of Health, Population Health Surveillance and Epidemiology, Chronic Disease Registry, 2012/13. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 16.3** Percentage of Children and Youth Age 5-19 with Asthma, by Health Service Delivery Area, BC, 2012/13




**Notes:** Health service delivery area is based on the residence of the child. See Appendix B for more information about this data source.
**Source:** BC Ministry of Health, Population Health Surveillance and Epidemiology, Chronic Disease Registry, 2012/13. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES

[1] Asthma Society of Canada. About asthma: what is asthma? [Internet]. Toronto, ON; Asthma Society of Canada; [updated 2016 Apr; cited 2016 Apr 6]. Available from: http://www.asthma.ca/adults/about/whatIsAsthma.php.

[2] H. Krueger & Associates. Child and youth health and well-being indicators project: appendix F – physical health and well-being evidence review [prepared for the Office of the Provincial Health Officer and the Canadian Institute for Health Information]. Ottawa, ON: Canadian Institute for Health Information; 2011.

[3] US National Library of Medicine. Asthma - children [Internet]. MedlinePlus. Bethesda, MD: US National Library of Medicine; 2012 [updated 2015 Apr 21; cited 2016 Mar 21]. Available from: https://www.nlm.nih.gov/medlineplus/ency/article/000990.htm.

[4] Canadian Institute for Health Information, Canadian Lung Association, Health Canada, Statistics Canada. Respiratory disease in Canada. Ottawa, ON: Health Canada; 2001 Sep [cited 2016 Mar 21]. Available from: https://secure.cihi.ca/free_products/RespiratoryComplete.pdf.

[5] Ducharme FM, Dell SD, Radhakrishnan D, Grad RM, Watson WTA, Yang CL, et al. Diagnosis and management of asthma in preschoolers: a Canadian Thoracic Society and Canadian Paediatric Society position paper. Paediatr Child Health. 2015 Oct;20(7):353-71.

[6] Canadian Thoracic Society. Canadian respiratory guidelines. 2012 guidelines update: diagnosis and management of asthma in preschoolers, children and adults. Ottawa, ON: Canadian Thoracic Society; 2012 [cited 2016 Jun 22]. Available from: http://www.respiratoryguidelines.ca/2012-cts-guideline-asthma-update.

[7] US Department of Health and Human Services, National Heart, Lung, and Blood Institute. Asthma control: keep it going [Internet]. Bethesda, MD: National Heart, Lung, and Blood Institute; [updated 2013 Jan; cited 2016 Jun 22]. Available from: http://www.nhlbi.nih.gov/health-pro/resources/lung/naci/discover/asthma-control.htm.

[8] National Asthma Control Task Force. The prevention and management of asthma in Canada. Ontario: National Asthma Control Task Force; 2000. Available from: http://publications.gc.ca/site/archivee-archived.html?url=http://publications.gc.ca/collections/Collection/H49-138-2000E.pdf.

[9] Statistics Canada. Asthma, 2014. Ottawa, ON: Statistics Canada; [modified 2015 Nov 27; cited 2016 Apr 6]. Available from: http://www.statcan.gc.ca/pub/82-625-x/2015001/article/14179-eng.htm.

# INDICATOR #17 Serious Injury among Children & Youth

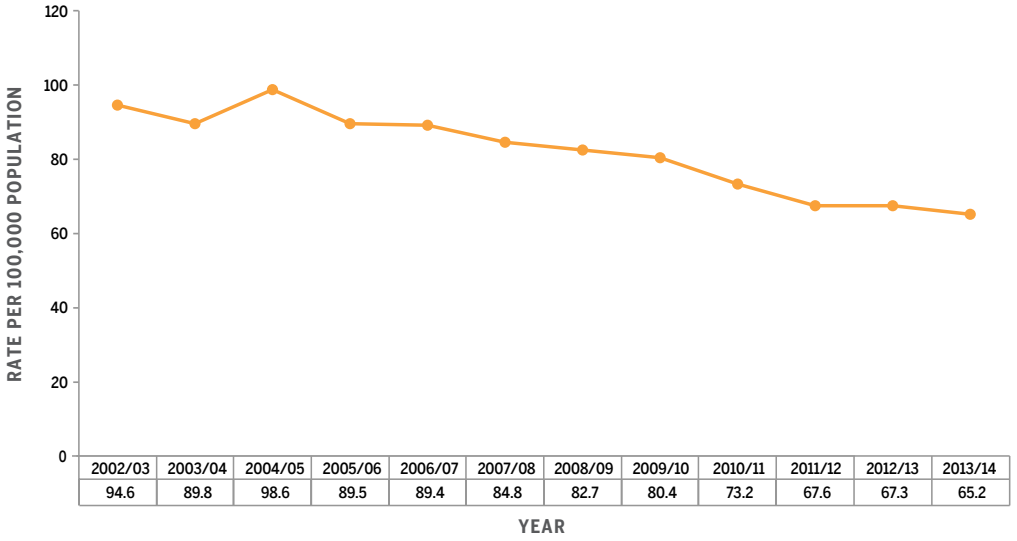
## DEFINITION

***INDICATOR #17 —*** Incidence of severe injuries among children and youth age 0–19.

## KEY MESSAGES

- Childhood injury is an important global public health priority. In 2005 the World Health Organization published a *Global Call to Action* to call attention to the area of child and adolescent injury prevention.[1]
- While the vast majority of unintentional childhood injury deaths occur in low- and middle-income countries, it is still an important health concern in Canada, involving several hundred cases each year. In fact, unintentional injuries (e.g., motor vehicle crashes, falls, poisoning, drowning, suffocation, fire) are the leading cause of death among Canadian children and youth age 0–19, and the third leading cause of hospitalizations.[2,3]
- Data analyzed here reflect serious injuries, which are described by the BC Injury Research and Prevention Unit as consisting of one or more of 60 specific ICD-10 codes identifying injuries that consistently result in at least a one-night admission to hospital.[4]
- Figure 17.1 shows that the age-standardized rate of serious injury-related hospitalizations among BC children and youth age 0–19 has declined by 33.8 per cent, from a high of 98.6 per 100,000 population in 2004/05 to a low of 65.2 per 100,000 in 2013/14.
- Figure 17.2 presents these data by health authority, and indicates that Northern Health and Interior Health reported the highest age-standardized hospitalization rates for serious injuries among children and youth age 0–19 in 2013/14, at 88.6 per 100,000 population and 87.1 per 100,000 respectively. These rates were significantly higher than the BC average of 65.2 per 100,000. In contrast, Vancouver Coastal Health reported the lowest rate in 2013/14 at 45.9 per 100,000—substantially lower than the BC average.
- Figure 17.3 demonstrates that there was considerable variation in rates of serious injury hospitalizations among children and youth age 0–19 among the health service delivery areas (HSDAs) in 2013/14. The highest rate was found in the Northwest HSDA at 104.1 per 100,000. Rates were also high in Fraser East (100.0), East Kootenay (91.1), Thompson Cariboo Shuswap (88.8), and Okanagan (86.1). Rates were lowest in Vancouver and Richmond HSDAs (35.2 and 36.0 per 100,000 respectively), and both of these regions had rates that were substantially lower than the BC average of 65.2 per 100,000.

## FIG 17.1 Age-standardized Serious Injuries for Children and Youth Age 0-19, Rate per 100,000 Population, BC, 2002/03 to 2013/14

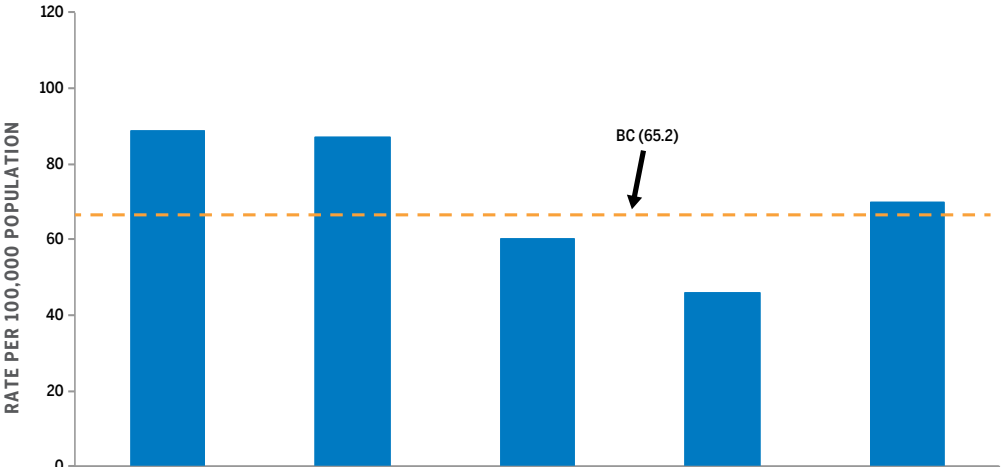



| 2002/03 | 2003/04 | 2004/05 | 2005/06 | 2006/07 | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | 2013/14 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 94.6 | 89.8 | 98.6 | 89.5 | 89.4 | 84.8 | 82.7 | 80.4 | 73.2 | 67.6 | 67.3 | 65.2 |

YEAR

**Notes:** "Serious injuries" means the child or youth had one or more of the 60 ICD-10 code injuries, that resulted in at least a one-night admission to hospital, as described by the BC Injury Research and Prevention Unit.[4] See Appendix B for more information about this data source.
**Source:** Data are from the Discharge Abstract Database, BC Ministry of Health, 2002/03 to 2013/14. Prepared by BC Injury Research and Prevention Unit, 2015; and the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 17.2 Age-standardized Serious Injuries for Children and Youth Age 0-19, Rate per 100,000 Population, by Health Authority, BC, 2013/14

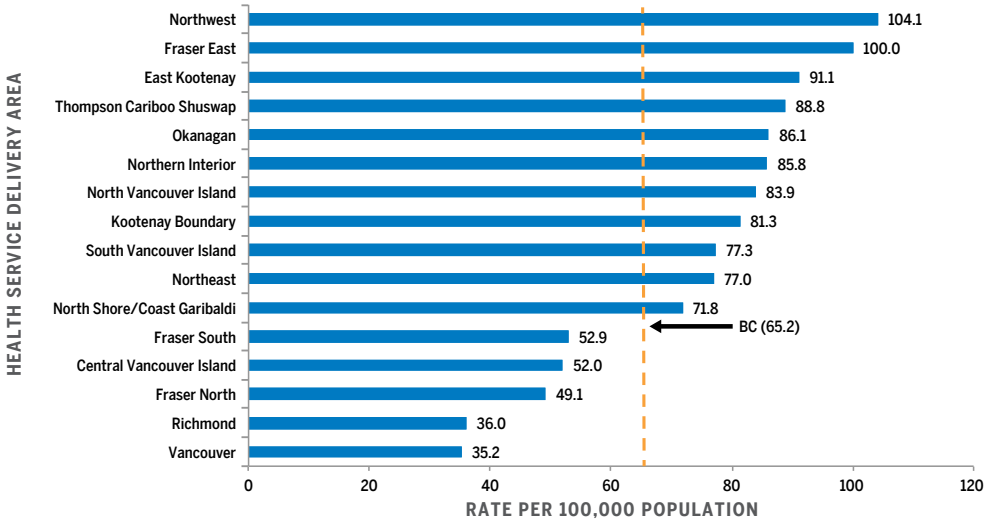



| Northern | Interior | Fraser | Vancouver Coastal | Island |
|---|---|---|---|---|
| 88.6 | 87.1 | 60.0 | 45.9 | 69.7 |

HEALTH AUTHORITY

**Notes:** "Serious injuries" means the child or youth had one or more of the 60 ICD-10 code injuries, that resulted in at least a one-night admission to hospital, as described by the BC Injury Research and Prevention Unit.[4] Health authority is based on the residence of the child. See Appendix B for more information about this data source.
**Source:** Data are from the Discharge Abstract Database, BC Ministry of Health, 2013/14. Prepared by BC Injury Research and Prevention Unit, 2015; and the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 17.3** Age-standardized Serious Injuries for Children and Youth Age 0-19, Rate per 100,000 Population, by Health Service Delivery Area, BC, 2013/14




**Notes:** "Serious injuries" means the child or youth had one or more of the 60 ICD-10 code injuries, that resulted in at least a one-night admission to hospital, as described by the BC Injury Research and Prevention Unit.[4] Health service delivery area is based on the residence of the child. See Appendix B for more information about this data source.

**Source:** Data are from the Discharge Abstract Database, BC Ministry of Health, 2013/14. Prepared by BC Injury Research and Prevention Unit, 2015; and the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES

[1] World Health Organization. Child and adolescent injury prevention: a global call to action. Geneva: World Health Organization; 2005.

[2] Parachute. The cost of injury in Canada. Toronto, ON: Parachute; 2015.

[3] Piedt S, Rajabali F, Turcotte K, Barnett B, Pike I. The BC casebook for injury prevention. Vancouver, BC: BC Injury Research and Prevention Unit; 2015.

[4] Pike I, Macpherson A. Measuring injury matters: an indicator for age standardized rate of serious injury-related hospitalizations in BC. Vancouver, BC: BC Injury Research and Prevention Unit, Canadian Institute of Health Research; [cited 2016 Jul 14].

# INDICATOR #18 Chlamydia Incidence

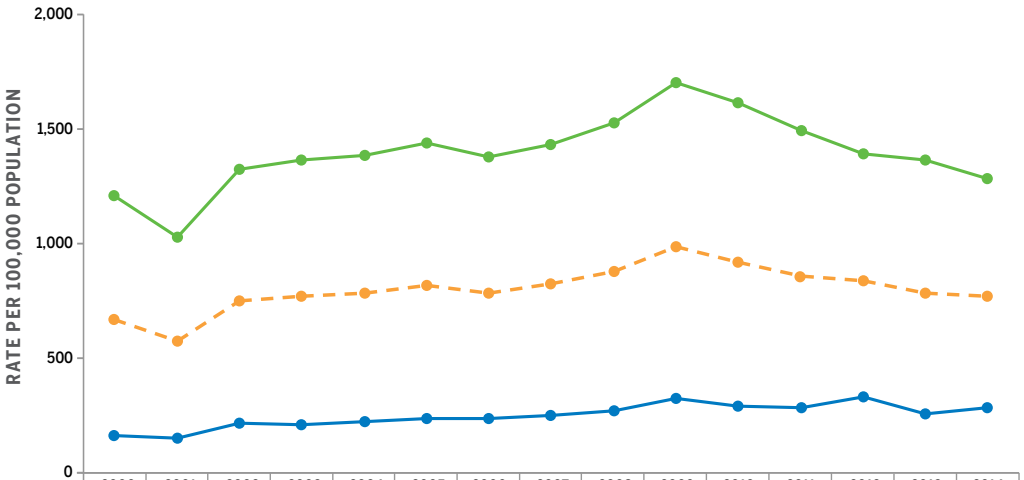
## DEFINITION

***INDICATOR #18 —*** Incidence of genital chlamydia among youth age 15–19, expressed as a rate per 100,000, by sex.

## KEY MESSAGES

- **Chlamydia** is the most commonly reported sexually transmitted infection (STI) in BC.[1,2]
- Although the health consequences of chlamydia are typically limited, a history of chlamydia infection is an important risk factor for pelvic inflammatory disease, infertility, ectopic pregnancy, and chronic pelvic pain. This is particularly concerning as the incidence of chlamydia is greatest among individuals 15–24 years old.[1,3]
- Chlamydia is often asymptomatic. The male rate may reflect symptomatic infection that results in testing and diagnosis. In females, an infection may be undiagnosed until routine testing is done or until complications appear such as pelvic inflammatory disease.[2–4] It is believed that females get tested more frequently—as part of a routine pelvic examination and Pap test[1]— than males, because screening programs tend to target females and because males are often treated without diagnostic testing.[3] Females also access health services more frequently than males in general.[4]
- There is evidence that chlamydia infections are associated with poorer socio-economic status, reflecting social vulnerabilities and disparities that require consideration of the social determinants of health and increasing equitable reach of prevention strategies, testing, and treatment.[5,6]
- Many studies have shown that other STIs often coexist in young people with chlamydia and are often amplified in certain risk groups. Since chlamydia is the most prevalent STI in jurisdictions such as the US (1997),[3] Canada, and BC (2014),[1] chlamydia diagnoses may allow health care practitioners to identify youth at-risk for a number of other things and identify a more vulnerable population for targeted health interventions.[7]
- The incidence of chlamydia may reflect risky sexual activity, such as not using condoms (condom use is an effective intervention to prevent acquisition of chlamydia). Thus, monitoring trends in chlamydia incidence among youth could be a proxy for sexual knowledge, skills, practices, and attitudes, particularly around negotiating condom use.[2,8]
- The chlamydia incidence rate when calculated as a percentage of the total youth population is a significant underrepresentation of the rate among those who are sexually active.[9]
- As shown in Figure 18.1, there are substantial differences between sexes in chlamydia rates, with the female rate being much higher than the male rate.
- Figures 18.2 and 18.3 show that there are also key geographic differences in incidence of chlamydia across BC.

## FIG 18.1 Chlamydia among Youth Age 15-19, Rate per 100,000 Population, by Sex, BC, 2000 to 2014

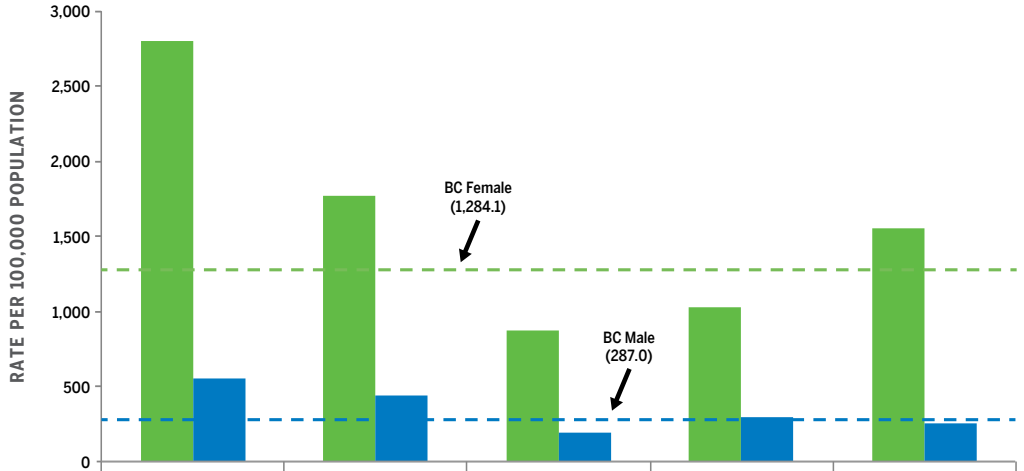



| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Female | 1207.6 | 1028.0 | 1322.0 | 1365.6 | 1385.1 | 1441.6 | 1379.4 | 1431.5 | 1525.1 | 1700.2 | 1611.4 | 1494.2 | 1394.5 | 1367.5 | 1284.1 |
| Male | 164.4 | 151.4 | 214.5 | 210.8 | 226.8 | 237.1 | 239.8 | 252.8 | 274.0 | 324.0 | 293.0 | 281.6 | 329.3 | 257.3 | 287.0 |
| All | 668.9 | 573.9 | 750.1 | 768.4 | 783.3 | 814.7 | 786.8 | 822.2 | 878.7 | 985.3 | 921.1 | 857.0 | 835.9 | 787.0 | 767.5 |

YEAR

**Note:** See Appendix B for more information about this data source.
**Source:** BC Centre for Disease Control, Clinical Prevention Services. Extracted from Sexually Transmitted Infection Information System, data as of April 30, 2016. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 18.2 Chlamydia among Youth Age 15-19, Rate per 100,000 Population, by Sex and Health Authority, BC, 2014

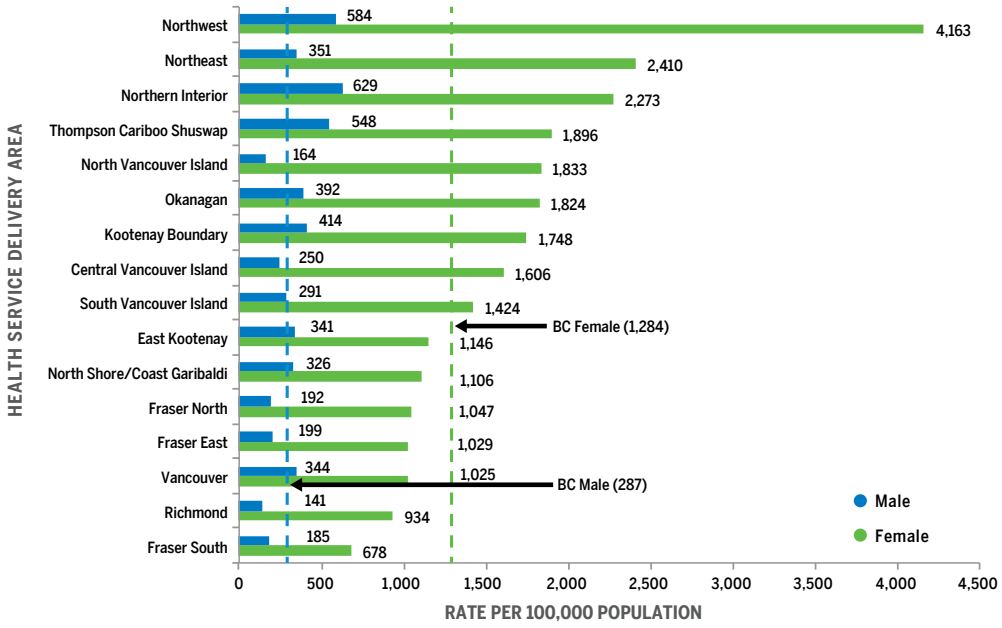



| | Northern | Interior | Fraser | Vancouver Coastal | Island |
|---|---|---|---|---|---|
| Female | 2,796.4 | 1,769.0 | 869.0 | 1,028.4 | 1,557.1 |
| Male | 548.8 | 437.9 | 189.9 | 295.2 | 254.7 |

HEALTH AUTHORITY

**Notes:** Health authority is based on the residence of the child. See Appendix B for more information about this data source.
**Source:** BC Centre for Disease Control, Clinical Prevention Services. Extracted from Sexually Transmitted Infection Information System, data as of April 30, 2016. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 18.3** Chlamydia among Youth Age 15-19, Rate per 100,000 Population, by Sex and Health Service Delivery Area, BC, 2014




**Notes:** Health service delivery area is based on the residence of the child. See Appendix B for more information about this data source.
**Source:** BC Centre for Disease Control, Clinical Prevention Services. Extracted from Sexually Transmitted Infection Information System, data as of April 30, 2016. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES


[1] BC Centre for Disease Control. STI in British Columbia: annual surveillance report 2014. Vancouver, BC: BC Centre for Disease Control; 2015 [cited 2016 Apr 7]. Available from: http://www.bccdc.ca/resource-gallery/Documents/Statistics%20and%20Research/Statistics%20and%20Reports/STI/STI_Annual_Report_2014-FINAL.pdf.

[2] Public Health Agency of Canada. Canadian guidelines on sexually transmitted infections. Ottawa, ON: Public Health Agency of Canada; 2016 [cited 2016 Apr 7]. Available from: http://www.phac-aspc.gc.ca/std-mts/sti-its/guide-lignesdir-eng.php.

[3] Braverman PK. Sexually transmitted diseases in adolescents. Med Clin North Am. 2000;84(4):869-89.

[4] BC Centre for Disease Control. Annual surveillance report: HIV and sexually transmitted infections 2010. Vancouver, BC: BC Centre for Disease Control; 2010.

[5] Jolly AM, Orr PH, Hammond G, Young TK. Risk factors for infection in women undergoing testing for Chlamydia trachomatis and Neisseria gonorrhoeae in Manitoba, Canada. Sex Transm Dis. 1995;22:289-95.

[6] Deering K, Tyndall M, Koehoorn M. Regional patterns of risk for sexually transmitted infections in British Columbia. Health Rep. 2010;21(3):37-44.

[7] Devries KM, Free CJ, Morison L, Saewyc E. Factors associated with pregnancy and STI among Aboriginal students in British Columbia. Can J Public Health. 2009 May-Jun;100(3):226-30.

[8] Rotermann M. Sex, condoms and STDs among young people. Health Rep. 2005 May;16(3):39-45.

[9] Mitchell K, Roberts A, Gilbert M, Homma Y, Warf C, Daly K, et al. Improving the accuracy of Chlamydia trachomatis incidence rate estimates among adolescents in Canada. Can J Hum Sex. 2015;24(1):12-18.

# INDICATOR #19 Teenage Birth Rate

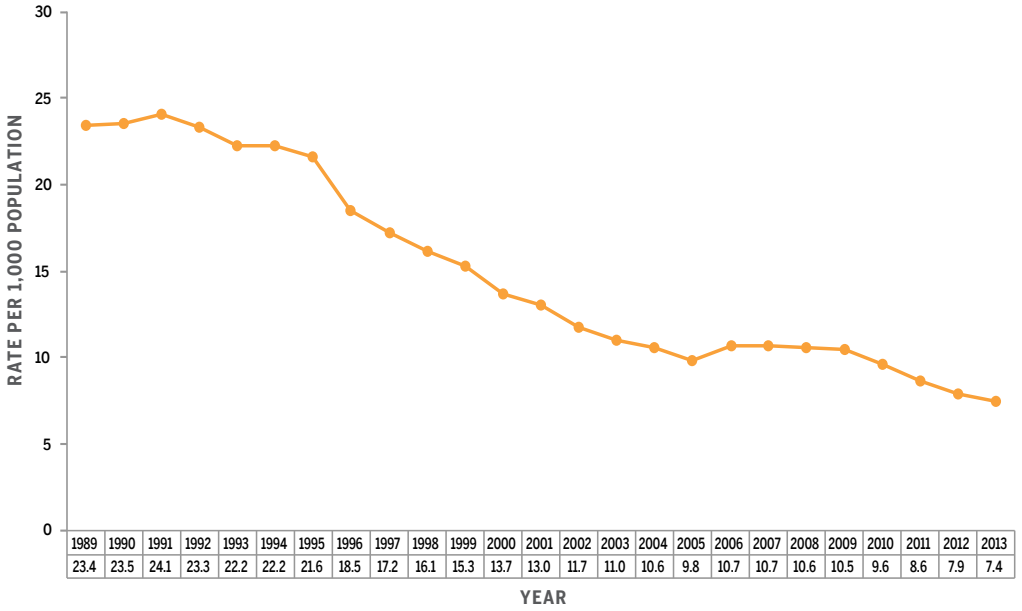
## DEFINITION

***INDICATOR #19 —*** Birth rate for females age 15–19, expressed as a rate per 1,000 females.

## KEY MESSAGES

- Evidence shows that the teenage pregnancy rate in Canada has been decreasing since the mid-1970s,[1] and BC has one of the lowest teenage birth rates in Canada.[2]
- Teenage pregnancy is associated with a variety of poor physical health outcomes for both mother and baby, as well as risk of educational underachievement and poorer economic status.[1]
- Figure 19.1 shows a substantial decrease in teenage pregnancies over the 25-year period of 1989 to 2013, and a rate of 7.4 teenage pregnancies per 1,000 population (females age 15–19) in 2013.
- Figure 19.2 reveals a large geographic difference between the health authority areas, with Vancouver Coastal Health having the lowest rate (2.9 per 1,000 population) and Northern Health having the highest—a rate that is almost five times higher (14.0 per 1,000).

## FIG 19.1 Births among Females Age 15-19, Rate per 1,000 Population, BC, 1989 to 2013

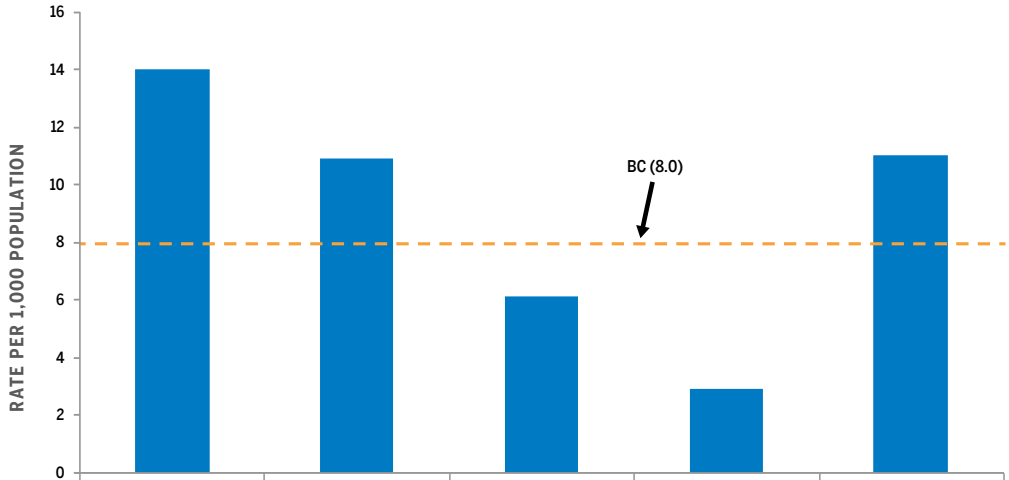



| 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 23.4 | 23.5 | 24.1 | 23.3 | 22.2 | 22.2 | 21.6 | 18.5 | 17.2 | 16.1 | 15.3 | 13.7 | 13.0 | 11.7 | 11.0 | 10.6 | 9.8 | 10.7 | 10.7 | 10.6 | 10.5 | 9.6 | 8.6 | 7.9 | 7.4 |

YEAR

**Notes:** The rate numerator includes BC live birth counts for all multiplicities for mothers age 15-19, and the rate denominator includes the total regional female population age 15-19. See Appendix B for more information about these data sources.
**Sources:** BC Vital Statistics Agency, 1989 to 2013 data. Population denominators for females age 15-19 are from the BC Stats website. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 19.2 Births among Females Age 15-19, Rate per 1,000 Population, by Health Authority, BC, 2011-2013

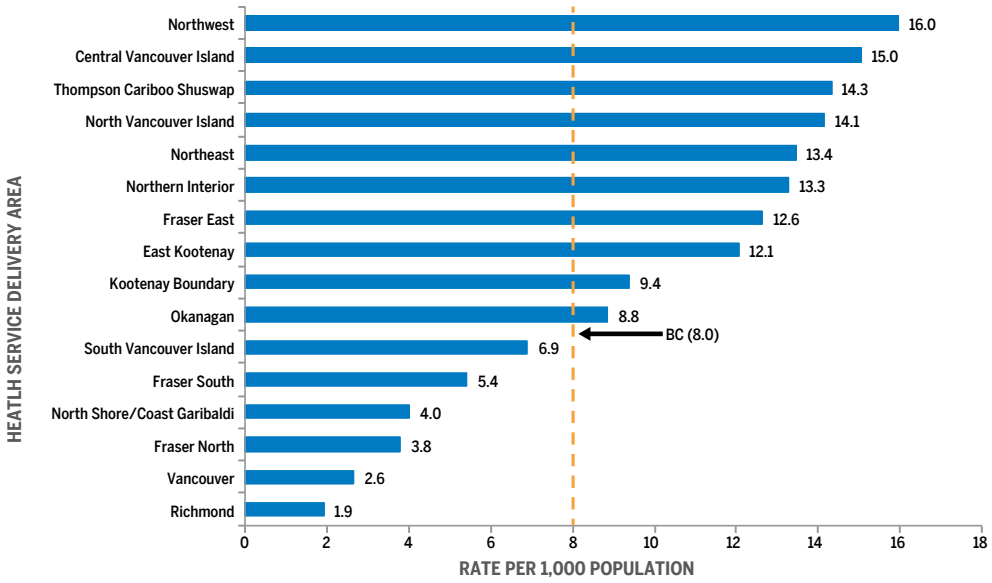



| Northern | Interior | Fraser | Vancouver Coastal | Island |
|---|---|---|---|---|
| 14.0 | 10.9 | 6.1 | 2.9 | 11.0 |

HEALTH AUTHORITY

**Notes:** The rate numerator includes BC live birth counts for all multiplicities for mothers age 15-19, and the rate denominator includes the total regional female population age 15-19. Health authority is based on the residence of the child. See Appendix B for more information about these data sources.
**Sources:** BC Vital Statistics Agency, 2011-2013 data. Population denominators for females age 15-19 are from the BC Stats website. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 19.3** Births among Females Age 15-19, per 1,000 Population, by Health Service Delivery Area, BC, 2011-2013




**Notes:** The rate numerator includes BC live birth counts for all multiplicities for mothers age 15-19, and the rate denominator includes the total regional female population age 15-19. Health service delivery area is based on the residence of the child. See Appendix B for more information about these data sources.

**Sources:** BC Vital Statistics Agency, 2011-2013 data. Population denominators for females age 15-19 are from the BC Stats website. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES

[1] H. Krueger & Associates. Child and youth health and well-being indicators project: appendix F – physical health and well-being evidence review [prepared for the Office of the Provincial Health Officer and the Canadian Institute for Health Information]. Ottawa, ON: Canadian Institute for Health Information; 2011.

[2] Statistics Canada. Births 2009 [Catalogue no. 84F0210X]. Ottawa, ON: Minister of Industry; 2012 Jan [cited 2016 Jul 14]. Available from: http://www.statcan.gc.ca/pub/84f0210x/84f0210x2009000-eng.pdf.

# INDICATOR #20 Physical Health & Well-being Skills

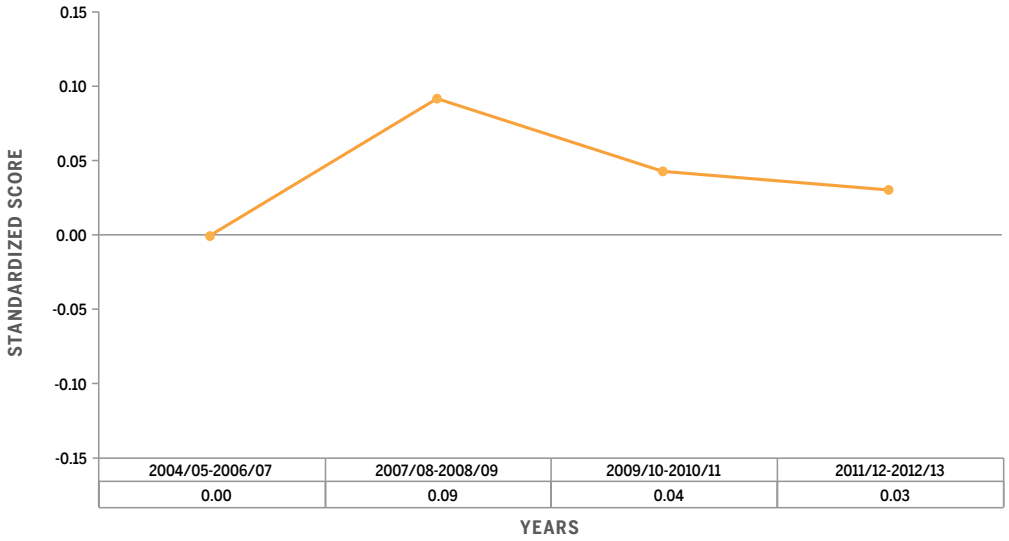
## DEFINITION

*INDICATOR #20* — Percentage of children identified as "vulnerable" based on the Physical Health and Well-being domain of the Early Development Instrument.

## KEY MESSAGES

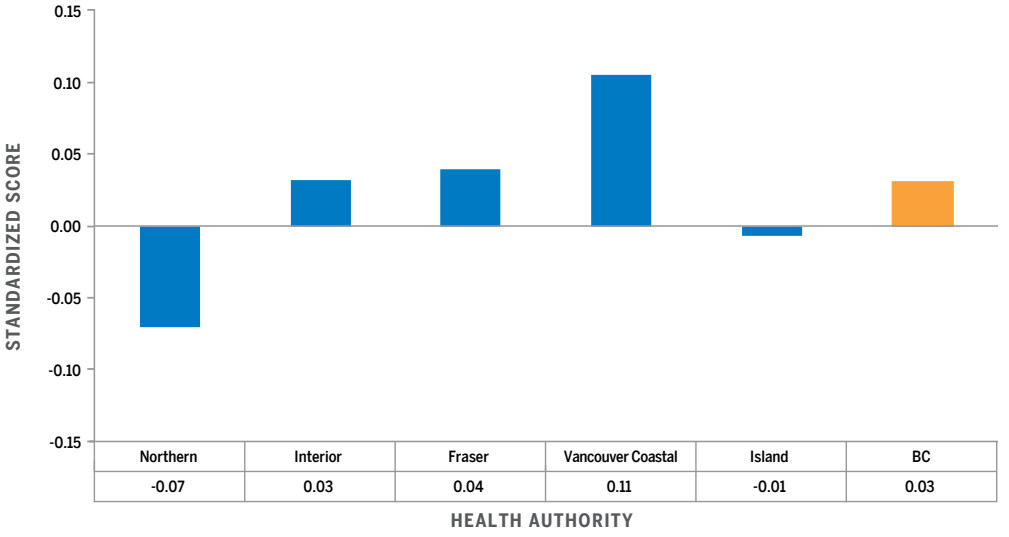
- The Physical Health and Well-being domain of the Early Development Instrument contains three subscales, one of which is the Gross and Fine Motor subscale. This subscale measures kindergarten children's **motor skills** including their ability to hold a pen, manipulate objects, and climb stairs, as well as measuring their general energy level.[1]
- This subscale was analyzed and is presented as standardized scores, using 2004/05–2006/07 as a baseline for evaluating subsequent years of data collection. This standardization allows for useful comparison over time, and between health authorities and health service delivery areas. The standardization was achieved by using the mean and standard deviation for the provincial average of 2004/05–2006/07 data.
- Figure 20.1 shows that the provincial trend for standardized scores has had minor fluctuations but overall has been relatively steady from 2004/05–2006/07 to 2011/12–2012/13.
- Figures 20.2 and 20.3 show the geographic variation for 2011/12–2012/13; the Gross and Fine Motor results among kindergarten children for each health authority and health service delivery area are presented relative to the provincial average for that time period.

## FIG 20.1 Fine and Gross Motor Skills Standardized Scores for Kindergarten Children, BC, 2004/05-2006/07 to 2011/12-2012/13



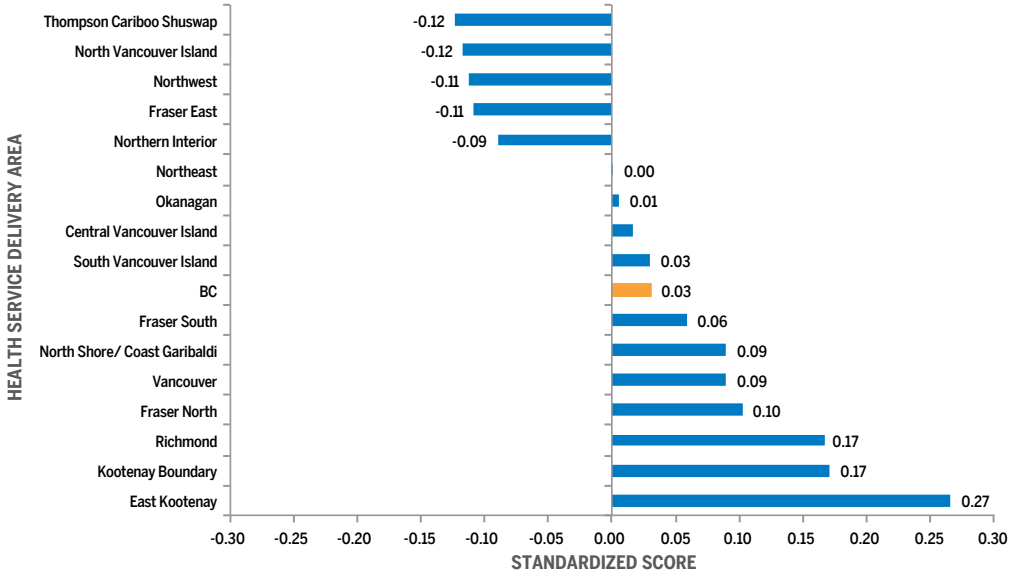

**Notes:** "Fine and gross motor skills" is a subscale of the Physical Health and Well-being domain of the Early Development Instrument. The scores are standardized using the 2004/05-2006/07 BC value. See Appendix B for more information about this data source.
**Source:** Human Early Learning Partnership, Early Development Instrument, 2004/05 to 2012/13. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 20.2 Fine and Gross Motor Skills Standardized Scores for Kindergarten Children, by Health Authority, BC, 2011/12-2012/13




**Notes:** "Fine and gross motor skills" is a subscale of the Physical Health and Well-being domain of the Early Development Instrument. The scores are standardized using the 2004/05-2006/07 BC value. Health authority is based on the residence of the child. See Appendix B for more information about this data source.
**Source:** Human Early Learning Partnership, Early Development Instrument, 2011/12-2012/13. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 20.3** Fine and Gross Motor Skills Standardized Scores for Kindergarten Children, by Health Service Delivery Area, BC, 2011/12-2012/13




**Notes:** "Fine and gross motor skills" is a subscale of the Physical Health and Well-being domain of the Early Development Instrument. The scores are standardized using the 2004/05-2006/07 BC value. Health service delivery area is based on the residence of the child. See Appendix B for more information about this data source.

**Source:** Human Early Learning Partnership, Early Development Instrument, 2011/12-2012/13. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCE

[1] Janus M, Walsh C, Duku E. Early development instrument: factor structure, sub-domains and multiple challenge index. Annual research day. Hamilton, ON: McMaster University, Department of Psychiatry and Biobehavioural Sciences; 2005.

# INDICATOR #21 Infant Mortality Rate

## DEFINITION

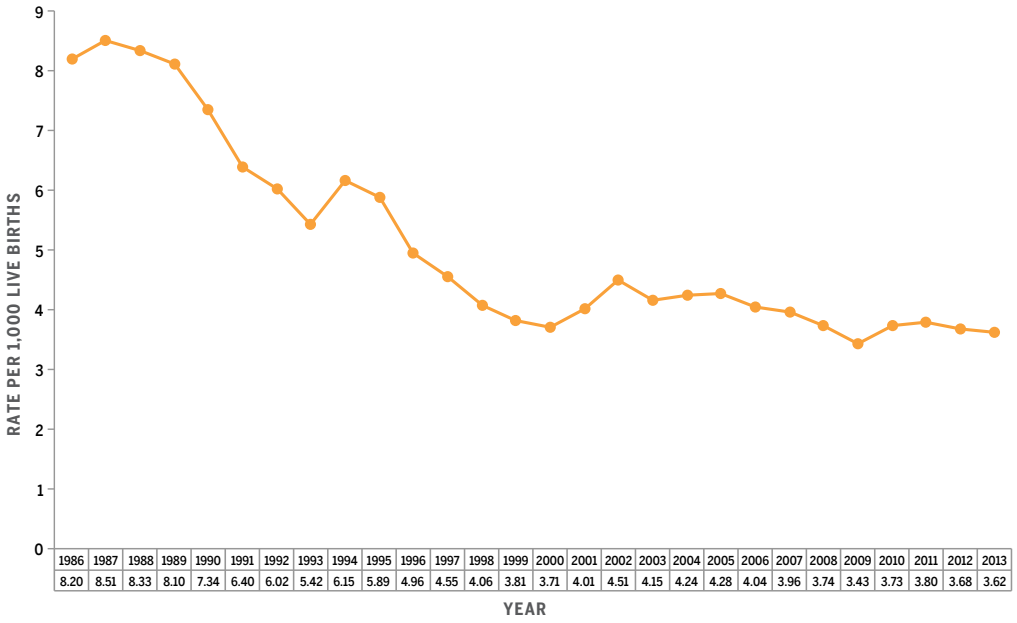
***INDICATOR #21*** — Number of infant deaths per 1,000 live births in a calendar year, where an infant is defined as being less than 365 days old.

## KEY MESSAGES

- The Canadian **infant mortality** rate was 4.8 per 1,000 live births in 2012.[1]
- Figures 21.1 and 21.2 show that in BC and Canada infant mortality rates have fluctuated year to year, but declined overall.[i]
- The gradually declining infant mortality rate in Canada has generally been attributed to prevention measures[2] such as improved sanitation, nutrition, and education, as well as advances in clinical medicine, improved access to health care, and better surveillance and monitoring of disease.[3]
- Infant mortality for multiple births (twins) has also decreased over the last 30 years and leveled off between 2000 and 2013, despite some year-to-year variation (Figure 21.3).

[i] Please note that the infant mortality rates for Figures 21.1 and 21.2 do not match exactly, as they are from different data sources.

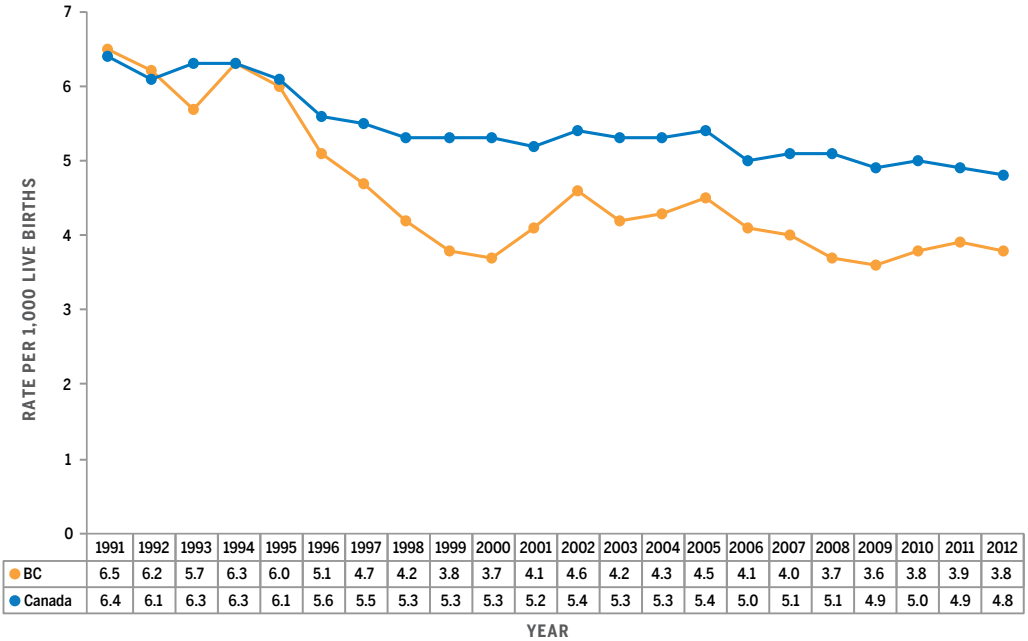
## FIG 21.1 Infant Mortality, Rate per 1,000 Live Births, BC, 1986 to 2013




| | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 8.20 | 8.51 | 8.33 | 8.10 | 7.34 | 6.40 | 6.02 | 5.42 | 6.15 | 5.89 | 4.96 | 4.55 | 4.06 | 3.81 | 3.71 | 4.01 | 4.51 | 4.15 | 4.24 | 4.28 | 4.04 | 3.96 | 3.74 | 3.43 | 3.73 | 3.80 | 3.68 | 3.62 |

**Notes:** "Infant mortality" means a child who dies within 365 days of birth. See Appendix B for more information about this data source.
**Source:** BC Vital Statistics Agency, 1986 to 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

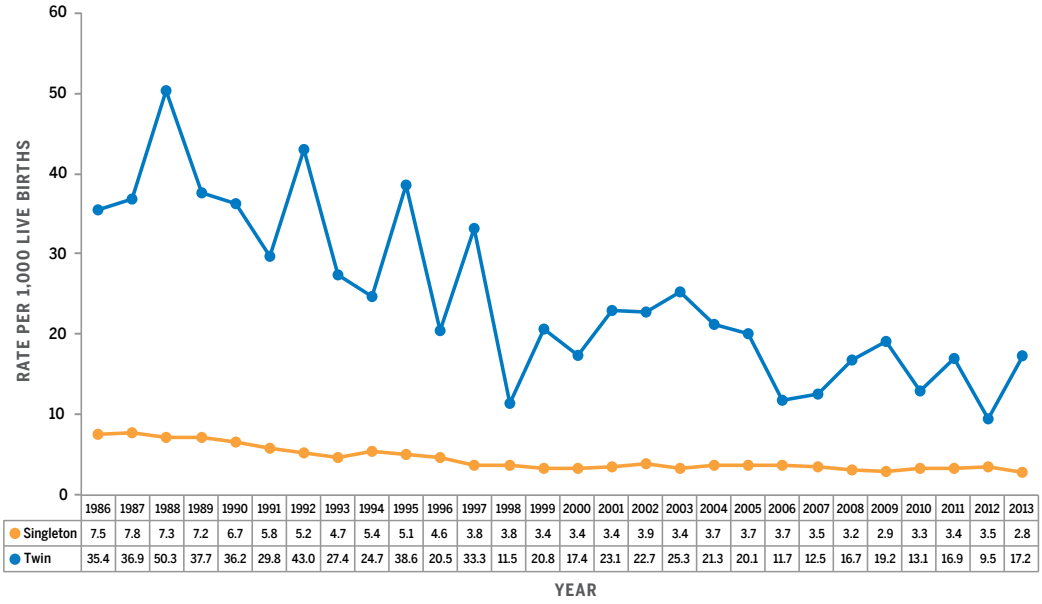
## FIG 21.2 Infant Mortality, Rate per 1,000 Live Births, BC and Canada, 1991 to 2012




| | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BC | 6.5 | 6.2 | 5.7 | 6.3 | 6.0 | 5.1 | 4.7 | 4.2 | 3.8 | 3.7 | 4.1 | 4.6 | 4.2 | 4.3 | 4.5 | 4.1 | 4.0 | 3.7 | 3.6 | 3.8 | 3.9 | 3.8 |
| Canada | 6.4 | 6.1 | 6.3 | 6.3 | 6.1 | 5.6 | 5.5 | 5.3 | 5.3 | 5.3 | 5.2 | 5.4 | 5.3 | 5.3 | 5.4 | 5.0 | 5.1 | 5.1 | 4.9 | 5.0 | 4.9 | 4.8 |

**Notes:** "Infant mortality" means a child who dies within 365 days of birth. See Appendix B for more information about this data source.
**Source:** Statistics Canada, Canadian Vital Statistics, 1991 to 2011. Table 102-0504, Deaths and mortality rates, by age group and sex, Canada, provinces and territories, CANSIM database. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 21.3 Infant Mortality, Rate per 1,000 Live Births, by Multiplicity, BC, 1986 to 2013

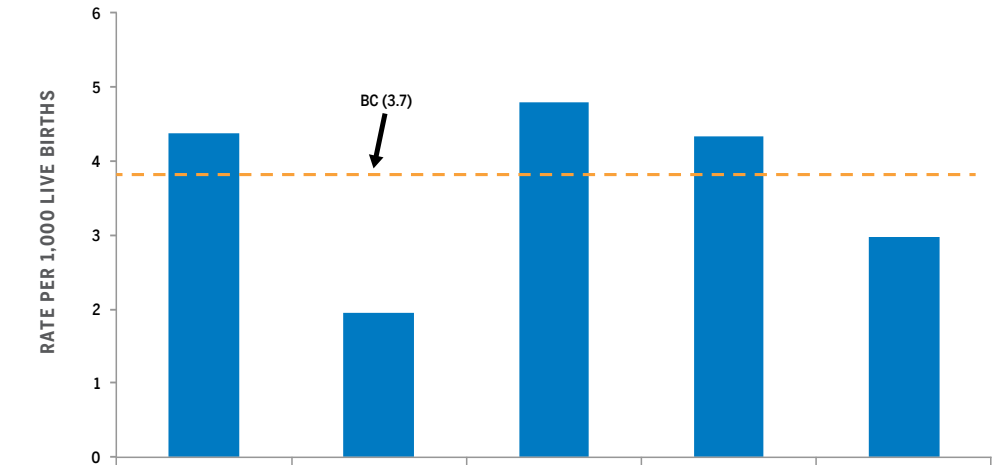



| | 1986 | 1987 | 1988 | 1989 | 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Singleton | 7.5 | 7.8 | 7.3 | 7.2 | 6.7 | 5.8 | 5.2 | 4.7 | 5.4 | 5.1 | 4.6 | 3.8 | 3.8 | 3.4 | 3.4 | 3.4 | 3.9 | 3.4 | 3.7 | 3.7 | 3.7 | 3.5 | 3.2 | 2.9 | 3.3 | 3.4 | 3.5 | 2.8 |
| Twin | 35.4 | 36.9 | 50.3 | 37.7 | 36.2 | 29.8 | 43.0 | 27.4 | 24.7 | 38.6 | 20.5 | 33.3 | 11.5 | 20.8 | 17.4 | 23.1 | 22.7 | 25.3 | 21.3 | 20.1 | 11.7 | 12.5 | 16.7 | 19.2 | 13.1 | 16.9 | 9.5 | 17.2 |

YEAR

**Notes:** "Infant mortality" means a child who dies within 365 days of birth. See Appendix B for more information about this data source.
**Source:** BC Vital Statistics Agency, 1986 to 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 21.4 Infant Mortality, Rate per 1,000 Live Births, by Health Authority, BC, 2011-2013

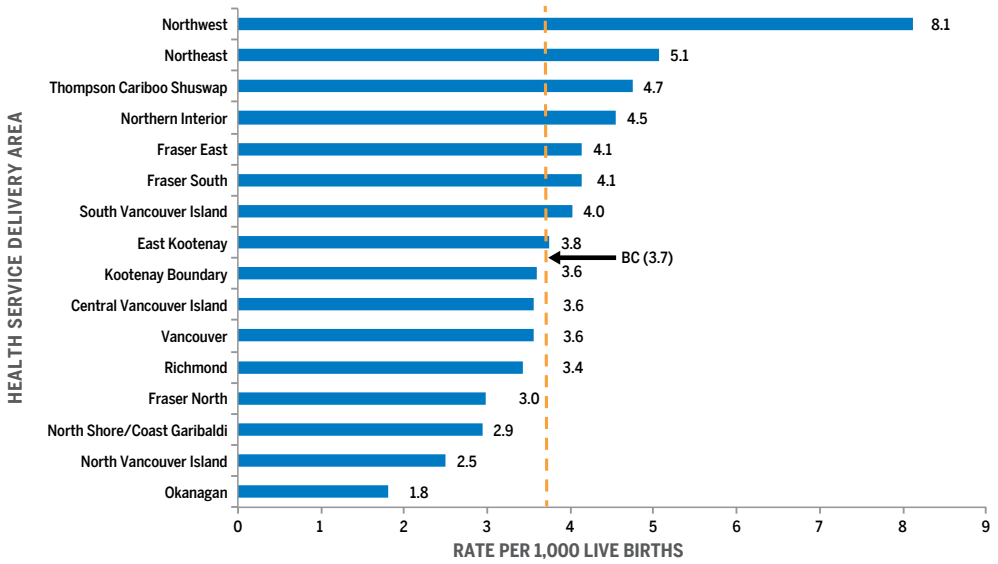



| | Northern | Interior | Fraser | Vancouver Coastal | Island |
|---|---|---|---|---|---|
| Rate | 4.4 | 2.0 | 4.8 | 4.3 | 3.0 |
| Deaths | 58 | 59 | 198 | 103 | 69 |
| Live Births | 13,256 | 30,123 | 41,340 | 23,824 | 23,158 |

HEALTH AUTHORITY

**Notes:** "Infant mortality" means a child who dies within 365 days of birth. Health authority is based on the residence of the child. See Appendix B for more information about this data source.
**Source:** BC Vital Statistics Agency, 2011-2013 data. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 21.5** Infant Mortality, Rate per 1,000 Live Births, by Health Service Delivery Area, BC, 2011-2013




**Notes:** "Infant mortality" means a child who dies within 365 days of birth. Health service delivery area is based on the residence of the child. See Appendix B for more information about this data source.

**Source:** BC Vital Statistics Agency, 2011-2013 data. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES

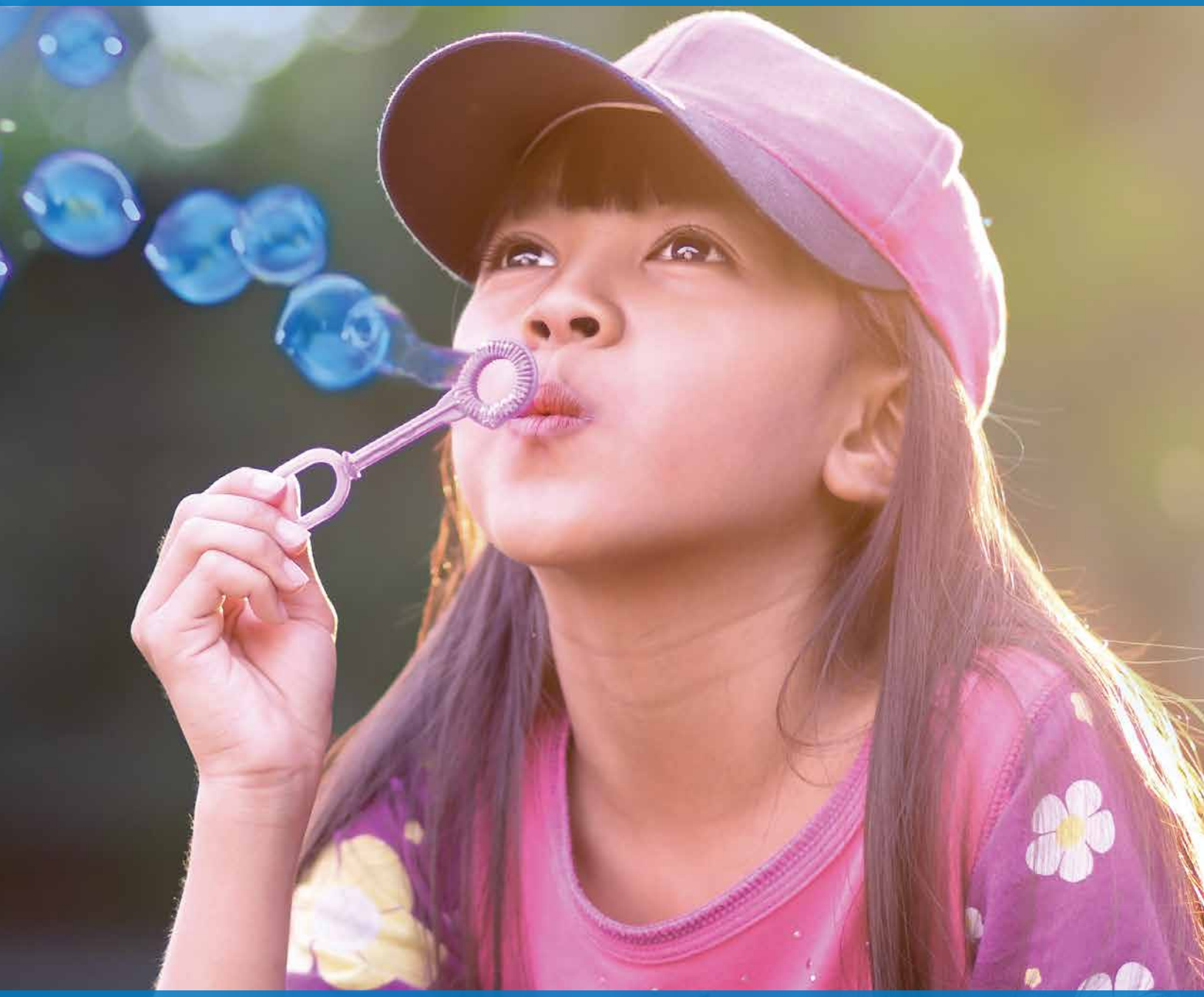
[1] Statistics Canada. Infant mortality rates, by province and territory (both sexes) (table). Ottawa, ON: Statistics Canada; [modified 2015 Dec 10; cited 2016 Jun 15]. Available from: http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/health21a-eng.htm.

[2] H. Krueger & Associates. Child and youth health and well-being indicators project: appendix F – physical health and well-being evidence review [prepared for the Office of the Provincial Health Officer and the Canadian Institute for Health Information]. Ottawa, ON: Canadian Institute for Health Information; 2011.

[3] Canadian Public Health Association. Overview: healthier mothers and babies [Internet]. Ottawa, ON: Canadian Public Health Association; [cited 2016 Jun 23]. Available from: http://www.cpha.ca/en/programs/history/achievements/06-hmb/overview.aspx.

# MENTAL & EMOTIONAL HEALTH & WELL-BEING

## CHAPTER 3



Mental and emotional health and well-being includes the presence of personal characteristics such as optimism, positive self-worth, emotional well-being and stability, and perceived safety and security. Child and youth mental and emotional health and well-being also includes self-regulating abilities such as coping with challenges and stress, goal directedness, and an orientation toward the future. As well, it encompasses a capacity for connectedness with other people and with one's culture and community. Finally, it includes freedom from anxiety and depression, early diagnosis, and access to mental health treatments.

# INDICATOR #22 Incidence & Prevalence of the Most Common Mental Health Disorders

## DEFINITION

***INDICATOR #22 —*** Incidence and prevalence of the five most common mental health disorders for children younger than 19 years.

## KEY MESSAGES

- Mental health—or social and emotional well-being—is fundamental to human development and essential for all children to flourish;[1] therefore, it is important for measuring the health of children and youth.
- A number of mental health disorders that present throughout childhood and adolescence negatively influence cognitive, emotional, and social aspects of development. Left unaddressed, these disorders tend to reoccur and negatively affect an individual throughout life.[2]
- Research shows that 70 per cent of adults with mental health disorders report that their symptoms began in childhood or adolescence. Promotion and prevention of these conditions can reduce demand on health services and the criminal justice system,[3] an outcome that is beneficial for individuals, their families, and society.
- Data regarding incidence and prevalence of mental health disorders in children and youth under age 19 are currently unavailable. Using estimates derived from recent prevalence surveys in other countries, it is estimated that as many as 12.6 per cent of children and youth age 4–17 (approximately 84,000 children and youth in BC) experience clinically significant mental disorders at any given time.[4]
- It is important to determine which mental health disorders are most common in children and youth in BC, in order to monitor this issue, and to provide a focus for efforts to improve the incidence and prevalence of these disorders. There is currently work underway to achieve this using BC Ministry of Health data (e.g., data from PharmaNet, Medical Services Plan and the Discharge Abstract Database). It is anticipated that this work will be reported on in future reports.

## REFERENCES

[1] Waddell C, Shepherd CA, Chen A. Creating comprehensive children's mental health indicators for British Columbia. Can J Commun Ment Health. 2013;32:1.

[2] Somers JM, Currie L, Eiboff F. Child and youth health and well-being indicators project: appendix G – mental and emotional health and well-being evidence review [prepared for the Office of the Provincial Health Officer for British Columbia and the Canadian Institute for Health Information]. Ottawa, ON: Canadian Institute for Health Information; 2011.

[3] Mental Health Commission of Canada. Changing directions, changing lives: The mental health strategy for Canada. Calgary, AB: Mental Health Commission of Canada; 2012 [cited 2016 Mar 4]. Available from: http://www.mentalhealthcommission.ca/English/system/files/private/MHStrategy_StrategyText_ENG_0.pdf.

[4] Waddell C, Shepherd CA, Schwartz C, Barican J. Child and youth mental disorders: prevalence and evidence-based interventions. Vancouver, BC: Children's Health Policy Centre, Simon Fraser University; 2014.

# INDICATOR #23 Positive Self-esteem
# INDICATOR #24 Positive Self-rated Mental Health
# INDICATOR #25 Positive Life Satisfaction

## DEFINITIONS

***INDICATOR #23*** — Percentage of BC students in grades 7–12 who report positive self-esteem, based on self-reporting that they usually felt good about themselves.

***INDICATOR #24*** — Percentage of BC students in grades 7–12 who report "excellent" and/or "very good" self-rated mental health.

***INDICATOR #25*** — Percentage of BC youth age 12–19 who report being "satisfied" or "very satisfied" with their lives.

## KEY MESSAGES

- A range of social, behavioural, and developmental characteristics that are associated with **self-esteem** among youth have been identified in the literature.[1] Several studies point to the importance of positive self-esteem in decreasing depression, suicidality, and behavioural adjustment during adolescence.[2,3]

- A US study showed associations between positive youth self-rated mental health status and higher quality of life, as measured by satisfaction with self, family, friends, school environment, and overall **life satisfaction**. In a BC study, self-reports of poor mental health and poor physical health were associated with lower self-reported quality of life, including in the areas of family, friends, living environment, school, and self.[4]

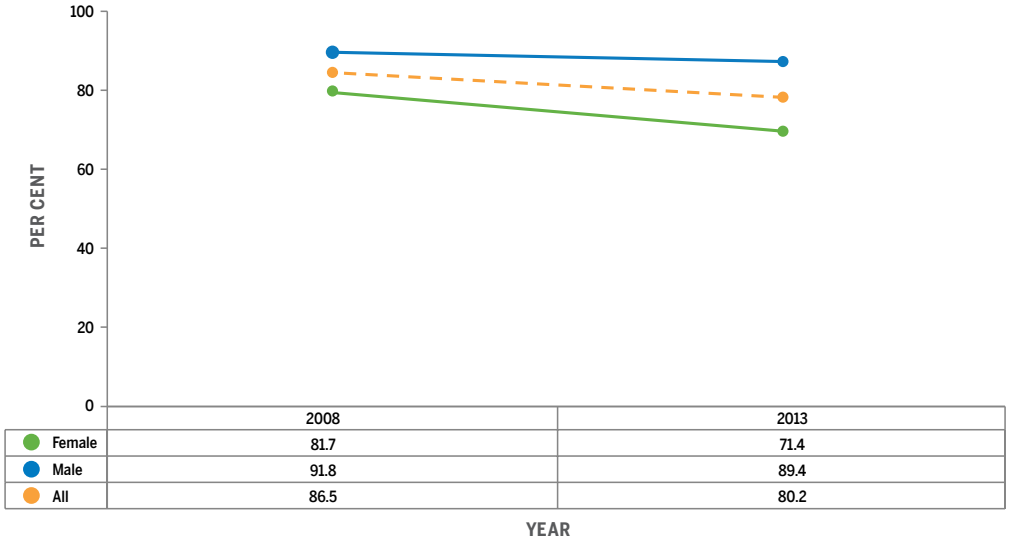
- Positive life satisfaction is another good predictor of positive physical and mental health outcomes, and is associated with optimal functioning. Life satisfaction is a subjective measure of general well-being based on people's own perceptions of how content or happy they are with their life as a whole.[5,6]

- Research shows that a healthy lifestyle, good physical health, exercise, and participation in sports foster positive life satisfaction. Additionally, positive environmental elements help to produce positive youth life satisfaction, such as living in safe neighbourhoods; housing quality, stability, and security; and adequate social supports like good familial and parental relationships, and peer and other social supports.[7]

- For all three indicators there was a difference between the sexes. In comparison to females, a larger percentage of males in grades 7 to 12 reported that they usually feel good about themselves (Figure 23.1), that they have "good" or "excellent" mental health (Figure 24.1), and that they are satisfied with their lives (Figure 25.1).

- As shown in Figure 23.1, in 2008, the majority (86.5 per cent) of BC students in grades 7–12 reported that they felt good about themselves; by 2013, this percentage had dropped to 80.2 per cent. This decline was largely a product of the decline among females over this time from 81.7 to 71.4 per cent. However, Figure 25.1 shows that the trend over time for life satisfaction remained relatively stable from 2007–08 to 2013–14.

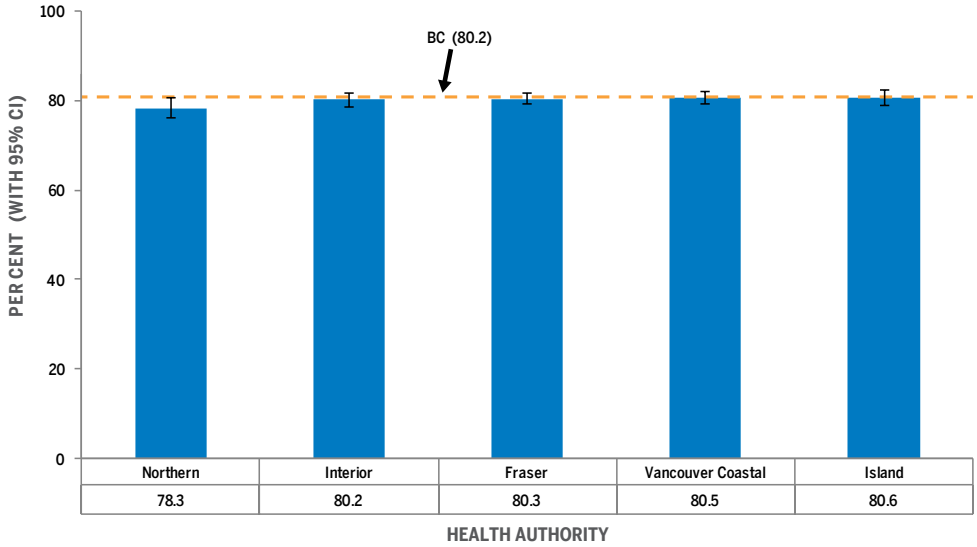
## FIG 23.1 Percentage of Students in Grades 7-12 Who Reported Usually Feeling Good about Themselves, by Sex, BC, 2008 and 2013




| | 2008 | 2013 |
|---|---|---|
| Female | 81.7 | 71.4 |
| Male | 91.8 | 89.4 |
| All | 86.5 | 80.2 |

**Notes:** "Usually feeling good about themselves" means youth who "agreed" or "mostly agreed" that they usually felt good about themselves. Data are not available for 2003. The difference between years was statistically significant for all groups. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2008, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

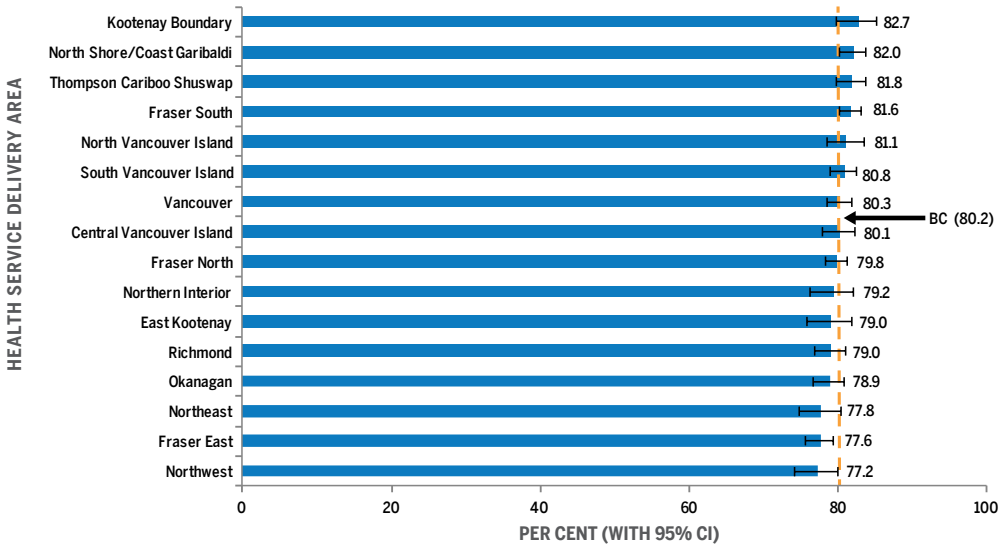
## FIG 23.2 Percentage of Students in Grades 7-12 Who Reported Usually Feeling Good about Themselves, by Health Authority, BC, 2013




| Northern | Interior | Fraser | Vancouver Coastal | Island |
|---|---|---|---|---|
| 78.3 | 80.2 | 80.3 | 80.5 | 80.6 |

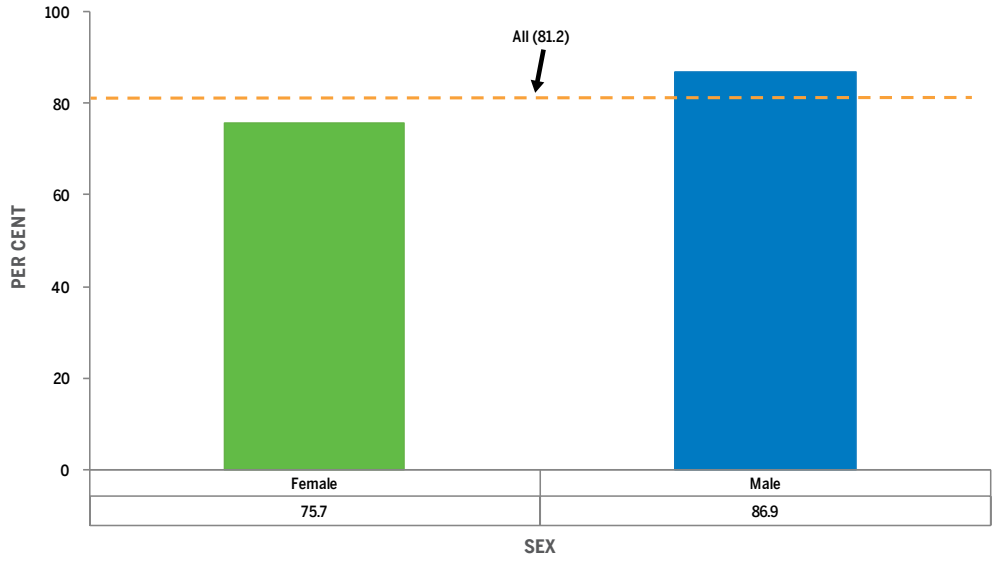
**Notes:** "Usually feeling good about themselves" means youth who "agreed" or "mostly agreed" that they usually felt good about themselves. Health authority is based on the location of the school. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 23.3 Percentage of Students in Grades 7-12 Who Reported Usually Feeling Good about Themselves, by Health Service Delivery Area, BC, 2013



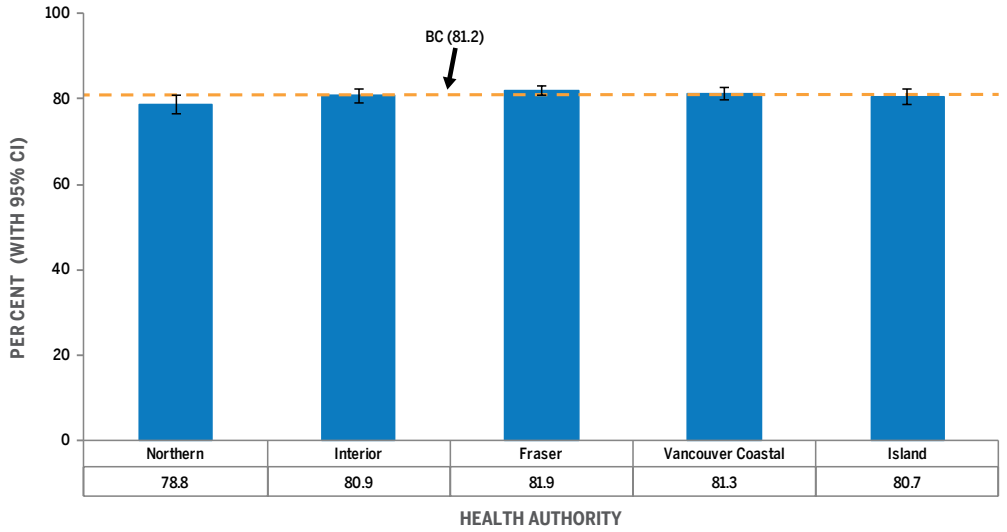

**Notes:** "Usually feeling good about themselves" means youth who "agreed" or "mostly agreed" that they usually felt good about themselves. Health service delivery area is based on the location of the school. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 24.1 Percentage of Students in Grades 7-12 Who Reported Positive Mental Health, by Sex, BC, 2013




**Notes:** "Positive mental health" means youth reported their mental health as either "good" or "excellent." Data are not available for 2003 or 2008. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

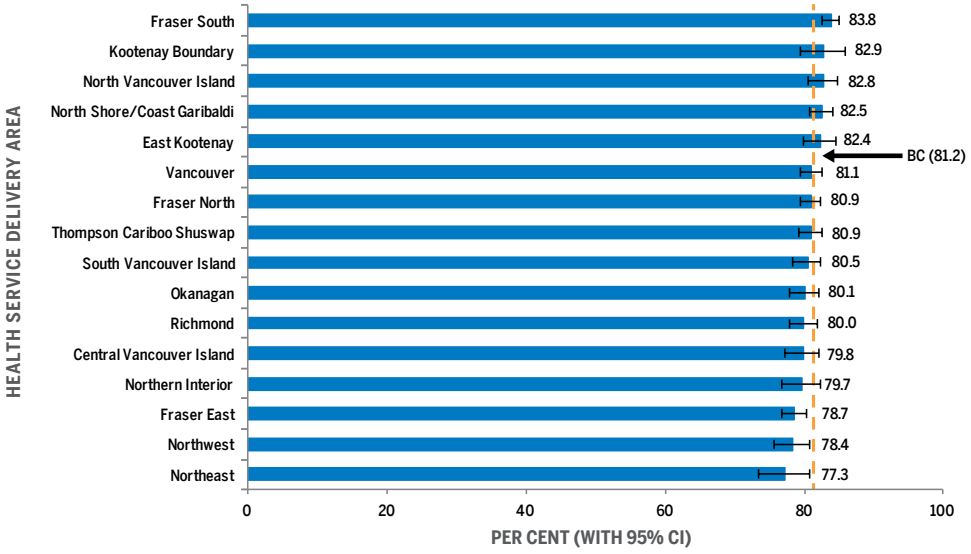
## FIG 24.2 Percentage of Students in Grades 7-12 Who Reported Positive Mental Health, by Health Authority, BC, 2013




**Notes:** "Positive mental health" means youth reported their mental health as either "good" or "excellent." Health authority is based on the location of the school. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

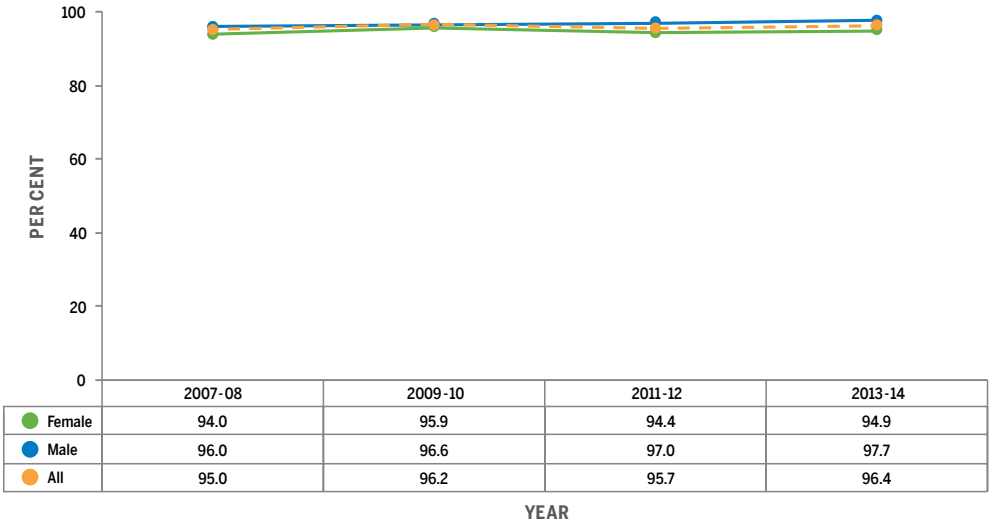
## FIG 24.3 Percentage of Students in Grades 7-12 Who Reported Positive Mental Health, by Health Service Delivery Area, BC, 2013




**Notes:** "Positive mental health" means youth reported their mental health as either "good" or "excellent." Health service delivery area is based on the location of the school. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 25.1 Percentage of Youth Age 12-19 Who Reported Positive Life Satisfaction, by Sex, BC, 2007-08 to 2013-14



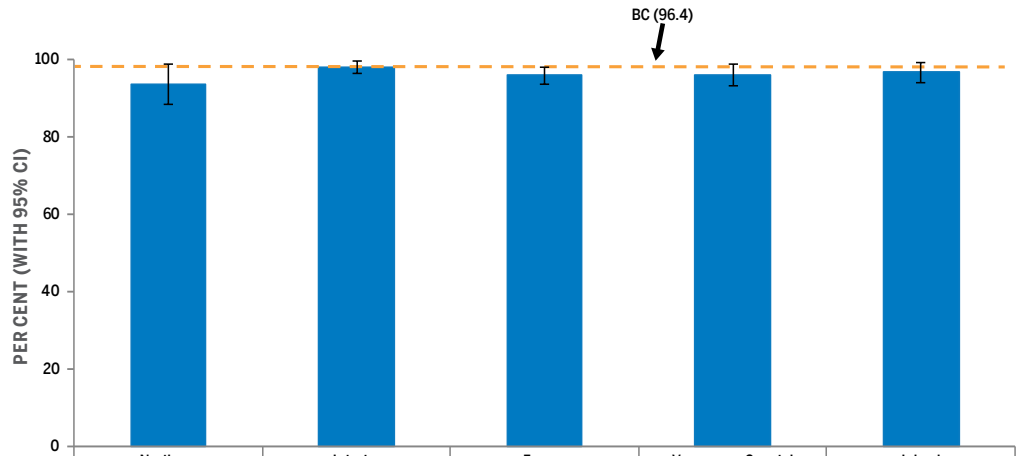

| | 2007-08 | 2009-10 | 2011-12 | 2013-14 |
|---|---|---|---|---|
| Female | 94.0 | 95.9 | 94.4 | 94.9 |
| Male | 96.0 | 96.6 | 97.0 | 97.7 |
| All | 95.0 | 96.2 | 95.7 | 96.4 |

YEAR

**Notes:** "Positive life satisfaction" means youth reported being "satisfied" or "very satisfied" with their life in general. See Appendix B for more information about this data source.

**Source:** Statistics Canada, Canadian Community Health Survey, 2007-08-2013-14. Table 105-0502, Health indicator profile, two year period estimates, by age group and sex, Canada, provinces, territories, health regions (2013 boundaries) and peer groups, CANSIM database. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 25.2 Percentage of Youth Age 12-19 Who Reported Positive Life Satisfaction, by Health Authority, BC, 2013-14



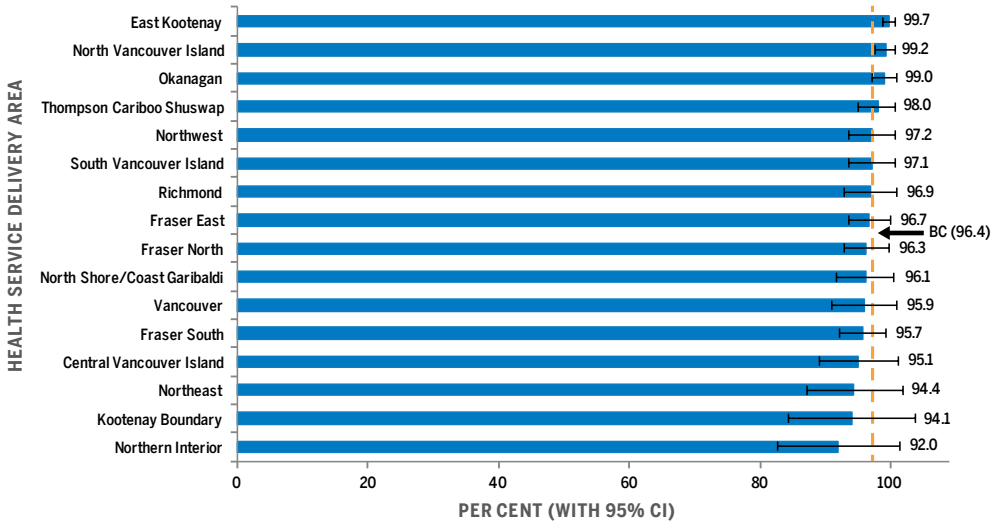

| Northern | Interior | Fraser | Vancouver Coastal | Island |
|---|---|---|---|---|
| 93.8 | 98.2 | 96.1 | 96.2 | 96.9 |

HEALTH AUTHORITY

**Notes:** "Positive life satisfaction" means youth reported being "satisfied" or "very satisfied" with their life in general. Health authority is based on the residence of the youth. See Appendix B for more information about this data source.

**Source:** Statistics Canada, Canadian Community Health Survey, 2013-14. Table 105-0502, Health indicator profile, two year period estimates, by age group and sex, Canada, provinces, territories, health regions (2013 boundaries) and peer groups, CANSIM database. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 25.3** Percentage of Youth Age 12-19 Who Reported Positive Life Satisfaction, by Health Service Delivery Area, BC, 2013-14




**Notes:** "Positive life satisfaction" means youth reported being "satisfied" or "very satisfied" with their life in general. Health service delivery area is based on the residence of the youth. See Appendix B for more information about this data source.
**Source:** Statistics Canada, Canadian Community Health Survey, 2013-14. Table 105-0502, Health indicator profile, two year period estimates, by age group and sex, Canada, provinces, territories, health regions (2013 boundaries) and peer groups, CANSIM database. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES

[1] McGee R, Williams S. Does low self-esteem predict health compromising behaviours among adolescents? J Adolesc. 2000 Oct;23(5):569-82.

[2] Marcotte D, Fortin L, Potvin P, Papillon M. Gender differences in depressive symptoms during adolescence: role of gender-typed characteristics, self-esteem, body image, stressful life events, and pubertal status. J Emot Behav Disord. 2002;10(1):29-42.

[3] Wild LG, Flisher AJ, Lombard C. Suicidal ideation and attempts in adolescents: associations with depression and six domains of self-esteem. J Adolesc. 2004;27:611-24.

[4] Sawatzky R, Ratner PA, Johnson JL, Kopec JA, Zumbo BD. Self-reported physical and mental health status and quality of life in adolescents: a latent variable mediation model. Health Qual Life Outcomes. 2010 Feb 3;8:17.

[5] Statistics Canada. Life satisfaction, 2009 [Internet]. Ottawa, ON: Statistics Canada; [modified 2015 Nov 27; cited 2016 Jun 7]. Available from: http://www.statcan.gc.ca/pub/82-625-x/2010002/article/11264-eng.htm.

[6] Bonikowska A, Helliwell JF, Hou F, Schellenberg G. An assessment of life satisfaction responses on recent Statistics Canada surveys. Analytical Studies Branch Research Paper Series [Catalogue no. 11F0019M– No. 351]. Ottawa, ON: Minister of Industry; 2013 [cited 2016 Jul 4]. Available from: http://www.statcan.gc.ca/pub/11f0019m/11f0019m2013351-eng.pdf.

[7] Proctor CL, Linley PA, Maltby J. Youth life satisfaction: a review of the literature. J Happiness Stud. 2009;10:583-630.

# INDICATOR #26 Considered Suicide
# INDICATOR #27 Suicide Rate

## DEFINITIONS

***INDICATOR #26A —*** Percentage of BC students in grades 7–12 who report having seriously considered suicide in the past year.

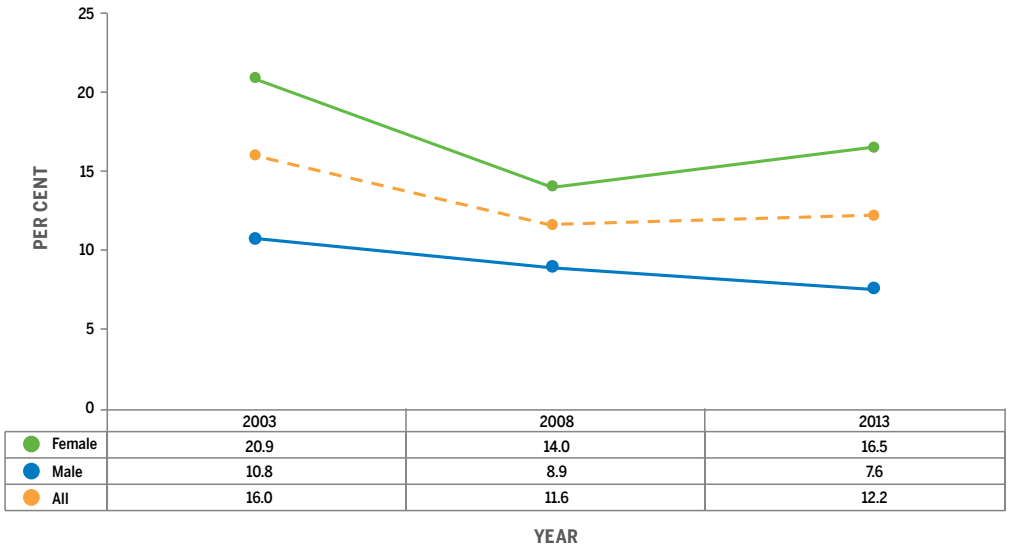
***INDICATOR #26B —*** Percentage of BC students in grades 7–12 who report having attempted suicide in the past year.

***INDICATOR #27 —*** Suicide rate of children and youth age 10–18, per 100,000 population.

## KEY MESSAGES

- **Suicidality** in young people encompasses a range of behaviours, including thinking about suicide (suicidal ideation), deliberate self-harm, suicide attempts, and completed suicide.[1]
- In the US, suicide is the third leading cause of mortality among children and youth age 10–24, and according to a 1991 estimate, as many as 3 per cent of youth make suicide attempts serious enough to require medical treatment.[2] As such, suicidality among youth is a serious concern.
- The reviews of evidence regarding youth suicidality highlight the importance of knowing and understanding key risk factors in order to identify opportunities for early identification and to facilitate intervention.[1]
- A range of studies have examined the life course of adolescents who have attempted and completed suicide, and have identified risk factors associated with suicidal behaviour. These risk factors include depression, disruptive behaviour disorders, abuse during childhood, poor relationships with parents, firearm availability, stressful life events, and substance use disorders—with comorbid psychiatric conditions further increasing risk. Individuals with family histories of suicidality may also be at greater risk of suicide.[1]
- Evidence shows that specific groups of youth are at a greater risk of suicidality, including gay, lesbian, and bisexual youth; youth in the criminal justice system; and homeless/runaway youth.[1]
- Engaging in self-harm at a young age has been identified as an important indicator of mental health problems later in life, and has been linked to a strongly increased risk of subsequent suicidal behaviour.[1] In fact, one of the best predictors of future attempts and completed suicide is having attempted suicide in the past.[2]
- Data currently available enables analyses of BC youth in grades 7–12 who have considered and/or attempted suicide, and those age 15–19 who have completed suicide. Future analyses may be able to report on youth age 10–18.
- As shown in Figures 26A.1 and 26B.1, female youth in grades 7–12 are more likely to consider and/or attempt suicide than male youth; however, Figure 27.1 shows that male youth age 15–19 have a higher suicide mortality rate per 100,000 population.
- Figures 26A.2 and 26B.2 demonstrate that the percentages of youth in grades 7–12 who have considered or attempted suicide are higher in Northern Health than Vancouver Coastal Health.

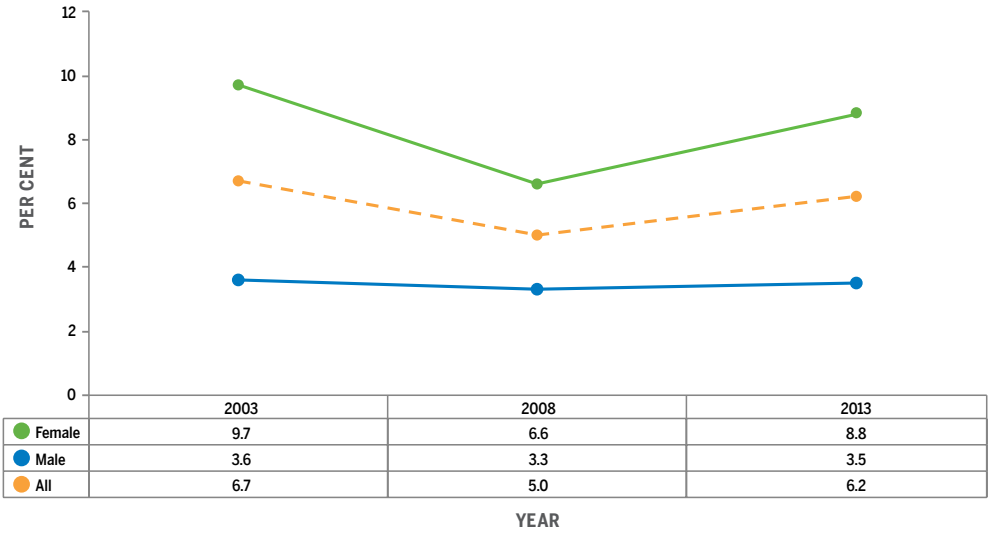
## FIG 26A.1 Percentage of Students in Grades 7-12 Who Seriously Considered Suicide in the Past 12 Months, by Sex, BC, 2003, 2008, and 2013




| | 2003 | 2008 | 2013 |
|---|---|---|---|
| Female | 20.9 | 14.0 | 16.5 |
| Male | 10.8 | 8.9 | 7.6 |
| All | 16.0 | 11.6 | 12.2 |

**Notes:** The differences between years were statistically significant for females and males. The difference between sexes was statistically significant for all years. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2003, 2008, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

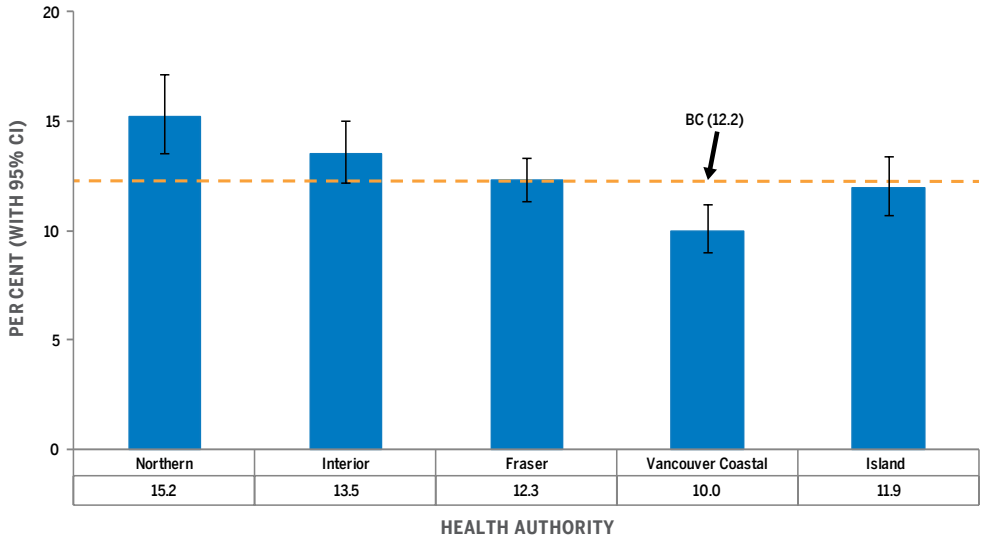
## FIG 26B.1 Percentage of Students in Grades 7-12 Who Attempted Suicide in the Past 12 Months, by Sex, BC, 2003, 2008, and 2013




| | 2003 | 2008 | 2013 |
|---|---|---|---|
| Female | 9.7 | 6.6 | 8.8 |
| Male | 3.6 | 3.3 | 3.5 |
| All | 6.7 | 5.0 | 6.2 |

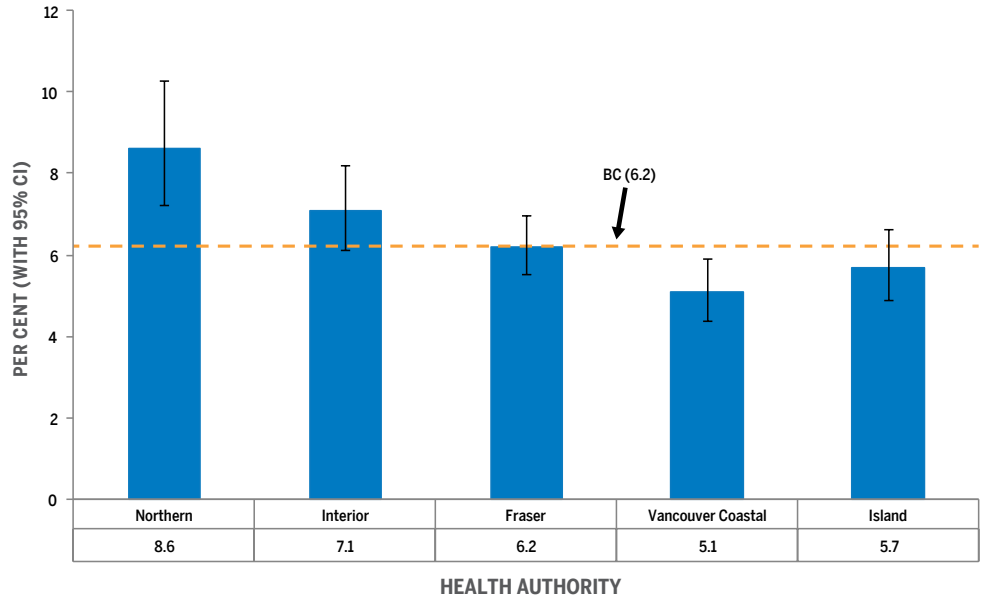
**Notes:** The differences between 2003 and 2008 and between 2008 and 2013 were statistically significant for "All". The differences between years were statistically significant for females but not for males. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2003, 2008, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 26A.2 Percentage of Students in Grades 7-12 Who Seriously Considered Suicide in the Past 12 Months, by Health Authority, BC, 2013



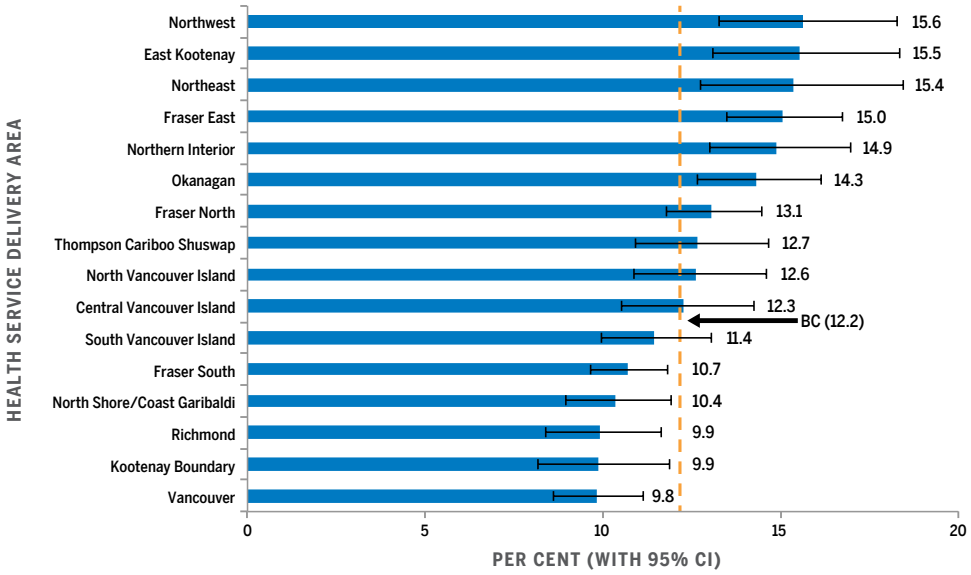

**Notes:** Health authority is based on the location of the school. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 26B.2 Percentage of Students in Grades 7-12 Who Attempted Suicide in the Past 12 Months, by Health Authority, BC, 2013



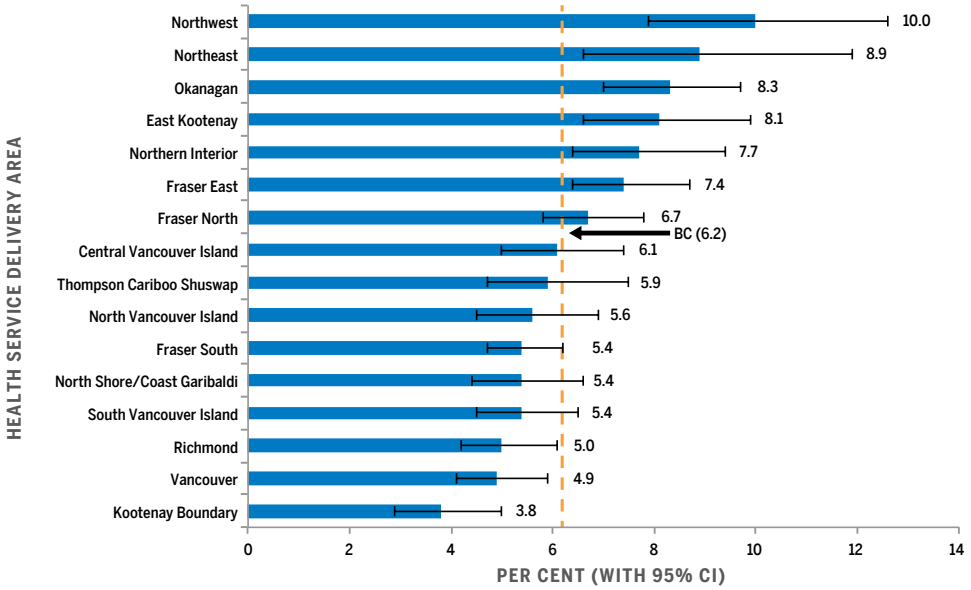

**Notes:** Health authority is based on the location of the school. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 26A.3 Percentage of Students in Grades 7-12 Who Seriously Considered Suicide in the Past 12 Months, by Health Service Delivery Area, BC, 2013



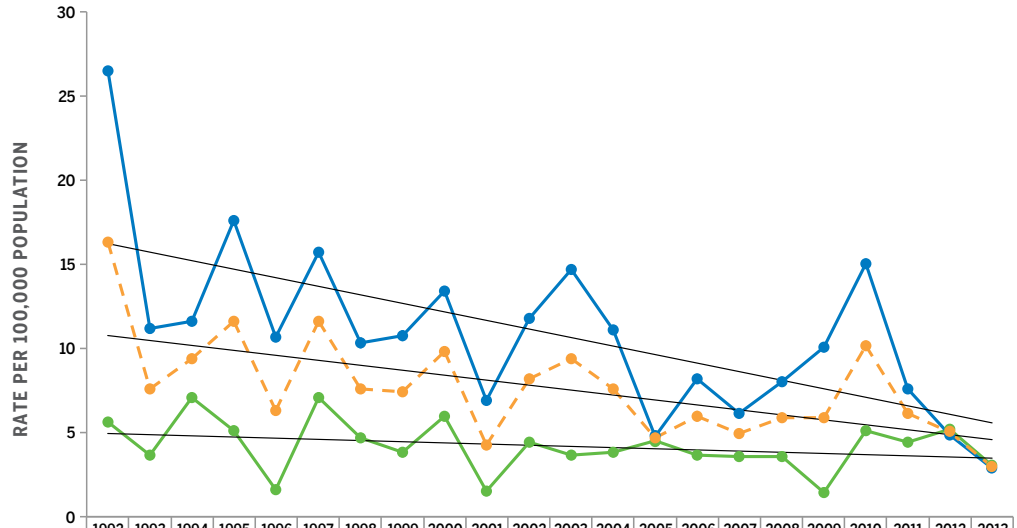

**Notes:** Health service delivery area is based on the location of the school. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 26B.3 Percentage of Students in Grades 7-12 Who Attempted Suicide in the Past 12 Months, by Health Service Delivery Area, BC, 2013




**Notes:** Health service delivery area is based on the location of the school. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 27.1 Suicide Mortality among Youth Age 15-19, Rate per 100,000 Population, by Sex, BC, 1992 to 2013



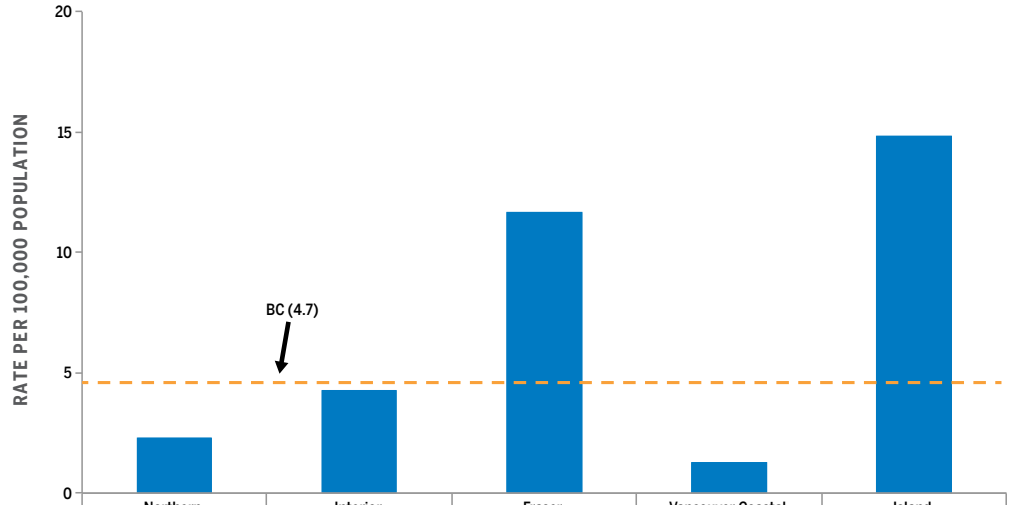

| | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Female | 5.6 | 3.7 | 7.1 | 5.1 | 1.6 | 7.1 | 4.7 | 3.8 | 6.0 | 1.5 | 4.4 | 3.7 | 3.8 | 4.5 | 3.7 | 3.6 | 3.6 | 1.4 | 5.1 | 4.4 | 5.2 | 3.1 |
| Male | 26.5 | 11.2 | 11.6 | 17.6 | 10.7 | 15.7 | 10.3 | 10.8 | 13.4 | 6.9 | 11.8 | 14.7 | 11.1 | 4.8 | 8.2 | 6.1 | 8.0 | 10.1 | 15.0 | 7.6 | 4.9 | 2.9 |
| All | 16.3 | 7.6 | 9.4 | 11.6 | 6.3 | 11.6 | 7.6 | 7.4 | 9.8 | 4.3 | 8.2 | 9.4 | 7.6 | 4.7 | 6.0 | 4.9 | 5.9 | 5.9 | 10.2 | 6.1 | 5.0 | 3.0 |

YEAR

**Notes:** Health authority is based on the usual residence of the youth. See Appendix B for more information about these data sources.

**Sources:** BC Vital Statistics Agency, 1992-2013 data. Population estimates are from the BC Stats website. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 27.2 Suicide Mortality among Youth Age 15-19, Rate per 100,000 Population, by Health Authority, BC, 2011-13




| | Northern | Interior | Fraser | Vancouver Coastal | Island |
|---|---|---|---|---|---|
| Rate | 2.3 | 4.2 | 11.7 | 1.3 | 14.8 |
| Deaths | 3 | 8 | 15 | 4 | 9 |

HEALTH AUTHORITY

**Notes:** Health authority is based on the usual residence of the youth. See Appendix B for more information about these data sources.

**Sources:** BC Vital Statistics Agency, 2011-13 data. Population estimates are from the BC Stats website. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES

[1] Somers JM, Currie L, Eiboff F. Child and youth health and well-being indicators project: appendix G – mental and emotional health and well-being evidence review [prepared for the Office of the Provincial Health Officer and the Canadian Institute for Health Information]. Ottawa, ON: Canadian Institute for Health Information; 2011.

[2] Spirito A, Esposito-Smythers C. Attempted and completed suicide in adolescence. Annu Rev Clin Psychol. 2006;2:237-66.

# INDICATOR #28 Most Common Prescription Mental Health Drugs

## DEFINITION

***INDICATOR #28 —*** Annual incidence of the most common classes of prescription mental health drugs among children and youth.

## KEY MESSAGES

- It is important to monitor the use of prescription medications to treat mental health conditions in children and youth, as well as to determine which **psychotropic medications** are most often prescribed to children and youth in BC.
- Two of the most common mental health disorders among children and youth are anxiety and depression,[1,2] and BC practice guidelines indicate that non-pharmacological approaches are the first-line treatment among children and youth for anxiety and depression.[3]
- This indicator includes the number of new prescriptions issued to children and youth for the most common classes of mental health prescription drugs. While there is work currently underway to monitor and report this using BC Ministry of Health data (e.g., PharmaNet, Medical Services Plan, the Discharge Abstract Database), the data were not ready at the time this report was developed, and so will be reported on in future reports.
- Using estimates derived from recent prevalence surveys in other countries, it is estimated that at any given time as many as 12.6 per cent of children and youth age 4–17, or nearly 84,000 children and youth in BC, are experiencing mental disorders with clinically significant symptoms and impairment as defined by the American Psychiatric Association's *Diagnostic and Statistical Manual, Fourth and Fifth Editions* and the World Health Organization's *International Classification of Diseases, Tenth Edition*.[2]

## REFERENCES

[1] Canadian Institute for Health Information. Care for children and youth with mental disorders. Ottawa, ON: Canadian Institute for Health Information; 2015 May [cited 2016 Jul 12]. Available from: https://secure.cihi.ca/estore/productFamily.htm?locale=en&pf=PFC2866&lang=en.

[2] Waddell C, Shepherd CA, Schwartz C, Barican J. Child and youth mental disorders: prevalence and evidence-based interventions. Vancouver, BC: Children's Health Policy Centre, Simon Fraser University; 2014.

[3] Government of British Columbia. BC guidelines: anxiety and depression in children and youth – diagnosis and treatment [Internet]. Victoria, BC: Government of British Columbia; [cited 2016 Jul 14]. Available from: http://www2.gov.bc.ca/gov/content/health/practitioner-professional-resources/bc-guidelines/anxiety-and-depression-in-youth.

# SOCIAL RELATIONSHIPS

## CHAPTER 4

Social relationships with parents, peers, teachers, coaches, and others are key components of child and youth health and well-being. Such relationships are beneficial when they are close, trusted, warm, caring, accepting, affirming, and reciprocal. Opportunities for belonging and inclusion in supportive family, peer, school, and cultural networks and for engaging in meaningful community actions with others are also central to this dimension.

# INDICATOR #29 Positive Parent Relationship
# INDICATOR #30 Trusting Adult Relationship

## DEFINITIONS

***INDICATOR #29*** — Percentage of BC students in grades 7–12 who report a positive relationship with their parents, as determined by the BC Adolescent Health Survey "Family Connectedness" scale.

***INDICATOR #30*** — Percentage of BC students in grades 7–12 who report a trusting relationship with an adult outside of their family.

## KEY MESSAGES

- Strong and supportive families as well as having caring adults outside the family are important **protective factors** in young peoples' lives. Protective factors are elements of a young person's life that foster healthy development, healthy decision-making, and healthy behaviours, even among those in challenging contexts.[1] This is an important social determinant of health, and supporting families and other adults to nurture children and youth is an important strategy for fostering the health and well-being of the next generation.[2]
- For a wide variety of family structures, there is a positive association between family caring and connectedness and youth health.[3] Youth who report higher levels of **family connectedness** are more likely to make healthier decisions and report "good" or "excellent" overall health[1] and mental health.[4]
- Family connectedness is a general sense of belonging and closeness to family.[5] Evidence shows that the more youth feel connected to their families, the less likely they are to be missing out on accessing needed health services, and the more likely they are to report "good" or "excellent" mental health.[4] Research also shows that a strong connection to family leads to less risky behaviour in youth.[4,6]
- Relationships with adults from outside the immediate family can also have a positive effect on child health outcomes, particularly on those children from disadvantaged backgrounds.
- Having family connectedness and/or relationships with adults outside the family provides an adult figure for youth to talk to if they are having serious problems. This positive connection with an adult provides social support for a child or youth and can foster healthy behaviours.[1]

*"There is more pressure in schools to meet demands and so there is no time to build student/adult relationships."*

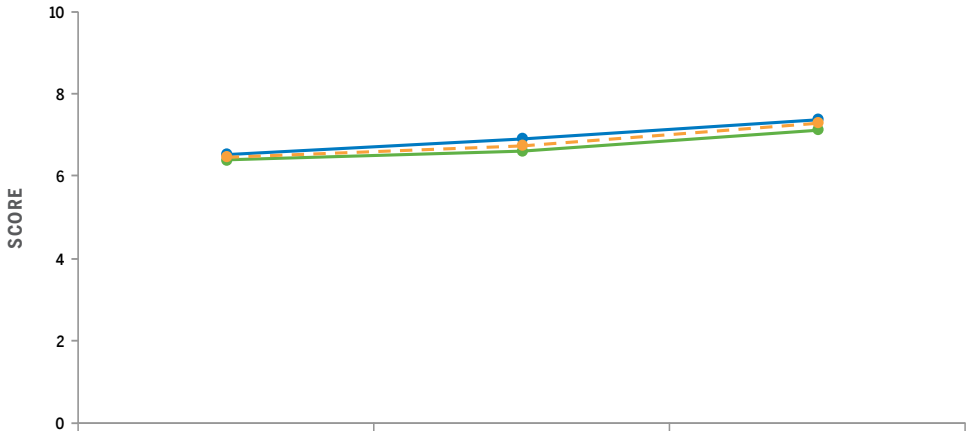
- As shown in Figure 29.1, family connectedness increased slightly among all youth grades 7–12 from 2003 to 2013. Unfortunately, Figure 30.1 shows that the percentage of those who reported having a trusting relationship with an adult (or an adult they can speak to if they were having a serious problem) decreased slightly during the same time, particularly for females.

- Both the declining trend shown in Figure 30.1 (from 87.6 per cent in 2003 to 81.6 per cent in 2013), as well as the fact that approximately 20 per cent of youth responded that they didn't have an adult in or outside of their family to talk to if they had a serious problem, are concerning.

*"Maybe social media and technology has made us disconnect with adults because we feel like they're on a different level because they have not caught up with the technology as fast as we have."*

*"If I were to have a fight with my parents, I would not be talking to another adult. I would Facebook or text with my friends because I feel more comfortable speaking to my friends. I feel more comfortable speaking to them than I would a counsellor. And technology makes it so much easier to contact them."*

**FIG 29.1** Family Connectedness Score for Students in Grades 7-12, by Sex, BC, 2003, 2008, and 2013

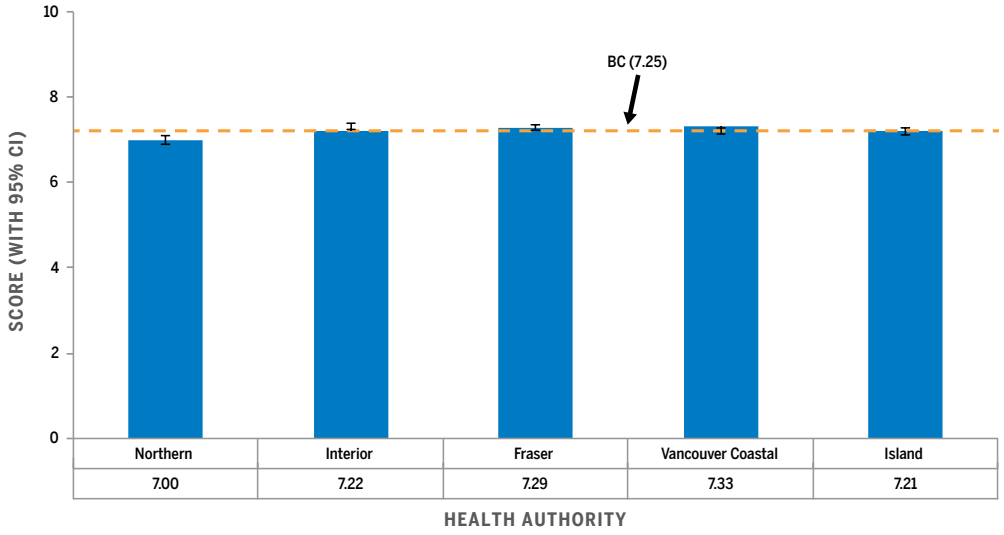



| | 2003 | 2008 | 2013 |
|---|---|---|---|
| Female | 6.4 | 6.6 | 7.1 |
| Male | 6.5 | 6.9 | 7.4 |
| All | 6.5 | 6.8 | 7.3 |

**Notes:** "Family connectedness score" reflects the mean score of three items: youth feel that people in their family understand them, that their family has fun together, and that their family pays attention to them. The score ranges from zero to ten, with a higher score indicating a higher level of connectedness. The difference between years was statistically significant for all groups. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2003, 2008, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

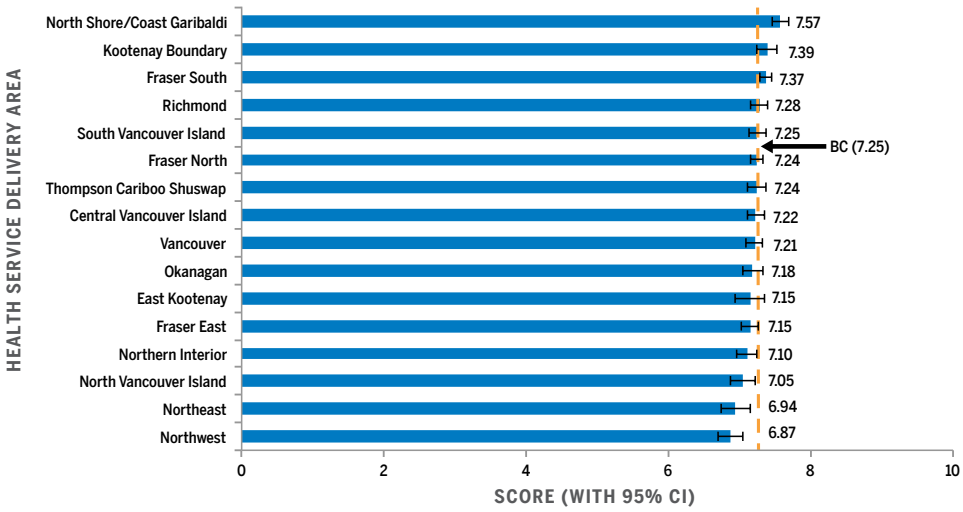
## FIG 29.2 Family Connectedness Score for Students in Grades 7-12, by Health Authority, BC, 2013




**Notes:** "Family connectedness score" reflects the mean score of three items: youth feel that people in their family understand them, that their family has fun together, and that their family pays attention to them. The score ranges from zero to ten, with a higher score indicating a higher level of connectedness. Health authority is based on the location of the school. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

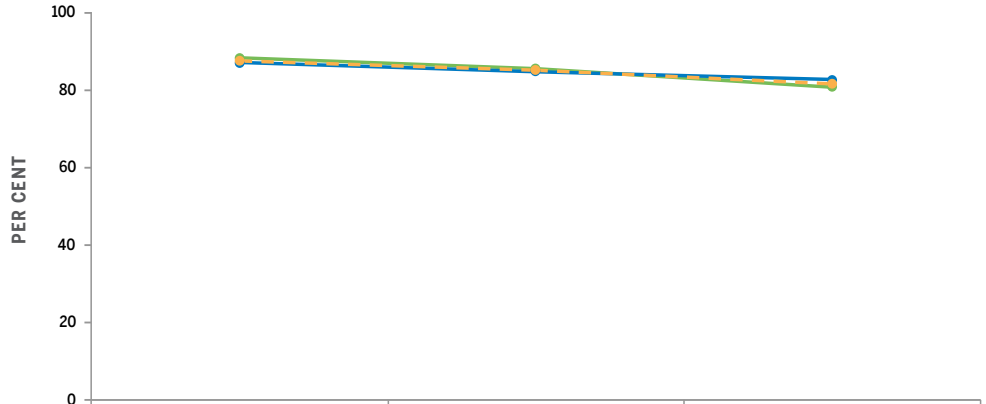
## FIG 29.3 Family Connectedness Score for Students in Grades 7-12, by Health Service Delivery Area, BC, 2013




**Notes:** "Family connectedness score" reflects the mean score of three items: youth feel that people in their family understand them, that their family has fun together, and that their family pays attention to them. The score ranges from zero to ten, with a higher score indicating a higher level of connectedness. Health service delivery area is based on the location of the school. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 30.1 Percentage of Students in Grades 7-12 Who Reported They Had an Adult to Talk to, by Sex, BC, 2003, 2008, and 2013



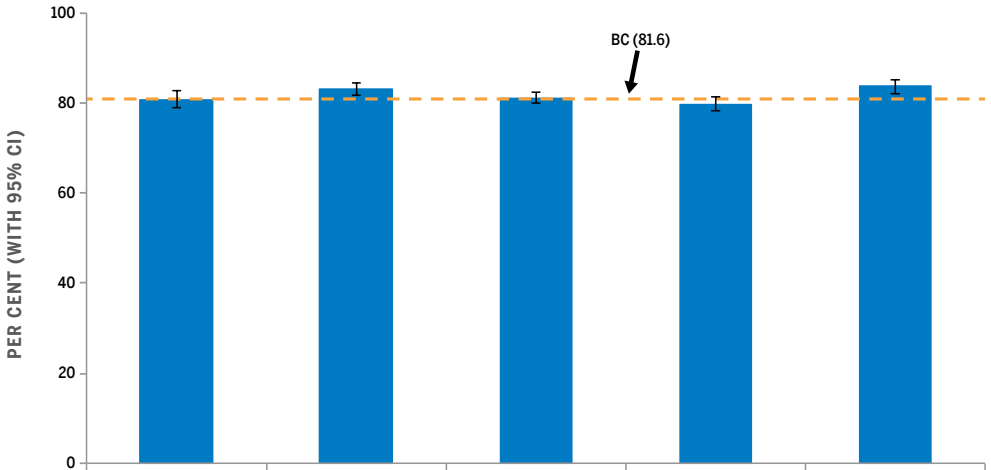

| | 2003 | 2008 | 2013 |
|---|---|---|---|
| Female | 88.2 | 85.7 | 80.7 |
| Male | 87.1 | 84.9 | 82.6 |
| All | 87.6 | 85.3 | 81.6 |

YEAR

**Notes:** Responses are based on youth who felt that they had an adult to talk to if they were having a serious problem. The differences between years were statistically significant for all groups. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2003, 2008, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 30.2 Percentage of Students in Grades 7-12 Who Reported They Had an Adult to Talk to, by Health Authority, BC, 2013



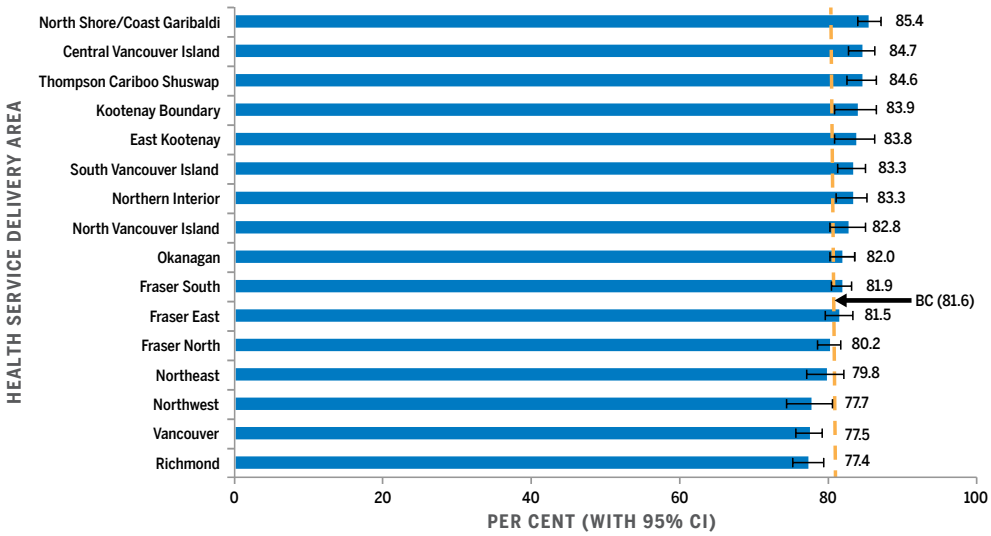

| Northern | Interior | Fraser | Vancouver Coastal | Island |
|---|---|---|---|---|
| 80.9 | 83.2 | 81.2 | 79.9 | 83.7 |

HEALTH AUTHORITY

**Notes:** Responses are based on youth who felt that they had an adult to talk to if they were having a serious problem. Health authority is based on the location of the school. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 30.3** Percentage of Students in Grades 7-12 Who Reported They Had an Adult to Talk to, by Health Service Delivery Area, BC, 2013




**Notes:** Responses are based on youth who felt that they had an adult to talk to if they were having a serious problem. Health service delivery area is based on the location of the school. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES

[1] Saewyc E, Tonkin R. Surveying adolescents: focusing on positive development. Paediatr Child Health. 2008 Jan;13(1):43-7.

[2] Shonkoff J, Phillips D. From neurons to neighborhoods - the science of early childhood development. Washington, DC: National Academy Press; 2000.

[3] Gottfried AE, Gottfried AW. Redefining families: implications for children's development. New York: Plenum Press; 1994.

[4] Smith A, Stewart D, Poon C, Peled M, Saewyc E. From Hastings Street to Haida Gwaii: provincial results of the 2013 BC Adolescent Health Survey. Vancouver, BC: McCreary Centre Society; 2014.

[5] Pivak J. Child and youth health and well-being indicators project: appendix H – social relationships evidence review [prepared for the Office of the Provincial Health Officer and the Canadian Institute for Health Information]. Ottawa, ON: Canadian Institute for Health Information; 2011.

[6] Resnick MD, Bearman PS, Blum RW, Bauman KE, Harris KM, Jones J, et al. Protecting adolescents from harm—findings from the National Longitudinal Study of Adolescent Health. JAMA. 1997 Sep 10;278(10):823-32.

# INDICATOR #31 School Connectedness Rate

## DEFINITION

***INDICATOR #31 —*** Percentage of BC students in grades 7–12 who report a high level of school connectedness, as determined by the BC Adolescent Health Survey "School Connectedness" scale.

## KEY MESSAGES

- **School connectedness** is a general term used to describe a sense of belonging, where students feel they are a part of the school. Students who feel connected to their school are characterized as feeling happy, liking school, feeling engaged and safe, and feeling accepted and valued. They also participate in school activities, feel that teachers are fair and care about them, and have good relationships with other students.[1,2]

- Studies have found that school connectedness is associated with lower levels of adolescent emotional distress, suicide, violence, and substance use (such as alcohol, cigarettes, and marijuana), and is also associated with later onset of sexual activity.[1,3]

- School connectedness has had a consistent relationship with positive academic and health outcomes, even for sub-populations of youth who experience other challenges. For example, although lesbian, gay, and bisexual students report lower levels of school connectedness compared to their heterosexual peers, when they have high levels of school connectedness, they are less likely to have substance use problems.[4,5]

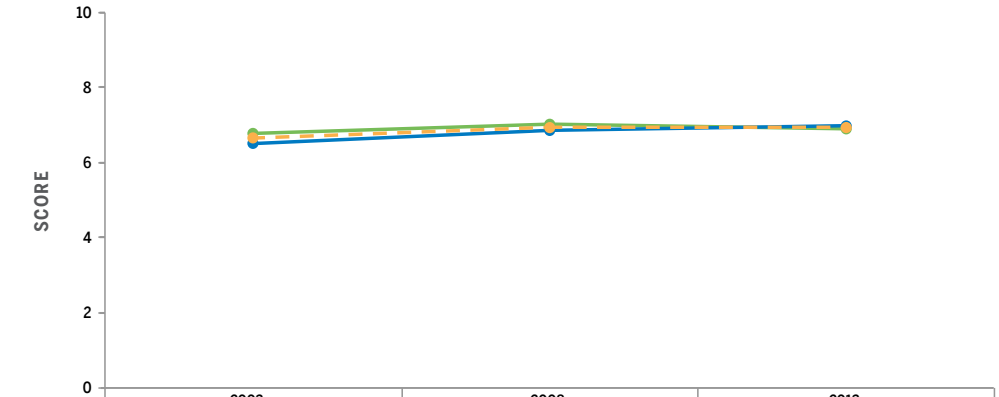
- Similarly, youth in government care struggle to stay in school and have higher levels of health challenges overall; however, BC youth in government care with higher levels of school connectedness report better physical and mental health, are less likely to engage in health-compromising behaviours, and are more likely to have post-secondary education plans.[6]

- In the BC Adolescent Health Survey and the figures presented for this indicator, school connectedness is measured on a scale composed of three items: students feel they are part of their school, are happy at their school, and feel safe at school. The score presented reflects the mean of these three items, and ranges from 0 to 10, with a higher score indicating a greater sense of school connectedness.

- Figure 31.1 shows that between 2003 and 2013, the mean scores of school connectedness among students improved, particularly from 2003 to 2008.

- While there was only modest improvement in the scores of school belonging, even small improvements across an entire population are meaningful, since it takes improvement over a large number of young people in most schools to create a noticeable change. Figure 31.1 also reveals that in 2003, male students in grades 7–12 reported a lower level of school connectedness than their female counterparts; however, in 2013, the score for males surpassed that of females.

## FIG 31.1 School Connectedness Score for Students in Grades 7-12, BC, 2003, 2008, and 2013



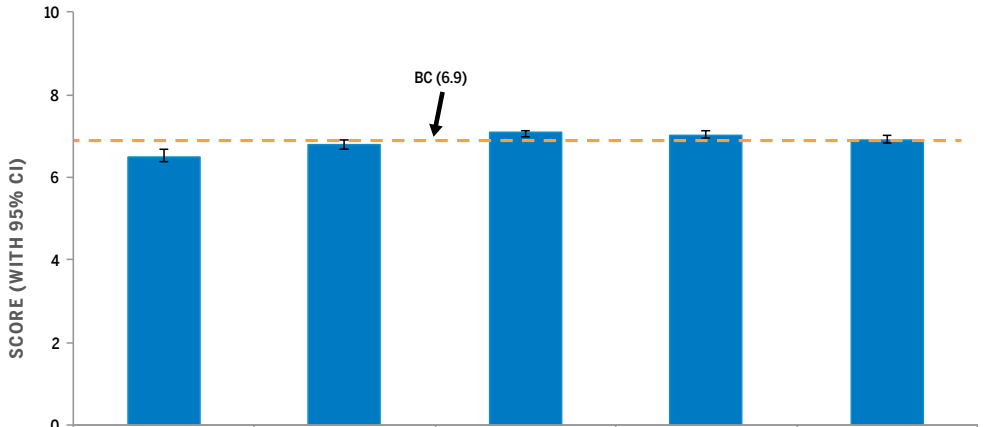

| | 2003 | 2008 | 2013 |
|---|---|---|---|
| Female | 6.8 | 7.0 | 6.9 |
| Male | 6.5 | 6.9 | 7.0 |
| All | 6.7 | 6.9 | 6.9 |

YEAR

**Notes:** "School connectedness" score reflects the mean score of three items: youth feeling they are a part of their school, being happy to be at their school, and feeling safe at school. The score ranges from zero to ten, with a higher score indicating a greater sense of school belonging. The differences between years were statistically significant for females and males. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2003, 2008, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 31.2 School Connectedness Score for Students in Grades 7-12, by Health Authority, BC, 2013



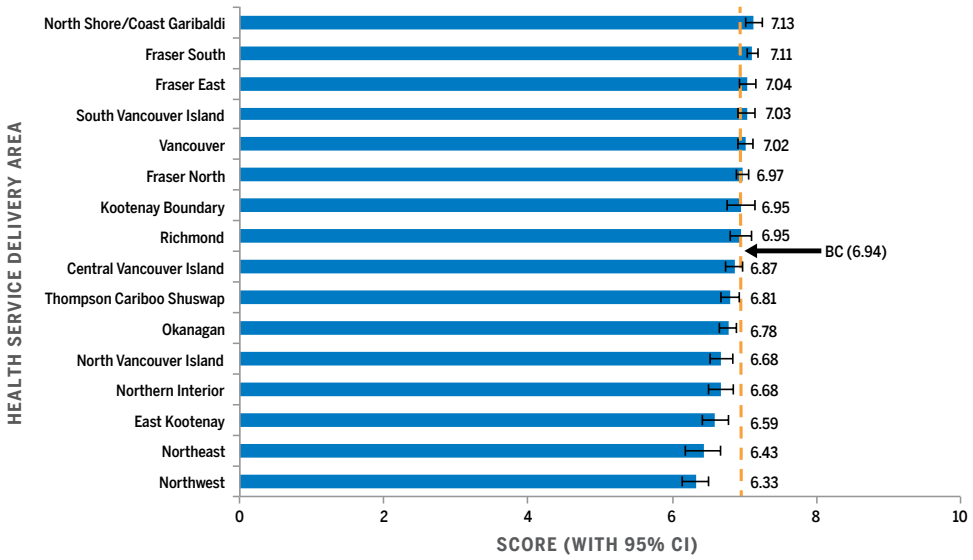

| Northern | Interior | Fraser | Vancouver Coastal | Island |
|---|---|---|---|---|
| 6.5 | 6.8 | 7.1 | 7.0 | 6.9 |

HEALTH AUTHORITY

**Notes:** "School connectedness" score reflects the mean score of three items: youth feeling they are a part of their school, being happy to be at their school, and feeling safe at school. The score ranges from zero to ten, with a higher score indicating a greater sense of school belonging. Health authority is based on the location of the school. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 31.3** School Connectedness Score for Students in Grades 7-12, by Health Service Delivery Area, BC, 2013




**Notes:** "School connectedness" score reflects the mean score of three items: youth feeling they are a part of their school, being happy to be at their school, and feeling safe at school. The score ranges from zero to ten, with a higher score indicating a greater sense of school belonging. Health service delivery area is based on the location of the school. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES

[1] Saewyc E, Tonkin R. Surveying adolescents: focusing on positive development. Paediatr Child Health. 2008 Jan;13(1):43-7.

[2] MacKay L. School connectedness: it matters to student health. Visions: BC's Mental Health and Addictions Journal, 2009;5(2):18-9.

[3] Resnick MD, Bearman PS, Blum RW, Bauman KE, Harris KM, Jones J, et al. Protecting adolescents from harm—findings from the National Longitudinal Study of Adolescent Health. JAMA. 1997 Sep 10;278(10):823-32.

[4] Saewyc EM, Homma Y, Skay CL, Bearinger L, Resnick M, Reis E. Protective factors in the lives of bisexual adolescents in North America. Am J Public Health. 2009 January;99(1):110-17.

[5] Poon C, Saewyc E, Chen W. Enacted stigma, problem substance use, and protective factors among Asian sexual minority youth in British Columbia. Can J Commun Ment Health. 2011;30(2):47-64.

[6] Smith A, Stewart D, Poon C, Saewyc E, McCreary Centre Society. Fostering potential: the lives of BC youth with government care experience. Vancouver, BC: McCreary Centre Society; 2011.

# INDICATOR #32 Community Connectedness Rate

## DEFINITIONS

The original established indicator is the percentage of BC youth age 15 to 19 who report a strong sense of community involvement. In the interest of more fully understanding community connectedness among youth, this indicator will be explored here and in future reports as three measures, specified below as Indicators 32A, 32B, and 32C.

***INDICATOR #32A*** — Percentage of BC students in grades 7–12 who report they felt like part of their community either "quite a bit" or "very much".

***INDICATOR #32B*** — Percentage of BC students in grades 7–12 who report they felt safe in their neighbourhood either "often" or "always" during the daytime.

***INDICATOR #32C*** — Percentage of BC students in grades 7–12 who report they felt safe in their neighbourhood either "often" or "always" at night.

## KEY MESSAGES

- Family, friends, and a feeling of belonging to a community give people the sense of being part of something larger than themselves. Satisfaction with self and community, problem-solving capabilities, and the ability to manage life situations can contribute to better overall health.[1]
- The extent to which people participate in their community and feel that they belong can positively influence their long-term physical and mental health.[2]
- Students who feel most connected to their communities are more likely to see themselves engaged in their community in five years. They are also more likely to see only positive future outcomes for themselves, to think they are really good at something, and to report feeling happy all or most of the time.[3]
- **Community connectedness** is a general sense of being part of or belonging to a community.[3]
- Figure 32A.1 shows that about 40 per cent of students reported that that they felt connected to their community. While not shown here, other data sources that monitor community connectedness suggest that the level of community connectedness in students has fluctuated, without a clear upward or downward trend over time.[4]
- Evidence shows that community connectedness has a direct correlation to feeling safe in your neighbourhood;[3] as such, this concept is examined through analyses of both the perception of community connectedness, and the feeling of being safe in one's neighbourhood. As shown in Figure 32B.1, the majority (91.3 per cent) of youth felt safe in their neighbourhoods during the daytime, while a lower percentage (64.7 per cent) felt safe in their neighbourhoods at night (shown in Figure 32C.1). These figures also show that males felt somewhat safer in their neighbourhoods than females during the daytime and substantially safer than females at night.

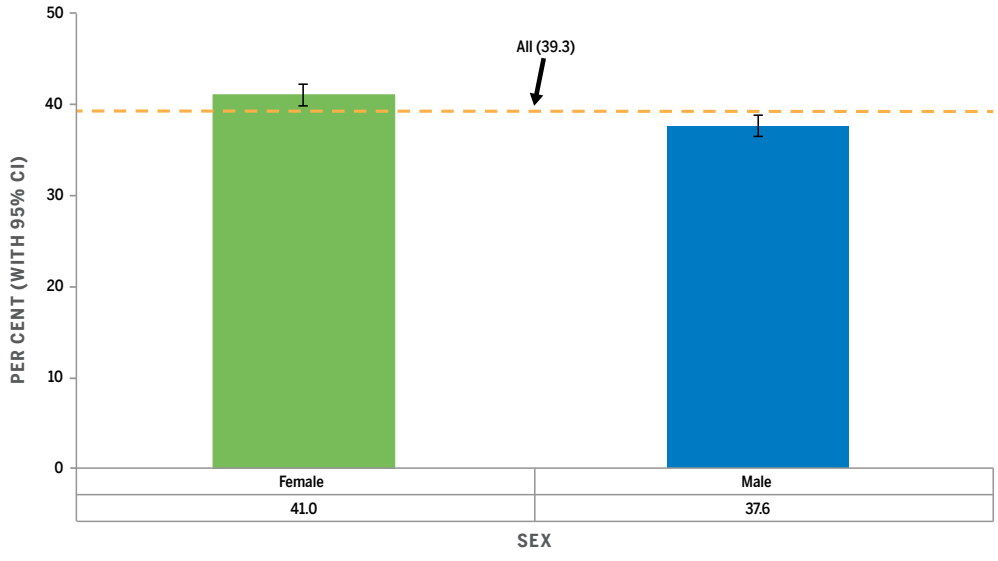
▶ Figure 32A.2 to 32C.3 present geographic differences in community connectedness by health authority and health service delivery area. A higher percentage of students in Interior and Island Health Authorities felt safe in their neighbourhoods during the daytime (Figure 32B.2) and at night (Figure 32C.2) than in Fraser Health. However, a higher percentage of students reported feeling like they were part of their community in Vancouver Coastal Health than in other health authorities (Figure 32A.2).

*"Technology and social media may contribute to a disconnected situation. The community is now online and unintentionally promotes segregation. Through social media it is easier to feel a sense of belonging than face-to-face."*

*"Kids our age are working to be efficient. We are not trying to connect. We just want to finish things, go to the computer and move on."*

*"We are not living in the moment anymore."*

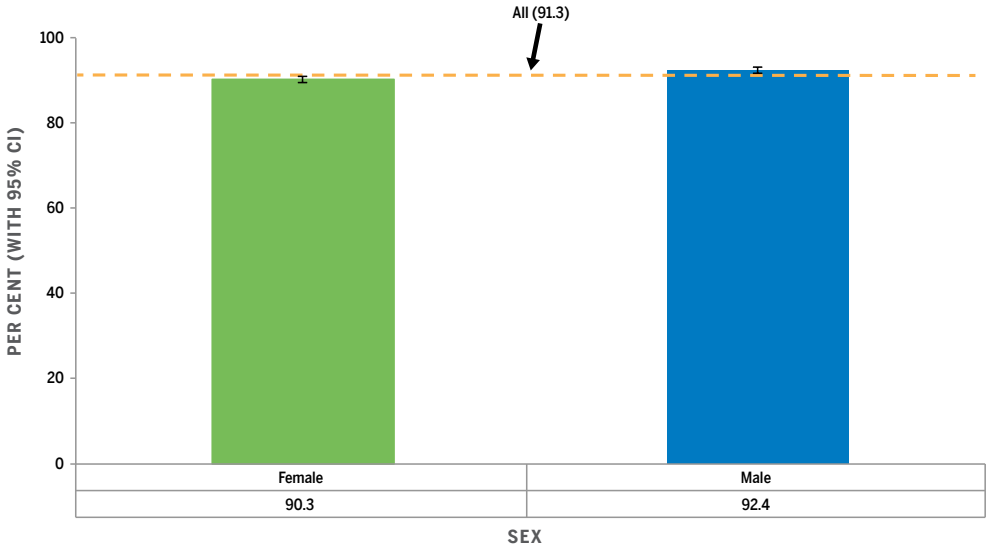
**FIG 32A.1** Percentage of Students in Grades 7-12 Who Reported Feeling Like a Part of Their Community, by Sex, BC, 2013




**Notes:** "Reported feeling like a part of their community" means youth reported they were either "quite a bit" or "very much" a part of their community. See Appendix B for more information about this data source.

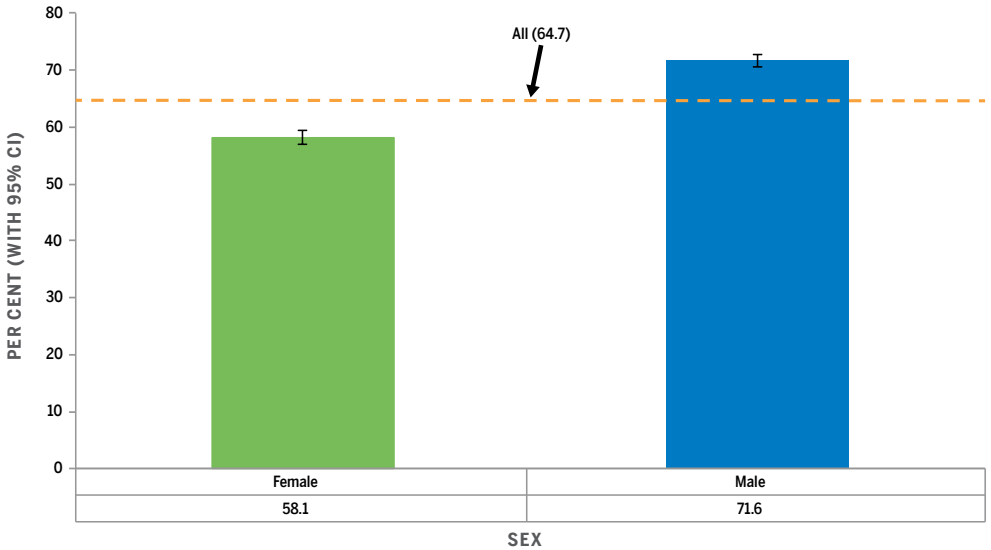
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 32B.1 Percentage of Students in Grades 7-12 Who Reported Feeling Safe in Their Neighbourhood during the Daytime, by Sex, BC, 2013



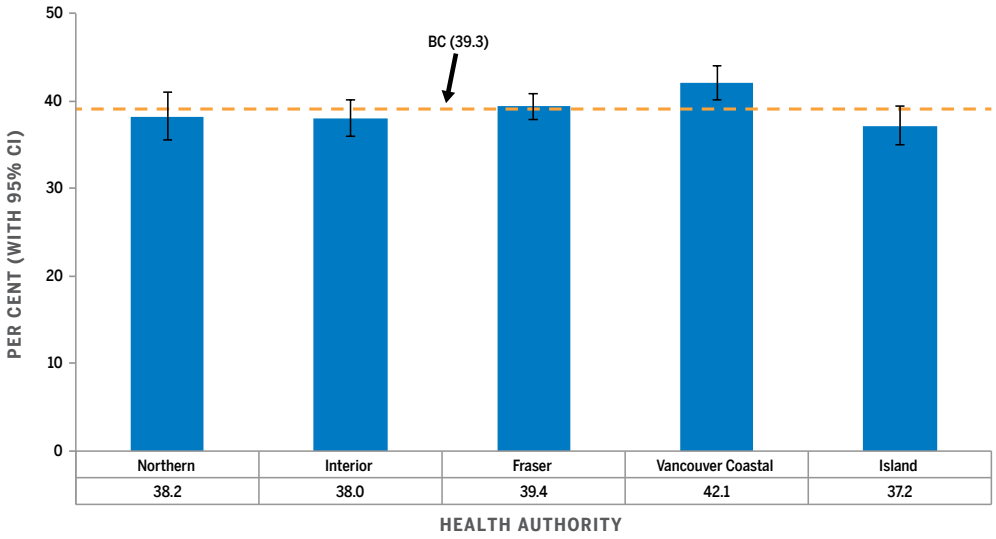

**Notes:** "Reported feeling safe" means youth reported feeling safe "often" or "always". See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 32C.1 Percentage of Students in Grades 7-12 Who Reported Feeling Safe in Their Neighbourhood at Night, by Sex, BC, 2013



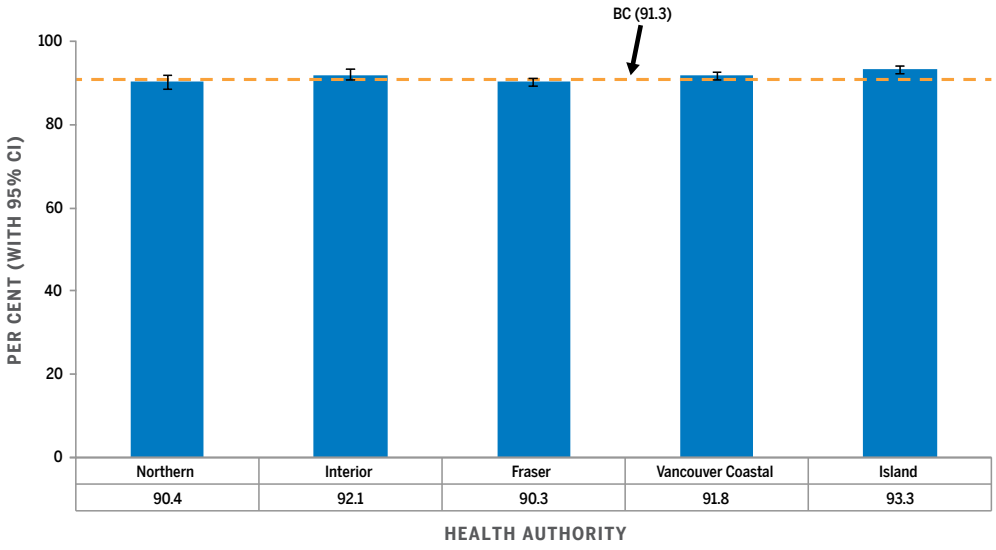

**Notes:** "Reported feeling safe" means youth reported feeling safe "often" or "always". See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 32A.2 Percentage of Students in Grades 7-12 Who Reported Feeling Like a Part of Their Community, by Health Authority, BC, 2013



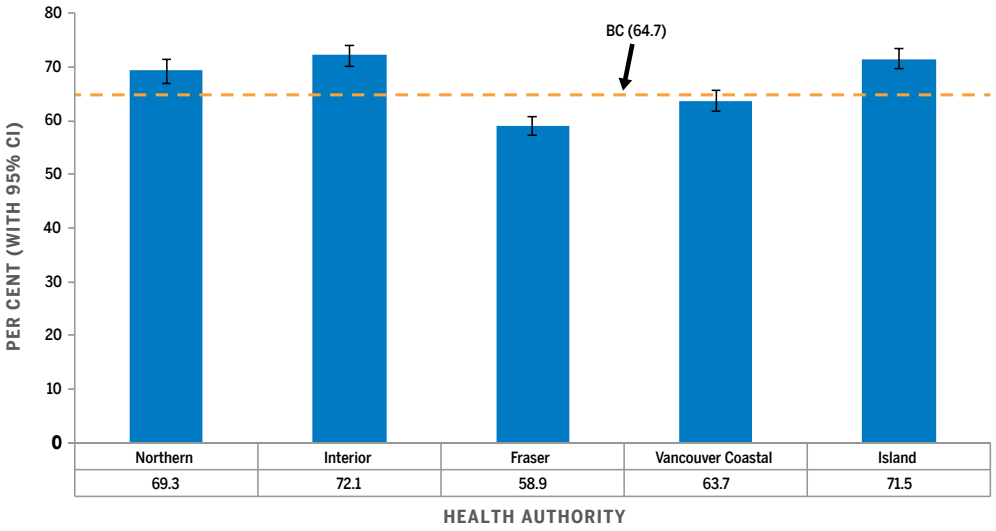

**Notes:** "Reported feeling like a part of their community" means youth reported they were either "quite a bit" or "very much" a part of their community. Health authority is based on the location of the school. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 32B.2 Percentage of Students in Grades 7-12 Who Reported Feeling Safe in Their Neighbourhood during the Daytime, by Health Authority, BC, 2013



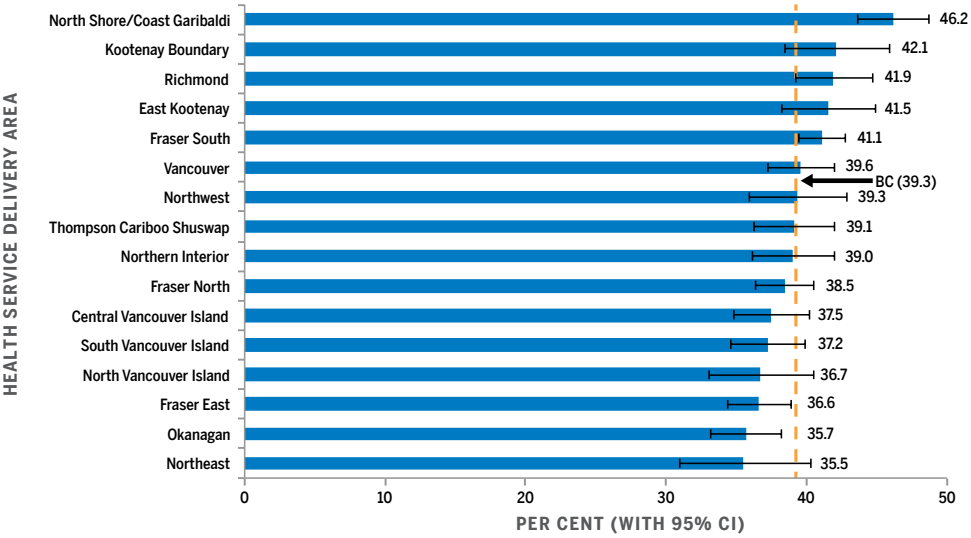

**Notes:** "Reported feeling safe" means youth reported feeling safe "often" or "always". Health authority is based on the location of the school. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 32C.2 Percentage of Students in Grades 7-12 Who Reported Feeling Safe in Their Neighbourhood at Night, by Health Authority, BC, 2013



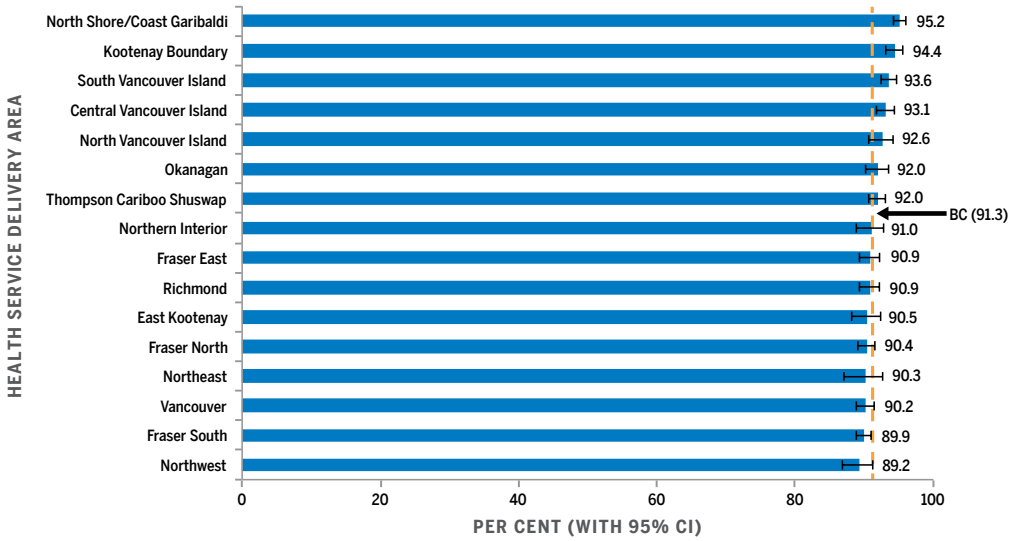

**Notes:** "Reported feeling safe" means youth reported feeling safe "often" or "always". Health authority is based on the location of the school. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 32A.3 Percentage of Students in Grades 7-12 Who Reported Feeling Like a Part of Their Community, by Health Service Delivery Area, BC, 2013



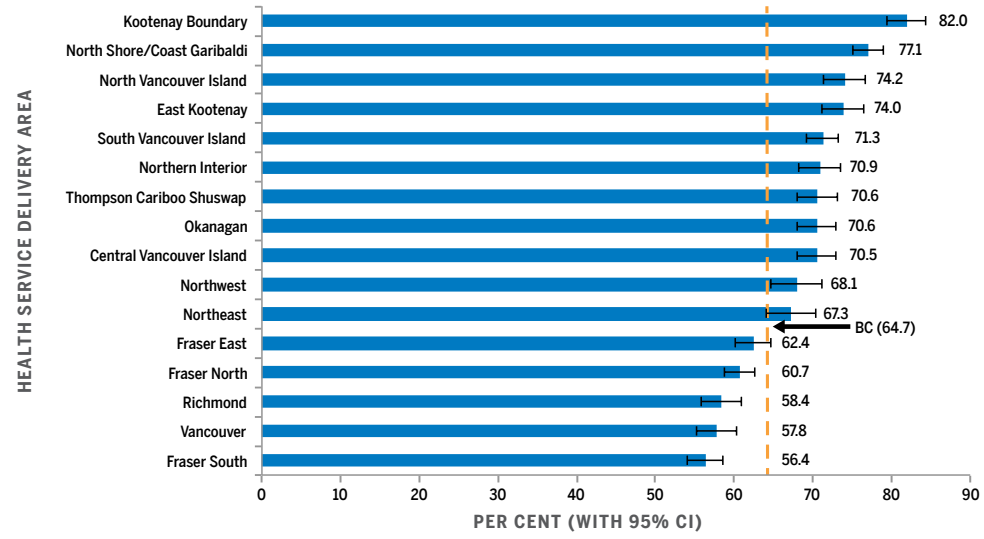

**Notes:** "Reported feeling like a part of their community" means youth reported they were either "quite a bit" or "very much" a part of their community. Health service delivery area is based on the location of the school. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 32B.3 Percentage of Students in Grades 7-12 Who Reported Feeling Safe in Their Neighbourhood during the Daytime, by Health Service Delivery Area, BC, 2013




**Notes:** "Reported feeling safe" means youth reported feeling safe "often" or "always". Health service delivery area is based on the location of the school. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 32C.3 Percentage of Students in Grades 7-12 Who Reported Feeling Safe in Their Neighbourhood at Night, by Health Service Delivery Area, BC, 2013




**Notes:** "Reported feeling safe" means youth reported feeling safe "often" or "always". Health service delivery area is based on the location of the school. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES

[1] Federal, Provincial and Territorial Advisory Committee on Population Health. Toward a healthy future. Second report on the health of Canadians. Charlottetown, PE: Federal, Provincial and Territorial Advisory Committee on Population Health; 1999.

[2] Chief Public Health Officer. Report on the state of public health in Canada 2008. Addressing health inequalities. Ottawa, ON: Minister of Health; 2008 [cited 2016 Feb 26]. Available from: http://www.phac-aspc.gc.ca/cphorsphc-respcacsp/2008/fr-rc/pdf/CPHO-Report-e.pdf.

[3] Smith A, Stewart D, Poon C, Peled M, Saewyc E. From Hastings Street to Haida Gwaii: provincial results of the 2013 BC Adolescent Health Survey. Vancouver, BC: McCreary Centre Society; 2014.

[4] Statistics Canada. Table 105-0501 Health indicator profile, annual estimates, by age group and sex, Canada, provinces, territories, health regions (2013 boundaries) and peer groups, occasional (table). CANSIM (database). Ottawa, ON: Statistics Canada; 2016 [cited 2016 Apr 6]. Available from: http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=1050501&&pattern=&stByVal=1&p1=1&p2=-1&tabMode=dataTable&csid.

# INDICATOR #33 Incidence of Abuse/Neglect
# INDICATOR #34 Incidence of Sexual Abuse

## DEFINITIONS

*INDICATOR #33* — Incidence of physical abuse/neglect, as reported by the Ministry of Children and Family Development.

*INDICATOR #34* — Percentage of BC students in grades 7–12 who report having experienced sexual abuse at some point during their lives.[j]

## KEY MESSAGES

- **Child abuse** can be physical, sexual, or emotional, and is cruel or violent treatment, especially when occurring regularly or repeatedly.[1] This includes physical abuse, which is bodily injury inflicted upon a child or youth such as punching, beating, kicking, biting, burning, or shaking; sexual abuse, which includes intercourse, fondling, acts of exposure, sexual soliciting, and sexual harassment; and emotional abuse, which includes exposure to domestic violence or witnessing a parent's misconduct.[2] **Child neglect** is the failure to provide shelter, safety, supervision, and/or nutritional needs for a child or youth.[2]

- Child abuse and neglect can have lasting and harmful outcomes, including physical and mental health problems (e.g., depression, anxiety, post-traumatic stress disorder, or chronic disease later in life) as well as reduced educational attainment and employment prospects, homelessness, and criminal activity.[3–7] Key factors associated with the likelihood and severity of these outcomes are the frequency, duration, and types of abuse and neglect—the effect is cumulative—and the child's age when the mistreatment occurred.

- Evidence shows that children abused and/or neglected in their families are approximately five times less likely to be securely attached to a caregiver. Children experiencing prolonged abuse and/or neglect are prone to suffer from chronic stress.[8]

- Among the mental health conditions strongly associated with experiencing abuse or neglect are post-traumatic stress disorders and depression. Conditions that are more moderately associated include **internalizing behaviours**, particularly for girls, such as withdrawal, depression, and eating disorders, and **externalizing behaviours**, particularly for boys, such as aggression, delinquency, and substance abuse (most notably alcohol) as youth and adults.[9]

- Young adults who have experienced sexual and/or physical abuse in childhood are also twice as likely to attempt suicide.[10]

[j] The original indicator specified that data would come from the BC Ministry of Children and Family Development (MCFD); however, it was subsequently determined that incidence of sexual abuse reported to MCFD underrepresents actual data. Therefore, during the development of the current report, the Advisory Committee changed the indicator to capture self-reported experiences of sexual abuse based on the BC Adolescent Health Survey.

- Physical abuse and neglect are associated with ecological conditions such as lack of social support and poverty, but are most clearly linked to parental substance abuse and mental health issues such as depression. Abuse and neglect are also associated with other parent and family factors such as a parent's lack of readiness to be a parent, a parent's own experience of abuse or neglect, family structure including single-parent families and very large families, and domestic violence.[11]

- The child abuse and neglect incidence rates for a given year represent the children for whom a formal report was made to the BC Ministry of Children and Family Development (MCFD) for physical, sexual, or emotional abuse and/or neglect, as explained in Section 13 of the *Child, Family and Community Service Act*.[12] These reports are resolved through either Family Development Responses (representing about two-thirds of the incidence rate) or Child Protection Investigations (representing about one-third of the incidence rate).[k] Although there is a statutory obligation to report suspected abuse and neglect, some incidents go unreported and are not reflected in the data.

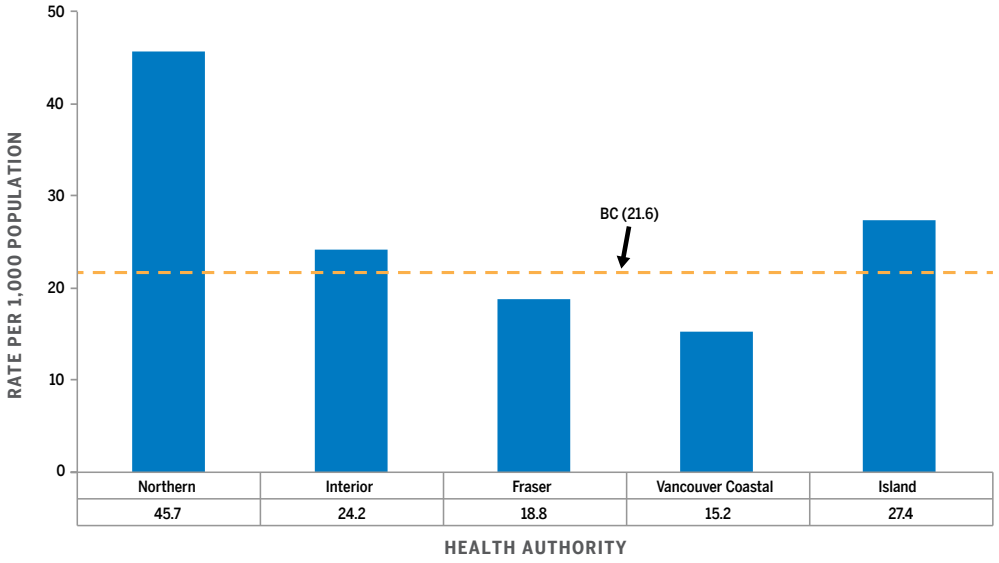
- Figures 33.1 and 33.2 reveal important geographic differences in reported abuse and neglect in BC: children and youth living in Northern Health were three times more likely to be reported as being abused or neglected than those living in Vancouver Coastal Health.

- Figures 34.1 to 34.3 show the percentage of BC students in grades 7–12 who self-report having experienced sexual abuse at some point during their lives. Figure 34.1 shows that there appears to be a slight downward trend emerging in the percentage of youth who have experienced sexual abuse. It also shows that the difference between the sexes is substantial, with females being more than three times as likely as males to have experienced sexual abuse.

- Similar to MCFD data regarding abuse shown in Figures 33.1 and 33.2, Figures 34.2 and 34.3 demonstrate that there are substantial geographic differences between health authorities and between health service delivery areas (HSDAs), for the percentage of youth who report having experienced sexual abuse. Within the HSDAs, the highest percentage of sexual abuse identified was in Northwest (14.0 per cent), which was more than twice the percentage of the lowest—Richmond HSDA (6.7 per cent).

[k] Family Development Responses involve working with a family to address the issues that led to a formal report. Child Protection Investigations are full investigations into conditions that led to the formal report, and are used to resolve very serious issues. A report initially pursued via a Family Development Response can be referred to a Child Protection Investigation.

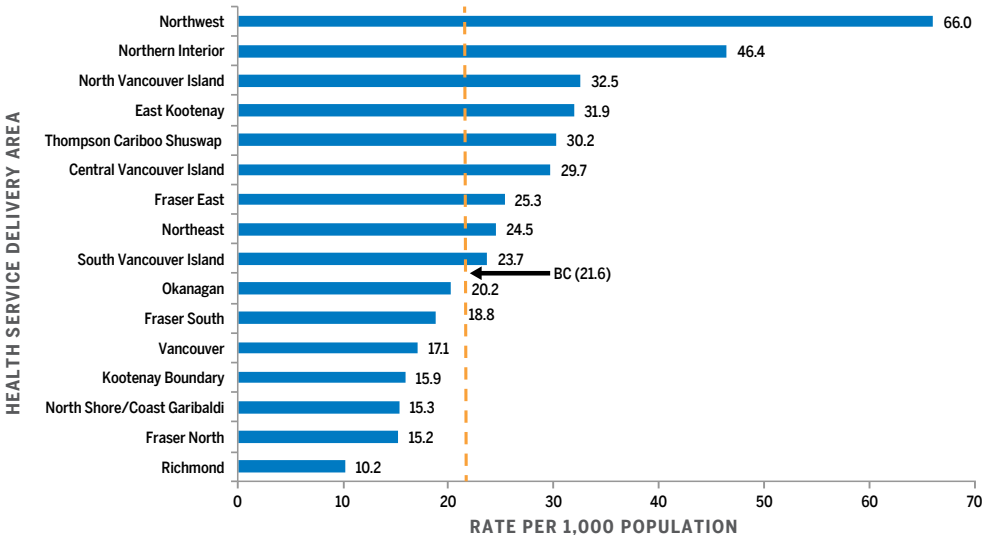
## FIG 33.1 Abused and/or Neglected Children and Youth Age 0-18, Rate per 1,000 Population, by Health Authority, BC, 2013




**Notes:** "Abused and/or neglected children" means children for whom a formal report was made to the BC Ministry of Children and Family Development (MCFD) for physical, sexual, or emotional abuse and/or neglect, as explained in Section 13 of the *Child, Family and Community Service Act*.[12] Health authority is based on the location of the MCFD office where the initial report is received. See Appendix B for more information about this data source.

**Source:** BC Ministry of Children and Family Development, Corporate Data Warehouse, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

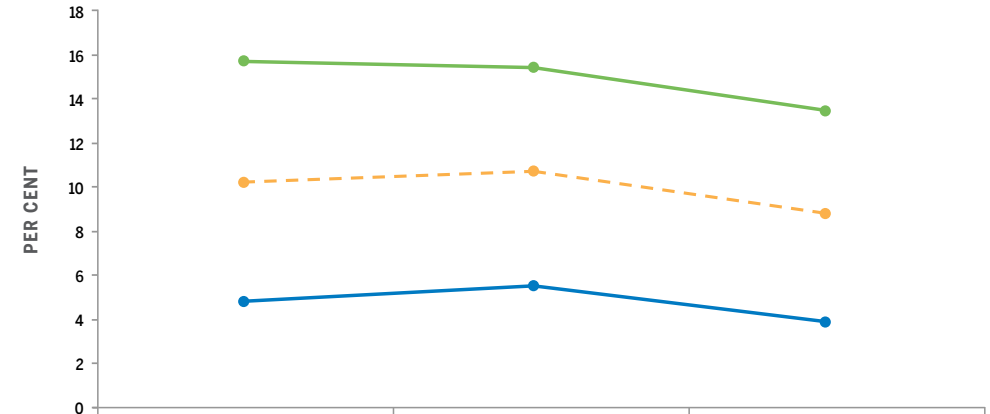
## FIG 33.2 Abused and/or Neglected Children and Youth Age 0-18, Rate per 1,000 Population, by Health Service Delivery Area, BC, 2013




**Notes:** "Abused and/or neglected children" means children for whom a formal report was made to the BC Ministry of Children and Family Development (MCFD) for physical, sexual, or emotional abuse and/or neglect, as explained in Section 13 of the *Child, Family and Community Service Act*.[12] Health service delivery area is based on the location of the MCFD office where the initial report is received. See Appendix B for more information about this data source.

**Source:** BC Ministry of Children and Family Development, Corporate Data Warehouse, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 34.1 Percentage of Students in Grades 7-12 Who Have Experienced Sexual Abuse, BC, 2003, 2008, and 2013



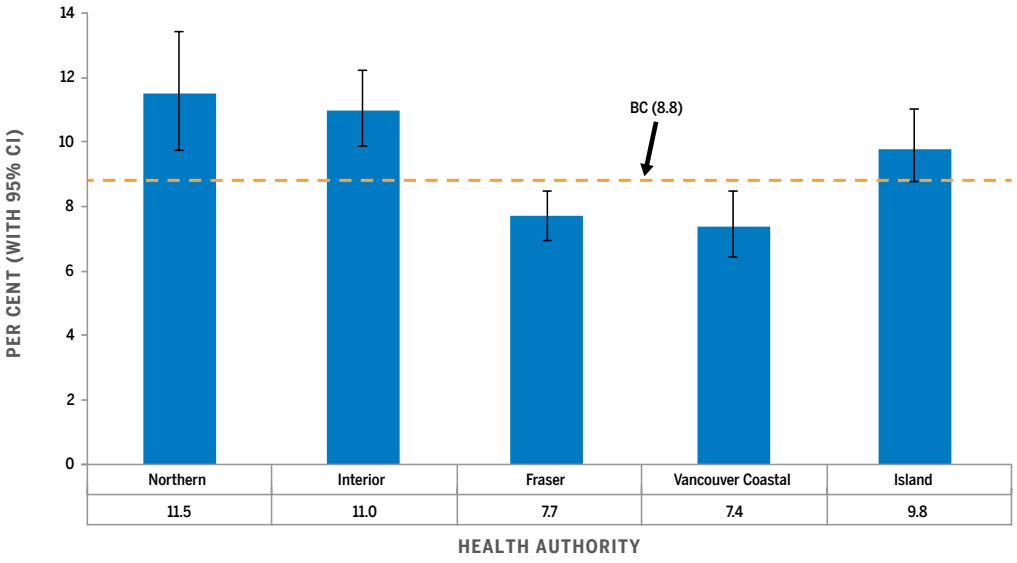

| | 2003 | 2008 | 2013 |
|---|---|---|---|
| Female | 15.7 | 15.4 | 13.5 |
| Male | 4.8 | 5.5 | 3.9 |
| All | 10.2 | 10.7 | 8.8 |

YEAR

**Notes:** "Experienced sexual abuse" means youth reported in the survey that they had experienced sexual abuse at some point during their lives. The differences between 2003 and 2008 and between 2008 and 2013 were statistically significant for "All". The differences between 2003 and 2013 and between 2008 and 2013 were statistically significant for females and males, but the difference between 2003 and 2008 was statistically significant for males only. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2003, 2008, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 34.2 Percentage of Students in Grades 7-12 Who Have Experienced Sexual Abuse, by Health Authority, BC, 2013



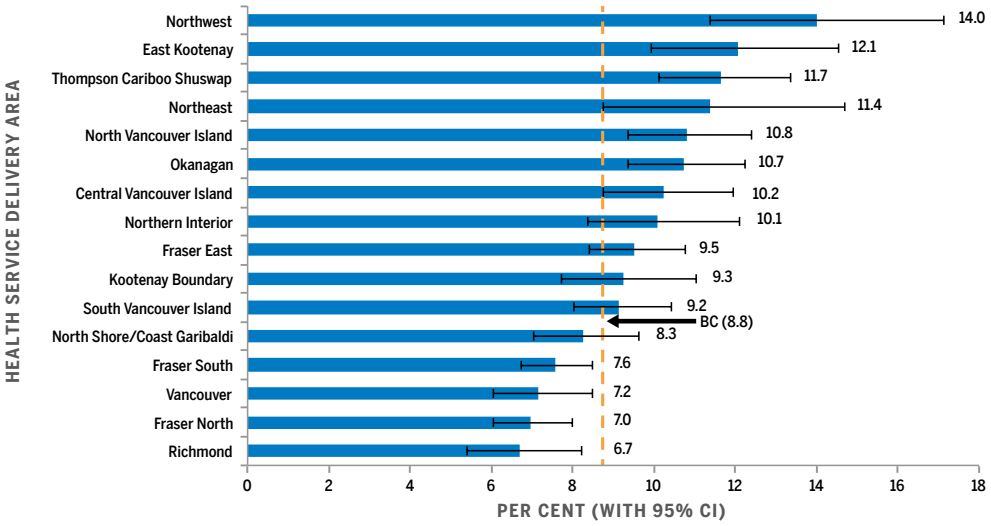

| Northern | Interior | Fraser | Vancouver Coastal | Island |
|---|---|---|---|---|
| 11.5 | 11.0 | 7.7 | 7.4 | 9.8 |

HEALTH AUTHORITY

**Notes:** "Experienced sexual abuse" means youth reported in the survey that they had experienced sexual abuse at some point during their lives. Health authority is based on the location of the school. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 34.3** Percentage of Students in Grades 7-12 Who Have Experienced Sexual Abuse, by Health Service Delivery Area, BC, 2013




**Notes:** "Experienced sexual abuse" means youth reported in the survey that they had experienced sexual abuse at some point during their lives. Health service delivery area is based on the location of the school. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES


[1] Definition of *abuse* in English [Internet]. Oxford dictionaries. Oxford: Oxford University Press; 2016; [cited 2016 Jun 07]. Available from http://www.oxforddictionaries.com/definition/english/abuse.

[2] Pivak J. Child and youth health and well-being indicators project: appendix H – social relationships evidence review [prepared for the Office of the Provincial Health Officer and the Canadian Institute for Health Information]. Ottawa, ON: Canadian Institute for Health Information; 2011.

[3] Walsh CA, Jamieson E, MacMillan H, Boyle M. Child abuse and chronic pain in a community survey of women. J Interpers Violence. 2007 Dec;22(12):1536-54.

[4] Boden JM, Horwood LJ, Fergusson DM. Exposure to childhood sexual and physical abuse and subsequent educational achievement outcomes. Child Abuse Negl. 2007 Oct;31(10):1101-14.

[5] Gilbert R, Spatz Widon C, Browne K, Fergusson D, Webb E, Janson S. Burden and consequences of child maltreatment in high-income countries. Lancet. 2009 Jan 3;373(9657):68–81.

[6] Lamont A. Effects of child abuse and neglect for children and adolescents. National Child Protection Clearinghouse Resource Sheet. Melbourne: Australian Institute of Family Studies; 2010 Apr.

[7] Wilson C. The emergence of trauma-informed child welfare systems. CW360°: Trauma-informed Child Welfare Practice. 2013 Winter:12-13.

[8] Van IJzendoorn MH, Bakermans-Kranenburg MJ. Attachment security and disorganization in maltreating families and orphanages. Encyclopedia on Early Childhood Development. Netherlands: Centre of Excellence for Early Childhood Development; 2009.

[9] Hornor G. Child sexual abuse: consequences and implications. J Pediatr Health Care. 2010 Nov-Dec;24(6):358-64.

[10] Wegman HL, Stetler C. A meta-analytic review of the effects of childhood abuse on medical outcomes in adulthood. Psychosom Med. 2009 Oct 1;71(8):805-12.

[11] McCoy ML, Keen SM. Child abuse and neglect. New York: Psychology Press, Taylor and Francis Group; 2009.

[12] Child, Family and Community Service Act [RSBC 1996, c.46, s.13] [statute on the Internet]; [cited 2016 Jun 30]. Available from: http://www.bclaws.ca/civix/document/id/complete/statreg/96046_01.

# INDICATOR #35 Rate of Children in Care

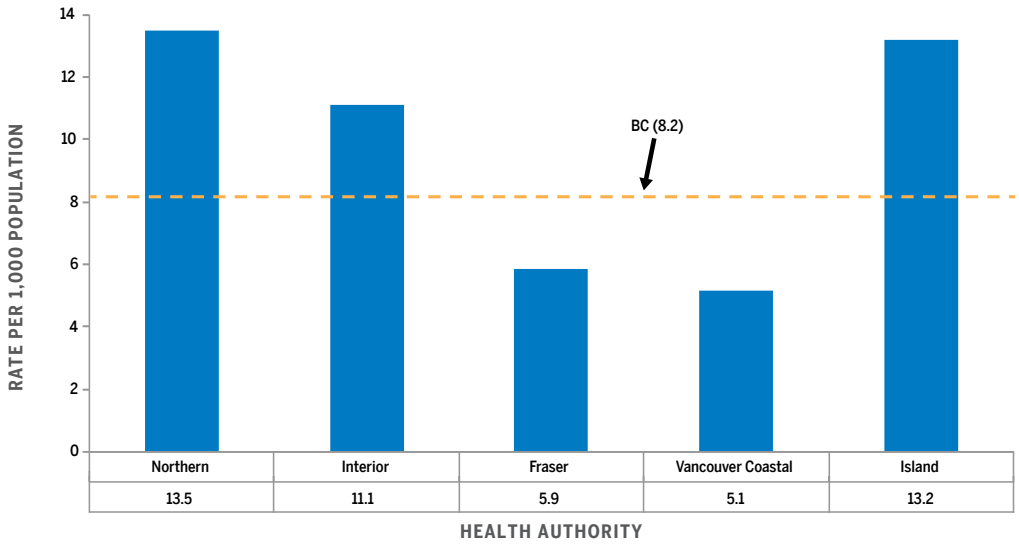
## DEFINITION

***INDICATOR #35 —*** Rate of children in care at year end, expressed as a rate per 1,000 children.

## KEY MESSAGES

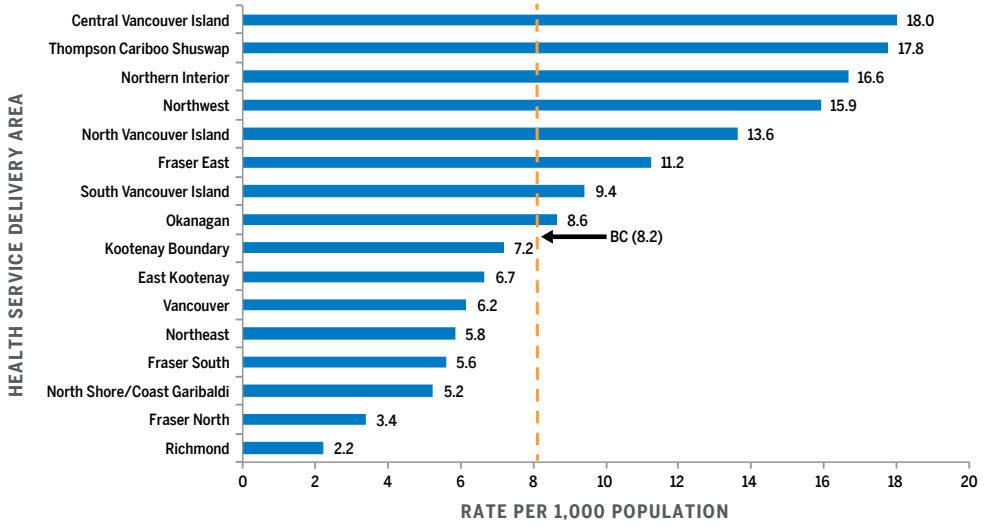
- Children and youth in care (typically referred to as **children in care**) are children or youth who are under the care of the Government of British Columbia and live in a foster or group home.[1] These children and youth are considered a vulnerable sub-population.
- As **child abuse** and **child neglect** are the overwhelming reasons why children and youth are in care, they are more likely than the general population to have suffered from trauma, to experience a mental health condition such as anxiety, or to suffer from developmental delay and/or a disability. They are also more likely to be suspended or expelled, and to have poor educational outcomes such as failing or repeating a grade.[2–5]
- Figures 35.1 and 35.2 present the rate of children and youth in care per 1,000 population age 0–18. They show that there are geographic differences in rates of children and youth in care; for example, the rates in Central Vancouver Island and Thompson Cariboo Shuswap Health Service Delivery Areas (HSDAs) are more than eight times the rate in Richmond HSDA (Figure 35.2).

## FIG 35.1 Children and Youth in Care Age 0-18, Rate per 1,000 Population, by Health Authority, BC, 2015




**Notes:** Health authority is based on the location of the BC Ministry of Children and Family Development office where the initial report is received. Data are current up to July 31, 2015. See Appendix B for more information about this data source.
**Source:** BC Ministry of Children and Family Development, Corporate Data Warehouse, 2015. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 35.2 Children and Youth in Care Age 0-18, Rate per 1,000 Population, by Health Service Delivery Area, BC, 2015




**Notes:** Health service delivery area is based on the location of the BC Ministry of Children and Family Development office where the initial report is received. Data are current up to July 31, 2015. See Appendix B for more information about this data source.
**Source:** BC Ministry of Children and Family Development, Corporate Data Warehouse, 2015. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES

[1] Government of British Columbia. Youth services [Internet]. Victoria, BC: BC Ministry of Children and Family Development; [cited 2016 Jun 2]. Available from: http://www.mcf.gov.bc.ca/youth/.

[2] Fernandez E. Children's well-being in care: evidence from a longitudinal study of outcomes. Child Youth Serv Rev. 2009;31:1092-1100.

[3] BC Ministry of Children and Family Development. Performance management report. Vol. 6. Victoria, BC: BC Ministry of Children and Family Development; 2015 Mar.

[4] Scherr T. Educational experiences of children in foster care: meta-analyses of special education, retention and discipline rates. Sch Psychol Int. 2007, Oct;28(4):419-36.

[5] Vandivere S, Chalk R, Moore KA. Children in foster homes: how are they faring? [Publication 2003-23]. Washington, DC: Child Trends; 2003 Dec.

# INDICATOR #36 Discrimination Rate

## DEFINITIONS

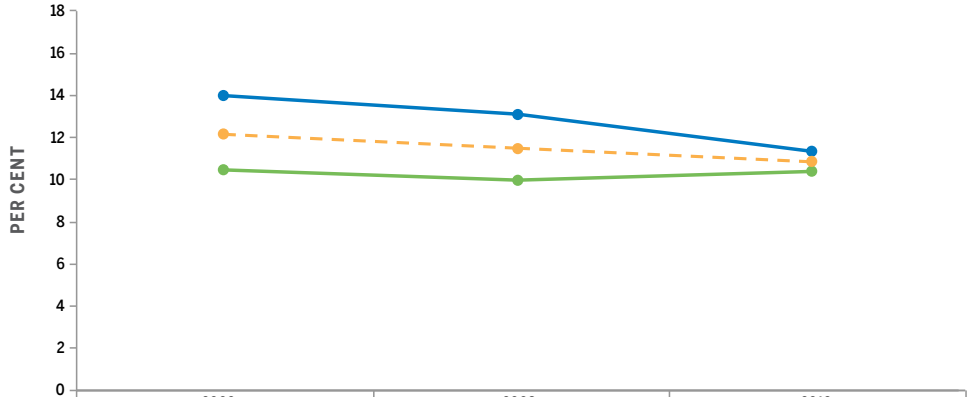
***INDICATOR #36A*** — Percentage of BC students in grades 7–12 who report having been discriminated against or treated unfairly because of their race, ethnicity, or skin colour in the past year.

***INDICATOR #36B*** — Percentage of BC students in grades 7–12 who report having been discriminated against or treated unfairly because of their sexual orientation in the past year.

## KEY MESSAGES

- Children and youth have a fundamental right, enshrined in the BC Human Rights Code, to be free from **discrimination** on the basis of race, colour, ancestry, place of origin, religion, sexual orientation, and physical or mental disability, among other factors.[1] Discrimination is linked to poor health behaviours, poor mental health, and, to a lesser extent, poor physical health.[2–7]
- As shown in Figure 36A.1, among students surveyed in grades 7–12, more males than females experienced discrimination on the basis of race, ethnicity, or skin colour; however, the percentage of males who experienced this discrimination decreased from 2003 to 2013 while the percentage for females was quite stable over this time.
- Conversely, there has been an overall increase in discrimination based on sexual orientation over the same time period, with the largest increase seen among females (Figure 36B.1).
- Figures 36AB.2, 36A.3 and 36B.3 demonstrate geographic differences for both discrimination based on race, ethnicity or skin colour, and discrimination based on sexual orientation.

## FIG 36A.1 Percentage of Students in Grades 7-12 Who Experienced Discrimination Based on Race, Ethnicity, or Skin Colour in the Past Year, by Sex, BC, 2003, 2008, and 2013



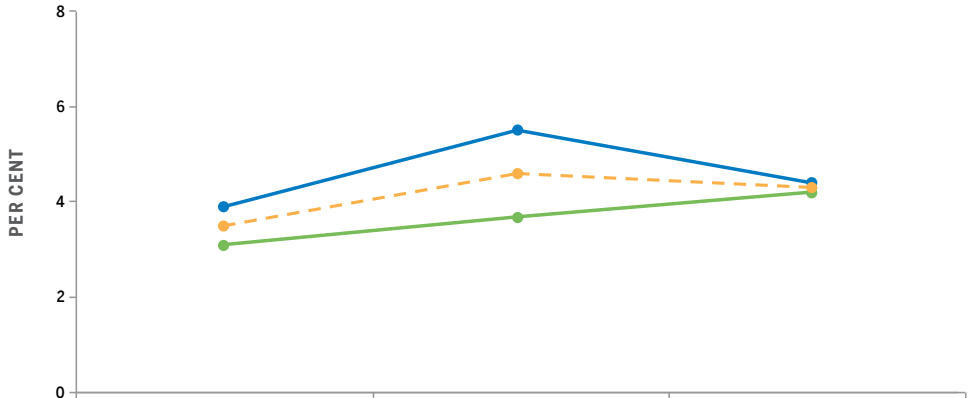

| | 2003 | 2008 | 2013 |
|---|---|---|---|
| Female | 10.5 | 10.0 | 10.4 |
| Male | 14.0 | 13.1 | 11.3 |
| All | 12.2 | 11.5 | 10.9 |

YEAR

**Notes:** "In the past year" means during the 12 months prior to the survey. The difference between 2003 and 2013 was statistically significant for "All" and males, and the difference between 2008 and 2013 was statistically significant for males only. The difference between the sexes was statistically significant in 2003 and 2008 only. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2003, 2008, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 36B.1 Percentage of Students in Grades 7-12 Who Experienced Discrimination Based on Sexual Orientation in the Past Year, by Sex, BC, 2003, 2008, and 2013



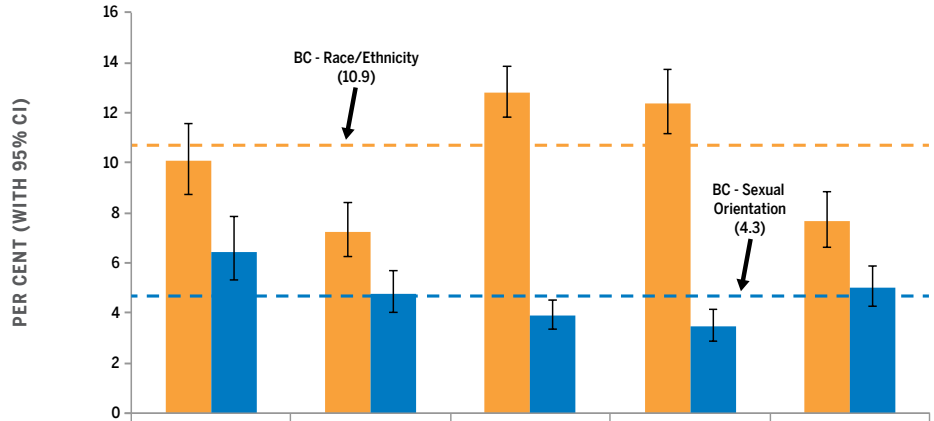

| | 2003 | 2008 | 2013 |
|---|---|---|---|
| Female | 3.1 | 3.7 | 4.2 |
| Male | 3.9 | 5.5 | 4.4 |
| All | 3.5 | 4.6 | 4.3 |

YEAR

**Notes:** "In the past year" means during the 12 months prior to the survey. The differences between years were statistically significant for "All". The differences between 2003 and 2008 and between 2008 and 2013 were statistically significant for both males and females. The difference between the sexes was statistically significant in 2008 only. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2003, 2008, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 36AB.2 Percentage of Students in Grades 7-12 Who Experienced Discrimination Based on Race, Ethnicity, or Skin Colour, and Based on Sexual Orientation in the Past Year, by Health Authority, BC, 2013



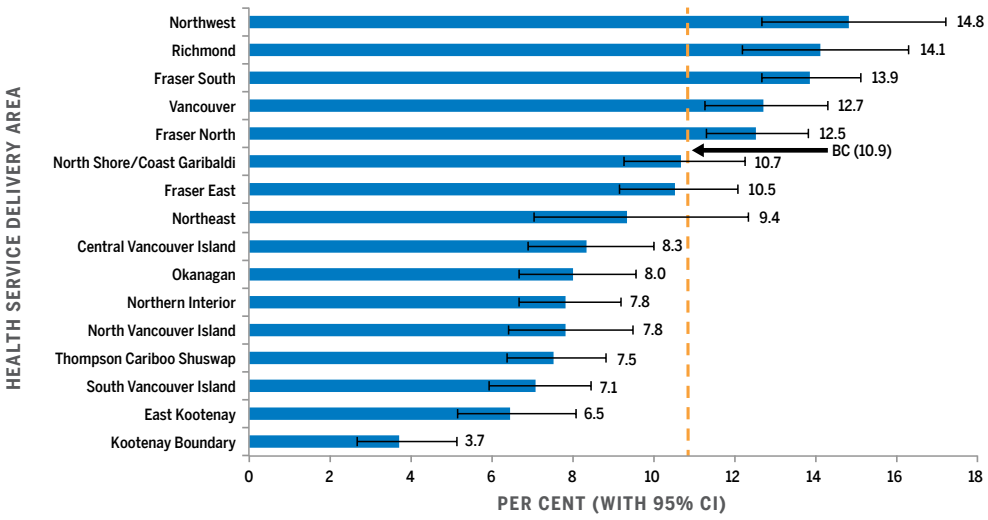

| | Northern | Interior | Fraser | Vancouver Coastal | Island |
|---|---|---|---|---|---|
| Race/Ethnicity | 10.1 | 7.3 | 12.8 | 12.4 | 7.7 |
| Sexual Orientation | 6.5 | 4.8 | 3.9 | 3.5 | 5.0 |

HEALTH AUTHORITY

**Notes:** "In the past year" means during the 12 months prior to the survey. Health authority is based on the location of the school. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

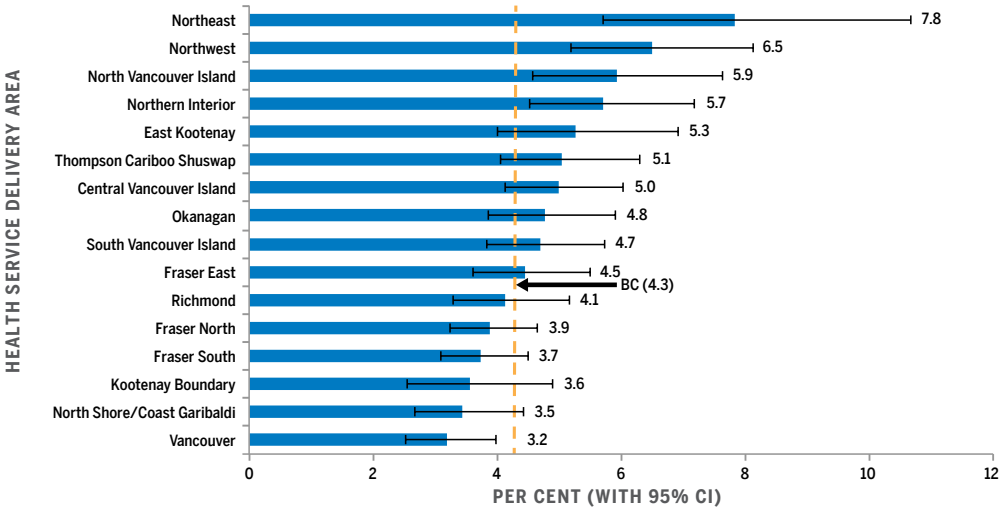
## FIG 36A.3 Percentage of Students in Grades 7-12 Who Experienced Discrimination Based on Race, Ethnicity, or Skin Colour in the Past Year, by Health Service Delivery Area, BC, 2013




**Notes:** "In the past year" means during the 12 months prior to the survey. Health service delivery area is based on the location of the school. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 36B.3** Percentage of Students in Grades 7-12 Who Experienced Discrimination Based on Sexual Orientation in the Past Year, by Health Service Delivery Area, BC, 2013




**Notes:** "In the past year" means during the 12 months prior to the survey. Health service delivery area is based on the location of the school. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES

[1] Human Rights Code [RSBC 1996, c.210] [statute on the Internet]; [cited 2016 Jun 1]. Available from: http://www.bclaws.ca/civix/document/id/complete/statreg/96210_01.

[2] Paradies Y. A systematic review of empirical research on self-reported racism and health. Int J Epidemiol. 2006 Aug;35(4):888-901. doi: 10.1093/ije/dyl056.

[3] Pascoe EA, Smart Richmond L. Perceived discrimination and health: a meta-analytic review. Psychol Bull. 2009 Jul;135(4):531-54. doi: 10.1037/a0016059.

[4] Luiz Bastos J, Keller Celeste R, Augusto Santos Silva D, Priest N, Paradies Y. Assessing mediators between discrimination, health behaviours and physical health outcomes: a representative cross-sectional study. Soc Psychiatry Epidemiol. 2015 Aug 12;50:1731-42. doi: 10.1007/s00127-015-1108-0.

[5] Viner RM, Ozer EM, Denny S, Marmot M, Resnick M, Fatusi A, et al. Adolescence and the social determinants of health. Lancet. 2012 Apr 28;379(9826):1641-52.

[6] Schmitt M, Branscombe N, Postmes T, Garcia A. The consequences of perceived discrimination for psychological well-being: a meta-analytic review. Psychol Bull. 2014 Jul;140(4):921-48. doi: 10.1037/a0035754.

[7] Williams D, Mohammed S. Discrimination and racial disparities in health: evidence and needed research. J Behav Med. 2009 Nov 22;32:20-47. DOI 10.1007/s10865-008-9185-0.

# INDICATOR #37 Bullying Rate

## DEFINITIONS

***INDICATOR #37A*** — Percentage of BC students in grades 7–12 who report having been bullied at school or on the way to or from school in the past year.

***INDICATOR #37B*** — Percentage of BC students in grades 7–12 who report having been bullied over the Internet or other technology in the past year.

## KEY MESSAGES

- **Bullying** is a pattern of unwelcome or aggressive behaviour, often with the goal of making others uncomfortable or scared, or hurting someone. It is almost always used as a way to have control or power over a target, and it is often based on another person's appearance, culture, race, religion, ethnicity, sexual orientation, or gender identity.[1]

- There are four common types of bullying: physical (hitting, tripping, pinching, or damaging property); verbal (name-calling, insults, teasing, intimidation, homophobic or racist remarks, or verbal abuse); social-emotional (spreading rumours, negative facial gestures, playing mean jokes to embarrass or humiliate, or social exclusion); and cyber (taunting, threatening, or humiliating over the Internet or through social media).[1]

- There is clear evidence of a negative association between bullying and child health and well-being, such as psychological well-being, academic achievement, and later substance use.[2,3] In fact, there is strong, consistent, international evidence that all forms of bullying have harmful mental health consequences for children and youth.[4,5]

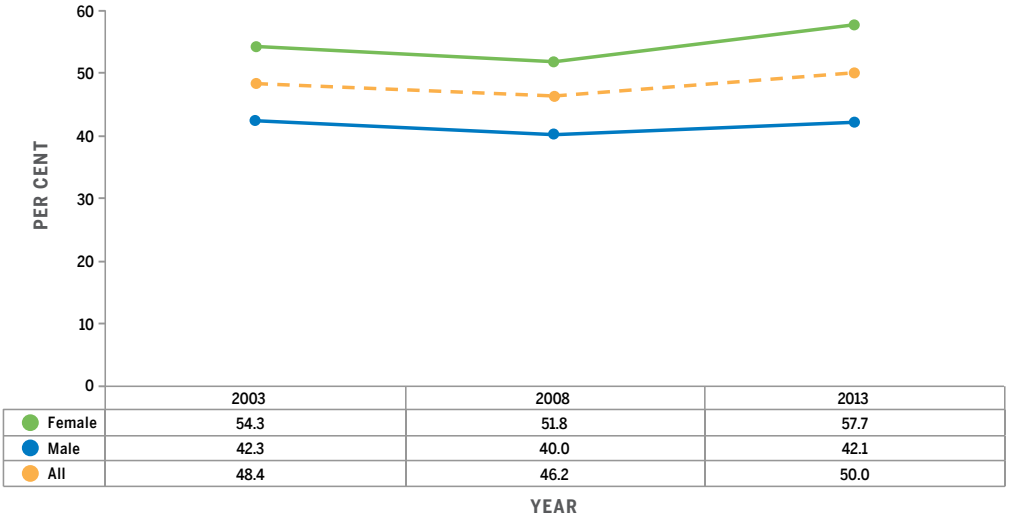
- Being bullied has also been linked to health risk behaviours such as **binge drinking** and using marijuana. The fear of being bullied restricted some students' activities, as they said they had not participated in extracurricular activities for fear of being bullied.[6]

- Evidence has shown that in BC, youth who were victims of bullying by their peers—teasing, exclusion, or assault—in the past year were more likely than those who were not bullied to report skipping class in the past month. The more types of bullying students experienced, the more likely they were to miss school.[6]

- Figure 37A.1 shows that about 50 per cent of youth in grades 7 to 12 surveyed in BC reported being bullied, with a greater proportion of females reporting being bullied than males. While the percentage for males was relatively stable from 2003 to 2013, the percentage among females increased somewhat during that time, from 54.3 per cent in 2003 to 57.7 per cent in 2013.

- It is challenging to determine the prevalence of cyberbullying because of inconsistent definitions and varied data collections methods; however, Figure 37B.1 suggests that it decreased slightly from 2008 to 2013. This figure also shows that females were twice as likely as males to report being cyberbullied.

## FIG 37A.1 Percentage of Students in Grades 7-12 Who Reported They Were Bullied at School in the Past Year, by Sex, BC, 2003, 2008, and 2013

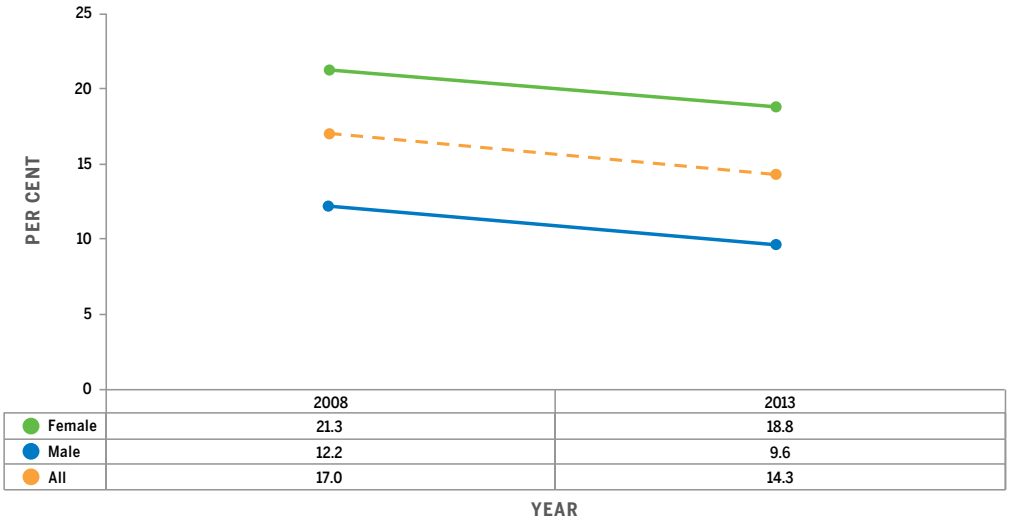



| | 2003 | 2008 | 2013 |
|---|---|---|---|
| Female | 54.3 | 51.8 | 57.7 |
| Male | 42.3 | 40.0 | 42.1 |
| All | 48.4 | 46.2 | 50.0 |

**Notes:** "Bullied at school in the past year" means youth reported having been teased, excluded, and/or physically assaulted by another youth at school or on the way to or from school in the 12 months prior to the survey. The differences between years were statistically significant for all groups, with the exception of males, where the difference between 2003 and 2013 was not statistically significant. The difference between the sexes was statistically significant in all years. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2003, 2008, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 37B.1 Percentage of Students in Grades 7-12 Who Reported They Were Cyberbullied in the Past Year, by Sex, BC, 2008 and 2013

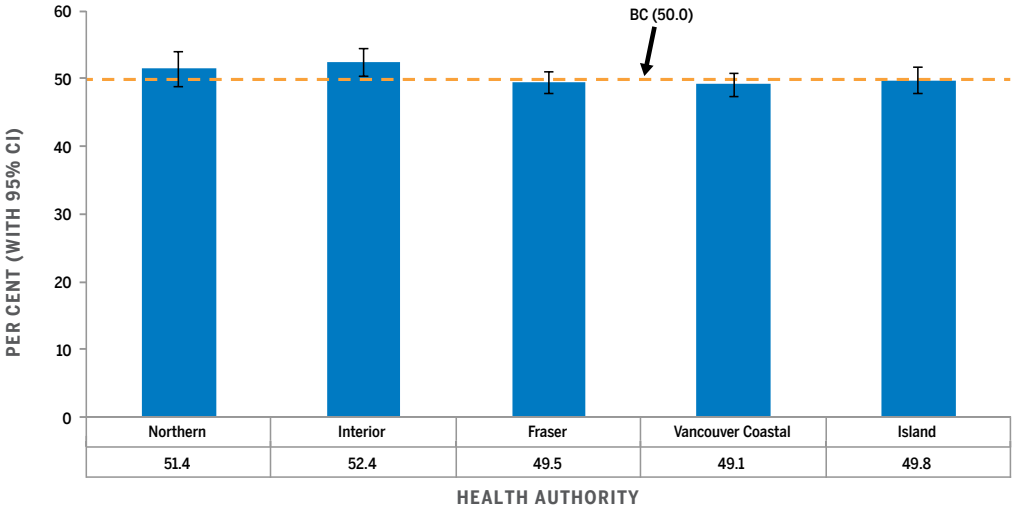



| | 2008 | 2013 |
|---|---|---|
| Female | 21.3 | 18.8 |
| Male | 12.2 | 9.6 |
| All | 17.0 | 14.3 |

**Notes:** "Cyberbullied in the past year" means youth reported being bullied or picked on through the Internet or other technology in the 12 months prior to the survey. The difference between years was statistically significant for all groups. The differences between the sexes were statistically significant in both years. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2008, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

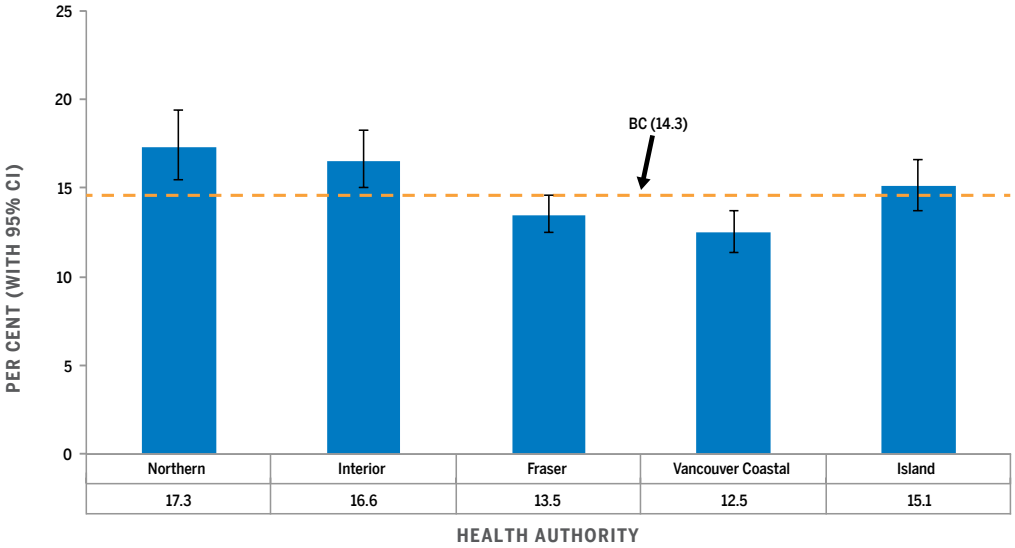
## FIG 37A.2 Percentage of Students in Grades 7-12 Who Reported They Were Bullied at School in the Past Year, by Health Authority, BC, 2013




**Notes:** "Bullied at school in the past year" means youth reported having been teased, excluded, and/or physically assaulted by another youth at school or on the way to or from school in the 12 months prior to the survey. Health authority is based on the location of the school. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

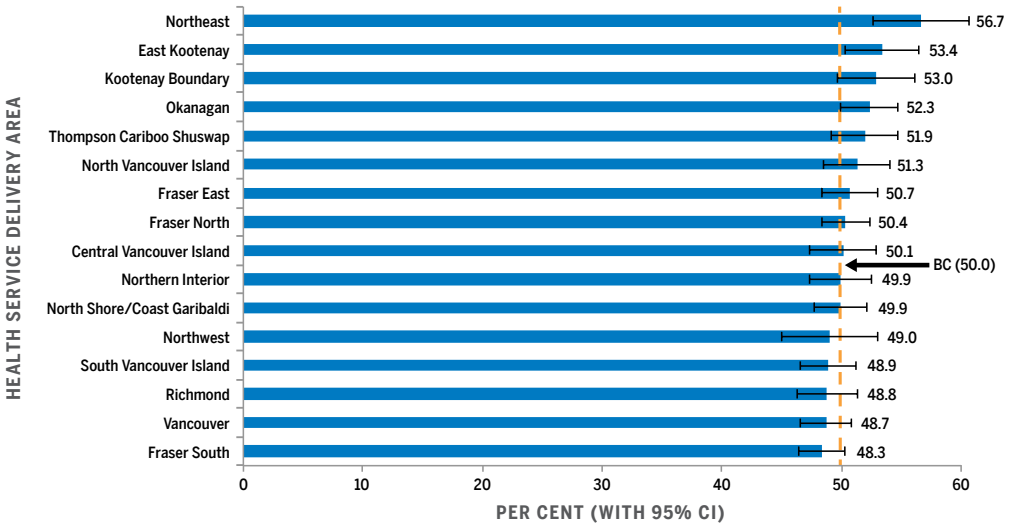
## FIG 37B.2 Percentage of Students in Grades 7-12 Who Reported They Were Cyberbullied in the Past Year, by Health Authority, BC, 2013




**Notes:** "Cyberbullied in the past year" means youth reported being bullied or picked on through the Internet or other technology in the 12 months prior to the survey. Health authority is based on the location of the school. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 37A.3** Percentage of Students in Grades 7-12 Who Reported They Were Bullied at School in the Past Year, by Health Service Delivery Area, BC, 2013




**Notes:** "Bullied at school in the past year" means youth reported having been teased, excluded, and/or physically assaulted by another youth at school or on the way to or from school in the 12 months prior to the survey. Health service delivery area is based on the location of the school. See Appendix B for more information about this data source.

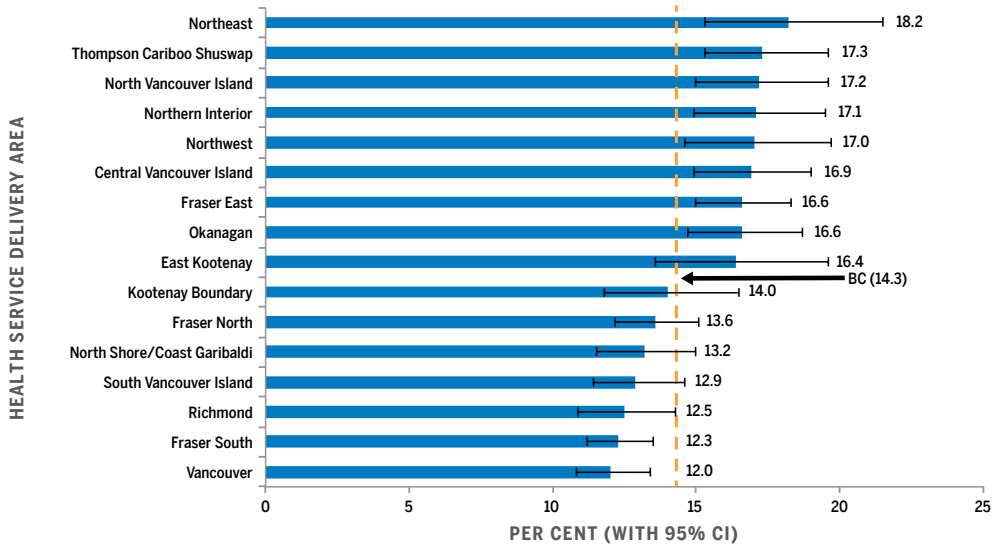
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

*"Schools are becoming more diverse and things that were formerly kept hidden like sexual orientation are more in the open now, so people who are prone to bullying have more targets to aim at than they used to."*

*"Bullying is easier to do and people have become more subtle about it. Kids have become more opinionated about diversity and expression."*

*"Cyber bullying has become really uncool. It is a sign of weakness to do it."*

**FIG 37B.3** Percentage of Students in Grades 7-12 Who Reported They Were Cyberbullied in the Past Year, by Health Service Delivery Area, BC, 2013




**Notes:** "Cyberbullied in the past year" means youth reported being bullied or picked on through the Internet or other technology in the 12 months prior to the survey. Health service delivery area is based on the location of the school. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES

[1] BC Ministry of Education. ERASE bullying [Internet]. Victoria, BC: BC Ministry of Education; 2012 [cited 2016 Apr 28]. Available from: http://www.erasebullying.ca/index.php.

[2] Pivak J. Child and youth health and well-being indicators project: appendix H – social relationships evidence review [prepared for the Office of the Provincial Health Officer and the Canadian Institute for Health Information]. Ottawa, ON: Canadian Institute for Health Information; 2011.

[3] Houbre B, Tarquinio C, Thuillier I, Hergott E. Bullying among students and its consequences on health. European Journal of Psychology of Education. 2006 Jun 1;21(2):183-208.

[4] Kaltiala-Heino R, Rimpela M, Marttunen M, Rimpela A, Rantanen P. Bullying at school: an indicator of adolescents at risk for mental disorders and suicide ideation in Finnish adolescents. BMJ. 1999 Aug 7;319(7206):348-51.

[5] Rigby K, Slee P. Suicide ideation among adolescent school children, involvement in bully-victim problems and perceived social support. Suicide Life Threat Behav. 1999;29:119-30.

[6] Smith A, Stewart D, Poon C, Peled M, Saewyc E. From Hastings Street to Haida Gwaii: provincial results of the 2013 BC Adolescent Health Survey. Vancouver, BC: McCreary Centre Society; 2014.

# INDICATOR #38 Youth Conviction Rate

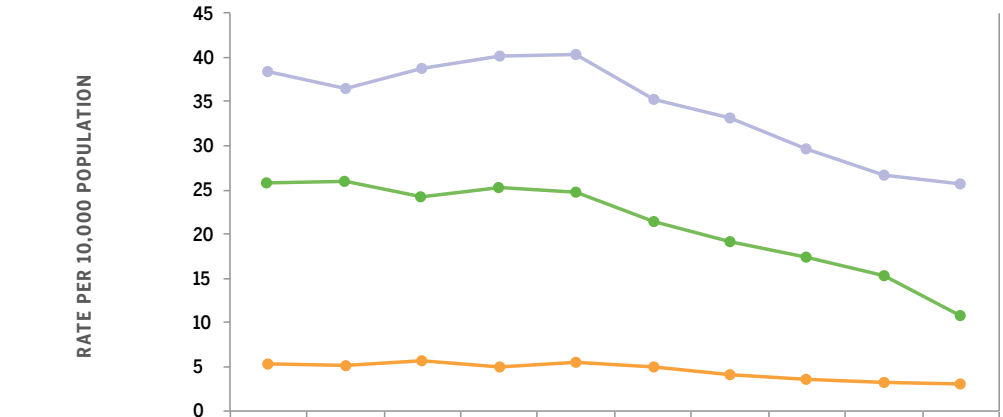
## DEFINITIONS

***INDICATOR #38A*** — Youth justice community rate per 10,000 youth population.
***INDICATOR #38B*** — Youth justice custody rate per 10,000 youth population.

## KEY MESSAGES

- Involvement in the youth justice system is often the consequence of poor childhood outcomes such as social exclusion, low educational achievement, and poverty.[1]
- In 2014, the rate of youth in custody in BC was 2 per 10,000, which is one-third the Canadian rate of 6 per 10,000.[2]
- The youth justice system in BC includes three categories:
  - **Formal Diversion:** Youth who are diverted from the court system to be managed by police in a formal community service such as the John Howard Society.
  - **First Community Sentence**: Youth under a first court order to serve a sentence in the community (rather than incarceration).
  - **Incarceration:** Youth ordered to serve a sentence in a Youth Custody Centre.[2]
- As shown in Figure 38AB.1, the rate per 10,000 youth in the BC justice system declined substantially from 2009 to 2014.

**FIG 38AB.1** Youth in the Justice System Age 12-17, Rate per 10,000 Population, BC, 2005 to 2014




| | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|---|---|---|---|---|
| Formal Diversion | 25.8 | 25.9 | 24.2 | 25.3 | 24.8 | 21.4 | 19.1 | 17.4 | 15.3 | 10.8 |
| First Community Sentence | 38.4 | 36.5 | 38.7 | 40.2 | 40.3 | 35.3 | 33.1 | 29.6 | 26.7 | 25.7 |
| First Incarceration | 5.3 | 5.1 | 5.7 | 5.0 | 5.5 | 5.0 | 4.1 | 3.6 | 3.3 | 3.0 |

YEAR

**Notes:** "Diversion" includes youth who are diverted from the court system to be managed by police in a formal community service such as the John Howard Society. "First Community Sentence" includes youth under a first court order to serve a sentence in the community rather than incarceration. "Incarceration" includes youth in a Youth Custody Centre. See Appendix B for more information about this data source.

**Source:** BC Ministry of Children and Family Development, Corporate Data Warehouse, 2015. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES

[1] McMurtry R, Curling A. Review of the roots of youth violence: literature reviews. Vol. 5. Toronto, ON: Ontario Ministry of Children and Youth Services; 2008.

[2] BC Ministry of Children and Family Development. Performance management report. Vol. 7. Victoria, BC: BC Ministry of Children and Family Development; 2015 Sep [cited 2016 Jun 30]. Available from: http://www2.gov.bc.ca/assets/gov/family-and-social-supports/services-supports-for-parents-with-young-children/reporting-monitoring/03-operational-performance-strategic-management/performance_management_report_sept_2015.pdf.

# INDICATOR #39 After-school Activities

## DEFINITIONS

***INDICATOR #39A*** — Percentage of BC students in grades 7–12 who report they took part in sports, dance, yoga, or exercise classes with a coach or instructor at least once a week during the past 12 months.

***INDICATOR #39B*** — Percentage of BC students in grades 7–12 who report they took part in sports *without* a coach or instructor at least once a week during the past 12 months.

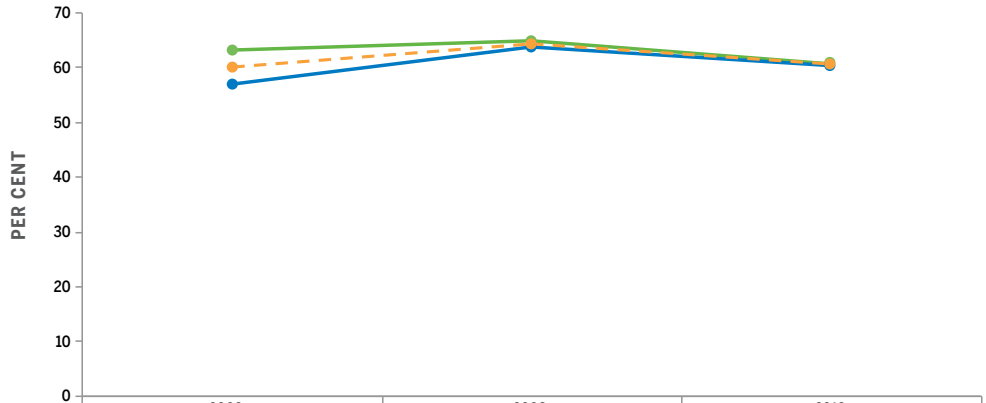
***INDICATOR #39C*** — Percentage of BC students in grades 7–12 who report they participated in drama, music, or club/groups at least once a week during the past 12 months.

## KEY MESSAGES

- **"Constructive use of time"** describes participation in out-of-school activities such as team sports, after-school programs, community service and volunteering, mentoring programs, arts programs, and school-based clubs.[1]
- There is strong evidence that participation in out-of-school activities is beneficial for increasing positive social relationships, **school connectedness**, a sense of self-worth, and academic achievement. Research indicates that participating in out-of-school activities has benefits for youth mental health, physical health, and positive **self-esteem**.[2,3]
- There is also evidence that supports a link between constructive use of time and less delinquent and problem behaviours, especially with at-risk children.[4]
- Research also shows that BC youth who reported being engaged in activities that they considered meaningful were less likely to consider or attempt suicide in the past year, compared to those who were involved in activities that they did not consider meaningful.[5]
- Figures 39A.1, 39B.1, and 39C.1 show that females were more likely than males to report taking an exercise class in the past year, or taking part in art, drama, singing, music, or clubs/groups; males were more likely to report participating in sports without an instructor. Overall, participating in sports without an instructor was the most common activity type, though it decreased substantially from 2003 to 2013. The six figures from 39A.2 to 39C.3 show geographic variation among health authorities and health service delivery areas (HSDAs). They highlight that the highest and lowest percentages among health authorities and HSDAs vary for each of the three categories of activities analyzed.

*"I used to wonder why I had to help with the house. Then I learned you are a family…you work together as a team. That's what you do. You help each other out."*

## FIG 39A.1 Percentage of Students in Grades 7-12 Who Reported Taking Exercise Classes in the Past Year, by Sex, BC, 2003, 2008, and 2013

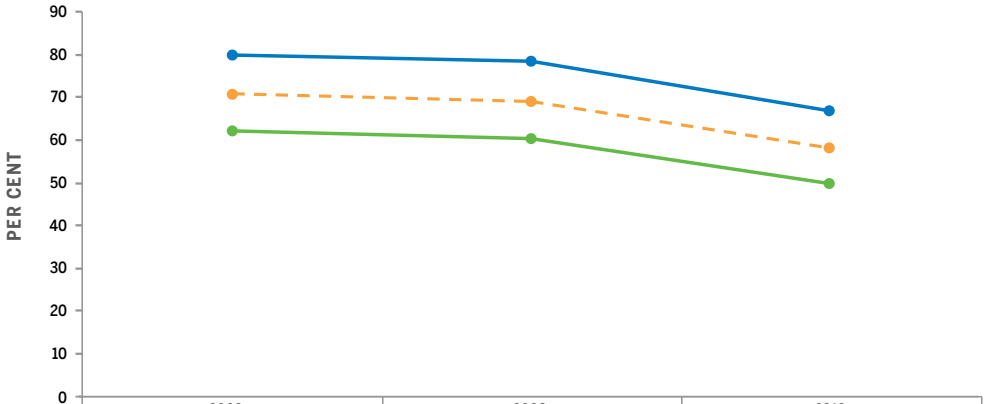



| | 2003 | 2008 | 2013 |
|---|---|---|---|
| Female | 63.3 | 65.0 | 60.7 |
| Male | 56.9 | 63.9 | 60.5 |
| All | 60.1 | 64.5 | 60.6 |

YEAR

**Notes:** "Taking exercise classes" means taking part in sports, dance, yoga, or exercise classes with a coach or an instructor at least once a week. "In the past year" means during the 12 months prior to the survey. The differences between years were statistically significant for females and males. The differences between 2003 and 2008 and between 2008 and 2013 were statistically significant for "All". The difference between the sexes was statistically significant in 2003 only. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2003, 2008, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 39B.1 Percentage of Students in Grades 7-12 Who Reported Participating in Sports without an Instructor in the Past Year, by Sex, BC, 2003, 2008, and 2013

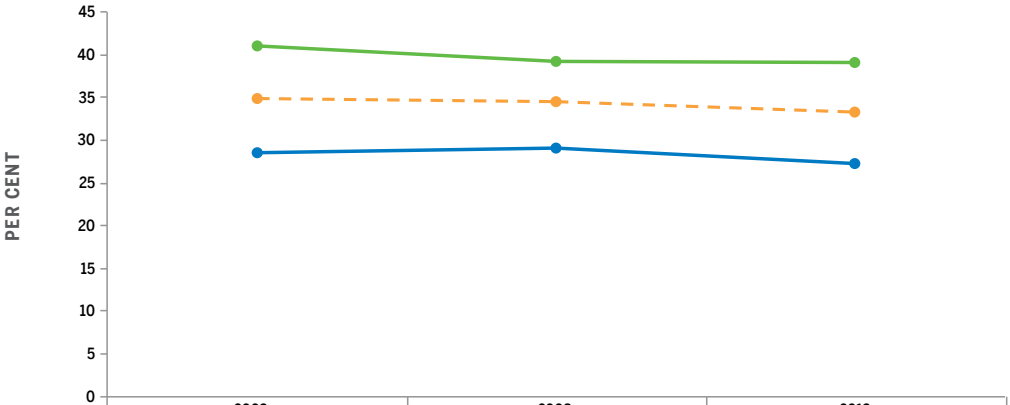



| | 2003 | 2008 | 2013 |
|---|---|---|---|
| Female | 62.2 | 60.3 | 49.8 |
| Male | 79.8 | 78.4 | 66.8 |
| All | 70.9 | 68.9 | 58.0 |

YEAR

**Notes:** "Participating in sports" includes sports or physical activities such as biking, skateboarding, and hiking at least once a week. "In the past year" means during the 12 months prior to the survey. The differences between years were statistically significant for all groups. The difference between the sexes was statistically significant in all years. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2003, 2008, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 39C.1 Percentage of Students in Grades 7-12 Who Reported Taking Part in Art, Drama, Singing, Music, or Clubs/Groups in the Past Year, by Sex, BC, 2003, 2008, and 2013



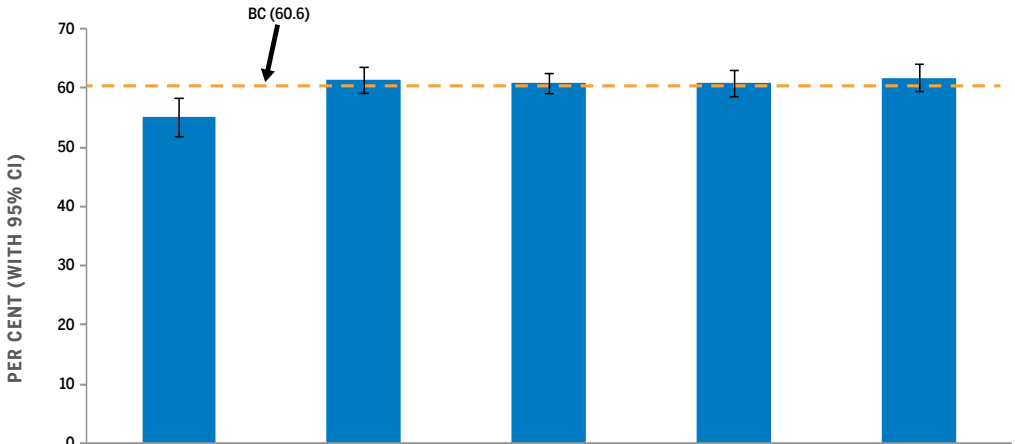

| | 2003 | 2008 | 2013 |
|---|---|---|---|
| Female | 41.0 | 39.3 | 39.1 |
| Male | 28.6 | 29.1 | 27.2 |
| All | 34.9 | 34.5 | 33.3 |

YEAR

**Notes:** "Participating" means taking part at least once a week. "In the past year" means during the 12 months prior to the survey. The difference between 2003 and 2013 was statistically significant for "All". The differences between 2003 and 2013 and between 2008 and 2013 were statistically significant for males. The differences between 2003 and 2008 and between 2008 and 2013 were statistically significant for females. The difference between the sexes was statistically significant in all years. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2003, 2008, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 39A.2 Percentage of Students in Grades 7-12 Who Reported Taking Exercise Classes in the Past Year, by Health Authority, BC, 2013



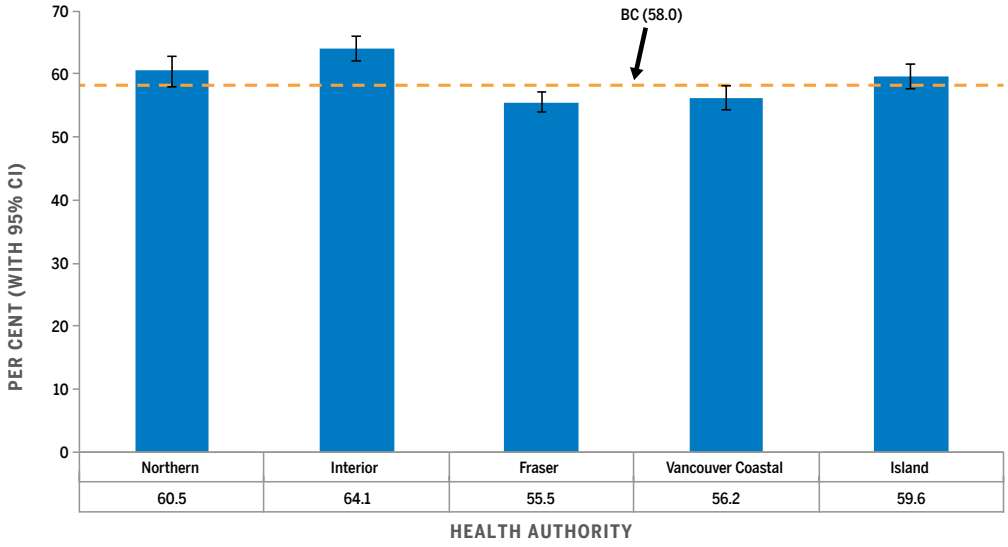

| Northern | Interior | Fraser | Vancouver Coastal | Island |
|---|---|---|---|---|
| 55.1 | 61.4 | 60.8 | 60.8 | 61.8 |

HEALTH AUTHORITY

**Notes:** "Taking exercise classes" means taking part in sports, dance, yoga, or exercise classes with a coach or an instructor at least once a week. "In the past year" means during the 12 months prior to the survey. Health authority is based on the location of the school. See Appendix B for more information about this data source.

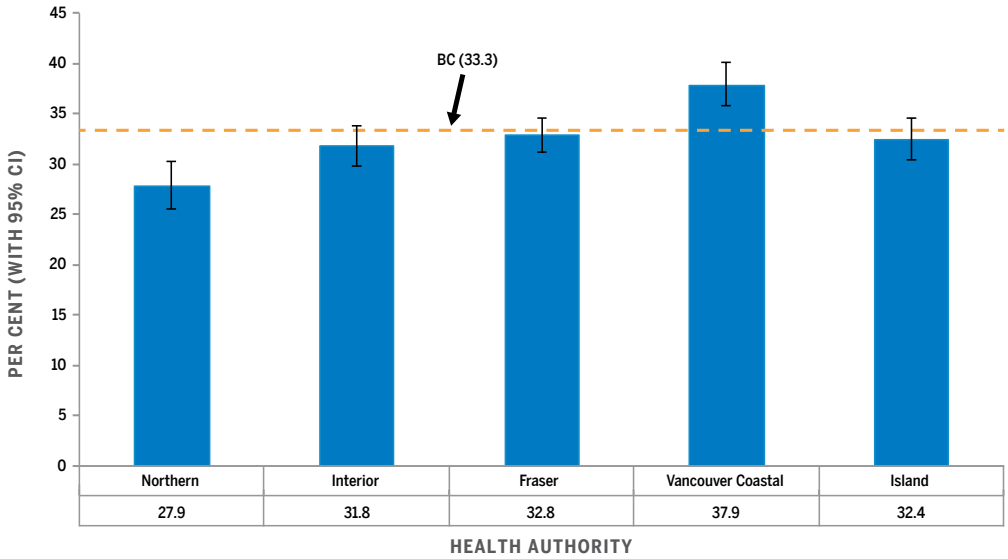
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 39B.2 Percentage of Students in Grades 7-12 Who Reported Participating in Sports without an Instructor in the Past Year, by Health Authority, BC, 2013



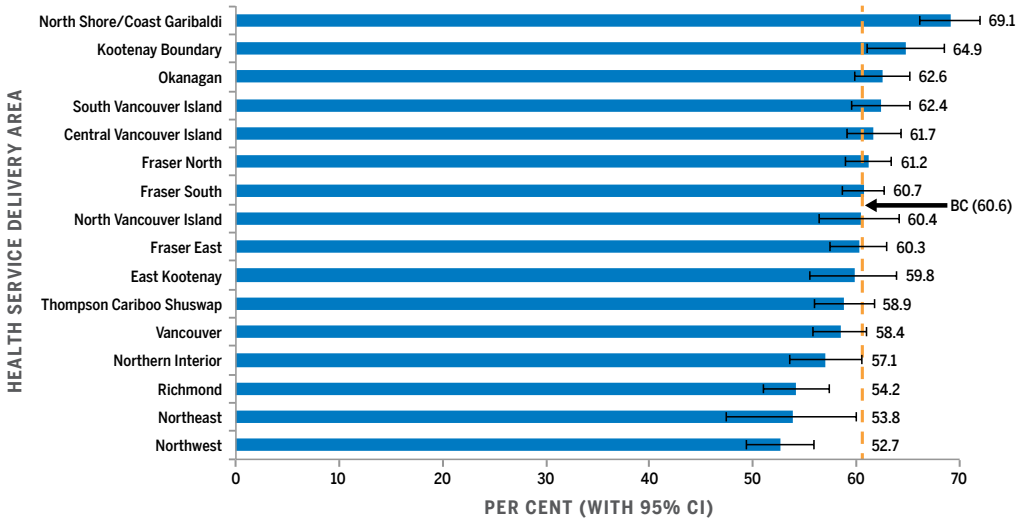

**Notes:** "Participating in sports" includes sports or physical activities such as biking, skateboarding, and hiking at least once a week. "In the past year" means during the 12 months prior to the survey. Health authority is based on the location of the school. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 39C.2 Percentage of Students in Grades 7-12 Who Reported Taking Part in Art, Drama, Singing, Music, or Clubs/Groups in the Past Year, by Health Authority, BC, 2013




**Notes:** "Participating" means taking part at least once a week. "In the past year" means during the 12 months prior to the survey. Health authority is based on the location of the school. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

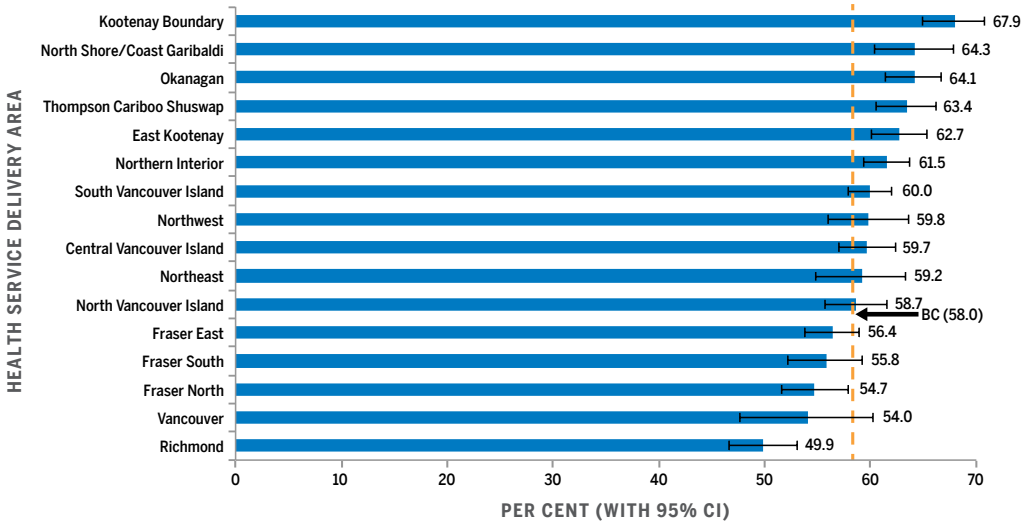
## FIG 39A.3 Percentage of Students in Grades 7-12 Who Reported Taking Exercise Classes in the Past Year, by Health Service Delivery Area, BC, 2013




**Notes:** "Taking exercise classes" means taking part in sports, dance, yoga, or exercise classes with a coach or an instructor at least once a week. "In the past year" means during the 12 months prior to the survey. Health service delivery area is based on the location of the school. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

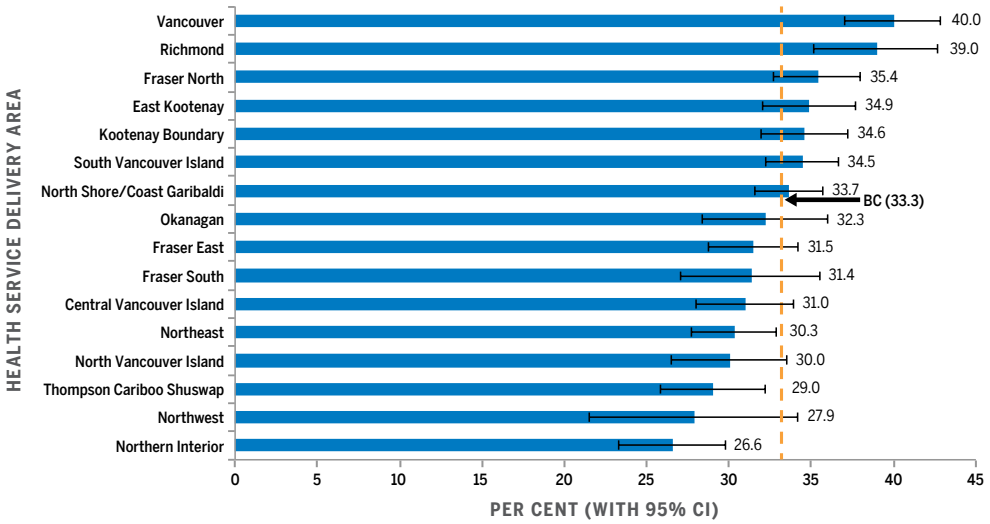
## FIG 39B.3 Percentage of Students in Grades 7-12 Who Reported Participating in Sports without an Instructor in the Past Year, by Health Service Delivery Area, BC, 2013




**Notes:** "Participating in sports" includes sports or physical activities such as biking, skateboarding, and hiking at least once a week. "In the past year" means during the 12 months prior to the survey. Health service delivery area is based on the location of the school. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 39C.3** Percentage of Students in Grades 7-12 Who Reported Taking Part in Art, Drama, Singing, Music, or Clubs/Groups in the Past Year, by Health Service Delivery Area, BC, 2013




**Notes:** "Participating" means taking part at least once a week. "In the past year" means during the 12 months prior to the survey. Health service delivery area is based on the location of the school. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

*"This measurement does not take into account other outside of school activities such as volunteering, school work, babysitting, working in your house and paid employment. It doesn't mention de-stressing activities such as reading, knitting, meditation, music, swimming and running."*

## REFERENCES

[1] Pivak J. Child and youth health and well-being indicators project: appendix H – social relationships evidence review [prepared for the Office of the Provincial Health Officer and the Canadian Institute for Health Information]. Ottawa, ON: Canadian Institute for Health Information; 2011.

[2] Durlak J, Weissberg R, Pachan M. A meta-analysis of after-school programs that seek to promote personal and social skills in children and adolescents. Am J Community Psychol. 2010 Jun;45(3-4):294-309.

[3] Fredicks J, Eccles J. Developmental benefits of extracurricular involvement: do peer characteristics mediate the link between activities and youth outcomes? J Youth Adolesc. 2005;34(6):507-20.

[4] Mahoney JL, Lord, H. Afterschool program participation and the development of child obesity and peer acceptance. Appl Dev Sci. 2005;9(4):202-15.

[5] Smith A, Stewart D, Peled M, Poon C, Saewyc E, McCreary Centre Society. A picture of health: highlights from the 2008 BC Adolescent Health Survey. Vancouver, BC: McCreary Centre Society; 2009.

# ECONOMIC & MATERIAL WELL-BEING

## CHAPTER 5

Economic and material well-being includes basic markers of economic subsistence, such as access to nutritious food, adequate housing, and warm clothing. However, it also goes beyond these basic measures to include access to medicine and health care, availability of computer technology to enhance learning, and availability of team sports and extracurricular and recreational activities.

# INDICATOR #40 Children & Youth Living in Low-income Households

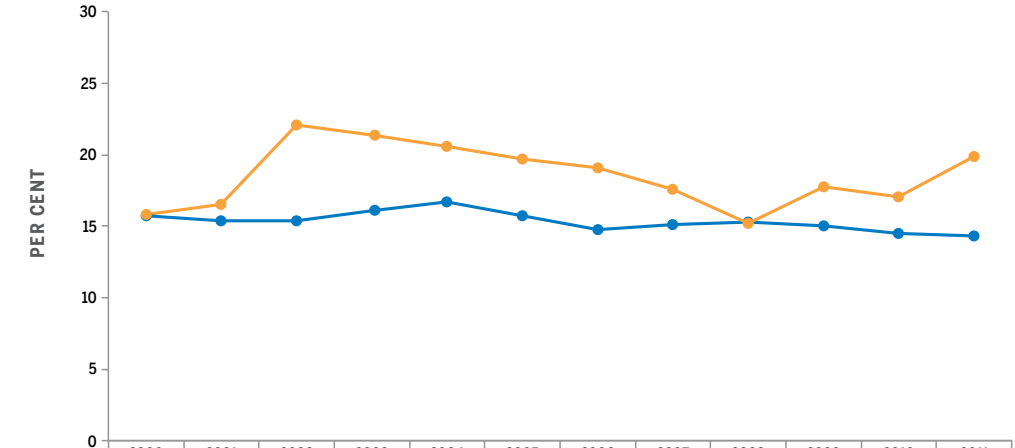
## DEFINITION

***INDICATOR #40 —*** Percentage of BC children and youth age 0–18 living in households that report an annual after-tax household income that is below the low-income cut-off, as defined by Statistics Canada.

## KEY MESSAGES

- Family or household income is widely considered a social determinant of health. There is evidence that poverty is correlated with a wide variety of negative physical, emotional, and social outcomes in children and youth.[1]
- The challenge of using household income as an indicator of health and well-being is that it does not always correspond accurately with disadvantage, since the cost of living can vary greatly between countries, provinces, and even cities. Depending on location, family structure, and other household arrangements, it is possible for households with relatively low incomes to live quite comfortably, and conversely, some households with higher incomes may struggle in a city with a higher cost of living. However, household income can generally be considered a general proxy measure for socio-economic advantage or disadvantage with related potential health effects.[2]
- As shown in Figure 40.1, after six years of decreasing rates, the prevalence of persons under age 18 living in low-income households in BC began to increase starting in 2008, following the economic downturn.
- The increasing rate of children and youth living in low-income households in BC contrasts with the decrease in the national rate over the post-2008 time period (see Figure 40.1). In fact, since 2000, in every year except 2008, BC has had a higher percentage of persons under age 18 living in low-income households than the overall Canadian percentage.
- Given the importance of low household income as a risk factor for a variety of physical, emotional, and social problems, the increasing rate in BC is a source of concern with respect to its impact on the health and well-being of children and youth in BC.
- Figure 40.2 shows that in 2011, BC had the second highest percentage among Canadian provinces of persons under age 18 living in low-income households. This high percentage was driven by high rates in the health service delivery areas of Richmond, Kootenay Boundary, Vancouver, North Vancouver Island, Central Vancouver Island, and Northwest (see Figure 40.4); more than 20 per cent of persons under age 18 in these areas were living in low-income households.

## FIG 40.1 Percentage of Children and Youth Under Age 18 in Low-income Households, BC and Canada, 2000 to 2011



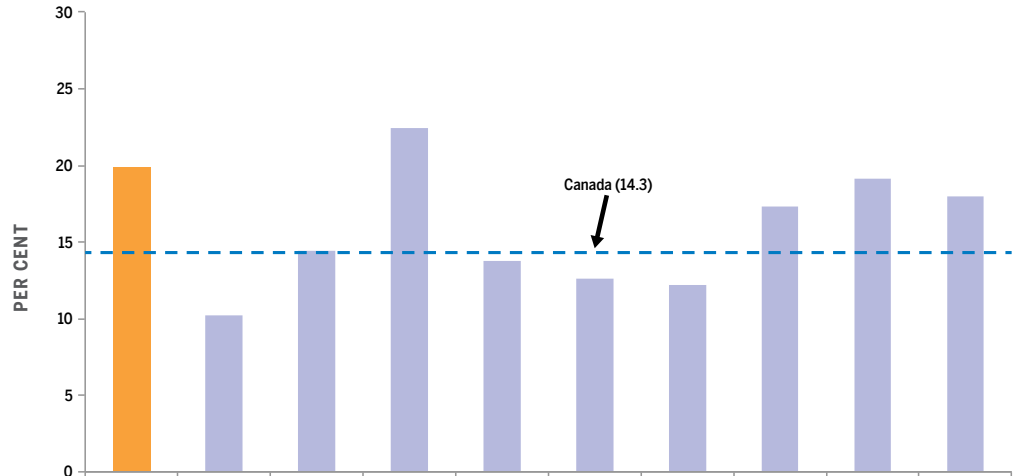

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BC | 15.8 | 16.5 | 22.1 | 21.4 | 20.6 | 19.7 | 19.1 | 17.6 | 15.2 | 17.8 | 17.1 | 19.9 |
| Canada | 15.7 | 15.4 | 15.4 | 16.1 | 16.7 | 15.7 | 14.8 | 15.1 | 15.3 | 15.0 | 14.5 | 14.3 |

YEAR

**Notes:** "Low-income households" means households that report an annual after-tax income below the low-income cut-off as defined and calculated by Statistics Canada. Estimates are derived from Statistics Canada's Survey of Labour and Income Dynamics. See Appendix B for more information about this data source.

**Source:** Statistics Canada, Table 202-0802, Persons in Low Income Families, CANSIM database. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 40.2 Percentage of Children and Youth Under Age 18 in Low-income Households, by Province, Canada, 2011



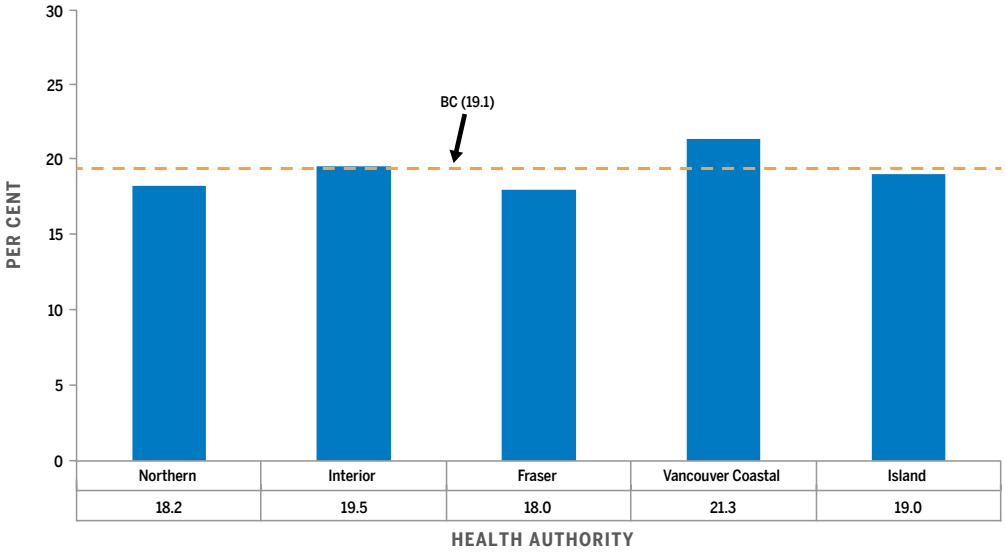

| BC | AB | SK | MB | ON | QC | NB | NS | PEI | NL |
|---|---|---|---|---|---|---|---|---|---|
| 19.9 | 10.2 | 14.4 | 22.4 | 13.8 | 12.6 | 12.2 | 17.3 | 19.1 | 18.0 |

PROVINCE

**Notes:** "Low-income households" means households that report an annual after-tax income below the low-income cut-off as defined and calculated by Statisitics Canada. Estimates are derived from Statistics Canada's Survey of Labour and Income Dynamics. See Appendix B for more information about this data source.

**Source:** Statistics Canada, Table 202-0802, Persons in Low Income Families, CANSIM database. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

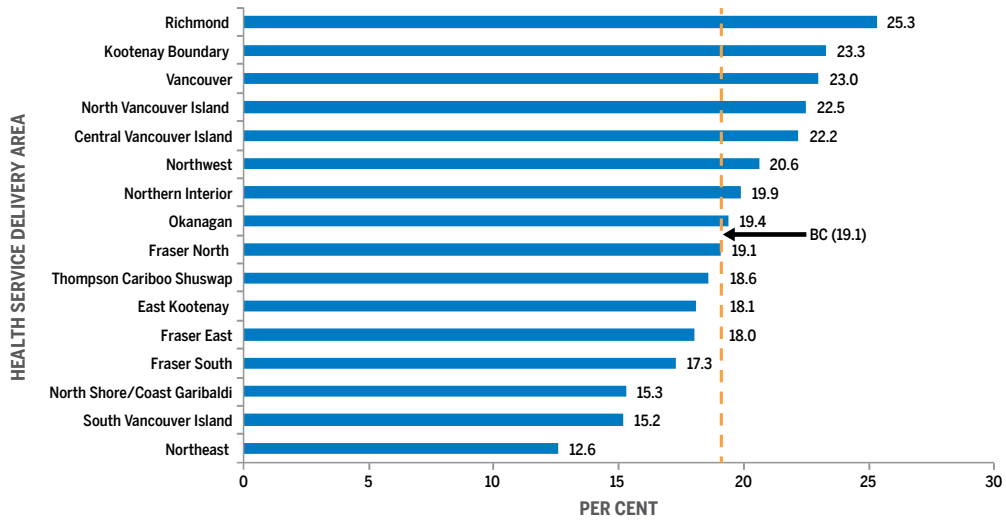
## FIG 40.3 Percentage of Children and Youth Under Age 18 in Low-income Households, by Health Authority, BC, 2011




**Notes:** "Low-income households" means households that report an annual after-tax income below the low-income cut-off as defined and calculated by Statisitics Canada. Health authority is based on the location of the household. Data are from Statistics Canada's National Household Survey, and may differ from provincial-level data provided elsewhere that are based on Statistics Canada's Survey of Labour and Income Dynamics. See Appendix B for more information about this data source.

**Source:** Statistics Canada, National Household Survey, 2011; extracted from data tables provided by BC Stats. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 40.4 Percentage of Children and Youth Under Age 18 in Low-income Households, by Health Service Delivery Area, BC, 2011




**Notes:** "Low-income households" means households that report an annual after-tax income below the low-income cut-off as defined and calculated by Statistics Canada. Health service delivery area is based on the location of the household. Data are from Statistics Canada's National Household Survey, and may differ from provincial-level data provided elsewhere that are based on Statistics Canada's Survey of Labour and Income Dynamics. See Appendix B for more information about this data source.

**Source:** Statistics Canada, National Household Survey, 2011; extracted from data tables provided by BC Stats. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES

[1] Children's Hospital of Eastern Ontario. Reducing poor health outcomes for children and youth: recommendations for the Ontario Poverty Reduction Strategy. Ottawa, ON: Children's Hospital of Eastern Ontario; 2008 Apr [cited 2016 Mar 31]. Available from: http://www.cheo.on.ca/uploads/AboutUs/Files/poverty_submission_e.pdf.

[2] H. Krueger & Associates. Child and youth health and well-being indicators project: appendix I—economic and material well-being evidence review [prepared for the Office of the Provincial Health Officer and the Canadian Institute for Health Information]. Ottawa, ON: Canadian Institute for Health Information; 2011 [cited 2016 Apr 7]. Available from: http://www2.gov.bc.ca/assets/gov/health/about-bc-s-health-care-system/office-of-the-provincial-health-officer/reports-publications/special-reports/appendix_i_-_economic__material_well_being_evidence_review.pdf.

# INDICATOR #41 Parental Unemployment Rate

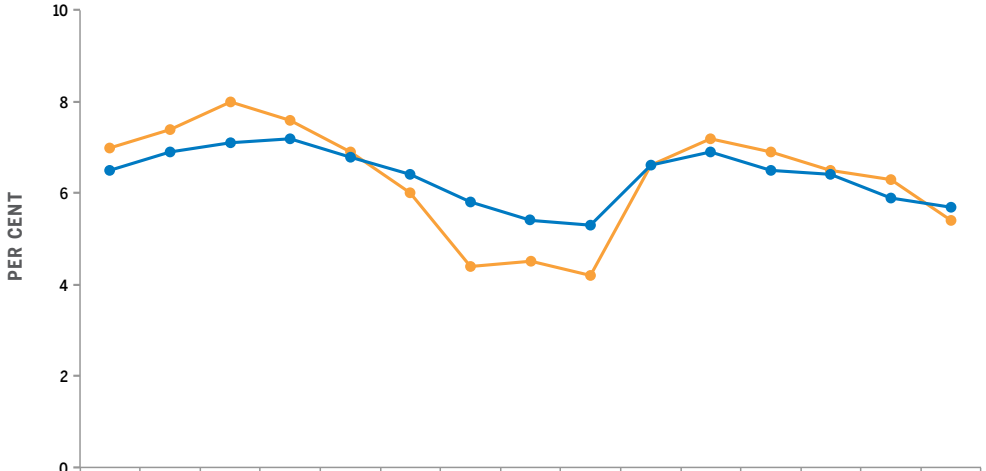
## DEFINITION

***INDICATOR #41 —*** Percentage of children for whom at least one parent reports having been unemployed in the previous year.

## KEY MESSAGES

- "Unemployment" means without work and actively seeking work. Unemployment tends to lead to lower household income and increased likelihood of receiving social assistance, especially when employment insurance benefits expire.[1]
- The Canadian, US, and European economies have had a slow rate of recovery from the 2008 recession.[2] Younger workers have been especially impacted by unemployment,[3] so this trend has the potential to create or exacerbate economic stresses for younger families.[4]
- Data currently available do not include the percentage of children with an unemployed parent, but do include the percentage of households with at least one child or youth under age 16 with at least one parent reporting unemployment in the previous year. As such, analyses presented here show the percentage of households with these parameters as a proxy measure for examining the percentage of children with an unemployed parent.
- In BC, the percentage of families with at least one unemployed parent and a child or youth less than 16 years old was decreasing before the economic downturn of 2008 (see Figure 41.1). This percentage increased sharply from 2008 to 2010—an increase that was more dramatic in BC than in the country as a whole—before decreasing steadily through to 2014. Despite the decrease, this percentage is still well above the rate of unemployment achieved between 2006 and 2008.
- Figure 41.1 provides the provincial and national percentages of families with at least one unemployed parent and a child or youth less than 16 years old. It shows that between 2005 and 2008, the BC rate was substantially lower than the national rate. This appears to be the result of the relatively steep rate of decrease in BC from 2002 to 2006. Since the recession in 2008, this gap has closed and the percentage for BC is very close to that of Canada overall.
- Figure 41.2 shows that in 2014, BC was virtually tied with Quebec, Manitoba, and Alberta for the second lowest percentage of parental unemployment among provinces.
- Comparable data regarding households with unemployed parents were not available by health authority or health service delivery area at the time of this report.

## FIG 41.1 Percentage of Families with a Child or Youth Age 0-16 that Report Unemployment, BC and Canada, 2000 to 2014



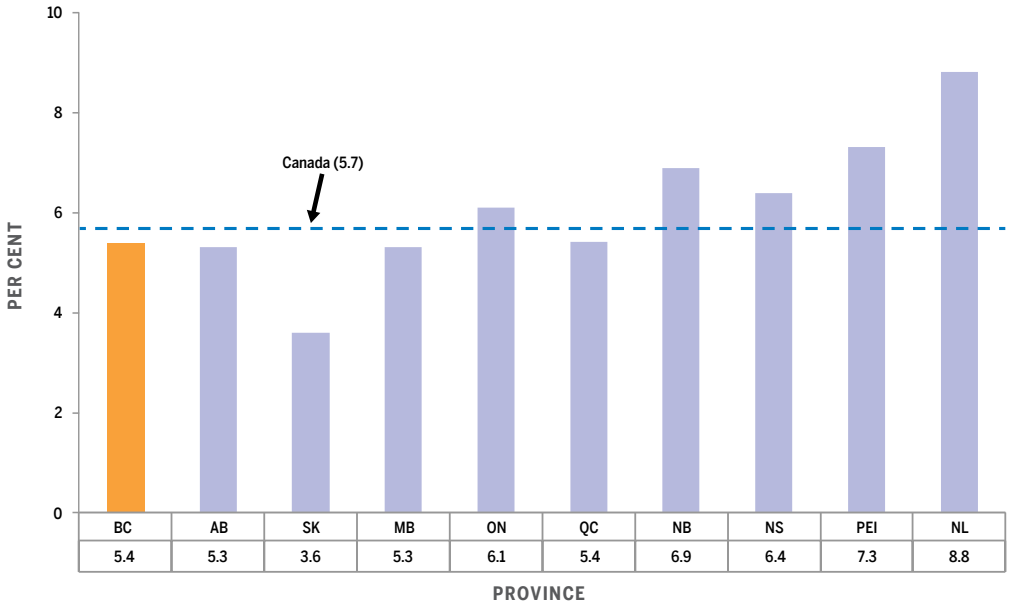

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BC | 7.0 | 7.4 | 8.0 | 7.6 | 6.9 | 6.0 | 4.4 | 4.5 | 4.2 | 6.6 | 7.2 | 6.9 | 6.5 | 6.3 | 5.4 |
| Canada | 6.5 | 6.9 | 7.1 | 7.2 | 6.8 | 6.4 | 5.8 | 5.4 | 5.3 | 6.6 | 6.9 | 6.5 | 6.4 | 5.9 | 5.7 |

YEAR

**Notes:** "Unemployed" means at least one parent reported at some point in the last year being available for work and either on temporary layoff or without work but looking for work. See Appendix B for more information about this definition and data source.

**Source:** Statistics Canada, Table 282-0211, Labour Force Survey Estimates, by Family Type and Family Age Composition, CANSIM database. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 41.2 Percentage of Families with a Child or Youth Age 0-16 that Report Unemployment, by Province, Canada, 2014




| BC | AB | SK | MB | ON | QC | NB | NS | PEI | NL |
|---|---|---|---|---|---|---|---|---|---|
| 5.4 | 5.3 | 3.6 | 5.3 | 6.1 | 5.4 | 6.9 | 6.4 | 7.3 | 8.8 |

PROVINCE

**Notes:** "Unemployed" means at least one parent reported at some point in the last year being available for work and either on temporary layoff or without work but looking for work. See Appendix B for more information about this definition and data source.

**Source:** Statistics Canada, Table 282-0211, Labour Force Survey Estimates, by Family Type and Family Age Composition, CANSIM database. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES

[1] H. Krueger & Associates. Child and youth health and well-being indicators project: appendix I – economic and material well-being evidence review [prepared for the Office of the Provincial Health Officer and the Canadian Institute for Health Information]. Ottawa, ON: Canadian Institute for Health Information; 2011 [cited 2016 Apr 7]. Available from: http://www2.gov.bc.ca/assets/gov/health/about-bc-s-health-care-system/office-of-the-provincial-health-officer/reports-publications/special-reports/appendix_i_-_economic__material_well_being_evidence_review.pdf.

[2] Ragan C. What now? Addressing the burden of Canada's slow growth recovery. Commentary 413. Toronto, ON: CD Howe Institute; 2014 Jul.

[3] TD Economics. Special report: assessing the long-term costs of youth unemployment. Toronto, ON: TD Economics; 2013 Jan 29.

[4] LaRochelle-Cote S, Gilmore J. Canada's economic downturn. Perspectives on Labour and Income. 2009 Dec;10(12):5-12.

# INDICATOR #42 Children Living in Families with Poor Housing Conditions

## DEFINITION

***INDICATOR #42 —*** Percentage of children living in families with unmet core housing need, as identified by the Canada Mortgage and Housing Corporation.

## KEY MESSAGES

- There is compelling evidence that housing conditions influence the health and well-being of children. In particular, inadequate or unsuitable housing, defined in terms of overcrowding and the presence of toxins/molds, appears to be strongly related to poor pediatric health outcomes—including negative physical and psychosocial effects. It has also been shown that poor housing conditions can increase the likelihood of injury among children.[1]

- According to the Canada Mortgage and Housing Corporation, **core housing need** is defined as housing that does not meet one of the established standards of adequacy, affordability, or suitability. This means the housing is unacceptable as determined by the following: requiring any major repairs (inadequate); costing more than 30 per cent of total before-tax household income (unaffordable); or not having enough bedrooms for the size and make-up of residents according to National Occupancy Standard requirements (unsuitable).[2]

- There are limitations in data available regarding core housing need and housing conditions in BC. Analyses presented here include all people in BC with core housing need (not only those with children), but only include urban areas (defined as communities with a population of 10,000 or more). Due to the cancellation of Statistics Canada's Survey on Labour and Income Dynamics, data are only available up to 2011.

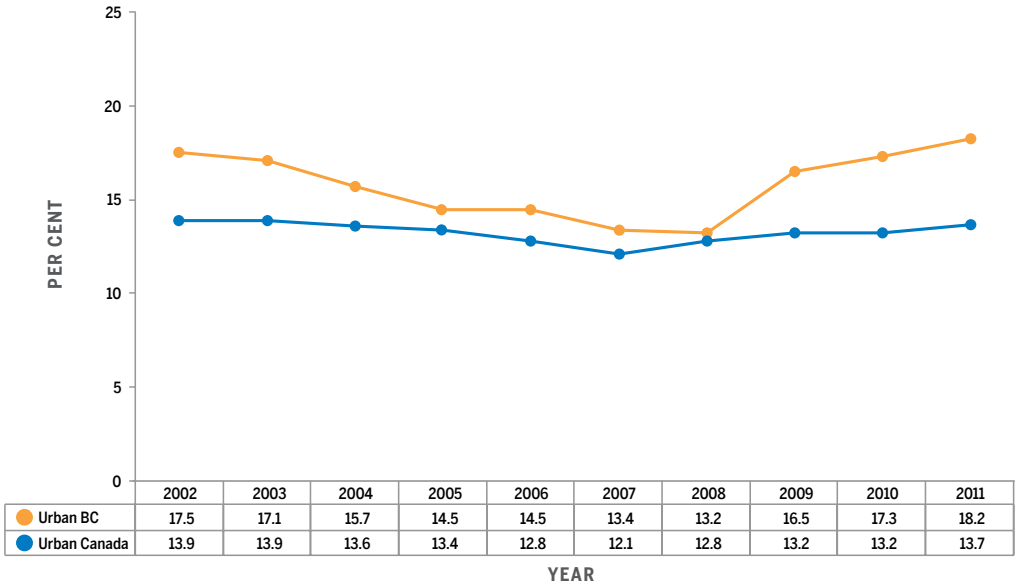
- As shown in Figure 42.1, the percentage of the urban population in BC with unmet core housing need increased dramatically between 2008 and 2011, and at a much faster rate than the national average.

- Figure 42.2 shows that in 2011, the percentage of people with unmet core housing needs in BC was the highest among provinces by a substantial margin.

- Figure 42.3 shows that within BC, in 2011, Vancouver had the highest rate of core unmet housing need among the three urban areas in the province.[3]

- The relatively high and escalating rate of core housing needs in BC is a source of concern, given the negative impacts of inadequate or unsuitable housing on child and youth health and well-being.

## FIG 42.1 Percentage of People with Unmet Core Housing Need Living in Urban Areas, BC and Canada, 2002 to 2011



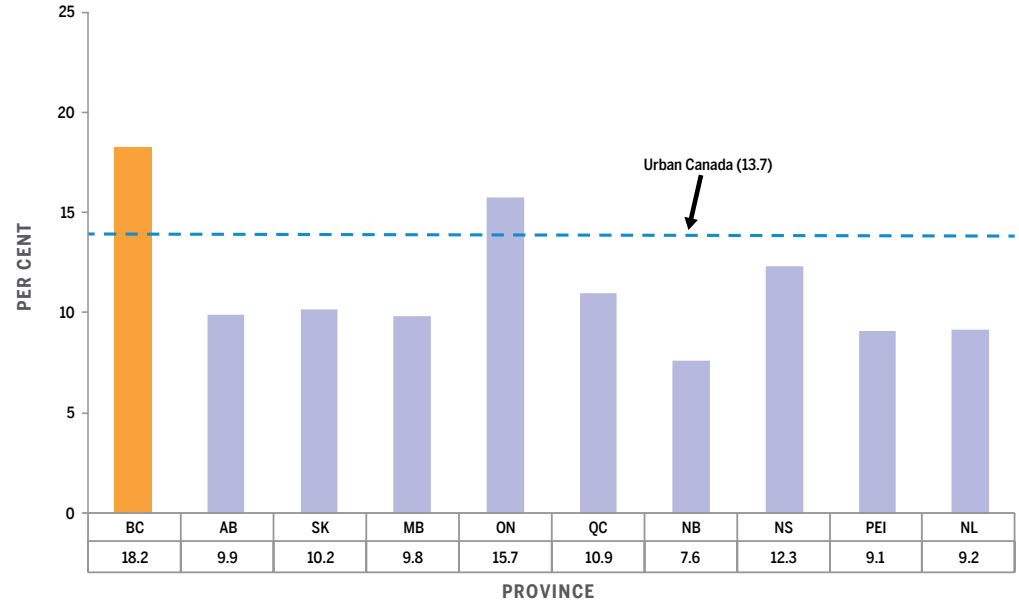

| | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|---|---|---|---|---|---|
| Urban BC | 17.5 | 17.1 | 15.7 | 14.5 | 14.5 | 13.4 | 13.2 | 16.5 | 17.3 | 18.2 |
| Urban Canada | 13.9 | 13.9 | 13.6 | 13.4 | 12.8 | 12.1 | 12.8 | 13.2 | 13.2 | 13.7 |

YEAR

**Notes:** "Core housing need" means not meeting one of the established standards of adequacy, affordability, or suitability, as defined by the Canada Mortgage and Housing Corporation. "Urban" means communities with a population of 10,000 or more.

**Source:** Canada Mortgage and Housing Corporation, Canadian Housing Observer 2013. Housing indicators and data based on the Survey of Labour and Income Dynamics.[3] Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 42.2 Percentage of People with Unmet Core Housing Need Living in Urban Areas, by Province, Canada, 2011



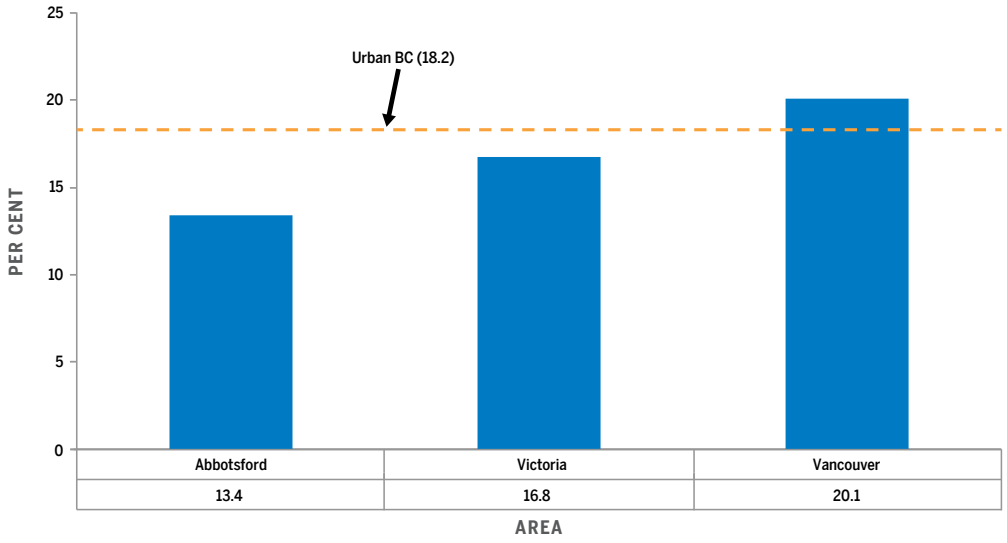

| BC | AB | SK | MB | ON | QC | NB | NS | PEI | NL |
|---|---|---|---|---|---|---|---|---|---|
| 18.2 | 9.9 | 10.2 | 9.8 | 15.7 | 10.9 | 7.6 | 12.3 | 9.1 | 9.2 |

PROVINCE

**Notes:** "Core housing need" means not meeting one of the established standards of adequacy, affordability, or suitability, as defined by the Canada Mortgage and Housing Corporation. "Urban" means communities with a population of 10,000 or more.

**Source:** Canada Mortgage and Housing Corporation, Canadian Housing Observer 2013. Housing indicators and data based on the Survey of Labour and Income Dynamics.[3] Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 42.3** Percentage of People with Unmet Core Housing Need Living in Urban Areas, BC, 2011




**Notes:** "Core housing need" means not meeting one of the established standards of adequacy, affordability, or suitability, as defined by the Canada Mortgage and Housing Corporation. While only the three Census Metropolitan Areas shown are large enough for comparative analyses, the BC percentage includes all "urban" areas (communities with a population of 10,000 or more).

**Source:** Canada Mortgage and Housing Corporation, Canadian Housing Observer 2013. Housing indicators and data based on the Survey of Labour and Income Dynamics.[3] Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES

[1] H. Krueger & Associates. Child and youth health and well-being indicators project: appendix I—economic and material well-being evidence review [prepared for the Office of the Provincial Health Officer and the Canadian Institute for Health Information]. Ottawa, ON: Canadian Institute for Health Information; 2011 [cited 2016 Apr 7]. Available from: http://www2.gov.bc.ca/assets/gov/health/about-bc-s-health-care-system/office-of-the-provincial-health-officer/reports-publications/special-reports/appendix_i_-_economic__material_well_being_evidence_review.pdf.

[2] Canada Mortgage and Housing Corporation. Housing in Canada online. Definitions of variables. Ottawa, ON: Canada Mortgage and Housing Corporation; [cited 2016 Jun 17]. Available from: http://cmhc.beyond2020.com/HiCODefinitions_EN.html.

[3] Canada Mortgage and Housing Corporation. Survey of Labour and Income Dynamics-based housing indicators and data. Cited by Canada Mortgage and Housing Corporation. Canadian housing observer 2013. Ottawa, ON: Canada Mortgage and Housing Corporation; 2013 [cited 2016 May 24]. Available from: http://www.cmhc-schl.gc.ca/odpub/pdf/67989.pdf.

# INDICATOR #43 Unmet Food Needs

## DEFINITION

***INDICATOR #43 —*** Percentage of BC students in grades 7–12 who report that they go to bed hungry because there is not enough money for food at home.

## KEY MESSAGES

- Food security is required to support healthy food choices, and healthy food choices are vitally important for good health and well-being. Food security exists when all people, at all times, have physical, social, and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy lifestyle.[1]

- **Food insecurity** is an important public health problem for children and youth. It is associated with a range of adverse effects on health as well as on development and academic performance. It is also connected to behavioural and psychological problems, and contributes to higher levels of stress.[2] According to Health Canada, moderate food insecurity is when a household has a compromised quality and/or quantity of food consumed, and severe food insecurity is when a household has reduced food intake or disrupted eating patterns.[3]

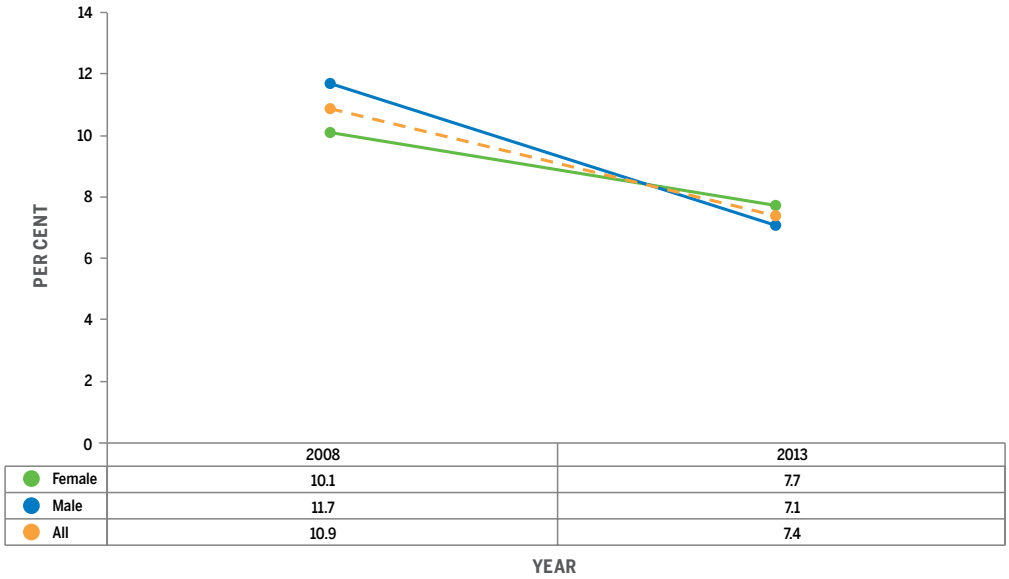
- Unmet food needs, or having insufficient food in a home, is closely associated with low-income households that cannot afford to purchase foods that constitute a healthy diet.[4] Healthy foods tend to be more expensive than high-energy foods of low nutritional value.[5]

- In Canada and many other developed nations, food insecurity is usually due to inadequate income.[6] Certain subsets of Canadian households, such as those involving single parents, the disabled, the unemployed, and Aboriginal people living both on reserve and off reserve, are particularly at risk for experiencing food insecurity.[7] In fact, Statistics Canada reports that among various household types, single-parent families with children under 18 reported the highest rate of household food insecurity, at 22.6 per cent in 2011–2012.[8]

- Figure 43.1 indicates that the unmet food needs of youth in grades 7 to 12 in BC decreased between 2008 and 2013; however, in 2013 there were still 7.4 per cent of BC youth reporting the most severe form of food insecurity (that they went to bed hungry because there was not enough money for food at home).

- Figures 43.2 and 43.3 show that there were geographic differences in the unmet food needs of youth in grades 7 to 12 in BC in 2013. Health service delivery areas (HSDAs) in the Lower Mainland had the lowest percentage of youth with unmet food needs, while HSDAs in northern BC had the highest.

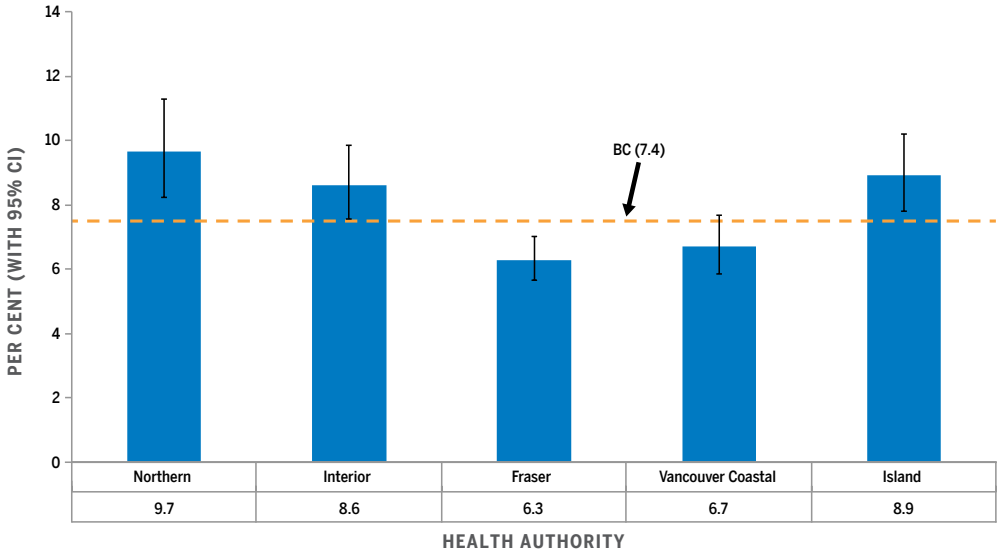
## FIG 43.1 Percentage of Students in Grades 7-12 Who Went to Bed Hungry, by Sex, BC, 2008 and 2013




| | 2008 | 2013 |
|---|---|---|
| Female | 10.1 | 7.7 |
| Male | 11.7 | 7.1 |
| All | 10.9 | 7.4 |

**Notes:** "Who went to bed hungry" means they went to bed hungry "sometimes," "often," or "always" because there was not enough money for food at home. The difference between 2008 and 2013 was statistically significant for all groups. The difference between sexes was statistically significant for 2008 only. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2008, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

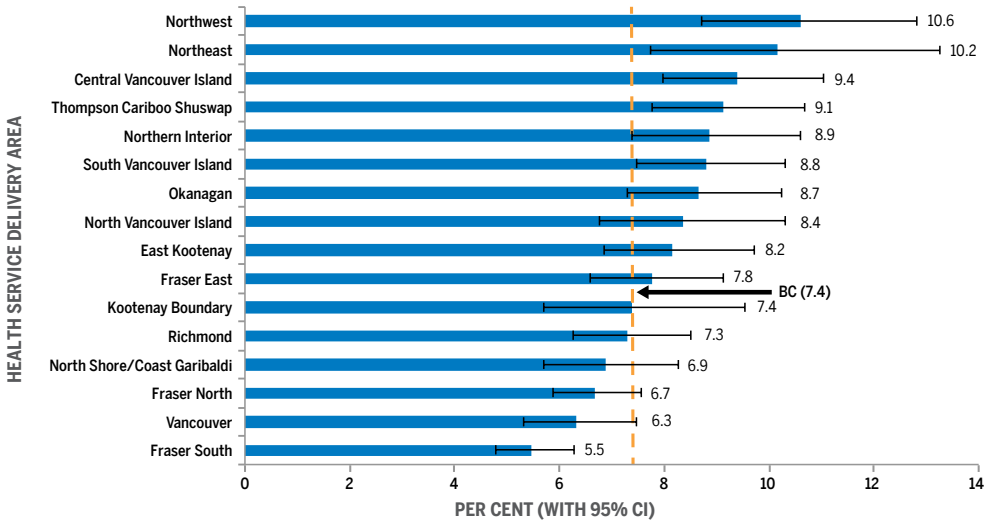
## FIG 43.2 Percentage of Students in Grades 7-12 Who Went to Bed Hungry, by Health Authority, BC, 2013




| Northern | Interior | Fraser | Vancouver Coastal | Island |
|---|---|---|---|---|
| 9.7 | 8.6 | 6.3 | 6.7 | 8.9 |

**Notes:** "Who went to bed hungry" means they went to bed hungry "sometimes," "often," or "always" because there was not enough money for food at home. Health authority is based on the location of the school. See Appendix B for more information about this data source.
**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 43.3** Percentage of Students in Grades 7-12 Who Went to Bed Hungry, by Health Service Delivery Area, BC, 2013




**Notes:** "Who went to bed hungry" means they went to bed hungry "sometimes," "often," or "always" because there was not enough money for food at home. Health service delivery area is based on the location of the school. See Appendix B for more information about this data source.

**Source:** McCreary Centre Society, BC Adolescent Health Survey, 2013. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES


[1] Food and Agriculture Organization of the United Nations. Rome declaration on world food security and world food summit plan of action. Rome: Food and Agriculture Organization of the United Nations; 1996 [cited 2016 Mar 31]. Available from: www.fao.org/docrep/003/w3613e/w3613e00.htm.

[2] Jyoti DF, Frongillo EA, Jones SJ. Food insecurity affects school children's academic performance, weight gain, and social skills. J Nutr. 2005 Dec;135(12):2831-9.

[3] Health Canada. Household food insecurity in Canada: overview. Ottawa, ON: Health Canada; [modified 2012 Jul 25; cited 2016 Jun 27]. Available from: http://www.hc-sc.gc.ca/fn-an/surveill/nutrition/commun/insecurit/index-eng.php.

[4] Politicians need to combat Canada's food insecurity. Vancouver Sun; 2011 Mar 8.

[5] Monsivais P, Drewnowski A. The rising cost of low-energy-density foods. J Am Diet Assoc. 2007 Dec;107(12):2071-6.

[6] Wilde, P. Food security policy in developed countries. In: Lusk JL, Roosen J, Shogren JF, editors. The Oxford handbook of the economics of food consumption and policy. Oxford: Oxford University Press; 2012 [cited 2016 Apr 7]. Available from: http://www.oxfordhandbooks.com/view/10.1093/oxfordhb/9780199569441.001.0001/oxfordhb-9780199569441-e-13.

[7] Health Canada, Office of Nutrition Policy and Promotion, Health Products and Food Branch. Canadian Community Health Survey cycle 2.2, nutrition (2004): income-related household food security in Canada. Ottawa, ON: Health Canada; 2007 [cited 2016 Apr 7]. Available from: http://www.hc-sc.gc.ca/fn-an/alt_formats/hpfb-dgpsa/pdf/surveill/income_food_sec-sec_alim-eng.pdf.

[8] Roshanafshar S, Hawkins E. Food insecurity in Canada. Health at a Glance [Catalogue no. 82-624-X]. Ottawa, ON: Minister of Industry; 2015 [cited 2016 Mar 31]. Available from: http://www.statcan.gc.ca/pub/82-624-x/2015001/article/14138-eng.pdf.

# INDICATOR #44 Youth Not in Education, Employment, or Training

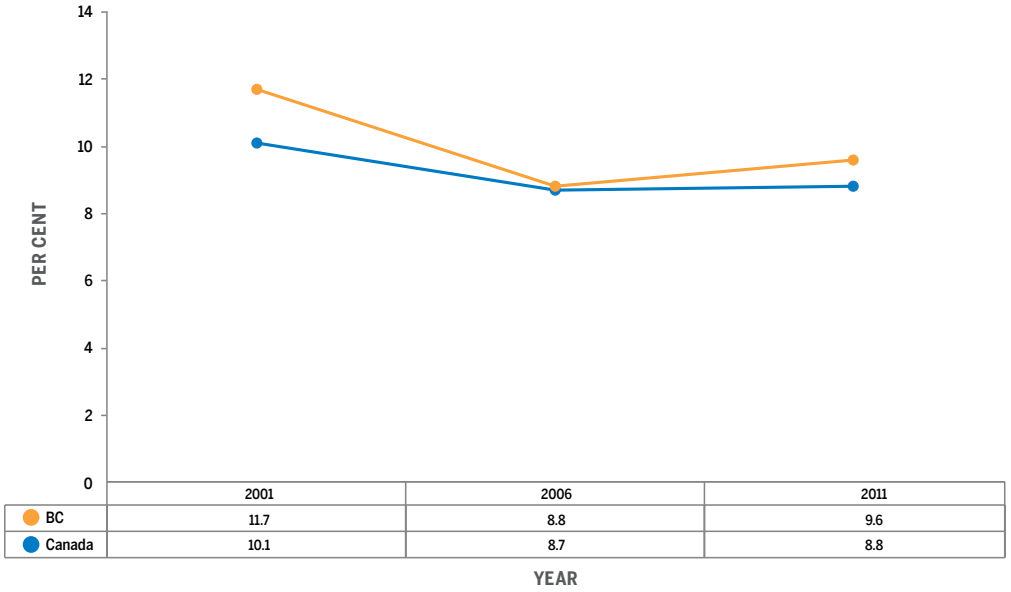
## DEFINITION

***INDICATOR #44 —*** Percentage of BC youth age 15–19 who are not attending school or training, and are not employed.

## KEY MESSAGES

- For the purposes of this report, **"youth unemployment"** is defined as youth not in school, training, or employment (NEET).[1] International research shows that unemployment among youth and young adults is associated with psychological problems, health problems,[2] and smoking, as well as unstable patterns of employment in later adulthood.[3] US evidence shows that among young adults 18–24 years of age, unemployment is associated with all-cause and homicide mortality.[4]
- Figure 44.2 demonstrates that the 2011 rate for BC (9.6 per cent) was in the mid-range among Canadian provinces, and was consistently higher than the overall national percentage (8.8 per cent).
- Figures 44.3 and 44.4 show that there was substantial geographic variation for this indicator. The highest percentage among the health authorities was in Northern Health (12.3 per cent) while the lowest was in Vancouver Coastal Health (8.5 per cent) (see Figure 44.3).

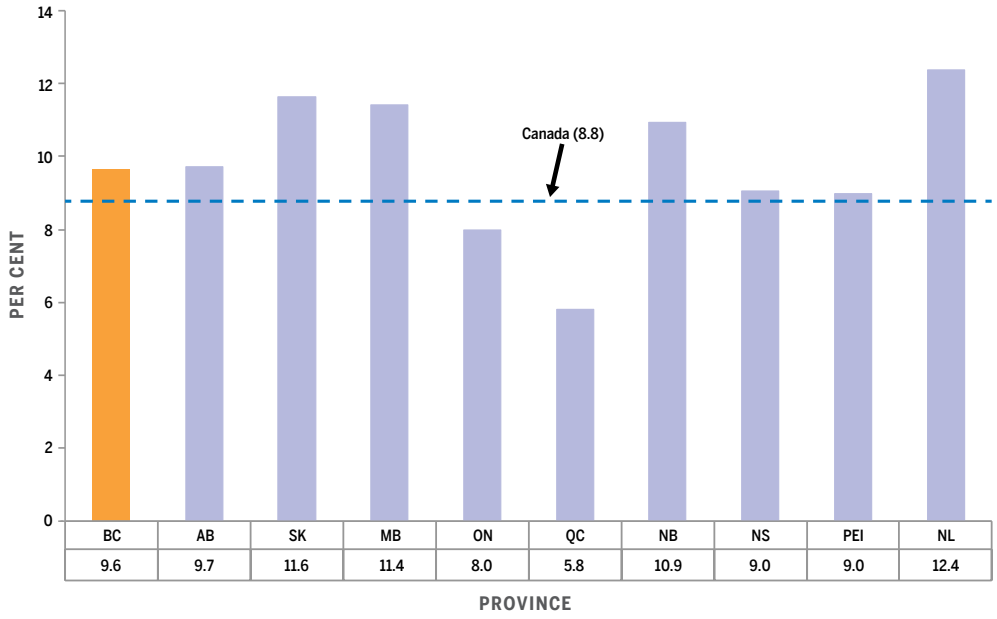
**FIG 44.1** Percentage of Youth Age 15-19 Who Are Not Attending School or Training and Are Not Employed, BC and Canada, 2001, 2006, and 2011




| | 2001 | 2006 | 2011 |
|---|---|---|---|
| BC | 11.7 | 8.8 | 9.6 |
| Canada | 10.1 | 8.7 | 8.8 |

**Notes:** See Appendix B for more information about this data source.
**Source:** Statistics Canada, Table 282-0211, Labour Force Survey Estimates, by Family Type and Family Age Composition, CANSIM database. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

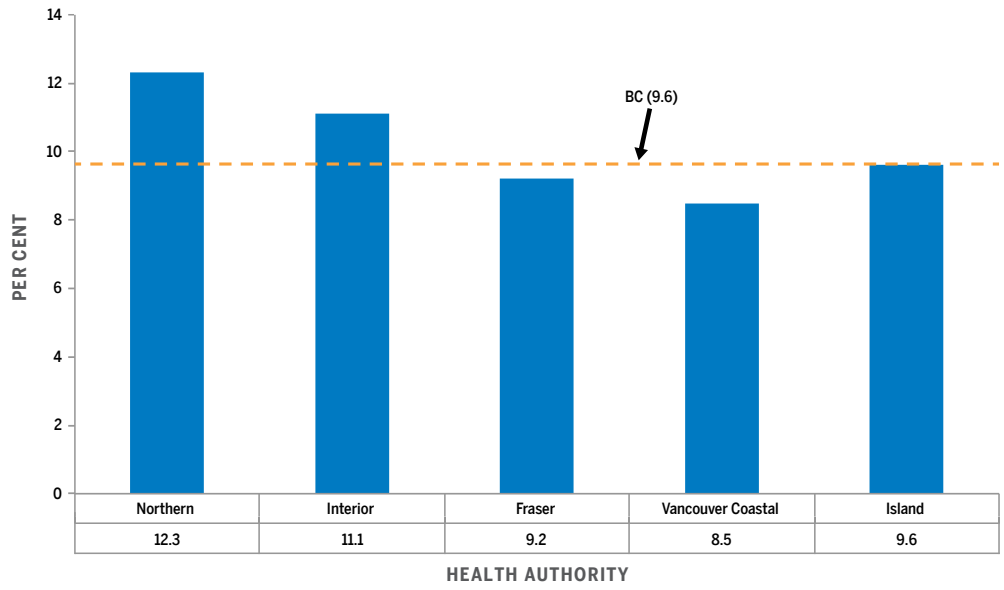
**FIG 44.2** Percentage of Youth Age 15-19 Who Are Not Attending School or Training and Are Not Employed, by Province, Canada, 2011




| BC | AB | SK | MB | ON | QC | NB | NS | PEI | NL |
|---|---|---|---|---|---|---|---|---|---|
| 9.6 | 9.7 | 11.6 | 11.4 | 8.0 | 5.8 | 10.9 | 9.0 | 9.0 | 12.4 |

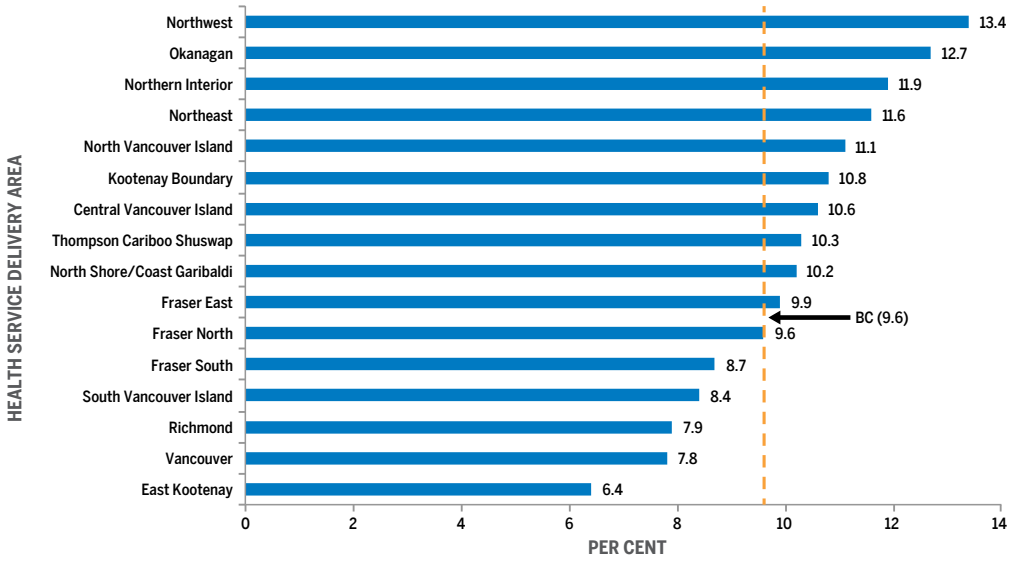
**Note:** See Appendix B for more information about this data source.
**Source:** Statistics Canada, Table 282-0211, Labour Force Survey Estimates, by Family Type and Family Age Composition, CANSIM database. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 44.3 Percentage of Youth Age 15-19 Who Are Not Attending School or Training and Are Not Employed, by Health Authority, BC, 2011




**Notes:** Health authority is based on the residence of the respondent. See Appendix B for more information about this data source.
**Source:** Statistics Canada, Table 282-0211, Labour Force Survey Estimates, by Family Type and Family Age Composition, CANSIM database. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 44.4 Percentage of Youth Age 15-19 Who Are Not Attending School or Training and Are Not Employed, by Health Service Delivery Area, BC, 2011




**Notes:** Health service delivery area is based on the residence of the respondent. See Appendix B for more information about this data source.
**Source:** Statistics Canada, Table 282-0211, Labour Force Survey Estimates, by Family Type and Family Age Composition, CANSIM database. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES

[1] Marshall, K. Youth neither enrolled nor employed. Perspectives on Labour and Income. 2012 Summer;24(2). Available from: http://www.statcan.gc.ca/pub/75-001-x/2012002/article/11675-eng.pdf.

[2] Scanlan JN, Bundy AC. Is the health of young unemployed Australians worse in times of low unemployment? Aust N Z J Public Health. 2009 Feb;33(1):79-82.

[3] Hammarstrom A, Janlert U. Early unemployment can contribute to adult health problems: results from a longitudinal study of school leavers. J Epidemiol Community Health. 2002 Aug;56(8):624-30.

[4] Davila EP, Christ SL, Caban-Martinez AJ, Lee DJ, Arheart KL, LeBlanc WG. Young adults, mortality, and employment. J Occup Environ Med. 2010 May;52(5):501-4.

# COGNITIVE DEVELOPMENT

## CHAPTER 6

Cognitive development refers to how children perceive, think about, and gain understanding of their world. Important aspects of cognitive development include the acquisition of age-appropriate reading, writing, and numeracy skills, as well as decision-making, critical-thinking, problem-solving, and self-regulatory learning skills. Another key facet of this dimension is the ability to communicate needs and wants in a socially appropriate manner. From a child's perspective, learning that engages, interests, excites, inspires, and also prepares him or her for healthy living and meaningful work may be the most important aspects of an effective education.

# INDICATOR #45 Communication Skills

## DEFINITIONS

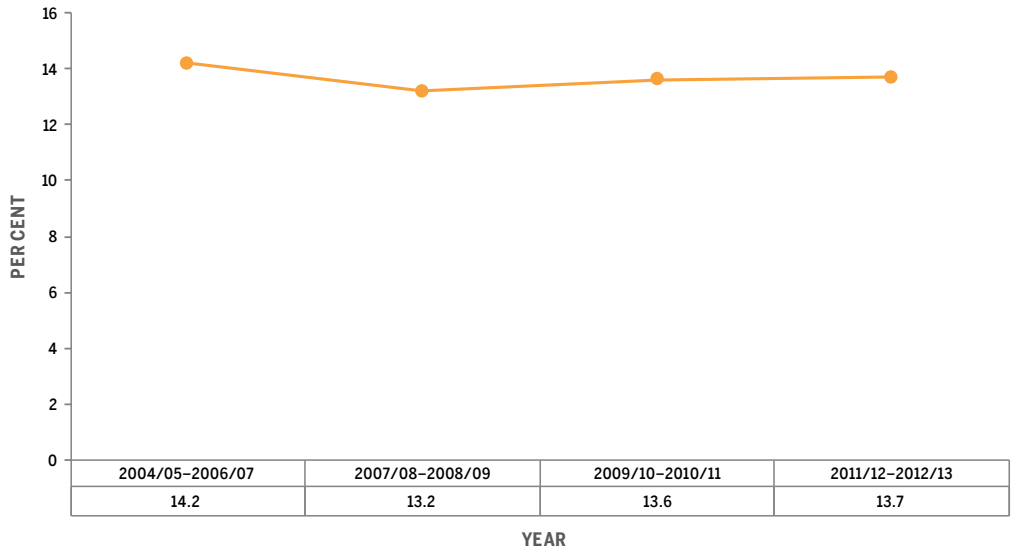
***INDICATOR #45A*** — Percentage of BC kindergarten students (enrolled in public school) identified as "vulnerable" based on the Communication Skills and General Knowledge domain of the Early Development Instrument.

***INDICATOR #45B*** — Percentage of BC kindergarten students (enrolled in public school) identified as "vulnerable" based on the Language and Cognitive Development domain of the Early Development Instrument.

## KEY MESSAGES

- There is strong evidence that elementary school reading is of particular importance in ensuring children can engage in learning and also in predicting school success. General speech ability is a predictor of reading skills in early elementary school, and the level of pre-reading skills attained before kindergarten is an important driver of reading ability in school.[1–3]
- Identification of children as "vulnerable" means they need additional support and care to avoid future challenges in school and society,[4] as determined by their score on the Early Development Instrument (EDI).[5] Children who are vulnerable within the Language and Cognitive Development domain of the EDI are more likely to score below expectations in reading, writing, and **numeracy** in grade 4. However, this relationship may vary depending on the language spoken by the child and whether English is their first language.[6]
- As shown in Figure 45A.1, the percentage of vulnerable children has remained relatively stable over the years shown in the EDI domain of Communication Skills and General Knowledge.
- As shown in Figure 45B.1, there has been a decline in the percentage of children identified as "vulnerable" in the domain of Language and Cognitive Development (from 11.3 per cent in 2004/05–2006/07, to 9.0 per cent in 2011/12–2012/13). This means that more children are entering their formal education prepared from a **literacy** and numeracy perspective. This suggests that the investment in early learning and literacy initiatives has had some positive effects.[6]

## FIG 45A.1 Percentage of Kindergarten Children Vulnerable on the Communication Skills and General Knowledge Domain, BC, 2004/05-2006/07 to 2011/12-2012/13



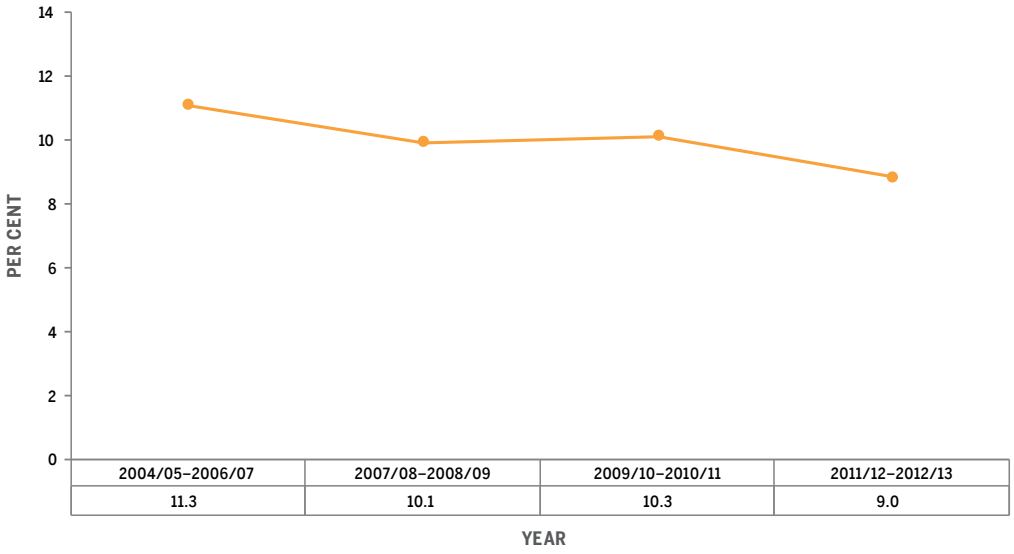

| 2004/05–2006/07 | 2007/08–2008/09 | 2009/10–2010/11 | 2011/12–2012/13 |
|---|---|---|---|
| 14.2 | 13.2 | 13.6 | 13.7 |

YEAR

**Notes:** "Vulnerable" means receiving a score below the cut-off on this domain of the Early Development Instrument. See Appendix B for more information about this data source.

**Source:** Human Early Learning Partnership, Early Development Instrument, 2004/05-2012/13. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 45B.1 Percentage of Kindergarten Children Vulnerable on the Language and Cognitive Development Domain, BC, 2004/05-2006/07 to 2011/12-2012/13



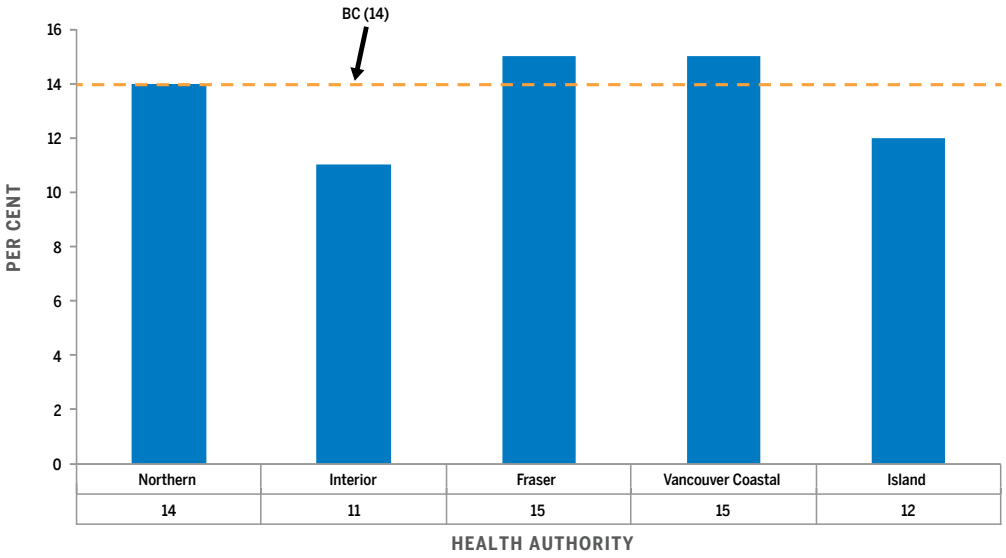

| 2004/05–2006/07 | 2007/08–2008/09 | 2009/10–2010/11 | 2011/12–2012/13 |
|---|---|---|---|
| 11.3 | 10.1 | 10.3 | 9.0 |

YEAR

**Notes:** "Vulnerable" means receiving a score below the cut-off on this domain of the Early Development Instrument. See Appendix B for more information about this data source.

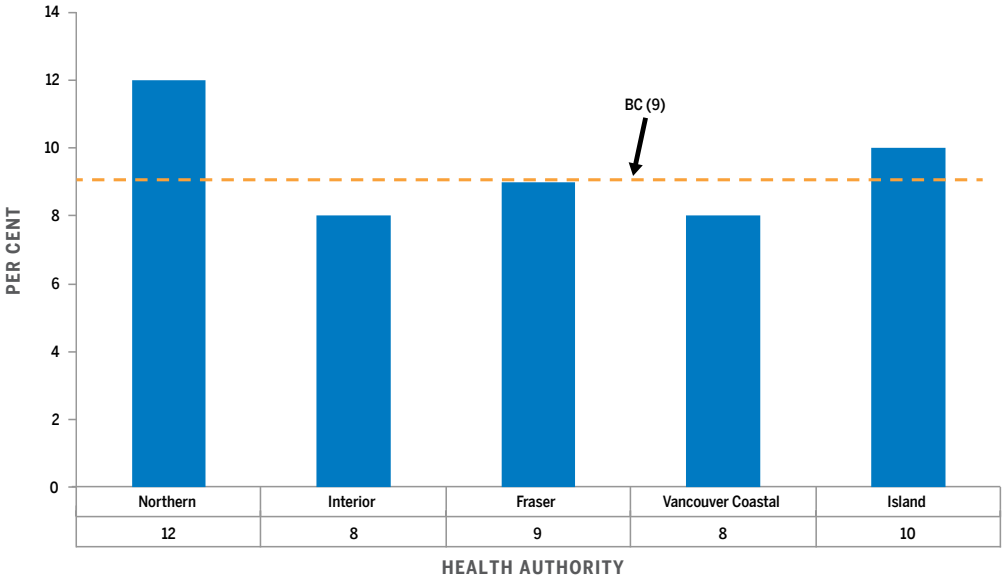
**Source:** Human Early Learning Partnership, Early Development Instrument, 2004/05-2012/13. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 45A.2** Percentage of Kindergarten Children Vulnerable on the Communication Skills and General Knowledge Domain, by Health Authority, BC, 2011/12-2012/13



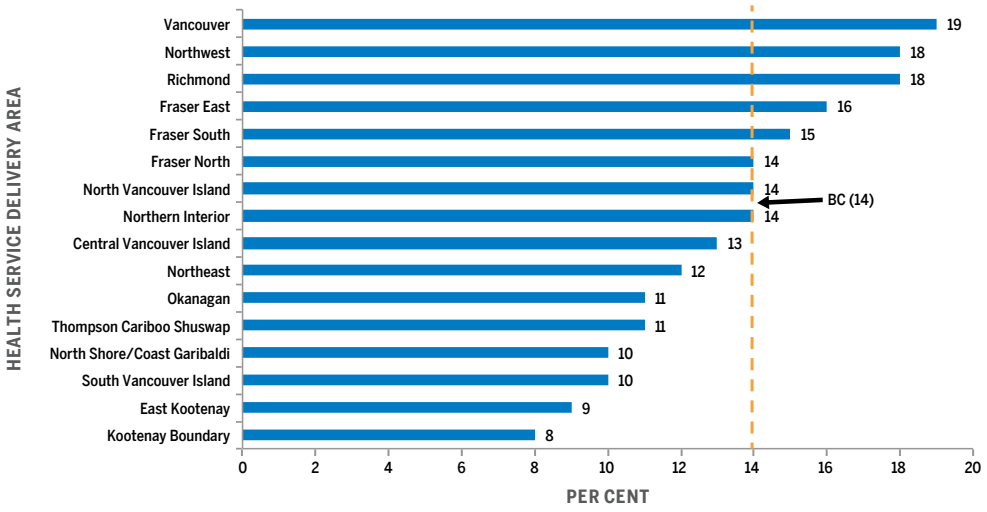

**Notes:** "Vulnerable" means receiving a score below the cut-off on this domain of the Early Development Instrument. Health authority is based on the residence of the child. See Appendix B for more information about this data source.
**Source:** Human Early Learning Partnership, Early Development Instrument, 2011/12-2012/13. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 45B.2** Percentage of Kindergarten Children Vulnerable on the Language and Cognitive Development Domain, by Health Authority, BC, 2011/12-2012/13




**Notes:** "Vulnerable" means receiving a score below the cut-off on this domain of the Early Development Instrument. Health authority is based on the residence of the child. See Appendix B for more information about this data source.
**Source:** Human Early Learning Partnership, Early Development Instrument, 2011/12-2012/13. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

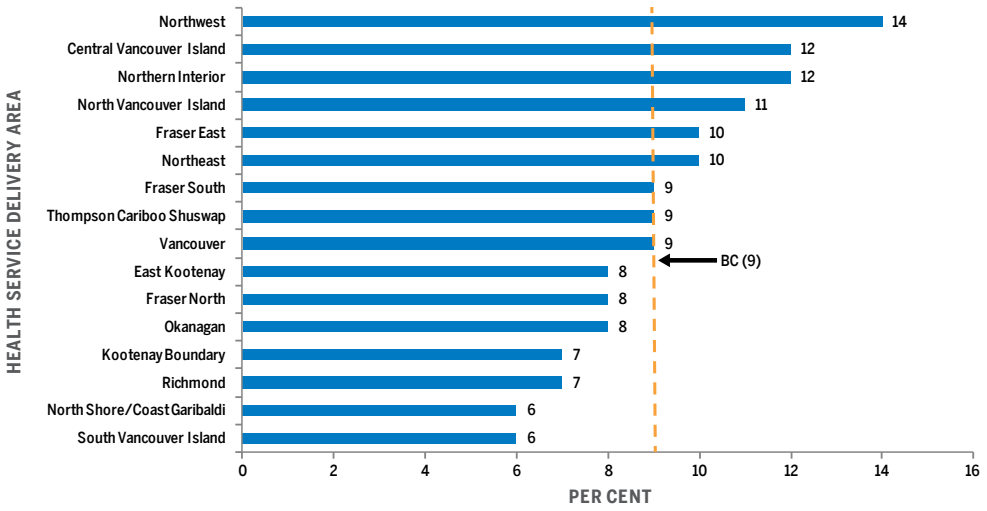
## FIG 45A.3 Percentage of Kindergarten Children Vulnerable on the Communication Skills and General Knowledge Domain, by Health Service Delivery Area, BC, 2011/12-2012/13




**Notes:** "Vulnerable" means receiving a score below the cut-off on this domain of the Early Development Instrument. Health service delivery area is based on the residence of the child. See Appendix B for more information about this data source.

**Source:** Human Early Learning Partnership, Early Development Instrument, 2011/12-2012/13. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 45B.3 Percentage of Kindergarten Children Vulnerable on the Language and Cognitive Development Domain, by Health Service Delivery Area, BC, 2011/12-2012/13




**Notes:** "Vulnerable" means receiving a score below the cut-off on this domain of the Early Development Instrument. Health service delivery area is based on the residence of the child. See Appendix B for more information about this data source.

**Source:** Human Early Learning Partnership, Early Development Instrument, 2011/12-2012/13. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES

[1] Hayiou-Thomas ME, Harlaar N, Dale PS, Plomin R. Preschool speech, language skills, and reading at 7, 9, and 10 years: etiology of the relationship. J Speech Lang Hear Res. 2010 Apr;53(2):311-32.

[2] Kendeou P, van den Broek P, White MJ, Lynch JS. Predicting reading comprehension in early elementary school: the independent contributions of oral language and decoding skills. J Educ Psychol. 2009;101:765-78.

[3] Furnes B, Samuelsson S. Preschool cognitive and language skills predicting kindergarten and grade 1 reading and spelling: a cross-linguistic comparison. J Res Read. 2009;32:275-92.

[4] Human Early Learning Partnership. Early development instrument [Internet]. Vancouver, BC: University of British Columbia; [cited 2016 May 11]. Available from: http://earlylearning.ubc.ca/edi/.

[5] Human Early Learning Partnership. Fact sheet 2013: vulnerability on the EDI. Vancouver, BC: University of British Columbia; [cited 2016 May 11]. Available from: http://earlylearning.ubc.ca/documents/68/.

[6] Rowcliffe P. Personal communication. UBC Human Early Learning Partnership; 2015 Sep 25.

# INDICATOR #46 Pro-social Behaviour Skills

## DEFINITIONS

***INDICATOR #46A*** — Percentage of BC kindergarten students (enrolled in public school) identified as "vulnerable" based on the Social Competence domain of the Early Development Instrument.

***INDICATOR #46B*** — Percentage of BC kindergarten students (enrolled in public school) identified as "vulnerable" based on the Emotional Maturity domain of the Early Development Instrument.

## KEY MESSAGES

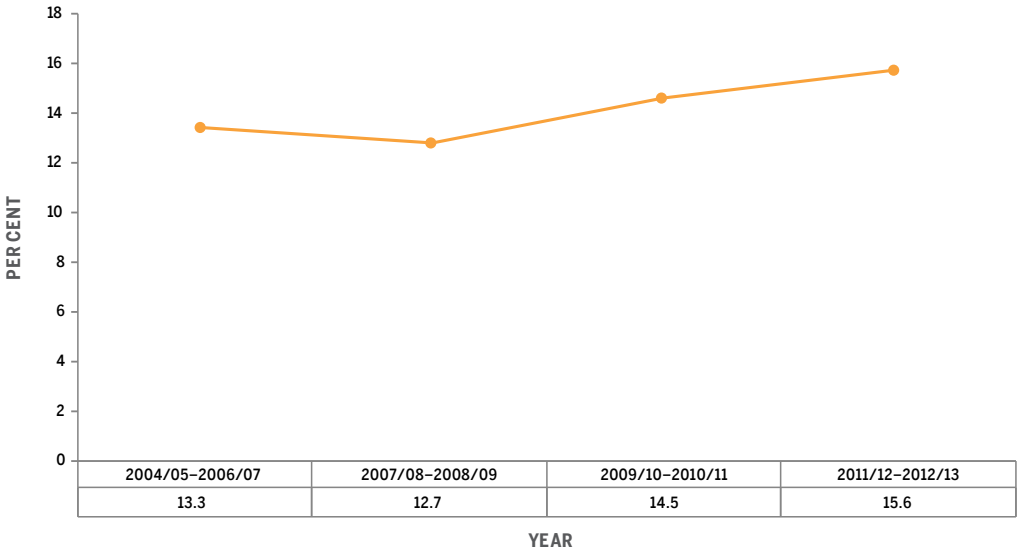
- **Pro-social behaviour** is behaviour or acts that are intended to benefit others (e.g., sharing, assisting others, cooperation).[1] The development of pro-social behaviours in early childhood is associated with social and emotional competence throughout childhood, and is also associated with academic performance, problem-solving, and moral reasoning.[2] The social and emotional skills developed in the early years of life are foundational to lifelong positive mental health and functioning.[3]

- The ability to use certain skills appropriately in social situations is the basis for "**social competence**." Often this concept is broadened to include the emotional underpinnings of positive and negative social interaction, or narrowed to specific problem behaviours in social contexts, including aggression, shyness/withdrawal, and attention deficits.[4]

- Studies of personal social behaviour skills—and social competence more broadly defined—have shown correlation between social behavioural skills and outcomes of health and well-being.[5] While results may vary, adverse social behaviours such as aggression and attention deficits generally were correlated with poor academic outcomes, while positive social behaviours were correlated with better achievement in school.[6–9]

- As shown in Figures 46A.1 and 46B.1, from 2004/05 to 2012/13, there has been an increase in the percentage of kindergarten children who are classified as "vulnerable" in the Early Development Instrument subdomain areas of Social Competence and Emotional Maturity.

## FIG 46A.1 Percentage of Kindergarten Children Vulnerable on the Social Competence Domain, BC, 2004/05-2006/07 to 2011/12-2012/13

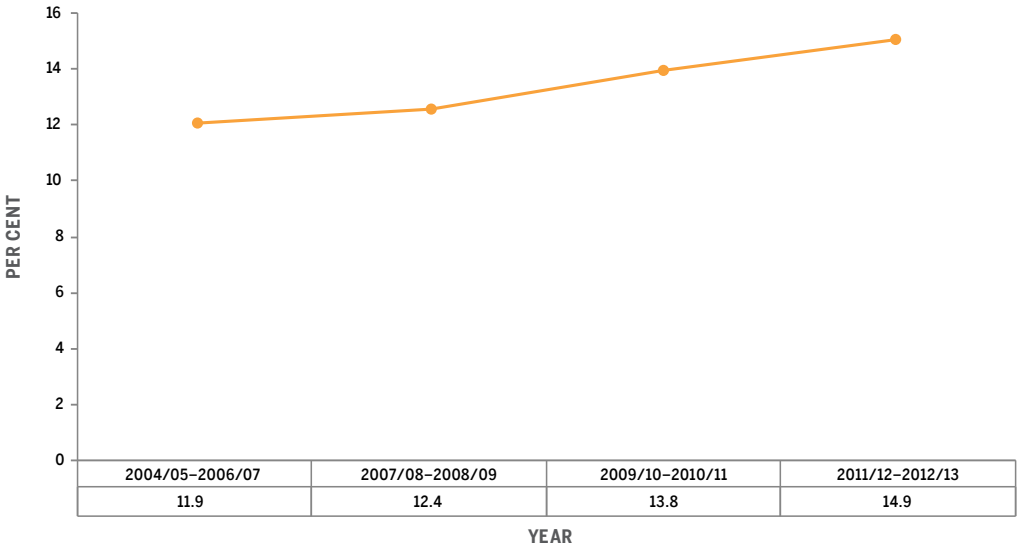



| 2004/05–2006/07 | 2007/08–2008/09 | 2009/10–2010/11 | 2011/12–2012/13 |
|---|---|---|---|
| 13.3 | 12.7 | 14.5 | 15.6 |

YEAR

**Notes:** "Vulnerable" means receiving a score below the cut-off on this domain of the Early Development Instrument. See Appendix B for more information about this data source.
**Source:** Human Early Learning Partnership, Early Development Instrument, 2004/05-2012/13. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 46B.1 Percentage of Kindergarten Children Vulnerable on the Emotional Maturity Domain, BC, 2004/05-2006/07 to 2011/12-2012/13

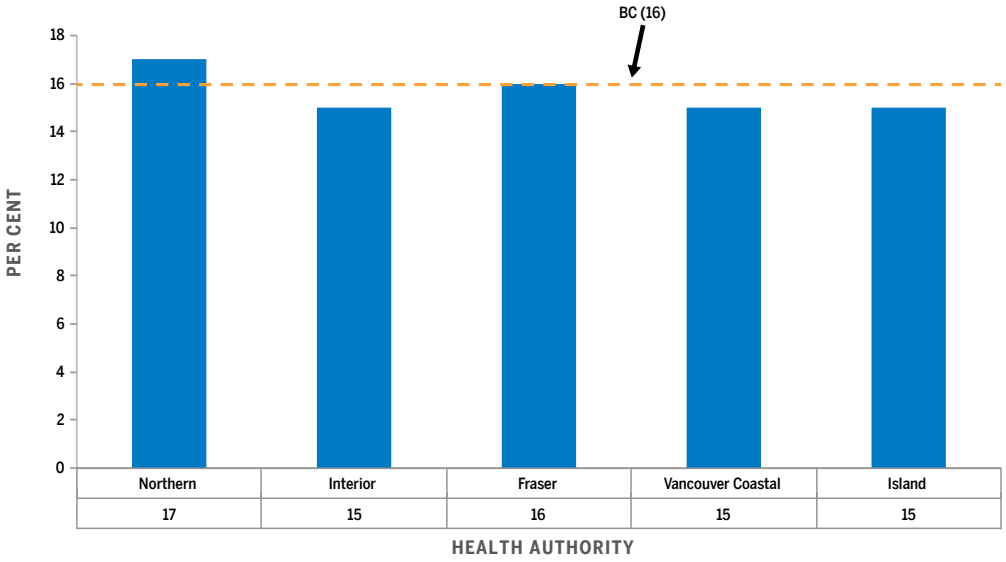



| 2004/05–2006/07 | 2007/08–2008/09 | 2009/10–2010/11 | 2011/12–2012/13 |
|---|---|---|---|
| 11.9 | 12.4 | 13.8 | 14.9 |

YEAR

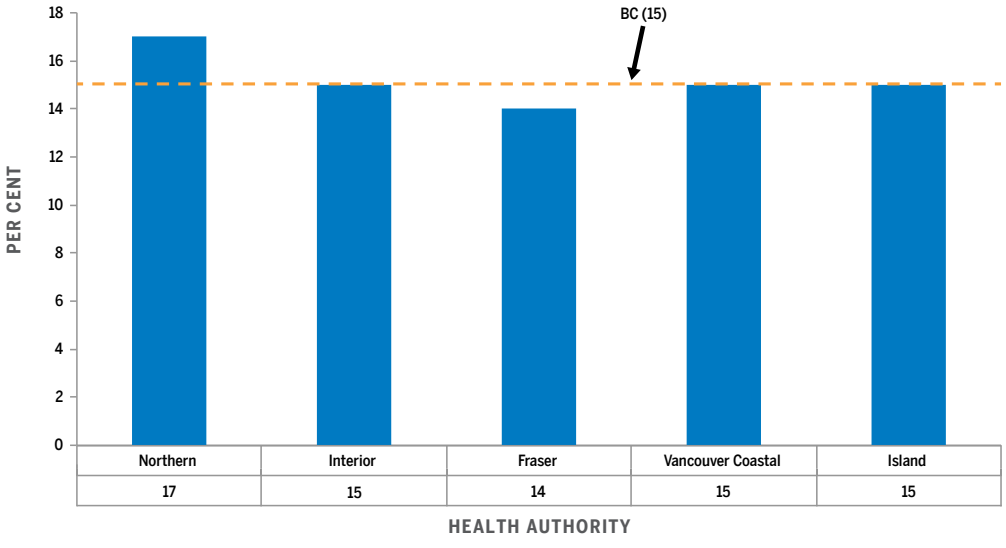
**Notes:** "Vulnerable" means receiving a score below the cut-off on this domain of the Early Development Instrument. See Appendix B for more information about this data source.
**Source:** Human Early Learning Partnership, Early Development Instrument, 2004/05-2012/13. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 46A.2 Percentage of Kindergarten Children Vulnerable on the Social Competence Domain, by Health Authority, BC, 2011/12-2012/13



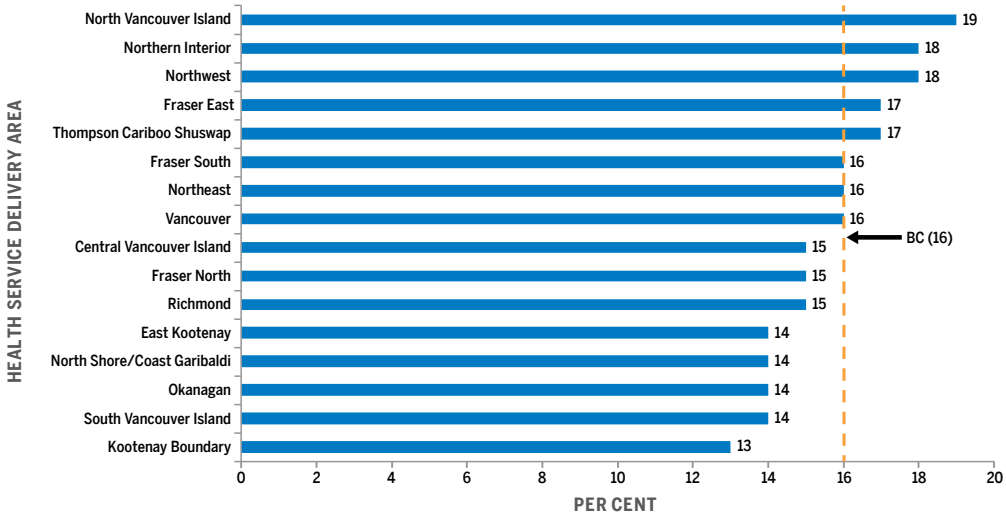

**Notes:** "Vulnerable" means receiving a score below the cut-off on this domain of the Early Development Instrument. Health authority is based on the residence of the child. See Appendix B for more information about this data source.
**Source:** Human Early Learning Partnership, Early Development Instrument, 2011/12-2012/13. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 46B.2 Percentage of Kindergarten Children Vulnerable on the Emotional Maturity Domain, by Health Authority, BC, 2011/12-2012/13




**Notes:** "Vulnerable" means receiving a score below the cut-off on this domain of the Early Development Instrument. Health authority is based on the residence of the child. See Appendix B for more information about this data source.
**Source:** Human Early Learning Partnership, Early Development Instrument, 2011/12-2012/13. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

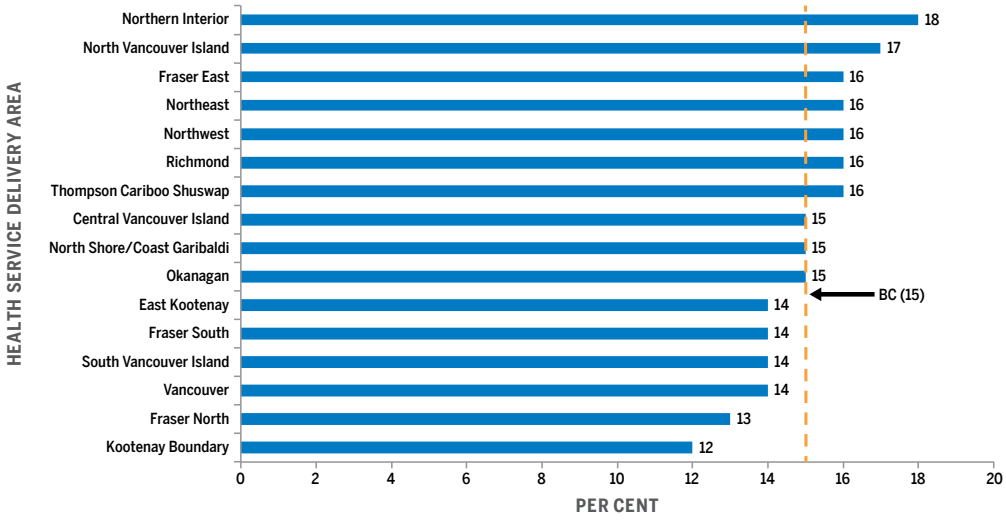
## FIG 46A.3 Percentage of Kindergarten Children Vulnerable on the Social Competence Domain, by Health Service Delivery Area, BC, 2011/12-2012/13




**Notes:** "Vulnerable" means receiving a score below the cut-off on this domain of the Early Development Instrument. Health service delivery area is based on the residence of the child. See Appendix B for more information about this data source.

**Source:** Human Early Learning Partnership, Early Development Instrument, 2011/12-2012/13. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 46B.3 Percentage of Kindergarten Children Vulnerable on the Emotional Maturity Domain, by Health Service Delivery Area, BC, 2011/12-2012/13




**Notes:** "Vulnerable" means receiving a score below the cut-off on this domain of the Early Development Instrument. Health service delivery area is based on the residence of the child. See Appendix B for more information about this data source.

**Source:** Human Early Learning Partnership, Early Development Instrument, 2011/12-2012/13. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES


[1] Eisenberg N, Fabes RA, Spinrad TL. Prosocial development (chapter 11). In Eisenberg N, volume editor, Damon W, Lerner RM, series editors. Handbook of child psychology and developmental science. 6th ed; Vol. 3. Social, Emotional, and Personality Development. New Jersey: John Wiley & Sons; 2006: 646-718.

[2] Knafo-Noam, A, editor. Prosocial behaviour. Encyclopedia on early childhood development. Montreal, PQ: Centre of Excellence for Early Childhood Development and Strategic Knowledge Cluster on Early Child Development; [updated 2016 Feb; cited 2016 May 26]. Available from: http://www.child-encyclopedia.com/sites/default/files/dossiers-complets/en/prosocial-behaviour.pdf.

[3] Hawkins JD, Kosterman R, Catalano RF, Hill KG, Abbott RD. Promoting positive adult functioning through social development intervention in childhood: longterm effects from the Seattle Social Development Project. Arch Pediatr Adolesc Med. 2005 Jan;159(1):25-31.

[4] H. Krueger & Associates. Child and youth health and well-being indicators project: appendix J – cognitive development evidence review [prepared for the Office of the Provincial Health Officer and the Canadian Institute for Health Information]. Ottawa, ON: Canadian Institute for Health Information; 2011.

[5] Temcheff CE, Serbin LA, Martin-Storey A, Stack DM, Ledingham J, Schwartzman AE. Predicting adult physical health outcomes from childhood aggression, social withdrawal and likeability: a 30-year prospective, longitudinal study. Int J Behav Med. 2011 Mar;18(1):5-12.

[6] Pagani LS, Fitzpatrick C, Archambault I, Janosz M. School readiness and later achievement: a French Canadian replication and extension. Dev Psychol. 2010 Sep;46(5):984-94.

[7] D'Angiulli A, Warburton W, Dahinten S, Hertzman C. Population-level associations between preschool vulnerability and grade-four basic skills. PLoS One. 2009;4(11):e7692.

[8] Miles SB, Stipek D. Contemporaneous and longitudinal associations between social behavior and literacy achievement in a sample of low-income elementary school children. Child Dev. 2006 Jan-Feb;77(1):103-17.

[9] Algozzine B, Wang CA, Violette AS. Reexamining the relationship between academic achievement and social behaviour. J Posit Behav Interv. 2011;13(1):3-16.

# INDICATOR #47 Child Literacy

## DEFINITION

***INDICATOR #47 —*** Percentage of BC students in grade 4 and grade 7 (writers only) who meet or exceed expectations on the grade 4 and grade 7 Reading section of the Foundation Skills Assessment.

## KEY MESSAGES

- The development of reading and writing abilities occurs in early childhood in a concurrent and interrelated fashion. Reading and writing abilities are so interdependent that they, along with oral language development, are often collectively referred to as **literacy**.[1] However, data analyses presented here are limited by the current inability to combine the two components of reading and writing in the Foundation Skills Assessment (FSA) into a single "literacy" indicator; therefore, reading is being used as a proxy indicator of literacy, in accordance with the focus on reading identified in the majority of evidence reviewed.[1]

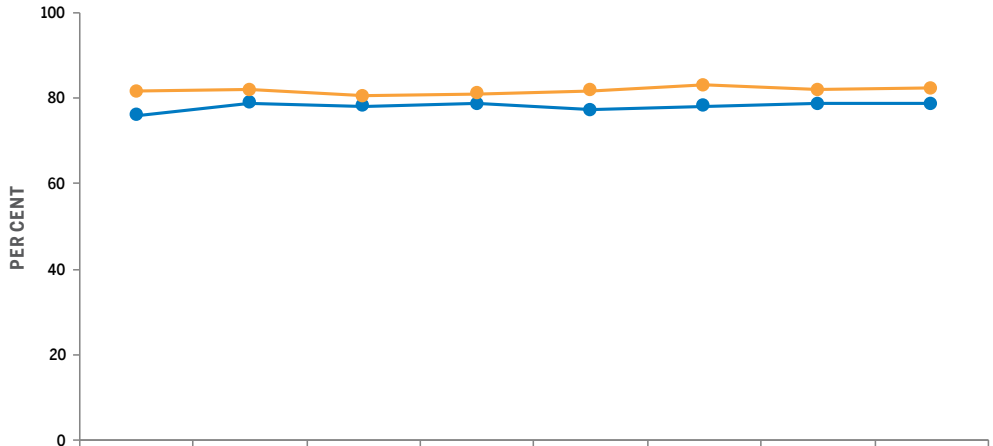
- Research has found that in general, the better educated people are, the healthier they are. Researchers believe that cognitive factors, such as verbal skills, and reading and writing abilities, play a key role in mediating this relationship with health outcomes.[2] While educational attainment has been traditionally correlated with health outcomes, recent evidence suggests that better academic performance is also strongly linked to better health later in life.[3]

- The relationship between adult literacy and health outcomes has been well documented, with lower literacy being linked to problems with the use of preventive services, delayed diagnoses, lack of understanding of one's medical condition, lack of adherence to medical instructions, lower ability to self-manage your health, lower levels of physical and mental well-being, and increased mortality risk.[4]

- Figure 47.1 shows that among those who completed the FSA test, the percentage of BC children in grades 4 and 7 who met or exceeded expectations on the Reading section remained steady from 2007/2008 to 2014/15. The data for this period also show that the percentage of children who met or exceeded expectations in grade 4 was higher than the percentage of those in grade 7.

- Figures 47.2 and 47.3 show that among those who completed the FSA, there are geographic differences in the percentage of grade 4 and grade 7 students who met or exceeded expectations on the Reading section of the FSA. Figure 47.2 illustrates that Northern Health had approximately 10 per cent fewer students in both grades that were meeting or exceeding expectations compared to those in Vancouver Coastal Health. This variation by geography is even more evident when data are reviewed by health service delivery area, which reveals a differential of almost 20 per cent between the lowest and highest areas (Figure 47.3).

## FIG 47.1 Percentage of Students in Grades 4 and 7 Who Meet or Exceed Expectations in Reading, BC, 2007/08 to 2014/15



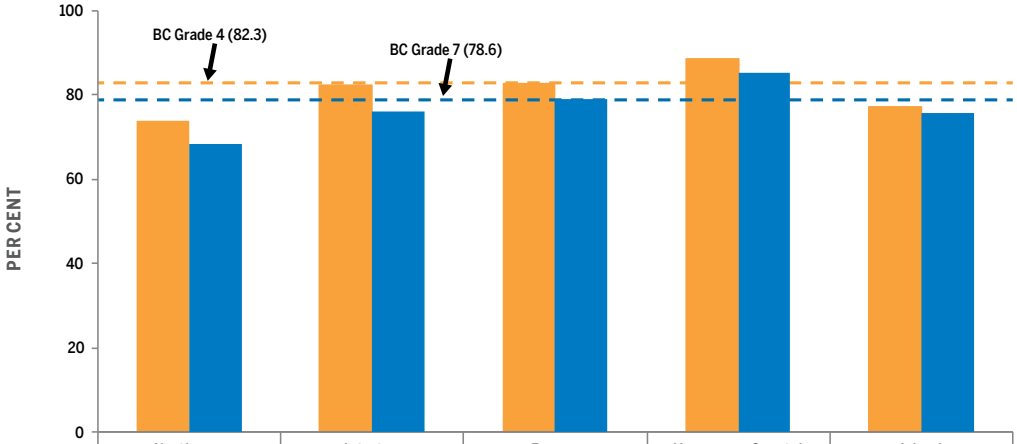

| | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | 2013/14 | 2014/15 |
|---|---|---|---|---|---|---|---|---|
| Grade 4 | 81.5 | 82.0 | 80.4 | 81.1 | 81.7 | 83.1 | 81.9 | 82.3 |
| Grade 7 | 76.0 | 78.8 | 78.1 | 78.6 | 77.3 | 78.2 | 78.8 | 78.6 |

YEAR

**Notes:** "Meet or exceed expectations" means an assessment of Meets Expectations (Minimal to Moderate), Fully Meets Expectations, or Exceeds Expectations on the Foundation Skills Assessment (FSA). Data only include those students who wrote the FSA. See Appendix B for more information about this data source.

**Source:** BC Ministry of Education, Foundation Skills Assessment scores, 2007/08–2014/15. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 47.2 Percentage of Students in Grades 4 and 7 Who Meet or Exceed Expectations in Reading, by Health Authority, BC, 2014/15



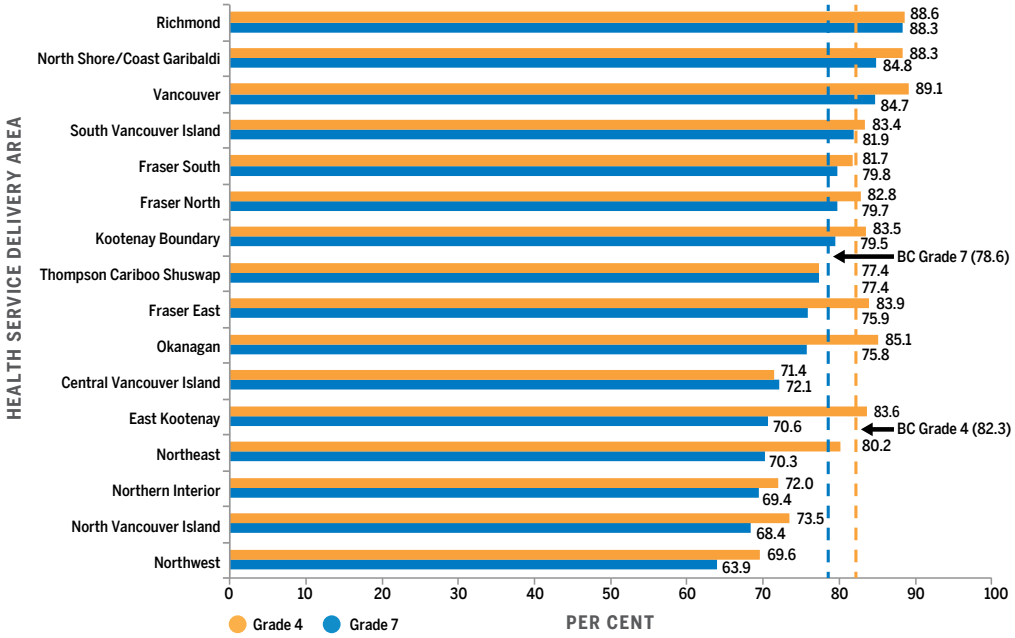

| | Northern | Interior | Fraser | Vancouver Coastal | Island |
|---|---|---|---|---|---|
| Grade 4 | 73.7 | 82.3 | 82.5 | 88.7 | 77.3 |
| Grade 7 | 68.2 | 76.1 | 79.0 | 85.4 | 75.8 |

HEALTH AUTHORITY

**Notes:** "Meet or exceed expectations" means an assessment of Meets Expectations (Minimal to Moderate), Fully Meets Expectations, or Exceeds Expectations on the Foundation Skills Assessment (FSA). Data only include those students who wrote the FSA. Health authority is based on the location of the school. See Appendix B for more information about this data source.

**Source:** BC Ministry of Education, Foundation Skills Assessment scores, 2014/15. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 47.3** Percentage of Students in Grades 4 and 7 Who Meet or Exceed Expectations in Reading, by Health Service Delivery Area, BC, 2014/15




**Notes:** "Meet or exceed expectations" means an assessment of Meets Expectations (Minimal to Moderate), Fully Meets Expectations, or Exceeds Expectations on the Foundation Skills Assessment (FSA). Data only include those students who wrote the FSA. Health service delivery area is based on the location of the school. See Appendix B for more information about this data source.

**Source:** BC Ministry of Education, Foundation Skills Assessment scores, 2014/15. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES

[1] H. Krueger & Associates. Child and youth health and well-being indicators project: appendix J – cognitive development evidence review [prepared for the Office of the Provincial Health Officer and the Canadian Institute for Health Information]. Ottawa, ON: Canadian Institute for Health Information; 2011.

[2] Strickland DS, Morrow LM. Emerging literacy: young children learn to read and write. Newark, DE: International Reading Association; 1989.

[3] Dewalt DA, Berkman ND, Sheridan S, Lohr KN, Pignone MP. Literacy and health outcomes: a systematic review of the literature. J Gen Intern Med. 2004 Dec;19(12):1228-39.

[4] Berkman ND, Sheridan SL, Donahue KE, Halpern DJ, Crotty K. Low health literacy and health outcomes: an updated systematic review. Ann Intern Med. 2011 Jul 19;155(2):97-107.

# INDICATOR #48 Child Numeracy

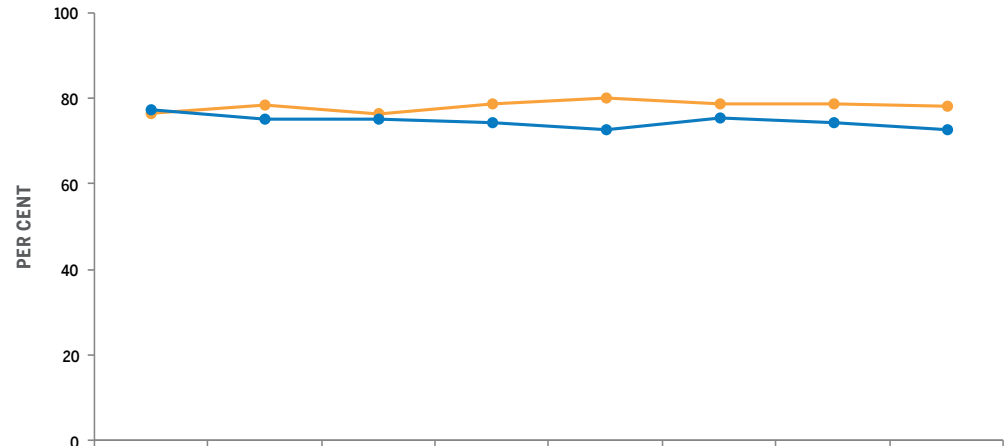
## DEFINITION

***INDICATOR #48 —*** Percentage of BC students in grade 4 or grade 7 (writers only) who meet or exceed expectations on the grade 4 and grade 7 Numeracy section of the Foundation Skills Assessment.

## KEY MESSAGES

- **Numeracy**, or number skills, refers to the "…ability to apprehend the value of small quantities immediately, make judgments about numbers and their magnitudes, grasp counting principles, and join and separate sets."[1]
- Research has shown that socio-economic differences contribute to variances in child numeracy between children.[2–4]
- Figure 48.1 shows that among BC children in grades 4 and 7 who completed the Foundation Skills Assessment (FSA), the percentage who met or exceeded expectations on the Numeracy section was relatively consistent from 2007/08 to 2014/15. The data for this period also show that the percentage of children who met or exceeded expectations in grade 4 was higher than in grade 7.
- Similarly to Indicator #47 results regarding reading, Figure 48.2 indicates geographic differences in the percentage of grade 4 and grade 7 students meeting or exceeding expectations on the Numeracy section of the FSA, whereby Northern Health had 20 per cent fewer students classified as meeting or exceeding expectations compared to Vancouver Coastal Health. Furthermore, this variation is even more evident when data are examined by health service delivery area, which shows a differential of over 30 per cent between the highest and lowest (Figure 48.3).

## FIG 48.1 Percentage of Students in Grades 4 and 7 Who Meet or Exceed Expectations in Numeracy, BC, 2007/08 to 2014/15

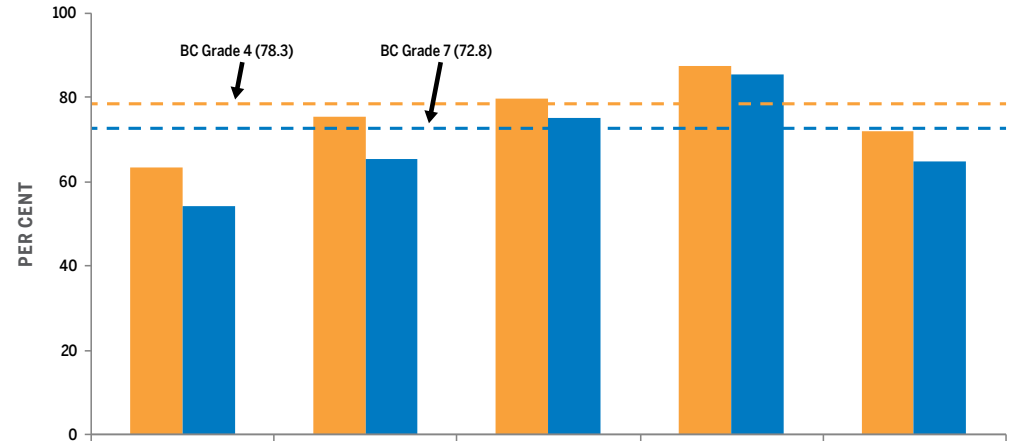



| | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | 2013/14 | 2014/15 |
|---|---|---|---|---|---|---|---|---|
| Grade 4 | 76.7 | 78.4 | 76.4 | 78.7 | 80.2 | 78.8 | 78.9 | 78.3 |
| Grade 7 | 77.3 | 75.3 | 75.3 | 74.4 | 72.6 | 75.5 | 74.5 | 72.8 |

YEAR

**Notes:** "Meet or exceed expectations" means an assessment of Meets Expectations (Minimal to Moderate), Fully Meets Expectations, or Exceeds Expectations on the Foundation Skills Assessment (FSA). Data only include those students who wrote the FSA. See Appendix B for more information about this data source.
**Source:** BC Ministry of Education, Foundation Skills Assessment scores, 2007/08-2014/15. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 48.2 Percentage of Students in Grades 4 and 7 Who Meet or Exceed Expectations in Numeracy, by Health Authority, BC, 2014/15

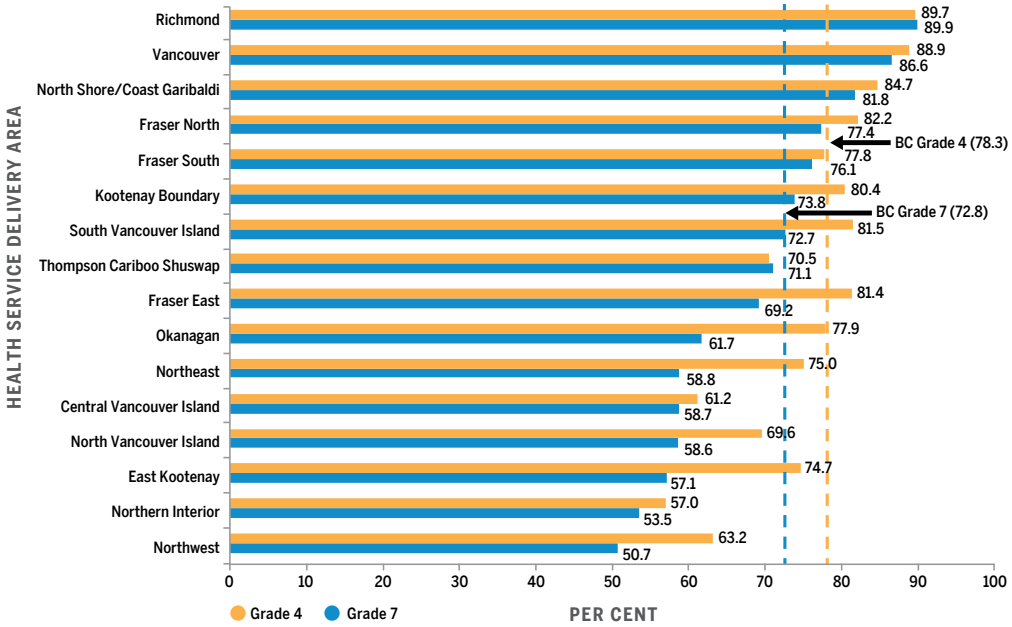



| | Northern | Interior | Fraser | Vancouver Coastal | Island |
|---|---|---|---|---|---|
| Grade 4 | 63.6 | 75.4 | 79.8 | 87.6 | 72.1 |
| Grade 7 | 54.2 | 65.5 | 75.2 | 85.5 | 65.0 |

HEALTH AUTHORITY

**Notes:** "Meet or exceed expectations" means an assessment of Meets Expectations (Minimal to Moderate), Fully Meets Expectations, or Exceeds Expectations on the Foundation Skills Assessment (FSA). Data only include those students who wrote the FSA. Health authority is based on the location of the school. See Appendix B for more information about this data source.
**Source:** BC Ministry of Education, Foundation Skills Assessment scores, 2014/15. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 48.3** Percentage of Students in Grades 4 and 7 Who Meet or Exceed Expectations in Numeracy, by Health Service Delivery Area, BC, 2014/15




**Notes:** "Meet or exceed expectations" means an assessment of Meets Expectations (Minimal to Moderate), Fully Meets Expectations, or Exceeds Expectations on the Foundation Skills Assessment (FSA). Data only include those students who wrote the FSA. Health service delivery area is based on the location of the school. See Appendix B for more information about this data source.

**Source:** BC Ministry of Education, Foundation Skills Assessment scores, 2014/15. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES

[1] Jordan NC, Kaplan D, Ramineni C, Locuniak MN. Early math matters: kindergarten number competence and later mathematics outcomes. Dev Psychol. 2009 May;45(3):850-67.

[2] Klibanoff RS, Levine SC, Huttenlocher J, Vasilyeva M, Hedges LV. Preschool children's mathematical knowledge: the effect of teacher "math talk". Dev Psychol. 2006 Jan;42(1):59-69.

[3] Jordan NC, Levine SC. Socioeconomic variation, number competence, and mathematics learning difficulties in young children. Dev Disabil Res Rev. 2009;15(1):60-8.

[4] Jordan NC, Glutting J, Ramineni C. The importance of number sense to mathematics achievement in first and third grades. Learn Individ Differ. 2010 Apr 1; 20(2): 82-8.

# INDICATOR #49 Grade 10 Literacy

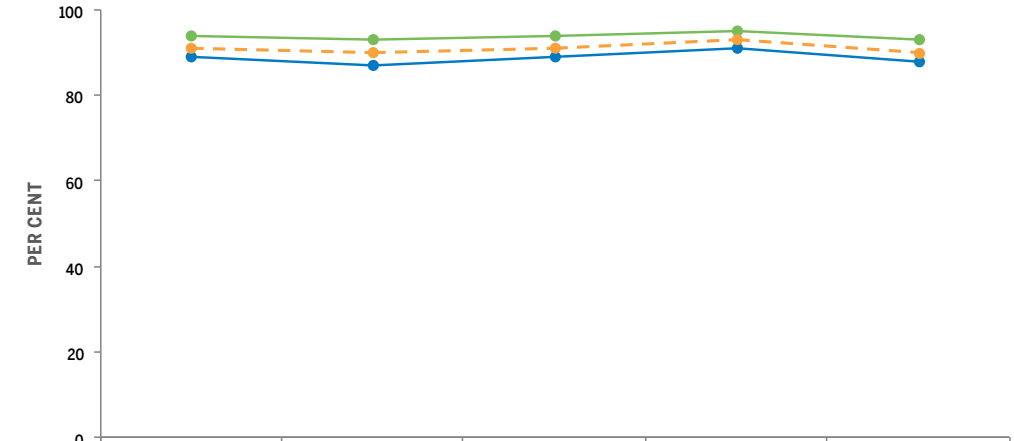
## DEFINITION

***INDICATOR #49 —*** Percentage of BC students in grade 10 who pass (receive a grade of C- or better) the grade 10 English Provincial Examination.

## KEY MESSAGES

- The aim of language arts throughout high school in BC is "...to provide students with opportunities for personal and intellectual growth through speaking, listening, reading, viewing, writing, and representing to make meaning of the world and to prepare them to participate effectively in all aspects of society."[1] **Literacy** is the ability to read, write, and use oral language.[2]
- Achievement of a higher level of education has been associated with positive outcomes for health and well-being.[2]
- As shown in Figure 49.1, the percentage of students who passed the grade 10 English Provincial Examination increased from 2010/11 to 2012/13 but then dropped back to 2010/11 levels in 2013/14.
- Figure 49.1 also reveals a striking difference in the percentage of female and male students who passed the grade 10 English Provincial Examination, with at least 4 per cent more female students consistently passing compared to male students across the five school years shown.
- Figure 49.2 shows geographic variation in the percentage of students who passed the grade 10 English Provincial Examination, with a high of 92 per cent passing in Vancouver Coastal Health, and a low of 87 per cent passing in Northern Health.
- Figure 49.3 shows that this geographic variation is even greater among health service delivery areas (HSDAs), with nearly a 10 percentage point difference between Vancouver HSDA (92.8 per cent) and Northeast HSDA (85.0 per cent).

## FIG 49.1 Percentage of Students in Grade 10 Who Pass the English Provincial Examination, by Sex, BC, 2009/10 to 2013/14

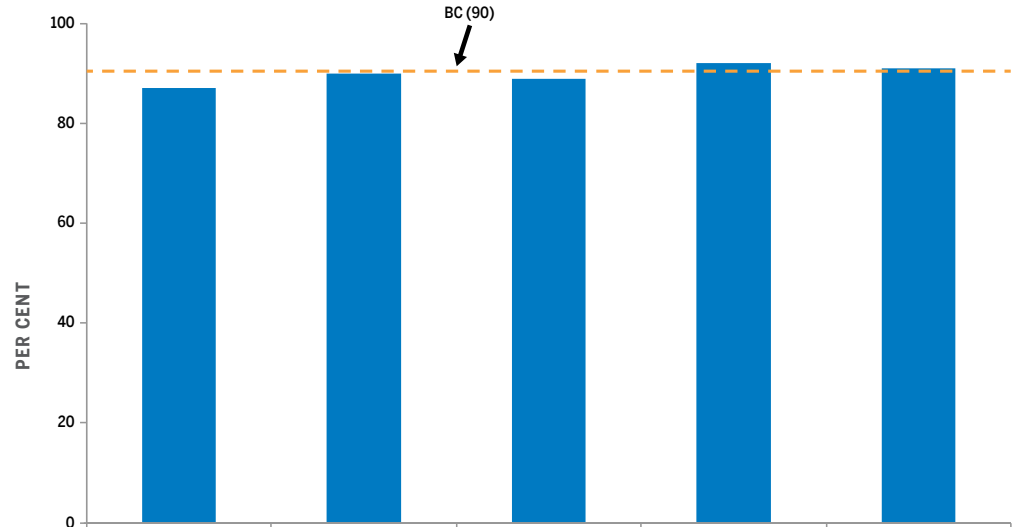



| | 2009/10 | 2010/11 | 2011/12 | 2012/13 | 2013/14 |
|---|---|---|---|---|---|
| Female | 94 | 93 | 94 | 95 | 93 |
| Male | 89 | 87 | 89 | 91 | 88 |
| All | 91 | 90 | 91 | 93 | 90 |

YEAR

**Notes:** "Pass" means a grade of 'C-' or better. See Appendix B for more information about this data source.
**Source:** BC Ministry of Education, Grade 10 English Provincial Exam Results, 2009/10-2013/14. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 49.2 Percentage of Students in Grade 10 Who Pass the English Provincial Examination, by Health Authority, BC, 2013/14

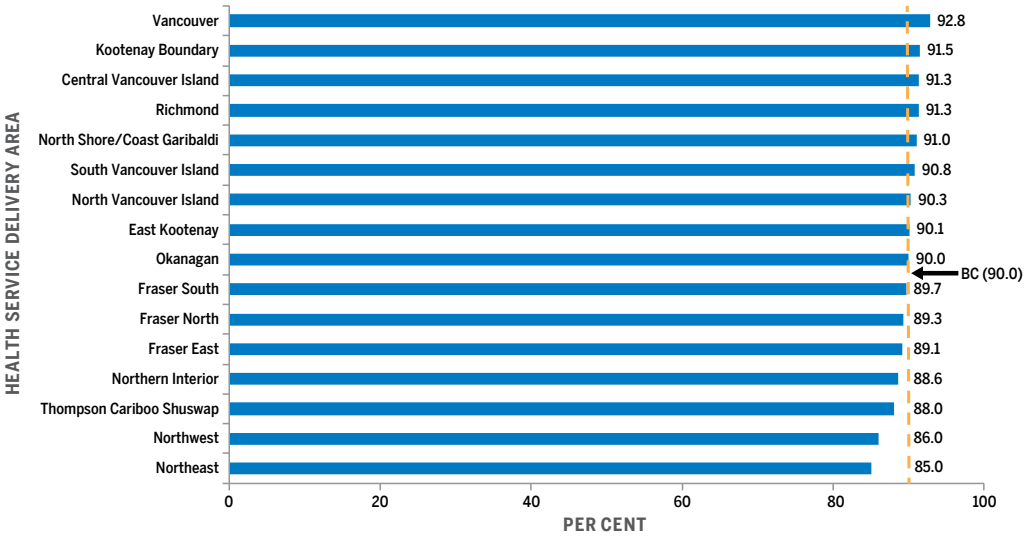



| Northern | Interior | Fraser | Vancouver Coastal | Island |
|---|---|---|---|---|
| 87 | 90 | 89 | 92 | 91 |

HEALTH AUTHORITY

**Notes:** "Pass" means a grade of 'C-' or better. Health authority is based on the location of the school. See Appendix B for more information about this data source.
**Source:** BC Ministry of Education, Grade 10 English Provincial Exam Results, 2013/14. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 49.3** Percentage of Students in Grade 10 Who Pass the English Provincial Examination, by Health Service Delivery Area, BC, 2013/14




**Notes:** "Pass" means a grade of 'C-' or better. Health service delivery area is based on the location of the school. See Appendix B for more information about this data source.

**Source:** BC Ministry of Education, Grade 10 English Provincial Exam Results, 2013/14. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES

[1] Ministry of Education. English language arts 8 to 12: integrated resource package 2007. Victoria, BC: Ministry of Education; 2007 [cited 2016 Apr 15]. Available from: http://www.bced.gov.bc.ca/irp/pdfs/english_language_arts/2007ela_812.pdf.

[2] H. Krueger & Associates. Child and youth health and well-being indicators project: appendix J – cognitive development evidence review [prepared for the Office of the Provincial Health Officer and the Canadian Institute for Health Information]. Ottawa, ON: Canadian Institute for Health Information; 2011.

# INDICATOR #50 Grade 10 Math

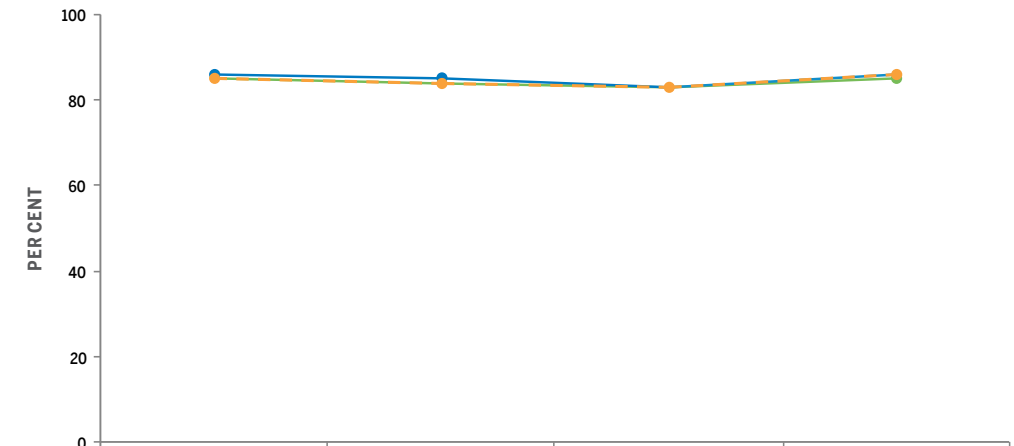
## DEFINITION

***INDICATOR #50 —*** Percentage of BC students in grade 10 who pass (receive a grade of C- or better) the grade 10 Math Provincial Examination.

## KEY MESSAGES

- Achieving a higher level of education has been associated with positive outcomes for health and well-being.[1]
- Figure 50.1 shows that there is a small difference in the percentage of female and male students who passed the grade 10 Math Provincial Examination, with more male students passing compared to female students in three out of four years analyzed—an inverse finding from Indicator #49 (Grade 10 Literacy).
- Much like the results of Indicator #49 (Grade 10 Literacy), Figure 50.2 shows that in 2013/14 there was geographic variation in the percentage of students who passed the grade 10 Math Provincial Examination, ranging from a high of 92 per cent in Vancouver Coastal Health to a low of 74 per cent in Northern Health.
- This variation becomes more evident when looking at health service delivery areas (HSDAs) in Figure 50.3: 93 per cent of students in Richmond and Vancouver HSDAs passed the exam, while only 64 per cent of students passed in the Northeast HSDA.

## FIG 50.1 Percentage of Students in Grade 10 Who Pass the Math Provincial Examination, by Sex, BC, 2010/11 to 2013/14

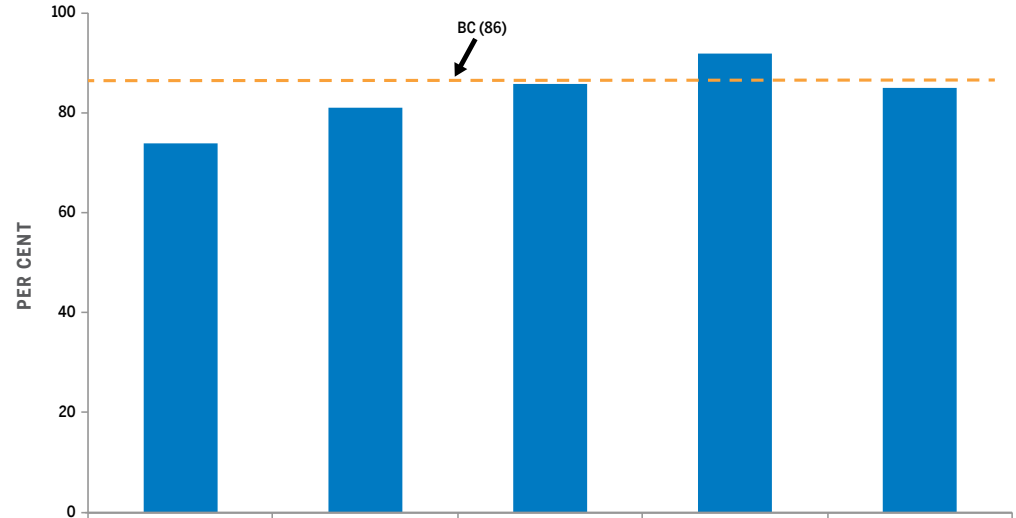



| | 2010/11 | 2011/12 | 2012/13 | 2013/14 |
|---|---|---|---|---|
| Female | 85 | 84 | 83 | 85 |
| Male | 86 | 85 | 83 | 86 |
| All | 85 | 84 | 83 | 86 |

YEAR

**Notes:** "Pass" means a grade of 'C-' or better. Data for 2009/10 are not available. See Appendix B for more information about this data source.
**Source:** BC Ministry of Education, Grade 10 Math Provincial Exam Results, 2010/11-2013/14. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 50.2 Percentage of Students in Grade 10 Who Pass the Math Provincial Examination, by Health Authority, BC, 2013/14

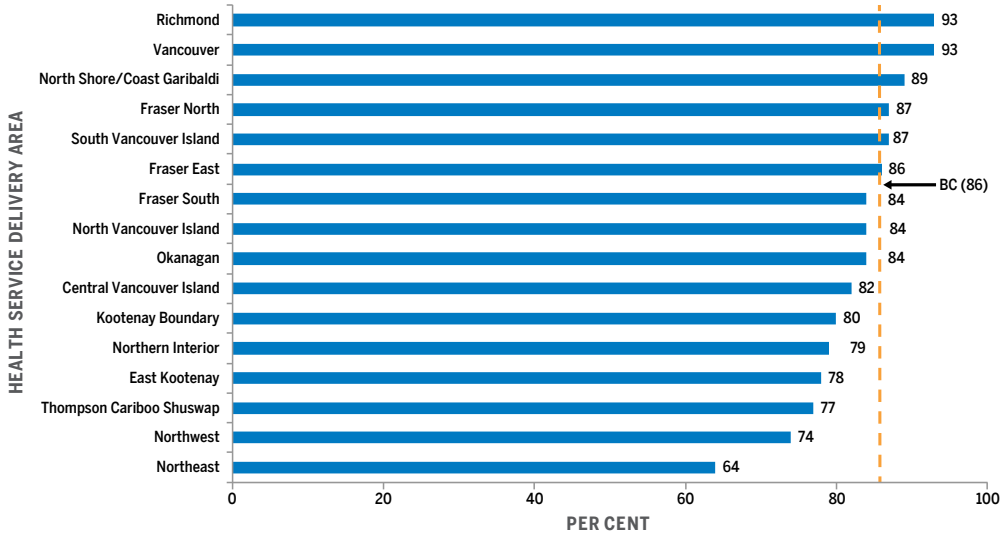



| Northern | Interior | Fraser | Vancouver Coastal | Island |
|---|---|---|---|---|
| 74 | 81 | 86 | 92 | 85 |

HEALTH AUTHORITY

**Notes:** "Pass" means a grade of 'C-' or better. Health authority is based on the location of the school. See Appendix B for more information about this data source.
**Source:** BC Ministry of Education, Grade 10 Math Provincial Exam Results, 2013/14. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 50.3** Percentage of Students in Grade 10 Who Pass the Math Provincial Examination, by Health Service Delivery Area, BC, 2013/14




**Notes:** "Pass" means a grade of 'C-' or better. Health service delivery area is based on the location of the school. See Appendix B for more information about this data source.

**Source:** BC Ministry of Education, Grade 10 Math Provincial Exam Results, 2013/14. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCE

[1] H. Krueger & Associates. Child and youth health and well-being indicators project: appendix J – cognitive development evidence review [prepared for the Office of the Provincial Health Officer and the Canadian Institute for Health Information]. Ottawa, ON: Canadian Institute for Health Information; 2011.

# INDICATOR #51 High School Completion

## DEFINITION

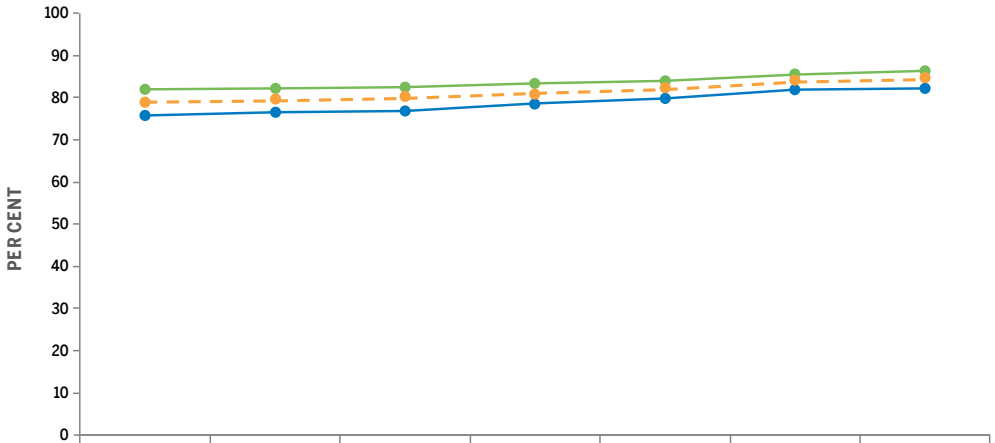
***INDICATOR #51 —*** The percentage of students who obtain their BC Certificate of Graduation ("Dogwood" diploma) within six years of entering grade 8.

## KEY MESSAGES

- Research shows a positive association between educational attainment and health. Researchers have suggested that this may be related to people with higher levels of education having better employment and higher incomes.[1,2] However, the association is most evident when comparing the levels that are more at the extremes; for example, completing just grade school versus being a college graduate.[3]
- In addition to educational attainment, educational achievement is also an important predictor of future socio-economic outcomes and positive health. The impact of simply passing a grade or acquiring a credential can be amplified by being more successful academically in terms of higher letter grades and/or exam scores.[4]
- The BC Certificate of Graduation[1] (Dogwood Diploma) is granted by the Ministry of Education to students who meet BC secondary school graduation requirements. While other indicators mark progress along the way, the Dogwood Diploma is the definitive measure of whether or not a student has met generally held expectations for learning, including **literacy** and **numeracy**.[5]
- Figure 51.1 shows the percentage of BC students who completed high school within six years of entering grade 8, from 2007/08 to 2013/14. It indicates that there was a steady increase in the completion rate over these seven school years. The increase is likely due in part to significant increases in the completion rates of Aboriginal students over these years. Aboriginal students constitute about 10 per cent of the BC student population.[6] The increase in educational completion/attainment percentage shown may also reflect the increased focus of school districts on improving student achievement.[7]
- Figure 51.2 shows that the percentage of students who completed secondary school ranged from 76.4 to 87.6 per cent in the 2013/14 school year among health authorities, and Figure 51.3 shows a range of 66.7 to 88.3 per cent among the health service delivery areas for the same year. Generally, higher rates were found in more urban health service delivery areas.

[1] A small number of students who are not cognitively capable of achieving a British Columbia Certificate of Graduation (Dogwood) or British Columbia Adult Graduation Diploma (Adult Dogwood) may still obtain a British Columbia School Completion Certificate (Evergreen). Expectations are set for each student individually. If the student successfully completes the goals and objectives contained in his or her Individual Education Plan, they receive an "Evergreen" Certificate.

## FIG 51.1 Percentage of Students Who Complete High School within Six Years, by Sex, BC, 2007/08 to 2013/14



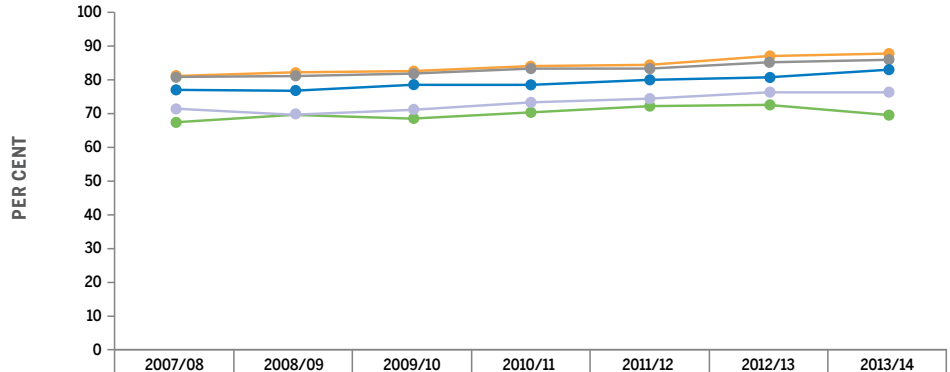

| | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | 2013/14 |
|---|---|---|---|---|---|---|---|
| Female | 82.0 | 82.1 | 82.6 | 83.4 | 83.9 | 85.4 | 86.4 |
| Male | 75.8 | 76.5 | 77.0 | 78.7 | 79.7 | 81.9 | 82.1 |
| All | 78.8 | 79.2 | 79.7 | 81.0 | 81.8 | 83.6 | 84.2 |

YEAR

**Notes:** "Students who complete high school within six years" means students under age 20 who graduate with a BC Certificate of Graduation or BC Adult Graduation Diploma within six years from the first time they enrolled in grade 8. The rate is adjusted for migration in and out of BC. Data include public and independent schools in School Districts 005 to 092 only. See Appendix B for more information about this data source.

**Source:** BC Ministry of Education, Education Data Warehouse, 2007/08-2013/14. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## FIG 51.2 Percentage of Students Who Complete High School within Six Years, by Health Authority, BC, 2007/08 to 2013/14



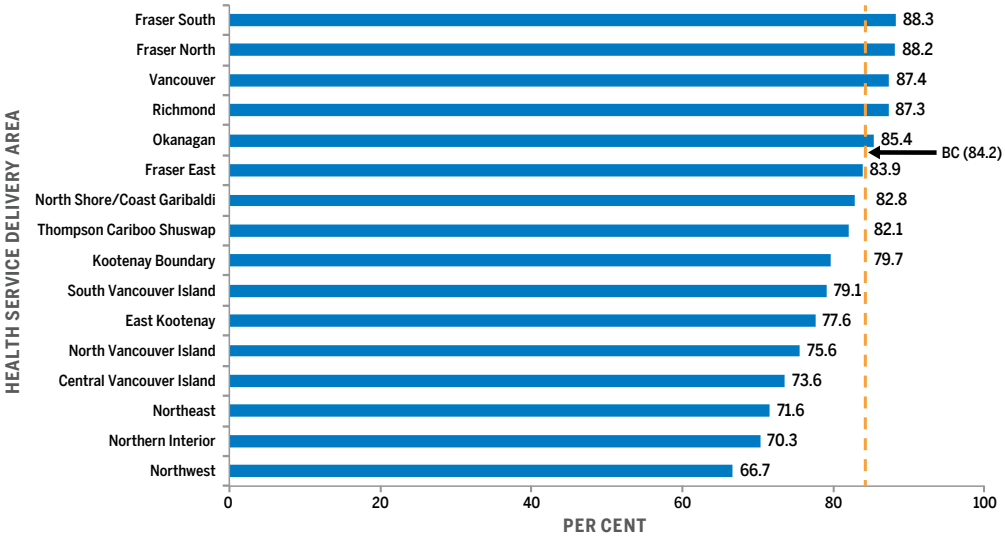

| | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | 2012/13 | 2013/14 |
|---|---|---|---|---|---|---|---|
| Northern | 67.2 | 69.7 | 68.4 | 70.4 | 72.1 | 72.5 | 69.5 |
| Interior | 76.9 | 76.7 | 78.5 | 78.5 | 79.9 | 80.6 | 82.8 |
| Fraser | 80.9 | 82.3 | 82.4 | 83.9 | 84.4 | 87.1 | 87.6 |
| Vancouver Coastal | 80.8 | 81.1 | 81.9 | 83.2 | 83.1 | 85.1 | 85.8 |
| Island | 71.4 | 69.6 | 71.1 | 73.4 | 74.3 | 76.4 | 76.4 |

YEAR

**Notes:** "Students who complete high school within six years" means students under age 20 who graduate with a BC Certificate of Graduation or BC Adult Graduation Diploma within six years from the first time they enrolled in grade 8. The rate is adjusted for migration in and out of BC. Data include public and independent schools in School Districts 005 to 092 only. Health authority is based on the location of the school district. See Appendix B for more information about this data source.

**Source:** BC Ministry of Education, Education Data Warehouse, 2007/08-2013/14. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

**FIG 51.3** Percentage of Students Who Complete High School within Six Years, by Health Service Delivery Area, BC, 2013/14




**Notes:** "Students who complete high school within six years" means students under age 20 who graduate with a BC Certificate of Graduation or BC Adult Graduation Diploma within six years from the first time they enrolled in grade 8. The rate is adjusted for migration in and out of BC. Data include public and independent schools in School Districts 005 to 092 only. Health service delivery area is based on the location of the school district. See Appendix B for more information about this data source.

**Source:** Education Data Warehouse, BC Ministry of Education, 2013/14. Prepared by the Surveillance and Epidemiology Team, BC Office of the Provincial Health Officer, 2016.

## REFERENCES

[1] Lynch SM. Explaining life course and cohort variation in the relationship between education and health: the role of income. J Health Soc Behav. 2006 Dec;47(4):324-38.

[2] Statistics Canada. Education and occupation of high-income Canadians [Catalogue no. 99-014-X2011003]. Ottawa, ON: Minister of Industry; 2013 [cited 2016 Jul 13]. Available from: https://www12.statcan.gc.ca/nhs-enm/2011/as-sa/99-014-x/99-014-x2011003_2-eng.cfm.

[3] H. Krueger & Associates. Child and youth health and well-being indicators project: appendix J – cognitive development evidence review [prepared for the Office of the Provincial Health Officer and the Canadian Institute for Health Information]. Ottawa, ON: Canadian Institute for Health Information; 2011.

[4] Herd P. Education and health in late-life among high school graduates: Cognitive versus psychological aspects of human capital. J Health Soc Behav. 2010;51(4):478-96.

[5] BC Ministry of Education. Student credentials [Internet]. Victoria, BC: Government of BC; 2016 [cited 2016 Apr 20]. Available from: http://www2.gov.bc.ca/gov/content/education-training/administration/legislation-policy/public-schools/student-credentials.

[6] BC Ministry of Education. Aboriginal report 2008/09 – 2012/13: how are we doing? Victoria, BC: Government of BC; 2013 Nov [cited 2016 Apr 25]. Available from: www.bced.gov.bc.ca/abed/perf2013.pdf.

[7] Archibald J, Rose D. Is B.C. getting it right? Moving towards Aboriginal education success in British Columbia. Education Canada. 2014 Summer; 54(3). Available from: http://www.cea-ace.ca/education-canada/article/bc-getting-it-right.

# DISCUSSION & RECOMMENDATIONS

## CHAPTER 7

# MONITORING CHILD & YOUTH HEALTH IN BC

Through the examination of 51 indicators of child and youth health, this report has explored the question: *how healthy are BC's children and youth?* The childhood years have the strongest impact on the rest of our lives and provide the greatest opportunity for positive influence on a number of immediate and long-term outcomes for health and well-being.[1] Healthy children and youth are more ready and able to learn and, in the longer term, are more likely to become healthy adults and productive citizens who support the continued vitality of society.[2] Improving the lives of the approximately 960,000 children and youth in this province[3] is essential to the health and well-being of not only the child and youth population, but also the province as a whole.

Through the comprehensive suite of indicators and the related holistic view of health and well-being examined here, this report enhances the understanding of the health status of children and youth in BC. It also assists in better understanding the social determinants of health, and programs and services that support healthy growth and development.

# SUMMARY OF KEY FINDINGS

## Physical Health & Well-being

Generally, the physical health and well-being of children and youth in BC is stable or improving, which represents the establishment of lifelong habits that support long-term health in BC. However, across many of these indicators, geographic differences appear, revealing populations for which these healthy behaviours are a greater challenge.

### *Infants*

Infant mortality has fallen over the last 30 years, and the percentage of low birth weight infants has been relatively stable over the last 25 years. The percentage of mothers who report smoking during pregnancy has decreased, but the percentage of women of reproductive age who report binge drinking has increased. There has been a substantial increase in the rate of mothers who exclusively breastfeed for the first six months, and BC is now a leader in Canada for this indicator. Unfortunately, rates varied substantially by geography, with almost half of mothers in Vancouver Coastal Health exclusively breastfeeding but less than one-third doing so in Northern Health.

### *Young Children*

Across the childhood years, the indicators show both positive and negative trends, and point to areas for improvement. The indicators among kindergarten students for gross and fine motor skills have been relatively stable over the eight years reported. The percentage of children in kindergarten with visible tooth decay decreased, reflecting improvement across BC; however, almost 15 per cent of children in BC continue to have visible tooth decay. Further, almost one-third of children are not up-to-date with their immunizations by age 7.

### *Children and Youth*

Serious injury-related hospitalizations among BC children and youth have substantially declined over the 10 years reported; however, Northern Health and Interior Health have rates about one-third higher than the provincial average. Among youth in grades 7-12, most rated themselves as having good or excellent health. The percentage of youth who reported being at a healthy weight has remained relatively stable, with approximately 25 per cent reporting a body weight outside

of the healthy range. Females were less likely to report being at a healthy weight. The percentage of youth who reported eating vegetables and fruit is increasing, but in 2013, there were still 6 per cent who reported that they didn't eat any fruits or vegetables the previous day. Further, only about 16 per cent of youth participated in at least 60 minutes of physical activity seven days per week, and male participation was 10 percentage points higher than females.

The percentage of youth who reported ever having smoked and who reported smoking daily decreased over the 10 years reported. Similarly, the percentage of youth who reported drinking alcohol decreased over this same time period, and there is a slight decrease in binge drinking during this same period. However, with 17 per cent of students across BC reporting binge drinking in the past 30 days, and as many as 28 per cent in some geographic areas, binge drinking is still an important issue among youth. Approximately one-quarter of youth surveyed reported having ever used marijuana, which indicates a decreasing trend. Teenage pregnancy is associated with a variety of poor physical health outcomes for both mother and baby.[4] There has been a substantial decrease in teenage pregnancies over the 25 years reported. However, there is a fivefold difference between the health authorities, with Northern Health having the highest teenage birth rate.

## Mental & Emotional Health & Well-being

From a mental health perspective, youth in BC have a positive view of themselves and their lives; however, it is evident that there are important differences between the sexes. For example, in comparison to female youth, a larger percentage of male youth reported that they usually feel good about themselves, that they have "good" or "excellent" mental health, and that they are satisfied with their lives. Specifically, while 80 per cent of BC youth reported that they feel good about themselves, this is a 5 per cent decline largely from fewer females reporting that they felt good about themselves. Female youth are also more likely to consider and/or attempt suicide than male youth, although male youth have a higher suicide mortality rate. Unfortunately, youth in some parts of the province, such as in Northern Health, are more likely to have considered or attempted suicide than their peers in other geographic areas.

## Social Relationships

Social connections with one's family, school, and community are known to be protective factors that foster healthy development, decision making, and behaviours.[5–8] Many of the social relationship dimension indicators are encouraging. Youth in BC are reporting a higher level of connection to their families than they did 10 years ago and are reporting a higher level of connection to their schools during this time. However, it is concerning that increasing numbers of youth—almost 20 per cent—are reporting that they do not have an adult inside or outside of their family that they can talk to about a serious problem. It is also disconcerting that only 40 per cent of youth in BC report that they have a sense of belonging to their community.

Child abuse and neglect can have lasting and harmful outcomes, including physical and mental health problems, reduced educational attainment and employment prospects, homelessness, and greater involvement in criminal activity.[9–13] Children and youth living in Northern Health, the health authority with the highest rate of abuse and neglect, were three times more likely to be abused or neglected than those living in Vancouver Coastal Health. It is also disturbing that sexual abuse rates among youth have not

meaningfully improved in the last 10 years; this is particularly important for females, who were more than three times as likely as males to have experienced sexual abuse.

More than 10 per cent of youth in BC reported experiencing discrimination on the basis of race, ethnicity, or skin colour. More males than females experienced this, but the percentage of males experiencing discrimination decreased over the 10 years, while the percentage of females experiencing discrimination remained relatively stable. Conversely, there has been an overall increase in youth experiencing discrimination based on sexual orientation over the same time period, with the largest increase seen among females. In addition, there are obvious geographic differences for both types of discrimination. An alarming 50 per cent of youth report being bullied, and this has increased slightly over the past 10 years, although cyberbullying has decreased over the past five years.

## Economic & Material Well-being

Economic disadvantages, such as low household income, inadequate housing conditions, and parental unemployment, adversely influence the health and well-being of children and youth.[14,15] Among Canadian provinces, BC has the second highest percentage of children and youth under age 18 living in low-income households. The percentage of families with at least one unemployed parent decreased until the economic downturn of 2008, when it increased until 2010, only to decrease again but not reach the lower levels of unemployment seen between 2006 and 2008. The percentage of the urban population in BC with unmet core housing need increased dramatically between 2008 and 2011, and at a much faster rate than the national average, resulting in BC having the highest unmet housing need among the Canadian provinces by a substantial margin.

Unmet food needs arise when families cannot afford to purchase foods that constitute a healthy diet and so are closely associated with low-income households.[16] In BC over the past five years, the percentage of youth reporting that they go to bed hungry due to insufficient food in their house has decreased; however, over 7 per cent still reported this most severe form of food insecurity, and more than 10 per cent of youth in both the Northwest and Northeast Health Service Delivery Areas (HSDAs) reported that they go to bed hungry.

In BC, youth unemployment, meaning youth who are not in school, training, or employment,[17] is 10 per cent and sits in the mid-range among Canadian provinces. Again, there is substantial geographic variation for this indicator, with the highest percentage of unemployed youth being reported in Northern BC.

## Cognitive Development

Cognitive development, such as the ability to read and communicate, is important for academic success and critical thinking and decision-making later in life. Over the past 10 years in BC there has been a decrease in the percentage of kindergarten children who require additional support and care in their language and cognitive development, while the percentage of children requiring similar support for their communication skills and general knowledge has remained relatively stable. While this indicates that children are arriving at school more prepared from a literacy and numeracy perspective than in the past, there are geographic differences across the province.

Another area of consideration is a child's ability to interact positively with others and establish relationships. The social and emotional skills developed in the early years are foundational to lifelong positive

mental health and functioning.[18] An increasing percentage of kindergarten children require additional support and care in the areas of social competence and emotional maturity.

Evidence suggests that academic performance is strongly linked to better health in later life.[19] While most of the indicators for academic performance have stayed steady over the years, high school completion across BC has increased. However, there are clear geographic differences in educational achievement between health authorities, and the pattern of which health authorities had the best and worst results was consistent across several measures: Foundation Skills Assessment – Reading (grades 4 and 7); Foundation Skills Assessment – Numeracy (grades 4 and 7); grade 10 English Provincial Examinations; and grade 10 Math Provincial Examinations. For these indicators, among the health authorities, the results found in schools within Vancouver Coastal Health were substantially better than schools within Northern Health. The percentage of students who graduated from high school is highest in Fraser Health, followed by Vancouver Coastal Health by a very small margin, with Northern Health having the lowest percentage of students who graduated from high school.

# DISCUSSION & RECOMMENDATIONS

## Is "Good", Good Enough?

The results presented in this report in response to the question *"how healthy are BC's children and youth?"* lead to even more important and difficult questions that can be used to guide future action.

Data in this report demonstrate that overall, the health and well-being of children and youth in BC is reasonably good, particularly in comparison to other jurisdictions in Canada. But is "good", good enough? Is the fact that the chlamydia rate for females is "stable" at 1,400 per 100,000 good enough? Is it reassuring that 15 per cent of kindergarten children are still found to have visible dental decay, even if it is an improvement? Is it satisfactory that 16 per cent of youth in BC fail to complete high school? Is it acceptable to call it progress when there are still more than 7 per cent of students in grades 7–12 who report they went to bed hungry because there was insufficient food at home?

This section outlines two key health equity themes, and provides five recommendations that are based on the findings presented in this report. These recommendations were established in collaboration with the Advisory Committee members that participated in the development of this report. The recommendations are offered with the aim of informing health system decision-making and the development of policy, programs, and services that benefit children and youth in BC.

## Addressing Health Disparities Based on Geography

**How do the evident, substantial geographic disparities in BC guide future action?**

Rural areas are defined by Statistics Canada as any area lying outside of urban areas. Urban areas are defined as having a population of at least 1,000 and a density of 400 or more people per square kilometre.[20] As identified in the Ministry of Health's policy framework on rural health services in BC, "The populations of rural British Columbia are often small, dispersed, and fluctuating in number…and a large percentage of the rural population identifies as Aboriginal."[21] This situation is not unique to BC, as similar findings have been identified in rural populations across Canada.[22]

Rural life affords many benefits to those who live there. For example, many rural and remote communities describe characteristics that may contribute to their resiliency such as a strong sense of community.[22] However, there are some unique challenges to accessing health care in a rural setting that stem from multiple factors: geographic remoteness, long distances between communities, low population densities, fewer providers, and inclement weather conditions. Generally speaking, individuals who reside in predominantly rural communities tend to have poorer health outcomes and socio-economic status compared to their urban counterparts.[22] When working towards better health and well-being outcomes for all children and youth in BC, one should consider and account for geography in relation to social and environmental contexts, as well as access to health care services.

There were significant geographic disparities evident for 39 out of 51 indicators, with Northern Health and rural and remote HSDAs being identified as the health authority and HSDAs most in need. These data must prompt coordinated action at the provincial level to address these geographic disparities as well as action at regional and local levels. Additionally, it is important to learn from those areas that are doing well in many of the indicators in order to support other communities as they strive towards better health and well-being outcomes for their own children and youth.

## Addressing Health Disparities Based on Sex & Gender

**Why are there differences in health and well-being according to sex/gender?**

It is alarming that sex and gender gaps are evident in many of the indicators of health and well-being. For example, females report lower levels of self-esteem and self-rated mental health, experience higher rates of bullying, report significantly higher rates of sexual abuse, and are less physically active than males. However, more females passed the English Provincial Exams compared to males, while in some years slightly fewer females passed the Math Provincial Exams compared to males. These disparities are complex, and further investigation and examination is required in order to better understand the causes and therefore the potential solutions.

## Addressing Gaps in Data Availability

**How do we fill in the blanks?**

It is imperative that government and non-government organizations gather, analyze, and use data to inform funding, policy, and service delivery decisions. Yet relevant, reliable, and accurate data are increasingly hard to come by. This report is foundational to addressing this issue by providing a baseline for key indicators of child and youth health in BC; however, it is essential that public decision-makers invest in continued generation of the data needed to enable informed decisions on how to foster the well-being of children and youth in BC today and in the years to come. There were 17 "gap" indicators identified for which data was unavailable during the selection process for the 51 indicators presented in this report. Additionally, as a result of findings presented here that warrant further analyses and understanding, the Advisory Committee identified a need to examine additional measures within the five dimensions of health in the future that are not examined in this report, including the following: physical dimension—sleep levels; mental and emotional dimension—family functioning, stress levels; social dimension—parental abuse of alcohol and other substances; economic dimension—adequacy of child care; cognitive dimension—early childhood education received.

## Pursuing Progress through Continued Collaboration

**How can the energy of youth, young families, and critical partners be used to improve the health of children and youth, and address health inequities?**

During the development of this report, youth across BC have shown commitment to understanding the findings presented as well as to using these data to make a difference in their communities. This is an eager, enthusiastic, and dedicated population that needs to be supported to ensure they are equipped with the tools required to support their own health and well-being as well as that of future generations, and to drive change in their communities.

**How do we commit to action?**

Communities, health authorities, school boards, ministries, and children, youth, and families need to work together—by leveraging good work already underway, strengthening connections, and learning from each other—to identify ways to positively influence the health and well-being of children and youth in BC.

# RECOMMENDATIONS

### RECOMMENDATION 1:

Commit to addressing the disparities in health based on sex/gender and geography, as identified in this report. This requires conducting further data analyses and consultations with stakeholders (including children and youth of all sexes and genders and from all geographic areas) to determine the underlying causes of ongoing disparities, and to identify actions that can be taken to better meet the needs of all children and youth in BC.

### RECOMMENDATION 2:

Create a provincial-level inter-ministerial leadership committee that will support actions generated from this report to improve the health and well-being of children and youth in BC.

### RECOMMENDATION 3:

Establish an ongoing provincial forum where youth are connected with other community stakeholders to plan and undertake initiatives to enhance child and youth health and well-being in communities.

### RECOMMENDATION 4:

Develop a mechanism for a coordinated approach to ongoing data collection and reporting of indicators of child and youth health and well-being in BC, and for addressing indicators with missing and/or scarce data.

### RECOMMENDATION 5:

Develop a mechanism to share programs and initiatives in BC that aim to improve the health and well-being of children and youth. These programs should be evaluated and demonstrate success, in order to serve as potential models for other communities.

# CONCLUSION

"Good" is not good enough. We must do better for the children and youth of BC today and in the future. Improving the lives of children and youth in this province is essential to the health and well-being of the entire BC population. This report brings together data from a broad range of contributing factors to child and youth health and well-being, and establishes a comprehensive and holistic baseline to support consistent and ongoing monitoring and reporting of child and youth health in BC into the future. In doing so, it provides essential information for decision-makers, educators, planners, members of communities, and youth themselves to use to make the changes that are needed to address issues identified in this report. This report provides crucial information on the influence of early childhood experiences on a person's health throughout life, and looks beyond physical health to consider how the social determinants of health affect the lives of children and youth in BC.

## REFERENCES


[1] Chief Public Health Officer. Report on the state of public health in Canada 2009. Growing up well – priorities for a healthy future. Ottawa, ON: Chief Public Health Officer; 2009 [cited 2016 Feb 26]. Available from: http://www.phac-aspc.gc.ca/cphorsphc-respcacsp/2009/fr-rc/pdf/cphorsphc-respcacsp-eng.pdf.

[2] Committee on Evaluation of Children's Health, Board on Children, Youth and Families, Division of Behavioral and Social Sciences and Education, National Research Council, Institute of Medicine. Children's health, the nation's wealth: assessing and improving child health. Washington, DC: The National Academies Press; 2004.

[3] BC Stats. Population estimates [Internet]. Victoria, BC: BC Stats; [cited 2016 Jul 26]. Available from: http://www.bcstats.gov.bc.ca/StatisticsBySubject/Demography/PopulationEstimates.aspx.

[4] H. Krueger & Associates. Child and youth health and well-being indicators project: appendix F – physical health and well-being evidence review [prepared for the Office of the Provincial Health Officer and the Canadian Institute for Health Information]. Ottawa, ON: Canadian Institute for Health Information; 2011.

[5] Saewyc E, Tonkin R. Surveying adolescents: focusing on positive development. Paediatr Child Health. 2008 Jan;13(1):43-7.

[6] Shonkoff J, Phillips D. From neurons to neighborhoods - the science of early childhood development. Washington, DC: National Academy Press; 2000.

[7] Resnick MD, Bearman PS, Blum RW, Bauman KE, Harris KM, Jones J, et al. Protecting adolescents from harm--findings from the National Longitudinal Study of Adolescent Health. JAMA. 1997 Sep 10;278(10):823-32.

[8] Federal, Provincial and Territorial Advisory Committee on Population Health. Toward a healthy future. Second report on the health of Canadians. Charlottetown, PE: Federal, Provincial and Territorial Advisory Committee on Population Health; 1999.

[9] Walsh CA, Jamieson E, MacMillan H, Boyle M. Child abuse and chronic pain in a community survey of women. J Interpers Violence. 2007 Dec;22(12):1536-54.

[10] Boden JM, Horwood LJ, Fergusson DM. Exposure to childhood sexual and physical abuse and subsequent educational achievement outcomes. Child Abuse Negl. 2007 Oct;31(10):1101-14.

[11] Gilbert R, Spatz Widon C, Browne K, Fergusson D, Webb E, Janson S. Burden and consequences of child maltreatment in high-income countries. Lancet. 2009 Jan 3;373(9657):68–81.

[12] Lamont A. Effects of child abuse and neglect for children and adolescents. National Child Protection Clearinghouse Resource Sheet. Melbourne: Australian Institute of Family Studies; 2010 Apr.

[13] Wilson C. The emergence of trauma-informed child welfare systems. CW360°: Trauma-informed Child Welfare Practice. 2013 Winter:12-13.

[14] Children's Hospital of Eastern Ontario. Reducing poor health outcomes for children and youth: recommendations for the Ontario Poverty Reduction Strategy. Ottawa, ON: Children's Hospital of Eastern Ontario; 2008 Apr [cited 2016 Mar 31]. Available from: http://www.cheo.on.ca/uploads/AboutUs/Files/poverty_submission_e.pdf.

[15] H. Krueger & Associates. Child and youth health and well-being indicators project: appendix I—economic and material well-being evidence review [prepared for the Office of the Provincial Health Officer and the Canadian Institute for Health Information]. Ottawa, ON: Canadian Institute for Health Information; 2011 [cited 2016 Apr 7]. Available from: http://www2.gov.bc.ca/assets/gov/health/about-bc-s-health-care-system/office-of-the-provincial-health-officer/reports-publications/special-reports/appendix_i_-_economic__material_well_being_evidence_review.pdf.

[16] Wilde, P. Food security policy in developed countries. In: Lusk JL, Roosen J, Shogren JF, editors. The Oxford handbook of the economics of food consumption and policy. Oxford: Oxford University Press; 2012 [cited 2016 Apr 7]. Available from: http://www.oxfordhandbooks.com/view/10.1093/oxfordhb/9780199569441.001.0001/oxfordhb-9780199569441-e-13.

[17] Marshall, K. Youth neither enrolled nor employed. Perspectives on Labour and Income. 2012 Summer;24(2). Available from: http://www.statcan.gc.ca/pub/75-001-x/2012002/article/11675-eng.pdf.

[18] Hawkins JD, Kosterman R, Catalano RF, Hill KG, Abbott RD. Promoting positive adult functioning through social development intervention in childhood: long-term effects from the Seattle Social Development Project. Arch Pediatr Adolesc Med. 2005 Jan;159(1):25-31.

[19] Dewalt DA, Berkman ND, Sheridan S, Lohr KN, Pignone MP. Literacy and health outcomes: a systematic review of the literature. J Gen Intern Med. 2004 Dec;19(12):1228-39.

[20] Statistics Canada. From urban areas to population centres [Internet]. Ottawa, ON: Statistics Canada; 2011 Feb 7 [modified 2015 Apr 2; cited 2016 Jul 25]. Available from: http://www.statcan.gc.ca/eng/subjects/standard/sgc/notice/sgc-06.

[21] BC Ministry of Health. Rural health services in BC: a policy framework to provide a system of quality care. Cross sector policy discussion paper. Victoria, BC: BC Ministry of Health; 2015 [cited 2016 Feb 18]. Available from: http://www.health.gov.bc.ca/library/publications/year/2015/rural-health-policy-paper.pdf.

[22] Canadian Institute for Health Information. How healthy are rural Canadians? An assessment of their health status and health determinants. Ottawa, ON: Canadian Institute for Health Information; 2006 [cited 2016 Feb 18]. Available from: https://secure.cihi.ca/free_products/rural_canadians_2006_report_e.pdf.

# TECHNICAL APPENDICES

# APPENDIX A: GLOSSARY

| | |
|---|---|
| **Asthma** | "A 'chronic inflammatory disease of the airway' that causes the following symptoms: shortness of breath, tightness in the chest, coughing, [and] wheezing."[1] |
| **Binge drinking** | A pattern of drinking that brings a person's blood alcohol concentration (BAC) to 0.08 g/dL or above. This typically occurs when men consume five or more drinks and when women consume four or more drinks in about two hours.[2] There are slight variations in the definition for this term between data sources (for more information about how a specific source has defined this term, please see the applicable figure notes). |
| **Breastfeeding initiation** | When mothers breastfed or tried to breastfeed their child, even if only for a short time.[3] |
| **Bullying** | "A pattern of unwelcome or aggressive behaviour, often with the goal of making others uncomfortable, scared, or hurt. It is almost always used as a way of having control or power over a target, and it is often based on another person's appearance, culture, race, religion, ethnicity, sexual orientation, or gender identity."[4] |
| **Child abuse** | Cruel or violent treatment of a child, especially when it occurs regularly or repeatedly.[5] This includes *physical abuse*, which is bodily injury inflicted upon a child or youth such as punching, beating, kicking, biting, burning, or shaking; *sexual abuse*, which includes intercourse, fondling, acts of exposure, sexual soliciting, and sexual harassment; and *emotional abuse*, which includes exposure to domestic violence or witnessing a parent's misconduct.[6] |
| **Child neglect** | The failure to provide shelter, safety, supervision, and nutritional needs for a child or youth.[6] |
| **Children in care** | Children or youth who are under the care of the Government of British Columbia and live in a foster or group home.[7] |
| **Chlamydia** | "A sexually transmitted infection caused by bacteria. In women, the infection may occur at the opening to the uterus, also known as the cervix, and the fallopian tubes. In both men and women, the infection may occur in the rectum, throat, and the urethra, which is the tube that carries urine from the bladder."[8] |
| **Community connectedness** | A general sense of being part of or belonging to a community.[9] |
| **Constructive use of time** | A term used to describe child and youth participation in out-of-school activities such as team sports, after-school programs, community service and volunteering, mentoring programs, arts programs, and school-based clubs.[6] |

| | |
|---|---|
| **Core housing need** | When a household's housing does not meet one of the established standards of adequacy (e.g., requiring any major repairs), affordability (i.e., costing more than 30 per cent of total before-tax household income), or suitability (i.e., not having enough bedrooms for the size and make-up of residents, according to National Occupancy Standard requirements).[10] |
| **Discrimination** | Prejudicial outlook, action, or treatment of an individual or group[11] based on their race, colour, ancestry, place of origin, religion, sexual orientation, and/or physical or mental disability, among other factors.[12] Like adults, children and youth have a fundamental right to be free from discrimination as described in the BC Human Rights Code. |
| **Early childhood caries** | "The presence of one or more decayed (noncavitated or cavitated lesions), missing (due to caries) or filled tooth surfaces in any primary tooth in a preschool-age child, i.e., between birth and 71 months of age."[13] |
| **Exclusive breastfeeding** | When an infant has received only breast milk since birth and has not received any other liquids or solids except any necessary medicines, oral rehydration solutions, or drops/syrups containing vitamins or minerals.[3,14] Breast milk can include expressed milk and donor milk. |
| **Externalizing behaviours** | Under-controlled, acting-out behaviours such as aggression, impulsivity, and noncompliance.[15] These are moderately associated with children or youth who have experienced abuse or neglect.[16] |
| **Family connectedness** | A general sense of belonging and closeness to one's family.[6] |
| **Fetal Alcohol Spectrum Disorder (FASD)** | An umbrella term that describes the range of effects that can occur in an individual who was exposed to alcohol during pregnancy. FASD is lifelong and can include physical abnormalities, and mental and behavioural deficits.[17–19] |
| **First Community Sentence** | One of three categories within the youth justice system in which youth are under a first court order to serve a sentence in the community (rather than be incarcerated).[20] |
| **Food insecurity** | Food security exists "when all people, at all times, have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life."[21] Food insecurity exists when a person or household is concerned they will not be able to, or are unable to acquire or consume an adequate diet, either because of the poor quality of food or insufficient quantity. It is often associated with the financial ability to acquire food.[22] Moderate food insecurity is when a household compromises the quality and/or quantity of food consumed. Severe food insecurity is when a household reduces food intake or disrupts normal eating patterns.[23] |
| **Formal Diversion** | One of three categories within the youth justice system in which youth who are diverted from the court system are managed by police in a formal community service such as the John Howard Society.[20] |

**Healthy body weight**

For children and youth, the definition varies by age:

- Children 0 to <2 years – weight-for-length at or above the 3rd percentile and at or below the 97th percentile.
- Children 2 to <5 years – body mass index (BMI) at or above the 3rd percentile and at or below the 97th percentile.
- Children and youth 5–19 years – BMI at or above the 3rd percentile and at or below the 85th percentile.[24]

**High birth weight**

For a singleton baby, a birth weight of more than 4,000 grams.[25]

**Immunization**

"..[T]he process whereby a person is made immune or resistant to an infectious disease, typically by the administration of a vaccine. Vaccines stimulate the body's own immune system to protect the person against subsequent infection or disease."[26]

**Incarceration**

See "youth incarceration."

**Infant mortality**

The death of a child less than 365 days old.[27]

**Internalizing behaviours**

Over-controlled, inhibited behaviours such as withdrawal, depression, and anxiety.[15] These are moderately associated with children or youth who have experienced abuse or neglect.[16]

**Life satisfaction**

A measure of general well-being based on people's perceptions of how content or happy they are with their life as a whole.[28,29]

**Literacy**

The ability to read and write.[11] By some definitions, literacy also includes the development of oral language.[30]

**Low birth weight**

For a singleton baby, a birth weight of less than 2,500 grams (including preterm babies). Low birth weight is used around the world as an indicator of the health status of newborns and as a predictor of health and developmental outcomes in later life.[31]

**Motor skills**

The abilities needed by a person to move his/her body to carry out a task; these abilities require the brain, nerves, skeleton, joints, and muscles to work together. There are two types: *gross motor skills* (e.g., rolling over, sitting up, balancing, crawling, walking); and *fine motor skills* (e.g., using small objects such as a spoon, transferring an object from one hand to the other).[32] For more information about how motor skills were determined in data presented in this report, see the corresponding figure notes.

**Numeracy**

The ability to "understand and work with numbers."[33] More specifically, the ability to instantly understand the value of small quantities, make judgments about numbers and their values, grasp counting principles, and complete basic addition and subtraction.[34] Numeracy is also known as *number skills* or *number competence*.

**Obese**

For children and youth, the definition varies by age:

- Children 0 to <2 years – weight-for-length above the 99.9th percentile.
- Children 2 to <5 years – body mass index (BMI) above the 99.9th percentile.
- Children and youth 5–19 years – BMI above the 97th percentile.[24]

| | |
|---|---|
| **Overweight** | For children and youth, the definition varies by age:<br>▶ Children 0 to <2 years – weight-for-length above the 97th percentile and at or below the 99.9th percentile.<br>▶ Children 2 to <5 years – body mass index (BMI) above the 97th percentile and at or below the 99.9th percentile.<br>▶ Children and youth 5–19 years – BMI above the 85th percentile and at or below the 97th percentile.[24] |
| **Preterm birth** | An infant born before 37 weeks of pregnancy.[35] |
| **Pro-social behaviour** | Behaviour or acts that are intended to benefit others (e.g., sharing, assisting others, cooperation).[43] The development of prosocial behaviours in early childhood is associated with social and emotional competence throughout childhood, and is also associated with academic performance, problem-solving, and moral reasoning.[44] |
| **Protective factors** | Elements of a young person's life that foster healthy development, healthy decision making, and healthy behaviours.[36] |
| **Psychotropic medications** | A medication capable of affecting a person's mind, emotions, and behaviour.[37] |
| **School connectedness** | A sense of belonging and a feeling of being part of the school. Students who feel connected to their school are characterized as feeling happy, liking school, feeling engaged and safe, and feeling accepted and valued. They also participate in school activities, feel that teachers are fair and care about them, and have good relationships with other students.[36,38] |
| **Self-esteem** | A confidence and satisfaction in oneself.[39] |
| **Singleton** | A single child carried in pregnancy and born, rather than one of a multiple birth.[40] |
| **Social competence** | The ability to use certain skills appropriately in social situations. The concept can be broad and inclusive of the emotional foundations of positive and negative social interaction, or it can be narrow and specifically refer to problem behaviours in social contexts, including aggression, shyness/withdrawal, and attention deficits.[30] |
| **Suicidality** | A range of behaviours including thinking about suicide (suicidal ideation), deliberate self-harm, suicide attempts, and completed suicide.[42] |
| **Underweight** | For children and youth, the definition varies by age:<br>▶ Children 0 to <2 years – weight-for-length below the 3rd percentile.<br>▶ Children 2 to <5 years – body mass index (BMI) below the 3rd percentile.<br>▶ Children and youth 5–19 years – BMI below the 3rd percentile.[24] |
| **Youth incarceration** | One of three categories within the youth justice system in which youth are ordered to serve a sentence in a Youth Custody Centre.[20] |
| **Youth unemployment** | Youth not enrolled in school or a training program, and not employed.[41] |

## REFERENCES


[1] Asthma Society of Canada. About asthma: what is asthma? [Internet]. Toronto, ON; Asthma Society of Canada; [updated 2016 Apr; cited 2016 Apr 6] Available from: http://www.asthma.ca/adults/about/whatIsAsthma.php.

[2] National Institute of Alcohol Abuse and Alcoholism. Drinking levels defined [Internet]. Bethesda, MD; National Institutes of Health; [cited 2016 Aug 26]. Available from: https://www.niaaa.nih.gov/alcohol-health/overview-alcohol-consumption/moderate-binge-drinking.

[3] Statistics Canada. Table 105-0502 Health indicator profile, two year period estimates, by age group and sex, Canada, provinces, territories, health regions (2013 boundaries) and peer groups, occasional (table). CANSIM (database). Ottawa, ON: Statistics Canada; [modified 2016 Mar 4; cited 2016 Jun 28]. Available from: http://www5.statcan.gc.ca/cansim/a26?lang=eng&retrLang=eng&id=1050502&&pattern=&stByVal=1&p1=1&p2=-1&tabMode=dataTable&csid=.

[4] BC Ministry of Education. ERASE bullying – What is bullying? [Internet]. Victoria, BC: BC Ministry of Education; 2012 [cited 2016 Apr 28]. Available from: http://www.erasebullying.ca/bullying/bullying.php.

[5] Definition of *abuse* in English [Internet]. Oxford dictionaries. Oxford: Oxford University Press; 2016; [cited 2016 Jun 07]. Available from: http://www.oxforddictionaries.com/definition/english/abuse.

[6] Pivak J. Child and youth health and well-being indicators project: appendix H – social relationships evidence review [prepared for the Office of the Provincial Health Officer and the Canadian Institute for Health Information]. Ottawa, ON: Canadian Institute for Health Information; 2011.

[7] Government of British Columbia. Youth services [Internet]. Victoria, BC: BC Ministry of Children and Family Development; [cited 2016 Jun 2]. Available from http://www.mcf.gov.bc.ca/youth/.

[8] HealthLink BC. Chlamydia [File #081]. Victoria, BC: HealthLink BC; 2014 Jan [cited 2016 Aug 5]. Available from: http://www.healthlinkbc.ca/healthfiles/pdf/hfile08l.pdf.

[9] Smith A, Stewart D, Poon C, Peled M, Saewyc E. From Hastings Street to Haida Gwaii: provincial results of the 2013 BC Adolescent Health Survey. Vancouver, BC: McCreary Centre Society; 2014.

[10] Canada Mortgage and Housing Corporation. Housing in Canada online. Definitions of variables. Ottawa, ON: Canada Mortgage and Housing Corporation; [cited 2016 Jun 17]. Available from: http://cmhc.beyond2020.com/HiCODefinitions_EN.html.

[11] Merriam Webster's collegiate dictionary. 10th ed. Springfield, MA: Merriam-Webster, Incorporated; 1997.

[12] Human Rights Code [RSBC 1996, c.210] [statute on the Internet]; [cited 2016 Jun 1]. Available from: http://www.bclaws.ca/Recon/document/ID/freeside/00_96210_01.

[13] Canadian Dental Association. CDA position on early childhood caries. Ottawa, ON: Canadian Dental Association; 2010 Apr [cited 2016 Mar 21]. Available from: http://www.cda-adc.ca/_files/position_statements/earlyChildhoodCaries.pdf.

[14] World Health Organization, Division of Child Health and Development. Indicators for assessing breastfeeding practices. Geneva: World Health Organization; 1991 Jun 11-12 [cited 2016 Jun 10]. Available from: http://apps.who.int/iris/handle/10665/62134.

[15] Gresham F, Lane K, MacMillan D, Bocian K. Social and academic profiles of externalizing and internalizing groups: risk factors for emotional and behavioural disorders. Behav Disord. 1999 May;24(3):231-45.

[16] Hornor G. Child sexual abuse: consequences and implications. J Pediatr Health Care. 2010 Nov-Dec;24(6):358-64.

[17] Welch-Carre E. The neurodevelopmental consequences of prenatal alcohol exposure. Adv Neonatal Care. 2005 Aug;5(4):217-29.

[18] Kodituwakku PW. Defining the behavioral phenotype in children with fetal alcohol spectrum disorders: a review. Neurosci Biobehav Rev. 2007;31(2):192-201.

[19] Nash K, Sheard E, Rovet J, Koren G. Understanding fetal alcohol spectrum disorders (FASDs): toward identification of a behavioral phenotype. ScientificWorldJournal. 2008 Sep 21;8:873-82.

[20] BC Ministry of Children and Family Development. Performance management report. Vol. 7. Victoria, BC: BC Ministry of Children and Family Development; 2015 Sep [cited 2016 Jun 30]. Available from: http://www2.gov.bc.ca/assets/gov/family-and-social-supports/services-supports-for-parents-with-young-children/reporting-monitoring/03-operational-performance-strategic-management/performance_management_report_sept_2015.pdf.

[21] Food and Agriculture Organization. Rome declaration on world food security and world food summit plan of action. Rome: Food and Agriculture Organization; 1996 [cited 2016 Aug 12]. Available from: www.fao.org/docrep/003/w3613e/w3613e00.htm.

[22] Health Canada. Household food insecurity in Canada: overview. Ottawa, ON: Health Canada; [modified 2012 Jul 25; cited 2016 Jun 27]. Available from: http://www.hc-sc.gc.ca/fn-an/surveill/nutrition/commun/insecurit/index-eng.php.

[23] Health Canada. Determining food security status. Ottawa, ON: Health Canada; [modified 2012 Jul 25; cited 2016 Aug 11]. Available from: http://www.hc-sc.gc.ca/fn-an/surveill/nutrition/commun/insecurit/status-situation-eng.php.

[24] Dietitians of Canada, Canadian Paediatric Society, The College of Family Physicians or Canada, Community Health Nurses of Canada. Promoting optimal monitoring of child growth in Canada: using the new World Health Organization growth charts [Internet]. Ottawa, ON: Dietitians of Canada and Canadian Paediatric Society; 2010 [cited 2016 Jun 13]. Available from: http://www.dietitians.ca/Downloads/Public/tcg-position-paper.aspx.

[25] Harder T, Roepke K, Diller N, Stechling Y, Dudenhausen JW, Plagemann A. Birth weight, early weight gain, and subsequent risk of type 1 diabetes: systematic review and meta-analysis. Am J Epidemiol. 2009 Jun 15;169(12):1428-36.

[26] World Health Organization. Immunization [Internet]. Geneva: World Health Organization; [cited 2016 Jul 18]. Available from: http://www.who.int/topics/immunization/en/.

[27] Statistics Canada. Infant mortality rates, by province and territory (both sexes) (table). Ottawa, ON: Statistics Canada; [modified 2015 Dec 10; cited 2016 Jun 15]. Available from: http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/health21a-eng.htm.

[28] Statistics Canada. Life satisfaction, 2009 [Internet]. Ottawa, ON: Statistics Canada; [modified 2015 Nov 27; cited 2016 Jun 7]. Available from: http://www.statcan.gc.ca/pub/82-625-x/2010002/article/11264-eng.htm.

[29] Bonikowska A, Helliwell JF, Hou F, Schellenberg G. An assessment of life satisfaction responses on recent Statistics Canada surveys. Analytical Studies Branch Research Paper Series [Catalogue no. 11F0019M– No. 351]. Ottawa, ON: Minister of Industry; 2013 [cited 2016 Jul 4]. Available from: http://www.statcan.gc.ca/pub/11f0019m/11f0019m2013351-eng.pdf.

[30] H. Krueger & Associates. Child and youth health and well-being indicators project: appendix J – cognitive development evidence review [prepared for the Office of the Provincial Health Officer and the Canadian Institute for Health Information]. Ottawa, ON: Canadian Institute for Health Information; 2011.

[31] Ashdown-Lambert JR. A review of low birth weight: predictors, precursors and morbidity outcomes. J R Soc Promot Health. 2005 Mar;125(2):76-83.

[32] Healthwise Staff. Motor skills in babies [Internet]. In: HealthLink BC. Growth and development, ages 12 to 24 months [Internet]. Victoria, BC: HealthLink BC; [updated 2016 Jul 3; cited 2016 Jul 18]. Available from: http://www.healthlinkbc.ca/healthtopics/content.asp?hwid=te7089.

[33] Definition of *numeracy* in English [Internet]. Oxford dictionaries. Oxford: Oxford University Press; 2016; [cited 2016 Jun 07]. Available from http://www.oxforddictionaries.com/definition/english/numeracy.

[34] Jordan NC, Kaplan D, Ramineni C, Locuniak MN. Early math matters: kindergarten number competence and later mathematics outcomes. Dev Psychol. 2009 May;45(3):850-67.

[35] Definition of *preterm* in English [Internet]. Oxford dictionaries. Oxford: Oxford University Press; 2016; [cited 2016 Jun 07]. Available from http://www.oxforddictionaries.com/definition/english/preterm.

[36] Saewyc E, Tonkin R. Surveying adolescents: focusing on positive development. Paediatr Child Health. 2008 Jan;13(1):43-7.

[37] Stedman's medical dictionary for health professions and nursing. 5th ed. Baltimore, MD: Lippincott Williams and Wilkins; 2005.

[38] MacKay L. School connectedness: it matters to student health. Visions: BC's Mental Health and Addictions Journal, 2009;5(2):18-9.

[39] Definition of *self-esteem*. Merriam-Webster's collegiate dictionary. 11th ed. Springfield, MA: Merriam-Webster, Incorporated; 2003.

[40] Definition of *singleton* in English [Internet]. Oxford dictionaries. Oxford: Oxford University Press; 2016; [cited 2016 Jun 07]. Available from http://www.oxforddictionaries.com/definition/english/singleton.

[41] Marshall, K. Youth neither enrolled nor employed. Perspectives on Labour and Income. 2012 Summer;24(2). Available from: http://www.statcan.gc.ca/pub/75-001-x/2012002/article/11675-eng.pdf.

[42] Somers JM, Currie L, Eiboff F. Child and youth health and well-being indicators project: appendix G – mental and emotional health and well-being evidence review [prepared for the Office of the Provincial Health Officer and the Canadian Institute for Health Information]. Ottawa, ON: Canadian Institute for Health Information; 2011.

[43] Eisenberg N, Fabes RA, Spinrad TL. Prosocial development (chapter 11). In Eisenberg N, volume editor, Damon W, Lerner RM, series editors. Handbook of child psychology and developmental science. 6th ed; Vol. 3. Social, Emotional, and Personality Development. New Jersey: John Wiley & Sons; 2006: 646-718.

[44] Knafo-Noam, A, editor. Prosocial behaviour. Encyclopedia on early childhood development. Montreal, PQ: Centre of Excellence for Early Childhood Development and Strategic Knowledge Cluster on Early Child Development; [updated 2016 Feb; cited 2016 May 26]. Available from: http://www.child-encyclopedia.com/sites/default/files/dossiers-complets/en/prosocial-behaviour.pdf.

# APPENDIX B: DATA SOURCES

## Adolescent Health Survey

The Adolescent Health Survey (AHS) is administered by the McCreary Centre Society. The society uses this survey to collect information from BC public school students in grades 7 to 12 on a wide range of health topics. It was most recently conducted in 2013, and previous cycles were conducted in 1992, 1998, 2003, and 2008. Many of the same questions are repeated in each survey cycle in order to track health trends over time. The AHS is administered to regular public schools[1] and does not include schools on reserves.[2]

This report presents survey data from 2003, 2008, and 2013 to examine 19 indicators in four of the health dimensions explored. For some indicators survey data were obtained from a survey question that was introduced in 2008 or 2013; therefore, earlier data do not exist. For several indicators, data are reported by sex because survey respondents were asked whether they were male or female (this may or may not match their gender identity). Since the survey is anonymous, geographic analyses of data by health authority and health service delivery area are based on the location of the school where the survey was administered.

## BC Early Hearing Surveillance Tool Database

The BC Provincial Health Services Authority (PHSA) collects data on the results of the BC Early Hearing Surveillance Tool (BEST). The BEST is a secure, web-based tool used for the operation, evaluation, and optimization of the provincial hearing screening and testing program. It provides follow-up flags and communications to care providers that are used to ensure that all children have access to timely services.[3,4]

This report presents these data to examine hearing screening and referrals. Geographic analyses by health authority and health service delivery area are based on the location where the service was delivered.

## BC Ministry of Children & Family Development Corporate Data Warehouse

The BC Ministry of Children and Family Development (MCFD) administers a corporate database to support their government responsibilities. This includes data about children, youth, and families in BC.

This report presents MCFD corporate data to examine the rates of abused and/or neglected children and youth, children and youth in care, and youth in the justice system. Geographic analyses by health authority and health service delivery area are based on the location of the MCFD office that received the initial report for abuse or neglect. Data include Aboriginal children living on-reserve.

## BC Ministry of Education Corporate Data Warehouse

The BC Ministry of Education (MEd) administers a corporate database to support their government responsibilities. This includes data about children and youth in public and provincially funded independent schools in BC (including any located on reserve) derived from several sources. The Foundation Skills Assessment is an annual province-wide assessment of BC students in grades 4 and 7 that assesses academic skills in reading comprehension, writing, and numeracy.[5] Additionally, provincial examinations are annual

province-wide assessments of English (Grade 10 and 12 students) and Math (Grade 10 students).[6] MEd also monitors high school completion, including those with a BC Adult Graduation Diploma, and continuing education services through school districts.

This report presents MEd corporate data about high school completion, as well as results from the Foundation Skills Assessment, and English and Math provincial exam results. Geographic analyses by health authority and health service delivery area are based on the location of the school.

## BC Perinatal Data Registry

The BC Perinatal Data Registry is owned and administered by Perinatal Services BC, which is part of the BC Provincial Health Services Authority. This database includes health data for mothers and babies from obstetrical and neonatal medical records in BC, including hospital births and registered midwife-attended home births.[7]

BC Perinatal Data Registry data are presented in this report to examine smoking during pregnancy. Geographic analyses of data by health authority and health service delivery area are based on the residence of the mother.

## BC Vital Statistics

One of the responsibilities of the BC Vital Statistics Agency (VSA) is administration of Vital Statistics data, such as births, deaths, and marriages in BC. The VSA uses the World Health Organization's International Statistical Classification of Diseases codes, Version 10 (ICD-10) to classify related health data.

In this report the BC Vital Statistics data were used to determine the number of births in BC, and to examine low birth weights, teenage mothers, infant mortality, and youth suicide. Geographic analyses of data by health authority and health service delivery area are based on the residence of the person.

## Chronic Disease Registry

The BC Ministry of Health collects information for people living with a number of chronic diseases, within the Chronic Disease Registry. Data include the person's sex, age, residence, date of birth and/or death, as well as disease diagnosis date(s), and source of diagnosis.[8]

In this report, the Chronic Disease Registry data are used to examine asthma among children and youth. Geographic analyses of data by health authority and health service delivery area are based on the residence of the patient.

## Discharge Abstract Database

The Discharge Abstract Database (DAD) is housed at the Ministry of Health and contains detailed patient information, including ICD-10 diagnostic codes that describe the causes and types of injury leading to hospitalization. The DAD only reflects data for those persons who were admitted to hospital for an overnight stay that did not result in death, and the record ends when the patient is discharged from hospital. Therefore, hospitalization is used as a proxy indicator for a serious injury. The DAD does not include emergency room data or fatalities. If the patient is transferred to a new facility, a new record is created at that facility. DAD is a live database, meaning data may change over time due to reporting corrections, adjustments, and reconciliation of data.

DAD data are used in this report to look at serious injuries among children and youth. In this report, to avoid multiple counts of the same injury, when a patient was re-admitted or transferred to another hospital only the first admission was counted. Geographic analyses

of data by health authority and health service delivery area are based on the residence of the child or youth.

## Early Development Instrument

The Early Development Instrument (EDI) is a 104-question survey measuring five domains, or core ideas, of early child development that are known to be predictors of adult health, education, and social outcomes. The EDI is administered by the Human Early Learning Partnership, which is an interdisciplinary research network based out of the University of British Columbia's School of Population and Public Health.[9] All schools in BC are invited to participate in the EDI, including public, independent, and on-reserve schools.

EDI data presented in this report are used to examine the percentage of children who are vulnerable on a selection of EDI domains. Geographic analyses of data by health authority and health service delivery area are based on the residence of the child.

## Sexually Transmitted Infection Information System

The Sexually Transmitted Infection (STI) Information System is administered by the BC Centre for Disease Control (BCCDC). It contains records for reportable STIs (chlamydia, gonorrhea, infectious syphilis) from care providers and public health clinics across BC.

Data on the rate of chlamydia among youth were taken from the STI Information System for this report. Geographic analyses of data by health authority and health service delivery area are based on the residence of the youth.

## Statistics Canada

Statistics Canada collects and houses a wide variety of information about Canadians in its CANSIM database. These data are derived from a number of surveys and sources, including three presented in this report: the Canadian Community Health Survey (CCHS), the Canadian Census/National Household Survey, and the Survey of Labour and Income Dynamics (SLID).

In this report, Statistics Canada data are presented to examine several indicators. For example, CCHS data was used to examine binge drinking among women of reproductive age, breastfeeding, and youth reports of life satisfaction; and SLID survey data are presented to examine core housing need. Geographic analyses of data by health authority and health service delivery area are based on the residence of the survey respondent or their household.

### *Canadian Community Health Survey*

Through the CCHS, Statistics Canada collects health data by region (in BC these are health authorities and health service delivery areas). Data collected include information about health status, health care utilization, and socio-economic status and other determinants of health. Prior to 2007, the survey was conducted every two years. Since 2007, the survey has been conducted annually, but is reported in combined two-year aggregate periods. This survey does not include people living on reserves or other Aboriginal settlements, full-time members of the Canadian forces, and institutionalized people.[10]

### *Canadian Census/National Household Survey*

The Canadian Census is conducted every five years and it gathers demographic, social, and economic information from the entire Canadian population, including Canadian citizens (by birth and by naturalization), landed immigrants and non-permanent residents as well as their families living with them in Canada, and those Canadian citizens

and landed immigrants who are temporarily outside the country on Census Day. It does not include foreign residents temporarily visiting or representing a foreign government.[11]

In addition to the basic census, some individuals are randomly selected and required to complete a longer, more detailed version of the census—the "long-form" census. The long-form census was replaced by a voluntary National Household Survey (NHS) in 2011, but it was reinstated in 2016. The NHS included people who usually live in Canada, including those who live on reserves or other Aboriginal settlements, permanent residents, non-permanent residents such as refugee claimants, those who have work or study permits, and some others. It did not include foreign residents temporarily visiting or representing a foreign government, people living in hospitals, nursing homes, and penitentiaries, and others (for a complete list of people excluded from the NHS please see Statistic's Canada's National Household Survey webpage[12]).

### *Survey of Labour & Income Dynamics*

Statistics Canada administered the SLID between 1998 and 2011 to collect additional information about Canadians' economic well-being. The SLID includes data about the incomes of Canadian families, households, and individuals.[13] The SLID was discontinued in 2011.

## REFERENCES


[1] McCreary Centre Society. Methodology: 2013 BC Adolescent Health Survey. Vancouver, BC: McCreary Centre Society; 2014 Jan [cited 2016 May 31]. Available from: http://www.mcs.bc.ca/pdf/AHSV_methodology.pdf.

[2] Ho, K. Personal communication. BC Ministry of Education; 2016 Aug 11.

[3] Human Early Learning Partnership. Early childhood screening research and evaluation [Internet]. Vancouver, BC: University of British Columbia; [cited 2016 Jun 10]. Available from: http://earlylearning.ubc.ca/screening/.

[4] Provincial Health Services Authority. BC Early Hearing Program – privacy [Internet]. Vancouver, BC: Provincial Health Services Authority; [cited 2016 Jun 10]. Available from: http://www.phsa.ca/our-services/programs-services/bc-early-hearing-program/privacy.

[5] BC Ministry of Education. Foundation skills assessment (FSA) [Internet]. Victoria, BC: BC Ministry of Education; [cited 2016 Jul 08]. Available from: https://www.bced.gov.bc.ca/assessment/fsa/.

[6] BC Ministry of Education. Glossary of terms [Internet]. Victoria, BC: BC Ministry of Education; [cited 2016 Aug 3]. Available from: http://www.bced.gov.bc.ca/reporting/glossary.php.

[7] Perinatal Services BC. Perinatal data registry [Internet]. Vancouver, BC: Perinatal Services BC; [cited 2016 May 20]. Available from: http://www.perinatalservicesbc.ca/health-professionals/data-surveillance/perinatal-data-registry.

[8] BC Ministry of Health. Chronic disease registry – data dictionary. Victoria, BC: BC Ministry of Health; 2015 Mar 27 [cited 2016 May 20]. Available from: www.gov.bc.ca/health/forms/5452datadictionary.pdf.

[9] Human Early Learning Partnership. Early development instrument [Internet]. Vancouver, BC: University of British Columbia; [cited 2016 Jun 3]. Available from: http://earlylearning.ubc.ca/edi/.

[10] Statistics Canada. Canadian Community Health Survey (CCHS) [Internet]. Ottawa, ON: Statistics Canada; [modified 2007 Oct 24; cited 2016 May 31]. Available from: http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&Id=3359.

[11] Statistics Canada. Census of population [Internet]. Ottawa, ON: Statistics Canada; [modified 2016 Apr 28; cited 2016 Aug 3]. Available from: http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=3901.

[12] Statistics Canada. National Household Survey (NHS) [Internet]. Ottawa, ON: Statistics Canada; [modified 2011 Oct 5; cited 2016 Aug 3]. Available from: http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=5178.

[13] Statistics Canada. Survey of Labour and Income Dynamics (SLID) – 2011 survey overview [Internet]. Ottawa, ON: Statistics Canada; [modified 2015 Nov 27; cited 2016 May 31]. Available from: http://www.statcan.gc.ca/pub/75f0011x/75f0011x2013001-eng.htm.


Office of the
Provincial Health Officer

www.health.gov.bc.ca/pho


www.childhealthbc.ca

**Visit the online report at:**

**www.ChildHealthIndicatorsBC.ca**