FINDING SAFE SPACES: HISTORICAL TRAUMA, HOUSING STATUS AND HIV VULNERABILITY AMONG YOUNG ABORIGINAL PEOPLE WHO USE ILLICIT DRUGS.

by

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B.A. (Hons.), The University of Toronto, 2008

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF SCIENCE

in

The Faculty of Graduate Studies

(Health Care and Epidemiology)

THE UNIVERSITY OF BRITISH COLUMBIA
(Vancouver)

December 2012

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Abstract

**Background:** Dispossession and dislocation of Aboriginal people in Canada through the reserve, residential school and child welfare systems have contributed to the gross overrepresentation of HIV/AIDS infection, substance use, and housing instability in Aboriginal communities. Ensuring young Aboriginal people who use illicit drugs have access to safe spaces, including places to live, is a fundamental part of dismantling structural injustices that lead to their elevated vulnerability to HIV infection.

**Objective:** This thesis investigates access to safe spaces among young Aboriginal men and women who use illicit drugs in Vancouver and Prince George, British Columbia, Canada within the context of historical and intergenerational trauma. It examines how accessibility of safe spaces, and housing in particular, affects young Aboriginal people’s vulnerability to HIV infection.

**Methods:** Baseline categorical variables were compared based on participants’ housing status using Pearson’s Chi-squared test and Fisher’s exact tests when expected cell values were five or less. Continuous variables were analyzed using a Student t test and all p values are two sided. Longitudinal analyses utilized data collected every six-months between November 2005 and January 2010. Generalized linear mixed models fitted with a Gauss-Hermite approximation were used to find odds ratio (ORs) for associations between trauma, housing status, and sex- and drug-related HIV vulnerabilities over time.

**Results:** We found an independent association between historical trauma and housing status: childhood sexual abuse was independently associated with 2.76 greater odds of living in an unstable type of housing over the study period. We uncovered important associations between sub-optimal housing status and drug- and sex-related HIV
vulnerability, including sex work, sexual assault, use of injection drugs, high frequency opiate and cocaine injection, and public injection.

**Conclusions:** Our findings reveal that both material and spatial dimensions of housing are closely linked to HIV vulnerability among young Aboriginal people. Further, the links between housing status and historical trauma indicate that addressing the legacy of historical trauma is a crucial component of tackling the underlying causes of housing instability among young Aboriginal people who use illicit drugs.
Preface

This study was approved by the University of British Columbia and Providence Health Care Research Ethics Boards, certificate number H12-00171.
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<td>AOR</td>
<td>Adjusted Odds Ratio</td>
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<td>ARYS</td>
<td>At Risk Youth Study</td>
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<td>BC</td>
<td>British Columbia</td>
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<td>CI</td>
<td>Confidence Interval</td>
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<td>Downtown East Side</td>
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<td>GLMM</td>
<td>Generalized Linear Mixed Models</td>
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<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
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<td>NFA</td>
<td>No Fixed Address</td>
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<td>OR</td>
<td>Odds Ratio</td>
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<td>SRO</td>
<td>Single Room Occupancy hotel</td>
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<td>Sexually Transmitted Infection</td>
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Acknowledgements

First and foremost, I would like to extend my gratitude to the brave young men and women who participate in the Cedar Project for making this work possible by entrusting us with their stories. I am grateful to Dr. Patricia Spittal for giving me the opportunity to work with her team, for supporting me through the process, and encouraging me to pursue my academic career. It is a tremendous privilege.

I would like to thank Dr.’s Martin Schechter and Eugenia Oviedo-Joekes for their support and guidance. Thank you to Victoria Thomas (Wuikinuxv Nation) for her mentorship, as well as helping me to understand what my findings mean in the real world. I also could not have completed any of this work without the continuous help of Hongbin Zhang. Thank you to my friends and colleagues Margo and Sheetal for their advice and support.

My greatest gratitude goes to my mum, dad and Ingo, for supporting me with enthusiasm and without question. Thanks also for Jennifer and Robyn for editorial comments and feedback.
for mum and dad.
Chapter 1: Background & literature review

Thesis overview

Dispossession and dislocation of Aboriginal people\(^1\) in Canada through the reserve, residential school and child welfare systems have contributed to the gross overrepresentation of HIV/AIDS infection, substance use, and housing instability in Aboriginal communities. Ensuring young Aboriginal people who use illicit drugs have access to safe spaces\(^2\), including places to live, is a fundamental part of dismantling structural injustices that lead to their elevated vulnerability to Human Immunodeficiency Virus (HIV) infection. The aim of this thesis is to investigate access to housing among young Aboriginal men and women who use both injection and non-injection drugs illicitly\(^3\) in Vancouver and Prince George, British Columbia (BC), Canada. This thesis situates access to housing among young Aboriginal people who use illicit drugs within the context of historical and intergenerational trauma. It examines how the accessibility of housing affects young Aboriginal people’s vulnerability to HIV infection.

This thesis consists of four parts. First, it sets out a framework outlining how the concept of “safe spaces” is understood and operationalized within this research. Safe spaces are broken down into three qualities or dimensions – material, spatial, and meaningful. The material and spatial dimensions in particular are investigated further over

\(^1\) For the purpose of this research, Aboriginal people are considered to be the descendants of the First Nation Peoples of North America, including Métis, First Nations, and Inuit, including both status and non-status Indians.

\(^2\) For the purposes of this research, a safe space is a physical, social, emotional and spiritual location where young people feel dignity, value, belonging and respect. Safe spaces include places to live, work and use drugs. This thesis focuses on housing in particular.

\(^3\) Throughout, the terms “illicit drug use” and “substance use” are used interchangeably to refer to either non-injection and injection drug use, excluding alcohol and marijuana. This definition also includes abuse of legal substances, such as prescription opiates. “Injection drug use” refers specifically to intravenous drug consumption via syringe.
the course of the thesis. This introductory section also provides a brief overview of the literature related to HIV infection, substance use, and gender among young Aboriginal people in Canada. It introduces the concepts of historical and intergenerational trauma, cultural safety, and intersectionality, the primary theoretical lenses that underpin this study.

This thesis goes on to use Cedar Project data to explore housing patterns among young Aboriginal people who use illicit drugs and examine the relationship between historical trauma and housing status in this group. Next, it investigates the relationships between material and spatial dimensions of housing status and sex- and drug-related HIV vulnerability. Finally, it discusses the findings and provides recommendations for meeting the needs of these young people related to space and place.

**Historical context of housing status among Aboriginal people**

“Traditionally, Aboriginal families…found home on the land and in culturally patterned relationships of reciprocity, learning, ceremony and knowledge; these interacting factors served as interconnection with each other and with all beings found in their environment. Home was found on the land and its life-ways; the basis of identity was found in family and community as based in culture, language and nation.” (Ruttan, LaBoucane-Benson, & Munro, 2010).

“The narrative of Indigenous homelessness has to start at the beginning, that is with the historical truth of the original and ongoing dispossession of Indigenous people and of its consequences for the first peoples.” (Murray, 2010)

Homelessness is not often understood literally, in the sense of being without a home. As academics, we investigate the nuances of homelessness: relative and absolute,
episodic and chronic. These terms tend to refer to a material deficit: the absence of a roof. In complicating and quantifying homelessness, we risk failing to understand homelessness at its essence: the absence of a *home*.

In BC, Aboriginal people make up a notably disproportionate segment of the homeless population. As explained in this chapter, throughout 150 years of colonial legislation, provincial and federal governments of Canada have worked in tandem to create this plague of Aboriginal homelessness by systematically dismantling the Aboriginal *home*.

Definitions of home include the social unit formed by a family living together, a place of origin, as well as a place of residence. *Home* is the answer to the question, “where are you from?” McCallum and Isaac emphasize the importance of home in cultural identity formation to clarify that homelessness is more than simply a lack of housing: “the concept of home, ‘a social, psychological space, not just a house as a physical structure,’ carries different meanings for different people and is strongly affected by emotion, memory and culture” (McCallum & Isaac, 2011). Robertson argues that “‘being-at-home’ is not always grounded in one particular site; it may refer to a state of well-being that extends to communities, cities, nations or ancestral territories” (Robertson, 2007). Further, Windsor and Macvey describe home as “a place where identity is continuously reinforced through connection to the past” (Windsor & Mcvey, 2005). In this study, home is understood as a safe place – a physical, social, emotional, and spiritual location where one feels dignity, value, belonging and respect. For young Aboriginal people who use drugs in particular, home also a physical place in which to live, work, and use drugs.

The concepts of land and home are deeply connected in Aboriginal worldviews; land is where Aboriginal culture is lived. Aboriginal "cultural identity [is] rooted and interlocked with the land" (Ware, 1975). Beyond being a “resource” or “asset,” land is a sacred place
and the foundation of survival (Wesley-Esquimaux & Smolewski, 2004). Berry describes the connection between land and traditional cultural activities as central to cultural identity (Berry, 1999). For example, Indigenous peoples around the world have identified their relationship to land as an important surviving marker of indigenous culture (K. Wilson & Peters, 2005).

At first contact, the relationship between Europeans and BC’s First Peoples was based on the fur trade. Introduction of smallpox and influenza epidemics decimated Aboriginal populations, facilitating the domination and oppression that followed (Wesley-Esquimaux & Smolewski, 2004). Death and disease initiated the loss of cultural and ceremonial knowledge, as well as socio-cultural order and expectations that could no longer be passed through generations (Wesley-Esquimaux & Smolewski, 2004). When the fur trade dwindled and Europeans set their sights on settlement, settlers outnumbered First Nations as a result of the destruction of Aboriginal populations by disease, as well as the arrival of the gold rush. The British colonial government, followed by the newly established Federal Dominion of Canada, acted to legislate the dislocation and dispossession of Aboriginal people across the country.

The *Indian Act*⁴, created in 1876, gave Canada’s federal government exclusive control over legislation related to Aboriginal people and their land. With this act, Aboriginal people became wards of the state. The Act defined who was and was not an “Indian,” including removing status from women who married someone without status or a person who wished to vote in Canadian elections. This legislation was used as a tool to restrict, assimilate and control Aboriginal people in Canada (Turner et al., 2010). In particular, the Act legally removed the rights of Aboriginal parents to their children, giving the government total control over the children’s lives (Chansonneuve, 2005). Though there have been

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⁴ *Indian Act*, 1876, S.C. 1876, c. 18
several amendments to the *Indian Act*, it exists to this day.

James Douglas, the first Governor of BC, established the reserve system in the 1860s, recognizing Aboriginal title and creating large reserves. Through this system, the colonial government closely controlled where Aboriginal people were allowed to live (Adelson, 2005). Treaties were signed between Douglas’ administration and First Nations of Vancouver Island, but nowhere else in the province. Subsequent leadership in BC failed to recognize Aboriginal title until the *Delgamuukw* statement by the Supreme Court of Canada in 1997. In the decades following Douglas’ term as governor, Aboriginal land was carved away, first by BC Commissioner of Lands and Works Joseph Trutch, then by the Indian Reserve and McKenna-McBride Commissions. The resulting reserve lands in BC are disjointed, marginalized and subject to right-of-way. By dislocating First Nations people from traditional territories and establishing the reserve system, the government made its first, and geographically most broad, attack on Aboriginal homeland.

Between 1861, when the first residential school was established in BC, and 1983, when the province’s last residential school closed, the Canadian government crossed the threshold of Aboriginal homes to force children out. Starting in 1920, Aboriginal parents were required by law to send their children to residential schools. Here, multiple generations children were taught to feel shame in their heritage, language, customs and spiritual traditions, and in their place learned fear, abuse, and punishment. Residential schools were sites of ritualized abuse and aggressive assimilation of young Aboriginal children (Chansonneuve, 2005). Like modern homelessness, residential school attendance put students at elevated risk of death: an estimated half of all students died during the residential school period (Milloy, 1999). The destruction of Aboriginal homes through this system of forced assimilation is demonstrated in the association between residential

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school survival and living on the street: 84% of homeless Aboriginal people in Victoria were affected by the residential school system (United Native Nations Society, 2001).

“For those who attended residential schools, locating home, was often a difficult process…returning to reserve communities at the end of their “schooling” was often a culturally confusing and stressful experience” (Ruttan et al., 2010).

In response to the home void created by the residential school system, the BC government initiated aggressive child welfare policies, which amounted to wholesale abduction of Aboriginal children. In the “Sixties Scoop,” thousands of Aboriginal children were apprehended and placed in foster or adoptive homes across Canada (Gough, Trocmé, Brown, Knoke, & Blackstock, 2005). These homes are often culturally alien, with little attempt to keep siblings together or place children in their own communities. Though removal from biological parents is often permanent, placements are not and children frequently move several times while in care.

Five decades on from the Sixties Scoop, the abduction of Aboriginal children sanctioned by provincial child welfare laws has not ceased. Aboriginal children across Canada are still disproportionately represented in the system. Up to one in 10 Aboriginal children are in care, compared to one in 200 non-Aboriginal children (Blackstock, 2008). Through the Health and Home Project, Robertson conducted monthly interviews with 14 women (10 of whom were Aboriginal) living with HIV in Vancouver's Downtown Eastside. Calling on the stories of several Aboriginal in the study who experienced foster care, Robertson describes “homelessness at home,” where “histories of rebellion, loss and abuse” occur in stark contrast to home as a nurturing space where “children grow towards independence” (Robertson, 2007). A cross-sectional study of over 3,000 youth who use injection drugs in several cities in the United States examined housing status and risk of HIV. This study found that ever having been in foster care was associated with future
homelessness (Coady et al., 2007). Using Aboriginal research methodologies, Baskin studied the structural determinants of homelessness among 24 Aboriginal youth in Toronto. This study revealed that many children leave their foster homes because the streets provide a better alternative (Baskin, 2007). Other researchers have observed that Aboriginal youth comprise half of all homeless youth who have been in care (Serge, Eberle, Goldberg, Sullivan, & Dudding, 2002). Housing instability has also contributed to child apprehension as unstably housed parents are often considered unfit to take care of children (Bodor, Chewka, Smith-Windsor, Conley, & Pereira, 2011).

Sexual abuse is one of the most disastrous corollaries of the residential school and child welfare systems among Aboriginal people in Canada (Pearce et al., 2008). Findings from the 1996 Royal Commission on Aboriginal Peoples report illustrated the degrading, violent, and often sexualized, ways that the residential school system attempted to “kill the Indian in the child” (Royal Commission on Aboriginal Peoples, 1996). As former students of residential schools raise children and grandchildren, learned abuse is evident in communities where interpersonal violence and drug dependencies are pervasive (Brave Heart, 2003; Christian & Spittal, 2008; Wesley-Esquimaux & Smolewski, 2004). Further, children in care face higher risk of experiencing childhood sexual abuse in foster homes compared to those who have not been apprehended (Save the Children Canada, 2000). Elifson and colleagues investigated the relationship between housing instability and HIV risk among 336 adult women in Atlanta over time. These researchers and others have demonstrated that sexual abuse, including childhood sexual abuse, is a significant predictor of housing instability, especially among women (Eastwood & Birnbaum, 2007; Elifson, Sterk, & Theall, 2007).

Access to safe spaces must be considered within the context of the intergenerational impact of colonialism, specifically the reserve, residential school, and child welfare
systems, as well as high rates of childhood sexual abuse. The terms historical or intergenerational trauma are used interchangeably throughout this thesis to refer to the collective emotional and psychological injury that is the legacy of Canada’s colonial relationship with Aboriginal people (Brave Heart, 2003). Intergenerational or historical trauma occurs when the effects of trauma are not resolved in one generation and are passed on to children and grandchildren (Chansoneneuve, 2005). Unresolved trauma manifests itself in peoples’ lives through maladaptive social and behavioural patterns, including high rates of addiction, suicide, violence, and sexual abuse in Aboriginal communities (Chansoneneuve, 2005; Wesley-Esquimaux & Smolewski, 2004).

Severing of family and community ties has left an indelible mark on individuals and communities across generations, and has created “a homeless state” (Christian & Spittal, 2008; Menzies, 2009). Aboriginal scholars and leaders have argued that Aboriginal homelessness and unstable housing is a result of historic dispossession of traditional territories and forced displacement from community structures (Dodson, 2010; Leach, 2010; Menzies, 2009; Reading & Wien, 2009; Ruttan et al., 2010; United Native Nations Society, 2001). The lasting impact of this forced displacement of Aboriginal people can be seen in poor housing outcomes in rural, reserve, and urban communities across Canada. Throughout this thesis we distinguish between historical trauma (directly related to colonial policy) and lifetime trauma (traumatic life experiences associated with impact of colonialism). Next, we examine how unresolved historical and lifetime trauma that has contributed to the creation of a homeless state has simultaneously increased Aboriginal people’s vulnerability to HIV.
A structural framework for understanding HIV vulnerability in the context of safe spaces

A structural framework of HIV vulnerability conceptualizes an “environment of risk” in which HIV infection occurs, emphasizing the role of factors exogenous to the individual that influence their risk of contracting HIV (Farmer, Connors, & Simmons, 1996; Rhodes, Singer, Bourgois, Friedman, & Strathdee, 2005; Rhodes, 2002). In her literature review on the topic, Sumartojo argues that taking a structural perspective of HIV vulnerability requires a shift in thinking away from the perception that behaviour is personally motivated, to understand that an individual’s ability to avoid exposure to HIV is shaped by economic, social, policy, and organizational factors, as well as other aspects of the environment (Sumartojo, 2000). Rhodes and Sumartojo both argue that structural factors can be either barriers or facilitators to an individual’s agency to act on knowledge about safer sex and drug use (Rhodes et al., 2005; Sumartojo, 2000). Based on his experiences working in Haiti’s Central Plateau, Farmer uses the term "structural violence" to refer to the social and economic forces that dictate the life choices of his patients (Farmer, 1996). He argues that, "life choices are structured by racism, sexism, political violence, and grinding poverty" and that these large-scale social forces conspire to constrain agency, particularly when it comes to HIV/AIDS prevention (Farmer, 1996). Further, this structural violence is intimately linked with the actions of the powerful; it cannot be seen exclusively through the lens of economic poverty (Farmer, 1996).

The importance of considering power differentials is clearly illustrated in the literature around gender inequality as a structural level cause of HIV vulnerability. Parker and colleagues categorize structural factors that facilitate HIV transmission into three broad categories, including poverty, mobility, and gender inequality. He cites the disintegration of
traditional socio-economic structures and exacerbation of inequality as contributing to situations of increased migration or mobility that in turn contribute to the spread of HIV. Parker notes that the interplay of poverty and mobility in HIV risk are gendered as they influence intimate relations, condom use, and sex work (Parker, Easton, & Klein, 2000). Zierler and Krieger frame women's risk of HIV within deepening economic and social inequality in the United States and women's strategies for living within and against these inequalities (Zierler & Krieger, 1997). They suggest that, "Women’s struggles with and resistance to social and economic subordination include strategies for survival that bear the burden of drug use, violence, hunger, social disintegration, and sexual risk" (Zierler & Krieger, 1997). Farmer et al. add that poverty, addiction, and violence interfere with women's ability to negotiate safe sexual encounters, and erode women's autonomy more broadly (Farmer, Lindenbaum, & Good, 1993).

Rhodes has chosen to emphasize the impact of structural factors on HIV in terms of a “risk environment” (Rhodes et al., 2005; Rhodes, 2002). According to Rhodes,

“A focus on the risk environment encourages us to think about the social situations and places in which harm is produced and reproduced. We can define the risk environment as the space – whether social or physical – in which a variety of factors interact to increase the chances of [sex- and] drug-related harm” (Rhodes, 2002).

In contrast, “enabling environments” are locations where drug- and sex-related HIV vulnerability can be reduced (Rhodes, 2002). Enabling environments or “safe spaces” encompass more than physical environments and instead may be defined physical, social, emotional, or spiritual locations where people feel dignity, value, belonging and respect. Safe spaces have qualities or dimensions that are simultaneously material, meaningful, and spatial (Rourke et al., 2012). Further, these qualities constitute mechanisms through
which space and place affect both mental and physical health (Jacobson, Oliver, & Koch, 2009; Rourke et al., 2012).

In the next section we examine the way in which housing status – what Sumartojo might term an "intermediate level" barrier to HIV prevention – comprises an important structural determinant of HIV (Sumartojo, 2000). Before we consider the material, spatial and meaningful dimensions of housing status as a safe spaces or enabling environment, it is important to understand that individuals experience a range of homelessness and housing arrangements (Greene et al., 2010). Instead of a fixed state, housing status must be understood as a dynamic process characterized by multiple transitions, with "literal homelessness at the most extreme among a range of unstable and inadequate living arrangements which can compromise health" (Aidala & Sumartojo, 2007; Greene et al., 2010; Metraux, Metzger, & Culhane, 2004).

**Material**

Direct physical aspects of space and place, as well as economic aspects, make up the material qualities of safe spaces (Aidala & Sumartojo, 2007). For example, material qualities may include housing quality or affordability of housing, as well as freedom from violence. Through in-depth interviews with 38 young people involved in the drug scene in Vancouver, Fast and colleagues observed that freedom from physical violence is a very important aspect of the materiality of safe spaces (Fast, Shoveller, Shannon, & Kerr, 2010). Neal interviewed 46 women who self-identified as homeless in three Canadian cities, hearing from many participants that, "a home is more than roof over one's head. It is also a place where they, as women, can be safe and secure and have a little privacy and control over their living spaces" (Neal, 2004). Aidala and Sumartojo define the material aspects of housing as "the direct physical aspects of housing which confer a protected
space and facilities for maintaining physical well-being” as well as economic considerations related to housing (Aidala & Sumartojo, 2007). The Canadian Government uses the Core Housing Need Model to determine the material acceptability of housing in Canada, defining “core housing need” as housing that does not meet adequacy, suitability or affordability standards. *Adequacy* refers to the condition of the housing; an adequate dwelling is one where no major repairs are required. *Suitability* refers to the amount of space available per person. *Affordability* is defined as housing that is both suitable and adequate that costs less than 30% of household income.

Statistics Canada’s 2006 report on the status of Aboriginal people in Canada reported that Aboriginal people were almost four times as likely to live in a crowded dwelling and three times as likely to live in a dwelling in need of major repairs compared to non-Aboriginal people in Canada (Statistics Canada, 2006). Though adequacy and suitability are major concerns for 27.5% and 23% of Aboriginal households in core housing need, respectively, affordability is the biggest concern for Aboriginal people living in core housing need (Belanger, Head, & Awosoga, 2012). Nearly eighty percent (77.9%) of Aboriginal households in core housing need in Canada do not meet the affordability standard (Belanger et al., 2012). In other words, these residents are paying more than 30% of their gross household income for costs of rental or ownership.

Using Statistics Canada data from 2006, Belanger et al. reported lower rates of home ownership among Aboriginal people in Canada compared to other Canadians (Belanger et al., 2012). Rental residents face the highest rates of “core housing need” across Canada: renters account for 77% of Aboriginal core need nationally (Canadian Aboriginal AIDS Network, 2010). Housing need among Aboriginal people in Canada is concentrated among young family households, often headed by single mothers; close to 60% of Aboriginal households in core housing need are under 45 years of age (Belanger
et al., 2012). In British Columbia, Aboriginal people’s home ownership rate was 17.3% lower than the provincial rate (69.7% compared to 53.4%) (Belanger et al., 2012). In 2006, 27% of off-reserve status Indian households in British Columbia were in core housing need, rising to 39.5% among rental households (Canada Mortgage and Housing Corporation, 2009). Belanger et al. note that Aboriginal renters are considerably worse off than their non-Aboriginal counterparts (Belanger et al., 2012).

With inadequate housing options for Aboriginal people in cities, rural areas and on-reserve, the risk of homelessness increases, in particular at points of transition, such as moving to a new city or experiencing a disruption in living situation. The United Native Nations Society estimates “that 41% of all Aboriginal peoples in British Columbia, Canada are at-risk of homelessness and 23% are absolutely homeless” (United Native Nations Society, 2001). Canada-wide, Aboriginal people are “more likely to become homeless than their non-Aboriginal counterparts by a factor of 10” (Hwang, 2001). In Prince George and Vancouver, Aboriginal people represent 66% and 36% of homeless populations, respectively (Kraus, Woodward, Billows, Greenwell, & Alvarez, 2010; Kutzner & Ameyaw, 2010). In both cities, Aboriginal women and youth were disproportionally represented among the homeless.

Several factors contribute to disproportionate material housing deficits among Aboriginal people in Canada, and in BC more specifically. At the meta level, there is a lack of overarching policy to tackle housing in Canada. Housing advocate Micheal Shapcott has called for a National Housing Strategy – Canada is one of the few countries in the world without one – without which Canada will continue to violate citizens’ rights to both health and housing (Shapcott, 2009). At the structural level, systemic barriers including poverty, discrimination, and inadequate social assistance have also been cited as factors that put individuals at elevated risk of homelessness (Belanger et al., 2012; Cooke & Bélanger,
Belanger and colleagues have noted that housing discrimination on the basis of culture and perceived economic standing affect Aboriginal people's quest for housing and work in urban contexts (Belanger et al., 2012; Cooke & Bélanger, 2006). Other researchers have emphasized shortage of on-reserve housing, and lack of affordable and appropriate housing options in the city exacerbated by gentrification and reduction of rental units as cause of Aboriginal homelessness (Bodor et al., 2011; Leach, 2010; Native Women’s Association of Canada, 2007). At the family or community level, factors that increase risk of homelessness or reliance on marginal housing include disruption in domestic situations, such as conflict with a roommate or end of an intimate relationship. Disproportionate rates of domestic violence contribute further to family breakup and loss of housing in Aboriginal communities (Mccallum & Isaac, 2011). Finally, high rates of incarceration, mental health issues and substance use are obstacles to securing and maintaining housing (Leach, 2010; Native Women’s Association of Canada, 2007). Researchers have highlighted the role of de-institutionalization without adequate supports as a major contributor to Aboriginal housing instability and homelessness in Canada (Native Women’s Association of Canada, 2007).

**Spatial**

The spatial qualities of safe spaces are relational; they reflect how individuals move through spaces, as well as how control and self-determination play out in physical environments, and how this in turn supports or violates dignity and health. Particularly relevant for this discussion of place-based safety for young Aboriginal people is understanding how neighbourhood and mobility influence vulnerability to HIV infection.

Several studies also report that control and self-determination over space play a significant role in how physical environment affects health (Dunn, 2002; Fast et al., 2010;
Jacobson et al., 2009; Robertson, 2007). Jacobson et al. describe how individuals navigate private, public and quasi-public spaces, arguing that access to private spaces offer the greatest sense of dignity by affording self-determination over space. In contrast, “a defining feature of life in the city for members of socially marginalized groups is to be barred from many private areas. Such individuals thus must conduct most aspects of their lives in public and quasi-public spaces and places” (Jacobson et al., 2009). Robertson offers a poignant example in her study of women living in Vancouver’s Downtown Eastside when she describes street and hotel living environments as places where open door policies rule, while private spaces provide a “sense of freedom to undertake simple activities…where ‘no-one is there to tell you anything’” (Robertson, 2007).

Unstably housed Aboriginal people in Western Canada have been described as “hyper-mobile,” a symptom of chronic housing distress (Distasio, Sylvestre, & Mulligan, 2005). A recent study of hidden homelessness among Aboriginal people in Canada’s Prairie cities found that almost 45% of respondents had lived in three or more places over the past six months. Youth and women were over represented in this highly mobile group (Distasio et al., 2005). In an Ontario study by Berman et al, Aboriginal girls “described uprooting as a pervasive and recurrent feature of their lives” (Berman et al., 2009). Little research has been done to describe the pathways that these housing and geographic transitions take, though they are likely to include movements within cities and neighbourhoods, and between cities, rural areas, and reserves. Robertson notes that “moves within the DTES corresponded with evictions; decreased or increased cash flow; periods of hospitalization for drug and alcohol treatment, mental and physical illness and/or injury; disgust with sanitary conditions; or a response to the degree of violence and drug use” (Robertson, 2007). Among street-involved youth in Vancouver, Fast et al. explain that “nowhere is safe for street-involved youth” and remaining highly mobile is a spatial tactic
employed to remain safe on the streets (Fast et al., 2010). Researchers in Baltimore, USA found that transience among 807 adults who use injection drugs was associated with incarceration, homelessness, and younger age (German, Davey, & Latkin, 2007).

Where individuals are moving to, not just whether they are highly mobile, may have a significant impact on their perceived and actual vulnerability (Aidala & Sumartojo, 2007; Fast et al., 2010; Maas et al., 2007; Robertson, 2007; Werb et al., 2010). Urban or neighbourhood deprivation and disadvantages is a factor critical to the social production of HIV risk associated with drug injecting (Rhodes et al., 2005). “Homeless and unstably housed are not randomly distributed throughout a city or geographic area but concentrated in the most devastated neighbourhoods…both housing situation and neighbourhood can be sources of comfort and protection, or environments where a variety of factors exogenous to the individual interact to increase risk and vulnerability” (Aidala & Sumartojo, 2007). Both Robertson and Fast et al. found that among participants in their studies, the Downtown Eastside neighbourhood was perceived as a place of HIV risk (Fast et al., 2010; Robertson, 2007). Maas et al. have contributed evidence of this escalated risk, demonstrating that among people who used injection drugs, those living in the Downtown Eastside had almost a twofold higher risk of HIV compared to those living elsewhere in Vancouver, even controlling for other drug-use factors (Maas et al., 2007). Further, the DTES was perceived as a place where drug use escalated and entry into sex work was common. Choosing not to enter that particular neighbourhood was seen as a “spatial tactic” to avoid these perceived risk (Fast et al., 2010).

Meaningful

The spaces that individuals inhabit play a major role in determining both identity and self worth. Aidala and Sumartojo report that the belonging associated with experiencing a
“sense of home” provides an “ontological security – a sense of order, continuity and meaning with regard to an individual’s experiences” (Aidala & Sumartojo, 2007). Jacobson et al. add that, “Spaces are prime ‘arenas of identity formation’ in which individuals come to learn who they are through where they are” (Jacobson et al., 2009). The social meaning attached to inferior material conditions of housing plays an important but sometimes overlooked role in health and well-being (Dunn, 2002).

As a result, socio-spatial locations can be stigmatizing. Internalized or external stigma related to both physical and social locations either promote or violate dignity in the daily lives of young Aboriginal people (Mann, 1998). “Place has been identified as the site of symbolic violence in which those experiencing marginalization internalize forces of exclusion, stigmatization and poverty, which are then understood and experienced as personal deficiencies or shortcomings” (Fast et al., 2010). This internalized symbolic violence is enhanced when the unfairness of poverty and homelessness are magnified in cities where others who are well-off and housed are treated differently (Jacobson et al., 2009). Socio-spatial meaning is linked with health and well-being through the way in which it “shapes the production and reproduction of risk perception and identity” (Aidala & Sumartojo, 2007; Rhodes et al., 2006).

Memmott and Chambers, who work with Australian indigenous communities, argue that place plays a particular role in identity for Aboriginal people, and use the term, “spiritual homelessness” to refer to the impact of colonial policy on place-based identity formation:

“A state arising from separation from traditional lands, and from family and kinship networks…as a result of historical governmental policies, and involving a crisis of personal identity wherein a person’s understanding or knowledge of how they relate
to country, family and Aboriginal identity systems is confused or lacking” (Memmott & Chambers, 2010).

Cultural safety

Use of the word “safe” in this conceptual framework around housing status is deliberate as it seeks to amplify the existing call for “cultural safety” in interactions between Aboriginal people and services such as the health care system. In a health care setting, “cultural safety” demands that individuals, organizations and governance structures privilege not just an understanding of Aboriginal worldview (“cultural competence”), but of power imbalances and structural violence experienced by colonized peoples that shape interactions between health care providers and Aboriginal clients. Cultural safety,

“Focus[s] attention on 'life chances - ie, access to health services, education and decent housing within an environment in which it is safe to be born brown - rather than lifestyles, ie, ethnography'. Cultural safety is, therefore, not about 'cultural practices'; rather it involves the recognition of the social, economic and political position of certain groups within society” (Smye & Browne, 2002).

In the context of housing status, cultural safety is about the interrogation of the social, cultural, and political structures that shape access to safe spaces among young Aboriginal people who use drugs.

The decision to use the term “safe spaces” also reflects the often gendered emphasis of home as a place of safety and security (Fast et al., 2010; Neal, 2004). Safety and security can reflect both material (i.e., freedom from violence and physical harm) and meaningful (i.e., freedom from stigmatization and “othering”) dimensions (Robertson, 2007). Zandy (1990), quoted in (Robertson, 2007) captures the essence of safe spaces in
her description of home: “home is an idea: an inner geography where the ache to belong finally quits, where there is no sense of ‘otherness’, where there is at last community.”

Finally, focusing on safety, rather than risk, is a way of recognizing the structural underpinnings of vulnerability, instead of looking narrowly at individual characteristics and behaviours that dominate in risk factor analyses (Fast et al., 2010). It also acknowledges that young Aboriginal people navigating substance use and chronic poverty, as well as intergenerational and lifetime trauma, are likely consumed by a daily project of seeking safety, in contrast to the popular image of street involved youth as criminals or victims (Fast et al., 2010).

Despite the structural context which restricts access to safe spaces for young Aboriginal men and women, it is important to recognize young people’s agency in identifying and creating safe spaces in their own lives. Robertson, in her ethnographic examination of stigmatized space in Vancouver’s Downtown Eastside neighbourhood describes Aboriginal women as inhabiting “a terrain defined by a sense of apartness scripted to some considerable extent by Canadian colonial legislation” where “social cartography is shaped by experiences of racism and the reserve system, by the dislocations of residential school and foster care” and the “often-racialized stigmata of HIV, drug use and poverty” (Robertson, 2007). However, she also argues that Aboriginal women living in the Downtown Eastside assert their agency to “resist, control or accommodate these spatial regimes” through an act she calls “taming space” (Robertson, 2007). Fast et al. describe young people’s use of “spatial tactics” to navigate local “geographies of power,” such as deciding to move out of areas where they feel like they are most vulnerable, or being highly mobile (Fast et al., 2010).

In sum, HIV does not exist in a vacuum; de Guzman argues against the notion that HIV/AIDS is a democratic disease, but rather is “concentrated in population groups that
were already marginalized, stigmatized and discriminated against within society” (De Guzman, 2001). In the context of historical and lifetime traumatic experiences, young Aboriginal people who use drugs face an ongoing struggle to establish personal safety, including social, cultural, spiritual, emotional and physical safety. Safe spaces, including places to inject drugs, to live and to work, play a crucial role in determining vulnerability to HIV. To understand the role of space and place in HIV vulnerability among young Aboriginal people who use illicit drugs, we must look beyond the individual risk behaviour model towards a structural understanding of HIV vulnerability.

**HIV epidemic among young Aboriginal people in Canada and its intersection with housing status**

The Public Health Agency of Canada (PHAC) reported in 2010 that Aboriginal people remain significantly over represented in the HIV/AIDS epidemic in Canada (Public Health Agency of Canada, 2010a). Aboriginal people living with HIV represent an increasing proportion of prevalent HIV infections. Although Aboriginal people comprise 3.8% of the total Canadian population, they account 8% of Canadians living with HIV, up from 7.4% in 2005 (Public Health Agency of Canada, 2010b). In 2008, 12.5% of new infections occurred among Aboriginal people – a rate 3.6 times higher than among non-Aboriginal people (Public Health Agency of Canada, 2010a). A similarly disproportionate burden of HIV has been observed among Aboriginal people living in BC. The most recent HIV surveillance report from the BC Centre for Disease Control (BCCDC) found that 14.9% of HIV cases diagnosed in 2011 were among Aboriginal people, although Aboriginal people account for only 5% of the total provincial population (BC Centre for Disease Control, 2011). Estimates suggest that HIV prevalence among Aboriginal people in BC is between 1.26% to 1.66% (Hogg, Strathdee, Kerr, Wood, & Remis, 2005). Aboriginal women in particular are
overrepresented in Canada’s HIV epidemic. Aboriginal women accounted for almost 50% of all HIV cases among Aboriginal people recorded between 1998 and 2008, whereas female cases accounted for only 21% of infections among other ethnicities in Canada during this time period (Public Health Agency of Canada, 2010a). The BCCDC noted that Aboriginal women comprised more than 30% of new HIV diagnoses among women in BC in 2011 (BC Centre for Disease Control, 2011).

Illicit drug use, and injection drug use in particular, place Aboriginal people in Canada at an increased risk of HIV infection (Canadian Aboriginal AIDS Network 1998; K. J. P. Craib et al. 2003). Injection drug use is accountable for the highest proportion of infections among Aboriginal men and women (Public Health Agency of Canada, 2010b). Sixty-six percent of new infections among Aboriginal people in Canada in 2008 are attributed to intravenous drug use, compared to 17% of new infections among all Canadians (Public Health Agency of Canada, 2010a). Considerable research about Aboriginal people who use injection drugs’ elevated vulnerability to HIV has come out of the Vancouver Injection Drug Use Study (VIDUS). The study has found that among individuals who use injection drugs, Aboriginal people are more likely to be living with HIV and to become infected with HIV compared to their non-Aboriginal peers (K. J. P. Craib et al., 2003). HIV prevalence at baseline was higher among Aboriginal people and Aboriginal ethnicity was independently associated with elevated HIV incidence (Wood et al., 2008). A comparison of male and female enrolled in VIDUS identified that Aboriginal ethnicity was significantly associated with HIV sero-conversion among both men and women who injected drugs (Spittal et al., 2002). Subsequent findings from the same cohort observed that cumulative HIV incidence among Aboriginal participants was double that of non-Aboriginal participants (21.1% vs. 10.7%) (K. J. P. Craib et al., 2003). An analysis of participants under 24 years of age found that Aboriginal youth who inject drugs were more
than four times as likely to be HIV-infected at enrolment and were more than twice as likely to become HIV-infected during follow-up than non-Aboriginal youth who inject drugs (C. Miller et al., 2006). Researchers have argued that the disproportionate incidence and prevalence of HIV among Aboriginal people in Canada are a result of ongoing discrimination, cultural disruption and systemic poverty (Duncan et al., 2011).

**HIV and housing**

The three dimensions of housing status discussed earlier in this chapter – material, meaningful, and spatial – affect both dignity and health. The impact of housing status on health and dignity is most evident at the extreme end of housing instability: homelessness. Though the risk factors for homelessness are strong independent risk factors of poor health, homelessness itself is a significant barrier to wellness. Homeless individuals face increased vulnerability to disease, obstacles to care, and high rates of hospitalization. As noted earlier, homelessness also puts individuals at increased risk of death. Simultaneously, unhealthy individuals find themselves disadvantaged in the housing market (Bryant 2008).

The relationship between housing status and HIV infection has been widely documented, both in terms of prevention and treatment (Aidala & Sumartojo, 2007; Corneil et al., 2006; Dickson-Gomez et al., 2009; Hillis et al., 2012; Marshall et al., 2009; Wolitski et al., 2010). Using data from VIDUS, Corneil and colleagues observed that unstable housing was marginally associated with elevated risk of HIV infection (Corneil et al., 2006). In a qualitative study of 65 active drug users, Dickson-Gomez et al., revealed that differences in housing status affect both HIV risk and protective behaviours (Dickson-Gomez et al., 2009). Researchers with the At Risk Youth Study of 529 street-involved youth in Vancouver found that homelessness was associated with several sex-related risk
behaviours (Marshall et al., 2009). Others have provided evidence of a dose-response relationship between housing status and HIV (Elifson, Sterk, and Theall 2007; E Rice, Milburn, and Rotheram-Borus 2007; Rosenthal et al. 2007). In addition, transience (German, Davey, and Latkin 2007) and type of housing have been identified as important factors related to the relationship between housing status and HIV. From a structural perspective, stable housing provides an environment where individuals have greater control and agency to act on existing knowledge about safer sex and drug use practices; "longitudinal research indicates that formerly homeless individuals who obtain housing are more likely to cease or reduce both drug-related and sexual risk behaviours" (Aidala & Sumartojo, 2007).

**Drug use:** Drug use, and injection drug use in particular, is the primary mode of exposure to HIV among Aboriginal people in Canada. Space and place play a significant role in shaping drug use, including intensity and safety of drug practice. Homelessness and housing instability have been associated with shooting gallery use (German et al., 2007; Metraux et al., 2004); daily crack cocaine and methamphetamine use, as well as daily injection of heroin and cocaine (Coady et al., 2007; Corneil et al., 2006); syringe sharing (Corneil et al., 2006; German et al., 2007; Metraux et al., 2004); using drugs in a public setting (Elifson et al., 2007); rushed injection (Dickson-Gomez et al., 2009); and not accessing drug treatment (Corneil et al., 2006). Further, some drug users reported increasing their drug use to cope with the stress of being homeless, and the challenges of reducing or stopping drug use in shelter environments (Dickson-Gomez et al., 2009). Housing can help to stabilize drug use, reduce unsafe injections and provide a safe place to store clean needles between injections (Dickson-Gomez et al. 2009).

**Safe sex:** "Particularly important for understanding relationships between housing and HIV is the extent to which access to housing structures intimate relations" (Aidala and
Sumartojo 2007). For example, women in sex work who have a safe place to conduct business can increase control over condom use and reduce the danger of a bad date (Krüsi et al., 2012). Others have suggested that housing instability can increase the risk of transactional sex (Dickson-Gomez et al., 2009). The link between housing status and sexual vulnerability to HIV has been demonstrated to be especially relevant to young Aboriginal people: Marshall et al. found that in a cohort of street-involved youth living in Vancouver, Aboriginal ethnicity was significantly associated with HIV infection (OR: 2.87, 95% CI: 1.02-8.09), but that lower rates of injection drug use and hepatitis C co-infection in this group suggested that factors other than injection drug use may be driving HIV infection (Marshall et al., 2008). Hwang has also noted that HIV vulnerability among street youth is distinct from that of homeless adults, because young people face major sexual and reproductive health challenges, including high rates of sexually transmitted infections (Hwang, 2001). In fact, inconsistent condom use (Corneil et al., 2006); sex work (Coady et al., 2007; Corneil et al., 2006); sexual abuse (Elifson et al., 2007); and higher numbers of sex partners (Coady et al., 2007; Marshall et al., 2009; Wenzel, Tucker, Elliott, & Hambarsoomians, 2007) have all been associated with housing instability and homelessness. A study of women involved in street-based sex work in Vancouver found that sleeping on the street was associated with younger age, sexual violence by non-commercial partners, servicing a higher number of clients, and servicing clients in public spaces (Duff, Deering, Gibson, Tyndall, & Shannon, 2011). However, other studies have found that housing instability and transience was not associated with sexual risk, including sex work, number of sexual partners, and condom use (German et al., 2007; Rosenthal et al., 2007).

**Social meaning:** Though the interplay between self-esteem, housing status, and HIV is not well understood, it is possible that the positive identity and meaning imbued in a
strong sense of home or place could influence both drug and sexual behaviour. Elifson et al. have suggested that, “psychosocial measures such as lower levels of self-esteem, higher levels of depression, lower levels of assertiveness are associated with adverse behavioural outcomes such as more drug use/abuse and more involvement in risky sexual behaviours. It is quite plausible that housing status may influence levels of psychological and psychosocial functioning and, in turn, risky drug use and sexual behaviour” (Elifson et al., 2007).

**Unstable housing and homelessness:** Unstable housing has been independently associated with both HIV and Hepatitis C infection. Some researchers have also found a dose response relationship between HIV and the housing continuum (Elifson, Sterk, and Theall 2007; Coady et al. 2007). Others have noticed that the longer someone has spent on the street, the more vulnerable they are to infection (Rosenthal et al. 2007; German, Davey, and Latkin 2007; E Rice, Milburn, and Rotheram-Borus 2007).

Links between housing status and HIV have also been identified in studies involving Aboriginal people in Canada. *The Positive Spaces, Healthy Places study* of housing among people living with HIV in Ontario found evidence of poor housing outcomes among Aboriginal people living with HIV, including an independent association between Aboriginal ethnicity and history of homelessness (L. E. Monette et al., 2011). Sixty-one percent of Aboriginal participants living with HIV reported experiencing homelessness at least once, with 30% reporting being homeless more than five times. Aboriginal women were more likely than men to report frequent homelessness (L. Monette et al. 2009). When the same study compared housing experiences of Aboriginal participants and Caucasian participants, Aboriginal people living with HIV were more likely to live in unstable housing (8% vs. 2%, *p*=0.012) and were almost twice as likely to have a history of homelessness (L. E. Monette et al. 2011). A prospective cohort of street-involved youth who use illicit
drugs found that Aboriginal participants were almost three times more likely to be HIV positive than other participants (Marshall et al. 2008). In the VIDUS, incident HIV infections were predicted by both Aboriginal ethnicity and unstable housing (Tyndall et al., 2003). Previous research from the Cedar Project found that young Aboriginal women who slept on the street were more likely to be HIV and HCV positive than their male counterparts (Bingham 2009).

**Intersectionality**

It is important to acknowledge that race cannot be neatly separated from other social relations that structure people’s lives (Smye, Browne, Varcoe, & Josewski, 2011). Young Aboriginal people who use illicit drugs face multiple, complex and interdependent experiences of oppression related to their age, gender, poverty, ethnicity, substance use, sexuality, participation in the sex trade, and HIV status. Each of these play a different role in reproducing inequality and vulnerability, shaping young people’s vulnerability to HIV.

Each of these dimensions intersect with multiple layers of marginalization, stigma and discrimination. Alongside experiences of historical, intergenerational and lifetime trauma, young Aboriginal people inhabit layers of age, gender, substance use, poverty, stigma and racism that contribute to high vulnerability to both HIV and housing instability. Though it is beyond the scope of this thesis to investigate each of these factors, it is important to briefly highlight the ways in which these can affect the intersection of HIV and housing status.

**Age:** Young people make up a significant proportion of unstably housed and homeless people in Canada. Estimates suggest that one third of homeless people in Canada are between 16 to 24 (Mccallum & Isaac, 2011). In a qualitative study of 38 street-involved youth between ages 14 to 26 living in Vancouver and enrolled in the At-Risk
Youth Study, Krüsi et al. found that youth experienced lack of autonomy and privacy at shelters which promote abstinence from drug use, felt excluded from adult-focused homeless shelters, viewed single room occupancy hotels as unsafe, faced challenges renting from landlords while on welfare, and lacked formal support in attaining a safe place to live (Krüsi, Fast, Small, Wood, & Kerr, 2010).

**Gender:** Researchers have argued for a gendered analysis of unstable housing among Aboriginal people as a result of different systemic factors that determine men and women’s housing status, as well as differing housing and support services available to men and women (Menzies, 2009; Native Women’s Association of Canada, 2007). Klodawsky argues that gendered experiences of homelessness begin with gendered socio-spatial relations; while women are associated with the suburban, the private, and the domestic, men are associated with the urban, the public, and the political. She argues that these gendered spaces play a role in making homeless women both hidden and invisible (Klodawsky, 2006). Others have noted that “women immersed in the street economy occupy a subordinate role in the male-centred street ideology, and are often victims of exploitation, physical and symbolic violence” (Duff et al., 2011). Violence against women and family breakdown are reoccurring themes in the literature to explain women’s turning points towards housing instability and homelessness (Abele, Falvo, & Hache, 2010; Benoit, Carroll, & Chaudhry, 2003; Neal, 2004; Robertson, 2007). Motherhood and domestic roles of women are presented as a major difference in men and women’s housing trajectories as well (Benoit et al., 2003; Greene et al., 2010; Klodawsky, 2006). Aboriginal women, who face higher levels of surveillance by social service agencies to begin with, are at increased risk having children apprehended if they are homeless or unstably housed (Native Women’s Association of Canada, 2007).
**Substance use:** Substance use is often a significant barrier to finding and maintaining housing. As well, trying to move out of substance use, while living in housing in close proximity to others with active addictions and easy access to drugs, is a barrier to stopping or reducing drug use (Greene et al., 2010; Klodawsky, 2006; Robertson, 2007). Others have noted that the stress of homelessness can escalate substance use (Dickson-Gomez et al., 2009; Duff et al., 2011). Together, these findings suggest that substance use is both a cause and effect of housing instability.

**Poverty:** That socio-economic status and health status are significantly positively related is well established (Dunn, 2002). The median income of Aboriginal people in Canada was 30% lower than the median income of the rest of Canadians in 2006 (D. Wilson & Macdonald, 2010). In BC, twice as many Aboriginal people were considered “low income” than other Canadians in 2005 (B.C. Stats, 2011). Reliance on social assistance is a significant barrier to establishing a safe, secure, and affordable home. Market rental costs are often way above allotted amounts for rent, and individuals receiving assistance are unable to meet all costs related to food, shelter, utilities and other expenses. Current maximum shelter allowances for BC income and disability assistance range from $375 to $820 (Ministry of Social Development, n.d.). Average rents for a one-bedroom apartment in Prince George and Vancouver are $588 and $934, respectively (Canada Mortgage and Housing Corporation, 2011). Neal reports that “the economics of state assistance requires doubling up, squatting, and frequent moves between shelters and low-income housing” (Neal, 2004).

**Summary**

In this chapter, we have provided a framework that will guide how we examine
housing status among young Aboriginal people who use drugs in the following chapters. We have introduced the concept of safe spaces and how they relate to the material, meaningful and spatial dimensions of housing. We have started to link housing status to historical trauma, and suggested that approaching these issues through a cultural safety and intersectional lens can be used to interrogate the multiple and systemic challenges young Aboriginal people who use illicit drugs face, especially in relation to HIV vulnerability.

For people vulnerable to, or living with, HIV, housing is a matter of life and death. As Aidala and Sumartojo have articulated so clearly, “the same ‘fundamental causes’ put people at risk for both homelessness and HIV infection: economic and political contexts, inequality of opportunities and conditions, social processes of discrimination and exclusion” (Aidala & Sumartojo, 2007). The stability that a roof and walls provide can help prevent HIV infection and improve quality of life for people living with HIV. Canada’s housing policy choices are also determinants of the health of those living with HIV and those at risk of infection.
Chapter 2: Methods

The Cedar Project

This research takes place within the Cedar Project, a community-based prospective cohort study of young Aboriginal people in Prince George and Vancouver, British Columbia who use illicit drugs. It is governed by the Cedar Project Partnership, an independent body of Aboriginal leaders, AIDS service organizations and health service providers.

Started in 2003, the Cedar Project is a prospective study of young Aboriginal people who use injection or non-injection drugs in Vancouver and Prince George, BC. The methods used in the Cedar Project study have been previously published in detail (Patricia M Spittal et al. 2007). For the purposes of this study, young people who self identify as Aboriginal were considered to be the descendants of the First Nation Peoples of North America, including Métis, Aboriginal, First Nations, Inuit and status and non-status Indians.

Participants living primarily in the downtown areas of both cities were recruited between 2003 and 2005 through health care providers, street outreach and word of mouth. Similar to other young “at-risk” cohorts studied to explore the transmission of blood-borne diseases, our eligibility criteria included being between 14 and 30 years of age and having smoked or injected illicit drugs, other than marijuana, in the month before enrolment (Roy et al. 2007; Kerr et al. 2009). Drug use was confirmed using saliva screens (Oral-screen, Avitar Onsite Diagnostics). All participants met with an Aboriginal study coordinator who explained procedures, sought informed consent and confirmed eligibility. Participants completed a detailed questionnaire administered by an interviewer at enrolment. The questionnaire was designed to elicit information on socio-demographic characteristics, patterns of drug use, sexual vulnerability and use of services. At baseline and every six
months, participants complete private follow-up interviews. Venous blood samples are taken and tested for antibodies to HIV and the hepatitis C virus at each visit. Participants are offered pre- and post-test counseling with trained nurses. They are requested, but not required, to return for the results of their antibody tests. Each participant is given a $20 stipend at each visit.

**Study setting**

Cedar Project offices are located in two urban centres – Vancouver and Prince George, British Columbia (BC). In 2006, there were just under 200,000 Aboriginal people living in BC, representing five percent of the population (Milligan, 2006a). Vancouver is BC’s largest city, located on the province’s south-west coast. The population reached just over 600,000 people in 2011, however the larger Metro Vancouver Area is home to over 1.5 million inhabitants (City of Vancouver Planning Department, 2011; Milligan, 2006a). It was estimated that just over 40,000 Aboriginal people lived in Metro Vancouver in 2006, accounting for two percent of the population (Milligan, 2006a). Prince George is a forestry and mining town and the largest urban centre in the northern interior of BC. In 2011, Prince George reached a population of 75,828 (Grundlingh, 2012). There are just under 9000 Aboriginal people estimated to be living in Prince George, accounting for 11% of the population (Milligan, 2006b).

Vancouver's Downtown Eastside (DTES) neighbourhood has been the setting of the province’s largest open-air illicit drug market, and the centre of an explosive HIV epidemic characterized by 18% annual incidence in 1997 (Corneil et al., 2006; Maas et al., 2007). The neighbourhood stretches approximately 10 city blocks and is home to 5,000 of approximately 12,000 people who use injection drugs in Vancouver (Corneil et al., 2006). Among people who inject in the DTES, HIV prevalence reaches 35% (Maas et al., 2007).
The DTES is characterized by extreme poverty, high crime rates, homelessness, unsatisfactory housing, as well as high levels of alcohol and drug use (Maas et al., 2007). There is a high concentration of services targeted towards Aboriginal people, substance users, sex workers, and people living in poverty compared to elsewhere in the city. It is estimated that 40% of DTES residents are of Aboriginal ancestry. The Cedar Project Vancouver office is located in the DTES and it is a neighbourhood where many of the Vancouver-based participants live and spend time. Although the DTES has received considerable attention and study related to both housing and HIV, very little has been documented about Prince George’s downtown core as a setting for high intensity drug use and homelessness.

**Cohort findings**

Previous Cedar Project analyses have highlighted the high levels of vulnerability and resilience of Aboriginal young people in the study. Particularly important for setting the context of the results presented in this thesis are HIV and HCV rates, historical and lifetime trauma, and sex- and drug-related vulnerability of Cedar Project participants.

**HIV:** HIV prevalence among all Cedar Project participants is 12.6% in Vancouver and 3.8% in Prince George. Among participants who report injecting, prevalence is 17.4% in Vancouver and 7.2% in Prince George (Spittal et al., 2007). History of non-consensual sex, residing in Vancouver, and duration of drug use are all independent factors associated with increased risk of HIV infection among Cedar Project participants. At baseline, young women were significantly more likely to test positive for HIV; 13.1% of young women compared to 4.3% of young men were HIV positive (Mehrabadi, Paterson, et al., 2008).
**HCV:** Previous Cedar Project analyses indicate a high HCV prevalence among participants overall (34.8%), and particularly among participants who reported using injection drugs at baseline (59.4%) (K. Craib et al., 2009). HCV prevalence was similar in both Prince George and Vancouver. Young women were significantly more likely to be living with HCV at baseline, compared to young men (43.6% vs. 25.4%) (Mehrabadi, Paterson, et al., 2008). Crude incidence of HCV infection over the study period was 10.6% and incidence density estimate was 9.9 per 100 person-years. Among Cedar Project participants, HCV infection has been associated with daily opiate injection, reuse of syringes, having at least one parent who attended residential school, female sex, and duration of drug use.

**Historical and lifetime trauma:** Sixty-five percent of Cedar Project participants were taken away from their biological parents at a young age (Clarkson, 2009). The median age at which participants were first taken was four years old. Participants involved in the child welfare system were 2.6 times as likely to have experienced sexual abuse and 2.4 times as likely to have been HIV positive at baseline. Having been taken away from biological parents was also associated with having a parent who attended residential school, self-harm, sleeping on the streets, and mental illness. Among those who reported injection drug use, those who had been in the child welfare system were more likely to have overdosed and to share needles.

Almost half (48%) of Cedar Project Participants reported being forced to have sex or molested prior to enrollment in the study, of whom 69% were young women (Pearce et al., 2008). For both males and females, the median age of first non-consensual sex was six years. Sexual abuse was associated with sleeping on the streets, self-harm, mental illness, high numbers of sexual partners, sex work and overdose.
In previous Cedar Project analyses, historical trauma has been found to be significantly associated with baseline housing status. In her Master’s thesis, Bingham found that ever having been on the street for three nights or more at baseline was significantly associated with both childhood sexual abuse and ever having been taken from biological parents (Bingham, 2009). Pearce et al. found that after adjusting for gender, age, marital status and employment, ever having been on the streets for three nights or more at baseline remained significantly associated with experiencing childhood sexual abuse (AOR 2.08, 95%CI: 1.36-3.12) (Pearce et al., 2008). Clarkson observed that participants who reported ever having been in foster care were 1.7 times as likely to report having ever been on the street for three nights or more at baseline (95%CI: 1.2-2.4) (Clarkson, 2009).

Drug use: At enrollment in the Cedar Project, 55.4% of participants reported using injection drugs (C. Miller, Pearce, et al., 2011). At baseline, Vancouver-based participants who inject drugs were more likely to use heroin daily (40% compared to 12%), compared to Prince George participants, who were more likely to use cocaine daily (37% compared to 21%) (Spittal et al., 2007). Prince George participants are also more likely to have difficulty accessing clean syringes (22% compared to 8%). Less than half of participants who inject opiates on a daily basis have ever received methadone maintenance therapy (Yang et al., 2011). Transition to injection is occurring at distressing rates among young Aboriginal people enrolled in the Cedar Project, especially young women. The initiation rate for injection drug use is 11.5 participants per 100 person years, and this transition is independently associated with involvement in sex work (C. Miller, Pearce, et al., 2011).

Sexual vulnerability: At baseline, 59% of young women and 46% of young men in the study reported inconsistent condom use during insertive sex (Chavoshi, 2009). At baseline, 58.8% of the young women enrolled in the study reported having recently been
involved in sex work. Involvement in sex work was associated with high frequency crack smoking and cocaine injection, as well as lifetime sexual abuse (Mehrabadi, Craib, et al., 2008).

**Objectives**

The following study objectives and associated research hypotheses are addressed and presented in Chapter 3.

**Objective 1:** Determine housing patterns and trends among Cedar participants.

1.1 What are the differences between housing status among participants living in Vancouver compared to those living in Prince George?

Hypothesis 1: Young Aboriginal people who use drugs face an ongoing struggle to access safe spaces to live and inject.

Hypothesis 2: Challenges finding and maintaining housing differ between Vancouver and Prince George.

**Objective 2:** Examine the relationship between historical and lifetime trauma and housing instability

Hypothesis 3: Historical trauma plays an important role in determining young Aboriginal people's access to safe spaces.
Objective 3: Investigate the relationship between housing status and HIV infection among young Aboriginal men and women.

Hypothesis 4: Access to safe spaces, including places to use drugs and to live, play a crucial role in determining vulnerability to HIV.

Ethical considerations

This study follows the guidelines provided in the Tri-Council Policy Statement on Ethical Conduct for Research Involving Humans – Chapter 9 Research involving the First Nations Inuit and Métis Peoples of Canada (Canadian Institutes of Health Research, Natural Sciences and Engineering Research Council of Canada, and Social Sciences and Humanities Research Council of Canada 2010). In addition, the study adheres to the principles of Ownership, Control, Access and Possession in relation to research with Aboriginal people. The study was approved by the University of British Columbia and Providence Health Care Research Ethics Boards. Aboriginal collaborators were involved in the conception, design and interpretation of the results of this analysis.

Analysis

Both cross-sectional and longitudinal techniques were employed in the analyses that follow. All analyses only included participants who attended more than one interview during the study period. Cedar Project baseline data were collected between 2003 and 2005 from all enrolled participants. However, data related to housing status variables used throughout this thesis were not consistently collected until follow-up four. As a result, data
from participants who attended follow-up four is considered baseline for this particular
study. Throughout, when the term “baseline” is used, it refers to follow-up four.

Bivariate cross-sectional analyses were used to describe housing patterns and other
characteristics of Cedar Project participants at several points in this thesis. Using IBM
SPSS Statistics Version 2.0, baseline categorical variables were compared between
participants based on housing status using Pearson’s Chi-squared test and Fisher’s exact
tests when expected cell values were five or less. Continuous variables were analyzed
using a Student t-test. All p values are two sided.

Longitudinal analyses utilized data collected during seven six-month intervals
between November 2005 and January 2010. Generalized linear mixed models (GLMM)
were fitted with a Gauss-Hermite approximation to find odds ratio (ORs) for associations
between housing status and sex- and drug-related HIV vulnerabilities over time using R
2.15.0 software with lme4 package. All variables that were significant at p<0.05 were used
to generate multivariable generalized linear mixed models. Ninety-five percent confidence
intervals were calculated.

**Missing data**

Data was carefully explored to determine the extent of missing responses. We
attempted to understand what a missing response meant, and recoded variables to
separate “no” answers from “true missings” where appropriate. Variables where less than
10% of the data were truly missing were considered acceptable. Several variables with
significant proportions of missing data were excluded from the analysis. In other instances,
a sub-sample of data was created such as in the case of intravenous drug use and
consistent condom use (see below). Some variables with more than 10% missing data
were included after careful consideration. We believe that the reason for missing data in
these instances was the highly sensitive nature of the questions being asked. Missing data for all variables included in the analysis remained below 20% of responses. Missing data were omitted from analyses, resulting in slightly different sample sizes for various statistical tests.

Measures

Historical and lifetime trauma: This study utilized three proxy indicators of historical trauma among Cedar Project participants. These variables were measured only once (at enrollment in the study).

1. **Either parent attended residential school**: Participants were asked, “Do you know if your biological parents attended residential school?” and had the option to answer: yes, no, or unsure for either mother or father. This variable was combined to reflect whether either parent had attended residential school. A limitation to this variable is that it does not account for Cedar Project participants who were raised by relatives or other guardians who had attended residential schools, therefore it likely underestimates the intergenerational impact of being raised by a residential school survivor. In addition, it does not capture the community-wide impact of residential schools.

2. **Ever taken from biological parent**: Participants were asked, “Were you ever taken from your biological parents?” and had the option to answer yes or no. Throughout Cedar Project analyses, this indicator has been used as a proxy for whether a participant was involved in the child welfare system or not.

3. **Childhood sexual abuse**: Participants were asked, “Have you EVER been forced to have sex against your will and/or been molested?” and had the option to answer: no, yes, unsure/can't remember, or prefer not to answer.
were also asked, “How old were you when this first happened?” Participants who reported their first experience of forced sex or molestation prior to age 13 were considered to have experienced childhood sexual abuse (yes vs. no). The cutoff of 13 years old is somewhat younger than generally used in the literature. Several studies have used the age of consent to define sexual abuse in childhood and others have defined childhood sexual abuse as forced sex or molestation prior to age 17 (Butchart, Harvey, Mian, & Furniss, 2006; Fergusson, Horwood, & Lynskey, 1997; Kalichman, Gore-Felton, Benotsch, Cage, & Rompa, 2004; Spataro, 2004; Trocmé et al., 2008; Zierler et al., 1991).

Previous studies of sexual abuse in the Cedar Project found that a significant majority of participants who had ever reported having been forced to have sex against their will first experienced sexual abuse at a very young age; 88% of participants who reported experiencing sexual abuse first experienced it prior to their 13th birthday, prompting us to use this younger age as the cutoff for childhood sexual abuse.

**Housing Status Variables:** There is no universal typology related to housing status available. However, in general, there is a strong call to use a broad definition that reaches beyond absolute homelessness or “sleeping rough” (Canadian Homelessness Research Network 2012). Individuals experience a range of homelessness and housing arrangements; rather than a fixed state, housing status must be understood as a dynamic process characterized by multiple transitions, with “literal homelessness at the most extreme among a range of unstable and inadequate living arrangements which can compromise health” (Aidala & Sumartojo, 2007; Greene et al., 2010; Metraux et al., 2004). As a result, we used three different measures to capture both the material and spatial
elements of housing. Each of these variables was measured at baseline and each six-month follow-up.

1. **Type of housing**: Participants were asked, “What type of place are you living in right now?” and had the option to answer: apartment, house, jail, no fixed address (NFA)/street, room in hotel, shelter/hostel, treatment/recovery house, or other. “Other” answers were sorted into existing categories and categories were added or modified as necessary. An additional category, “work,” was added for participants who indicated living at their job site. The treatment/recovery house category was expanded to include any type of institutional setting other than jail or hostel, such as a group home, Dr. Peter Centre or Sheway. Type of housing was then dichotomized into “stable” and “unstable” categories, as determined with consultation of existing literature and Cedar staff. Living in an apartment, house or at work was classified as stable housing types. Living in jail, no fixed address/street, room in hotel, shelter/hostel, and treatment/recovery house were classified as unstable housing types. Although treatment and recovery are often positive steps in an individual’s life, we have considered this type of housing to be unstable as it is often a temporary living situation.

2. **Slept on the streets for 3+ nights in the past 6 months**: Participants were asked, “In the last 6 months, have you slept on the street for more than 3 nights or had nowhere to go for three days in a row or longer?” They had the option to answer: yes, no, unsure or refused.

3. **Highly transient**: Participants were asked, “How many different places have you slept in the last 6 months?” Participants were given the following categories as possible answers: 1, 2 to 5, 6 to 10, 11 to 20, 20+, unsure, and refused. After looking carefully at participants’ responses, results were combined them into a
three level variable: low transience (slept in 1 place in the past 6 months), medium transience (slept in 2 to 5 places in the past 6 months) and high transience (slept in 6 or more places in the past 6 months). Finally, transience was dichotomized into a two groups: individuals that were highly transient in the past six months, and those who were not.

**Sex-related HIV vulnerabilities:** Sexual vulnerability was measured at each follow-up using several *a priori* factors associated with HIV transmission, including sex work, sexual assault, condom use, and presence of sexually transmitted infections.

1. **Condom use:** This variable combines several questions that examine at condom use during vaginal and anal sex with regular and casual partners. Participants could select always, usually, sometimes, occasionally, or never in relation to their sexual encounters with different types of partners. Responses were dichotomized into “always” and “not always” and one variable was created for combining regular and casual partners.

2. **Sex work:** Participants were asked, “Have you been paid for sex in the last 6 months?” and could answer: yes, no, unsure and refused.

3. **Sexual assault:** Participants were asked, “In the last 6 months, have you been forced to have sex against your will and/or been touched where you’re not supposed to be without consent? (excluding incidents in detention)” and could answer yes, no, unsure and refused.

**Drug-related HIV vulnerabilities:** Drug-related vulnerability was measured at each follow-up using several *a priori* factors associated with HIV transmission, including type and frequency of drug use and needle use behaviours. A sub-sample of participants who had reported injecting in the prior six months was used to analyze injection patterns and behaviours.
1. **Injection drug use:** Participants reporting ever having injected were asked, “In the last 6 months, have you injected?” and could answer: yes, no, unsure, refused or N/A (not using).

2. **Drug type and frequency:** Participants were asked to answer, “Which of the following drugs did you regularly use and how often?” Drug types included: heroin, cocaine alone, heroin and cocaine (“speedballs”), methadone, morphine, crystal meth, dilaudid, crack and other. Participants were allowed to choose multiple answers. Participants were shown a prompt card to help them respond about how frequently they used each substance: less than once per month, 1 to 3 times per month, once per week, 2 to 3 times per week, once per day, 2 to 3 times per day, 4 to 6 times per day, 7 to 10 times per day, 10 or more times per day, or don’t remember. We created three variables that dichotomized drug injection frequency into daily and less than daily or not at all for opiates (heroin, methadone, morphine, and dilauded), cocaine, and crystal methamphetamine.

3. **Need help injecting:** Participants were asked, “In the last 6 months, have you needed someone to help you inject?” and could answer: yes, no, unsure or refused.

4. **Needle sharing:** This variable combined two variables related to whether participants’ reported lending or borrowing needles in the past 6 months. Participants were asked, “In the last 6 months, have you fixed with a rig that had already been used by someone else?” and “In the last 6 months, have you loaned your used rig to someone else?” Participants had the options to answer: yes, no, unsure or refused.

5. **Public injection:** Participants were asked, “In the last 6 months, how often did you inject drugs in public places?” Of the possible responses, “always”,
“usually”, “sometimes”, and “occasionally” were combined into “ever,” and
dichotomized with “never.”
Chapter 3: Results

Characteristics and housing patterns of Cedar Project Participants

A total of 352 young Aboriginal men and women were included in this study. Of this group, 280 completed the interviewer-administered baseline questionnaire. Of these 280 people, 131 (46.7%) were male and 149 (53.2%) were female. Participants ranged between 15 to 33 years old at baseline and had a mean age of 25. The vast majority of participants were currently in a relationship (89.2%). A small proportion – 12.5% – identified as gay, lesbian, bisexual or two-spirited.

Table 1 provides comparisons of socio-demographic characteristics and traumatic life events, as well as sex- and drug-related HIV vulnerabilities and health outcomes between participants from Prince George and Vancouver. We noticed significant differences between participants from each city. At baseline, compared to participants from Prince George, Vancouver participants were slightly older (26 vs. 24 years, \( p<0.001 \)); more likely to inject opiates (54.1% vs. 20.4%, \( p=0.001 \)) or methamphetamine daily (23% vs. 2%, \( p=0.001 \)); more likely to inject with strangers (33.3% vs. 14%, \( p=0.018 \)); and had a higher prevalence of HIV (16.8% vs. 7.9%, \( p=0.03 \)).

Prince George participants were more likely to report daily cocaine injection (44.9% vs. 14.8%, \( p<0.001 \)), needing help injecting (42% vs. 22.2%, \( p=0.024 \)), and needle sharing (30% vs. 3.2%, \( p<0.001 \)).

Participants in both cities reported similar levels of historical and lifetime trauma, although Vancouver participants were significantly more likely to report having at least one parent who attended a residential school (83.9% compared to 68.7%, \( p=0.003 \)). Among both Prince George and Vancouver participants, large proportions had been taken from
their biological parents (68.9%) and had experienced childhood sexual abuse prior to age 13 (50.0%).

Table 1: Baseline characteristics of Cedar Project participants by city (2005).

<table>
<thead>
<tr>
<th>Demographic Characteristics</th>
<th>Prince George (n= 134) no. (%)</th>
<th>Vancouver (n= 146) no. (%)</th>
<th>Total (n= 280) no. (%)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age at baseline (mean, SD) (range=15-33)</strong></td>
<td>24 (4.27)</td>
<td>26 (3.67)</td>
<td>25 (4.11)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Female gender</strong></td>
<td>76 (56.7)</td>
<td>73 (50.0)</td>
<td>149 (53.2)</td>
<td>0.261</td>
</tr>
<tr>
<td><strong>Identifying as gay, lesbian, bisexual or two-spirited</strong></td>
<td>12 (9.0)</td>
<td>23 (15.8)</td>
<td>35 (12.5)</td>
<td>0.086</td>
</tr>
<tr>
<td><strong>In a relationship</strong></td>
<td>121 (91.0)</td>
<td>127 (87.6)</td>
<td>248 (89.2)</td>
<td>0.363</td>
</tr>
<tr>
<td><strong>Traumatic Life Experiences</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>At least one parent attended residential school</td>
<td>92 (68.7)</td>
<td>120 (83.9)</td>
<td>212 (76.5)</td>
<td>0.003</td>
</tr>
<tr>
<td>Ever taken from biological parents</td>
<td>92 (68.7)</td>
<td>101 (69.2)</td>
<td>193 (68.9)</td>
<td>0.925</td>
</tr>
<tr>
<td>Experienced sexual abuse prior to age 13</td>
<td>65 (49.6)</td>
<td>72 (50.3)</td>
<td>137 (50.0)</td>
<td>0.904</td>
</tr>
<tr>
<td><strong>Sexual Vulnerabilities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consistent condom use (p6m)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>46 (41.1)</td>
<td>43 (45.7)</td>
<td>86 (42.8)</td>
<td>0.500</td>
</tr>
<tr>
<td>Participated in sex work (p6m)</td>
<td>36 (27.1)</td>
<td>34 (23.9)</td>
<td>70 (25.5)</td>
<td>0.552</td>
</tr>
<tr>
<td>Experienced sexual assault (p6m)</td>
<td>5 (3.8)</td>
<td>5 (3.6)</td>
<td>10 (3.7)</td>
<td>0.943</td>
</tr>
<tr>
<td><strong>Drug-Related Vulnerabilities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Injected drugs (p6m)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>50 (75.8)</td>
<td>63 (79.7)</td>
<td>113 (77.9)</td>
<td>0.564</td>
</tr>
<tr>
<td>Daily or more opiate injection (p6m)&lt;sup&gt;c&lt;/sup&gt;</td>
<td>10 (20.4)</td>
<td>33 (54.1)</td>
<td>43 (39.1)</td>
<td>0.001</td>
</tr>
<tr>
<td>Daily or more methamphetamine injection (p6m)&lt;sup&gt;c&lt;/sup&gt;</td>
<td>1 (2.0)</td>
<td>14 (23.0)</td>
<td>15 (13.6)</td>
<td>0.001</td>
</tr>
<tr>
<td>Daily or more cocaine injection (p6m)&lt;sup&gt;c&lt;/sup&gt;</td>
<td>22 (44.9)</td>
<td>9 (14.8)</td>
<td>31 (28.2)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Need help injecting (p6m)&lt;sup&gt;c&lt;/sup&gt;</td>
<td>21 (42.0)</td>
<td>14 (22.2)</td>
<td>35 (31.0)</td>
<td>0.024</td>
</tr>
<tr>
<td>Needle sharing (p6m)&lt;sup&gt;c&lt;/sup&gt;</td>
<td>15 (30.0)</td>
<td>2 (3.2)</td>
<td>17 (15.0)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Injected in public (p6m)&lt;sup&gt;c&lt;/sup&gt;</td>
<td>31 (63.3)</td>
<td>32 (51.6)</td>
<td>63 (56.8)</td>
<td>0.219</td>
</tr>
<tr>
<td><strong>Health Outcomes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Presence of antibodies to Hepatitis C virus (HCV)</td>
<td>40 (32.3)</td>
<td>47 (37.3)</td>
<td>87 (34.8)</td>
<td>0.403</td>
</tr>
<tr>
<td>Presence of antibodies to HIV</td>
<td>10 (7.9)</td>
<td>23 (16.8)</td>
<td>33 (12.5)</td>
<td>0.030</td>
</tr>
</tbody>
</table>

Note: p6m= in the past 6 months
<sup>a</sup> among those reporting having a casual or regular sexual partner (n=232)
<sup>b</sup> among those reporting ever having injected drugs (n=146)
<sup>c</sup> among those reporting injecting in the past 6 months (n=113)
City of residence was a significant determinant of type of housing, sleeping on the streets, and transience among Cedar Project participants. Baseline housing patterns of Cedar Project participants are presented in Table 2, including a comparison of housing status of participants living in Vancouver and Prince George. At baseline, participants were slightly more likely to live in Vancouver (52%) compared to Prince George (48%).

Nearly half (42.4%) of Vancouver-based participants reported having slept on the street three or more nights in the past six months at baseline, compared to 26.9% of Prince George participants.

Participants in Vancouver and Prince George reported currently living in one of the following types of housing: apartment, house, jail, street or no fixed address, hotel room, shelter or hostel, institution, or at work. Living in an apartment, house or at work was considered stable, while all other types were considered unstable. Overall, participants living in Vancouver were nearly twice as likely as Prince George participants to have been living in an unstable type of housing at baseline (60.4% vs. 34.4%, p<0.001).

Examining different housing types more closely, approximately one-quarter of participants lived in apartments at baseline in both Vancouver and Prince George (26.4% and 24.8%, respectively). At baseline, Prince George participants were more likely to live in a house (40.8% vs. 13.2%), shelter (13.6% vs. 5.6%), or institutional setting (7.2% vs. 2.8%). Vancouver participants were more likely to have no fixed address (19.4% vs. 6.4%) or live in a hotel room (32.6% vs. 7.2%).

However, living in Prince George was significantly associated with housing transience, or number of places slept in the past six months (p=0.004). Prince George participants were very transient at baseline, with 90% of participants in that city reporting sleeping in two or more places in the past six months, compared to 74.1% of participants in Vancouver. In both cities, a majority of participants reported sleeping in two to five
places in the past six months ("medium transience", 63.5%). Vancouver had a higher proportion of participants reporting staying in only one place over the past six months (26.0% compared to 10.1%), while 20.2% of Prince George participants reported living in six or more places in the past six months (compared to 16.8%). Prince George participants also reported higher rates of visiting a reserve in the prior six months (38.1% compared to 11.1%).

Table 2: Housing patterns of Cedar Project participants by city at baseline (2005).

<table>
<thead>
<tr>
<th>Type of housing right now</th>
<th>Prince George (n= 133)</th>
<th>Vancouver (n= 147)</th>
<th>Total (n= 280)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apartment</td>
<td>31 (24.8)</td>
<td>38 (26.4)</td>
<td>69 (25.7)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>House</td>
<td>51 (40.8)</td>
<td>19 (13.2)</td>
<td>66 (24.5)</td>
<td></td>
</tr>
<tr>
<td>Jail</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>Street or no fixed address</td>
<td>8 (6.4)</td>
<td>28 (19.4)</td>
<td>36 (13.4)</td>
<td></td>
</tr>
<tr>
<td>Room in hotel</td>
<td>9 (7.2)</td>
<td>47 (32.6)</td>
<td>57 (20.8)</td>
<td></td>
</tr>
<tr>
<td>Shelter or hostel</td>
<td>17 (13.6)</td>
<td>8 (5.6)</td>
<td>25 (9.3)</td>
<td></td>
</tr>
<tr>
<td>Institution (eg, treatment, group home)</td>
<td>9 (7.2)</td>
<td>4 (2.8)</td>
<td>13 (4.8)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Type of housing right now - stable or unstable | <0.001 |

| Slept on the street three nights or more in the past 6 months | 36 (26.9) | 59 (42.4) | 95 (34.8) | 0.007 |

Transience: Number of different places slept in the past 6 months | 0.004 |

| Low: 1 place in the past 6 months | 13 (10.1) | 34 (26.0) | 47 (18.1) |
| Medium: 2-5 places in the past 6 months | 90 (69.8) | 75 (57.3) | 165 (63.5) |
| High: 6+ places in the past 6 months | 26 (20.2) | 22 (16.8) | 48 (18.5) |

Number of people currently living in the same place (mean, SD) | 4.82 (5.75) | 3.26 (4.48) | 4.22 (5.37) | 0.046 |

Been to a reserve in the past 6 months | 51 (38.1) | 16 (11.1) | 67 (24.1) | <0.001 |

Has privacy where they live** | 89 (76.1) | 97 (75.8) | 186 (75.9) | 0.958 |

Feels safe where they live** | 103 (91.2) | 116 (92.1) | 196 (91.6) | 0.799 |

In detention, prison or jail in the past 6 months | 38 (28.6) | 36 (24.8) | 66 (26.6) | 0.480 |

**Note: Data from 2008
On average, participants in Prince George reported a slightly higher number of people living in the same residence (4.82 vs. 3.26, p=0.046). Individuals who lived in an institutional setting, such as a jail or shelter, with large numbers of other people affect this average. Participants in both Vancouver and Prince George reported high levels of feeling both private (75.9%) and safe (91.6%) where they live; there were no differences between cities. There were no differences between rates of detention in the past six months between participants in Vancouver compared to Prince George.

In sum, while Vancouver residents were more likely to report sleeping on the street and living in an unstable type of housing, high levels of housing transience among participants from Prince George indicates that participants from both cities are struggling to find and maintain adequate housing.

**Historical trauma and housing status**

Results from the univariate and multivariable generalized linear mixed model analysis examining the relationship between historical trauma and housing status are found in Table 3 and Table 4. In unadjusted longitudinal analysis of the association between historical trauma and housing status, the odds of living in an unstable type of housing were twice as high among participants who reported having a parent who attended residential school (UOR: 2.1; 95%CI: 1.13-3.92). In addition, participants who reported experiencing sexual abuse prior to age 13 had 3.31 times the odds of currently live in an unstable type of housing (95%CI: 1.26, 8.65). Controlling for age, city, and sex, the relationship between childhood sexual abuse and living in an unstable type of housing remained statistically significant (AOR: 2.76; 95%CI: 1.09, 6.98). However, the relationship between either parent attending residential school and unstable housing type retained only marginal significance (AOR: 1.76; 95%CI: 0.97, 3.20; p=0.063).
Table 3: Unadjusted generalized linear mixed modeling of traumatic life experience associated with housing status over time (2005-2010).

<table>
<thead>
<tr>
<th></th>
<th>Slept on the street three nights or more in the past 6 months</th>
<th>Type of housing right now - unstable</th>
<th>Highly transient in the past 6 months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>UOR  95% CI  p value</td>
<td>UOR  95% CI  p value</td>
<td>UOR  95% CI  p value</td>
</tr>
<tr>
<td>At least one parent attended residential school</td>
<td>1.02  0.60, 1.74  0.943</td>
<td>2.10  1.13, 3.92  0.019</td>
<td>0.87  0.53, 1.44  0.597</td>
</tr>
<tr>
<td>Ever taken from biological parents</td>
<td>0.97  0.65, 1.43  0.866</td>
<td>1.24  0.76, 2.03  0.392</td>
<td>1.09  0.73, 1.63  0.673</td>
</tr>
<tr>
<td>Experienced sexual abuse prior to age 13</td>
<td>1.26  0.62, 2.58  0.519</td>
<td>3.31  1.26, 8.65  0.015</td>
<td>1.11  0.52, 2.35  0.786</td>
</tr>
</tbody>
</table>

Table 4: Generalized linear mixed modeling of historical and lifetime trauma associated with housing status over time among Cedar Project participants, controlling for city, sex and age (2005-2010).

<table>
<thead>
<tr>
<th></th>
<th>Slept on the street three nights or more in the past 6 months</th>
<th>Type of housing right now - unstable</th>
<th>Highly transient in the past 6 months</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AOR*  95% CI  p value</td>
<td>AOR*  95% CI  p value</td>
<td>AOR*  95% CI  p value</td>
</tr>
<tr>
<td>At least one parent attended residential school</td>
<td>0.85  0.51, 1.41  0.528</td>
<td>1.76  0.97, 3.20  0.063</td>
<td>0.82  0.50, 1.34  0.431</td>
</tr>
<tr>
<td>Ever taken from biological parents</td>
<td>1.02  0.69, 1.51  0.909</td>
<td>1.25  0.77, 2.02  0.360</td>
<td>1.11  0.74, 1.67  0.620</td>
</tr>
<tr>
<td>Experienced sexual abuse prior to age 13</td>
<td>1.09  0.54, 2.20  0.819</td>
<td>2.76  1.09, 6.98  0.030</td>
<td>1.13  0.53, 2.44  0.747</td>
</tr>
</tbody>
</table>

* adjusted for city, sex and age.
Housing status and HIV vulnerability – material dimension

Sleeping on the streets

Table 5 summarizes the socio-demographic characteristics, historical and lifetime trauma, sex- and drug-related vulnerabilities, and health outcomes of participants living on the streets for three nights or more at baseline, compared to participants who did not sleep on the streets. Of the 273 participants included in baseline analysis, 95 (34.8%) reported sleeping on the street for three nights or more in the prior six months. Cedar Participants reporting having slept on the street for three nights or more in the past six months were slightly older than those who had not (26 compared to 24, p<0.001) and more likely to live in Vancouver (62.1% compared to 44.9%, p=0.007). At baseline, participants who slept on the street were more likely to have participated in sex work (33.3 percent vs. 21.3 percent, p=0.033) and to have injected in public (73.5 percent vs. 44.1%, p=0.002) in the past six months. However, participants sleeping on the streets were less likely to have ever been taken from their biological parents (57.9% vs. 74.7%, p=0.004).

We used generalized linear mixed models to examine the relationship between sleeping on the streets for three or more nights in the past six months and sex- and drug-related vulnerabilities that put young Aboriginal people at high risk for HIV infection. Results from the univariate and multivariate GLMM analyses are found in Table 6. The GLMM analysis included 1687 observations contributed by a total of 352 participants, all of whom attended more than one follow-up interview between 2005 and 2010. Participants attended between two and seven visits; the median number of follow-up visits was six. The rate of sleeping on the streets for three nights or more in the previous six months varied from 35% to 18% over the study period. The reference category in all cases was
individuals who did not report sleeping on the streets for three nights or more in the past six months.

Table 5: Baseline characteristics of Cedar Project participants by sleeping on the street for three nights or more in the past six months (2005).

<table>
<thead>
<tr>
<th>Demographic Characteristics</th>
<th>Streets (3+ nights) (n=95) no. (%)*</th>
<th>Not sleep on streets (n=178) no. (%)*</th>
<th>Total (n=273) no. (%)*</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at baseline (mean, SD) (range=15-33)</td>
<td>26 (3.86)</td>
<td>24 (4.05)</td>
<td>25 (4.11)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Female gender</td>
<td>44 (46.3)</td>
<td>100 (56.2)</td>
<td>144 (52.7)</td>
<td>0.120</td>
</tr>
<tr>
<td>Lived in Vancouver</td>
<td>59 (62.1)</td>
<td>80 (44.9)</td>
<td>139 (50.9)</td>
<td>0.007</td>
</tr>
<tr>
<td>Identifying as gay, lesbian, bisexual or two-spirited</td>
<td>10 (10.5)</td>
<td>24 (13.5)</td>
<td>34 (12.5)</td>
<td>0.481</td>
</tr>
<tr>
<td>In a relationship</td>
<td>83 (87.4)</td>
<td>158 (89.8)</td>
<td>241 (88.9)</td>
<td>0.547</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Traumatic Life Experiences</th>
<th>Streets (3+ nights) (n=95) no. (%)*</th>
<th>Not sleep on streets (n=178) no. (%)*</th>
<th>Total (n=273) no. (%)*</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>At least one parent attended residential school</td>
<td>75.5 (71)</td>
<td>134 (76.1)</td>
<td>205 (75.9)</td>
<td>0.912</td>
</tr>
<tr>
<td>Ever taken from biological parents</td>
<td>55 (57.9)</td>
<td>133 (74.7)</td>
<td>188 (68.9)</td>
<td>0.004</td>
</tr>
<tr>
<td>Experienced sexual abuse prior to age 13</td>
<td>46 (48.4)</td>
<td>86 (50.0)</td>
<td>132 (49.4)</td>
<td>0.805</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sexual Vulnerabilities</th>
<th>Streets (3+ nights) (n=95) no. (%)*</th>
<th>Not sleep on streets (n=178) no. (%)*</th>
<th>Total (n=273) no. (%)*</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consistent condom use (p6m)a</td>
<td>28 (42.4)</td>
<td>58 (43.0)</td>
<td>86 (42.8)</td>
<td>0.942</td>
</tr>
<tr>
<td>Participated in sex work (p6m)</td>
<td>30 (33.3)</td>
<td>38 (21.3)</td>
<td>68 (25.4)</td>
<td>0.033</td>
</tr>
<tr>
<td>Experienced sexual assault (p6m)</td>
<td>4 (4.4)</td>
<td>5 (2.9)</td>
<td>9 (3.4)</td>
<td>0.723</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Drug-Related Vulnerabilities</th>
<th>Streets (3+ nights) (n=95) no. (%)*</th>
<th>Not sleep on streets (n=178) no. (%)*</th>
<th>Total (n=273) no. (%)*</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injected drugs (p6m)b</td>
<td>49 (84.5)</td>
<td>61 (73.5)</td>
<td>110 (78.0)</td>
<td>0.121</td>
</tr>
<tr>
<td>Daily or more opiate injection (p6m)c</td>
<td>21 (43.8)</td>
<td>20 (33.9)</td>
<td>41 (38.3)</td>
<td>0.297</td>
</tr>
<tr>
<td>Daily or more methamphetamine injection (p6m)c</td>
<td>8 (16.7)</td>
<td>7 (11.9)</td>
<td>15 (14.0)</td>
<td>0.477</td>
</tr>
<tr>
<td>Daily or more cocaine injection (p6m)c</td>
<td>16 (33.3)</td>
<td>15 (25.4)</td>
<td>31 (29.0)</td>
<td>0.370</td>
</tr>
<tr>
<td>Need help injecting (p6m)c</td>
<td>16 (32.7)</td>
<td>19 (31.1)</td>
<td>35 (31.8)</td>
<td>0.866</td>
</tr>
<tr>
<td>Needle sharing (p6m)c</td>
<td>7 (14.3)</td>
<td>10 (16.4)</td>
<td>17 (15.5)</td>
<td>0.761</td>
</tr>
<tr>
<td>Injected in public (p6m)c</td>
<td>36 (73.5)</td>
<td>26 (44.1)</td>
<td>62 (57.4)</td>
<td>0.002</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Health Outcomes</th>
<th>Streets (3+ nights) (n=95) no. (%)*</th>
<th>Not sleep on streets (n=178) no. (%)*</th>
<th>Total (n=273) no. (%)*</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presence of antibodies to Hepatitis C virus (HCV)</td>
<td>30 (35.7)</td>
<td>54 (33.5)</td>
<td>84 (34.3)</td>
<td>0.734</td>
</tr>
<tr>
<td>Presence of antibodies to HIV</td>
<td>7 (7.8)</td>
<td>25 (15.0)</td>
<td>32 (12.5)</td>
<td>0.960</td>
</tr>
</tbody>
</table>

Note: p6m= in the past 6 months

a among those reporting having a casual or regular sexual partner (n=227)
b among those reporting ever having injected drugs (n=142) 
c among those reporting injecting in the past 6 months (n=110)
In unadjusted analysis, sleeping on the streets for three nights or more in the past six months was associated with sex work (UOR: 2.78, 95%CI: 1.72, 4.51), experiencing sexual assault (UOR: 3.14, 95%CI: 1.61, 6.13) and using injection drugs (UOR: 4.07, 95%CI: 2.67, 6.20). In a sub-analysis of participants who reported using injection drugs in the prior six months, living on the streets was associated with using opiates daily (UOR: 2.27, 95%CI: 1.34, 3.87), and injecting in public (UOR: 5.29, 95%CI: 3.22, 8.69).

After adjusting for city, sex and age, sleeping on the streets remained associated with a 2.93 increased odds of participating in sex work (95%CI: 1.80, 4.78) and 3.31 increased odds of experiencing sexual assault in the previous six month period (95%CI: 1.67, 6.55).

Sleeping on the streets was also significantly associated with several drug related harms, including 3.67 increased odds of using injection drugs in the prior six months (95%CI: 2.38, 5.66). Among participants who reported using injection drugs in the previous six months, living on the streets was independently associated with 2.07 greater odds of injecting opiates daily (95%CI: 1.21, 3.52). While we did not find a statistically significant relationship between sleeping on the streets and sharing needles, we did find that homeless participants were 5.47 times more likely to have injected in public (95%CI: 3.31, 9.02).
Table 6: Generalized linear mixed model unadjusted and adjusted relationships between sex- and drug-related HIV vulnerabilities and sleeping on the streets 3+ nights over the past six months (2005-2010)

<table>
<thead>
<tr>
<th></th>
<th>UOR</th>
<th>95%CI</th>
<th>p value</th>
<th>AOR*</th>
<th>95%CI</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sexual Vulnerabilities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consistent condom use</td>
<td>0.82</td>
<td>0.57, 1.17</td>
<td>0.270</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Participated in sex work</td>
<td>2.78</td>
<td>1.72, 4.51</td>
<td>&lt;0.001</td>
<td>2.93</td>
<td>1.80, 4.78</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Experienced sexual assault</td>
<td>3.14</td>
<td>1.61, 6.13</td>
<td>&lt;0.001</td>
<td>3.31</td>
<td>1.67, 6.55</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td><strong>Drug-Related Vulnerabilities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Injected drugs(^a)</td>
<td>4.07</td>
<td>2.67, 6.20</td>
<td>&lt;0.001</td>
<td>3.67</td>
<td>2.38, 5.66</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Daily or more opiate injection(^b)</td>
<td>2.27</td>
<td>1.34, 3.87</td>
<td>0.002</td>
<td>2.07</td>
<td>1.21, 3.52</td>
<td>0.008</td>
</tr>
<tr>
<td>Daily or more methamphetamine injection(^b)</td>
<td>0.76</td>
<td>0.29, 1.97</td>
<td>0.569</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Daily or more cocaine injection(^b)</td>
<td>1.17</td>
<td>0.71, 1.91</td>
<td>0.541</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Need help injecting(^b)</td>
<td>0.90</td>
<td>0.54, 1.51</td>
<td>0.684</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Needle sharing(^b)</td>
<td>1.49</td>
<td>0.70, 3.17</td>
<td>0.300</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Injected in public(^b)</td>
<td>5.29</td>
<td>3.22, 8.69</td>
<td>&lt;0.001</td>
<td>5.47</td>
<td>3.31, 9.02</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

* adjusted for city, sex, and age
\(^a\) among those reporting ever having injected drugs (n=244)
\(^b\) among those reporting injecting in the past 6 months (n=190)

**Living in unstable type of housing**

At baseline, 130 of 269 participants (48.3%) reported living in an unstable housing type, including jail, street or no fixed address, room in a hotel, shelter or hostel, or institution (eg., drug treatment program or halfway house). Table 7 compares demographic characteristics, historical and lifetime trauma, HIV and HCV antibody status, and drug- and sex-related vulnerabilities between participants who reported living in an unstable type housing and those who lived in stable housing types at baseline. At baseline, participants who reported living in an unstable type of housing were slightly older (25 vs. 24 years, p=0.011) and were more likely to live in Vancouver (66.9% vs. 41.0%, p<0.001). Those who reported injecting in the past six months were marginally more likely to inject with a stranger compared to participants who lived in a stable type of housing (32.8% vs. 16.3%, p=0.056). Surprisingly, stably housed participants were less likely to report consistent
condom use compared to unstably housing participants at baseline (37.1% vs. 52.2%, p=0.034).

Table 7: Baseline characteristics of Cedar Project participants by current housing type (2005).

<table>
<thead>
<tr>
<th>Demographic Characteristics</th>
<th>Unstable (n=130)</th>
<th>Stable (n=139)</th>
<th>Total (n=269)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at baseline (mean, SD) (range=15-33)</td>
<td>25 (4.20)</td>
<td>24 (3.93)</td>
<td>25 (4.11)</td>
<td>0.011</td>
</tr>
<tr>
<td>Female gender</td>
<td>65 (50.0)</td>
<td>63 (45.3)</td>
<td>128 (47.6)</td>
<td>0.443</td>
</tr>
<tr>
<td>Lived in Vancouver</td>
<td>87 (66.9)</td>
<td>57 (41.0)</td>
<td>144 (53.5)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Identifying as gay, lesbian, bisexual or two-spirited</td>
<td>19 (14.6)</td>
<td>15 (10.8)</td>
<td>34 (12.6)</td>
<td>0.346</td>
</tr>
<tr>
<td>In a relationship</td>
<td>116 (89.2)</td>
<td>122 (89.1)</td>
<td>238 (89.1)</td>
<td>0.962</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Traumatic Life Experiences</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>At least one parent attended residential school</td>
<td>100 (78.1)</td>
<td>104 (74.8)</td>
<td>204 (76.4)</td>
<td>0.525</td>
</tr>
<tr>
<td>Ever taken from biological parents</td>
<td>89 (68.5)</td>
<td>98 (70.5)</td>
<td>187 (69.5)</td>
<td>0.719</td>
</tr>
<tr>
<td>Experienced sexual abuse prior to age 13</td>
<td>57 (44.2)</td>
<td>71 (53.0)</td>
<td>128 (48.7)</td>
<td>0.154</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sexual Vulnerabilities</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Consistent condom use (p6m)&lt;sup&gt;a&lt;/sup&gt;</td>
<td>47 (52.2)</td>
<td>39 (37.1)</td>
<td>86 (44.1)</td>
<td>0.034</td>
</tr>
<tr>
<td>Participated in sex work (p6m)</td>
<td>34 (26.8)</td>
<td>33 (24.1)</td>
<td>67 (25.4)</td>
<td>0.617</td>
</tr>
<tr>
<td>Experienced sexual assault (p6m)</td>
<td>5 (4.0)</td>
<td>5 (3.6)</td>
<td>10 (3.8)</td>
<td>0.872</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Drug-Related Vulnerabilities</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Injected drugs (p6m)&lt;sup&gt;b&lt;/sup&gt;</td>
<td>64 (81.0)</td>
<td>43 (72.9)</td>
<td>107 (77.5)</td>
<td>0.258</td>
</tr>
<tr>
<td>Daily or more opiate injection (p6m)&lt;sup&gt;c&lt;/sup&gt;</td>
<td>24 (38.7)</td>
<td>18 (41.9)</td>
<td>42 (40.0)</td>
<td>0.746</td>
</tr>
<tr>
<td>Daily or more methamphetamine injection (p6m)&lt;sup&gt;c&lt;/sup&gt;</td>
<td>10 (16.1)</td>
<td>4 (9.3)</td>
<td>14 (13.3)</td>
<td>0.390</td>
</tr>
<tr>
<td>Daily or more cocaine injection (p6m)&lt;sup&gt;c&lt;/sup&gt;</td>
<td>18 (29.0)</td>
<td>12 (27.9)</td>
<td>30 (28.6)</td>
<td>0.900</td>
</tr>
<tr>
<td>Need help injecting (p6m)&lt;sup&gt;c&lt;/sup&gt;</td>
<td>19 (29.7)</td>
<td>15 (34.9)</td>
<td>34 (31.8)</td>
<td>0.571</td>
</tr>
<tr>
<td>Needle sharing (p6m)&lt;sup&gt;c&lt;/sup&gt;</td>
<td>8 (12.5)</td>
<td>9 (20.9)</td>
<td>17 (15.9)</td>
<td>0.242</td>
</tr>
<tr>
<td>Injected in public (p6m)&lt;sup&gt;c&lt;/sup&gt;</td>
<td>40 (62.5)</td>
<td>20 (47.6)</td>
<td>60 (56.6)</td>
<td>0.131</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Health Outcomes</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Presence of antibodies to Hepatitis C virus (HCV)</td>
<td>38 (32.8)</td>
<td>44 (35.5)</td>
<td>82 (34.2)</td>
<td>0.656</td>
</tr>
<tr>
<td>Presence of antibodies to HIV</td>
<td>17 (13.6)</td>
<td>14 (10.9)</td>
<td>31 (12.2)</td>
<td>0.504</td>
</tr>
</tbody>
</table>

<sup>Note: p6m= in the past 6 months</sup>
<sup>a</sup> among those reporting having a casual or regular sexual partner (n=221)
<sup>b</sup> among those reporting ever having injected drugs (n=139)
<sup>c</sup> among those reporting injecting in the past 6 months (n=107)
Table 8 presents results from unadjusted and adjusted generalized linear mixed models examining the relationship between unstable housing type and sex- and drug-related HIV vulnerability. The GLMM analysis included 1629 observations contributed by a total of 350 participants, all of whom attended more than one follow-up interview between 2005 and 2010. Participants attended between two and seven visits; the median number of follow-up visits was six. The proportion of participants who currently lived in an unstable type of housing varied from 56% to 41% over the study period. The reference category in all models was individuals who reported living in a stable type of housing, including an apartment or house.

In unadjusted analysis, currently living in an unstable type of housing was associated with a 1.71 increase in odds of participating in sex work (95%CI: 1.05, 2.80). As well, unstable housing type was associated increased odds of using injection drugs in the previous six months (UOR: 3.45, 95%CI: 2.30, 5.16), injecting cocaine on a daily basis (UOR: 2.22, 95%CI: 1.25, 3.96), and injecting in public (UOR: 3.28, 95%CI: 1.93, 5.56). Contrary to our expectations, living in unstable housing was associated with an increase in consistency of condom use (UOR: 1.68, 95%CI: 1.17, 2.41).

When we adjusted for city, sex and age, all four associations identified in unadjusted analysis remained statistically significant. Living in an unstable type of housing was associated with 1.78 increased odds of participating in sex work (95%CI: 1.08, 2.93), 1.55 increased odds of using condoms consistently (95%CI: 1.07, 2.22), and 2.94 increased odds of injecting drugs (95%CI: 1.93, 4.47). Among injectors, living in an unstable type of housing was associated with 2.78 increased odds of injecting cocaine daily (95%CI: 1.56, 4.94), and 3.36 increased odds of injecting in public (95%CI: 1.96, 5.75).
Table 8: Generalized linear mixed model unadjusted and adjusted relationships between sex- and drug-related HIV vulnerabilities and currently living in unstable type of housing (2005-2010).

<table>
<thead>
<tr>
<th>Sexual Vulnerabilities</th>
<th>UOR</th>
<th>95%CI</th>
<th>p value</th>
<th>AOR*</th>
<th>95%CI</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consistent condom use</td>
<td>1.68</td>
<td>1.17, 2.41</td>
<td>0.005</td>
<td>1.55</td>
<td>1.07, 2.22</td>
<td>0.020</td>
</tr>
<tr>
<td>Participated in sex work</td>
<td>1.71</td>
<td>1.05, 2.80</td>
<td>0.032</td>
<td>1.78</td>
<td>1.08, 2.93</td>
<td>0.023</td>
</tr>
<tr>
<td>Experienced sexual assault</td>
<td>0.99</td>
<td>0.50, 1.94</td>
<td>0.972</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Drug-Related Vulnerabilities</th>
<th>UOR</th>
<th>95%CI</th>
<th>p value</th>
<th>AOR*</th>
<th>95%CI</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injected drugs</td>
<td>3.45</td>
<td>2.30, 5.16</td>
<td>&lt;0.001</td>
<td>2.94</td>
<td>1.93, 4.47</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Daily or more opiate injection</td>
<td>1.24</td>
<td>0.70, 2.19</td>
<td>0.454</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Daily or more methamphetamine injection</td>
<td>0.87</td>
<td>0.28, 2.69</td>
<td>0.806</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Daily or more cocaine injection</td>
<td>2.22</td>
<td>1.25, 3.96</td>
<td>0.007</td>
<td>2.78</td>
<td>1.56, 4.94</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Need help injecting</td>
<td>0.94</td>
<td>0.53, 1.66</td>
<td>0.838</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Needle sharing</td>
<td>0.60</td>
<td>0.28, 1.27</td>
<td>0.181</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Injected in public</td>
<td>3.28</td>
<td>1.93, 5.56</td>
<td>&lt;0.001</td>
<td>3.36</td>
<td>1.96, 5.75</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Note: all variables refer to sex and drug related vulnerabilities occurring in the prior six months
* adjusted for city, sex, and age
a among those reporting ever having injected drugs (n=240)
b among those reporting injecting in the past 6 months (n=185)

Housing status and HIV vulnerability – spatial dimension

Highly transient

At baseline, 48 out of 260 participants (18.5%) reported sleeping in six or more places in the past six months (‘highly transient’). All bivariate comparisons of the socio-demographic characteristics, historical and lifetime trauma, sex- and drug-related vulnerabilities, and health outcomes of participants between participants who reported a high level of housing transience (staying in 6+ different places in the past six months) and those who reported medium (2-5 places) or low (1 place) transience at baseline are summarized in Table 9. Experiencing high housing transience at baseline was associated with participating in sex work (43.2% vs. 20.9%, p=0.002), injecting in public (71.9% vs. 48.0%, p=0.023), and having hepatitis C (52.4% vs. 32.5%, p=0.015). Participants
reporting high levels of transience at baseline were marginally more likely to have experienced sexual assault in the past 6 months (8.7% vs. 2.4%, p=0.059).

**Table 9: Baseline characteristics of Cedar Project participants by level of transience (2005).**

<table>
<thead>
<tr>
<th>Demographic Characteristics</th>
<th>Highly transient (n= 48) no. (%)*</th>
<th>Low or medium (n= 212) no. (%)*</th>
<th>Total (n= 260) no. (%)*</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at baseline (mean, SD) (range=15-33)</td>
<td>25 (4.19)</td>
<td>25 (4.07)</td>
<td>25 (4.11)</td>
<td>0.011</td>
</tr>
<tr>
<td>Female gender</td>
<td>30 (62.5)</td>
<td>110 (51.9)</td>
<td>140 (53.8)</td>
<td>0.183</td>
</tr>
<tr>
<td>Lived in Vancouver</td>
<td>22 (45.8)</td>
<td>109 (51.4)</td>
<td>131 (50.4)</td>
<td>0.485</td>
</tr>
<tr>
<td>Identifying as gay, lesbian, bisexual or two-spirited</td>
<td>8 (16.7)</td>
<td>25 (11.8)</td>
<td>33 (12.7)</td>
<td>0.360</td>
</tr>
<tr>
<td>In a relationship</td>
<td>43 (89.6)</td>
<td>186 (88.6)</td>
<td>229 (88.8)</td>
<td>0.841</td>
</tr>
</tbody>
</table>

**Traumatic Life Experiences**

<table>
<thead>
<tr>
<th>Traumatic Life Experiences</th>
<th>Highly transient (n= 48) no. (%)*</th>
<th>Low or medium (n= 212) no. (%)*</th>
<th>Total (n= 260) no. (%)*</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>At least one parent attended residential school</td>
<td>34 (70.8)</td>
<td>162 (77.5)</td>
<td>196 (76.3)</td>
<td>0.327</td>
</tr>
<tr>
<td>Ever taken from biological parents</td>
<td>31 (64.6)</td>
<td>149 (70.3)</td>
<td>180 (69.3)</td>
<td>0.440</td>
</tr>
<tr>
<td>Experienced sexual abuse prior to age 13</td>
<td>29 (60.4)</td>
<td>100 (48.1)</td>
<td>129 (50.4)</td>
<td>0.123</td>
</tr>
</tbody>
</table>

**Sexual Vulnerabilities**

<table>
<thead>
<tr>
<th>Sexual Vulnerabilities</th>
<th>Highly transient (n= 48) no. (%)*</th>
<th>Low or medium (n= 212) no. (%)*</th>
<th>Total (n= 260) no. (%)*</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consistent condom use (p6m)(^a)</td>
<td>16 (48.5)</td>
<td>65 (41.5)</td>
<td>81 (42.4)</td>
<td>0.437</td>
</tr>
<tr>
<td>Participated in sex work (p6m)</td>
<td>19 (43.2)</td>
<td>44 (20.9)</td>
<td>63 (24.7)</td>
<td>0.002</td>
</tr>
<tr>
<td>Experienced sexual assault (p6m)</td>
<td>4 (8.7)</td>
<td>5 (2.4)</td>
<td>9 (3.5)</td>
<td>0.059</td>
</tr>
</tbody>
</table>

**Drug-Related Vulnerabilities**

<table>
<thead>
<tr>
<th>Drug-Related Vulnerabilities</th>
<th>Highly transient (n= 48) no. (%)*</th>
<th>Low or medium (n= 212) no. (%)*</th>
<th>Total (n= 260) no. (%)*</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Injected drugs (p6m)(^b)</td>
<td>33 (89.2)</td>
<td>75 (75.8)</td>
<td>108 (79.4)</td>
<td>0.085</td>
</tr>
<tr>
<td>Daily or more opiate injection (p6m)(^c)</td>
<td>15 (46.9)</td>
<td>24 (32.9)</td>
<td>39 (37.1)</td>
<td>0.172</td>
</tr>
<tr>
<td>Daily or more methamphetamine injection (p6m)(^c)</td>
<td>2 (6.2)</td>
<td>12 (16.4)</td>
<td>14 (13.3)</td>
<td>0.218</td>
</tr>
<tr>
<td>Daily or more cocaine injection (p6m)(^c)</td>
<td>11 (34.4)</td>
<td>19 (26.0)</td>
<td>30 (28.6)</td>
<td>0.383</td>
</tr>
<tr>
<td>Need help injecting (p6m)(^c)</td>
<td>12 (36.4)</td>
<td>21 (28.0)</td>
<td>33 (30.6)</td>
<td>0.385</td>
</tr>
<tr>
<td>Needle sharing (p6m)(^c)</td>
<td>8 (24.2)</td>
<td>9 (12.0)</td>
<td>17 (15.7)</td>
<td>0.108</td>
</tr>
<tr>
<td>Injected in public (p6m)(^c)</td>
<td>23 (71.9)</td>
<td>36 (48.0)</td>
<td>59 (55.1)</td>
<td>0.023</td>
</tr>
</tbody>
</table>

**Health Outcomes**

<table>
<thead>
<tr>
<th>Health Outcomes</th>
<th>Highly transient (n= 48) no. (%)*</th>
<th>Low or medium (n= 212) no. (%)*</th>
<th>Total (n= 260) no. (%)*</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presence of antibodies to Hepatitis C virus (HCV)</td>
<td>22 (52.4)</td>
<td>63 (32.5)</td>
<td>85 (36.0)</td>
<td>0.015</td>
</tr>
<tr>
<td>Presence of antibodies to HIV</td>
<td>6 (13.0)</td>
<td>26 (13.0)</td>
<td>32 (13.0)</td>
<td>0.994</td>
</tr>
</tbody>
</table>

\(^a\) among those reporting having a casual or regular sexual partner (n=215)  
\(^b\) among those reporting ever having injected drugs (n=137)  
\(^c\) among those reporting injecting in the past 6 months (n=108)
We examined the relationship between experiencing high levels of housing transience in the previous six months and sex- and drug-related vulnerability that puts young Aboriginal people at increased risk of contracting HIV. Results from the univariate and multivariate GLMM analyses are found in Table 10. The GLMM analysis included 1631 observations contributed by a total of 352 participants, all of whom attended more than one follow-up interview between 2005 and 2010. Participants attended between two and seven visits; the median number of follow-up visits was six. The rate of high levels of transience in the previous six months varied from 20% to 12% over the study period. The reference category in all models was participants who reported low or medium levels of transience in the prior six months.

Table 10: Generalized linear mixed model unadjusted and adjusted relationships between sex- and drug-related HIV vulnerabilities and experiencing high transience over the past six months (2005-2010)

<table>
<thead>
<tr>
<th></th>
<th>UOR</th>
<th>95%CI</th>
<th>p value</th>
<th>AOR*</th>
<th>95%CI</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sexual Vulnerabilities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consistent condom use</td>
<td>1.00</td>
<td>0.67, 1.48</td>
<td>0.981</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Participated in sex work</td>
<td>3.57</td>
<td>2.09, 6.09</td>
<td>&lt;0.001</td>
<td>3.52</td>
<td>2.06, 6.05</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Experienced sexual assault</td>
<td>2.49</td>
<td>1.27, 4.89</td>
<td>0.008</td>
<td>2.48</td>
<td>1.26, 4.86</td>
<td>0.008</td>
</tr>
<tr>
<td><strong>Drug-Related Vulnerabilities</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Injected drugs(^a)</td>
<td>4.83</td>
<td>2.93, 7.97</td>
<td>&lt;0.001</td>
<td>4.54</td>
<td>2.71, 7.61</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Daily or more opiate injection(^b)</td>
<td>0.94</td>
<td>0.53, 1.68</td>
<td>0.839</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Daily or more methamphetamine injection(^b)</td>
<td>0.43</td>
<td>0.13, 1.35</td>
<td>0.147</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Daily or more cocaine injection(^b)</td>
<td>1.98</td>
<td>1.15, 3.42</td>
<td>0.014</td>
<td>2.16</td>
<td>1.26, 3.72</td>
<td>0.005</td>
</tr>
<tr>
<td>Need help injecting(^b)</td>
<td>1.65</td>
<td>0.95, 2.88</td>
<td>0.074</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Needle sharing(^b)</td>
<td>2.17</td>
<td>0.98, 4.83</td>
<td>0.057</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Injected in public(^b)</td>
<td>2.85</td>
<td>1.64, 4.96</td>
<td>&lt;0.001</td>
<td>2.87</td>
<td>1.65, 5.00</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Note: all variables refer to sex and drug related vulnerabilities occurring in the prior six months
* adjusted for city, sex, and age
\(^a\) among those reporting ever having injected drugs (n=242)
\(^b\) among those reporting injecting in the past 6 months (n=187)
Sex work (UOR: 3.57, 95%CI: 2.09, 6.09), sexual assault (UOR: 2.49, 95%CI: 1.27, 4.89), and injecting drugs (UOR: 4.83, 95%CI: 2.93, 7.97) were significantly associated with experiencing high levels of transience. Among injectors, high transience was associated with daily cocaine injecting (UOR: 1.98, 95%CI: 1.15, 3.42) and injecting in public (UOR: 2.85, 95%CI: 1.64, 4.96). We also found that needing help injecting (UOR: 1.65, 95%CI: 0.95, 2.88) and sharing needles (UOR: 2.17, 95%CI: 0.98, 4.83) were marginally associated with high levels of housing transience.

High levels of housing transience were independently associated with significantly elevated odds of participating in sex work (AOR: 3.52, 95%CI: 2.06, 6.05) and experiencing sexual assault (AOR: 2.48, 95%CI: 1.26, 4.86). After adjusting for city, sex and age, high transience was associated with 4.54 elevated odds of injecting drugs (95%CI: 2.71, 7.61), and 2.16 increased odds of injecting cocaine daily (95%CI: 1.26, 3.72). Injecting in public (AOR: 2.87, 95%CI: 1.65, 5.00) also remained significantly associated with high levels of housing transience in adjusted analysis.
Chapter 4: Discussion & conclusions

The aims of this thesis were: (1) to investigate housing patterns and trends among young Aboriginal people in Vancouver and Prince George; (2) to situate housing status of young Aboriginal people who use illicit drugs within the context of historical and intergenerational trauma; and (3) to examine how housing status is related to HIV vulnerability via both sex and drug use among young Aboriginal people. In this study we found very high levels of housing instability among Cedar Project participants overall, and identified independent associations between recent housing instability and historical and lifetime trauma. Further, we observed independent relationships between housing instability and several sex and drug related vulnerabilities that place young Aboriginal people at higher risk of HIV infection.

Colonialism and legislated oppression in Canada has included the loss of traditional lands and territories, forced removal of children from their families, and the subsequent placement in the residential schools system (Chansonneuve, 2005; Fournier & Crey, 1997). The multigenerational impact of the systemic abuse experienced by children who attended residential school is ongoing. While the residential school system was being dismantled, a drastic increase in the number of children removed from their families and placed in the care of the state occurred. In British Columbia, an estimated 5.2% of Aboriginal children are in care, compared with 0.7% of non-Aboriginal children (Provincial Health Officer, 2002). The legacy of the intergenerational trauma and familial fragmentation experienced by former residential school students as they raise their own children and grandchildren are evident in disproportionate rates of housing instability, sexual abuse, poverty, and substance abuse in Aboriginal communities (Wesley-
Esquimaux & Smolewski, 2004). It is within the context of the ongoing effects of legislated oppression that we unpack the findings from this study.

Characteristics and housing patterns of Cedar Project participants

Material dimensions of housing status

**Key finding:** Differing housing contexts in Prince George and Vancouver are reflected in different types of housing instability among Cedar Project participants in both cities.

- Overall, participants living in Vancouver were nearly twice as likely as Prince George participants to have been living in an unstable housing type at baseline. Examining different housing types more closely, we learned that approximately one-quarter of participants lived in apartments at baseline in both Vancouver and Prince George. At baseline, Prince George participants were more likely to live in a house, shelter, or institutional setting. Vancouver participants were more likely to have no fixed address or live in a hotel room. Differences in Prince George and Vancouver participants reporting living in unstable types of housing reflect the differences in housing situations in the two cities.

**Streets vs. shelters:** We found that significantly more participants living in Vancouver had slept on the street for three nights or more in the past six months at baseline, compared to participants living in Prince George. Significant differences in rates of absolute homelessness between Vancouver and Prince George participants are consistent with existing research. Both cities conducted homeless counts in the spring of 2010 (Kraus et al., 2010; Kutzner & Ameyaw, 2010). In Prince George, 11 of 359 participants (3.1%) reported sleeping outside the previous night. In Vancouver, 421 of 1715 participants (24.5%) were classified as “unsheltered,” defined as either sleeping
outside or on a friend’s couch.

Although Vancouver participants were more likely to have reported sleeping on the street, Prince George participants were almost three times more likely to report currently living in a shelter or hostel at baseline. This finding makes it clear that while Prince George participants may not be as visibly homeless as participants in Vancouver, they face considerable challenges accessing permanent housing arrangements. There is a paucity of literature to explain the differences in shelter use between youth in these two BC cities. It is possible that differences in sleeping on the street between Vancouver and Prince George participants reflect the significant temperature differences between the two cities in the spring months. Krüsi et al.’s qualitative investigation of barriers to shelter use among street-involved youth in Vancouver may also provide some insight. The At Risk Youth Study (ARYS) found that street-involved youth in Vancouver felt that shelters that required them to abstain from drug use were not a viable option (Krüsi et al., 2010). At the same time, youth in the study felt excluded from adult shelter services. Differences in rates of living on the street in Vancouver and Prince George may indicate that shelter services are more acceptable to young people in Prince George. While investigation of the factors that affect young people’s choice of where to stay on any given night is beyond the scope of this thesis, it is clear that shelter services in both Prince George and Vancouver must meet young Aboriginal people where they are in terms of drug use and provide culturally safe places to sleep and spend time.

**Single room occupancy hotels:** One major difference between the two cities is the prevalence of single room occupancy (SRO) residences in Vancouver, compared to Prince George. Among Cedar Project participants, nearly five times as many Vancouver residents reported living in an SRO at baseline, compared to Prince George residents. Similar low proportions of hotel stays are reflected in the 2010 Prince George homeless count.
(Kutzner & Ameyaw, 2010). SROs comprise the most accessible type of market housing for people on income assistance in Vancouver, with rental rates considerably lower than apartments or houses (Carnegie Community Action Project, 2006). Residents often share access to sanitation facilities, may or may not have access to cooking facilities, and have limited private space (approximately 100ft²) (Evans & Strathdee, 2006). Of approximately 6435 SRO units in Vancouver, 5150 (80%) are located in the Downtown Eastside core (Shannon, Ishida, Lai, & Tyndall, 2006).

Shannon et al. studied SRO residency through the Community Health and Safety Evaluation (CHASE) Project, a cohort of approximately 3000 individuals living in Vancouver’s Downtown Eastside. These researchers found that SRO residency is closely associated with illicit drug use among a large cohort of Downtown Eastside residents, including using injection cocaine, heroin and crystal methamphetamine, as well as smoking crack cocaine (Shannon et al., 2006). Though these researchers did not examine drug use behaviours among SRO residents, it is believed that the SRO setting constitutes a high-risk environment; some researchers even go so far as to describe SROs as “de facto shooting galleries” (Benoit et al., 2003; Evans & Strathdee, 2006; Shannon et al., 2006). In addition, SROs are often situated close to open drug markets (Benoit et al., 2003). The high risks associated are further evident as living in an SRO was also independently associated with HIV infection (AOR: 1.6; 95%CI: 1.2-2.0) (Shannon et al., 2006). However, as a result of concerted efforts by community organizations to improve living conditions for SRO residents, they may also be sites where services are concentrated to meet primary health care and social needs of people who use illicit drugs (Evans & Strathdee, 2006). Because of the concerns of illicit drug use, others have recommended that a comprehensive action plan targeting SROs be adopted as part of Vancouver’s drug policy response (Shannon et al., 2006).
Despite the affordability of SROs, existing literature suggests that they do not constitute a viable housing option for most young people who use illicit drugs. Evans and Strathdee describe SROs as “the last housing option before the street” and the “refugee camps of Vancouver” (Evans & Strathdee, 2006). The unacceptability of SROs as a long-term housing solution has been demonstrated in a large cohort of Downtown Eastside residents (the CHASE study), which found that among people living in an SRO, the median number of moves in the past year was five, and one quarter had slept outdoors at least once in the past six months (Shannon et al., 2006). Participants in the ARYS felt that living in an SRO is unsafe and unhygienic. They reported concerns about exposure to drug trade-related violence, fear of being taken advantage of by other residents, insect and rodent infestations and inadequate sanitary facilities (Krüsi et al., 2010). For youth in the study, moving into an SRO was seen as “‘giving up’ on potential future reintegration into mainstream society and as setting themselves up for a lifetime of poverty and substance use” (Krüsi et al., 2010). Findings from the CHASE study in Vancouver also highlighted concerns about elevated risk of physical and sexual assault in SROs (Shannon et al., 2006).

Recommendations

Type of available housing is an important issue for youth, and Aboriginal young people who use illicit drugs in particular. Trying to move out of substance use, while living in housing in close proximity to others with active addictions and easy access to drugs, is a barrier to stopping or reducing drug use (Greene et al., 2010; Klodawsky, 2006; Robertson, 2007). Krüsi and colleagues have found that young people in the ARYS feel that housing options available to them are insufficient, and that there is little formal support to assist young people in finding stable housing (Krüsi et al., 2012). Aboriginal scholars and practitioners have argued for housing services that meet the unique needs of
Aboriginal young people, including providing culturally safe services such as shelters that acknowledge the role of historical trauma in young people’s current circumstances.

Understanding the vulnerability associated with living in an SRO helps illustrate the housing instability experienced by Vancouver participants. However, while much fewer Prince George participants live the high-risk, low stability SRO environments we have just described, this is likely a result of limited availability of SRO units in this Northern city, not a result of more stability or better housing options. Prince George participants were much more likely to live in houses compared to Vancouver participants (40.8% vs. 13.2%). Our decision to classify this type of housing as “stable” is based on our understanding of the Vancouver housing context. We are concerned that this characterization of living in housing as “stable” obfuscates the kind of risks that young Aboriginal people living in Prince George experience while living in a house, as we will examine further in the following section about high rates of housing transience among Cedar Project participants living in Prince George. Understanding whether living in a house does constitute a safer place for young Aboriginal people who use drugs, or whether living in a house involves staying in unstable environments such as crack shacks or couch surfing, must be explored in future research.

Prince George participants were also more likely to live in an institutional setting such as a drug treatment facility or halfway house. Though living in some types of institutional settings may mark a positive step in participants’ lives, these situations are often temporary housing arrangements and do not provide stability over time. Further, institutional settings may be re-traumatizing; power differentials between staff and consumers can replicate aspects of past abuse (Bebout, 2001). This is an important area for future research.
**Spatial dimensions of housing status**

**Key finding:** A majority of Cedar Project participants are extremely mobile, particularly participants living in Prince George.

In this analysis, we observed the “hyper-mobility” of Aboriginal young people reported in previous studies (Distasio et al., 2005; Distasio, Sylvester, Jaccubucci, Mulligan, & Sargent, 2004). Overall, more than 80% of participants in Vancouver and Prince George reported living in two or more places in the past six months at baseline. High transience, or living in six or more places in the past six months, was experienced by almost 20% of participants. In the material sense, moving may be an attempt to leave an uninhabitable space or an effort to ensure that household characteristics meet households needs (Lazarus, Chettiar, Deering, Nabess, & Shannon, 2011; Skelton, 2002). Frequent moves may also be a direct result of living in inherently temporary situations, such as shelters, couch-surfing or jail. Fast et al. and Robertson have suggested that mobility among young people and Aboriginal women who use drugs are “a strategy to navigate local ‘geographies of power’” (Fast et al., 2010; Robertson, 2007). For young men and women fleeing abuse, transience may be a spatial tactic used to find or maintain safety in the context of sexual or domestic violence. Gendered socio-spatial relations may put women at a disadvantage in terms of housing tenure during a breakup or in the event of intimate partner violence (Abele et al., 2010; Benoit et al., 2003; Neal, 2004; Robertson, 2007).

Although Prince George participants were generally considered more stably housed based on the types of housing they inhabited, examining the number of places they lived in the past six months indicated high levels of transience in this group. Ninety percent of Prince George participants reported medium or high levels of transience at baseline; 20%
reported living in 6 or more places in the prior six months at baseline. Prince George participants’ movement to and from reserve communities may account for some of the difference in transience between participants in the two cities. At baseline, 52 participants from Prince George (almost 40%) reported having visited a reserve in the past six months, compared to 15 in Vancouver (10%).

Though this study did not seek to determine the driving force behind high levels of transience among young Aboriginal people who use illicit drugs, high transience likely reflects the volatility and daily project of seeking safety that accompanies high intensity drug use. Movement in and out of shelters and couch-surfing arrangements, as well as movement to and from reserves, may account for some of the transience observed here. For example, 24% of participants had visited a reserve in the past six months at baseline. Crisis moments, such as evictions, breakdown of relationships, and arrest may also account for these findings. For example, 26.6% of participants had been in detention, prison, or jail in the past six months.

Though high intensity drug use is independently associated with HIV vulnerability, transience may play a role in exacerbating injection-related risk. High levels of transience and mobility can be obstacles to fostering a sense of place attachment, as well as establishing and maintaining social networks and daily routines (German et al., 2007). Specifically, German et al. note that transience can disrupt regular networks of drug partners, allowing HIV to be introduced. As well, transience may increase visits to high-risk settings as a result of absence of safe injection spaces. Further, high mobility can be a barrier to engagement in services, including drug treatment, harm reduction, and other HIV prevention services (German et al., 2007). More research is needed to understand the high levels of transience in this highly vulnerable group.

Recommendations
Differences in the housing situations in Vancouver and Prince George illustrate the importance of carefully considering how we measure housing instability. Of note, by investigating housing transience, a measure of the spatial dimension of housing status, we were able to capture housing instability in Prince George that was not visible using measures of material aspects of housing status. Future research should include measures that capture the broad spectrum of housing instability, not just material aspects or risk failing to capture a highly vulnerable group.

Future research must also seek to learn more about the patterns of transition among highly vulnerable young Aboriginal people. We are interested to know how young people are moving between cities and within cities, as well as between city and reserve. We are concerned that moments of housing transition are especially vulnerable times for the young people in our study; it is important to understand if transitions are usually associated with improvement in housing or not, as well as whether transitions are associated with an increase in sex- or drug-related vulnerability.

High levels of transience in both Vancouver and Prince George illustrate the value of programs that respond to the moments in time when young people are in transition, including acute housing crisis, relationship breakdown, and moving into new environments, to assist them to stabilize and avoid increased vulnerability. Interventions that reach young people in moments of housing transition have the opportunity to help prevent episodic homelessness and spirals into vulnerability. These programs must be culturally safe and young Aboriginal people must be meaningfully involved and provide leadership in the design of all programming. Programs may include resources for individuals leaving jail or arriving from reserve or another city to help them connect with resources related to housing, but also related to safe sex and drug use; eviction prevention programming; and help during income transitions (eg, changes in social assistance amounts).
Historical trauma and housing status

**Key finding:** There is some evidence to support an association between historical trauma and sub-optimal housing outcomes later in life, particularly related to childhood sexual abuse.

Fifty percent of the young Aboriginal people included in our study had experienced sexual abuse prior to age 13. We found a statistically significant independent association between historical trauma and housing status over time. In particular, childhood sexual abuse was associated with 2.76 greater odds of currently living in an unstable type of housing.

Childhood sexual abuse is considered one of the most disastrous corollaries of the ongoing historical trauma among Aboriginal people in Canada caused by residential school and child welfare systems. Starting in 1831, over 100,000 Aboriginal children were forcibly removed from their families and placed in residential schools, separating them from their families and communities. Parents who tried to protect their children from this fate were prevented as withholding children from residential schools became punishable by law. The schools, implemented through a church-state partnership, were "opportunistic sites of abuse" (Royal Commission on Aboriginal Peoples, 1996) where missionary teachers used "strict discipline, regimented behaviour, submission to authority and corporal punishment" (Furniss, 2002) as a means to assimilate and Christianize young Aboriginal students. Systematic abuses carried out by teachers and administrators in the residential school setting have been described as a means to degrade the psyche of Aboriginal children and devalue Aboriginal identity on the whole (Royal Commission on Aboriginal Peoples, 1996). Thousands of children passed through the system, leaving Aboriginal communities desolate and empty. Many students died and many chose not to return home after
graduation, as they had been isolated from families and communities for so long.

Residential school survivors have spoken out about their horrifying experiences which including forced sexual intercourse, touching and sexualized punishment.

Overlapping the residential school era was another period of legislated removal of Aboriginal children from their families and communities. In 1951, the Federal government turned over authority over the health, welfare, and education of Aboriginal people outlined in the Indian Act to provincial governments. With a guaranteed payment for each status Indian child provincial social workers apprehended, rates of child welfare apprehension of Aboriginal children skyrocketed from 1% to 30-40% during the 1950s and 1960s (Fournier & Crey, 1997). Today, while Aboriginal children account for approximately 9% of the child population, they make up 49% of children in care (British Columbia, 2006).

Aboriginal scholars and leaders have argued that Aboriginal homelessness and unstable housing is a result of historic dispossession of traditional territories and forced displacement from community structures (Dodson, 2010; Leach, 2010; Menzies, 2009; Reading & Wien, 2009; Ruttan et al., 2010; United Native Nations Society, 2001). Severing of family and community ties has left an indelible mark on individuals and communities across generations, and has created “a homeless state” (Christian & Spittal, 2008; Menzies, 2009). On an individual level, our observation of an association between childhood sexual abuse and housing instability corresponds with existing research that has revealed that individuals who experience trauma are particularly vulnerable to recurrent housing loss (Bebout, 2001). Others have established that young people who have experienced childhood sexual abuse may be more likely to run away from home, initiating connections with street based social networks earlier in life (Simons & Whitbeck, 1991; Stoltz, Shannon, et al., 2007). Childhood sexual abuse may set into motion a process that increases the probability of housing instability through a number of pathways, including
increasing risk for substance abuse. While we cannot infer causality based on our findings, we are very interested in the interplay between HIV vulnerability, gender, childhood sexual abuse, substance, sex work, recent sexual assault and housing instability among young Aboriginal people who use drugs that we will discuss later on in this thesis.

In univariate analysis, we found that participants who reported that either one of their parents had attended residential school were more likely to live in an unstable type of housing during the study period. However, when we controlled for city, sex and age, the association was reduced to marginal significance. City of residence in particular is closely associated with both type of housing and having a parent who attended residential school. As a result, when we controlled for city the relationship was no longer significant.

The absence of a statistically significant association between being removed from biological parents and housing status is surprising. Having been in foster care has been associated with future homelessness in several studies (Baskin, 2007; Coady et al., 2007; Robertson, 2007). However, in adjusted models, the direction of the relationship between this proxy measure of foster care and each measure of housing status supports the hypothesis that historical trauma increases risk of future housing instability. This relationship may be masked by the more proximal realities of this highly vulnerable population, such as substance use. Not finding an association may also be a result of the crudity of our measures of historical trauma in general, and foster care involvement in particular. We were not able to distinguish between participants who were placed with family members or other members of their community versus those who were placed in foster families outside their community. It is possible is that some of the young people in our study had a positive experience in foster care.

Taken in tandem, our observation that childhood sexual abuse, rather than having a parent in residential schools or being taken from a biological parent, was associated with
housing instability may suggest that the relationship that other researchers have observed between homelessness and involvement in child welfare may be mediated by childhood sexual abuse.

**Recommendations**

The association between childhood sexual abuse and unstable housing type suggests that to help young Aboriginal people find and maintain stable housing, they must have access to culturally appropriate programs and services to heal from lifetime sexual and historical trauma. This correlation suggests that housing instability among young Aboriginal people who use illicit drugs must be addressed on two levels: (1) by providing culturally safe housing programs and services that recognize the role of historical trauma in Aboriginal young people’s lives, and are designed with their input; and (2) by dismantling ongoing structural injustice which remains a barrier to young Aboriginal people finding and maintaining safe, secure, and adequate housing.

These findings suggest that helping young Aboriginal people to heal from intergenerational and lifetime trauma, particularly childhood sexual abuse, may be an important way of preventing future homelessness and housing instability. Housing programs that fail to consider trauma may be less effective for this population, and in some cases may be re-traumatizing (Bebout, 2001). This is particularly important as many of the services available for homeless individuals are provided by faith-based organizations, despite the role of Christian churches as agents of colonization (Mccallum and Isaac 2011). For young Aboriginal people, trauma informed housing services may include culturally safe programs that are delivered and governed by Aboriginal people themselves (Benoit et al., 2003; Distasio et al., 2005; Leach, 2010; Mccallum & Isaac, 2011).

Simultaneously, self-determination over housing and home has the potential to play a role in decolonizing processes among Aboriginal peoples in Canada, at both the
individual and community level. Responding to Aboriginal homelessness, particularly among young people, requires more than a roof; it requires the reinstatement of home that has been systematically destroyed by Canadian legislation. It requires the end of continued dispossession of Aboriginal people through the colonialism of poverty, failure to recognize Aboriginal title, and ongoing child apprehensions. It requires Aboriginal self-determination (not self-government or self-administration) over land and children. Menzies has argued that, “for Aboriginal peoples, the solution to homelessness is not necessarily the construction of housing; rather the response also requires a holistic approach that reconstructs the links between the individual, family, community, and Aboriginal nation” (Menzies, 2009). Responses to indigenous homelessness “cannot hope to be effective without addressing the consequences of dispossession” (Burrell, 2010), including addressing land rights issues (Dodson, 2010). It is crucial that Aboriginal people are supported in self-determination to address the historical dispossession and dislocation, as well as the trauma inflicted through residential school and child welfare policies, and this will play an important role in helping future generations of young Aboriginal people to improve access to housing.

**Housing status and HIV vulnerability**

| **Key Finding:** Housing status is closely related to safe sex and drug use practices that determine risk of HIV infection. |

**Drug related vulnerability**

This analysis illustrates the strong link between housing status, use of injection drugs, and injection-related HIV vulnerability. Each measure of housing status in this study was significantly associated with having used injection drugs in the previous six-month
period. Housing instability is both a cause and effect of substance use. On one hand, substance use is often a significant barrier to finding and maintaining housing (Elifson et al., 2007). On the other, homelessness can escalate substance use as individuals try to cope with the stress and loss of dignity associated with navigating life on the streets (Dickson-Gomez et al., 2009; Duff et al., 2011). Further, recent findings from the ARYS in Vancouver suggest that homelessness independently predicts initiation of injection (Feng et al., 2012).

Among Aboriginal young people, both housing instability and substance use must be understood within the context of historical trauma. As a result of lifetime and intergenerational trauma, young Aboriginal people may feel compelled to experiment with injection drug use to numb feelings of disconnection, shame and isolation (Barlow, 2003; M. Miller, 1999). Walters and Simoni have argued that young Aboriginal people self medicate as a coping mechanism to deal with the unresolved grief of intergenerational trauma (Walters & Simoni, 1999). At the same time, vulnerability to HIV and hepatitis C infection, and other traumatic health outcomes are significantly increased by injection drug use (C. Miller et al., 2006; Spittal et al., 2007).

**Type of drugs**

Choice of drug and patterns of use have important implications for HIV infection. We found that sleeping on the streets was associated with high frequency (daily or more than daily) opiate injection. High frequency cocaine injection was significantly associated with living in an unstable type of housing, and with being highly transient in the prior six-month period. In our study, housing instability was not significantly associated with methamphetamine use.

In our study, young people who lived on the street for three or more nights in the prior six months were more likely than those who did not to inject opiates frequently. One
interpretation of this finding is that young people use opiates as a means of keeping warm and numbing the pain of unresolved trauma while sleeping on the streets (Mitchell & Maracle, 2005). Another possible explanation for these results is that high frequency opiate injection may be an obstacle to finding and maintaining housing, as young people who inject may have difficulty making rent or face conflict with family, roommates or landlords over drug use practices.

The link between absolute homelessness and high intensity opiate injection is distressing as it may indicate greater risk of HIV infection. Vancouver researchers have observed significant relationships between high frequency opiate injection and risky injection behaviour (Wood et al., 2001). Young Aboriginal people suffering from dope sickness due to withdrawal are especially vulnerable to unsafe injection practice, including being second on the needle (Spittal et al., 2003; Wood et al., 2001). Previous Cedar project analysis found that needle borrowing was associated with a 3.5 increased odds of daily opiate injection (Patel et al., 2009).

Among individuals who reported ever injecting drugs in our sample, we found a significant correlation between living in an unstable housing or being highly transient and high intensity cocaine injection. Similar results have been found in previous studies with young Aboriginal people (C. Miller et al., 2006). Researchers in Vancouver have found that cocaine injection, characterized by bursts of high intensity use, are associated with elevated rates of HIV infection (Spittal et al., 2007; Tyndall et al., 2003). The need to inject multiple times over a short period of time to avoid withdrawal may result in safe needle practice being compromised (Tyndall et al., 2003).

These findings may indicate that young Aboriginal people struggle to access and maintain housing during periods of intense drug activity. Facing eviction as a result of drug activity or failure to make rent, young people who inject cocaine several times per day may
find themselves with few housing options, including low quality or temporary housing. Alternatively, loss of housing may escalate the intensity of drug use if the young people in our study are left with housing options that make them more vulnerable.

For example, as we discuss later, housing status is closely associated with sex work in this study. High intensity cocaine injection has been associated with sex work in several previous studies (Mehrabadi, Craib, et al., 2008; Shannon, Bright, Gibson, Tyndall, & Others, 2007; Spittal et al., 2003). Faced with limited housing options, young men and women in the Cedar Project may turn to sex work to make ends meet. In order to cope with the overwhelming stress, violence and dissociation of sex work, they may increase their drug use (M. Miller, 1999; Walters & Simoni, 2002). Each piece of this pathway re-enforces the other, with escalation of drug use and increasing dependence on sex work impacting whether the participant is able to secure safe, stable housing.

**Injecting patterns**

All three measures of housing instability used in this study were associated with increased risk of injecting in public among individuals who reported using injection drugs in the prior six months. Housing instability was associated with between 2.87 to 5.47 increased odds of injecting in public in the prior six months. This finding suggests that regardless of whether the young people in our study are on the streets, living in marginal housing or moving frequently, they are unable to consistently find safe spaces for injections to take place.

Our findings further suggest that lack of access to safe spaces to inject may play an important role in determining safe injection practices. Rhodes and colleagues suggest that, “the physical environments in which drug injecting occurs can determine access to clean injecting equipment as well as the capacity of [people who use injection drugs] to maintain safer injection routines without disruption” (Rhodes et al., 2005). Use of illicit substances
requires the negotiation of multiple simultaneous risks, where reduction of one risk may entail other risks (Malins, Fitzgerald, and Threadgold 2006). For example, fear of interruption by police, other users or non-users has been associated with rushed injection. Rushed injection may lead to sharing or using discarded paraphernalia, solutes and syringes, potentially leading to vein damage, skin infections, overdose, and increased risk of HIV or HCV infection (Small, Kerr, Charette, Schechter, & Spittal, 2006; Small, Rhodes, Wood, & Kerr, 2007; Stoltz, Wood, et al., 2007). Public injection also involves higher risk of arrest and incarceration. Rhodes et al. have highlighted the interplay between urgency, privacy, hygiene and safety during public (street) and semi-public (shooting galleries) injecting (Rhodes et al., 2006). People who use drugs must navigate the complex balance between too much privacy (risk of unattended overdose) and not enough privacy (violence, stigma, police intervention and arrest) each time they inject.

Despite public injection being a risk factor for unsafe needle practice, we did not find significant associations between housing instability and risky injection behaviour, including needle sharing and needing help injection. Because participation in the Cedar Project required testing positive for drug use within the previous month, the sample is homogeneous for drug use, which may have attenuated associations between housing status and drug use patterns and practices. However, it is interesting to note that needing help injecting (marginal) and sharing needles (marginal) were most closely associated with our measure of transience. Being highly transient was significantly associated with residence in Prince George. In previous Cedar Project analyses we found that needle borrowing was also much more likely among Prince George participants, so this marginal association between this high risk behaviour and transience may be confounded by city of residence; however, we did not check for that in this analysis (Patel et al., 2009).

We found that high levels of transience were marginally associated with increased
likelihood of needle sharing in the past six months. Despite not reaching the cutoff of statistical significance used throughout this study, we believe this is an important finding as it has been associated with housing instability in previous studies (Corneil et al., 2006; Des Jarlais, Braine, & Friedmann, 2007; German et al., 2007; Metraux et al., 2004). Not having a fixed place to live or inject makes it challenging to access and store clean injecting equipment. This is of particular concern as needle sharing is the primary driver of HIV transmission among people who use injection drugs (Tyndall et al., 2003; Wood et al., 2002). In spite of needle exchange services in both Prince George and Vancouver, recent Cedar Project findings demonstrate that this high-risk behaviour persists among as many as 20% of participants who use injection drugs (Patel et al., 2009).

Needle sharing has been demonstrated to be highly gendered. Borrowing used syringes was found to be independently associated with involvement in the sex trade in study of women who inject drugs in Montreal and Vancouver (Spittal et al., 2003). Others have found that sharing needles is associated with male control over the injection process (MacRae & Aalto, 2000; Shannon, Kerr, et al., 2008). Dependence on sex work or intimate partners for living accommodations may exacerbate the gendered risks of needle sharing among young women in our study.

Needing help injection, which we found to be marginally associated with being highly transient in our study, is also highly gendered and predictive of HIV seroconversion (Spittal et al., 2002). Participants in a study of Scottish women who inject drugs found that even if women knew how to inject themselves, they often relied on their partner to help them inject (MacRae & Aalto, 2000). For women in this study, being injected and sharing needles with her intimate partner was an important element of love, trust and intimacy in their relationship. In a study of people who inject in Vancouver, reasons given for needing help injecting included being anxious or dope sick, and not being able to find a vein (Wood et
al., 2003). Among women, “jugging” and not knowing how to inject were additional reasons to seek help injecting. Given that the injectors in this study reported needing help as a result of shaky hands and anxiousness, it is possible that having a safe place to inject may reduce the need for help. Reducing the need for help injecting has important implications for HIV as it is believed that needing help injecting decreases power of the injection process and may result in increased frequency of being second on the needle.

**Recommendations**

Our findings point to the potential role of housing in shaping intensity of drug use and safe injection practice among young Aboriginal people in Vancouver and Prince George. Housing is more than just a place to sleep, but also a location where drug use occurs. Access to safe, secure and adequate housing has the potential make drug use safer by providing a place to store needles, as well as give young Aboriginal people the privacy to slow down injection and take careful precautions that can impact their health. They may inject less because they are not worried that they will be caught with drugs on them. It may also be able to stabilize drug use by reducing the need to use drugs as a blanket to stay warm, take people somewhat outside of spaces of high drug activity and affect the emotional need to use drugs as a coping mechanism.

In the absence of safe, secure and adequate housing, it is crucial that unstably housed young Aboriginal people have access to alternative safe places to inject. Rhodes et al. describe safer injecting spaces as those that aim to “minimize the likelihood of police or public interference, the disruption of injecting safety and hygiene routines and the need for hurried or hasty injection” while at the same time maximizing “opportunities for injecting safely through the availability of sterile injecting equipment…sterile water, good light, clean surfaces and safe sharps disposal” (Rhodes et al. 2006). Drug consumption rooms or supervised injecting facilities are one type of intervention that provides this type of safer
injecting space by enabling “the consumption of pre-obtained drugs in an anxiety- and stress-free atmosphere under hygienic conditions” (Fry, Cvetkovski, and Cameron 2006). There are approximately 65 supervised injection facilities worldwide (Debeck et al., 2010).

Insite is Vancouver’s supervised injection facility and the first government sanctioned drug consumption room in North America. It operates on a harm reduction model and offers clean injection equipment and 12 injection booths where visitors are supervised by a team of nursing and health care staff while injecting their pre-obtained drugs. Clients of the site have access to sterile syringes, emergency care in the event of overdose, as well as primary care services and referral to addiction treatment. The facility also offers several other services, including referrals, counseling, primary health care, drug treatment and recovery (Vancouver Coastal Health, n.d.). Rigorous, peer-reviewed research has demonstrated that the SIF in Vancouver provides a number of benefits, including reduced needle sharing, decreased public drug use, fewer publicly discarded syringes, and more rapid entry into detoxification services by persons using the facility (Kerr, Tyndall, Li, Montaner, & Wood, 2005; Wood et al., 2006). In a small qualitative study of clients’ perceptions and experiences of Insite, including 13 Aboriginal clients, researchers reported that the regulated environment provided physical and psychological safety by reducing the potential for assault and robbery, and providing a ‘safe haven’ where clients were ‘treated like humans’ (Small, Ainsworth, Wood, & Kerr, 2011). In light of the harm reduction benefits provided by Vancouver’s SIF, the establishment of a SIF in Prince George and other remote and northern cities should be seriously considered. However, Aboriginal leadership and young people who use injection drugs must be meaningfully engaged the development of appropriate harm reduction services.

In addition, future research must seek to uncover whether or not Vancouver’s SIF is adequately meeting the needs of young Aboriginal people who use drugs in the city. In
2010, 17% of users at Insite were Aboriginal people (Vancouver Coastal Health). Aboriginal and non-aboriginal scholars and service providers have called for “harm reduction programs which acknowledge and respect the vibrant cultures of Aboriginal people” (Dell, Lyons, and Cayer 2010; Wardman and Quantz 2006) and that include culturally appropriate services (Canadian Aboriginal AIDS Network 1998). Currently, there exists a paucity of data related to whether Insite is meeting the specific needs of this highly vulnerable group.

Our findings about the link between housing status and drug use also support the implementation of Housing First programs for young people who use illicit drugs. The Housing First model acknowledges the role of housing in helping individuals to regulate substance use. Clients are housed quickly without being required to reduce or cease drug use to be eligible for housing services, and are provided with additional services as needed once housed (Aidala & Sumartojo, 2007). In the past, housing programs have often relied on a “treatment first” approach which requires people in active addiction to cease drug use before they can be placed in housing. In contrast, the Housing First model is, “a client centered approach which holds to the belief that before someone can break the cycle of homelessness, a safe and secure home is necessary, with support services readily available” (Thurston et al. 2011). A Housing First model can provide stability as a foundation on which to start to address other issues in life (Palepu, Marshall, Lai, Wood, & Kerr, 2010).

Since Housing First is a relatively new approach, there is a paucity of data available related to Housing First programs for Aboriginal people. Belanger et al. have suggested that Housing First models could be implemented in partnership or independently through Friendship Centres to support unstably housed Aboriginal people to become successful renters (Belanger et al., 2012). Bodor et al. conducted an evaluation of a Housing First
program at Homeward Trust in Edmonton among Aboriginal clients and service providers using qualitative indigenous research methods. Bodor et al. found that Housing First programs provided an opportunity for colonized individuals to engage in a process of decolonization through providing space for clients to make decisions and set their own priorities around housing and services. Findings depicted this housing first program as a place where Aboriginal clients were accepted, and their challenges finding and maintaining housing were understood in the context of the ongoing effects of historical trauma. However, the evaluation did not shed light on more material successes and challenges in finding and maintaining homes for its clients. It is important for Housing First models to integrate culturally safe and appropriate services to meet the housing and support needs of young Aboriginal people who use drugs, for example through involving Aboriginal leadership in the development of these programs and integrating cultural based healing for trauma.

**Sexual vulnerability**

**Sex work**

One quarter of participants in our study reported having been involved in sex work in the previous six months at baseline. Sex work is highly gendered, with significantly more women than men reporting involvement in sex work in our study. There is growing concern amongst Aboriginal leadership and AIDS service organizations that Aboriginal young people involved in survival sex work in Canada’s urban centres continue to be overwhelmed by multiple layers of discrimination, criminalization and alarming levels of intergenerational trauma including drug related harm, predation and HIV and HCV infection.
High prevalence of sex work among young Aboriginal men and women must be understood within the context of the ongoing intergenerational legacy of trauma related to dispossession of land, forced attendance at residential school, and appropriation of children into the child welfare system. Walters and Simoni have argued that disempowerment of Native women was a primary goal of colonizers and a key component of destabilizing indigenous nations (Walters & Simoni, 2002). Farley et al. connect the disempowerment of Aboriginal women in Canada to high rates of sex work involvement compared to other Canadian women: “The overrepresentation of First Nations women in prostitution…reflects not only their poverty, but also their marginalized and devalued status as Canadians” (Farley, Lynne, & Cotton, 2005).

A number of studies in Vancouver have documented the overrepresentation of Aboriginal women in sex work. Findings from the ARYS, a cohort of street-involved youth aged 14 to 26, revealed an independent association between Aboriginal ethnicity and survival sex work (Chettiar, Shannon, Wood, Zhang, & Kerr, 2010). In a qualitative study of 100 women involved in sex work in Vancouver by Farley and colleagues, 52% of the women in the sample were of Aboriginal ancestry (Farley et al., 2005). Fifty-seven percent of the women involved in the Maka Project, a cohort study related to survival sex work in Vancouver, identify as Aboriginal (Shannon et al., 2007). In this study, a comparison of young (18 to 24) versus older (25+) females involved in sex work in Vancouver identified that young sex workers were more likely to be Aboriginal and were also more likely to be homeless (C. Miller, Fielden, et al., 2011).

We found that sleeping on the streets, living in an unstable type of housing, and being highly transient were all significantly associated with increased likelihood of being involved in sex work. These findings are likely related to the independent association between childhood sexual abuse and living in marginal housing reported earlier in this
thesis. Several studies have observed a strong association between childhood sexual abuse and future involvement in sex work. Having experienced childhood sexual abuse was found to increase the probability of involvement in sex work in a study of youth and homeless women from Des Moines, Iowa (Simons & Whitbeck, 1991). Two Vancouver studies, VIDUS and the ARYS found that past childhood sexual abuse was independently associated with sex work (Braitstein et al., 2003; Stoltz, Shannon, et al., 2007). A study of 186 men and women in New England found that those exposed to childhood sexual abuse were significantly more likely to report sex work in their lifetime. Men who reported abuse were almost 8 times more likely to report a history of sex work (Zierler et al., 1991). In previous Cedar Project analyses, lifetime sexual abuse was independently associated with recent sex work involvement (AOR: 2.46, 95%CI: 1.36, 4.43) (Mehrabadi, Craib, et al., 2008).

Farley’s study of 100 women involved in sex work in Vancouver provides insight into how childhood sexual abuse, housing instability and sex work are likely connected. She and other researchers posit that children typically become involved in sex work subsequent to abusive treatment at home and after running away from dangerous home environments (Farley et al., 2005; Stoltz, Shannon, et al., 2007). Young men and women escaping sexual violence at home may become entrenched in street culture at an early age, putting them at increased risk for transition to injection drug use and involvement in sex work to make ends meet. Researchers from the Montreal Street Youth Cohort observed that having been without a place to sleep prior to age 16 was an independent predictor of initiation into prostitution among young women (Weber, Boivin, Blais, Haley, & Roy, 2004). It is likely that as young people become more entrenched in their addiction sex work acts as both a cause and effect of housing instability.

One way to interpret these findings is that young Aboriginal men and women facing
housing instability may use sex as means to secure housing in the absence of alternative ways to generate income and access resources related to their basic needs. In a study of 252 street-based female sex workers in the Maka Project, sleeping on the street was independently associated with servicing a higher volume of clients and servicing clients in public spaces (Duff et al., 2011). These findings suggest significant economic dependence on paid sex among homeless sex workers. Describing the Maka Project’s participants involvement in sex work, Shannon and colleagues suggest that, “sex work in this population is a rational, economic strategy adopted by women to meet basic subsistent needs in the face of large scale social and structural inequities” (Shannon, Kerr, et al., 2008). Anecdotally, we have heard from young women who participate in the Cedar Project that sex work is often initiated as a means of survival and later becomes a way of providing the basic needs for their own children and families, such as food, diapers and baby formula.

It could also be that women in particular are entering short or long term intimate relationships with regular trusted clients, non-client sexual partners, or spouses, to access resources such as housing. Previous studies have illustrated that individuals experiencing housing instability use survival sex work as a tactic to secure a temporary place to stay (Dickson-Gomez et al., 2009). In a study of 100 women involved in sex work in Vancouver, Farley et al found that 86% of their sample reported current or past homelessness and identified housing as one of their most urgent needs (Farley et al., 2005). Through in-depth life history interviews with 28 women who use drugs in New York City, Miller and Neaigus found that participants reported exchanging sex or other services (eg, cleaning and cooking) for shelter with men they had met in the context of sex work (M. Miller & Neaigus, 2002). For these women, this exchange was an important strategy to stabilize their lives. In the Maka Project, a qualitative study with 46 women involved in sex work in Vancouver’s
Downtown Eastside found that women often described their intimate partners as “glorified pimps” who controlled their drug use, while the woman participated in sex work to supply funds for drugs for both herself and her partner (Shannon, Kerr, et al., 2008). In the context of our study, it is possible that unstably housed young Aboriginal people – especially women – enter intimate relationships, including those with sugar daddies and regular, trusted clients, as a strategy to find safety and temporary accommodation.

We are concerned that dependence on intimate partners for housing can heighten young people’s vulnerability as it may serve to reinforce gender power inequalities and trap young women in abusive relationships (Duff et al., 2011). In turn, these unequal relationships may have severe implications for negotiating condom use or power over injection for young Aboriginal women who use drugs (M. Miller & Neaigus, 2002). In addition, dependence on intimate partners for housing leaves women vulnerable in terms of tenure during domestic breakdown.

Examining sex work as a cause of housing instability, our findings may indicate that young Aboriginal men and women involved in sex work are at higher risk of eviction, for example if they bring clients home. Alternatively, current housing parameters fail to meet the needs of women involved in sex work. Lazarus and colleagues observed that several women involved in sex work living in the Downtown Eastside were restricted by curfews, guest policies, and discrimination by housing managers who suspected them of being involved in sex work (Lazarus et al., 2011).

In the absence of safe spaces to work, street based sex workers are pushed into marginal spaces where they have less control over the sexual encounter, including over condom negotiation and risk of assault or arrest (Shannon & Csete, 2010). Findings from the Maka Project indicate that women working outside of the Downtown Eastside core, particularly in industrial spaces along the northeast and south, were more likely to report
being pressured by a client to engage in unprotected sex (Shannon et al., 2009). Further, the Maka Project presents findings that younger women and Aboriginal women were more likely to be marginalized from areas where services were concentrated as a result of fear of violence and policing (Shannon, Rusch, et al., 2008). Sex workers servicing clients in cars or public spaces experienced a 2-fold increase in odds of being pressured into unprotected sexual intercourse (Shannon et al., 2009). “A lack of safe places to take dates due to the current legal framework was described by several women as a direct structural barrier to HIV prevention by limiting their control with dates, increasing the risk of violence and reducing their ability to negotiate condom use. The most consistent theme documented in discussion groups was that once women enter a car, their ability to control their situation was severely compromised,” (Shannon, Kerr, et al., 2008). These studies underscore the importance of understanding the structural and coerced contexts in which condom negotiation and sexual assault often occurs.

Being highly transient in particular was associated with 3.52 greater odds of participating in sex work, compared to individuals who experienced low or medium transience. This was the largest effect size related to sex work of each of the measures of housing status we used in this study. Farley and colleagues have noted that young aboriginal people in housing transition are particularly vulnerable to being involved in sex work (Farley et al., 2005). We are concerned that this is critical time point at which the degree of vulnerability among young Aboriginal people who use drugs escalates drastically. Given the well documented but complex interplay between sex work, drug dependence and sexual violence, it is critical that we address the dearth of understanding about how young men and women transition to survival sex work, particularly during moments of housing transition.

**Sexual assault**
We found a significant positive relationship between having experienced sexual assault in the previous six months and both sleeping on the street and being highly transient. However, we did not find a similar relationship between type of housing and sexual assault. Young Aboriginal men and women living in public spaces or moving frequently likely face significant challenges finding privacy and freedom from violence. In a study of homeless individuals in LA County, having an outdoor sleeping place was associated with physical and sexual victimization (Wenzel, Koegel, & Gelberg, 2000). Researchers have identified several factors that put homeless individuals at risk of victimization, including lack of protective shelter, proximity to high crime areas, engagement in high risk activities, history of previous victimization, mental health issues, and substance abuse (Kushel, Evans, Perry, Robertson, & Moss, 2003; Wenzel et al., 2000). However, Kushel’s finding that a history of victimization was associated with initiation and prolongation of housing instability also suggests that victimization is a risk factor for poor housing outcomes (Kushel et al., 2003).

Like sex work, sexual assault is gendered with 6% of women experiencing sexual assault in the past six months at baseline compared to 1% of men. In their comparison of individuals who lived on the streets compared to those who were marginally housed, Kushel and colleagues found that women who were homeless had 3.4 increased odds of sexual assault compared to those who were marginally housed. A similar association was not identified for men (Kushel et al., 2003). A study of Maka Project participants in Vancouver demonstrated that women felt vulnerable to violence and sexual assault when staying in co-ed residences (Lazarus et al., 2011). In this study, male-centered housing models served to reinforce gender inequalities and perpetuate women’s powerlessness.

Previous studies have observed a close relationship between involvement in sex work and sexual assault. In a study of 100 sex work involved women in Vancouver, 78%
has been raped while working (Farley et al., 2005). In a qualitative study of 39 women living in an unsanctioned safer sex work environments in Vancouver, BC, all participants reported that violence and rape were a ubiquitous feature of street-level sex work (Krüsi et al., 2012). In a study of 2500 homeless and marginally housed individuals in San Francisco, sex work was associated with increased odds of sexual assault (Kushel et al., 2003). However, sexual violence is also often perpetrated by non-commercial partners (Duff et al., 2011).

A link between increased risk of re-victimization and childhood sexual abuse is well established. In a previous Cedar Project study, investigators found that nearly 50% of participants who had experienced sexual abuse have again experienced sexual abuse by other people (Pearce et al., 2008). Braitstein et al found similar results in the VIDUS study: over 50% of women and 9% of men had been re-victimized since the first incident of sexual violence (Braitstein et al., 2003). Further, a study of 215 young homeless women in a northwestern city in the US found a clear association between childhood sexual abuse and sexual coercion later in life (Noell, Rohde, Seeley, & Ochs, 2001).

**Consistent condom use**

Contrary to our expectations, living in unstable housing was associated with an increase in consistency of condom use. We know from previous studies that condom use can serve as the distinction between work and relational sex (Benoit et al., 2003). Others have observed that women and men involved in sex work have high rates of condom use with clients (Spittal et al., 2003). However, some researchers have observed low condom use with marginally housed individuals, including among those who trade sex or other services for temporary accommodations with a trusted client (M. Miller & Neaigus, 2002). We believe that this finding was due to a random error. However, it is also possible that this finding indicates the increased accessibility of condoms at places like SROs and
shelters (Evans & Strathdee, 2006), or that young people who are marginally housed in this study have a higher perception of their sexual risk and choose to wear condoms more often as a result (MacRae & Aalto, 2000). Further research is required to test this consistent condom use result.

Recommendations

The murder and disappearance of hundreds of Aboriginal women involved in sex work on Canadian streets has been highlighted by the Robert Pickton trial, the Highway of Tears investigations, reports from Save the Children and Amnesty International, and by numerous social justice inquiries and groups. Still, young Aboriginal men and women remain vulnerable to sexual violence and assault as they participate in street-based sex work in Canada’s cities. Programs informed by Aboriginal leadership, elders, and young people themselves must provide culturally safe spaces for healing from lifetime trauma including childhood sexual abuse, trauma and re-victimization.

Our findings point to the urgent need for the decriminalization of sex work as current legislation pushes street-based sex workers into marginal spaces where they are at increased risk of violence and HIV-related harms (Duff et al., 2011; Shannon & Csete, 2010). Recent successes in attempt to remove laws that prohibit formalized indoor sex work and solicitation for the purpose of sex are important steps in changing the environment of sex worker’s rights in Canada but there is still a long way to go. It is vital that as this fight for decriminalization continues that young Aboriginal sex workers are represented, and that these highly vulnerable young people are not marginalized further.

It is crucial that young Aboriginal people, especially young women, have access to safer indoor spaces where they can practice sex work with fewer risks. A recent qualitative study that observed 39 women involved in sex work living in unsanctioned indoor sex work environments in Vancouver found that participants who were able to work in their own
residences, with some security-related support from building management, were at less risk of assault by clients, had increased control over condom use and payment, and were better able to identify and respond to bad dates (Krüsi et al., 2012). Women living in these safer sex work environments were able to work with greater dignity, safety, and collaboration with their peers in the building. This harm reduction approach to sex work reduce threat of punitive sanctions by police and minimizes unequal gendered power dynamics related to outdoor sex work that put women at risk of sexual assault and coerced sex (Duff et al., 2011; M. Miller & Neaigus, 2002). Further, our finding that young Aboriginal people who are highly transient face significant risk of sexual assault suggests that it is not just being indoors that is important, but that women also need security of tenure and control over private spaces where they can feel safe from sexual assault.

**Limitations**

Our findings are subject to several potential limitations. Attaining a probabilistic sample was a challenge with this population and we cannot discount the possibility that our recruitment methods were biased towards particularly vulnerable young Aboriginal men and women. However, we have used a variety of recruitment methods to acquire a representative sample including snowball sampling. Studies have demonstrated that if referral chains are sufficiently long to penetrate deeply into the networks of a hidden population, snowball sampling can draw non-biased samples of the population (Magnani, Sabin, Saidel, & Heckathorn, 2005). Therefore, while we cannot rule out selection bias and its impact on our parameter estimates, we are confident that our sample is representative of Aboriginal young people who use illicit drugs in both Vancouver and Prince George. Nevertheless, it should be noted that Indigenous communities all over the world have a diversity of experience in relation to drug use; therefore, patterns of drug use observed in
this study may not necessarily be reflected among other Indigenous peoples living in resource rich or poor countries.

We must acknowledge that the complexity of risk factors within vulnerable sub-populations such as Aboriginal young people who use drugs may not be measured adequately with our current instruments. In addition, the data are self-reported, therefore, variables such as consistency of condom use may be imprecise. What is more, participants may also under-report experiences and behaviours that are too painful to recall or are illegal or stigmatizing. Indeed, we suspect that the prevalence of sexual abuse and HIV risk behaviours may have been substantially under-reported. We have attempted to minimize this limitation through repeated assurances of confidentiality and through establishment of rapport between participants and Aboriginal interviewers over time.

We recognize that our indicators of historical trauma, having parents who attended residential school and being taken from parents into care, are limited in that they do not directly assess the extent of the historical trauma experienced by the youth in our study. For example, young people who were raised by aunties and uncles who attended residential school are not counted as having parents who attended residential school. In addition, our measures do not assess community-level trauma arising from colonial legislation over the past 150 years. However, these measures do provide information on the effect of specific events (e.g., having a parent who experienced residential school) associated with colonization in Canada.

The associations between historical and lifetime trauma, housing status, and HIV vulnerability do not inform us of their relative temporal sequence. We cannot determine if housing instability preceded or followed sex- and drug-related HIV vulnerability, and therefore cannot infer causality. Despite these limitations, the results of this study provide an accurate understanding of the magnitude and correlates of housing instability among
young Aboriginal people in Vancouver and Prince George.

A further limitation of this research is that it does not include an in-depth gender analysis of the effect of historical trauma on housing status, and housing status on HIV vulnerability. This important consideration will be undertaken in future publications related to this research.

**Conclusion**

Our findings illustrate that both material and spatial dimensions of housing are closely linked to HIV vulnerability among young Aboriginal people. Our findings echo previous studies by illustrating that the life challenges that put individuals at risk for homelessness are the same as those that put individuals at risk of HIV infection. Ensuring that young Aboriginal people have access to safe spaces to live and inject must target both these dimensions. Further, the links between housing status and historical trauma indicate clearly that addressing the legacy of historical trauma is a crucial component of tackling the underlying causes of housing instability among young Aboriginal people who use illicit drugs.
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