Social Determinants of Health among off-reserve First Nations, Métis and Inuit youth in
Canada

by

Nadine Badets

A thesis submitted to the Faculty of Graduate and Postdoctoral Affairs in partial
fulfillment of the requirements for the degree of

Master of Arts in Sociology

Carleton University

Ottawa, Ontario

© 2018

Nadine Badets

Abstract

This study uses data from the 2012 Aboriginal Peoples Survey (APS) to examine associations between the social determinants of health and health among off-reserve First Nations, Métis and Inuit youth in Canada aged 12 to 18. The selected measures of health are excellent/very good health, and a diagnosed mood and/or anxiety disorder. The social determinants in this study were selected to depict a wholistic portrait of the lives of Indigenous youth. Measures of socioeconomic status, the physical environment and the school environment were examined, including measures specific to the experiences of Indigenous peoples such as intergenerational trauma and cultural continuity. Findings show that a distinctions-based approach to quantitative research about Indigenous peoples is crucial, as associations between health and the social determinants differ by Aboriginal identity group and by health outcome. This is likely due to differences in cultures, languages, area of residence and different experiences of colonization. However, some determinants such as age and closeness with extended family showed almost consistent relationships with health outcomes. The results from this study indicate that a wholistic and historical understanding of the lives of Indigenous peoples is crucial for understanding health outcomes, and a social determinants approach shifts the focus from stigmatizing research on individual behaviour to an examination of the structural barriers to good health.

Keywords: Indigenous youth, social determinants of health, intergenerational trauma, cultural continuity

Acknowledgements

The completion of this study has been a very long journey, and I am grateful for all the support I have received from my professors, supervisors and colleagues, friends, and family.

I would like to extend special gratitude to my thesis supervisors Dr. Rania Tfaily and Dr. Xiaobei Chen for their kind words, guidance and patience. Their support throughout this project, especially their determination to help me finish, are greatly appreciated and I cannot say thank you enough. I am honoured to have had both of you as my supervisors.

Many thanks go to Statistics Canada staff, my Directors François Nault and Marc Lachance for allowing me access to the data at work. A very big thank you to Dr. Michael Wendt for all of his guidance, from teaching me to code in SUDAAN, giving me time to work on my thesis, and for completing the institutional review. I would also like to thank my Assistant Director Pamela Best for all her support, and Dr. Andrew MacKenzie for taking the time to research and discuss proportional odds models with me.

Thank you to Mum, Dad and Catou for your unconditional support, which is immeasurable and invaluable. Without you this may not have been possible.

Finally, thank you to all the respondents of the 2012 Aboriginal Peoples Survey, who took the time to complete the survey and provide information on their personal experiences.

Foreword

This study began at a time when many universities were revising their research ethics with regard to Indigenous peoples. Indigenous peoples have long decried academic research as it is exploitive, Indigenous peoples are excluded from planning and decision-making, and often do not reap the benefits of research. Around the same time, the social determinants of health were at the forefront of public health research internationally. National Indigenous Organizations in Canada created specific lists for First Nations people and Inuit because most of the social determinants work by other organizations focused on the general population, excluding historical and cultural factors that are crucial for understanding the health of Indigenous peoples.

I identified eight quantitative studies on the health of Indigenous youth in Canada (Ng et al. 2010; Elton-Marshall et al. 2013; Kaspar 2013; Ryan et al. 2016a; Ryan et al. 2016b; Bhawra et al. 2017; Van Bower and Woodgate 2017; Nasreen et al. 2018). All of these studies focus on negative outcomes from smoking, heavy drinking and obesity to violence in school and mental illness. Some studies included variables on culture, yielding strange results that associate cultural connectedness with stereotypical and stigmatizing behaviours. In my work, I have heard from representatives of National Indigenous Organizations about how their youth have said they do not want to hear negative stories all the time. For example, First Nations youth want to shift the conversation from suicide prevention to health promotion. This study focuses on determinants of good health among Indigenous youth, as the aim is to understand the structural barriers to good health and not essentialize behaviours.

Table of Contents

Abstract	2
Acknowledgements	3
Foreword	4
Table of Contents	5
List of Abbreviations	7
List of Tables and Figures	8
List of Appendices	11
Chapter 1: Introduction	12
Historical Context	13
Colonization in Canada	13
Truth and Reconciliation Commission's Calls to Action	14
Theoretical Orientation	14
Defining Health	14
Social Determinants of Health	15
Sample Characteristics	17
Outcome Variables	17
Demographic Characteristics	19
My Positionality	20
Conclusion	23
Chapter 2: Data Sources and Methods	24
Data	24
Data sources	24
Study Sample	27
Data Quality	28
Methods	30
Statistical Methods	30
Variables	32
Chapter 3: Socioeconomic Factors and Health Care	38
The Income Gradient	39
Parental Educational Attainment	42
Health Care Access and Use	44
Results	47
Bivariate Results	47
Household Income	48
Parental Educational Attainment	49

Health Care Access and Use	50
Logistic Regression Results	52
General Health	53
Mood/Anxiety Disorders	54
Discussion	56
Conclusion	58
Chapter 4: Home and School Environments	60
The Physical Environment	60
The School Environment	62
Results	67
Bivariate Results	67
Home Environment	67
School Environment	70
Logistic Regression Results	73
General Health	73
Mood/Anxiety Disorders	75
Discussion	77
Conclusion	79
Chapter 5: Intergenerational Trauma and Resilience	80
Historical Trauma	81
Cultural Continuity as Resilience	86
Results	91
Bivariate Results	91
Intergenerational Trauma	91
Cultural Continuity	92
Logistic Regression Results	95
General Health	95
Mood/Anxiety Disorders	96
Discussion	97
Conclusion	101
Chapter 6: Conclusion	102
Final models	103
Building the Models	103
Model Results	104
Discussion	116
Conclusion	118
References	120
Appendix A. Variable Codebook, 2012 Aboriginal Peoples Survey (APS)	130
Appendix B. Variable Codebook, 2012 Canadian Community Health Survey (CCHS)	134

List of Abbreviations

AFN	Assembly of First Nations
APS	Aboriginal Peoples Survey
CCHS	Canadian Community Health Survey
CI	Confidence Interval
CV	Coefficient of Variation
FNIGC	First Nations Information Governance Centre
FNWPPM	First Nations Wholistic Policy and Planning Model
ITK	Inuit Tapiriit Kanatami
IRS	Indian Residential Schools
NAHO	National Aboriginal Health Organization
NCCAH	National Collaborating Centre for Aboriginal Health
OCAP	Ownership, Control, Access and Possession
OR	Odds Ratios
RHS	Regional Health Survey
SDOH	Social Determinants of Health
SE	Standard Error
TRC	Truth and Reconciliation Commission
UN	United Nations
WHO	World Health Organization

List of Tables and Figures

Table 1.1. Distributions of youth aged 12 to 18 by general health status and the presence of a mood/anxiety disorder, by Aboriginal identity, Canada, 2012	19
Table 1.2. Distributions of youth aged 12 to 18 by selected demographic characteristics, by Aboriginal identity, Canada, 2012	20
Table 2.1. Social determinants of health for First Nations people, Métis and Inuit as identified by National Indigenous Organizations	34
Table 2.2. Social determinants of health for the general population as listed by the World Health Organization (WHO) and the Public Health Agency of Canada (PHAC) ..	35
Table 2.3. Logistic regression models and variables by chapter and topic	36
Table 3.1. Distributions of youth aged 12 to 18 by selected measures of household income in Canadian dollars, by Aboriginal identity, Canada, 2012	42
Table 3.2. Distributions of youth aged 12 to 18 by selected measures of parental or household educational attainment, by Aboriginal identity, Canada, 2012	44
Table 3.3. Distributions of youth aged 12 to 18 by selected measures of health care access and use, by Aboriginal identity, Canada, 2012	47
Table 3.4. Proportion of youth aged 12 to 18 with excellent/very good health or a mood/anxiety disorder, by household income quartiles and Aboriginal identity, Canada, 2012	49
Table 3.5. Proportion of youth aged 12 to 18 with excellent/very good health or a mood/anxiety disorder, by parental or household educational attainment and Aboriginal identity, Canada, 2012	50
Table 3.6. Proportion of youth aged 12 to 18 with excellent/very good health or a mood/anxiety disorder, by health care access and use and Aboriginal identity, Canada, 2012	52
Table 3.7. Odds ratios for better health among youth aged 12 to 18, for selected measures of socioeconomic status and health care access and use, by Aboriginal identity, Canada, 2012	54
Table 3.8. Odds ratios for a mood/anxiety disorder among youth aged 12 to 18, for selected measures of socioeconomic status and health care access and use, by Aboriginal identity, Canada, 2012	56

Table 4.1. Distributions of youth aged 12 to 18 for selected characteristics of the home environment, by Aboriginal identity, Canada, 2012	62
Table 4.2. Distributions of youth aged 12 to 18 for selected characteristics of the school environment, by Aboriginal identity, Canada, 2012	67
Table 4.3. Proportion of youth aged 12 to 18 with excellent/very good health or a mood/anxiety disorder for selected characteristics of the home environment, by Aboriginal identity, Canada, 2012	69
Table 4.4. Proportion of youth aged 12 to 18 with excellent/very good health or a mood/anxiety disorder for selected characteristics of the school environment, by Aboriginal identity, Canada, 2012	72
Table 4.5. Odds ratios for better health among youth aged 12 to 18 for selected home and school characteristics, by Aboriginal identity, Canada, 2012	74
Table 4.6. Odds ratios for a mood/anxiety disorder among youth aged 12 to 18 for selected home, school and other characteristics, by Aboriginal identity, Canada, 2012	76
Table 5.1. Distributions of youth aged 12 to 18 for intergenerational attendance of residential schools, by Aboriginal identity, Canada, 2012	86
Table 5.2. Distributions of youth aged 12 to 18 for selected measures of cultural continuity, by Aboriginal identity, Canada, 2012	90
Table 5.3. Proportion of youth aged 12 to 18 with excellent/very good health or a mood/anxiety disorder, by familial attendance of residential schools and Aboriginal identity, Canada, 2012	92
Table 5.4. Proportion of youth aged 12 to 18 with excellent/very good health or a mood/anxiety disorder, by selected measures of cultural continuity and Aboriginal identity, Canada, 2012	94
Table 5.5. Odds ratios for better health among youth aged 12 to 18, selected social and cultural factors and Aboriginal identity, Canada, 2012	96
Table 5.6. Odds ratios for a mood/anxiety disorder among youth aged 12 to 18, by selected social and cultural factors and Aboriginal identity, Canada, 2012	97
Figure 5.1 Proportion of First Nations youth living off reserve aged 12 to 18, by familial attendance of residential schools for selected socioeconomic characteristics, Canada, 2012	100

Table 6.1. Unadjusted and adjusted odds ratios for better health among First Nations youth living off reserve aged 12 to 18, Canada, 2012	105
Table 6.2. Unadjusted and adjusted odds ratios for mood/anxiety disorders among First Nations youth living off reserve aged 12 to 18, Canada, 2012	107
Table 6.3. Unadjusted and adjusted odds ratios for better health among Métis aged 12 to 18, Canada, 2012	109
Table 6.4. Unadjusted and adjusted odds ratios for mood/anxiety disorders among Métis aged 12 to 18, Canada, 2012	111
Table 6.5. Unadjusted and adjusted odds ratios for better health among Métis aged 12 to 18, Canada, 2012	113
Table 6.6. Unadjusted and adjusted odds ratios for mood/anxiety disorders among Métis aged 12 to 18, Canada, 2012	115
Table 6.7. Distributions of foster children aged 6 to 18 by age group and Aboriginal identity, Canada, 2012	119

List of Appendices

Appendix A. Variable Codebook, 2012 Aboriginal Peoples Survey (APS)

Appendix B. Variable Codebook, 2012 Canadian Community Health Survey (CCHS)

Chapter 1: Introduction

This study explores the social determinants of health among Indigenous youth in Canada aged 12 to 18 years, for First Nations living off reserve, Métis and Inuit. Data from the 2012 Aboriginal Peoples Survey (APS) are used to produce estimates for Indigenous youth, and data from the 2012 Canadian Community Health Survey (CCHS) are used to examine social determinants of health for non-Indigenous youth.

Previous research has often shown that Indigenous children and youth experience poorer health outcomes than non-Indigenous people (Assembly of First Nations 2008; National Collaborating Centre for Aboriginal Health 2009-2010; Postl et al. 2010). Research on the social determinants of health has also focused on Indigenous adults, excluding children and youth under 15 or 18 years, or has focused on only one Indigenous group (Wilson and Cardwell 2012; Halseth 2013; Thompson and Anderson 2015; Anderson 2016; Rotenberg 2016).

Epidemiological research is often stigmatizing, as it presents Indigenous peoples as being inherently ill and weak in comparison to non-Indigenous people (Poudrier 2007). The purpose of this study is to explore associations between the social determinants of health and different dimensions of health among Indigenous youth. Data on non-Indigenous youth are also examined for differences and similarities, to contextualize findings for Indigenous youth in relation to specific socioeconomic characteristics, such as household income. One limitation of the data is that they are cross-sectional survey data, and as such causality cannot be established.

This chapter describes the historical context for understanding health outcomes among Indigenous peoples in Canada, as well as the theoretical orientation and

positionality of this study. Tables 1.1 and 1.2 present descriptive statistics for the dependent variables in this study and selected demographic characteristics.

Historical Context

Colonization in Canada

The health of Indigenous peoples in Canada cannot be studied in isolation from historical processes of colonization and forced assimilation. Colonization has been identified as a key determinant of Indigenous health (Smylie and Adomako 2009). Colonization and processes of assimilation in the Americas have created the current conditions in which Indigenous peoples live; leaving brutal legacies of devastation upon multiple generations (Brave Heart 1998; Barton et al. 2005; Evans-Campbell 2008; Bombay et al. 2011; Walters et al. 2011; Elias et al. 2012; Gone 2013; Bombay et al. 2014; Hackett et al. 2016; Wilk et al. 2017).

One predominant example is that of the Indian Residential Schools (IRS) in Canada, which began before the Canadian Confederation in 1867 (Truth and Reconciliation Commission of Canada 2012). Indigenous children and youth were forcibly removed from their homes and families and forced to attend these schools, often far away from their communities. The IRS were designed to “kill the Indian in the child”, and it was not only cultural genocide – Indigenous children and youth were prohibited from speaking their languages and practicing their culture – but also a genocide, where many Indigenous children and youth were abused physically, emotionally, sexually, and many died in these schools or ran away from them (Truth and Reconciliation Commission of Canada 2012). The last IRS closed in the mid-1990s (Bombay et al. 2014).

Other examples of forced assimilation include the history of enfranchisement, whereby Indigenous peoples were required to deny their identity, families and communities in order to become Canadian citizens and participate in economic activities. There has also been the Sixties Scoop, where Indigenous children and youth were forcibly removed from their families and communities and placed into the care of often White families in Canada, the United States and abroad. To this day, almost half of all foster children in Canada aged 14 years and under are Indigenous (Turner 2016).

Finally, it is important to remember that Indigenous peoples are not one homogenous group, and that a distinctions-based approach is always best when studying First Nations people, Métis and Inuit (which are heterogeneous groups within themselves). Although all Indigenous people have faced colonization, racialization and marginalization in Canada, these groups have experienced them differently and at different periods of time (Reading and Wien 2009).

Truth and Reconciliation Commission's Calls to Action

One key recommendation from the Truth and Reconciliation Commission of Canada (2012) calls on the federal government to monitor the health of Indigenous children. Although this is not a complete record of the health of Indigenous children, it is an attempt to examine underlying social issues and structures that have an effect on Indigenous youth, and how these may differ from non-Indigenous youth.

Theoretical Orientation ***Defining Health***

This aim of this subsection is to briefly and broadly describe differences in Western and Indigenous conceptualizations of health. The United Nations has

enshrined health as a human right in several Declarations, such as the Universal Declaration of Human Rights (UDHR 1948 in Arcaya et al. 2015), the Declaration on the Rights of Indigenous Peoples (UNDRIP 2007) and the Convention on the Rights of the Child (UNCRC 1989). In Canada, the federal government has a fiduciary responsibility to care for the health of Indigenous peoples, as per the 'Medicine Chest' clause in Treaty 6. In addition, in April 2016 the Supreme Court of Canada ruled that Métis and non-status First Nations people are 'Indians' under the Canadian Constitution. This allows Métis and non-status First Nations people to engage in negotiations with the Canadian federal government for access for First Nations and Inuit programs, services and rights, such as health care, that were previously unavailable to them (Canadian Television Network 2016).

Defining health, or iterating every possible definition, would be far outside the scope of this study. According to the World Health Organization (WHO), health is not merely the absence of disease or infirmity – it is a state of complete well-being physically, mentally and socially (World Health Organization). This is a departure from previous biomedical explanations of health. Indigenous peoples have a wholistic conception of health that embraces multiple dimensions and their interconnections: physical, spiritual, emotional and mental (Reading and Wien 2009).

Social Determinants of Health

The WHO defines social determinants of health as “the circumstances in which people are born, grow up, live, work and age, and the systems put in place to deal with illness” (World Health Organization). Reading and Wien (2009) describe the *Integrated Life Course and Social Determinants Model of Aboriginal Health* (ILCSDMAH). It is a

conceptual framework for relationships between the social determinants of health and various other dimensions of health. In their report, Reading and Wien categorize the social determinants of health as: distal (historic, political, social, and economic contexts); intermediate (e.g. community infrastructure, resources, systems and capacities); and proximal (e.g. health behaviours, physical, and social environment). It is important to note that while social determinants influence health outcomes, health outcomes can affect subsequent social determinants.

The concept of the social determinants of health is a paradigm shift that de-emphasizes health behaviours, although acknowledging their importance, and makes a shift away from scrutinizing and blaming the individual for their health outcomes by examining the impact of societal structures, such as socio-economic characteristics and living conditions, on health. Sir Michael Marmot, a prominent researcher in the field of public health, emphasizes the importance of structural barriers and refers to them as “the causes of causes” (Marmot 2005; Marmot 2018). Social determinants of health indicate how health is affected by socioeconomic and structural barriers that historically and continually (dis)advantage certain population groups over others.

Research on the health of Indigenous peoples can be stigmatizing and prescriptive when it focuses on health behaviours (Poudrier 2007). This study takes a social determinants approach as opposed to biomedical research, which often seeks to essentialize health differences between Indigenous and non-Indigenous populations as genetic. Authors such as Duster (2005) and Poudrier (2007) contest the narrative of genetic predisposition, where research on chronic diseases among Black and Indigenous populations connects race to genes. Both authors have problematized this

type of biological research, because even within Black or Indigenous (First Nations in Poudrier 2007) populations there is much genetic diversity, and 'race' can be about social identity as much as it is about ancestry.

And yet there is also potential danger with a social determinants approach, which may fall prey to reproducing neo-racisms whereby processes of racialization stigmatize cultural and religious differences (Balibar 1991). Neo-racisms involve the stigmatization of behaviours that are often culturally-based. For example, Poudrier (2007) challenged the notion of the 'thrifty gene', used as a 'scientific' explanation for the higher prevalence of obesity and Type 2 diabetes among Indigenous populations. The danger with a social determinants approach to studying obesity and diabetes among Indigenous peoples is that it can be stigmatizing, by invoking stereotypes on eating behaviours and lifestyle choices (Poudrier 2007). In particular, it creates a discourse where 'race' is mobilized as a determinant of disease not only through essentialized notions of genetic difference, but which also essentializes stereotypes about behaviours and habits of specific communities. In this study, social determinants of health were purposefully selected to exclude health-related behaviours in order to study structural determinants of health, to develop an understanding of how societal structures and history in Canada have an impact on the health of Indigenous youth.

Sample Characteristics

Outcome Variables

This study focuses on two health outcomes, general health categorized as excellent/very good rated health and the presence of a diagnosed mood and/or anxiety disorder. Excellent/very good health was selected to examine how the selected social determinants are associated with a positive health outcome, that is, a positive

perception of overall health. Mood and anxiety disorders which are a measure of mental health are used to explore which determinants are associated with the presence or the absence of poor mental health. Measures of social determinants in this study include selected demographic and socioeconomic characteristics, certain features of the home and school environments, and intergenerational trauma and cultural continuity (resilience). The selection process for the independent variables in this study is discussed in detail in Chapter 2, and in each data chapter (Chapters 3, 4 and 5) descriptive statistics are presented for these variables.

In this study, almost 70% of all youth, Indigenous and non-Indigenous, were reported as being in excellent or very good health (Table 1.1). About 20% to 25% of youth in each Aboriginal identity group were in good health, and less than 10% in each group were in fair or poor health. About 6% of Inuit and non-Aboriginal youth, respectively, had at least one diagnosed mood and/or anxiety disorder, whereas 13% of off-reserve First Nations youth and 12% of Métis youth had a diagnosed mood/anxiety disorder.

Table 1.1

Distributions of youth aged 12 to 18 by general health status and the presence of a mood/anxiety disorder, by Aboriginal identity, Canada, 2012

	Aboriginal identity			
	Off-reserve First Nations	Métis	Inuit	Non- Aboriginal
	%			
General health				
Excellent/very good health	68.6	73.1	69.8	70.3
Good health	23.0	20.2	22.9	25.6
Fair/poor health	8.4	6.6	7.1	4.0
Mood/anxiety disorder				
Has a diagnosed mood and/or anxiety disorder	12.8	12.2	6.1	6.9
No diagnosed mood/anxiety disorder	87.1	87.7	93.9	93.0

Note: Totals may not add to 100% due to rounding.

Source: Statistics Canada, Aboriginal Peoples Survey (APS), 2012 and Canadian Community Health Survey (CCHS), 2012.

Demographic Characteristics

A little over half (around 55%) of youth in each Aboriginal identity group were between the ages of 12 and 15 (Table 1.2). Almost all non-Indigenous youth resided in urban centres (medium or large population centres), whereas the split between urban centres and rural areas was more evenly distributed for off-reserve First Nations and Métis youth. About 70% of Inuit youth aged 12 to 18 lived in Inuit Nunangat, which corresponds with findings from the 2011 National Household Survey where about three-quarters (73.1%) of Inuit lived in Inuit Nunangat (Statistics Canada 2013).

About 60% of off-reserve First Nations, Métis and Inuit youth had a parent or guardian complete the 2012 APS on their behalf. Due to differences in the collection of both surveys, only 3% of non-Indigenous youth had a proxy respondent.

Table 1.2

Distributions of youth aged 12 to 18 by selected demographic characteristics, by Aboriginal identity, Canada, 2012

	Aboriginal identity			
	Off-reserve First Nations	Métis	Inuit	Non- Aboriginal
	%			
Age group				
12 to 15 years	55.8	54.1	55.9	55.2
16 to 18 years	44.1	45.8	44.0	44.7
Sex				
Females	49.0	47.5	47.8	47.6
Males	51.0	52.4	52.1	52.3
Proxy				
Proxy respondents	60.2	58.8	59.4	3.0
Non-proxy respondents	39.7	41.1	40.5	96.9
Geography				
Medium and large population centres	44.2	48.0		80.3
Small population centres and rural areas	55.7	51.9		19.6
Inuit Nunangat (Inuit only)			71.3	
Outside of Inuit Nunangat (Inuit only)			28.6	

Notes:

Totals may not add to 100% due to rounding.

The geography variable for non-Aboriginal youth is categorized as 'Population centres' and 'Rural areas', respectively.

Source: Statistics Canada, Aboriginal Peoples Survey (APS), 2012 and Canadian Community Health Survey (CCHS), 2012.

My Positionality

A critical aspect of 'mapping "race"' in health research is to be cognizant of one's own understanding of race (Gómez and López 2013). That is to say, all researchers need to be aware of their own positionality in relation to their work and should be able to situate their positionality in the context of their research. This section is meant to explain my underlying motivations for the selection of this research topic and to articulate the awareness that I have of my limitations in relation to my approach to, and conceptualization and interpretation of health research among Indigenous peoples. From a research ethics perspective, it is also important to reveal my positionality when conducting research that relates to the well-being of marginalized populations, so that

readers are aware of the limitations of the author's perspective, experiences and knowledge.

As a non-Indigenous and Canadian-born researcher, I am the product of colonialism in Canada, and I benefit from this colonialism in multiple ways. I live on the land and use its natural resources wastefully. I have benefitted economically from the marginalization and colonization of Indigenous peoples, and I contribute to colonization by continuing to occupy physical spaces and spaces in the production of knowledge on Indigenous peoples as a researcher. I was born, raised and currently live on unceded Algonquin Territory, without knowledge of Algonquin languages, histories or cultures. I do not know nor understand the lived experiences of Indigenous peoples, but hold an unearned position of privilege as an educated White woman (Moffat 2016).

In the same moment that I articulate my ignorance of the lived experiences of Indigenous peoples, I also conduct research on their health and well-being. I acknowledge and respect the Indigenous right to self-determination, which extends to research. Indigenous voices should always be at the forefront of Indigenous research, as only Indigenous peoples can explain and contextualize their own experiences, lives and well-being. As a non-Indigenous researcher, it is essential that I listen to Indigenous peoples, scholars and organizations to inform my analysis of data, data which has been provided by Indigenous peoples about their lived experiences. I have attempted to pay particular attention to the work of Indigenous scholars and organizations in the development of this study, from the selection of independent and dependent variables, to discussion points and studying the design and results of Indigenous-led studies.

In addition, all people in Canada are Treaty people, Indigenous peoples are owners of the land (Keith 2015). The negative legacies of colonialism cannot be the burden of Indigenous peoples to bear alone – non-Indigenous people and researchers like myself have a duty and an obligation to work with Indigenous peoples to make change. Reconciliation cannot occur without truth and justice first (Truth and Reconciliation Commission of Canada 2012), and non-Indigenous peoples have a responsibility to take part in knowing and documenting the horrific devastation colonization has brought upon Indigenous peoples.

Although it would be preferable for this study to be premised on the decolonial approach, that is, to center Indigenous knowledges and ways of knowing (Pete, Schneider & O'Reilly 2013 in Sasakamoose et al. 2016), my positionality as a non-Indigenous researcher, coupled with the use of quantitative (positivist) methods of data analysis, severely limit this possibility. However, it is important for me to keep in mind that there is no 'one' knowledge, knowledge is not centrifugal and it is not universal (Mignolo 2009). Blind trust in 'knowledge', such as quantitative methods or ahistorical accounts of the experiences of Indigenous peoples, is incredibly dangerous because of the silences it creates, and the histories of human suffering that are omitted. Current issues cannot be dealt with effectively without a critical understanding of the historical influences that have come to shape present conditions. Everyone has a role in decolonization, and I believe that part of my role is decolonizing my own understanding of Indigenous peoples and history, and by providing the proper historical context when conducting and producing research about Indigenous peoples.

Conclusion

The following chapters of this study examine different aspects of the social determinants of health, examining how proximal, intermediate and distal determinants have an effect on the health of Indigenous youth. Chapter 2 describes the methods for this study, as well as a more detailed account of the selection of variables. Chapter 3 examines how socio-economic conditions such as household income and parental educational attainment are associated with health outcomes, as well as issues related to health care access and consultations. In Chapter 4, the richness of the 2012 APS data is explored to study the physical and social environments of youth, from household food security to academic performance and feelings of security and happiness at school. Chapter 5 studies distal determinants, that is, intergenerational trauma measured as familial attendance of residential schools, and cultural continuity as resilience. Finally, Chapter 6 presents final models incorporating specific determinants for each Indigenous group and health outcome.

Chapter 2: Data Sources and Methods

This study examines the social determinants of health for off-reserve First Nations, Métis and Inuit youth aged 12 to 18 years in Canada. The goal of the study is to develop a better understanding of the impact of demographic, social, economic and cultural factors on Indigenous health. Some studies have documented the impact of the social determinants on the health of Indigenous adults (for example Anderson 2015; Rotenberg 2016; Anderson and Thompson 2016), but there is a serious lack of information on the social determinants of health for Indigenous children and adolescents (Greenwood and de Leeuw 2012). This chapter covers the data sources and methods used in this study, which include data quality, statistical methods and variable selection.

Data

Data Sources

The two data sources for this study are the 2012 Aboriginal Peoples Survey (APS) and the 2012 Canadian Community Health Survey (CCHS). Both surveys are conducted by Statistics Canada, Canada's national statistical agency, and are voluntary. The 2012 APS provides data on Indigenous youth and the 2012 CCHS provides data on non-Indigenous youth. A quick note on terminology: in each survey respondents are asked for their Aboriginal identity, so all of the data tables refer to Aboriginal identity to be consistent with the original questions. However, throughout the study the term Indigenous is used to refer to Aboriginal peoples, as this is considered to be a more appropriate term.

The 2012 APS is a national cross-sectional survey of Indigenous peoples in Canada that provides detailed information on a number of topics such as health,

education, employment, language, housing and mobility (Statistics Canada 2012a). The APS is a post-censal survey, meaning it is conducted every five years and uses the census as the sampling frame. Respondents are aged six years and older and are selected based on responses to the Aboriginal identity questions on the long form of the census.

One of the limitations of this data source is that data are not collected for First Nations people living on reserve, so the results in this study only pertain to First Nations youth living off reserve. Living conditions on reserves can be quite different from other communities and can thus affect health outcomes. For example, health care access is often limited on reserves, often due to remoteness, and it can be difficult to get access to necessary services on a timely basis (Reading and Wien 2009). In addition, health care services are generally not culturally appropriate (Reading and Wien 2009). Data from the 2011 National Household Survey show that First Nations people living on reserve and Inuit are more likely to live in crowded households and in homes in need of major repairs (Kelly-Scott and Smith 2015). Poor housing conditions have been linked to adverse health outcomes among Aboriginal peoples (Kohen et al. 2015; Carrière et al. 2017). Generalizations cannot be made for all First Nations youth by only using data for First Nations youth living off reserve, which is why the distinction ‘living off reserve’ or ‘off-reserve’ is continually made throughout the study.

The First Nations Information Governance Centre (FNIGC) collects data on First Nations people living on reserve, such as through the Regional Health Survey (RHS) (For more information please see: <http://fnigc.ca/our-work/regional-health-survey/about-rhs.html>). In December 2009, the Assembly of First Nations (AFN) Special Chiefs

Assembly passed Resolution #48 to support the development of FNIGC (FNIGC 2017a), which operates by the Ownership, Control, Access and Possession (OCAP) principles (FNIGC 2017b). The OCAP principles are a set of standards that were established to ensure that First Nations people have control over and access to their own data, as well as control of data collection processes within their communities (FNIGC 2017b).

One of the main strengths of the APS is that the survey is tailored specifically to the lives and experiences of Aboriginal peoples in Canada, so information on Aboriginal languages and cultural activities is collected. This information is not available in population health surveys such as the CCHS. Additionally, the APS has an oversample of the Aboriginal identity population, meaning it can produce reliable estimates by Aboriginal identity group. General population surveys such as the CCHS do collect information on the Aboriginal identity of respondents, however due to the small samples of respondents who identify as Aboriginal, several cycles (4 years) of the survey have to be combined to produce reliable estimates by Aboriginal identity group (Gionet and Roshanafshar 2013). In terms of health analysis, it can be problematic to combine several years of data, whereas the APS allows for estimates in one year. In Canada, the RHS is main source of health data for the First Nations population living on reserve, and the APS is the key source of health data for the First Nations population living off reserve, as well as for Métis and Inuit.

The second data source, the 2012 CCHS, is a national cross-sectional population health survey that is conducted annually. The CCHS provides detailed data on the health status, health care utilization and health determinants of the Canadian

population (Statistics Canada 2012b). Respondents are aged 12 years and older, and are sampled from the 10 provinces and three territories. The survey excludes the institutionalized population, children aged 12 to 17 living in foster care, full-time members of the Canadian Forces, and people living in the Québec health regions of Nunavik and Terres-des-Cries-de-la-Baie-James – these exclusions represent 3% of the total Canadian population aged 12 years and older (Statistics Canada 2012b).

Both data sources are cross-sectional, meaning that causality cannot be implied – only associations between health outcomes and social determinants can be discussed. It should also be noted that data from these sources are not exactly comparable as the surveys have different survey methodologies (for example the APS uses the census as a sampling frame). However, an important component of this study is examining whether differences in health outcomes between Indigenous and non-Indigenous populations are due to differences in the social determinants of health. In addition, Statistics Canada has set a precedent for presenting 2012 APS and 2012 CCHS data together (Kelly-Scott and Smith 2015).

Study Sample

The study sample consists of youth aged 12 to 18 years disaggregated by Aboriginal identity. Single responses for First Nations, Métis and Inuit identity questions in the 2012 APS were used to identify Aboriginal youth. It is possible to select more than one Aboriginal identity in the APS, however this study is restricted to individuals who reported a single Aboriginal identity. Throughout this study, Aboriginal identity groups are listed in order of population size with First Nations people as the largest population, and Inuit as the smallest. Sample sizes were not included in this study so as to prevent

possible secondary disclosure through distributions, and to align with Statistics Canada's suppression rules.

A key component of this study is the separation of analyses by Aboriginal identity. First Nations people, Métis and Inuit are distinct Aboriginal populations who have all been subjected to colonialism and racism, albeit in different ways and at different points in time. Each group has distinct languages and cultural practices, and even within groups there is much heterogeneity, such as between various First Nations. Past research on the health of Indigenous children and youth tends to focus on either one Indigenous population or a combination of all three (for example Banerji et al. 2001; Banerji et al. 2009; Bowd 2005). The pan-Indigenous approach can be problematic as it masks differences between populations, and will be more likely to represent the results for the largest population group (First Nations people). There is a need in the literature for research on the health of Indigenous children and youth that examines Indigenous populations separately (Greenwood and de Leeuw 2012).

Data for non-Aboriginal youth from the 2012 Canadian Community Health Survey were also disaggregated to exclude the immigrant population from the non-Aboriginal Canadian-born population. Immigrants were excluded from the analysis to remove the 'Health Immigrant Effect' from the data on non-Aboriginal youth.

Data Quality

Coefficients of variation (CVs) and 95% Confidence Intervals (CIs) were calculated for proportions, as well as the Standard Error (SE). For data suppression, Statistics Canada rules were applied. Unweighted counts below 10 were withheld and the cell is marked with 'X'. Any estimates with a CV above 33.3% were suppressed and

marked with 'F', whereas estimates with a CV between 16.6% and 33.3% were marked with 'E' for high variability, and are to be interpreted with caution.

The statistical software program SUDAAN was used for both datasets to take the survey design into account for variance estimation. Variance is needed to determine the quality of an estimate (Statistics Canada 2012b). The bootstrap method was used for both the 2012 APS and CCHS, which is necessary to adjust results for the sample to represent the population. However, there is no exact or appropriate way to calculate bootstrap weights for either survey as they both have complex designs – the APS is post-censal and the CCHS uses a multi-stage design (Statistics Canada 2012a and 2012b). Thus, APS sampling was treated as two phases with the first phase being the 2011 National Household Survey (NHS) (the voluntary version of the long form of the census for 2011), and the APS as the second phase. The general bootstrap method for two-phase sampling was used (for more details please see Langlet et al. 2008). The APS generally uses 1000 bootstrap weights.

The 2012 CCHS used a bootstrap resampling method, which selects random samples at different stratum to calculate the variance between samples, recalculates and then post-stratifies the weights for each stratum (Statistics Canada 2012b). Post-stratification is a method usually used for adjusting sampling weights to account for underrepresented populations (see STATA in references for more information). Each cycle of the CCHS usually has 500 bootstrap weights (Statistics Canada 2012b).

Missing categories below 5% were excluded from analysis in both the descriptive statistics and the logistic regression models. One exception is the missing category for familial attendance of residential schools, which was kept in the both the descriptive and

logistic regression analyses, as the percentage was high. Missing categories include valid skips, as well as responses of don't know, refused or not stated. For information on how each variable was categorized, please see Appendices A and B for the APS and CCHS variable codebooks.

Methods

Statistical Methods

Descriptive statistics, such as distributions and bivariate analysis, as well as logistic regression analysis were used to produce the results in this study. For the logistic regression models, odds ratios were produced for ease of interpretation, which predict the odds for the likelihood of an outcome.

Statistical significance was represented by a star in the tables. Significance testing was conducted through the most conservative approach, by verifying if confidence intervals (CIs) overlap. In bivariate analysis, if CIs overlap with the reference category, they are not considered to be different from one another. Similarly, for logistic regression analysis, if CIs overlap with 1.00 they were not considered to be statistically significant, that is, not different from the reference category that was set at 1.00. Please note that no significance testing was done between Aboriginal identity populations, as the purpose of this study is not to compare Aboriginal peoples to one another but to examine the social determinants of health within each group.

The general health variable was divided into three outcomes: excellent or very good health; good health; and fair or poor health. A proportional odds model was run in SAS-callable SUDAAN to predict the odds of better health, using the multilog procedure and cumulative logit (cumlogit) in the model statement. Binomial logistic regression analysis was used for mood/anxiety disorders as there were only two outcomes.

Model building was only conducted for the analyses in the final chapter, Chapter 6, where the selection method is explained in detail. In each of the other data chapters, models consisted only of the variables or theme topics for the chapter. Chapter 3 examined socioeconomic characteristics as well as health care access and utilization, Chapter 4 combined characteristics of the home and school environments, and Chapter 5 studied intergenerational trauma and cultural continuity. The models in Chapter 6 are unique in that they present the unadjusted and adjusted odds ratios (univariate and multivariate model results).

For the non-Indigenous population, no logistic regression models were run due to a lack of pertinent variables. The CCHS does not collect information on social and cultural factors for Indigenous peoples, and it excludes many other measures for the home and school environments (such as household crowding, condition of dwelling, academic performance, school attrition, positive and negative school climate). Thus, no logistic regression models were run for the non-Indigenous population as most variables for comparison were not available. This limited analysis for the non-Indigenous population was reduced to descriptive statistics, and mainly for Chapters 1 and 3. However, despite these limitations, it is important to include some measures for the non-Indigenous population, to determine if there are similarities or differences for outcomes by socioeconomic characteristics, such as household income, and measures of health care access and use, in order to understand if associations (or the lack thereof) being detected in the APS data are issues specific to Indigenous peoples, or if they were also being observed among non-Indigenous youth.

Multicollinearity testing was performed in base SAS for model testing and verification. Multicollinearity occurs when two or more variables are highly correlated which could potentially affect model estimates and significance tests. In addition, the R^2 value (the Cox-Snell likelihood ratio) was examined for binomial logistic regression to understand model fit, as well as the Wald F statistics in all logistic regression models.

Variables

This section describes how the dependent and independent variables were selected for this study. Two dependent variables were selected to represent positive health and mental health, which are key issues for youth and in particular for Indigenous youth. Past studies on the social determinants of Indigenous peoples' health have often used only one outcome variable, one Aboriginal population, or focused only on adults (see Anderson 2015; Rotenberg 2016; Anderson and Thompson 2016). This study uses two outcomes to assess patterns across social determinants. A study on the social determinants of child health by Victorino and Gauthier (2009), based on the general population, used six physical conditions – asthma, headaches/migraine, ear infections, respiratory allergy, food/digestive allergy and skin allergy.¹ Physical conditions were not examined in this study because of a lack of associations and a lack of variables in both surveys. For example, earlier versions of the analysis for this study included asthma as an outcome variable, however there were very few associations with the selected social

¹ Children were defined as being 0 to 17 years of age. The goal of the study was to test for the existence of the income gradient in child health and to test the interaction between income and education.

determinants. Additionally, determinants of asthma such as indoor air quality were not available through the APS nor the CCHS.

The first outcome is based on a rating of general health going from poor, fair, good, very good to excellent. This dependent variable is used as a positive measure of health, focusing on the social determinants of excellent or very good health in the descriptive statistics (proportional odds models examine the odds for better health, as described earlier in this chapter). The second outcome is a measure of mental health; it examines the presence of at least one mood or anxiety disorder as diagnosed by a health professional. The mental health variable in the 2012 APS, which rates mental health from excellent to poor, was not recommended for analysis involving respondents under 18 years.

The social determinants identified in this study are based on work done by National Indigenous Organizations, in an attempt to center Indigenous knowledges, priorities and voices. In 2005, the Assembly of First Nations (AFN) developed the First Nations Wholistic Policy and Planning Model (FNWPPM) as a first step toward developing a First Nations governed health system (Assembly of First Nations 2013). This model was based on the World Health Organization's (WHO's) approach to the social determinants of health, as well as First Nations' perspectives on health and culturally appropriate approaches to wellness (Assembly of First Nations 2013). In 2013 the model was updated, and 16 social determinants of First Nations health were identified (please see Table 2.1 for the list).

Currently, there is no list of social determinants of Métis health, however Miranda Dyck of the Métis Centre at the National Aboriginal Health Organization (NAHO) laid the

groundwork for foundational principles and priorities. Social determinants of Métis well-being have been summarized as a continuum that flows from the past to the present, and to the future (Dyck 2009) (Table 2.1).

Finally, Inuit Tapiriit Kanatami (ITK) has named 11 factors as key social determinants of Inuit health (please see Inuit Tapiriit Kanatami 2014). Table 2.1 below lists the social determinants of health for each Indigenous population, as identified by National Indigenous Organizations. Common themes found across their lists include socioeconomic indicators such as income, education and employment, but there is also a focus on language, culture, land, self-determination, colonialism and marginalization.

Table 2.1
Social determinants of health for First Nations people, Métis and Inuit as identified by National Indigenous Organizations

Assembly of First Nations (AFN)	Métis Centre, National Aboriginal Health Organization (NAHO)	Inuit Tapiriit Kanatami (ITK)
<ul style="list-style-type: none"> - Community Readiness - Economic Development - Employment - Environmental Stewardship - Gender - Historical Conditions & Colonialism - Housing - Land & Resources - Language, Heritage & Strong Cultural Identity - Legal & Political Equity - Life Long Learning - On/Off Reserve - Racism & Discrimination - Self Determination & Non-Dominance - Social Services & Supports - Urban/Rural 	<p>Determinants of the past:</p> <ul style="list-style-type: none"> - Colonialism - Racism - Marginalization - Lack of Métis rights - Lack of Métis land - Loss of culture, Métis knowledge, language, spirituality, and more. <p>Determinants of present and future Métis well-being:</p> <ul style="list-style-type: none"> - Self-determination - Resiliency - Healing - Resurgency - Education 	<ul style="list-style-type: none"> - Quality of early childhood development - Culture and language - Livelihoods - Income distribution - Housing - Personal safety and security - Education - Food security - Availability of health services - Mental wellness - The environment

Sources: Assembly of First Nations 2013, Dyck 2009, and Inuit Tapiriit Kanatami 2014.

The work by the World Health Organization (WHO) and the Public Health Agency of Canada (PHAC) have also informed the selection of variables. Table 2.2 presents social determinants for general population health. These lists focus on social and economic indicators.

Table 2.2
Social determinants of health for the general population as listed by the World Health Organization (WHO) and the Public Health Agency of Canada (PHAC)

World Health Organization (WHO)	Public Health Agency of Canada (PHAC)
<ul style="list-style-type: none"> - Income and social status - Education - Physical environment - Social support networks - Genetics - Health services - Gender 	<ul style="list-style-type: none"> - Income and Social Status - Social Support Networks - Education and Literacy - Employment/Working Conditions - Social Environments - Physical Environments - Personal Health Practices and Coping Skills - Healthy Child Development - Biology and Genetic Endowment - Health Services - Gender - Culture

Sources: World Health Organization (WHO), and Public Health Agency of Canada (PHAC) 2011.

In this study, four sets of models were run for Indigenous determinants of health: socioeconomic factors with health care access and use (Chapter 3); selected characteristics of the home and school environments (Chapter 4); intergenerational trauma and cultural continuity (Chapter 5); and final models that combine topics and measures (Chapter 6). Each of the models and their variables encompass common themes in social determinants identified by National Indigenous Organizations, the WHO and PHAC. However, there are limitations as to what is available through the data sources, and how specific variables are measured or captured may not necessarily

correspond to the concepts listed above. Table 2.3 shows the breakdown of each model by chapter and their specific variables.

Table 2.3
Logistic regression models and variables by chapter and topic

Chapters	Topics	Variables
3	Socioeconomic status	Household income quartiles
		Parental educational attainment
	Health care access and use	Unmet health care needs
		Health care consultations
4	Home environment	Household crowding
		Condition of dwelling
		Household food security
	School environment	Academic performance
		School attrition
		Aboriginal language/cultural programs at school
5	Intergenerational trauma	School climate
		Familial attendance of residential schools
	Cultural continuity	Fluency in an Aboriginal language
		Participation in cultural activities
6	Demographic characteristics	Strength of extended family ties
		Age group
		Sex
	Socioeconomic status	Area of residence (or geography)
		Household income quartiles
		Parental educational attainment*
	Health care access and use	Unmet health care needs
		Health care consultations*
	Home environment	Household crowding*
		Condition of dwelling*
		Household food security*
	School environment	Academic performance*
		School attrition*
		Aboriginal language/cultural programs at school*
		School climate*
	Intergenerational trauma	Familial attendance of residential schools
	Cultural continuity	Fluency in an Aboriginal language*
		Participation in cultural activities*
		Strength of extended family ties*

* means the variable was only used in selected models.

The model for demographic characteristics examines sex differences and the rural versus urban divide, however for the Inuit models the focus is on Inuit living inside and outside of Inuit Nunangat, the Inuit homeland. Inuit Nunangat is composed of the four Inuit regions: Nunatsiavut (Northern Labrador), Nunavik (Northern Québec), Nunavut, and the Inuvialuit Settlement Region (North of the Northwest Territories) (Arriagada 2017).

Socioeconomic factors in this study are household income and parents' educational attainment. Living conditions such as household food security, household crowding and the condition of the dwelling (in need of major repairs) help to control for the environment in which the adolescent is living, as these can all have a serious impact on health (Kohen et al. 2015).

Finally, the model for social and cultural factors examines fluency in Aboriginal languages (how well the respondent can understand or speak an Aboriginal language). This model also examines participation in cultural activities in the last 12 months, although this is very loosely defined and is only a yes or no answer. For a measure of social support, strength of extended family ties was used as a proxy for the importance of extended family and community. Intergenerational trauma was measured as the respondent having one family member or more who attended residential school. This is a crude measure for historical trauma from colonization, racism and forced assimilation. More details about these variables and their categories will be described in their respective chapters.

Chapter 3: Socioeconomic Factors and Health Care

General population health research has shown that low socioeconomic status is negatively associated with excellent/very good health (Shields and Shooshtari 2001). The purpose of this chapter is to examine associations between socioeconomic characteristics and health outcomes among First Nations youth living off reserve, Métis youth and Inuit youth. Much of the literature on the social determinants of health for the general population of children and adolescents in high-income countries has focused on socioeconomic characteristics (Chen et al. 2002; Chen 2004; Victorino and Gauthier 2009), such as family income (i.e. living in poverty) (Brooks-Gunn and Duncan 1997; Case et al. 2002; Currie et al. 2007; Propper et al. 2007; Murasko 2008; Khanam et al. 2009; Kuehnle 2014) and maternal educational attainment (Case et al. 2002; Currie and Stabile 2003; Allin and Stabile 2012). Inuit Tapiriit Kanatami (ITK), a national organization that represents the rights and interests of Canadian Inuit, has identified the income distribution as a crucial determinant of Inuit health (ITK 2014). In this study, socioeconomic characteristics are defined and studied as after-tax household income and parental educational attainment. This chapter also explores associations between access and use of health care services and health.

Understanding how socioeconomic characteristics are correlated with health outcomes among Indigenous populations is important for any study on the determinants of Indigenous health. There is a serious lack of research on how socioeconomic status and health are correlated among Indigenous youth, as the majority of related research focuses on children and youth in the general population (for some examples please see Case et al. 2002; Chen et al. 2002; Currie and Stabile 2003; Currie et al. 2007; Propper

et al. 2007; Murasko 2008; Khanam et al. 2009; Victorino and Gauthier 2009; Allin and Stabile 2012; Kuehnle 2014). Previous quantitative studies on the health and the social determinants of Indigenous health often focus on one Indigenous group, and usually exclude children and youth under 15 or 18 years (Wilson and Cardwell 2012; Anderson 2015; Rotenberg 2016; Anderson and Thompson 2016). Another limitation of the literature is that the operationalization of socioeconomic characteristics is often inconsistent across studies (Wolfe 2015).

The following sections in this chapter discuss the existing literature, along with a description of how characteristics such as household income, parents' education and health care access and use were measured and defined in this study. This is followed by the presentation and discussion of the bivariate and logistic regression results.

The Income Gradient: Is there an Association between Household Income and Health among Indigenous Youth?

Several quantitative studies across Canada, the United States, Australia, and the United Kingdom have provided evidence of an income gradient in the health of children and youth. Children living in lower income have worse health outcomes than those living in high income families (Canada: Currie and Stabile 2003; Victorino and Gauthier 2009; Allin and Stabile 2012. United States: Murasko 2008. Australia: Khanam et al. 2009. United Kingdom/England: Case et al. 2002; Chen et al. 2006; Currie et al. 2007; Propper et al. 2007; Kuehnle 2014). In particular, several studies have noted that the income gradient becomes more pronounced among adolescents, or as children age (Case et al. 2002; Currie and Stabile 2003; Chen et al. 2006; Murasko 2008).

That said, previous research on child or adolescent health does not have a clear or consistent operationalization of socioeconomic status (Wolfe 2015). In particular, measures of income have been quite diverse. Wolfe (2015) identified three main components of socioeconomic status: economic, educational and occupational.² Economic measures range from poverty and duration thereof (such as in Brooks-Gunn and Duncan 1997), to family/household income (like Case et al. 2002; Currie and Stabile 2003; Currie et al. 2007), among other measures such as income to needs and wealth (Wolfe 2015). The purpose of this section is to present different possibilities for measuring household income, to describe the selection of the measure that was used in this study and how it best fits the populations being studied.

Three measures of household income were examined in this study, and all were derived from the same variable in the 2012 APS, after-tax household income (for more information on this variable please see Appendix A). After-tax income was used to account for the available disposable income in the household; however, this variable does not take shelter costs, the cost of living, nor regional differences in the cost of living (such as in the North) into account. In addition, none of the income measures are adjusted for household size. Although adjusting for household size could be a better indicator for the distribution of income within the household, and the availability of funds, there is high multicollinearity between household income adjusted for household size and household crowding, since both are calculated with the same variable for the number of rooms in the household. Finally, please note that only before-tax household

² Educational measures will be discussed in the next section, but occupational measures were not studied, as neither data source has variables on parents' occupation.

income was available through the 2012 CCHS for the non-Aboriginal population, so household income for non-Aboriginal youth may be overestimated.

Table 3.1 shows the income ranges and distributions of youth aged 12 to 18 by Aboriginal identity for selected income measures. Household income was measured in three ways: as household income quartiles (derived respectively for First Nations people living off reserve, Métis, Inuit and the non-Aboriginal Canadian-born population), pre-selected household income groups, and as a continuous variable, shown in Table 3.1 as median and average income.

Household income quartiles were selected as the main income measure in this study since the measure is evenly distributed, and because it gives a better indication of what the low income groups are for each population. The highest median and average income were seen for the non-Aboriginal population (\$80,000.00 and \$93,907.51), although as mentioned earlier this may be an overestimation as the data are before-tax (Table 3.1). It should also be noted that household income quartiles, and median and average household income were derived for each Aboriginal identity population separately, and specifically for the age group of 12 to 18. Since more than the majority of youth live in a two-parent household (data not presented), household income is higher than if you include the entire population, which has more single people living on their own.

Table 3.1

**Distributions of youth aged 12 to 18 by selected measures of household income¹,
² in Canadian dollars, by Aboriginal identity, Canada, 2012**

	Aboriginal identity			
	Off-reserve First Nations	Métis	Inuit	Non-Aboriginal
	Canadian \$			
Household income quartiles, cut-off points				
Quartile 1 – Lowest income	< 32,936	< 40,324	< 41,978	< 50,000
Quartile 2	32,936 to < 54,918	40,324 to < 67,489	41,978 to < 68,683	50,000 to < 80,000
Quartile 3	54,918 to < 85,200	67,489 to < 100,095	68,683 to < 104,253	80,000 to < 120,000
Quartile 4 – Highest income	85,200 +	100,095 +	104,253 +	120,000 +
Household income groups				
Less than \$30,000	21.7	15.8	12.2	11.3
\$30,000 to less than \$60,000	32.6	25.9	29.7	20.1
\$60,000 to less than \$90,000	23.3	25.6	24.2	24.4
\$90,000 and more	22.2	32.5	33.8	44.0
Median income	54,918.00	67,489.00	68,683.00	80,000.00
Average income	64,559.77	75,209.64	80,013.88	93,907.51

^E Means interpret with caution.

¹ Income data refer to the total income received by all household members and from all sources for the past 12 months.

² Income data from the 2012 Aboriginal Peoples Survey are after-tax, and data from the 2012 Canadian Community Health Survey are before-tax.

Note: Totals may not add to 100% due to rounding.

Source: Statistics Canada, Aboriginal Peoples Survey (APS), 2012 and Canadian Community Health Survey (CCHS), 2012.

Parental Educational Attainment

Educational attainment is particularly important in health research as it has been shown to be correlated with increased knowledge and skills in health literacy, as well as with healthier lifestyles, it can also be related to occupational prestige and higher income (Bills 2003, Conger et al. 2009, Currie 2009, Mirowsky and Ross 1998, Montez et al. 2012, and Ross and Wu 1995 in Wolfe 2015). Much of the literature on the health of children and youth has focused on the educational attainment of mothers (Case et al.

2002; Currie and Stabile 2003; Allin and Stabile 2012), but in this study the educational attainment of the mother and father were combined into one variable to account for both parents, regardless of who the child lives with (the living arrangement of Indigenous children are more diverse than non-Indigenous children, Turner 2016). The 2012 CCHS only provides information on the highest educational attainment in the household, so the two variables are not exactly comparable, however they provide some measure of educational attainment in the household, or of family members who are responsible for the youth in this study.

As previously discussed, Wolfe (2015) identified three main components of socioeconomic status, one of which is education and can be measured as years of schooling or degree(s) obtained. In this study, only the latter measure is available through both data sources, with some distinct variations. The 2012 Aboriginal Peoples Survey (APS) has data on the mother's and father's educational attainment, and these were combined to create a variable on parental educational attainment (please see Appendix A for details). Less than 20% of off-reserve First Nations, Métis and Inuit youth in this study, respectively, lived in other living arrangements (data not presented). In the 2012 Canadian Community Health Survey (CCHS), data on educational attainment measure the highest degree obtained by at least one member of the household.

About 33% of Inuit youth had parents who did not have a high school diploma (Table 3.2). This percentage was 10% for First Nations youth living off reserve, almost 6% among Métis youth, and about 3% for non-Aboriginal youth. The high rate of high school non-completion among parents of Inuit youth could be due to various factors,

one of which is a lack of education services in the North. Many communities in Nunavut, for example, did not get grades 11 or 12 until the late 1990s and early 2000s. Data from the 2011 National Household Survey (NHS) show that rates of high school completion are equally low for Inuit and the non-Aboriginal population living in Inuit Nunangat (Li and Smith 2016). For many Inuit, getting a high school education was a difficult decision as they would have to leave their families and home communities, sometimes for the first time, to travel and live in another community. The residential school system in Canada is another contributing factor to lower high school completion among Inuit, which included federal day schools that Inuit were forced to attend, sometimes in tents (Truth and Reconciliation Commission of Canada 2012).

Table 3.2
Distributions of youth aged 12 to 18 by selected measures of parental or household educational attainment, by Aboriginal identity, Canada, 2012

	Aboriginal identity			
	Off-reserve First Nations	Métis	Inuit	Non-Aboriginal
	%			
Parental educational attainment / Highest household education				
No high school diploma	10.0	5.6	32.6	2.6
At least one parent / person has a high school diploma or more	89.9	94.3	67.3	97.4

Note: Totals may not add to 100% due to rounding.

Source: Statistics Canada, Aboriginal Peoples Survey (APS), 2012 and Canadian Community Health Survey (CCHS), 2012.

Health Care Access and Use

In Canada, health care is a legal right for First Nations people with Status and for Inuit, stemming from the 'Medicine Chest Clause' in Treaty 6, as well as from promises for health care provision in other treaties and in many historical and modern treaty negotiations (Assembly of First Nations 2015). In addition, in April 2016 the Supreme

Court of Canada ruled that Métis and non-status First Nations people are ‘Indians’ under the Canadian Constitution (CTV 2016). This allows Métis and non-status First Nations people to engage in negotiations with the federal government for access to First Nations programs, services and rights, such as health care, which were previously unavailable to them.

Furthermore, Indigenous peoples’ right to health is entrenched in international declarations such as the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP). In September 2007, Canada voted against the Declaration, but in November 2010 the Government of Canada issued official support for it (Assembly of First Nations 2015). That said, access to and the provision of health care services for Indigenous peoples in Canada has historically been inconsistent, inadequate and culturally inappropriate (Reading and Wien 2009). For example, there is a very alarming lack of health care services in Inuit Nunangat, the Inuit homeland.³ This is evidenced by the bigger role that nurses play in delivering health care services in the North (Reading and Wien 2009; Gionet and Roshanafshar 2013). In this study, 20% of Inuit youth aged 12 to 18 consulted only a nurse in the last year, compared with about 3% each for off-reserve First Nations and Métis youth, and almost 4% of non-Aboriginal youth (Table 3.3). A larger proportion of off-reserve First Nations (46%), Métis (48%) and non-Aboriginal (58%) youth visited only a doctor in the last year. The majority of off-reserve First Nations, Métis and non-Aboriginal youth lived in urban areas (see sample characteristics in Chapter 1), which could explain some of the discrepancies in health

³ Inuit Nunangat is composed of four Inuit regions: Nunatsiavut (northern coastal Labrador), Nunavik (northern Quebec), the territory of Nunavut, and the Inuvialuit Settlement Region (north of the Northwest Territories) (Arriagada 2017).

care access. Additionally, almost 40% of Inuit youth have regular medical doctor, whereas over 80% of youth in all other populations studied have a regular medical doctor.

Access to and use of health care services are critical issues for the health of Indigenous peoples. Health care access in this study is measured as unmet health care needs – when health care was needed but not received. Health care utilization is measured as having consulted a medical professional in the last year. Unfortunately, it was not possible to examine the cultural appropriateness of health care services delivered to Indigenous peoples with data from the 2012 APS, but it is possible that respondents who answered the question on unmet health care needs consider the lack of culturally appropriate services as unmet health care needs. Additionally, these particular variables were selected as they are comparable to variables in the 2012 CCHS. This allows for an examination of similarities and differences in health care access and use between Indigenous peoples and the non-Indigenous population, as this may have a significant effect on diagnosis and perceptions of health. Unmet health care needs were reported highest among First Nations youth living off reserve and Inuit youth at 9% each (Table 3.3).

Table 3.3

Distributions of youth aged 12 to 18 by selected measures of health care access and use, by Aboriginal identity, Canada, 2012

	Aboriginal identity			
	Off-reserve First Nations	Métis	Inuit	Non-Aboriginal
	%			
Unmet health care needs ¹				
Needed care but did not receive it	9.0	6.6	9.1	5.0
Did not need care or received it when needed	90.9	93.3	90.8	94.9
Health care use ¹				
Consulted a medical professional	75.6	75.9	69.1	70.3
Did not consult a medical professional	24.3	24.0	30.8	29.7
Regular medical doctor				
Has a regular medical doctor	80.6	83.0	38.2	87.6
Does not have a regular medical doctor	19.3	16.9	61.7	12.3
Visit with a doctor or nurse				
Doctor only	46.3	47.7	18.8	58.2
Nurse only	2.7	2.8	20.1	3.6
Both doctor and nurse	20.6	19.9	24.0	7.7
Neither	30.3	29.4	36.9	30.3

¹ All of these variables refer to accessing and using health care services in the past 12 months, from the time of the survey interview.

Note: Totals may not add to 100% due to rounding.

Source: Statistics Canada, Aboriginal Peoples Survey (APS), 2012 and Canadian Community Health Survey (CCHS), 2012.

Results

Bivariate Results

In this section each of the independent variables selected for this chapter are crossed with the three health outcomes in this study; excellent/very good health and the presence of at least one mood and/or anxiety disorder. Tables are grouped by social determinants rather than by health outcomes, so each table shows the results for a particular determinant cross-tabulated with each health outcome.

Household Income

There appears to be an income gradient for the health of Métis youth, as those living in the lowest income quartile are less likely to be rated as being in excellent/very good health (64%) when compared with their counterparts living in the highest income quartile (82%) (Table 3.4). In addition, Métis youth living in lower income are more likely to have a diagnosed condition, such as a mood/anxiety disorder (18^E%), than Métis youth living in the highest income quartile (7^E%).

Results for First Nations youth living off reserve and Inuit youth do not show an association between household income and either health outcome. Among non-Indigenous youth, those living in the two lowest income quartiles are less likely to be rated as being in excellent/very good health than youth living in higher income (Quartile 1: 63% and Quartile 2: 66% compared to Quartile 4: 78%) (Table 3.4). No association was found between household income and a diagnosed mood/anxiety disorder. This could indicate better access to health care across income quartiles for non-Indigenous youth, who are more likely to reside in urban areas (see sample characteristics in Chapter 1).

Table 3.4

Proportion of youth aged 12 to 18 with excellent/very good health or a mood/anxiety disorder, by household income quartiles¹ and Aboriginal identity, Canada, 2012

	Aboriginal identity			
	Off-reserve First Nations	Métis	Inuit	Non-Aboriginal
	Percent with confidence intervals in brackets			
Excellent/very good health				
Quartile 1 – Lowest income	61.4 (53.6-68.6)	63.6* (54.8-71.5)	71.2 (60.5-80.0)	62.9* (58.4-67.2)
Quartile 2	67.7 (61.9-73.0)	72.5 (66.2-78.0)	68.9 (59.6-76.9)	66.0* (61.6-70.2)
Quartile 3	72.1 (66.9-76.7)	74.3 (67.6-80.0)	66.3 (58.3-73.3)	73.1 (68.9-76.9)
Quartile 4 – Highest income (ref.)	72.6 (67.1-77.5)	81.8 (77.2-85.7)	73.0 (66.8-78.4)	77.6 (73.8-80.9)
Mood/anxiety disorder				
Quartile 1 – Lowest income	11.5 (8.3-15.8)	18.1 ^{E*} (11.8-26.8)	F	8.0 (6.0-10.5)
Quartile 2	11.3 (8.4-14.9)	13.1 ^E (9.3-18.2)	5.6 ^E (3.1-10.1)	7.4 ^E (5.3-10.2)
Quartile 3	15.8 (11.8-20.9)	11.2 ^E (7.5-16.4)	F	6.3 ^E (4.2-9.2)
Quartile 4 – Highest income (ref.)	12.7 (9.8-16.4)	6.6 ^E (4.5-9.4)	5.3 ^E (2.9-9.5)	6.2 ^E (4.4-8.8)

* Statistically significant from reference category (ref.).

^E Interpret with caution, the coefficient of variation is high (between 16.6% and 33.3%).

F Too unreliable to be published, the coefficient of variation is very high (more than 33.3%).

¹ Income data from the 2012 Aboriginal Peoples Survey is after-tax.

Source: Statistics Canada, Aboriginal Peoples Survey (APS), 2012 and Canadian Community Health Survey (CCHS), 2012.

Parental Educational Attainment

When parental educational attainment is taken into account, an association with health was only found for Inuit youth. Among Inuit youth for whom neither parent had a high school diploma, 61% were rated as being in excellent or very good health, whereas 74% of Inuit youth who had at least one parent who completed high school or more were rated as being in excellent or very good health (Table 3.5). This is possibly an indicator of health literacy and health care access, which will be explored further in the following sections.

Table 3.5

Proportion of youth aged 12 to 18 with excellent/very good health or a mood/anxiety disorder, by parental or household educational attainment and Aboriginal identity, Canada, 2012

	Aboriginal identity			
	Off-reserve First Nations	Métis	Inuit	Non- Aboriginal
	Percent with confidence intervals in brackets			
Excellent/very good health				
No high school diploma	63.2 (50.7-74.2)	66.5 (51.5-78.7)	60.9* (54.2-67.3)	70.2 (57.4-80.5)
At least one parent / person has a high school diploma or more (ref.)	70.6 (67.5-73.5)	74.3 (70.7-77.6)	74.4 (67.8-80.1)	71.6 (69.5-73.7)
Mood/anxiety disorder				
No high school diploma	10.8 ^E (6.2-18.4)	F	3.7 ^E (1.9-6.9)	F
At least one parent / person has a high school diploma or more (ref.)	12.8 (10.9-15.1)	11.8 (9.5-14.6)	7.9 ^E (4.9-12.5)	6.4 (5.4-7.7)

* Statistically significant from reference category (ref.).

^E Interpret with caution, the coefficient of variation is high (between 16.6% and 33.3%).

F Too unreliable to be published, the coefficient of variation is very high (more than 33.3%).

Source: Statistics Canada, Aboriginal Peoples Survey (APS), 2012 and Canadian Community Health Survey (CCHS), 2012.

Health Care Access and Use

Among Indigenous youth, those with unmet health care needs were less likely to be rated as being in excellent or very good health than youth who either received or did not need health care, with differences of more than 20 percentage points for each Indigenous group (Table 3.6). In addition, results indicate that among all youth studied, Indigenous and non-Indigenous, those with unmet health care needs were more likely to have a diagnosed mood or anxiety disorder (off-reserve First Nations: 37% versus 10%; Métis: 38^E% versus 11%; Inuit: 18^E% versus 5^E%; and non-Aboriginal: 24^E% versus 6%).

Findings for health care use were less evident. No association was found between ratings of excellent or very good health and the consultation of a medical

professional in the last 12 months (preceding the survey interview). However, having consulted a medical professional was associated with having a diagnosed mood or anxiety disorder among First Nations youth living off reserve (16% versus 4^E%) and among non-Aboriginal, Canadian-born youth (8% versus 3^E%) (Table 3.6). Results for Métis and Inuit youth were not significant because the proportion of youth with a diagnosed mood or anxiety condition who did not consult a medical professional was too small to be published.

Table 3.6

Proportion of youth aged 12 to 18 with excellent/very good health or a mood/anxiety disorder, by health care access and use and Aboriginal identity, Canada, 2012

Canada, 2012

	Aboriginal identity			
	Off-reserve First Nations	Métis	Inuit	Non-Aboriginal
	Percent with confidence intervals in brackets			
Excellent/very good health				
Unmet health care needs				
Needed health care but did not receive it	42.3* (31.4-54.1)	49.2* (34.8-63.7)	49.6* (35.4-63.8)	67.7 (55.5-77.9)
Did not need health care or received it when needed (ref.)	71.3 (68.6-73.8)	74.8 (71.3-78.0)	72.2 (67.9-76.2)	72.2 (69.2-75.0)
Health care use				
Consulted a medical professional (ref.)	67.2 (63.7-70.5)	72.1 (68.3-75.6)	67.8 (62.1-72.9)	70.1 (67.6-72.4)
Did not consult a medical professional	72.7 (67.4-77.4)	76.9 (69.9-82.7)	74.1 (67.9-79.5)	71.0 (67.1-74.5)
Mood/anxiety disorder				
Unmet health care needs				
Needed health care but did not receive it	37.3* (26.9-49.2)	37.5 ^{E*} (23.5-53.9)	17.5 ^{E*} (9.3-30.4)	24.4 ^{E*} (15.3-36.7)
Did not need health care or received it when needed (ref.)	10.4 (8.8-12.2)	10.5 (8.5-12.9)	5.0 ^E (3.2-7.7)	6.4 (5.1-8.0)
Health care use				
Consulted a medical professional (ref.)	15.8 (13.5-18.4)	13.6 (11.0-16.6)	8.0 ^E (5.4-11.7)	8.1 (6.8-9.6)
Did not consult a medical professional	3.7 ^{E*} (2.2-6.3)	F	X	2.9 ^{E*} (1.7-4.7)

* Statistically significant from reference category (ref.).

^E Interpret with caution, the coefficient of variation is high (between 16.6% and 33.3%).

F Too unreliable to be published, the coefficient of variation is very high (more than 33.3%).

X Sample size is smaller than 10 counts.

Note: Both health care variables refer to accessing and using health care services in the past 12 months from the time of the survey interview.

Source: Statistics Canada, Aboriginal Peoples Survey (APS), 2012 and Canadian Community Health Survey (CCHS), 2012.

Logistic Regression Results

In this section, data tables are presented by model for each dependent variable.

Analysis of the general health variable used ordinal logistic regression, which was coded for three outcomes – excellent/very good health, good health and fair/poor

health. Results for this variable indicate the odds or likelihood of being in better health. Analysis for the second dependent variable, diagnosed mood/anxiety disorders, was conducted with binomial logistic regression since the outcome is a binary variable.

General Health

When selected measures of socio-economic status and health care use are controlled for in a proportional odds model, there appears to be an income gradient in health among Métis and non-Aboriginal youth. Métis and non-Aboriginal youth living in the lowest income quartile (Odds ratio (OR): 0.4 and 0.5, respectively) and in the second lowest income quartile (OR: 0.5 and 0.5, respectively) have lower odds of being in better health than those in the highest income quartile (Table 3.7). An association between household income quartiles and better health was not observed for off-reserve First Nations and Inuit youth. However, an association between general health and parental education was only observed among Inuit youth, where the odds for having better health was lower among youth who have two parents without a high school diploma (OR: 0.6).

Indigenous youth who had unmet health care needs had lower odds of being in better health (OR: off-reserve First Nations 0.2, Métis 0.3 and Inuit 0.3). No relationship between unmet health care needs and general health was observed for non-Indigenous youth. In addition, there does not appear to be a correlation between consulting a medical professional and better health for Indigenous and non-Indigenous youth.

Table 3.7

Odds ratios for better health among youth aged 12 to 18, for selected measures of socioeconomic status and health care access and use, by Aboriginal identity, Canada, 2012

	Aboriginal identity			
	Off-reserve First Nations	Métis	Inuit	Non- Aboriginal
	Odds ratios with confidence intervals in brackets			
Household income quartiles ¹				
Quartile 1 – Lowest income	0.7 (0.4-1.2)	0.4* (0.2-0.7)	1.1 (0.5-2.2)	0.5* (0.3-0.7)
Quartile 2	0.8 (0.5-1.2)	0.5* (0.3-0.8)	0.8 (0.4-1.6)	0.5* (0.3-0.8)
Quartile 3	1.1 (0.7-1.6)	0.6 (0.4-1.0)	0.7 (0.4-1.2)	0.8 (0.5-1.2)
Quartile 4 – Highest income (ref.)	1.0	1.0	1.0	1.0
Parental educational attainment / Highest household education				
No high school diploma	0.7 (0.4-1.3)	0.8 (0.4-1.7)	0.6* (0.3-0.9)	1.0 (0.4-2.6)
At least one parent / person has a high school diploma or more (ref.)	1.0	1.0	1.0	1.0
Unmet health care needs				
Needed health care but did not receive it	0.2* (0.1-0.4)	0.3* (0.1-0.7)	0.3* (0.1-0.9)	0.6 (0.3-1.2)
Did not need health care or received it when needed (ref.)	1.0	1.0	1.0	1.0
Health care use				
Consulted a medical professional (ref.)	1.0	1.0	1.0	1.0
Did not consult a medical professional	1.2 (0.9-1.7)	1.3 (0.8-2.0)	1.4 (0.9-2.2)	1.1 (0.8-1.6)
Wald F	62.33	59.44	26.25	52.64

* Statistically significant from reference category (ref.) if the confidence intervals do not cross 1.00.

¹ Income data from the 2012 Aboriginal Peoples Survey is after-tax.

Note: Both health care variables refer to accessing and using health care services in the past 12 months from the time of the survey interview.

Source: Statistics Canada, Aboriginal Peoples Survey (APS), 2012 and Canadian Community Health Survey (CCHS), 2012.

Mood/Anxiety Disorders

Results from logistic regression analysis reinforce that the income gradient in health is present among Métis youth. Métis youth living in the lowest and second lowest

household income quartiles have a higher likelihood of having a diagnosed mood or anxiety disorder than those in the highest income quartile (Odds ratios (ORs): 2.8 and 1.9, respectively) (Table 3.8). The results for off-reserve First Nations, Inuit and non-Aboriginal youth did not show evidence of an income gradient. In addition, parental education (or highest household education) did not appear to be associated with mood or anxiety disorders among both Indigenous and non-Indigenous youth.

That being said, one of the key findings in Table 3.8 is that health care access is correlated with mood and anxiety disorders among Indigenous and non-Indigenous youth. Youth in every Aboriginal identity population in this study for whom it was indicated that they needed health care in the last 12 months but did not receive it had higher odds of having a diagnosed mood or anxiety condition (OR: off-reserve First Nations 4.7, Métis 5.2, Inuit 3.9, and non-Aboriginal 5.1). Finally, it should be noted that only data for First Nations youth living off reserve indicated that not having consulted a medical professional in the last 12 months had a lower likelihood of a mood or anxiety disorder (see Table 3.8).

Table 3.8

Odds ratios for a mood/anxiety disorder among youth aged 12 to 18, for selected measures of socioeconomic status and health care access and use, by Aboriginal identity, Canada, 2012

	Aboriginal identity			
	Off-reserve First Nations	Métis	Inuit	Non- Aboriginal
	Odds ratios with confidence intervals in brackets			
Household income quartiles ¹				
Quartile 1 – Lowest income	0.8 (0.4-1.4)	2.8* (1.4-5.7)	0.6 (0.2-2.0)	1.4 (0.7-3.0)
Quartile 2	0.8 (0.5-1.3)	1.9* (1.1-3.4)	1.2 (0.4-3.6)	1.2 (0.5-2.6)
Quartile 3	1.1 (0.7-1.7)	1.6 (0.9-2.9)	2.1 (0.7-6.6)	0.7 (0.3-1.7)
Quartile 4 – Highest income (ref.)	1.0	1.0	1.0	1.0
Parental educational attainment / Highest household education				
No high school diploma	0.7 (0.3-1.5)	0.5 (0.2-1.3)	0.4 (0.2-1.0)	0.6 (0.1-2.3)
At least one parent / person has a high school diploma or more (ref.)	1.0	1.0	1.0	1.0
Health care access				
Needed health care but did not receive it	4.7* (2.7-8.4)	5.2* (2.6-10.2)	3.9* (1.6-9.7)	5.1* (2.7-9.8)
Did not need health care or received it when needed (ref.)	1.0	1.0	1.0	1.0
Health care use				
Consulted a medical professional (ref.)	1.0	1.0	1.0	1.0
Did not consult a medical professional	0.2* (0.1-0.4)	0.5 (0.2-1.6)	0.3 (0.1-1.0)	0.5 (0.1-1.8)
R ²	0.062	0.049	0.048	0.028
Wald F	73.51	61.41	28.31	49.34

* Statistically significant from reference category (ref.) if the confidence intervals do not cross 1.00.

¹ Income data from the 2012 Aboriginal Peoples Survey is after-tax.

Note: Both health care variables refer to accessing and using health care services in the past 12 months from the time of the survey interview.

Source: Statistics Canada, Aboriginal Peoples Survey (APS), 2012 and Canadian Community Health Survey (CCHS), 2012.

Discussion

The income gradient in health is most evident among Métis youth, where youth living in the lowest income quartiles have lower odds of having excellent or very good health,

but have higher odds of having a diagnosed mood and/or anxiety disorder when compared with Métis youth living in the highest income quartile (Tables 3.7 and 3.8).

No association between household income quartiles and the selected health outcomes was found for off-reserve First Nations and Inuit youth. Non-Aboriginal youth had a lower odds of being in excellent or very good health if they were classified in the lower income quartiles, but no correlation between income and the presence of a mood and/or anxiety disorder was observed. Not finding an association does not necessarily mean that one does not exist. No association could be attributed to a variety of factors, including sample size.

Among the health care variables, associations between health and unmet health care needs were found for all Indigenous youth. Youth with unmet health care needs had lower odds of having excellent or very good health (Table 3.7) and had higher odds of having a mood and/or anxiety disorder (Table 3.8). Among non-Indigenous youth, a relationship was observed between the presence of a mood and/or anxiety and unmet health care needs, where youth with unmet health care needs had a higher likelihood of being diagnosed with a mood/anxiety disorder. No association was found between the consultation of a medical professional and health. That said, one finding showed that among First Nations youth living off reserve, those who had not consulted a medical professional in the past year had a lower likelihood of having a mood and/or anxiety disorder. This is likely related to diagnosis, which requires the presence of a medical professional, although interestingly none of the other population groups showed this relationship (Table 3.8).

The findings from the logistic regression analyses reflect the findings from the bivariate analyses. Even when other socio-economic characteristics and measures of health care access and use are controlled for in a model, the associations observed in the bivariate tables (Tables 3.4, 3.5 and 3.6) remained.

However, one association that disappeared in the full models is that between parental education and excellent/very good health among Inuit youth. It would be too simplistic to say that parents without a high school education are more likely to be unemployed, live in poor housing conditions and have low household food security, which all in turn has an impact on the health and well-being of children and youth in the household. Low educational attainment, poor housing conditions and low food security are prevalent in the North, where the majority of Inuit youth live (Li and Smith 2016; Arriagada 2017). Low educational attainment in the North can be attributed to a number of factors, namely the lack of educational services offered across the North, difficulties in obtaining access to education services from remote communities, and a serious lack of culturally appropriate education programs in Inuit Nunangat. Limited access to supplies and services also extends to health care, where 20% of Inuit youth indicated that they had only seen a nurse in the past year, compared with less than 4% of off-reserve First Nations, Métis and non-Indigenous youth (Table 3.3). Additionally, 38% of Inuit youth have a regular medical doctor compared with over 80% for each of the other population groups (Table 3.3).

Conclusion

The results from this chapter show that the selected measures of socio-economic status and health care are not always correlated with the selected health outcomes

across all Aboriginal identity groups. The next chapter examines factors about the home environment, school environment and extra-curricular activities to develop a more wholistic portrait of the lives of Indigenous youth. These variables will provide insights into how the social environments of Indigenous youth impact their overall well-being and health.

Chapter 4: Home and School Environments

In this chapter, the proximal determinants of health (Reading and Wien 2009) are examined in two parts: the physical environment and the school environment. The physical environment represents the home environment where youth live, with measures such as housing conditions (crowding, home in need of major repairs) and household food security. The school environment refers to academic performance, school attrition and indicators of school atmosphere (positive or negative social environment and the presence of Aboriginal language/cultural programs).

The Physical Environment

The physical or home environment is crucial to the well-being of children and youth. Living in a home where basic needs, such as food security, are not met can have considerable health repercussions that can lead into adulthood, as can living in a physical environment with safety issues (World Health Organization 2011; Kohen et al. 2015). Among children, living conditions such as household crowding and living in a home in need of major repairs are associated with health conditions such as respiratory diseases (respiratory infections and asthma) (Banerji et al. 2001; Gao et al. 2008; Kohen et al. 2015), as well as with injuries (Shenassa et al. 2004; Delgado et al. 2002) and behavioural issues like aggression and mental distress (Kohen et al. 2015).

Three variables were selected for this study as measures of the physical (home) environment: household crowding, condition of the dwelling, and household food security. A crowded household is defined as a home with more than one person per room, excluding bathrooms and rooms used for business purposes. The condition of the

dwelling refers to whether the home is in need of major repairs, or if it is only in need of regular maintenance and/or minor repairs.

In the 2012 APS, household food security is based on situations where the household runs out of food; there is not enough money to purchase more food; balanced meals are not affordable, or household members either cut the size of their meals or skip meals because there is not enough money for food (Arriagada 2017). Table 4.1 shows the frequency distributions for the variables on household crowding, condition of the dwelling and household food insecurity by Aboriginal identity. Only data on household food security was available for non-Indigenous youth through the 2012 CCHS.

Household crowding is high among Inuit youth, where about 40% live in crowded households with more than one person per room (Table 4.1). Almost 20% of Inuit youth live in homes in need of major repairs compared to about 10% of First Nations youth living off reserve and almost 7% (6.8%) of Métis youth. Household food security is around 85% for off-reserve First Nations and Métis youth (83.0% and 85.4%, respectively) and 57% among Inuit youth. Non-Indigenous youth have the lowest household food insecurity at 8.3%, however, it should be noted that since the APS and CCHS measure household food security slightly differently, the data may not be comparable.

Table 4.1

Distributions of youth aged 12 to 18 by selected characteristics of the home environment, by Aboriginal identity, Canada, 2012

	Aboriginal identity			
	Off-reserve First Nations	Métis	Inuit	Non- Aboriginal
	%			
Household crowding				
More than one person per room	9.7	5.5	43.6	
One person or fewer per room	90.3	94.4	56.3	
Condition of dwelling				
Major repairs	10.4	6.7	18.9	
Regular maintenance or minor repairs	89.5	93.2	81.0	
Household food security¹				
Low or very low / Food insecure	17.0	14.5	42.9	8.30
High or marginal / Food secure	82.9	85.4	57.0	91.70

¹ Household food security is measured differently in the Aboriginal Peoples Survey (APS) than in the Canadian Community Health Survey (CCHS). For the analysis in this study, the person sample weight and not the CCHS household weights were used to calculate food security, so that the analysis is comparable to the APS which does not have household weights.

Notes: Totals may not add to 100% due to rounding. Greyed out cells indicate that the variable was not available through the CCHS.

Source: Statistics Canada, Aboriginal Peoples Survey (APS), 2012 and Canadian Community Health Survey (CCHS), 2012.

The School Environment

In Canada, elementary and secondary schools generally run from Monday to Friday, except for holidays (Immigration, Refugees and Citizenship Canada 2017). The school day is usually around 5 to 6 hours, meaning that elementary and high school students in Canada spend about 25 to 30 hours in school a week, for about 10 months a year. Youth spend a substantial amount of time away from their parents/guardians, families and home environments. Thus any discussion of social determinants of health should include a wholistic portrait of their lives that includes experiences at school.

Among Indigenous youth, this is particularly salient as they navigate a Western education system that has not only consistently denied Indigenous peoples their identity, rights, languages, cultures and histories, but has also sought to efface them through aggressive assimilation projects, such as the residential school system (Truth and Reconciliation Commission of Canada 2012). In addition, Indigenous youth living in primarily urban settings are surrounded by non-Indigenous populations, where they are immersed in the urban North American lifestyle. All of these factors influence the well-being of Indigenous youth and can have a profound impact on their health.

A wholistic study of the social determinants examines all aspects of life, including the environments in which people spend the majority of their time. For youth, school plays a key role in their lives – more specifically, it is a major site for socializing, which can have a tremendous impact on overall and mental well-being and is foundational for identity formation. One of the core themes of the 2012 Aboriginal Peoples Survey (APS) is education experiences (Statistics Canada 2012a). Detailed questions on academic performance, school climate and participation in various activities were asked of youth or their parents/guardians who were attending Grades 7 to 12 in Canada in 2012. This section explores the richness of this data to build a wholistic portrait of the lives of First Nations youth living off reserve, Métis youth and Inuit youth, and how these aspects of their lives intersect with their health.

In this section on the school environment, variables related to academic performance, school climate and the presence of Aboriginal language and/or cultural programs at school are explored for associations with excellent/very good rated health and the presence of a mood and/or anxiety disorder. The 2012 Canadian Community

Health Survey (CCHS) does not cover these topics, thus no data or analyses are available for non-Aboriginal youth.

Academic performance

Academic performance is measured to understand how success in school is correlated with health. That said, the data are cross-sectional and no causality can be established – we cannot say that the data show how ill health affects academic performance or if academic performance has an effect on health. For example, if academic performance is low it may be due to frequent absences from school due to ill health, or an inability to focus properly due to illness. However, poor academic performance could also create anxiety and stress that leads to poor mental and overall health – it is not possible to distinguish the direction of causality in the data. In this study, the respondent (or proxy respondent) was asked for their average grades for the school year of the survey interview. The academic performance variable in this study has three categories: above average performance (mainly A grades), average grades (mainly Bs), and below average (mainly Cs, Ds, Es or F) (please see Appendix A for more details).

School climate

The history of Indigenous peoples in the Canadian education system has been horrific, most notably through the residential school system. Indigenous children and youth were forcibly removed from their families and communities and made to attend Canadian schools that aimed to destroy Indigenous families, communities, cultures, languages and ways of life through involuntary assimilation (Truth and Reconciliation Commission of Canada 2012). Children were abused physically, sexually, emotionally,

verbally, and to this day there remain unmarked graves and families searching for their missing loved ones (Truth and Reconciliation Commission of Canada 2012). The legacy of abuse has ramifications that continue to be experienced by the descendants of those who attended residential schools, and it continues to disrupt and harm Indigenous families and communities in a multitude of ways – such as the devastating youth suicide rates among certain Indigenous communities (Hallett et al. 2007).

Therefore, it is crucial to take into account how colonization and forced methods of assimilation, such as the residential school system, continue to have an effect on the social and school experiences of Indigenous youth. For example, in this chapter there is a measure of positive and negative school climate, that is youth who identify feeling safe and/or happy at school (positive climate) versus youth who have indicated that racism and/or bullying are a problem in their school (negative climate). Racism and bullying were combined to indicate a negative school climate because the two are often intertwined and are indicative of aggression and social issues within the school, community and nation.

Aboriginal language and/or cultural programs

The presence of Aboriginal language or cultural programs at school is an important change in Canada. It is a significant change in Canadian education policies – as well as in Canadian society – and in how Indigenous peoples, their cultures, families, communities and languages are treated and respected. The presence of these programs allows Indigenous children and youth to be immersed in their families' languages and cultures in an environment outside their homes. Cultural continuity,

particularly through language, has also been found to be a protective factor against youth suicide (Hallett et al. 2007).

Table 4.2 presents frequency distributions for characteristics of the school environment and social activities. Almost all Indigenous youth have average or above average grades, and almost all youth reported feeling safe and/or happy at school. Notably, about 16% of Inuit youth have dropped out of school at least once, whereas the percentages were lower among off-reserve First Nations (9.4%) and Métis (4.6%) youth. Almost all Inuit youth (91.6%) attended schools that offered Aboriginal language and/or cultural programs, while it was closer to three-quarters of off-reserve First Nations and Métis youth (74.5% and 76.5%, respectively).

Table 4.2

Distributions of youth aged 12 to 18 for selected characteristics of the school environment, by Aboriginal identity, Canada, 2012

Environment, by Aboriginal identity, Canada, 2012

	Aboriginal identity		
	Off-reserve First Nations	Métis	Inuit
	%		
Academic performance¹			
Above average grades	32.5	35.7	32.9
Average grades	37.5	37.4	37.7
Below average grades	29.8	26.7	29.3
School attrition			
Dropped out of school ²	9.3	4.6	15.7
Never dropped out of school	90.6	95.3	84.2
Aboriginal languages and/or cultural programs			
Offered at school	74.4	76.5	91.5
Not offered	25.5	23.4	8.4
School climate			
Positive – Felt safe and/or happy at school	94.5	95.7	97.0
Negative – Racism and/or bullying are a problem at school	5.4	4.2	2.9

¹ 'Above average grades' are 80% and over, 'Average grades' are 70% to 79%, and 'Below average grades' are 69% and below. A small number of respondents indicated that they do not receive grades at school and were excluded.

² Dropped out of school at least once.

Note: Please note that totals do not add to 100% due to rounding.

Source: Statistics Canada, Aboriginal Peoples Survey (APS), 2012.

Results

Bivariate Results

Home Environment

Selected characteristics of the home environment are cross-tabulated with each outcome, excellent/very good health and the presence of a mood and/or anxiety disorder. A consistent association between health and household food security was found among Métis youth. Métis youth who live in a food insecure household are less likely to have their health rated as excellent or very good (55.4% versus 76.2%) and are more likely to have a diagnosed mood or anxiety disorder (25.0^E% versus 10.1%) (Table 4.3).

In addition, associations between household food security and health were observed for off-reserve First Nations, Inuit and non-Aboriginal youth. First Nations youth living off reserve were more likely to have a diagnosed mood or anxiety disorder if they lived in a food insecure household (20.6% versus 11.3%), and Inuit and non-Aboriginal youth were more likely to be in excellent or very good health if they lived in food secure households (78.5% compared to 60.8%, and 72.4% compared to 48.1%, respectively). The sample size for Inuit youth with a diagnosed mood and/or anxiety disorder was small, and consequently many results were suppressed.

Household crowding has long been known to be a serious issue in the North. In 2016, Inuit in Inuit Nunangat were more likely to live in crowded households than Inuit living anywhere else in Canada, with half of the Inuit population in Inuit Nunangat living in crowded households (51.7%) (Anderson 2017). Previous research has shown that young Inuit adults living in crowded households are less likely to be in excellent or very good health, and Inuit women in crowded households are more likely to be in higher mental distress (Anderson and Thompson 2016; Anderson 2015). According to analyses from the 2012 APS, Inuit youth aged 12 to 18 who live in crowded households, that is more than one person per room, are less likely to be rated in excellent/very good health than Inuit youth who are not living in crowded households (62.8% versus 75.5%) (Table 4.3).

Table 4.3

Proportion of youth aged 12 to 18 with excellent/very good health or a mood/anxiety disorder for selected characteristics of the home environment, by Aboriginal identity, Canada, 2012

Aboriginal identity, Canada, 2012				
	Aboriginal identity			
	Off-reserve First Nations	Métis	Inuit	Non- Aboriginal
	Percent with confidence intervals in brackets			
Excellent/very good health				
Household crowding				
More than one person per room	65.2 (55.7-73.7)	57.7 ^E (34.1-78.2)	62.7* (57.0-68.1)	
One person or fewer per room (ref.)	68.8 (65.7-71.7)	74.2 (71.0-77.2)	75.5 (68.9-81.1)	
Condition of dwelling				
Major repairs	64.4 (50.8-76.0)	67.1 (55.8-76.7)	63.2 (51.9-73.1)	
Regular maintenance or minor repairs (ref.)	69.2 (66.4-71.9)	73.7 (70.1-77.0)	72.3 (67.5-76.6)	
Household food security ¹				
Low or very low / Food insecure	63.4 (54.4-71.5)	55.4* (46.0-64.4)	60.8* (53.7-67.4)	48.0* (39.4-56.8)
High or marginal / Food secure (ref.)	70.1 (67.2-72.9)	76.2 (72.7-79.4)	78.4 (73.5-82.6)	72.4 (70.2-74.5)
Mood/anxiety disorders				
Household crowding				
More than one person per room	11.2 ^E (7.0-17.5)	F	3.6 ^E (2.0-6.1)	
One person or fewer per room (ref.)	13.3 (11.3-15.6)	12.1 (9.9-14.8)	8.0 ^E (5.0-12.7)	
Condition of dwelling				
Major repairs	9.1 ^E (5.7-14.2)	20.5 ^E (12.9-31.0)	F	
Regular maintenance or minor repairs (ref.)	13.3 (11.3-15.5)	11.7 (9.3-14.5)	6.0 ^E (3.9-9.1)	
Household food security ¹				
Low or very low / Food insecure	20.5* (14.9-27.5)	25.0 ^{E*} (16.6-35.8)	5.8 ^E (3.8-8.7)	9.8 ^E (6.3-15.0)
High or marginal / Food secure (ref.)	11.3 (9.5-13.3)	10.1 (8.0-12.6)	F	6.6 (5.5-7.8)

¹ Household food security is measured differently in the Aboriginal Peoples Survey than in the Canadian Community Health Survey.

* Indicates that the category is different from the reference category as the 95% confidence intervals (CI) do not overlap.

Source: Statistics Canada, Aboriginal Peoples Survey (APS), 2012.

School Environment

The bivariate analyses of the school environment show that school attrition is the only independent variable that is consistently associated with both health outcomes for most Indigenous youth. For example, all Indigenous youth were less likely to be reported as being in excellent/very good health if they had dropped out of school at least once, versus those who had never dropped out: 49.2% versus 70.9% among off-reserve First Nations youth, 32.6^E% versus 74.5% among Métis youth, and 56.6% versus 73.7% among Inuit youth (Table 4.4). These are large differences, among off-reserve First Nations and Inuit youth these are differences of about 20 percentage points (21.7 and 17.1, respectively), whereas the difference among Métis youth (41.9 percentage points) was twice that. Additionally, off-reserve First Nations and Métis youth who had dropped out of school at least once were more than twice as likely to have a mood or anxiety disorder in comparison to youth who did not drop out of school, 27.0^E% versus 10.8% and 27.6^E% versus 11.5%, respectively (Table 4.4).

Associations between excellent/very good health with academic performance and school climate were observed for most Indigenous youth. In particular, Métis youth with above average grades were less likely to be reported as being in excellent/very good health than youth with average grades, and off-reserve First Nations and Inuit youth with below average grades were less likely to be in excellent/very good in comparison to youth with average grades (below 50% each) (Table 4.4).

No associations between health and the presence of Aboriginal language and/or cultural programs in school were observed. However, important associations between health and school climate were found. Among off-reserve First Nations and Métis youth,

those who indicated that racism and/or bullying are a problem in their school were less likely to be in excellent/very good health than their counterparts who reported feeling safe and/or happy at school (39.2^E% versus 70.8% among First Nations youth living off reserve, and 48.0^E% versus 74.3% among Métis youth) (Table 4.4). In addition, this association persisted among Métis youth with a mood/anxiety disorder. Métis youth who reported a negative school climate were much more likely to have a diagnosed mood/anxiety disorder (50.8^E%) than those who reported a positive school atmosphere (10.6%).

Table 4.4

Proportion of youth aged 12 to 18 with excellent/very good health and at least one a mood/anxiety disorder for selected characteristics of the school environment, by Aboriginal identity, Canada, 2012

	Aboriginal identity		
	Off-reserve First Nations	Métis	Inuit
	Percent with confidence intervals in brackets		
Excellent/very good health			
Academic performance ¹			
Above average grades	80.9 (76.2-84.9)	82.7* (78.1-86.5)	79.5 (71.1-85.9)
Average grades (ref.)	73.1 (68.5-77.3)	71.7 (64.7-77.9)	70.5 (63.2-76.9)
Below average grades	57.7* (49.6-65.3)	65.9 (59.1-72.2)	57.8 (48.7-66.4)
School attrition			
Dropped out of school ²	49.2* (38.4-60.0)	32.5 ^{E*} (22.0-45.2)	56.5* (44.2-68.0)
Never dropped out of school (ref.)	70.9 (67.9-73.7)	74.4 (70.7-77.8)	73.6 (68.9-77.9)
Aboriginal languages and/or cultural programs			
Offered at school	70.6 (67.2-73.7)	71.7 (67.3-75.8)	68.9 (64.3-73.2)
Not offered at school (ref.)	65.3 (58.8-71.3)	74.5 (68.5-79.8)	82.9 (66.9-92.0)
School climate			
Positive: Felt safe and/or happy (ref.)	70.8 (68.0-73.5)	74.3 (70.9-77.4)	70.1 (65.7-74.2)
Negative: Racism and/or bullying are a problem	39.2 ^{E*} (24.2-56.5)	47.9 ^{E*} (28.4-68.1)	60.2 ^E (38.8-78.2)
Mood/anxiety disorders			
Academic performance ¹			
Above average grades	9.4 (6.8-12.8)	7.5 ^E (5.0-11.0)	F
Average grades (ref.)	12.4 (9.3-16.4)	13.4 ^E (8.9-19.6)	4.4 ^E (2.6-7.4)
Below average grades	14.2 (11.0-18.1)	14.3 (10.3-19.4)	6.5 ^E (3.4-12.0)
Dropped out of school			
Dropped out of school ²	26.9 ^{E*} (18.4-37.7)	27.5 ^{E*} (16.9-41.4)	8.4 ^E (4.6-14.9)
Never dropped out of school (ref.)	10.8 (9.2-12.7)	11.5 (9.2-14.3)	5.7 ^E (3.6-8.9)
Aboriginal languages and/or cultural programs			
Offered at school	11.7 (9.6-14.3)	12.2 (9.5-15.5)	5.7 ^E (3.8-8.5)
Not offered at school (ref.)	15.6 (11.6-20.6)	15.1 (10.8-20.7)	X

School climate			
Positive: Felt safe and/or happy (ref.)	11.9 (10.0-14.0)	10.5 (8.5-12.9)	5.9 ^E (4.0-8.6)
Negative: Racism and/or bullying are a problem	23.5 ^E (11.9-41.0)	50.7 ^{E*} (30.6-70.5)	X

¹ 'Above average grades' are 80% and over, 'Average grades' are 70% to 79%, and 'Below average grades' are 69% and below. A small number of respondents indicated that they do not receive grades at school and were excluded.

² Dropped out of school at least once.

* Indicates that the category is different from the reference category as the 95% confidence intervals (CI) do not overlap.

Source: Statistics Canada, Aboriginal Peoples Survey (APS), 2012.

Logistic Regression Results

The logistic regression analyses were separated into two sections: one model for excellent/very good health, and another for the presence of a mood/anxiety disorder. Both models combine characteristics of the home and school environments. The Wald F statistic and multicollinearity were used as model diagnostics and for model fit, and the R² value, the Cox-Snell likelihood ratio, was also included in the results for mood and anxiety disorders (binary logistic regression).

General Health

Indigenous youth who had dropped out of school at least once had lower odds of being in better health (Odds ratio (OR): 0.5, 0.1 and 0.5 respectively) (Table 4.5). Inuit youth who lived in food insecure households also had lower odds for better health (OR: 0.5), as did off-reserve First Nations youth who had below average grades (OR: 0.5). Finally, off-reserve First Nations and Métis youth who indicated that bullying and/or racism were problems at school had lower odds of being in better health (OR: 0.3 and 0.3).

Table 4.5

Odds ratios for better health among youth aged 12 to 18 for selected home and school characteristics, by Aboriginal identity, Canada, 2012

	Aboriginal identity		
	Off-reserve First Nations	Métis	Inuit
<i>Odds ratios with confidence intervals in brackets</i>			
<i>Home environment</i>			
Household crowding			
More than one person per room	1.0 (0.60-1.8)	0.5 (0.1-1.6)	0.8 (0.4-1.4)
One person or fewer per room (ref.)	1.0	1.0	1.0
Condition of dwelling			
Major repairs	1.0 (0.5-2.1)	0.8 (0.4-1.5)	0.8 (0.3-1.8)
Regular maintenance or minor repairs (ref.)	1.0	1.0	1.0
Household food security			
Low or very low	0.7 (0.4-1.2)	0.6 (0.3-1.0)	0.5* (0.2-0.8)
High or marginal (ref.)	1.0	1.0	1.0
<i>School environment and other activities</i>			
Academic performance¹			
Above average grades	1.2 (0.8-1.9)	1.54 (1.00-2.37)	1.3 (0.6-2.8)
Average grades (ref.)	1.0	1.0	1.0
Below average grades	0.5* (0.3-0.8)	0.6 (0.4-1.0)	0.7 (0.4-1.3)
School attrition			
Dropped out of school ²	0.5* (0.3-0.9)	0.1* (0.1-0.3)	0.5* (0.3-0.9)
Never dropped out of school (ref.)	1.0	1.0	1.0
Aboriginal languages and/or cultural programs			
Offered at school	1.2 (0.8-1.8)	0.8 (0.5-1.2)	0.7 (0.2-1.9)
Not offered at school (ref.)	1.00	1.00	1.00
School climate			
Positive: Felt safe and/or happy at school (ref.)	1.0	1.0	1.0
Negative: Racism and/or bullying are a problem at school	0.3* (0.1-0.6)	0.3* (0.1-0.9)	2.8 (0.9-8.2)
<i>Wald F</i>	<i>35.28</i>	<i>30.75</i>	<i>14.54</i>

¹ 'Above average grades' are 80% and over, 'Average grades' are 70% to 79%, and 'Below average grades' are 69% and below. A small number of respondents indicated that they do not receive grades at school and were excluded.

² Dropped out of school at least once.

* Indicates that the category is different from the reference category as the 95% confidence intervals (CI) do not overlap.

Source: Statistics Canada, Aboriginal Peoples Survey (APS), 2012.

Mood/Anxiety Disorders

First Nations youth living off reserve who attended schools that offer Aboriginal language and/or cultural programs, as well as those living in household in need of major repairs, had lower odds for mood and/or anxiety disorders (OR: 0.5 and 0.3) (Table 4.6). Métis youth who reported that bullying and/or racism are issues at school had much higher odds of having mood/anxiety disorders (OR: 10.2). Among both off-reserve First Nations and Métis youth, those living in food insecure households had higher odds for mood and/or anxiety disorders (OR: 2.5 and 2.6). No associations were found for Inuit youth.

Table 4.6

Odds ratios for a mood/anxiety disorder among youth aged 12 to 18 for selected home and school characteristics, by Aboriginal identity, Canada, 2012

Home and school characteristics, by Aboriginal identity, Canada, 2012			
	Aboriginal identity		
	Off-reserve First Nations	Métis	Inuit
	Odds ratios with confidence intervals in brackets		
Home environment			
Household crowding			
More than one person per room	0.5 (0.2-1.1)	1.11 (0.21-5.90)	0.5 (0.1-1.6)
One person or fewer per room (ref.)	1.0	1.0	1.0
Condition of dwelling			
Major repairs	0.3* (0.1-0.8)	1.2 (0.5-2.8)	1.7 (0.6-4.7)
Regular maintenance or minor repairs (ref.)	1.0	1.0	1.0
Household food security			
Low or very low	2.5* (1.5-4.1)	2.6* (1.2-5.3)	1.4 (0.3-6.5)
High or marginal (ref.)	1.0	1.0	1.0
School environment and other activities			
Academic performance ¹			
Above average grades	0.7 (0.4-1.2)	0.6 (0.3-1.2)	2.8 (0.9-8.5)
Average grades (ref.)	1.0	1.0	1.0
Below average grades	1.0 (0.6-1.6)	1.0 (0.5-1.8)	0.9 (0.2-3.2)
School attrition			
Dropped out of school ²	2.5* (1.4-4.5)	1.3 (0.6-2.8)	2.3 (0.7-7.4)
Never dropped out of school (ref.)	1.0	1.0	1.0
Aboriginal languages and/or cultural programs			
Offered at school	0.5* (0.3-0.8)	0.8 (0.4-1.4)	0.5 (0.1-2.2)
Not offered at school (ref.)	1.0	1.0	1.0
School climate			
Positive: Felt safe and/or happy at school (ref.)	1.0	1.0	1.0
Negative: Racism and/or bullying are a problem at school	2.6 (1.0-7.0)	10.2* (2.8-36.6)	0.2 (0.0-2.0)
R ²	0.04	0.07	0.02
Wald F	48.83	36.12	20.54

¹ 'Above average grades' are 80% and over, 'Average grades' are 70% to 79%, and 'Below average grades' are 69% and below. A small number of respondents indicated that they do not receive grades at school and were excluded.

² Dropped out of school at least once.

Source: Statistics Canada, Aboriginal Peoples Survey (APS), 2012.

Discussion

Previous research on the social determinants of health among Indigenous adults has found that characteristics of the home environment are predictive of poor health outcomes. Using data from the 2012 APS, Rotenberg (2016) found that among First Nations people living off reserve aged 15 and older, household food insecurity is related to poor health outcomes. Research on Inuit aged 15 to 54, with the same data source, has shown that household crowding, living in dwellings in need of major repairs, and household food insecurity are associated with higher mental distress, diagnosed mood/anxiety disorders, and a lower likelihood of reporting excellent/very good general health (Anderson 2015; Anderson and Thompson 2016; Arriagada 2017).

The results in this chapter show that among Indigenous youth, living in food insecure households is related to worse health outcomes, such as a lower likelihood of reporting better general health (for example Inuit youth in Table 4.5), and a higher likelihood of having a mood and/or anxiety disorder (off-reserve First Nations and Métis youth in Table 4.6). In addition, how food security is measured in the 2012 APS is problematic, as it focuses on the Western capitalist economy, with questions focusing on the affordability of food and having enough money to purchase food (Arriagada 2017). Inuit in the North tend to live in remote communities where it is difficult to deliver food, and are more likely to live off the land – something that is not accurately captured in the food security measures of national surveys. Finally, findings for other characteristics of the home environment, household crowding and living in dwellings in need of major repairs, remain unclear as these variables often have small sample sizes, high CVs, and multicollinearity.

Far less research has been conducted on the school and social environments of Indigenous peoples in Canada, and in particular, on Indigenous youth. The theme of education in the 2012 APS provided rich data for analysis on academic performance, school climate, the provision of Aboriginal language and/or cultural programs at school, and school attrition. Overall, findings from this analysis showed that better academic performance is associated with a higher likelihood of being in excellent/very good health among Métis youth (Table 4.7). A negative school climate is negatively related to excellent/very good health among First Nations youth living off reserve and is related to a higher likelihood of mood/anxiety disorders among Métis youth (Tables 4.7 and 4.10). The provision of Aboriginal language and/or cultural programs at school does not appear to be related to excellent/very good health among Indigenous youth, but it is negatively related to mood/anxiety disorders among off-reserve First Nations youth (Table 4.10).

School attrition was found to be associated with lower odds of being in excellent/very good health among Métis youth (Table 4.7), and was found to increase the odds of a mood/anxiety disorder among First Nations youth living off reserve. Previous research on Indigenous youth has linked to early school leaving among First Nations communities that lack cultural continuity – that is, sovereignty and self-determination over their land, resources and the delivery of services such as health care, education, child protection and policing to youth suicide (Chandler and Lalonde 1998; Chandler et al. 2003; Hallett 2005; Hallett et al. 2007). It is possible that we can see some of these effects among off-reserve First Nations and Métis youth, the majority of whom live in urban areas and are thus disconnected from land stewardship,

Indigenous governments and Indigenous-led services. In addition, past research on cultural connectedness among First Nations youth has been found to be associated with pro-social behaviors, such as an increase in school and community engagement (Snowshoe et al. 2014 in Auger 2016).

For the most part, statistically significant associations between the school/social environment and health outcomes were not found for Inuit youth. This could be due to a couple of factors, such as the small sample size for Inuit youth, which may be too small to detect associations. Another reason could be that since most Inuit youth live in Inuit Nunangat, they tend to be more likely to live on Inuit lands (modern land claims agreements/settlements) with Inuit-led regional governments, and are closely connected to Inuit identity, languages and culture.

Conclusion

In terms of physical environment, household food security most often has statistically significant associations with health outcomes among Indigenous youth. The school and social environment show that different factors have an effect on different Indigenous groups. One of the limitations of this chapter is that factors such as time spent in physical activity and sedentary behavior, as well as nutrition and sleep, have all been shown to be associated with the well-being of youth in Canada (Koezuka et al. 2006; Mark et al. 2012; Carson et al. 2016) but were not possible to study since data were not available on these topics.

The next chapter explores intergenerational trauma and cultural continuity for possible associations with health outcomes, excellent/very good health and the presence of diagnosed mood/anxiety disorders.

Chapter 5: Intergenerational Trauma and Resilience

History is an essential component of racial health disparities research – it is the context for understanding how existing inequalities and inequities came to be.

Chowkwanyun (2011) urges researchers who study racial health disparities to push beyond the descriptive statistics and associations between variables to explore historical processes, instead of condensing them. That said, the literature on Indigenous peoples' health often refers to the history of colonization and assimilation as crucial elements leading to disparities not only in health, but also in other aspects of Indigenous peoples' lives, such as socioeconomic outcomes and living conditions.

Reading and Wien (2009) refer to colonialism, racism and social exclusion, and self-determination as examples of distal determinants, which represent historical, political, social and economic contexts. Distal determinants have the most profound influence on health as they construct both intermediate and proximal determinants, but are the most difficult to measure as they encompass historical processes and events which have come to shape the current experiences of Indigenous peoples in Canada.

This chapter's focus is on the distal determinants of Indigenous health for off-reserve First Nations, Métis and Inuit youth. The first section provides a discussion of historical and intergenerational trauma, explaining how these concepts are defined and used in the literature, as well as how intergenerational trauma was measured in this study. Secondly, this chapter explores resilience to historical trauma, examining findings from previous studies and describing the resilience variables in this study. The following section then presents the results from the bivariate and logistic regression analyses, followed by a discussion of the findings that situates them within historical processes.

Historical Trauma

Intergenerational trauma is a facet of historical trauma, although at times the terms have been used interchangeably (Evans-Campbell 2008; Kirmayer et al. 2014). Historical trauma is collective; many members of the community consider the historical trauma events as acute losses and experience trauma reactions (Evans-Campbell 2008). However, the concept of historical trauma is somewhat ambiguous due to varied understandings and uses in the literature on Indigenous peoples. Walters et al. (2011) have identified four main applications of historical trauma in the literature: as a cause of distress, an outcome (a trauma response), a mechanism for transferring trauma across generations, and historical trauma as a stressor that interacts with other proximal stressors (see also Evans-Campbell 2008). Proximal determinants refers to conditions that have a direct influence on all aspects of health: mental, spiritual, emotional and physical (Reading and Wien 2009). This variety of functions for historical trauma has led to the inconsistent use of the concept across studies (Walters et al. 2011).

Nonetheless, the literature on Indigenous peoples has identified some common factors for defining historical trauma as events. The first factor is that the historical trauma events were widespread within a specific population or community; the second factor is that historical trauma events were committed by outsiders with destructive intentions, and thirdly, historical trauma events generated high levels of stress within the affected population (Sotero 2006; Evans-Campbell 2008; Bombay et al. 2014). Examples of historical trauma events for Indigenous peoples include massacres, forced relocations, forced attendance at residential schools, forbidding traditional and spiritual practices, and even assaults on the environment through the dumping of toxic waste on

Indigenous lands (Evans-Campbell 2008; Walters et al. 2011). In addition, there is some agreement in the literature as to general trauma responses, namely that the events of historical trauma continue to exert a negative influence on the well-being of the members of the affected population. Responses to historical trauma events also interact with contemporary stressors, which compound their effects. Thirdly, there is an accumulation of risk across generations, intergenerational trauma (Evans-Campbell 2008; Bombay et al. 2014).

Historical trauma can then be generally understood as traumatic events that accumulate over time (Sotero 2006; Evans-Campbell 2008), and which elicit trauma responses within the affected population and their descendants. However, Bombay et al. (2014) call for more empirical research to provide evidence that historical trauma responses are indeed invoked by historical trauma events. In this chapter, the aim is to explore if there is an association between intergenerational trauma and the two health outcomes in this study; excellent/very good overall health, and the presence of at least one mood or anxiety disorder. However, due to the nature of the data, causation cannot be discussed because the data are cross-sectional and only represent one period in time. The data are not longitudinal and thus do not represent cumulative effects and responses over time.

Intergenerational trauma is understood as the transmission of trauma across several generations, in the form of physical or emotional responses (Sotero 2006; Evans-Campbell 2008), but it can also be conceptualized as emotional identification with ancestral suffering (Brave Heart 1998). Research on intergenerational trauma has

mainly been conducted with survivors of the Jewish Holocaust and Japanese internment and their descendants (Evans-Campbell 2008; Bombay et al. 2014).

One of the main challenges of quantitative research is finding a way to conceptualize how past events affect the present (Sotero 2006). Quantitative research is especially limited with regard to the use of secondary data, where others have conceived the questionnaire and conducted the survey, and with the proliferation of cross-sectional surveys that do not allow for causal explanations. In addition, general population health surveys in Canada like the Canadian Community Health Survey (CCHS) often do not collect information on Indigenous languages, cultures and histories. The 2012 Aboriginal Peoples Survey (APS) was specifically designed for Indigenous peoples in Canada, and it provides researchers the unique opportunity to explore health along with certain measures of Indigenous history and culture. This information is essential for understanding the social determinants of Indigenous health.

As described earlier, one example of a historical trauma event is the forced attendance of Indigenous children and youth at residential schools (Evans-Campbell 2008; Walters et al. 2011). The residential school system in Canada began in 1883 when the federal government made the decision to open three residential schools for Aboriginal children in the Prairies; however, residential schools existed long before that (Truth and Reconciliation Commission of Canada 2012). The residential school system ended in the mid-1990s when the last school was closed (Bombay et al. 2014).

Before 1883, residential schools were largely run and operated by Catholic and Protestant churches with government funding (Truth and Reconciliation Commission, 2012). Although Christian churches continued to operate residential schools after the

1883 federal government decision, that decision was a shift in the governance structure of residential schools as the government took over construction and the appointment of principals (based on church recommendations) (Miller 1996 in Truth and Reconciliation Commission of Canada 2012). The purpose of the residential school system was to assimilate Indigenous children into Euro-Canadian society by removing them from their family and communities (Truth and Reconciliation Commission of Canada 2012). Canada's first Prime Minister and Minister of Indian Affairs, John A. Macdonald, declared in 1868 that it was necessary to separate Indigenous children from their parents through residential schools to efface the influence of Indigenous cultures and ways of life (Truth and Reconciliation Commission of Canada 2012). Residential schools were created to "kill the Indian in the child" – it was an assault on Indigenous children, families, culture and self-governing and self-sustaining Indigenous nations (Truth and Reconciliation Commission of Canada 2012).

Residential schools continue to exert a negative and destructive influence on the lives of survivors and their descendants. A great amount of research has been conducted on the health and well-being of residential school survivors, linking negative life experiences and poor health outcomes to residential schools (Barton et al. 2005; Ross et al. 2015; Wilk et al. 2017). For example, a recent study by Ross et al. (2015) among Indigenous peoples in Quebec has shown that alcohol abuse is related to residential school attendance.

The 2012 APS asks respondents about their own attendance of residential schools, and if any of their relatives, such as parents, grandparents, aunts, uncles and cousins, have attended. In this study, familial attendance of residential schools was

used as a measure of a historical trauma event. Two versions of the variable were tested, which both examined generational attendance of residential schools. The first compared youth with at least one family member (for example, a parent or grandparent) who attended residential school to youth who did not. Please note that it is possible other family members (such as siblings, aunts/uncles or cousins) may have attended, but this was included in the 'no' category as the aim was to measure direct lineage and the people who are likely responsible for the youth's upbringing and care. The second variable examined generational attendance of residential schools separately, allowing for a comparison between youth for whom none, one, or two generations of their family attended residential school (similar to the analysis in Bombay et al. 2014). One generation was defined as one or both parents, and two generations was defined as one or both parents as well as one or both grandparents (please see Appendix A: Variable Codebook for the 2012 APS for more information).

Although the second variable is preferable as a measure of intergenerational trauma because it provides a more distinct breakdown of generational attendance of residential school, the sample sizes are small and often data must be suppressed (as per the suppression rules outlined in Chapter 2 – Data and methods), and as can be seen in the distributions in Table 5.1 below. An interesting note about the data – this survey was being conducted around the time of the 2012 Truth and Reconciliation Commission in Canada, so it is possible that with increased awareness about residential schools, respondents were more likely to have discussed it with their families, or may have been more willing to respond to questions about familial attendance after learning about the impacts of residential schools.

About half of off-reserve First Nations and Inuit youth, and close to a quarter of Métis youth had at least one parent or grandparent who attended residential school (Table 5.1). Among off-reserve First Nations, Métis and Inuit youth less than 10% had one or both parents who attended residential school. The results for two generations were similar; however, 13% of Inuit youth had at least one parent and at least one grandparent who attended residential school (Table 5.1).

Table 5.1
Distributions of youth aged 12 to 18 for intergenerational attendance of residential schools and Aboriginal identity, Canada, 2012

Residential schools and Aboriginal identity, Canada, 2012			
	Aboriginal identity		
	Off-reserve First Nations	Métis	Inuit
	%		
Familial attendance of residential schools			
At least one parent/grandparent attended	48.1	22.3	49.7
No parents/grandparents attended	47.0	73.7	39.2
Missing	4.7	3.8	11.0
Generational attendance of residential school			
No generations attended	33.9	60.0	27.9
One generation attended	2.5	1.5	6.7
Two generations attended	9.5	2.7	13.3
Missing	53.8	35.6	51.9

Note: Totals may not add to 100% due to rounding.

Source: Statistics Canada, Aboriginal Peoples Survey, 2012.

Cultural Continuity as Resilience

Much of the literature on historical trauma among Indigenous peoples has focused on negative outcomes, both mental and physical, but how Indigenous peoples maintain wellness after trauma has not been explored to the same extent (Evans-Campbell 2008). This study explores resilience to historical and intergenerational trauma through variables aimed at measuring cultural continuity.

Culture and language have been named as key determinants of Indigenous health for First Nations people, Métis and Inuit (Assembly of First Nations 2013; Dyck 2009; Inuit Tapiriit Kanatami 2014). With regard to historical trauma, they are also a

form of resistance and resilience to a dominant culture that seeks to wipe out Indigenous ways of life and of knowing (Brave Heart 1998; Sotero 2006; Evans-Campbell 2008; Walters et al. 2011; Bombay et al. 2014). Some examples of countermeasures to the effects of colonialism include processes that support self-determination among Indigenous peoples and which restore cultural pride and heritage, in addition to establishing methods to acknowledge and deal with racism (Postl et al. 2010).

Past research on the social determinants of urban Aboriginal and non-Aboriginal populations in Canada has shown that both populations have similar social determinants of health; for example, age, education, income, employment, health care use and health behaviours (Wilson and Cardwell 2012). However, cultural factors are critical in shaping health among Aboriginal people, and there is a need for future research to focus on culturally specific determinants of health as a way to understand health disparities between Aboriginal and non-Aboriginal populations (Wilson and Cardwell 2012). There is also a need in Indigenous research to move away from the traditional Western epidemiological model of health, which conceives of health as physical, and to include the social, spiritual and emotional realms (Greenwood and de Leeuw 2012; Sasakamoose et al. 2016).

This study has three variables for resilience, which seek to measure cultural continuity among Indigenous youth. Cultural continuity is a legal right entrenched in the Canadian Constitution and the United Nations Convention on the Rights of the Child (Greenwood and de Leeuw 2012). The variables in this study focus on fluency in an Aboriginal language, participation in Indigenous cultural activities and strength of

extended family ties. In the documents consulted for the selection of health determinants, those by National Indigenous Organizations listed language and culture as essential components of Indigenous well-being and good health (Assembly of First Nations 2013; Dyck 2009; Inuit Tapiriit Kanatami 2014) (please see Chapter 2 for more details).

In this study, three variables were selected as measures of cultural continuity and resilience among Indigenous youth. These include measures of fluency in speaking and understanding an Aboriginal language, participation in First Nations, Métis and Inuit cultural activities, and strength of extended family ties. A fourth variable on social support was tested throughout the analysis; however, it was ultimately removed due to small samples sizes and suppression, as well as issues with interpretation.

As previously discussed, language is a key determinant of Indigenous health (Dyck 2009; Reading and Wien 2009; Assembly of First Nations 2013; Inuit Tapiriit Kanatami 2014). The 2012 APS allows for a measure of fluency in Aboriginal languages, where respondents can indicate if they speak or understand an Aboriginal language relatively well or very well. However, due to small sample sizes, respondents who indicated that they speak or understand an Aboriginal language with effort were grouped with those who can speak/understand an Aboriginal language relatively well or very well. This category is contrasted with youth who indicated that they could not speak nor understand an Aboriginal language at all, including those who indicated that they only know a few words.

Measuring connection to culture is difficult as culture can be defined in different ways. Culture can encompass aspects such as traditional activities like celebrations or

hunting, knowledge of Indigenous languages, traditional practices like those used for healing, knowledge and transmission of community history, Indigenous knowledges and ways of life, among others. Thus, the variable used in this study to measure cultural immersion is very broad and only looks at whether or not youth have participated in First Nations, Métis or Inuit cultural activities in the last 12 months. The variable used for this measure included participation in sports and physical activities, as well as participation in activities related to First Nations, Métis or Inuit culture. Unfortunately, the 2012 APS does not provide more details as to what the activities are or how they are related to Indigenous culture. Variables specific to traditional activities such as hunting and fishing, gathering wild plants, making clothing and/or footwear were only asked of respondents aged 15 and older, so it was not possible to use them in this analysis as these variables exclude about half of the youth population in this study. In addition, these variables were originally included in the APS to measure economic activity and not cultural connectedness.

Finally, the last variable is strength of extended family ties. This variable is a proxy for measuring community involvement and attachment to community. As the First Nations and Métis youth are more likely to live in urban areas and off reserve, this variable helps to measure sense of belonging within the extended family structure as a (crude) substitute for ties to an Indigenous community, which is also not measured through the 2012 APS. Respondents were asked to rate on a scale of 1 to 5 how strong their ties are to members of their family living in the same town or city but in a different household. A rating of 0 indicates that no family members reside in the same town/city as the respondent, and unfortunately this is a limitation of the variable as the

assumption is that those without extended family in the same city must not have any close family ties. This category was considered 'missing' and was excluded from analysis. A rating of 1 means the ties to family are very weak, and 5 is very strong. Respondents were split into a binary variable where respondents with strong or very strong ties to extended family were compared to all others (excluding the missing categories).

In this study, around 67% of Inuit youth can speak/understand an Aboriginal language, while 20% of off-reserve First Nations and 6% of Métis youth can speak/understand an Aboriginal language (Table 5.2). Almost half of Inuit youth had participated in an Indigenous cultural activity in the last year, as well as 28% of off-reserve First Nations youth and about 6% of Métis youth. Almost 70% of youth in each Indigenous population indicated that they have strong or very strong ties with extended family (Table 5.2).

Table 5.2
Distributions of youth aged 12 to 18 for selected measures of cultural continuity, by Aboriginal identity, Canada, 2012

Aboriginal identity			
	Off-reserve First Nations	Métis	Inuit
	%		
Fluency in an Aboriginal language			
Can speak/understand an Aboriginal language ¹	19.4	5.7	66.9
Cannot speak/understand an Aboriginal language ²	80.5	94.2	33.0
Participation in cultural activities in the last year			
Yes	27.7	17.3	48.8
No	72.2	82.6	51.1
Strength of extended family ties			
Strong to very strong	74.3	71.6	68.3
Very weak to somewhat strong	25.6	28.3	31.6

¹ Includes those who responded: with effort, relatively well or very well.

² Includes those who cannot not speak/understand an Aboriginal language and those who only know a few words.

Note: Totals may not add to 100% due to rounding.

Source: Statistics Canada, Aboriginal Peoples Survey, 2012.

Results

Bivariate Results

This section presents the results of the bivariate analysis, where each health outcome is cross-tabulated with the variables for intergenerational trauma and cultural continuity. Table 5.3 below shows the bivariate analysis for the intergenerational trauma variable, and Table 5.4 displays the results for the selected measures of cultural continuity.

Intergenerational Trauma

For the most part, there does not appear to be a relationship between familial attendance of residential school and health among off-reserve First Nations, Métis and Inuit youth. However, First Nations youth living off reserve who were in the missing category, don't know, refusal or not stated, were less likely to be in excellent or very good health, and were more likely to have a mood or anxiety disorder (Table 5.3).

Similarly, Métis youth in the missing category were less likely to report excellent or very good health (63%) than Métis youth from families where there was no attendance of residential school by the preceding generations (75% and 46^E%, respectively) (Table 5.3).

Table 5.3

Proportion of youth aged 12 to 18 with excellent/very good health or a mood/anxiety disorder, by intergenerational attendance of residential schools and Aboriginal identity, Canada, 2012

	Aboriginal identity		
	Off-reserve First Nations	Métis	Inuit
	Percent with confidence intervals in brackets		
Excellent/very good health			
At least one parent/grandparent attended	67.9 (64.2-71.4)	71.0 (64.7-76.7)	72.2 (66.4-77.3)
No parents/grandparents attended (ref.)	70.8 (66.2-75.1)	74.5 (70.2-78.3)	69.4 (62.6-75.5)
Missing	39.1 ^{E*} (24.4-56.0)	46.2 ^{E*} (29.6-63.6)	52.9 ^E (34.7-70.4)
Mood/anxiety disorder			
At least one parent/grandparent attended	11.6 (9.2-14.5)	12.1 ^E (8.7-16.7)	6.7 ^E (3.9-11.4)
No parents/grandparents attended (ref.)	12.8 (10.4-15.7)	12.1 (9.5-15.4)	5.4 ^E (3.4-8.7)
Missing	34.8 ^{E*} (20.3-52.7)	X	X

* Indicates that the category is different from the reference category as the 95% confidence intervals (CI) do not overlap.

^E Means interpret with caution as the coefficient of variation is high (between 16.6% and 33.3%).

X Sample size is smaller than 10 counts.

Source: Statistics Canada, Aboriginal Peoples Survey, 2012.

Cultural Continuity

For all of the Indigenous youth in this study, those with a strong or very strong relationship with their extended family were more likely to report being in excellent or very good health when compared with youth who have a very weak to somewhat strong relationship with extended family (off-reserve First Nations: 73% versus 59%, Métis: 76% versus 67% and Inuit: 74% versus 63%) (Table 5.4). Among off-reserve First Nations and Métis adolescents, those with a strong or very strong relationship with extended family were less likely to have a diagnosed mood or anxiety disorder (off-reserve First Nations: 11% and 17% and Métis: 9% and 19%).

Among Inuit, associations between health and participation in cultural activities were found. Inuit youth who reported having participated in an Indigenous cultural activity in the last 12 months were less likely to have a mood or anxiety disorder (3^E%) than Inuit youth who did not participate in cultural activities (10^E%) (Table 5.4). In addition, Inuit who can speak and/or understand an Aboriginal language are less likely to have a mood or anxiety disorder (3^E% compared with 12^E%). Due to smaller sizes among Inuit youth, the coefficients of variation are higher and the results should thus be interpreted with caution. However, these findings remained the same even after the sample size was increased by widening the age group to 12 to 24 years (data not presented).

Table 5.4

Proportion of youth aged 12 to 18 with excellent/very good health or a mood/anxiety disorder by selected measures of cultural continuity and Aboriginal identity, Canada, 2012

Aboriginal identity			
	Off-reserve First Nations	Métis	Inuit
	Percent with confidence intervals in brackets		
Excellent/very good health			
Fluency in an Aboriginal language			
Can speak/understand an Aboriginal language ¹ (ref.)	69.8 (61.2-77.3)	69.1 (58.6-78.0)	68.1 (63.4-72.5)
Cannot speak/understand an Aboriginal language ²	68.7 (65.6-71.8)	73.3 (69.7-76.7)	72.8 (62.5-81.2)
Participation in cultural activities in the last year			
Yes (ref.)	70.0 (63.5-75.8)	70.9 (63.3-77.5)	70.7 (64.8-76.0)
No	67.7 (64.3-71.0)	73.2 (69.1-76.8)	70.5 (63.1-76.9)
Strength of extended family ties			
Strong to very strong (ref.)	73.1 (69.8-76.2)	75.7 (72.0-79.1)	74.2 (69.5-78.4)
Very weak to somewhat strong	58.6* (52.8-64.3)	65.5* (58.4-71.9)	57.7* (48.8-66.1)
Mood/anxiety disorder			
Fluency in an Aboriginal language			
Can speak/understand an Aboriginal language ¹ (ref.)	14.0 ^E (9.9-19.4)	F	3.3 ^E (2.0-5.2)
Cannot speak/understand an Aboriginal language ²	12.4 (10.5-14.8)	12.1 (9.8-14.8)	11.7 ^{E*} (7.0-18.8)
Participation in cultural activities in the last year			
Yes (ref.)	12.1 (9.1-16.0)	15.7 ^E (9.2-25.7)	2.9 ^E (1.7-4.8)
No	13.1 (10.8-15.7)	11.5 (9.2-14.3)	9.7 ^{E*} (6.1-15.1)
Strength of extended family ties			
Strong to very strong (ref.)	10.7 (8.8-12.9)	9.3 (7.0-12.4)	5.2 ^E (3.5-7.7)
Very weak to somewhat strong	18.5* (14.2-23.8)	18.3* (13.2-24.7)	F

* Indicates that the category is different from the reference category as the 95% confidence intervals (CI) do not overlap.

^E Means interpret with caution as the coefficient of variation is high (between 16.6% and 33.3%).

F Too unreliable to be published, the coefficient of variation is very high (more than 33.3%).

¹ Includes those who responded: with effort, relatively well or very well.

² Includes those who cannot not speak/understand an Aboriginal language and those who only know a few words.

Source: Statistics Canada, Aboriginal Peoples Survey, 2012.

Logistic Regression Results

Tables 5.5 and 5.6 present odds ratios for better health and mood/anxiety disorders, respectively. These tables present the results for the intergenerational trauma and cultural continuity variables when run together in a model. This is important for determining if these variables have associations with health outcomes when other determinants are not considered, and then assess if these associations remain after the other social determinants of health are included in the models. Further analysis using logistic regression that controls for the other social determinants in this study will be presented in Chapter 6.

General Health

Among Indigenous youth, those who had strong or very strong ties to extended family had higher odds of being in better health (OR: 1.8, 1.5 and 2.0, respectively) (Table 5.5). In addition, Indigenous youth who indicated that they did not know if a parent or grandparent attended Indian Residential Schools or who did not answer the questions, all had lower odds of being in better health (OR: 0.3, 0.3 and 0.2, respectively).

Table 5.5

Odds ratios for better health among youth aged 12 to 18, by selected social and cultural factors and Aboriginal identity, Canada, 2012

Sakuragi factors and Aboriginal identity, Canada, 2012			
	Aboriginal identity		
	Off-reserve First Nations	Métis	Inuit
	Odds ratios with confidence intervals in brackets		
Fluency in an Aboriginal language ¹			
Can speak/understand an Aboriginal language	1.0 (0.5-1.7)	0.8 (0.5-1.5)	1.0 (0.5-2.0)
Cannot speak/understand an Aboriginal language (ref.)	1.0	1.0	1.0
Participation in cultural activities in the past 12 months			
Yes	1.1 (0.7-1.6)	0.8 (0.5-1.3)	1.1 (0.7-1.8)
No (ref.)	1.0	1.0	1.0
Strength of extended family ties			
Strong or very strong	1.8* (1.3-2.4)	1.5* (1.1-2.2)	2.0* (1.3-3.2)
Very weak to somewhat strong (ref.)	1.0	1.0	1.0
Familial attendance of residential schools			
At least one parent or grandparent attended	0.9 (0.6-1.4)	0.8 (0.5-1.2)	0.9 (0.6-1.5)
No parents or grandparents attended (ref.)	1.0	1.0	1.0
Missing – Don't know, refused or not stated	0.3* (0.1-0.6)	0.3* (0.1-0.5)	0.2* (0.0-0.9)
Wald F	45.32	38.36	38.43

* Statistically significant as confidence intervals do not overlap with 1.00, the reference category (ref.).

¹ The first category refers to respondents who stated that they can speak/understand an Aboriginal language with effort, relatively well or very well. The reference category refers to respondents who identified that they either cannot speak/understand an Aboriginal language or they only know a few words.

Source: Statistics Canada, Aboriginal Peoples Survey, 2012.

Mood/Anxiety Disorders

Among off-reserve First Nations and Métis youth, those who indicated strong or very strong ties to extended family (living in a different household but in the same city) had lower odds for mood/anxiety disorders (OR: 0.5 and 0.4) (Table 5.6). First Nations youth living off reserve who were missing (don't know, refusal or not stated) for familial attendance of residential school had higher odds for mood/anxiety disorders (OR: 3.5). Finally, Inuit youth who indicated that they are fluent in an Aboriginal language (OR: 0.3)

and who had participated in an Indigenous cultural activity in the past year (OR: 0.3) had lower odds for mood/anxiety disorders.

Table 5.6

Odds ratios for a mood/anxiety disorder among youth aged 12 to 18 years, by selected social and cultural factors and Aboriginal identity, Canada, 2012

Selected Social and Cultural Factors and Aboriginal Identity, Canada, 2012			
	Aboriginal identity		
	Off-reserve First Nations	Métis	Inuit
	Odds ratios with confidence intervals in brackets		
Fluency in an Aboriginal language ¹			
Can speak/understand an Aboriginal language	1.2 (0.7-2.1)	0.5 (0.2-1.4)	0.3* (0.1-0.6)
Cannot speak/understand an Aboriginal language (ref.)	1.0	1.0	1.0
Participation in cultural activities in the past 12 months			
Yes	0.8 (0.5-1.3)	1.3 (0.6-2.8)	0.3* (0.1-0.7)
No (ref.)	1.0	1.0	1.0
Strength of extended family ties			
Strong or very strong	0.5* (0.3-0.8)	0.4* (0.2-0.7)	0.6 (0.2-1.4)
Very weak to somewhat strong (ref.)	1.0	1.0	1.0
Familial attendance of residential schools			
At least one parent or grandparent attended	0.8 (0.5-1.3)	1.1 (0.6-1.8)	1.8 (0.8-4.4)
No parents or grandparents attended (ref.)	1.0	1.0	1.0
Missing – Don't know, refused or not stated	3.5* (1.4-9.1)	1.6 (0.5-5.2)	1.3 (0.4-4.7)
R ²	0.01	0.01	0.04
Wald F	69.52	49.44	39.98

* Statistically significant as confidence intervals do not overlap with 1.00, the reference category.

¹ The first category refers to respondents who stated that they can speak/understand an Aboriginal language with effort, relatively well or very well. The reference category refers to respondents who identified that they either cannot speak/understand an Aboriginal language or they only know a few words.

Source: Statistics Canada, Aboriginal Peoples Survey, 2012.

Discussion

Past research among Indigenous peoples on health and intergenerational trauma, and particularly for health and resilience/cultural continuity, has been limited. The literature on Indigenous health has identified gaps that need to be addressed with regard to the effects of residential schools on the descendants of survivors (Barton et al.

2005; Sotero 2006), as well as the influence of cultural continuity on Indigenous well-being (Reading and Wien 2009; Greenwood and de Leeuw 2012; Wilk et al. 2017). The goal of this chapter is to fill in some of these gaps by examining relationships between intergenerational trauma, resilience and health among Indigenous youth.

Much of the research on intergenerational trauma among Indigenous peoples has focused on mental health outcomes and general health ratings (Bombay et al. 2011; Walls and Whitbeck 2011; Elias et al. 2012; Bombay et al. 2014; Kaspar 2014; Walls et al. 2014; Anderson 2015; Anderson and Thompson 2016; Hackett et al. 2016; Rotenberg 2016). Two studies on the offspring of residential school survivors have shown that descendants are more likely to be at risk of depression (Bombay et al. 2011), and that the effects of residential school attendance are indeed intergenerational – they are cumulative, and the more generations that attended the poorer the psychological well-being of their descendants (Bombay et al. 2014). Other research supports the link between mental health, such as suicidal ideation and attempts, and intergenerational trauma from residential school attendance (Elias et al. 2012; Walls et al. 2014; Hackett et al. 2016).

The analyses in this chapter show that there does not appear to be an association between familial attendance of residential school and better health among off-reserve First Nations, Métis or Inuit youth. Similarly, there does not appear to be an association, or at least a consistent association, between familial attendance of residential school and the presence of a mood and/or anxiety disorder. That said, associations between the missing category for intergenerational trauma and health were observed, for example Table 5.5 showed that all Indigenous youth who were missing for

this variable had lower odds for better health than those who indicated that none of their parents or grandparents attended residential schools. This could indicate a lack of communication within families, perhaps there is deep trauma that is not discussed, or that youth are being raised by other relatives or non-relatives. In addition, more discussion with regard to foster children is included in the discussion in Chapter 6.

Several indicators of socioeconomic status were selected for Chart 5.1, and significance testing was conducted by checking if the 95% confidence intervals overlap with the reference categories. The selected indicators of socioeconomic status include youth in the lowest household income quartile (Q1), youth in the highest household income quartile (Q4), youth with at least one parent with a high school diploma or more, youth living in a household with low or very low food security, youth living in a crowded household (more than one person per room), and youth living in a home in need of major repairs. This analysis was also conducted for Métis and Inuit youth, however no statistically significant differences were observed.

First Nations youth living off reserve who had at least one family member who attended residential school were more likely to be in worse living conditions than their counterparts who declared that no family members attended residential school. Off-reserve First Nations youth were less likely to be in the highest income quartile (18% versus 32%), were less likely to have at least one parent with a high school diploma (87% versus 94%), were more likely to be in a food insecure household (21% versus 11%), were more likely to be in a crowded household (13% versus 5^E%), and were more likely to live in a home in need of major repairs (13% versus 7^E%) (Chart 5.1).

Therefore, it is possible that off-reserve First Nations youth have less access to health care and are thus less likely to receive a diagnosis for a mental health disorder.

Figure 5.1

Proportion of First Nations youth living off reserve aged 12 to 18, by familial attendance of residential schools for selected socioeconomic characteristics, Canada, 2012

* Statistically different from reference category (ref.).

^E Means interpret with caution as the coefficient of variation is high (between 16.6% and 33.3%).

Source: Statistics Canada, Aboriginal Peoples Survey, 2012.

The findings in this chapter for the resilience variables show that there appears to be a strong relationship between strong extended family ties with excellent/very good health and with mental health among off-reserve First Nations and Métis youth. There is also an association between participation in Indigenous cultural activities and a lower likelihood of a mood/anxiety disorder among Inuit youth. These are promising findings that show direct associations between cultural continuity and health outcomes for Indigenous youth. These results support research that suggest that “culture as treatment” can be used to redress the socio-psychological devastation that colonization

has left in the lives of Indigenous peoples and their descendants (Gone 2013; Sasakamoose et al. 2016).

Conclusion

Overall, this study has shown that there is a relationship between health and cultural continuity among Indigenous youth, although it varies by measure of cultural continuity and by each Indigenous population. There does not appear to be a direct association between familial attendance of residential school and the health of Indigenous youth, although this remains a topic to be explored further. There is a need for more precise measurement of intergenerational trauma and of cultural immersion and continuity. This necessitates an iterative process between qualitative and quantitative research that is informed by Indigenous peoples.

Chapter 6: Conclusion

Chapters 3 through 5 of this study explored the three levels of social determinants of health for Indigenous youth identified by Reading and Wien (2009) – proximal, intermediate and distal. Chapter 3 examined two measures of socio-economic status, household income and parental educational attainment, as well as measures of health care access and utilization to capture intermediate determinants of health. In Chapter 4, the physical environment (household crowding, condition of dwelling and household food security) were studied as proximal measures, in addition to factors related to the school environment (academic performance, school climate, Aboriginal language/cultural programs and school attrition). Chapter 5 studied the distal determinants of health, that is, historical trauma through colonization measured as intergenerational attendance of residential schools, coupled with measures of cultural continuity (fluency in an Aboriginal language, participation in Indigenous cultural activities and strength of extended family ties) to measure connection to culture and Indigenous identity.

Results from these chapters show that relationships between the social determinants of health and the health outcomes excellent/very good health and the presence of a diagnosed mood/anxiety disorder are not consistent by outcome nor by Aboriginal identity group. This final chapter examines full model results, using variables from all three levels of the social determinants for each Aboriginal identity group and by outcome. It is important to note that relationships between the social determinants and health outcomes could be bidirectional, however as the data are cross-sectional it is not

possible to establish causality and direction, therefore conclusions are restricted to the observation of associations.

Final Models

Building the Models

The final models for this study were determined according to three criteria: relevance, statistical significance and level of social determinant. Relevance was determined based on the literature. For example, household income quartiles and familial attendance of residential schools were included in all models because of the literature on the income gradient in children's health, and the literature on the effects of intergenerational trauma on Indigenous peoples. Relevance also has to do with the importance or salience of the determinant (independent variable). Demographic characteristics – age group, sex and area of residence – were included in all models because of their relevance as common socio-demographic factors that can affect health outcomes.

Statistical significance was based on results in the final logistic regression models of chapters 3, 4 and 5. If a variable was found to be statistically significant (confidence intervals did not cross the reference categories), then the variable would be added to the model. Additionally, all models had at least one variable from each of the three chapters, to ensure that all levels of the social determinants, proximal, intermediate and distal, were represented in the final models. Multicollinearity testing was also conducted for the various models.

Model Results

This section presents the logistic regression results for each Aboriginal identity group by outcome, beginning with First Nations youth living off reserve and general health (Table 6.1), followed by mood/anxiety disorders (Table 6.2). Each model is presented with the unadjusted and adjusted odds ratios. Unadjusted odds ratios were derived by running the model with only the one independent variable, whereas adjusted odds ratios display the results for that variable when the other independent variables are controlled for in the model.

First Nations youth living off reserve **General Health**

Among First Nations youth living off reserve, being younger (12 to 15 years), feeling safe and/or happy at school, and having strong or very strong ties to extended family were associated with a higher likelihood of being rated in better health (Table 6.1). Youth with unmet health care needs in the past 12 months and those who either didn't know or refused to state if their parents or grandparents attended residential schools had lower likelihoods for better health (OR: 0.2 and 0.2, respectively).

Table 6.1
Unadjusted and adjusted odds ratios for better health among First Nations youth living off reserve aged 12 to 18, Canada, 2012

Variables	Categories	Unadjusted odds ratios	Adjusted odds ratios
		<i>Odds ratios with confidence intervals in brackets</i>	
Age group	12 to 15 years	1.5* (1.1-2.0)	1.6* (1.1-2.1)
	16 to 18 years (ref.)	1.0	1.0
Sex	Males	1.1 (0.9-1.5)	1.1 (0.8-1.4)
	Females (ref.)	1.0	1.0
Geography	Rural areas	0.8 (0.6-1.1)	0.8 (0.6-1.1)
	Urban areas (ref.)	1.0	1.0
Household income quartiles¹	Quartile 1 – Lowest income	0.6* (0.4-0.9)	0.7 (0.5-1.2)
	Quartile 2	0.8 (0.5-1.1)	0.7 (0.4-1.1)
	Quartile 3	0.9 (0.6-1.4)	1.0 (0.7-1.5)
	Quartile 4 – Highest income (ref.)	1.0	1.0
Health care access, past 12 months	Unmet health care needs	0.2* (0.1-0.4)	0.2* (0.1-0.5)
	Health care received or not needed (ref.)	1.0	1.0
School climate	Positive: Felt safe and/or happy at school	3.4* (2.0-6.0)	2.8* (1.5-5.0)
	Negative: Racism and/or bullying are problems at school (ref.)	1.0	1.0
Familial attendance of residential schools	At least one parent or grandparent attended	0.9 (0.6-1.2)	1.1 (0.8-1.5)
	No parents or grandparents attended (ref.)	1.0	1.0
	Missing – Don't know, refused or not stated	0.2* (0.1-0.5)	0.2* (0.1-0.5)
Strength of extended family ties	Strong or very strong	1.8* (1.3-2.4)	1.5* (1.1-2.1)
	Very weak to somewhat strong (ref.)	1.0	1.0
Wald F			38.65

¹ Income data from the 2012 Aboriginal Peoples Survey (APS) is after-tax.

* Statistically significant as confidence intervals do not overlap with 1.00, the reference category.

Source: Statistics Canada, Aboriginal Peoples Survey (APS), 2012.

Mood/Anxiety Disorders

When the selected social determinants are examined for mood/anxiety disorders for off-reserve First Nations youth, we see some similar associations like those for general health. For example, being younger (12 to 15 years) is associated with better health outcomes, as younger youth have a lower likelihood of being diagnosed with a mood/anxiety disorder (OR: 0.5) (Table 6.2). Not having consulted a medical professional in the past 12 months (OR: 0.2) was also associated with a lower likelihood of a mood/anxiety disorder, since diagnosis requires the presence of a doctor.

Youth with unmet health care needs and those who don't know (or who did not state) if a parent or grandparent attended residential school have higher likelihoods of mood/anxiety disorders (OR: 2.9 and 4.4, respectively). In addition, the youth's physical environment, such as living in a household with low or very low household food security, was found to be associated with a higher likelihood of having a mood/anxiety disorder (OR: 2.1), as was school attrition (OR: 2.3).

Table 6.2

Unadjusted and adjusted odds ratios for mood/anxiety disorders among First Nations youth living off reserve aged 12 to 18, Canada, 2012

Variables	Categories	Unadjusted odds ratios	Adjusted odds ratios
		<i>Odds ratios with confidence intervals in brackets</i>	
Age group	12 to 15 years	0.4* (0.3-0.6)	0.5* (0.3-0.8)
	16 to 18 years (ref.)	1.0	1.0
Sex	Males	0.7 (0.5-1.0)	0.8 (0.5-1.2)
	Females (ref.)	1.0	1.0
Geography	Rural areas	0.9 (0.6-1.3)	1.1 (0.7-1.6)
	Urban areas (ref.)	1.0	1.0
Household income quartiles¹	Quartile 1 – Lowest income	0.8 (0.5-1.4)	0.7 (0.4-1.4)
	Quartile 2	0.8 (0.5-1.3)	0.8 (0.5-1.4)
	Quartile 3	1.2 (0.8-2.0)	1.1 (0.7-1.8)
	Quartile 4 – Highest income (ref.)	1.0	1.0
Health care access, past 12 months	Unmet health care needs	5.1* (3.0-8.6)	2.9* (1.7-4.9)
	Health care received or not needed (ref.)	1.0	1.0
Health care use, past 12 months	Did not consult a medical professional	0.2* (0.1-0.3)	0.2* (0.1-0.5)
	Consulted a medical professional (ref.)	1.0	1.0
Condition of dwelling	In need of major repairs	0.6 (0.3-1.1)	0.2* (0.1-0.6)
	Regular maintenance or minor repairs (ref.)	1.0	1.0
Household food security	Low or very low	2.0* (1.3-3.1)	2.1* (1.2-3.5)
	High or marginal (ref.)	1.0	1.0
School attrition²	Dropped out of school at least once	3.0* (1.8-5.1)	2.3* (1.2-4.2)
	Never dropped out of school (ref.)	1.0	1.0
Aboriginal language and/or cultural programs	Offered at school	0.7 (0.4-1.0)	0.6* (0.4-0.9)
	Not offered at school (ref.)	1.0	1.0
Familial attendance of residential schools	At least one parent or grandparent attended	0.8 (0.6-1.2)	0.8 (0.5-1.1)
	No parents or grandparents attended (ref.)	1.0	1.0
	Missing – Don't know, refused or not stated	3.6* (1.6-7.8)	4.4* (2.2-8.9)
Strength of extended family ties	Strong or very strong	0.5* (0.3-0.7)	0.6 (0.4-1.0)
	Somewhat strong to very weak (ref.)	1.0	1.0
<i>R</i> ²			0.09
<i>Wald F</i>			27.74

¹ Income data from the 2012 Aboriginal Peoples Survey (APS) is after-tax.

² Dropped out of school at least once.

* Statistically significant as confidence intervals do not overlap with 1.00, the reference category.

Source: Statistics Canada, Aboriginal Peoples Survey (APS), 2012.

Métis youth

General Health

Among Métis youth, associations were found between general health and age, health care access, academic performance, school attrition and familial attendance of residential schools. Youth aged 12 to 15 had a higher likelihood of being in better health (OR: 1.8), as did youth with strong or very strong ties to extended family (OR: 1.4) (Table 6.3). However, having dropped out of school at least once (OR: 0.3), and not knowing/stating intergenerational attendance of residential schools (OR: 0.3) was associated with worse health outcomes – lower likelihoods of being in better health.

Table 6.3

Unadjusted and adjusted odds ratios for better health among Métis youth aged 12 to 18, Canada, 2012

Variables	Categories	Unadjusted odds ratios	Adjusted odds ratios
		<i>Odds ratios with confidence intervals in brackets</i>	
Age group	12 to 15 years	2.2* (1.6-3.0)	1.8* (1.3-2.6)
	16 to 18 years (ref.)	1.0	1.0
Sex	Males	1.1 (0.8-1.5)	1.3 (0.9-1.9)
	Females (ref.)	1.0	1.0
Geography	Rural areas	0.8 (0.6-1.2)	1.0 (0.7-1.5)
	Urban areas (ref.)	1.0	1.0
Household income quartiles ¹	Quartile 1 – Lowest income	0.3* (0.2-0.6)	0.6 (0.3-1.0)
	Quartile 2	0.5* (0.3-0.8)	0.6 (0.4-1.0)
	Quartile 3	0.6* (0.4-0.9)	0.7 (0.4-1.2)
	Quartile 4 – Highest income (ref.)	1.0	1.0
Health care access, past 12 months	Unmet health care needs	0.2* (0.1-0.5)	0.4 (0.1-1.0)
	Health care received or not needed (ref.)	1.0	1.0
Household food security	Low or very low	0.3* (0.2-0.5)	0.6 (0.3-1.0)
	High or marginal (ref.)	1.0	1.0
Academic performance	Above average grades	1.8* (1.1-2.8)	1.3 (0.9-2.1)
	Average grades (ref.)	1.0	1.0
	Below average grades	0.7 (0.4-1.1)	0.6 (0.4-1.0)
School attrition	Dropped out of school at least once	0.1* (0.0-0.2)	0.3* (0.1-0.6)
	Never dropped out of school (ref.)	1.0	1.0
Familial attendance of residential schools	At least one parent or grandparent attended	0.8 (0.5-1.2)	0.9 (0.6-1.4)
	No parents or grandparents attended (ref.)	1.0	1.0
	Missing – Don't know, refused or not stated	0.3* (0.2-0.6)	0.3* (0.1-0.5)
Strength of extended family ties	Strong or very strong	1.6* (1.1-2.2)	1.4* (1.0-2.1)
	Somewhat strong to very weak (ref.)	1.0	1.0
Wald F			27.65

¹ Income data from the 2012 Aboriginal Peoples Survey (APS) is after-tax.

* Statistically significant as confidence intervals do not overlap with 1.00, the reference category. **Source:** Statistics Canada, Aboriginal Peoples Survey (APS), 2012.

Mood/Anxiety Disorders

Among Métis youth age, household income, health care access, household food security, school climate and strength of extended family ties were found to be associated with the presence of a diagnosed mood and/or anxiety disorder. Métis youth who were aged 12 to 15 (OR: 0.6), felt safe and/or happy at school (OR: 0.2) and reported strong or very strong ties to extended family (OR: 0.5) had lower likelihoods of having a mood/anxiety disorder (Table 6.4). Conversely, Métis youth in the lowest household income quartile (OR: 2.1) and with unmet health care needs (OR: 2.7) were more likely to have a mood/anxiety disorder.

Table 6.4

Unadjusted and adjusted odds ratios for mood/anxiety disorders among Métis youth aged 12 to 18, Canada, 2012

Variables	Categories	Unadjusted odds ratios	Adjusted odds ratios
		<i>Odds ratios with confidence intervals in brackets</i>	
Age group	12 to 15 years	0.6 (0.4-1.0)	0.6* (0.4-0.9)
	16 to 18 years (ref.)	1.0	1.0
Sex	Males	0.7 (0.5-1.2)	0.6 (0.4-1.0)
	Females (ref.)	1.0	1.0
Geography	Rural areas	1.5 (0.9-2.5)	1.4 (0.9-2.3)
	Urban areas (ref.)	1.0	1.0
Household income quartiles ¹	Quartile 1 – Lowest income	3.1* (1.6-5.8)	2.1* (1.1-4.1)
	Quartile 2	2.1* (1.2-3.7)	1.8 (1.0-3.2)
	Quartile 3	1.8 (1.0-3.2)	1.7 (0.9-3.1)
	Quartile 4 – Highest income (ref.)	1.0	1.0
Health care access, past 12 months	Unmet health care needs	5.1* (2.5-10.2)	2.7* (1.0-7.2)
	Health care received or not needed (ref.)	1.0	1.0
Household food security	Low or very low	2.9* (1.6-5.2)	1.8 (0.9-3.5)
	High or marginal (ref.)	1.0	1.0
School climate	Positive: Felt safe and/or happy at school	0.1* (0.0-0.2)	0.2* (0.0-0.7)
	Negative: Racism and/or bullying are problems at school (ref.)	1.0	1.0
Familial attendance of residential schools	At least one parent or grandparent attended	1.0 (0.6-1.5)	0.9 (0.5-1.5)
	No parents or grandparents attended (ref.)	1.0	1.0
	Missing – Don't know, refused or not stated	1.4 (0.5-3.9)	1.4 (0.4-5.1)
Strength of extended family ties	Strong or very strong	0.4* (0.2-0.7)	0.5* (0.3-0.9)
	Very weak to somewhat strong (ref.)	1.0	1.0
R^2			0.07
Wald F			41.07

¹ Income data from the 2012 Aboriginal Peoples Survey (APS) is after-tax.

* Statistically significant as confidence intervals do not overlap with 1.00, the reference category.

Source: Statistics Canada, Aboriginal Peoples Survey (APS), 2012.

Inuit youth
General Health

Inuit youth who had unmet health care needs, were living in households with low or very low food security, or who did not know/state if their parents and/or grandparents attended residential schools had lower likelihoods of being in excellent/very good health (Table 6.5). Only age, being younger, and closeness with extended family were associated with a higher likelihood of being in excellent/very good health (OR: 1.9 and 1.7, respectively).

Table 6.5

Unadjusted and adjusted odds ratios for better health among Inuit youth aged 12 to 18, Canada, 2012

Variables	Categories	Unadjusted odds ratios	Adjusted odds ratios
		<i>Odds ratios with confidence intervals in brackets</i>	
Age group	12 to 15 years	2.0* (1.3-3.0)	1.9* (1.2-3.0)
	16 to 18 years (ref.)	1.0	1.0
Sex	Males	0.9 (0.6-1.4)	1.0 (0.6-1.7)
	Females (ref.)	1.0	1.0
Inuit Nunangat	Inuit Nunangat	0.6 (0.3-1.2)	1.1 (0.5-2.3)
	Outside Inuit Nunangat (ref.)	1.0	1.0
Household income quartiles ¹	Quartile 1 – Lowest income	0.9 (0.5-1.6)	1.1 (0.6-2.1)
	Quartile 2	0.8 (0.4-1.3)	0.8 (0.4-1.6)
	Quartile 3	0.7 (0.4-1.1)	0.8 (0.4-1.3)
	Quartile 4 – Highest income (ref.)	1.0	1.0
Parental educational attainment	Neither parent has a high school diploma	0.6* (0.3-0.9)	0.6 (0.4-1.0)
	At least one parent has a high school diploma or more (ref.)	1.0	1.0
Health care access, past 12 months	Unmet health care needs	0.3* (0.1-0.7)	0.4* (0.2-0.9)
	Health care received or not needed (ref.)	1.0	1.0
Household food security	Low or very low	0.4* (0.2-0.6)	0.5* (0.3-0.9)
	High or marginal (ref.)	1.0	1.0
School climate	Positive: Felt safe and/or happy at school	1.4 (0.6-3.4)	1.1 (0.3-4.0)
	Negative: Racism and/or bullying are problems at school (ref.)	1.0	1.0
Familial attendance of residential schools	At least one parent or grandparent attended	1.0 (0.7-1.6)	1.0 (0.6-1.7)
	No parents or grandparents attended (ref.)	1.0	1.0
	Missing – Don't know, refused or not stated	0.4 (0.1-1.1)	0.0* (0.0-0.3)
Strength of extended family ties	Strong or very strong	2.0* (1.3-3.2)	1.7* (1.0-2.8)
	Somewhat strong to very weak (ref.)	1.0	1.0
Wald F			14.55

¹ Income data from the 2012 Aboriginal Peoples Survey (APS) is after-tax.

* Statistically significant as confidence intervals do not overlap with 1.00, the reference category. **Source:** Statistics Canada, Aboriginal Peoples Survey (APS), 2012.

Mood/Anxiety Disorders

Factors associated with better mental health among Inuit youth include fluency in speaking/understanding an Aboriginal language (OR: 0.2) and participation in Indigenous cultural activities in the past 12 months (OR: 0.2), even when intergenerational trauma is controlled for in the model (Table 6.6). Inuit youth who had unmet health needs had a higher likelihood of having a mood/anxiety disorder (OR: 8.2).

Table 6.6

Unadjusted and adjusted odds ratios for mood/anxiety disorders among Inuit youth aged 12 to 18, Canada, 2012

Variables	Categories	Unadjusted odds ratios	Adjusted odds ratios
		<i>Odds ratios with confidence intervals in brackets</i>	
Age group	12 to 15 years	0.4 (0.2-1.0)	0.5 (0.2-1.2)
	16 to 18 years (ref.)	1.0	1.0
Sex	Males	0.8 (0.4-1.9)	1.0 (0.4-2.3)
	Females (ref.)	1.0	1.0
Inuit Nunangat	Inuit Nunangat	0.3* (0.1-0.7)	1.0 (0.4-2.6)
	Outside Inuit Nunangat (ref.)	1.0	1.0
Household income quartiles ¹	Quartile 1 – Lowest income	0.6 (0.2-1.8)	0.5 (0.1-1.4)
	Quartile 2	1.0 (0.4-2.5)	1.1 (0.4-3.3)
	Quartile 3	1.8 (0.7-5.0)	1.7 (0.6-4.9)
	Quartile 4 – Highest income (ref.)	1.0	1.0
Health care access, past 12 months	Unmet health care needs	4.0* (1.7-9.4)	8.2* (3.3-20.2)
	Health care received or not needed (ref.)	1.0	1.0
Household crowding	More than one person per room	0.4* (0.2-0.9)	0.8 (0.3-2.1)
	One person or fewer per room (ref.)	1.0	1.0
Familial attendance of residential schools	At least one parent or grandparent attended	1.2 (0.5-2.6)	1.6 (0.6-4.1)
	No parents or grandparents attended (ref.)	1.0	1.0
	Missing – Don't know, refused or not stated	0.7 (0.2-2.4)	0.8 (0.1-3.8)
Fluency in an Aboriginal language ²	Speaks/understands an Aboriginal language fluently	0.2* (0.1-0.5)	0.2* (0.0-0.5)
	Does not speak an Aboriginal language, or only knows a few words (ref.)	1.0	1.0
Participation in cultural activities, past 12 months	Did participate	0.2* (0.1-0.5)	0.2* (0.1-0.5)
	Did not participate (ref.)	1.0	1.0
<i>R</i> ²			0.08
<i>Wald F</i>			19.83

¹ Income data from the 2012 Aboriginal Peoples Survey (APS) is after-tax.

² The reference category refers to respondents who stated that they can speak/understand an Aboriginal language with effort, relatively well or very well. The comparison category refers to respondents who identified that they either cannot speak/understand an Aboriginal language or only know a few words.

* Statistically significant as confidence intervals do not overlap with 1.00, the reference category.

Source: Statistics Canada, Aboriginal Peoples Survey (APS), 2012.

Discussion

Findings from this study have shown that associations between selected social determinants and health vary by Aboriginal identity group and by health outcome. Among all Indigenous youth, age was found to almost always be significantly associated with excellent/very good health and a diagnosed mood/anxiety disorder. Other demographic variables, such as sex and area of residence, were not found to be associated with these outcomes.

Past research on the effects of socio-economic status on children's health, most notably household income in Commonwealth countries, has shown that children living in low income families have worse health outcomes than those living in higher income families (Case et al. 2002; Currie and Stabile 2003; Chen et al. 2006; Currie et al. 2007; Proper et al. 2007; Murasko 2008; Khanam et al. 2009; Victorino and Gauthier 2009; Allin and Stabile 2012; Kuehnle 2014). General population research on the income gradient in health has also shown that as children age, the effects of the income gradient on health become more pronounced (Case et al. 2002; Currie and Stabile 2003; Chen et al. 2006; Murasko 2008). However, in this study, household income was only found to be significantly associated with mental health among Métis youth, where those living in the two lowest income quartiles had higher likelihoods of having a diagnosed mood/anxiety disorder (Table 6.4). Another measure of socio-economic status was parental educational attainment, however this variable was not found to be statistically significant (Table 6.5).

Other intermediate variables include measures of health care access and use. The health care access variable measured unmet health care needs in the past 12

months, and this variable was significant across all models in this chapter. Indigenous youth who had unmet health care needs consistently had lower likelihoods of being in excellent/very good health, and had higher likelihoods of having a mood/anxiety disorder. The result for mental health may seem counterintuitive, since the variable is defined by diagnosis, which necessitates the presence and consultation of a medical professional. However, this result indicates that Indigenous youth with mental illness, or specifically with mood/anxiety disorders, are not receiving appropriate health care. This results aligns with past research that has shown rates of mental illness to be higher among Indigenous youth, and that suicide rates are much higher among Indigenous youth than the general population.

Finally, measures of distal determinants showed in general that intergenerational trauma may possibly be related to worse health, and that strong ties to extended family are related to better health outcomes. For all Indigenous youth, those who were ‘missing’ for familial attendance of residential schools – that is, they either did not know or did not state if their parents or grandparents attended – were less likely to be in excellent/very good health. This could be an indication of trauma within families, where there are silences about residential schools and experiences associated with them, or even disconnection between generations. In Aboriginal cultures, children are highly respected as they are gifts from the Creator, and are cherished within Aboriginal families (Government of Canada 1996). Among First Nations youth living off reserve, those with strong or very strong ties to extended family had a higher likelihood of excellent/very good health (Table 6.1), and Métis youth with strong or very strong ties to extended family had a lower likelihood of having a diagnosed mood/anxiety disorder

(Table 6.4). Overall, while demographic and socio-economic variables had some influence on the health of Indigenous youth, it seems that the physical and school environments, as well as certain measures of cultural continuity, play critical roles in determining the health status of Indigenous youth in Canada.

Conclusion

There were several limitations to this study, which include determinants that were not possible to measure/study, the imprecise measurement of certain variables, small sample size, and the cross-sectional nature of the data. One of the missing variables in this study is parental employment, which was not possible to examine as it was not available through the 2012 APS. Parental employment has a direct impact on the socio-economic characteristics and physical environment of the household, and it is possible that precarious parental employment or unemployed parents could result in stress that is passed on to younger members of the household.

In addition, the exclusion of foster children living in institutions and group homes from this study is a fundamental limitation. In 2011, Aboriginal children and youth aged 0 to 14 accounted for 7% of all children and youth in Canada, but made up almost half of all foster children living in private households in Canada (Turner 2016). In the 2012 APS, about 69% of First Nations youth living off reserve were foster children living in private dwellings, as were 20% of Métis youth and 11% of Inuit youth (Table 6.7). Among children and youth aged 6 to 18, 72% of off-reserve First Nations, 18% of Métis and 11% of Inuit children and youth were foster children. Thus, the proportion of Indigenous youth who are foster children is quite high and those in care institutions may be at more risk for ill health as their needs are likely not being met in the same way as

youth in private dwellings. This is a data gap that needs to be addressed in the future, where the health of foster children in institutions, in particular Indigenous foster children, is studied to help change policies and programs for foster care in Canada.

Table 6.7
Distributions of foster children aged 6 to 18 by age group and Aboriginal identity, Canada, 2012

	Aboriginal identity		
	Off-reserve First Nations	Métis	Inuit
Total - 6 to 18	71.6	17.6	10.7
Youth - 12 to 18	68.8	20.4	10.7

Note: Totals may not add to 100% due to rounding.

Source: Statistics Canada, Aboriginal Peoples Survey (APS), 2012.

*These numbers must be weighted to match the rest of the data.

One of the most noticeable measurement errors in this study have to do with the variables for cultural continuity, such as the vague terminology for participation in Indigenous cultural activities. The question does not specify what cultural activities encompass or how they are defined, only that they are First Nations, Métis or Inuit. Other limitations are the cross-sectional nature of this data, and this means that causality cannot be implied in any of the relationships found in this study. Finally, issues with small sample sizes have been discussed in previous chapters, and this is a factor that has affected the analyses throughout this study. That said, although sample size was an issue, it is particularly important to conduct analysis with a distinctions-based approach when studying Indigenous peoples, as all three groups are distinct and have distinct languages, cultures, lands, histories and experiences. This shows in the results throughout this study, where not even the social determinants align in the same way for each of the Indigenous youth studied.

References

- Allin, Sara and Mark Stabile. 2012. "Socioeconomic status and child health: what is the role of health care, health conditions, injuries and maternal health?" *Health Economics, Policy and Law* 7: 227-242.
- Anderson, Thomas. 2015. "The social determinants of higher mental distress among Inuit." *Aboriginal Peoples Survey, 2012* catalogue number 89-653-X. <http://www.statcan.gc.ca/pub/89-653-x/89-653-x2015007-eng.htm>. Accessed November 15, 2016.
- Anderson, Thomas. 2017. "The housing conditions of Aboriginal people in Canada." *Census in Brief*. Statistics Canada catalogue number 98-200-X.
- Anderson, Thomas and Amanda Thompson. 2016. "Assessing the social determinants of self-reported Inuit health in Inuit Nunangat." *Aboriginal Peoples Survey, 2012* catalogue number 89-653-X. <http://www5.statcan.gc.ca/olc-cel/olc.action?ObjId=89-653-X2016009&ObjType=46&lang=en&limit=0>. Accessed November 15, 2016.
- Arcaya, Mariana C., Alyssa L. Arcaya, and S.V. Subramanian. 2015. "Inequalities in health: Definitions, concepts, and theories." *Global Health Action* 8. <http://www.globalhealthaction.net/index.php/gha/article/view/27106>. Accessed November 20, 2016.
- Arriagada, Paula. 2017. "Food insecurity among Inuit living in Inuit Nunangat." *Insights on Canadian Society*. Statistics Canada catalogue number 75-006-X.
- Assembly of First Nations (AFN). 2008. "First Nations Wholistic Policy and Planning: A Transitional Discussion Document on the Social Determinants of Health." AFN (September 2013). Accessed November 17, 2016.
- Assembly of First Nations (AFN). 2015. "Wellness Foundational Model." Safe, Secure, Sustainable Communities Unit at the Assembly of First Nations. http://health.afn.ca/uploads/files/health_foundational_model_-2015-final.pdf.
- Auger, Monique D. 2016. "Cultural Continuity as a Determinant of Indigenous Peoples' Health: A Metasynthesis of Qualitative Research in Canada and the United States." *The International Indigenous Policy Journal* 7(4). DOI: 10.18584/iipj.2016.7.4.3.
- Balibar, Etienne. 1991. "Is There a 'Neo-Racism'?" In *Race, Nation, Class: Ambiguous Identities*, Etienne Balibar and Immanuel Wallerstein, 17-28. London and New York: Verso, 1991.
- Banerji, Anna, Alison Bell, Elaine L. Mills, Jane McDonald, Kanta Subbarao, Greg Stark, Nicola Eynon, and Vivian G. Loo. 2001. "Lower respiratory tract infections in Inuit

- infants on Baffin Island." *Canadian Medical Association Journal* 164(13): 1847-1850.
- Banerji, Anna, David Greenberg, Laura Forsberg White, Alexander W. Macdonald, Audrey Saxton, Eva Thomas, Douglas Sage, Muhammad Mamdani, Krista L. Lanctôt, James B. Mahony, Mia Dingle and Ann Roberts. 2009. "Risk factors and viruses associated with hospitalization due to lower respiratory tract infections in Canadian Inuit children: A case-control study." *The Pediatric Infectious Disease Journal* 28(8): 697–701.
- Barton, Sylvia S., Harvey V. Thommasen, Bill Tallio, William Zhang and Alex C. Michalos. 2005. "Health and quality of life of Aboriginal residential school survivors, Bella Coola Valley, 2001." *Social Indicators Research* 75: 295-312. DOI: 10.1007/s11205-004-6169-5.
- Bhawra, Jasmin, Martin J. Cooke, Yanling Guo and Piotr Wilk. 2017. "The association of household food security, household characteristics and school environment with obesity status among off-reserve First Nations and Métis children and youth in Canada: results from the 2012 Aboriginal Peoples Survey." *Health Promotion and Chronic Disease Prevention in Canada* 37(3): 77-86.
- Bombay, Amy, Kimberly Matheson and Hymie Anisman. 2011. "The impact of stressors on second generation Indian residential school survivors." *Transcultural Psychiatry* 48(4): 367-391.
- Bombay, Amy, Kimberly Matheson and Hymie Anisman. 2014. "The intergenerational effects of Indian Residential Schools: Implications for the concept of historical trauma." *Transcultural Psychiatry* 51(4): 320-338.
- Bowd, Alan D. 2005. "Otitis media: Health and social consequences for Aboriginal youth in Canada's North." *International Journal of Circumpolar Health* 64(1): 5–15.
- Brave Heart, Maria Yellow Horse. 1998. "The return to the sacred path: Healing the historical trauma and historical unresolved grief response among the Lakota through a psychoeducational group intervention." *Smith College Studies in Social Work* 68(3): 287-305.
- Brooks-Gunn, Jeanne and Greg J. Duncan. 1997. "The Effects of Poverty on Children." *The Future of Children* 7(2): 55-71.
- Canadian Television Network (CTV). 2016. "SCC rules Métis, non-status Indians are federal responsibility." CTV: <http://www.ctvnews.ca/canada/scc-rules-metis-non-status-indians-are-federal-responsibility-1.2858535>. Accessed November 18, 2016.

- Carrière, Gisèle M., Rochelle Garner and Claudia Sanmartin. 2017. "Housing conditions and respiratory hospitalizations among First Nations people in Canada." *Health Reports* 28(4). Statistics Canada catalogue number 82-003-X. Ottawa, ON.
- Carson, Valerie, Mark S. Tremblay, Jean-Philippe Chaput and Sébastien F. M. Chastin. 2016. "Associations between sleep duration, sedentary time, physical activity, and health indicators among Canadian children and youth using compositional analyses." *Applied Physiology, Nutrition, and Metabolism* 41(6): S294-S302.
- Case, Anne, Darren Lubotsky and Christina Paxson. 2002. "Economic Status and Health in Childhood: The Origins of the Gradient." *The American Economic Review* 92(5): 1308-1334.
- Chandler, Michael J. and Christopher E. Lalonde. 1998. "Cultural continuity as a hedge against suicide in Canada's First Nations." *Transcultural Psychiatry* 35: 191-219.
- Chandler, Michael J., Christopher E. Lalonde, Bryan W. Sokol and Darcy Hallett. 2003. "Personal persistence, identity development, and suicide: A study of Native and non-Native North American adolescents." *Monographs of the Society for Research in Child Development* 68(2, Serial 273).
- Chen, Edith, Karen A. Matthews and W. Thomas Boyce. 2002. "Socioeconomic differences in children's health: How and why do these relationships change with age?" *Psychological Bulletin* 128(2): 295-329.
- Chen, Edith. 2004. "Why Socioeconomic Status Affects the Health of Children: A Psychosocial Perspective." *Current Directions in Psychological Science* 13(3): 112-115.
- Chen, Edith, Andrew D. Martin and Karen A. Matthews. 2006. "Socioeconomic status and health: Do gradients differ within childhood and adolescence?" *Social Science & Medicine* 62: 2161-2170.
- Chowkwanyun, Merlin. 2011. "The strange disappearance of history from racial health disparities research." *Du Bois Review* 8(1): 253-270.
- Currie, Alison, Michael A. Shields and Stephen Wheatley Price. 2007. "The child health/family income gradient: Evidence from England." *Journal of Health Economics* 26: 213-232.
- Currie, Janet and Mark Stabile. 2003. "Socioeconomic Status and Child Health: Why is the Relationship Stronger for Older Children?" *The American Economic Review* 93(5): 1813-1823.
- Delgado, J., M.E. Ramirez-Cardich, R.H. Gilman, R. Lavarello, N. Dahodwala, and A. Bazan. 2002. "Risk factors for burns in children: Crowding, poverty, and poor maternal education." *Injury Prevention* p. 38+.

- Duster, Troy. 2005. "Medicine, Race and Reification in Science." *Science (New York, N.Y.)* 307(5712): 1050-1051.
- Dyck, Miranda. 2009. "Social Determinants of Métis Health." *Métis Centre – National Aboriginal Health Organization*.
http://www.naho.ca/documents/metiscentre/english/Research_SocialDeterminantsofHealth.pdf. Accessed July 30, 2016.
- Elias, Brenda, Javier Mignone, Madelyn Hall, Say P. Hong, Lyna Hart and Jitender Sareen. 2012. "Trauma and suicide behaviour histories among a Canadian indigenous population: An empirical exploration of the potential role of Canada's residential school system." *Social Science & Medicine* 74: 1560-1569.
- Elton-Marshall, Tara, Scott T. Leatherdale, Robin Burkhalter and K. Stephen Brown. 2013. "Changes in tobacco use, susceptibility to future smoking, and quit attempts among Canadian youth over time: A comparison of off-reserve Aboriginal and non-Aboriginal youth." *International Journal of Environmental Research and Public Health* 10(2): 729-741.
- Evans-Campbell, Teresa. 2008. "Historical Trauma in American Indian/Native Alaska Communities: A Multilevel Framework for Exploring Impacts on Individuals, Families and Communities." *Journal of Interpersonal Violence* 23(3): 316-338.
- First Nations Information Governance Centre (FNIGC). 2017a. "About FNIGC: Frequently Asked Questions." FNIGC. Date accessed: July 11, 2017.
<http://fnigc.ca/about-fnigc/frequently-asked-questions.html>
- First Nations Information Governance Centre (FNIGC). 2017b. "OCAP: The First Nations Principles of OCAP®." FNIGC. Date accessed: July 11, 2017.
<http://fnigc.ca/ocap.html>
- Gao, Zhiwei, Brian H. Rowe, Carina Majaesic, Cindy O'Hara, and Ambikaipakan Senthilselvan. 2008. "Prevalence of asthma and risk factors for asthma-like symptoms in Aboriginal and non-Aboriginal children in the northern territories in Canada." *Canadian Respiratory Journal* 15(3): 139-145.
- Gionet, Linda and Shirin Roshanafshar. 2013. "Select health indicators of First Nations people living off reserve, Métis and Inuit." *Health at a Glance* catalogue number 82-624-X. <http://www.statcan.gc.ca/pub/82-624-x/2013001/article/11763-eng.htm>. Accessed November 15, 2016.
- Gómez, Laura E. and Nancy López. 2013. *Mapping race: critical approaches to health disparities research*. New Brunswick, NJ: Rutgers University Press.

- Gone, Joseph P. Gone. 2013. "Redressing First Nations historical trauma: Theorizing mechanisms for indigenous culture as mental health treatment." *Transcultural Psychiatry* 50(5): 683-706.
- Government of Canada. 1996. *Highlights from the Report of the Royal Commission on Aboriginal Peoples*. Catalogue no. Z1-1991/1-6E. Royal Commission on Aboriginal Peoples. Ottawa: Minister of Supply and Services Canada.
- Greenwood, Margo Lianne and Sarah Naomi de Leeuw. 2012. "Social determinants of health and the future well-being of Aboriginal children in Canada." *Paediatric Child Health* 17(7): 381-384.
- Hackett, Christina, David Feeny and Emile Tompa. 2016. "Canada's residential school system: measuring the intergenerational impact of familial attendance on health and mental health outcomes." *Journal of Epidemiology and Community Health* 70: 1096-1105. DOI: 10.1136/jech-2016-207380.
- Hallett, Darcy. 2005. *Aboriginal identity development, language knowledge, and school attrition: An examination of cultural continuity*. Doctoral Dissertation. Vancouver, B.C., Canada: University of British Columbia.
- Hallett, Darcy, Michael J. Chandler and Christopher E. Lalonde. 2007. "Aboriginal language knowledge and youth suicide." *Cognitive Development* 22: 392-399.
- Inuit Tapiriit Kanatami (ITK). 2014. "Social Determinants of Inuit Health in Canada." ITK: https://www.itk.ca/wp-content/uploads/2016/07/ITK_Social_Determinants_Report.pdf. Accessed July 30, 2016.
- Kaspar, Violet. 2013. "Mental health of Aboriginal children and adolescents in violent school environments: Protective mediators of violence and psychological/nervous disorders." *Social Science & Medicine* 81(Complete): 70-78.
- Kaspar, Violet. 2014. "The Lifetime Effect of Residential School Attendance on Indigenous Health Status." *American Journal of Public Health* 104(11): 2184-2190.
- Keith, Jennifer. 2015. "The totalizing nature of the Canadian state: Modern-Treaties in the era of recognition." *The Canadian Journal of Native Studies* 35(1): 45-67.
- Kelly-Scott, Karen and Kristina Smith. 2015. "Aboriginal Peoples: Fact Sheet for Canada." Aboriginal Peoples Fact Sheets. Statistics Canada catalogue number 89-656-X. Ottawa, ON.

- Khanam, Rasheda, Hong Son Nghiem and Luke B. Connelly. 2009. "Child health and the income gradient: Evidence from Australia." *Journal of Health Economics* 28: 805-817.
- Kirmayer, Laurence, Joseph P. Gone and Joshua Moses. 2014. "Rethinking Historical Trauma." *Transcultural Psychiatry* 51(3): 299-319.
- Koezuka, Naoko, Malcolm Koo, Kenneth R. Allison, Edward M. Adlaf, John J.M. Dwyer, Guy Faulkner and Jack Goodman. 2006. "The Relationship between Sedentary Activities and Physical Inactivity among Adolescents: Results from the Canadian Community Health Survey." *Journal of Adolescent Health* 39(4): 515-522.
- Kohen, Dafna, Evelyne Bougie and Anne Guèvremont. 2015. "Housing and health among Inuit children." *Health Reports* 26(11). Statistics Canada catalogue number 82-003-X.
- Kuehnle, Daniel. 2014. "The causal effect of family income on child health in the UK." *Journal of Health Economics* 36: 137-150.
- Langlet, Éric, Jean-François Beaumont and Pierre Lavallée. 2008. "Bootstrap Methods for Two-Phase Sampling Applicable to Postcensal Surveys." Statistics Canada. Paper submitted to Statistics Canada's Advisory Committee on Statistical Methods. Ottawa, ON.
- Li, Shirley and Kristina Smith. 2016. "Inuit: Fact Sheet for Inuit Nunangat." Aboriginal Peoples Fact Sheets. March. Statistics Canada catalogue no. 89-656-X.
- Mark, Sean, Marie Lambert, Jennifer O'Loughlin, and Katherine Gray-Donald. 2012. "Household Income, Food Insecurity and Nutrition in Canadian Youth." *Canadian Journal of Public Health* 103(2): 94-99.
- Marmot, Michael. 2005. "Social determinants of health inequalities." *The Lancet* 365(9464): 19-25.
- Marmot, Michael. 2018. "Inclusion health: addressing the causes of causes." *The Lancet (British Edition)* 391(10117): 186-188.
- Mignolo, Walter. 2009. "Dispensable and Bare Lives: Coloniality and the Hidden Political/Economic Agenda of Modernity." *Human Architecture: Journal of the Sociology of Self-Knowledge* 7(2): 69-87.
- Milyavskaya, Marina, Isabelle Gingras, Geneviève A. Mageau, Richard Koestner, Hugo Gagnon, Jianqun Fang and Julie Boiché. 2009. "Balance Across Contexts: Importance of Balanced Need Satisfaction Across Various Life Domains." *Personality and Social Psychology Bulletin* 35(8): 1031-1045.

- Moffat, Michele. 2016. "Exploring Positionality in an Aboriginal Research Paradigm: A Unique Perspective." *International Journal of Technology and Inclusive Education (IJTIE)* 5(1): 750-755.
- Murasko, Jason E. 2008. "An evaluation of the age-profile in the relationship between household income and the health of children in the United States." *Journal of Health Economics* 27: 1489-1502.
- Nasreen, Sharifa, Ramanpreet Brar, Samanpreet Brar, Alana Maltby and Piotr Wilk. 2018. "Are Indigenous determinants of health associated with self-reported health professional-diagnosed anxiety disorders among Canadian First Nations adults?: Findings from the 2012 Aboriginal Peoples Survey." *Community Mental Health Journal* 54(4): 460-468.
- National Collaborating Centre for Aboriginal Health (NCCAH). 2009-2010. "Poverty as a social determinant of First Nations, Inuit, and Métis health." NCCAH. [http://www.nccah-ccnsa.ca/docs/fact%20sheets/social%20determinates/NCCAH fs poverty EN.pdf](http://www.nccah-ccnsa.ca/docs/fact%20sheets/social%20determinates/NCCAH_fs_poverty_EN.pdf). Accessed on July 30, 2016.
- Ng, Carmina, T. Kue Young and Paul N. Corey. 2010. "Associations of television viewing, physical activity and dietary behaviours with obesity in Aboriginal and non-Aboriginal Canadian youth." *Public Health Nutrition* 13(9): 1430-1437.
- Postl, Brian, Catherine Cook, and Michael Moffat. 2010. "Aboriginal child health and the social determinants: Why are these children so disadvantaged?" *Health Care Quarterly* 14(Special issue): 42-51.
- Poudrier, Jennifer. 2007. "The Geneticization of Aboriginal Diabetes and Obesity: Adding Another Scene to the Story of the Thrifty Gene." *The Canadian Review of Sociology and Anthropology* 44(2): 237-261.
- Propper, Carol, John Rigg and Simon Burgess. 2007. "Child health: Evidence on the roles of family income and maternal mental health from a UK birth cohort." *Health Economics* 16: 1245-1269.
- Public Health Agency of Canada (PHAC). 2011. "Key Determinants." PHAC. <http://www.phac-aspc.gc.ca/ph-sp/determinants/index-eng.php>.
- Reading, C.L. & Wien, F. 2009. *Health Inequalities and Social Determinants of Aboriginal Peoples' Health*. Prince George, BC: National Collaborating Centre for Aboriginal Health.
- Ross, Amélie, Jacinthe Dion, Michael Cantinotti, Delphine Collin-Vézina and Linda Paquette. 2015. "Impact of residential schooling and of child abuse on substance use problem in Indigenous Peoples." *Addictive Behaviors* 51: 184-192.

- Rotenberg, Cristine. "Social determinants of health for the off-reserve First Nations population, 15 years of age and older, 2012." 2016. *Aboriginal Peoples Survey, 2012* catalogue number 89-653-X. <http://www.statcan.gc.ca/pub/89-653-x/89-653-x2016010-eng.htm>. Accessed November 15, 2016.
- Ryan, Christopher J., Martin Cooke and Scott T. Leatherdale. 2016a. "Factors associated with heavy drinking among off-reserve First Nations and Métis youth and adults: Evidence from the 2012 Canadian Aboriginal Peoples Survey." *Preventive Medicine* 87(Complete): 95-102.
- Ryan, Christopher, Scott Leatherdale and Martin Cooke. 2016b. "Factors associated with current smoking among off-reserve First Nations and Métis youth: Results from the 2012 Aboriginal Peoples Survey." *The Journal of Primary Prevention* 38(1-2): 105-119.
- Sasakamoose, JoLee, Andrea Scerbe, Ila Wenaus and Amanda Scandrett. 2016. "First Nation and Métis Youth Perspectives of Health: An Indigenous Qualitative Inquiry." *Qualitative Inquiry* 22(8): 636-650.
- Shenassa, Edmond D., Amy Stubbendick, and Mary Jean Brown. 2004. "Social Disparities in Housing and Related Pediatric Injury: A Multilevel Study." *American Journal of Public Health* 94(4): 633-639.
- Shields, Margot and Shahin Shooshtari. 2001. "Determinants of self-perceived health." *Health Reports* 13(1). Statistics Canada catalogue number 82-003-X.
- Smylie, Janet and Paul Adomako. 2009. "Indigenous Children's Health Report: Health Assessment in Action." *Centre for Research on Inner City Health*.
- Sotero, Michelle M. 2006. "A Conceptual Model of Historical Trauma: Implications for Public Health Practice and Research." *Journal of Health Disparities Research and Practice* 1(1): 93-108.
- STATA. "Poststratification – Poststratification for survey data." Stata.com. Date accessed: July 13, 2017.
<http://www.stata.com/manuals13/svypoststratification.pdf>
- Statistics Canada. 2012a. "Aboriginal Peoples Survey (APS): Detailed information for 2012." Statistics Canada. Ottawa, ON. Last modified January 31, 2012.
<http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&Id=109115>
- Statistics Canada. 2012b. "Canadian Community Health Survey – Annual Component (CCHS): Detailed information for 2012." Statistics Canada. Ottawa, ON. Last modified November 11, 2012.
<http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&Id=135927>

- Statistics Canada. 2013. "2011 National Household Survey: Aboriginal Peoples in Canada: First Nations People, Métis and Inuit." *The Daily*, <http://www.statcan.gc.ca/daily-quotidien/130508/dq130508a-eng.htm>.
- Truth and Reconciliation Commission of Canada. 2012. *Canada, Aboriginal Peoples, and Residential Schools: They Came for the Children*. Winnipeg: Truth and Reconciliation Commission of Canada.
- Turner, Annie. 2016. "Living arrangements of Aboriginal children aged 14 and under." *Insights on Canadian Society*. Statistics Canada catalogue number 75-006-X.
- United Nations General Assembly. *Convention on the Rights of the Child*. 1989. United Nations, Treaty Series, vol. 1577. <http://www.ohchr.org/en/professionalinterest/pages/crc.aspx>. Accessed November 20, 2016.
- United Nations General Assembly. *Declaration on the Rights of Indigenous Peoples*. 2007. http://www.un.org/esa/socdev/unpfii/documents/DRIPS_en.pdf. Accessed November 20, 2016.
- Van Bower, Vanessa and Roberta L. Woodgate. 2017. "Examining the correlates of current smoking among off-reserve First Nations, Métis and Inuit youth: Evidence from the 2012 Aboriginal Peoples Survey." *Addictive Behaviours* 69(Complete): 93-97.
- Véronneau, Marie-Hélène, Richard F. Koestner and John R.Z. Abela. 2005. "Intrinsic need satisfaction and well-being in children and adolescents: An application of the self-determination theory." *Journal of Social and Clinical Psychology* 24(2): 280-292.
- Victorino, Charlemagne C. and Anne H. Gauthier. 2009. "The social determinants of child health: variations across health outcomes – a population-based cross-sectional analysis." *BMC Pediatrics* 9(53). DOI: 10.1186/1471-2431-9-53.
- Walls, Melissa L. and Les B. Whitbeck. 2011. "Distress among Indigenous North Americans: Generalized and Culturally Relevant Stressors." *Society and Mental Health* 1(2): 124-136.
- Walls, Melissa L., Dane Hautala and Jenna Hurley. 2014. " 'Rebuilding our community': Hearing silenced voices on Aboriginal youth suicide." *Transcultural Psychiatry* 51(1): 47-72.
- Walters, Karina L., Selina A. Mohammed, Teresa Evans-Campbell, Ramona E. Beltrán, David H. Chae and Bonnie Duran. 2011. "Bodies Don't Just Tell Stories, They Tell Histories: Embodiement of Historical Trauma among American Indians and Alaskan Natives." *Du Bois Review* 8(1): 179-189.

- Wilk, Piotr, Alana Maltby and Martin Cooke. 2017. "Residential schools and the effects on Indigenous health and well-being in Canada – a scoping review." *Public Health Reviews* 38(8). DOI: 10.1186/s40985-017-0055-6.
- Wilson, Kathi and Nicolette Cardwell. 2012. "Urban Aboriginal health: Examining inequalities between Aboriginal and non-Aboriginal populations in Canada." *The Canadian Geographer* 56(1): 98-116.
- Wolfe, Joseph D. 2015. "The effects of socioeconomic status on child and adolescent physical health: An organization and systematic comparison of measures." *Social Indicators Research* 123: 39-58.
- World Health Organization (WHO). 2011. *Environmental Burden of Disease Associated with Inadequate Housing*. Copenhagen: World Health Organization.
- World Health Organization (WHO). "Key Concepts." http://www.who.int/social_determinants/thecommission/finalreport/key_concepts/en/. Accessed November 17, 2016.
- World Health Organization (WHO). "The determinants of health." *Health Impact Assessment (HIA)*: <http://www.who.int/hia/evidence/doh/en/>.

Appendix A. Variable Codebook, 2012 Aboriginal Peoples Survey (APS)

Population Variables

Identity = Aboriginal identity, single response categories (DIDENTGP)

- First Nations living off reserve
- Métis
- Inuit
- Multiple identities (excluded from analyses)

PopAge = Youth aged 12 to 18 (AGE)

- 12 to 18 years
- 6 to 11 years and 19 years and older (excluded from analyses)

Outcome Variables

Health = General health (GH1_01)

- Excellent or very good
- Good
- Fair or poor
- Missing (Don't know, refusal or not stated)

Mood = Diagnosed mood and/or anxiety disorder (CC2_09 and CC2_10)

- Has at least one diagnosed mood and/or anxiety disorder
- No diagnosed mood or anxiety disorders
- Missing (Don't know, refusal or not stated)

Demographic Characteristics

Ageg = Age group of youth (AGE)

- 12 to 15 years
- 16 to 18 years
- Missing (All other ages, excluded from analyses)

Sex = Sex of youth (SEX)

- Male
- Female

Proxy = Indicates if the youth self-completed the survey or if a parent/guardian did on their behalf (PROXY)

- Proxy respondents
- Non-proxy respondents

Geography = Area of residence for off-reserve First Nations and Métis youth (NPOPCTRS)

- Medium and large population centres
- Small population centres and rural areas

InuitNunangat = Area of residence for Inuit youth, inside or outside the Inuit Homeland (NIREG)

- Inuit Nunangat
- Outside Inuit Nunangat

Socioeconomic and Household Characteristics

FN_Quartiles = After-tax household income quartiles for off-reserve First Nations people (HHINC_AT)

- Quartile 1 – Lowest income (Less than \$32,936, excluding \$0 and negative values)
- Quartile 2 (\$32,936 to less than \$54,918)
- Quartile 3 (\$54,918 to less than \$85,200)
- Quartile 4 – Highest income (\$85,200 and more)
- Missing (\$0 or less, or not stated)

M_Quartiles = After-tax household income quartiles for Métis (HHINC_AT)

- Quartile 1 – Lowest income (Less than \$40,324, excluding \$0 and negative values)
- Quartile 2 (\$40,324 to less than \$67,489)
- Quartile 3 (\$67,489 to less than \$100,095)
- Quartile 4 – Highest income (\$100,095 and more)
- Missing (\$0 or less, or not stated)

I_Quartiles = After-tax household income quartiles for Inuit (HHINC_AT)

- Quartile 1 – Lowest income (Less than \$41,978, excluding \$0 and negative values)
- Quartile 2 (\$41,978 to less than \$68,683)
- Quartile 3 (\$68,683 to less than \$104,253)
- Quartile 4 – Highest income (\$104,253 and more)
- Missing (\$0 or less, or not stated)

Education = Parental educational attainment (DHLOSMG and DHLOSFG)

- Neither parent has a high school diploma
- At least one parent has a high school diploma or more
- Missing (Valid skip or not stated)

Crowding = Household crowding (DPERSRM)

- One person or few per room

- More than one person per room
- Missing (Not stated)

Repairs = Condition of dwelling (HOU_02)

- Home in need of regular maintenance or minor repairs
- Home in need of major repairs
- Missing (Don't know, refusal or not stated)

FoodSecurity = Household food security status (DFOODSEC)

- High or marginal
- Low or very low
- Missing (Not stated)

Health Care Access and Use

NoCare = Unmet health care needs in the past 12 months (GH2_06)

- Health care needed but not received
- Did not need health care or received care when needed
- Missing (Don't know, refusal or not stated)

Consulted = Consulted a health professional in the past 12 months (DCONSULT)

- Consulted a health professional in the past 12 months
- Did not consult a health professional
- Missing (Not stated)

School Characteristics

Grades = Academic performance (DAVEGR)

- Above average grades (Mainly As)
- Average grades (Mainly Bs)
- Below average grades (Cs and below)
- Missing (No grades, valid skip, don't know, refusal or not stated)

Dropped = School attrition (DDRSCHFR)

- Never dropped out of school
- Dropped out of school at least once
- Missing (Valid skip or not stated)

Programs = Aboriginal language and/or cultural programs offered at youth's school (DABCLSCH)

- Aboriginal language and/or cultural programs offered at school
- Aboriginal language and/or cultural programs not offered at school
- Missing (Valid skip or not stated)

Climate = School climate (DSAFE, DHAPPY, DBULLY and DRACISM)

- Positive climate – Youth feels safe and/or happy at school
- Negative climate – Youth feels that bullying and/or racism are issues at their school
- Missing (Reported no issues or no opinion, excluded from analyses)

Intergenerational Trauma and Cultural Continuity

Trauma = Parents or grandparents attended Indian Residential Schools (RS_02A, RS_02B and RS_02C)

- At least one of the youth's parents or grandparents attended residential school
- None of the youth's parents and grandparents attended residential school (but other family members may have)
- Missing (Don't know, refusal or not stated)

Fluency = Fluency in understanding and/or speaking an Aboriginal language (DSKILSPK and DSKILUND)

- Can speak and/or understand an Aboriginal language with effort, relatively well or very well
- Cannot speak nor understand an Aboriginal language, or only knows a few words
- Missing (Not stated)

Participation = Participation in cultural activities in the past 12 months (DAB)

- Has participated in First Nations, Métis, Inuit cultural activities in the last year
- No participation, at least in the last year
- Missing (Valid skip, don't know or refusal)

Family = Strength of extended family ties (CS_02)

- Strong or very strong ties to extended family (living in a separate household in the same city)
- Very weak to somewhat strong ties to extended family
- Missing (Don't know, refusal, not stated or no extended family in the same city)

Appendix B. Variable Codebook, 2012 Canadian Community Health Survey (CCHS)

Population Variables

Canadianborn = Identifying non-Aboriginal and non-immigrant youth (SDC_41 and SDCFIMM)

- Non-Aboriginal and non-immigrant
- Aboriginal person or immigrant (excluded from analyses)

PopAge = Youth aged 12 to 18 (DHH_AGE)

- 12 to 18 years
- 19 years and older (excluded from analyses)

Outcome Variables

Health = General health (GEN_01)

- Excellent or very good
- Good
- Fair or poor
- Missing (Don't know and refusal)

Mood = Diagnosed mood and/or anxiety disorder (CCC_280 and CCC_290)

- Has at least one diagnosed mood and/or anxiety disorder
- No diagnosed mood or anxiety disorders
- Missing (Don't know, refusal or not stated)

Demographic Characteristics

Ageg = Age group of youth (DHH_AGE)

- 12 to 15 years
- 16 to 18 years
- Missing (All other ages, excluded from analyses)

Sex = Sex of youth (DHH_SEX)

- Male
- Female

Proxy = Indicates if the youth self-completed the survey or if a parent/guardian did on their behalf (ADM_PRX)

- Proxy respondents
- Non-proxy respondents

Geography = Area of residence for off-reserve First Nations and Métis youth (GEODUR2)

- Population centres
- Rural areas

Socioeconomic and Household Characteristics

Cb_Quartiles = Household income quartiles for non-Aboriginal and Canadian-born people (INC_3)

- Quartile 1 – Lowest income (Less than \$45,000, excluding \$0 and there are no negative values)
- Quartile 2 (\$45,000 to less than \$75,000)
- Quartile 3 (\$75,000 to less than \$120,000)
- Quartile 4 – Highest income (\$120,000 and more)
- Missing (\$0 or not stated)

Education = Highest household educational attainment (EDUDH04)

- Less than a high school diploma
- High school diploma or more
- Missing (Not stated)

FoodSecurity = Household food security status (FSCDHFS2)

- Food secure household
- Moderately or severely food insecure household
- Missing (Not stated)

Health Care Access and Use

NoCare = Unmet health care needs in the past 12 months (UCN_010)

- Health care needed but not received
- Did not need health care or received care when needed
- Missing (Don't know, refusal or not stated)

Consult = Consulted a medical doctor in the past 12 months (CHPDMDC)

- Consulted a family doctor or specialist in the past 12 months
- Did not consult a medical doctor
- Missing (Not stated)