YOUNG PEOPLE WHO USE DRUGS AND THE CHILD WELFARE SYSTEM: EVIDENCE TO IMPROVE OUTCOMES

by

Brittany Barker
B.A., University of Victoria, 2008
M.P.P., Simon Fraser University, 2014

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY
in
THE FACULTY OF GRADUATE AND POSTDOCTORAL STUDIES
(Interdisciplinary Studies)

THE UNIVERSITY OF BRITISH COLUMBIA
(Vancouver)

April 2019

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The following individuals certify that they have read, and recommend to the Faculty of Graduate and Postdoctoral Studies for acceptance, the dissertation entitled:

Young people who use drugs and the child welfare system: Evidence to improve outcomes

submitted by Brittany Barker in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Interdisciplinary Studies

Examining Committee:

Dr. Jean Shoveller, School of Population and Public Health, UBC
Supervisor

Dr. Thomas Kerr, Faculty of Medicine, UBC
Supervisory Committee Member

Dr. Robert Woollard, Faculty of Medicine, UBC
University Examiner

Dr. Richard Young, Faculty of Education, UBC
University Examiner

Additional Supervisory Committee Members:

Dr. Kora DeBeck, School of Public Policy, SFU
Supervisory Committee Member

Supervisory Committee Member
Abstract

Background: Youth exposed to the child welfare system (CWS) experience elevated rates of subsequent homelessness and other negative health-related outcomes. The objectives of this dissertation were to: systematically search and synthesize the literature on the relationship between the CWS and substance use outcomes; examine possible intergenerational impacts of the residential school system (RSS) on CWS-involvement among Indigenous youth; investigate the relationship between the CWS and injection initiation among street-involved youth; and evaluate if utilizing services while aging-out of care is associated with improved long-term health-related outcomes among a high-risk sample of younger people who use drugs (PWUD).

Methods: Data were derived from two harmonized, community-recruited prospective cohorts of PWUD in Vancouver, Canada. Study participants were seen semi-annually to complete an interviewer-administered questionnaire. Multivariable logistic regression analyses were used to investigate the intersections between social and structural forces associated with CWS-involvement and their influence on substance use and health-related outcomes.

Results: Collectively, the findings of this dissertation indicate that the CWS and related exposures act as a risk environment for youth in care. Having a history of CWS-involvement was independently associated with initiating injection drug use before age 18 among street-involved youth. Among Indigenous PWUD, immediate familial RSS exposure (i.e., grandparent, parent) was common (66.3%) and independently associated with a higher likelihood for having been personally placed into the CWS. Further, when controlling for familial RSS exposure, a non-detectable difference in the odds of CWS-involvement between Indigenous and non-Indigenous PWUD was found. Among PWUD, approximately half of the sample utilized financial, independent living, and medical services while aging-out, but low utilization rates and high unmet demand were
reported for education, employment, and life-skills services. PWUD who utilized a higher number of transitional services while aging-out were significantly less likely to report subsequent daily drug use or housing instability.

**Conclusions:** This dissertation identifies several policy opportunities to improve the health and wellbeing of marginalized youth in care, and particularly supports calls to extend care and services to facilitate successful transitions to independence among those who age-out. Evidence-based interventions that address the upstream social and structural determinants of CWS-involvement are also urgently needed.
Lay Summary

Youth involved with the child welfare system (CWS) are vulnerable to homelessness, substance use, and other health-related issues. This thesis sought to provide scientific evidence to improve the health and wellbeing of youth in care using data obtained from two long-running studies of people who use drugs (PWUD) with high rates of CWS-involvement in Vancouver, Canada. Using epidemiologic research methods, this thesis found that Indigenous PWUD who had a parent that attended a residential school were more likely to be placed into care. It also found that among street youth who inject drugs, those who had been in care were more likely to initiate injection drug use earlier (age<18). Lastly, among PWUD and who aged-out, those who accessed more transitional services while aging-out were less likely to subsequently use drugs daily or be homeless. Collectively, these findings demonstrate that youth in care need additional support throughout their placements into young adulthood.
Preface

This statement certifies that the work presented in this dissertation was conceived, conducted, written, and disseminated by the candidate, Brittany Barker (BB). All empirical research presented in this dissertation (Chapters 3-5) was approved by the University of British Columbia/Providence Health Care Ethics Board (certificate H04-50160 and H05-50234). The co-authors of the manuscripts: Dr. Kora DeBeck (KD), Dr. Jeannie Shoveller (JS), Dr. Thomas Kerr (TK), Dr. Evan Wood (EW), Dr. Kanna Hayashi (KH), Dr. John Milloy (JM), Huiru Dong (HD), Kali Sedgemore (KS), Malcolm Tourangeau (MT), Lousie Lagimodiere (LL), Cameron Grant (CG), and Margaret Erickson (ME) made contributions only commensurate with supervisory committee, collegial or co-investigator duties. The principal investigators of VIDUS (TK, KH) and ARYS (TK, KD) from which Chapters 3-5 were derived (exclusively ARYS data for Chapter 4), had access to all study data and as corresponding authors, take full responsibility for the integrity of the results and accuracy of the statistical analyses.

Specific contributions for each chapter are as follows:

Chapters 1 and 6 are original, unpublished products by the candidate. With guidance and input from co-supervisors (KD, JS) and committee member (TK), BB searched, reviewed and synthesized all of the literature presented in these chapters and incorporated feedback from the supervisory committee.

A version of Chapter 2 is currently under peer-review for publication. BB, ME, KD. “Substance use among youth involved with the child welfare system: A systematic review.” With guidance and input from KD, BB drafted the search strategy, conducted the review, and wrote the initial draft. As second reviewer, ME reviewed all full-text articles independently and both ME and KD provided critical feedback on manuscript for final submission.
A version of Chapter 3 has been accepted for peer-reviewed publication and is reused here as per journal and university guidelines. BB, KS, MT, LL, JM, HD, KH, JS, KD. “Intergenerational trauma: The relationship between residential schools & the child welfare system among young people who use drugs in Vancouver Canada,” *Journal of Adolescent Health* (in-press). Chapter 3 was conceived of by BB and KD, with MT and LL providing prior community support for the study aims. HD conducted the statistical analyses with significant input from BB, TK and KD, and BB prepared the initial draft of the analysis. JM, KS, MT, and LL provided content expertise and input, specifically KS, MT, LL helped facilitate culturally appropriate interpretations and dissemination of findings through ongoing collaborative efforts with BB. JS, KH, TK, KD provided significant input and critical feedback. All authors approved final manuscript for submission.

A version of Chapter 4 has been published and is reused here as per journal and university guidelines. BB, TK, HD, EW, KD. “History of being in government care associated with younger age at injection initiation among a cohort of street-involved youth,” *Drug and Alcohol Review* 2017;36(5):639-642. KD, TK and BB designed the study, HD conducted the statistical analyses with substantial input from BB, BB wrote the initial draft and TK, EW and KD provided significant input. BB revised the manuscript based on peer-review. All authors approved the final manuscript.

A version of Chapter 5 is under peer-review for publication. BB, JS, CG, TK, KD. “Long-term benefits of providing transitional services to youth aging-out of the child welfare system: Evidence from a cohort of young people who use drugs.” Chapter 5 was designed by BB and KD. CG conducted the statistical analyses with significant input from BB and guidance from KD and TK. BB prepared the initial draft of the analysis. TK, JS and KD provided substantive critical feedback. All authors approved final manuscript for submission.
# Table of Contents

Abstract........................................................................................................................................... iii
Lay Summary ........................................................................................................................................ v
Preface............................................................................................................................................... vi
Table of Contents .............................................................................................................................. viii
List of Tables ...................................................................................................................................... xi
List of Figures ...................................................................................................................................... xii
List of Abbreviations ........................................................................................................................ xiii
Acknowledgements ........................................................................................................................... xiv
Dedication ........................................................................................................................................... xvi

## Chapter 1: Introduction .................................................................................................................. 1

  1.1 Child maltreatment and the child welfare system................................................................. 1
  1.2 Trajectories and outcomes of former youth in care ......................................................... 4
  1.3 Contemporary society and child welfare policy ............................................................... 6
  1.4 Neglect, poverty and the overrepresentation of Indigenous youth in the child welfare system ........................................................................................................... 9
  1.5 Study justification ................................................................................................................ 12
  1.6 Conceptual framework ...................................................................................................... 13
  1.7 Study objectives .................................................................................................................. 14
  1.8 Study design and methods ................................................................................................. 16
  1.9 Summary ............................................................................................................................ 18

## Chapter 2: The child welfare system and substance use: A systematic review ............ 21

  2.1 Introduction .......................................................................................................................... 21
  2.2 Methods ............................................................................................................................... 22
    2.2.1 Search strategy and information sources .................................................................. 22
    2.2.2 Eligibility criteria ...................................................................................................... 22
Chapter 5: Long-term benefits of providing transitional services to youth aging-out of the child welfare system: Evidence from a cohort of young people who use drugs....63

5.1 Introduction........................................................................................................................................63

5.2 Methods .............................................................................................................................................64

5.2.1 Study sample ...................................................................................................................................64

5.2.2 Study design and variable selection ...............................................................................................64

5.2.3 Analytic technique ..........................................................................................................................66

5.3 Results ................................................................................................................................................66

5.4 Discussion ..........................................................................................................................................68

Chapter 6: Conclusions .............................................................................................................................77

6.1 Summary of findings and overall contributions of this study ..........................................................77

6.1.1 Contributions to the literature on colonization ............................................................................78

6.1.2 Contributions to the literature on initiation of injection drug use ..............................................79

6.1.3 Contributions to the literature on service utilization and aging-out ...........................................80

6.2 Reflecting on study methods: strengths and limitations ....................................................................81

6.3 Policy implications and recommendations .......................................................................................84

6.4 Directions for future research ...........................................................................................................87

6.5 Conclusions .......................................................................................................................................89

References ...............................................................................................................................................91
List of Tables

Table 2.1 Summary of included studies in systematic review (n=19) ........................................37
Table 3.1 Descriptive statistics, bivariable and multivariable logistic regression analyses assessing impact of familial exposure to the residential school system (RSS) on personal involvement with the CWS among younger Indigenous PWUD (n=267) ..................53
Table 3.2 Secondary analysis assessing the relationship between ethnicity and involvement with the child welfare system among younger PWUD (n=498) ...............54
Table 4.1 Descriptive statistics stratified by age at injection initiation (<18 vs. ≥18). Bivariable and multivariable analyses of factors associated with initiating injection drug use before age 18 among street-involved youth (n=815) ..................................................62
Table 5.1 Sociodemographic and recent substance use patterns among PWUD that aged-out of the CWS ............................................................................................................73
Table 5.2 Observations of reported service utilization, availability, barriers, and interest across seven categories of transitional services among PWUD and who aged-out of CWS (n=217) ........................................................................................................74
Table 5.3 Bivariable logistic regression analyses assessing the relationship between transitional service utilization and health and social outcomes among PWUD and who aged-out of CWS (n=217) ........................................................................................................75
Table 5.4 Multivariable logistic regression analyses assessing the relationship between transitional service utilization and health and social outcomes among PWUD and who aged-out of CWS (n=217) ........................................................................................................76
List of Figures

Figure 1.1 Flowchart of pathways through the child welfare system ...............................20
Figure 2.1 Flowchart of systematic review acquisition, screening and article selection
process (Moher et al., 2009) ..................................................................................................36
Figure 3.1 Primary analysis depicting point estimates and 95% confidence intervals for
CWS involvement among younger Indigenous PWUD (n=267) ...........................................55
# List of Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AYAs</td>
<td>Agreements with Young Adults</td>
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<tr>
<td>AOR</td>
<td>Adjusted odds ratio</td>
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<tr>
<td>ARYS</td>
<td>At-Risk Youth Study</td>
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<tr>
<td>B.C.</td>
<td>British Columbia</td>
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<tr>
<td>CI</td>
<td>Confidence interval</td>
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<tr>
<td>CWS</td>
<td>Child welfare system</td>
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<tr>
<td>DSM-IV</td>
<td>Diagnostic and Statistical Manual of Mental Disorders - 4th edition</td>
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<tr>
<td>DTES</td>
<td>Downtown Eastside of Vancouver</td>
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<tr>
<td>HCV</td>
<td>Hepatitis C</td>
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<tr>
<td>HIV</td>
<td>Human immunodeficiency virus</td>
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<tr>
<td>ILPs</td>
<td>Independent living programs</td>
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<tr>
<td>IQR</td>
<td>Interquartile range</td>
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<tr>
<td>MCFD</td>
<td>B.C. Ministry of Children and Family Development</td>
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<tr>
<td>OHC</td>
<td>Out-of-home care</td>
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<tr>
<td>OR</td>
<td>Odds ratio</td>
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<tr>
<td>PWID</td>
<td>People who inject drugs</td>
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<td>PWUD</td>
<td>People who use drugs</td>
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<tr>
<td>RSS</td>
<td>Residential school system</td>
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<tr>
<td>U.S.</td>
<td>United States</td>
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<tr>
<td>VIDUS</td>
<td>Vancouver Injection Drug Users Study</td>
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<tr>
<td>WAHRS</td>
<td>Western Aboriginal Harm Reduction Society</td>
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Acknowledgements

This dissertation would not have been possible without considerable and sustained support from supervisors, colleagues, family, and friends. First and foremost, my outstanding supervisory committee: Drs. Kora DeBeck, Jeannie Shoveller and Thomas Kerr – it has been my privilege to learn from such brilliant minds and passionate individuals. Dr. Shoveller, you have been an amazing advocate for me and embody the true spirit of a teacher. Drs. DeBeck and Kerr, thank you for your dedication in developing my capacity to become an independent investigator, it has been a long and somewhat painful journey at times and I hope I have earned a “most improved player” designation. The ongoing mentorship I received from these individuals and countless others at the B.C. Centre on Substance Use throughout my doctoral studies has been immeasurable including, Dr. M-J Milloy, Dr. Evan Wood, Dr. Tessa Cheng, Dr. Mint Ti, Huiru Dong, Stephanie Lake, Mohammad Karamouzian, Daniel Kane, frontline staff, and study co-authors. Lastly, to Dr. Mary Clare Kennedy and Elena Argento, I would not have made it this far without your support and friendship over these past four years. I am beyond grateful to call you my friends.

The research presented herein would not have been possible without the contribution of ARYS and VIDUS participants. I thank you for sharing your experiences and dedication to improving the wellbeing of people who use drugs in Vancouver. In particular, I would like to thank the Western Aboriginal Harm Reduction Society for allowing me to be part of your meetings and sharing deeply personal stories with me. Kali Sedgemore you are a bright and passionate individual and I thank you for your contributions to my work, as well as the work you do to improve policy and programming for youth in care and youth who use substances in Vancouver.

Just as pivotal in getting me to this place is the love and support I have received from my family and friends. To my parents and their unwavering faith in me – all youth
deserve parents like you, you are an inspiration for what I do. To Aaron, my lobster, you may have shown up in the 4th quarter but I cannot imagine my world without you or Snow – you are my family (and the kitties).

Support for this research was provided by a Canadian Institutes of Health Research Doctoral Research Award and a University of British Columbia Four Year Fellowship and Tuition Award. I would additionally like to thank the Interdisciplinary Studies Graduate Program, Dr. Barbara Weber and Enid Ho for the generous end of program support.

Lastly, I humbly acknowledge that this research took place on the unceded, traditional and ancestral territories of the Coast Salish Peoples, including the xʷməθkʷəy̓əm (Musqueam), Skwxwú7mesh (Squamish), and Səl̓ílwətaɬ (Tsleil-waututh) Nations.
To one of the strongest women I know, 
my maternal grandmother (nanny).
Chapter 1: Introduction

1.1 Child maltreatment and the child welfare system

It is well established that early life events and exposures can influence social and health trajectories over the life course.\textsuperscript{1,2} Epidemiological studies have documented that early adverse childhood experiences (e.g., child maltreatment, exposure to violence, loss of a parent, parental substance use and mental illness) are associated with an increased subsequent risk of a wide range of health and social harms (e.g., substance use, mental health issues, poor educational attainment, unemployment).\textsuperscript{3-5} This is a considerable public health concern as suspected child maltreatment results in over 250,000 annual reports to child welfare services across Canada and over 4,000,000 reports annually in the United States.\textsuperscript{6,7} Although definitions and wording in legislation vary by jurisdiction, child maltreatment is commonly defined as the act, or failure to act, by a parent or caretaker (e.g., legal guardian, school teacher, daycare worker) that results in death, serious harm or imminent risk of serious harm to a child.\textsuperscript{6-8} As a consequence of the high prevalence and public health harms associated with child maltreatment, governments are mandated to protect and promote the wellbeing of children operationalized by a group of public and private services collectively known as the child welfare system\textsuperscript{1} (CWS).

How governments and researchers categorize child maltreatment is inconsistent across settings, and neglect and emotional maltreatment are rarely systematically defined.\textsuperscript{6} In the province of British Columbia (B.C.) where this doctoral research took place, the ministry responsible for child welfare (i.e., Ministry of Children and Family Development) defines neglect as an act of omission by a parent or caretaker to provide for a youth’s basic needs, and may include a failure to provide housing, food, basic

\textsuperscript{1} It should be noted that in addition to child maltreatment investigations, child welfare services may become involved in situations where youth behavioural or mental health issues are so severe parents are unable to provide appropriate care, as well as cases where the parent(s) or guardian(s) pass away and kin is unable or unwilling to take the youth. However, these represent a small proportion of cases handled by the CWS and are outside of the scope of this dissertation and therefore, will not be examined.
medical care, or supervision that results in serious harm.\textsuperscript{9} Parental substance use contributes to a significant proportion of neglect charges as well.\textsuperscript{6,10} Emotional harm encompasses both emotional neglect (e.g., rejection, isolation) and emotional abuse (e.g., verbal insults, humiliation, threats); and in B.C., exposure to intimate partner violence is included in the category of emotional harm.\textsuperscript{5,9}

Organizational structure, service delivery, policy, oversight, and funding of child welfare services vary considerably across settings as well. In Canada, the federal government is devolved of child welfare and each of the ten provinces and three territories have unique legislation and service delivery models for child welfare. In Ontario for example, a system of 49 accredited private agencies (collectively referred to as Children’s Aid Societies) deliver child protection and family support services (e.g., child maltreatment investigations, removal of youth, placement decisions), and the ministry is responsible for oversight, funding and policy.\textsuperscript{11} Whereas in B.C., a more centralized model is employed with the Ministry of Children and Family Development (MCFD) providing child protection and support services, in addition to policy, and contracts foster parents and local agencies to house youth and provide supplemental services. In response to the overrepresentation of Indigenous children and youth in care,\textsuperscript{12,13} MCFD has delegated various levels of responsibility over child protection and family support services to “Delegated Aboriginal Agencies”\textsuperscript{14} (see section 1.4 for further discussion of Indigenous overrepresentation and child welfare structure).

Despite differences in definitions, structure and reporting, child welfare systems are guided by two primary aims: child protection and family preservation. In B.C. and elsewhere, child welfare statutes require the general public and professionals working with children to report all suspected child abuse and neglect to child welfare services or local law enforcement.\textsuperscript{6,9} This includes any individual under the age of 19 in B.C.\textsuperscript{8} As a consequence, MCFD can receive upwards of 25,000 calls for suspected child maltreatment and related concerns per month.\textsuperscript{15} A child protection social worker is then assigned to
investigate with the vast majority of reports being unsubstantiated and closed. When maltreatment is suspected, substantiated, or the risk of harm is deemed likely, the youth is thought to need protection and some level of services. At this point, a case is opened, although in the majority of cases the family remains intact throughout and after the investigation. The most recent available data in Canada estimated that 21.3% of the approximately 85,000 substantiated child maltreatment cases in 2008 resulted in a youth changing residence (or 8.0% of total child maltreatment reports). Based on the social worker’s assessment, the family may be referred to time-limited, support services either through a court order or entered into voluntarily, such as, in-home supervision, respite care, family counselling, addiction treatment, or parenting programs. However, in cases where significant or sustained maltreatment has occurred, or the risk of harm is considered imminent, out-of-home care (OHC) may be determined to be in the best interest of the child by the court. See Figure 1.1 for a flow chart of potential pathways through the CWS. Child welfare best practice is to place a youth in the least restrictive and disruptive setting (e.g., kinship care, family-based foster care) that can provide appropriate services to meet their needs. These include:

1. **Informal kinship care**: an informal arrangement with a relative or someone with kinship-like ties (e.g., close family friend, extended family, cultural community) that does not involve government custody of the youth.

2. **Kinship care**: a formal placement provided by a relative or someone with kinship-like ties under the auspices of child welfare services. The care provider is compensated for the cost of housing and supporting the youth, and the government has temporary or permanent custody of the youth.

3. **Family-based foster care**: non-kin, family-based care placement typically in a private residence. The care provider is compensated for the cost of housing and supporting the youth, and the government has temporary or permanent custody of the youth.
4. **Group home**: an out-of-home placement in a structured group living setting attended by child care and social work professionals.

5. **Residential/secure treatment**: the most restrictive setting where placement occurs in a therapeutic or correctional residential treatment centre to address specialized needs of the child.

While escalating placements to more restrictive settings are supposed to be guided by the needs and risk profile of each youth, strained resources and a limited supply of foster parents have been identified for youth being placed in group homes and even hotels across Canada, particularly in rural and northern areas.\(^{18,19}\) Even in well-resourced and urban areas, many children and youth experience system abuses while in government custody (e.g., bureaucratic delays, mismanaging caseloads),\(^{20}\) placement instability,\(^{21}\) and other disruptions (e.g., changing schools or social workers).\(^{22}\) Prior research has identified that experiencing these system abuses can negatively impact child cognitive development, physical health and learning outcomes.\(^{23,24}\) However, research that CWS involvement and related system experiences precede health and development issues is far from conclusive. Thought to be partially explained by the high prevalence of adverse childhood experiences,\(^{25}\) data support that youth coming into government care present with elevated rates of chronic health conditions,\(^{26,27}\) mental health issues,\(^{28}\) behavioural problems,\(^{27}\) and require special education\(^{27,29}\) compared to their peer group in the general population. Regardless of the temporality of exposure and outcome, the frequency of vulnerabilities experienced by children and youth in government care suggest that this is a population with a high-risk profile.

### 1.2 Trajectories and outcomes of former youth in care

As a result of adverse childhood experiences that may have preceded and/or occurred during CWS involvement, a number of negative health and social outcomes are common among youth and adults with a history of being in government care. Compared
to their peers outside of the CWS, youth in government care experience elevated rates of homelessness, \textsuperscript{30}-\textsuperscript{32} substance use, \textsuperscript{33},\textsuperscript{34} incarceration, \textsuperscript{35},\textsuperscript{36} unplanned pregnancies, \textsuperscript{37} poverty and underemployment, \textsuperscript{38},\textsuperscript{39} poor educational attainment, \textsuperscript{38},\textsuperscript{40} and both mental and physical health issues \textsuperscript{30},\textsuperscript{41} in adolescence and well into adulthood. Furthermore, youth who age-out of government care are recognized as being especially vulnerable to negative health and social outcomes – particularly homelessness. \textsuperscript{42}-\textsuperscript{44} “Aging-out” may be defined as being in out-of-home care at the legal age of majority and experiencing an abrupt termination of child welfare supports and services including provision of care placement (in most jurisdictions). \textsuperscript{45}-\textsuperscript{48}

Previous research has consistently found that approximately half of youth in government care do not graduate from high school; \textsuperscript{38},\textsuperscript{49},\textsuperscript{50} although Pecora et al. reviewed a number of U.S. studies conducted among representative samples of older youth that aged-out of care and estimated that 74\% eventually completed a diploma or equivalent credential after being emancipated from the CWS. \textsuperscript{51} B.C. data from 2017 indicates that only 51\% of youth in care graduated within six years of starting grade 8 compared to 89\% from the general population of youth for the same reporting period. \textsuperscript{52} Further, it is estimated that approximately a third of former youth in care access post-secondary education and only one in ten attain a degree, compared to 60-70\% and a third of peers from the general population respectively. \textsuperscript{53} It should be noted that in 2017, the B.C. Provincial Government established a tuition waiver program for former youth in care between the ages of 19-27. In 2018 the program was expanded, with all 25 public post-secondary institutions in the province and ten union-based trades schools exempting former youth in care from tuition and program-related fees. \textsuperscript{54} As a result, the reported number of former youth in care that enrolled in post-secondary increased by 20\% in the first year. \textsuperscript{55} Employment levels vary across studies depending on follow-up time, with approximately half of former government care youth experiencing unemployment at some point, and among those employed, income disparity was observed compared to
peers who were not exposed to the CWS.\textsuperscript{38,39,56-58} As a result of negative education and employment outcomes, reliance on social assistance is common among former youth in care.\textsuperscript{59} B.C. data indicates that nearly half of youth who aged-out of care in 2017 subsequently accessed social assistance or disability payments within six months post-discharge, although it should be noted these trends have been decreasing over the past decade.\textsuperscript{60}

Lastly, a recent review by the B.C. Coroners Service found that among all youth and young adults aged 17-25 who died in the province between 2011 and 2016, 13\% (n=200) had a history of involvement with MCFD, either as a current or former youth in care (e.g., aged-out).\textsuperscript{61} Among the deceased with a history of child welfare involvement, only 4\% were classified as natural causes. The major causes of death among this population were drug overdose (47\%), suicide (24\%), motor vehicle deaths (9\%), homicide (7\%), and other accidental death (e.g., traumatic injury, drowning; 8\%).\textsuperscript{61} Among young people who died during the reporting period without a history of MCFD involvement, 22\% of deaths were attributed to a drug overdose.\textsuperscript{61} This disparity highlights that overdose fatalities are particularly concentrated among youth with a history of having been in care. In sum, overall death rates in this setting suggest that young people exiting the CWS experience mortality at five times the rate of the general population of youth in B.C.\textsuperscript{61} Given the well documented negative health and social outcomes associated with CSW exposure, including high mortality rates, it is clear that there are major gaps in current child welfare policy and programming and that youth in care are not adequately protected, nor successfully supported in their transition to independence as young adults.

\section*{1.3 Contemporary society and child welfare policy}

As all youth transition from adolescence to adulthood, a number of major life experiences can occur such as, obtaining higher education, starting a career, forming
long-lasting adult relationships, engaging in complex finances (e.g., loans, investments), and developing and strengthening life skills in order to function and live independently as an adult. Over the past several decades in North America and elsewhere, considerable changes to the labour market, rising living costs, and the accessibility and need for higher education have led to the gradual deferral of traditional markers of adulthood. Marriage, home owning, and parenting frequently commence later in life, with youth and young adults making multiple moves between the parental home and independent living in their twenties. This is supported by data obtained from the 2016 Canadian Census indicating that over one-third (35%) of young adults between the ages 20-34 were living with a parent, and this proportion has increased substantially over the last several decades. Parents increasingly provide financial and emotional support to their young adult-children during this period as well. Although it is worth noting that these processes are not standardized across or within nations, the transition from adolescence to adulthood is considered a major developmental phase in a young person’s life.

As previously defined, youth aging-out of the CWS are emancipated from their care placements and government support is often terminated at the legal age of majority in most jurisdictions across North America (e.g., 18 or 19 years old). In response to high rates of homelessness and other negative outcomes frequently experienced among youth exiting the CWS, there have been changes to legislation, as well as increased supports, services and programs aimed at helping youth transition to independence and improve outcomes in recent decades. Extending the age of emancipation to 21 or mid-twenties is one mechanism that advocates have long proposed to help youth aging-out of care successfully transition to independence. Although some jurisdictions have formally extended the duration of care placements, there are typically numerous eligibility requirements that may ultimately exclude youth who are most in need of continued support. In the U.S. for example, the *Fostering Connections to Success and*
Increasing Adoptions Act of 2008 provides federal transfer payments to states for expenditures related to extending government care for young people up to the age of 21; with all but Louisiana, Ohio, Oregon, and Utah currently providing eligible youth with continued care placements and supports past the age of 18 as of 2017. However, for youth to remain in care past their 18th birthday, they must be: enrolled in high school (or equivalent), postsecondary or a vocational program; employed a minimum of 80 hours a month; participating in a program designed to promote or remove barriers to employment; or qualify for medical accommodation.

Unlike the U.S. and noted above, Canada does not have a federal department responsible for overseeing child welfare, and across the country there is no formal legislation to extend care beyond the legal age of majority. Instead, various piecemeal services and supports have been implemented for youth aging-out of care that typically involve providing living expenses and other supports for young people pursuing educational and vocational programs. In B.C., MCFD implemented “Agreements with Young Adults” (AYAs) that provide living expenses and additional supports for eligible youth until their 27th birthday. Eligibility criteria is similar to the above noted U.S. model, although AYAs are somewhat more inclusive as youth engaging in mental health and addiction treatment programs qualify for AYA support. While age 27 is closer to the average age young people in B.C. become financially independent and leave home, child welfare advocates argue AYAs are inadequate and inequitable as this approach places the burden on youth to have knowledge of, apply and be approved for a program that has an arduous amount of paperwork and re-enrolment every six months. Furthermore, AYAs are not universally accessible to all youth in care and exclude those who are not able, or ready, to be enrolled in educational, vocational, or addiction treatment programs. Lastly, AYAs have been characterized as primarily a “financial transaction” that do not provide youth with a social worker or case manager whom they can develop a supportive adult relationship with. Research has demonstrated that
positive adult relationships and natural mentors are critical for youth in care, particularly for youth who age-out of the CWS.\textsuperscript{71-73} For both American and Canadian programs that extend care placements and living support for youth aging-out, researchers and advocates argue the restrictive eligibility criteria favours the highest functioning youth while actively excluding the most vulnerable leaving the CWS.\textsuperscript{53,61,74} Although there has been an increase in policy and programming to improve stability and outcomes among youth exiting the CWS, the impacts of these policies have yet to be evaluated in B.C.

1.4 Neglect, poverty and the overrepresentation of Indigenous youth in the child welfare system

Child neglect has been shown to be one of the most detrimental forms of maltreatment to cognitive and psychosocial development with short and long-lasting effects.\textsuperscript{75} However, a wealth of research has demonstrated the strong association between poverty and child neglect, and indeed, low-income families are drastically overrepresented among those involved with the CWS.\textsuperscript{76-78} As described above, the category of neglect encompasses social and structural risk factors such as housing instability, food insecurity, lack of medical care, supervision, parental substance use, and provision of other essential materials that are frequently indirect indicators of poverty. This is particularly problematic considering charges of neglect have long been the primary reason children and youth come into government care. In 2008 for example, of the approximately 85,000 substantiated child maltreatment cases across Canada neglect was identified as the primary maltreatment category in 34\% of cases.\textsuperscript{6} In the U.S., data from 2016 indicated that of the approximately 676,000 substantiated maltreatment cases 74.8\% involved a report of neglect.\textsuperscript{7} It should be noted that these data are not directly comparable due to differences in reporting periods, data collection and measures, and that in the U.S. financial barriers associated with accessing a public-private health care system are more pronounced.
The relationship between poverty and child neglect has been shown to contribute to the overrepresentation of ethnic minorities in the CWS.\textsuperscript{79,80} Across Canada and elsewhere, assimilative and colonial child welfare policy and practice directed at Indigenous\textsuperscript{2} populations has been the norm for hundreds of years.\textsuperscript{81-84} Indigenous children are significantly overrepresented at every stage of child maltreatment cases, from investigations to out-of-home care placements.\textsuperscript{13,85-87} Statistics Canada estimated that despite accounting for approximately 7\% of the total youth population under the age of 14 across the country, Indigenous youth (age<14) represented 48\% of the total youth in government care in 2016.\textsuperscript{88} However, it should be noted that these numbers are likely vastly underestimated as they do not include Indigenous youth living in kinship care arrangements or group homes. In some areas of the country the proportion of Indigenous youth in the CWS is extremely high. For example, 90\% of the total youth in care in Manitoba and 95\% of the youth in care in the Northwest Territories are reported as being of Indigenous ancestry, despite accounting for less than half of the youth population in both jurisdictions.\textsuperscript{89,90} Lastly, Indigenous youth comprised 63\% of the total youth in care in B.C. while only accounting for 10\% of the youth population according to MCFD data for 2017.\textsuperscript{12}

While neglect is the most common reason youth of all ethnicities are apprehended from the parental home and placed into care, this dynamic is more pronounced among Indigenous families involved with the CWS. Prior research using a nationally representative sample of youth and families involved in child welfare systems across Canada found that Indigenous families are investigated for suspected neglect at rates six times higher than non-Indigenous families, and that neglect is substantiated eight times

\textsuperscript{2} Indigenous refers to three distinct groups: First Nations, Métis and Inuit peoples. However, it should be noted that Statistics Canada estimated that First Nations youth comprise between 77-82\% of all Indigenous youth in care (Turner, 2016), and therefore the injustices spoken to in this context fall disproportionately on First Nations families.
higher among Indigenous families compared to non-Indigenous families.\textsuperscript{10,85} Additionally, Canadian research has identified the substantial role of caregiver (e.g., parental substance use) and household risk factors (e.g., housing instability, overcrowding, poverty) in contributing the overrepresentation of Indigenous youth in care.\textsuperscript{10,13,91}

As previously mentioned, Canada employs a decentralized model for child welfare with provincial and territorial governments funding and operating their own systems. However, the federal government is responsible for funding all health and social services on reserves\textsuperscript{3} across Canada – including child welfare services. Multiple previous evaluations have identified the chronic federal underfunding of on-reserve child welfare services compared to provincial counterparts.\textsuperscript{92,93} This disparity led to the 2016 Canadian Human Rights Tribunal ruling that found the federal government systemically failed First Nations children and youth living on reserves through the provision of child welfare services that were structurally flawed, inequitable and discriminatory.\textsuperscript{94} The structure of Indigenous child welfare services has changed rapidly over the last several decades, with an increasing number of services being provided for by fully- or partly-mandated Indigenous organizations and communities across Canada.\textsuperscript{95} In B.C., through delegated agreements with the Provincial Government, Indigenous communities are gradually assuming authority over child welfare and family support services. As of 2018, there are 23 Delegated Aboriginal Agencies in various stages of delegation representing 148 of the approximately 198 First Nation communities across the province.\textsuperscript{14} Only nine agencies have complete autonomy over child protection and family support services, while the

\textsuperscript{3} Reserves are publicly-owned Crown lands set aside for the use and occupancy of a band or group of Indians (i.e., First Nations) pursuant to the \textit{Indian Act} of 1985. Canadian federal legislation outlines the obligations of the Federal Government and regulates the management of Indian reserve lands. There are nearly 2,300 reserves in Canada (Trocmé et al., 2004).
remaining have some control over permanency planning for youth in long-term care, provision of voluntary services, and approval of foster and kinship homes.\textsuperscript{14}

\subsection*{1.5 Study justification}

Researchers and advocates alike have characterized the CWS as a “pipeline” to homelessness, particularly among youth who age-out of care.\textsuperscript{30,96,97} This is a considerable public health concern as over 26,000 youth age-out of the CWS annually in the U.S.\textsuperscript{45,98} In Canada, national estimates are not readily available as there is no federal child welfare oversight or tracking of youth leaving care.\textsuperscript{67} In B.C., between 700-1100 youth age-out annually.\textsuperscript{60} Studies among homeless and street-involved populations have consistently found that 35-50\% of study participants have a history of being in government care.\textsuperscript{99-102} This is in stark contrast to the estimated 0.5\% of the general population that has been in the CWS across both the U.S. and Canada.\textsuperscript{7,65,103} Prior research conducted by the candidate suggests that street-involved youth in Vancouver are approximately 100 times more likely to have a history of being in government care compared to the general population of youth in Canada.\textsuperscript{33}

A previous systematic review identified similarities in characteristics and needs (e.g., histories of trauma, elevated rates of mental health issues and substance use) among street and CWS involved youth populations.\textsuperscript{104} Indeed, youth in care who experience subsequent street-involvement and substance use are some of the most vulnerable to pass through the CWS, and there is some evidence that they are being excluded from current supports and services aimed at transitioning youth from care to independence.\textsuperscript{61,70} For these reasons, this dissertation uses data obtained from two long-running cohorts of people who use drugs (PWUD) with high rates of street and CWS involvement. Given the overlap in vulnerabilities and needs among these populations, the primary research aim of this dissertation is to provide scientific evidence to improve the health and wellbeing of the most marginalized youth in the CWS.
1.6 Conceptual framework

This research is guided by the “Risk Environment Framework” originally developed by Rhodes. This framework emphasizes the intersecting social, structural and environmental forces that shape individual choice, behaviour, and health-related harms and outcomes among PWUD. This represents a departure from traditional and prevailing public health approaches that privilege individual-level behavioural change related to substance use, and seeks to recognize and acknowledge the ways in which contextual-level forces operating at the micro-, meso- and macro-level shape the distribution of disease and other health-related outcomes among drug using populations. This is not to discount agency, but to position individuals in the larger context. From this perspective, responsibility for health promotion and risk reduction lies not solely with the individual, but also in the laws, policies and social conditions and environments that PWUD operate within. Although primarily used in the context of HIV infection and injection drug use, the present dissertation modifies this theoretical framework to conceptualize the CWS and related-exposures (e.g., placement type, rate of placement change, aging-out) as a distinct risk environment.

In the context of the CWS, a number of individual, social, and structural forces and physical environments shape family risk for child maltreatment precipitating CWS involvement. These antecedent risk factors interact and compound adverse experiences for youth while in government care, ultimately influencing health and social outcomes into young adulthood and throughout the life course. Specifically, this doctoral research seeks to unpack how social (e.g., childhood maltreatment and other adverse childhood experiences, exposure to racism), structural (e.g., child welfare policies [past and present], aging-out regulations), and environmental (e.g., placement type, availability of services) forces intersect with individual-level characteristics and behaviours (e.g., ethnicity, drug use patterns) to produce harm and negative outcomes among PWUD with a history of
CWS involvement. Interventions to-date for vulnerable youth and families involved with the CWS have largely focused on individual-level educational and behavioural change (e.g., parenting classes, cognitive behavioural therapy, abstinence-based addiction treatment), while ignoring upstream social, political, structural forces (e.g., poverty, intergenerational trauma) that lead to CWS involvement and negative health-related outcomes. As such, guided by the Risk Environment Framework, this doctoral research will conceptualize the CWS as a distinct risk environment in order to study the impact of social, structural and environmental forces associated with the CWS (e.g., history of CWS involvement, service availability and utilization, familial residential school exposure) on individual-level behaviours and health-related outcomes (e.g., substance use patterns, housing status).

1.7 Study objectives

To provide scientific evidence to improve the health and wellbeing of the most marginalized youth in the CWS, this research project has multiple objectives. First, to identify social, structural and environmental forces operating within the CWS, and then to examine the interplay of these forces, the CWS and related health outcomes among a high-risk sample of younger PWUD. The second part aims to document utilization, availability, barriers, and interest in services aimed at supporting youth aging-out of the CWS, and to evaluate whether transitional service utilization is associated with improved long-term health and social outcomes among a sample of individuals who are typically excluded from such programming. It is hoped that by measuring outcomes and gauging interest and willingness to engage in transitional services that these findings will inform future policy and programming in this area.

1. To systematically assess the literature examining the relationship between the CWS and substance use outcomes. Chapter 2 provides the results of a systematic review of the literature examining the relationship between
exposure to the CWS, or experiences of being in the CWS (e.g., aging-out, placement type), on short and long-term substance use outcomes. Findings from the review informed the objectives and hypotheses for Chapters 3-5.

2. **To assess the relationship between familial exposure to the residential school system and likelihood for having been personally involved in the CWS among younger Indigenous PWUD.** It is well documented that Indigenous youth are overrepresented in the CWS, and a previous analysis undertaken by the candidate found Indigenous street-involved youth had over two times the odds of having been involved with the CWS. Although this relationship is well described, it was hypothesized that social-structural factors, namely the intergenerational trauma associated with having a family member that attended a residential school, may be driving the previously observed association. Similarly, it was also hypothesized that by controlling for familial exposure to the residential school system, a non-detectable difference in the odds of being personally involved with the CWS would be observed between Indigenous and non-Indigenous participants. Theoretical and qualitative evidence has demonstrated a relationship between familial exposure to the residential school system and the present overrepresentation of Indigenous youth in the CWS; however, epidemiological evidence in this area is largely lacking.

3. **To examine the relationship between having been in the CWS and the likelihood of initiating injection drug use at a younger age among street-involved youth.** The results of the systematic review presented in Chapter 2 found some evidence to suggest that youth in the CWS experience elevated rates of substance use. While there is evidence to suggest that youth in care are initiating substance use at a younger age and that engaging in non-injection “hard” drug use (e.g., crystal methamphetamine, heroin, cocaine) is associated
with transitioning into injection drug use,\textsuperscript{114,115} this relationship is unexplored among individuals who have been in the CWS. Therefore, it was hypothesized that among street-involved youth who inject drugs, having a history of being in the CWS would be independently associated with initiating injection drug use at a younger age.

4. To document utilization, availability, barriers, and interest in transitional services at the time of emancipation from the CWS among younger PWUD with a history of aging-out of care, and to assess whether service utilization is associated with improved long-term health and social outcomes. Research indicates that services and supports for youth aging-out of the CWS are inadequate and may be actively excluding the most in need. Further, despite recent developments in policy and programming in this area, interventions to improve health and social outcomes for youth aging-out of care remain largely unevaluated, particularly among high-risk populations. Given the restrictive eligibility criteria for many of these programs (e.g., engagement in educational or vocational program), it was hypothesized that service utilization would be low among PWUD that aged-out of care. It was further hypothesized that utilization of a higher number of services would be associated with better health and social outcomes (e.g., housing, employment, education).

1.8 Study design and methods

The analyses presented in Chapters 3-5 rely on data obtained from two ongoing, open prospective cohorts of PWUD in Vancouver. To avoid replication in these chapters, the cohort studies are summarized here. Where appropriate, specific eligibility criteria and procedures are detailed in the methods section of each chapter.

The At-Risk Youth Study (ARYS) is a prospective cohort of street-involved youth who use drugs that began enrollment in 2005. To be eligible for ARYS, youth must have
used “hard” drugs (e.g., heroin, crack-cocaine, crack, crystal methamphetamine) in the previous 30-days, be “street-involved,” defined as being absolutely or temporarily without stable housing or having used a service for street youth in the previous 30-days and be between the ages of 14-26 at the time of enrollment. The Vancouver Injection Drug Users Study (VIDUS) began enrolling HIV-negative adults (≥18 years) who had injected drugs in the previous-30 days in 1996. VIDUS data were included in Chapters 3 and 5 to increase statistical power and to assess the influence of exposures (e.g., familial exposure to the residential school system, service receipt while aging-out) on long-term outcomes (e.g., personal likelihood of CWS involvement, housing status, substance use patterns), and to evaluate changes to policy and programming over time.

ARYS and VIDUS have harmonized procedures for recruitment, follow-up and data collection, facilitating combined analyses. All participants are recruited using extensive outreach efforts by field staff and peer research associates or self-referral. Individuals interested in participating in the study are screened for inclusion and then offered enrolment. Next, they undergo an informed consent procedure in a private room at the study offices with trained staff who help explain the standardized consent form detailing study protocols, potential uses of study data and biological samples, and possible risks and benefits of participation. Only individuals who provide written informed consent are included in the study. At the baseline study visit and semi-annually thereafter, participants complete interviewer-administered questionnaires and blood and urine samples for diagnostic testing (e.g., HIV, HCV, fentanyl) are collected by a study nurse. The questionnaire elicits information regarding socio-demographics, substance use patterns, housing status, adverse childhood events, experiences with health and social services, and related exposures. At every study visit, participants are given an $30 honouraria for their time and expertise. Ethical approval for ARYS and VIDUS has been granted by the University of British Columbia/Providence Health Care Ethics Review
Board. An amendment has been approved adding this doctoral research to the larger ethics file.

1.9 Summary

This dissertation includes six chapters. This introductory chapter provides a summary of the literature pertaining to the CWS and the immediate and long-term health and social disparities commonly experienced by individuals involved in the CWS. This chapter also provides a broad overview of the structure and procedures common to child welfare systems across North America, with an emphasis on the British Columbian context. It then briefly touches on the overrepresentation of Indigenous youth and families involved with the CWS and the relationship between poverty and charges of child neglect. Lastly, this chapter includes the study objectives and hypotheses, study design and methods, and the conceptual framework guiding this dissertation. Chapter 2 presents the systematic review of studies investigating the relationship between the CWS and substance use outcomes, focusing on the CWS as both an explanatory variable of interest and youth in the CWS as a population of interest. Chapters 3-5 comprise the empirical analyses for this dissertation guided by the gaps in knowledge identified from the systematic review, as well as the Risk Environment Framework’s emphasis on social, structural, and environmental forces in shaping health-related outcomes among marginalized populations. Specifically, given the well documented overrepresentation of Indigenous youth in the CWS and the ongoing harms associated with colonization,13,86,116 Chapter 3 tests the hypothesis that having a close family member who attended a residential school would increase the odds of having been personally involved in the CWS among younger Indigenous PWUD. As the systematic review did not identify studies that examined the relationship between CWS involvement and initiating injection drug use, Chapter 4 seeks to investigate if street-involved youth with a history of being in government care are more likely to initiate injection drug use at a younger age. Chapter 5 documents utilization, availability, barriers, and interest in transitional services among
PWUD while they were aging-out of care. It further investigates if receiving transitional services at the time of emancipation from care is associated with better long-term health and social outcomes. Finally, Chapter 6 summarizes and synthesizes the key findings of this dissertation and concludes with a discussion of the significance and policy implications of the studies, as well as limitations and directions for future research.
Figure 1.1 Flowchart of pathways through the child welfare system
Chapter 2: The child welfare system and substance use: A systematic review

2.1 Introduction

As detailed throughout Chapter 1, youth involved with the CWS are widely recognized as a vulnerable population that commonly experiences numerous negative health and social disparities across the life course.\textsuperscript{31,34,39,44,117} Alongside these issues, a small body of prior research studies have found an increased risk of substance use among current and former youth in care,\textsuperscript{113,118} while others have found out-of-home care (OHC) to have a protective effect.\textsuperscript{119,120} The lack of empirical work on this topic is of concern given that adolescence is a critical period for cognitive development as well as the establishment of life-long health behaviours.\textsuperscript{66,121-123} During the transition from adolescence to adulthood, neurobiological changes occur (e.g., synaptic pruning of the prefrontal cortex and limbic brain regions), which may be disrupted by early substance use.\textsuperscript{123-125} Further, adolescence is generally regarded as the period when risk for initiating substance use is highest, as well as when substance use increases, peaking in young adulthood.\textsuperscript{126} The pathways that put youth in care at a heightened risk for initiating substance use are multifactorial. As described in section 1.1, child protection social workers often place youth in OHC due to abuse, neglect and exposure to violence.\textsuperscript{6,7,127} These adverse childhood experiences are well-documented risk factors for subsequent initiation into substance use.\textsuperscript{5,128} Similarly, parental substance use is common among families involved with the CWS, which is known to have an intergenerational impact.\textsuperscript{33,129-131} Furthermore, prior research has demonstrated a protective effect of strong familial relationships and positive adult role-models in mitigating substance use initiation among adolescents,\textsuperscript{132,133} which for many youth in government care, are lacking.

This is particularly relevant to the B.C. context as recent governmental reports found elevated rates of substance use and substance use-related harms and mortality
among youth involved with the CWS. As such, early identification and mitigation of substance use among this population is imperative and potential interventions in this area need to be rigorously evaluated. However, to develop and implement effective policy and programming a better understanding of the relationship between the CWS and substance use among vulnerable youth is needed. As decision-makers are increasingly relying on syntheses of large selections of studies to inform policy and establish evidence-based practice, the purpose of this systematic review was to evaluate existing literature investigating short- and long-term substance use patterns associated with involvement in the child welfare system.

2.2 Methods

This systematic review is informed by the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines.

2.2.1 Search strategy and information sources

A comprehensive search of several key databases was undertaken (EMBASE, Sociological Abstracts, Ovid-MEDLINE in-process & other non-indexed citations, Ovid-MEDLINE, Social Work Abstracts, CINAHL, and PsychINFO). Search terms included: “foster care,” “child welfare,” “age-out,” “group home,” “substance use,” “alcohol use,” and common variants, as well as specific illicit drugs (e.g., heroin, cocaine, methamphetamine). These terms were mapped into subject headings or “MeSH” terms for specific databases where possible. Searches were limited to 2006 or thereafter and published in English-language.

2.2.2 Eligibility criteria

Studies were eligible for inclusion if they were published in a peer-reviewed journal as an original research article or academic conference proceeding. Grey literature, case reports, case series, reviews, commentaries, and qualitative studies were excluded. In cases where conference abstracts and research articles presented the same information,
data were extracted from the research article. As the purpose of this review is to provide policymakers with rigorous evidence to inform future child welfare policy, included studies must have reported a measure of strength of association. Specifically, included studies must have provided analyses of factors related to the exposure (i.e., involvement in CWS) and outcome (i.e., substance use) of interest using appropriate statistical tests with measures of conventional statistical significance. Further, included studies were restricted to Canada and the United States due to similarities in political and child welfare systems, as well as geographical proximity.

The criteria for considering studies for this review were organized using a modified PICO (population, intervention/exposure, comparison, outcome) framework. Given the nature of the research question, a single ‘comparison’ group was not feasible. The candidate retained all studies measuring substance use among individuals currently or previously (e.g., aged-out) involved with the CWS as the population of interest or that included exposure to the CWS as a key explanatory variable of interest. There was no further restriction on how substance use was measured (e.g., initiation, mode of administration, DSM-IV dependency diagnosis). Lastly, there was no age restriction placed on study samples in order to capture studies that assessed long-term substance use associated with having a history of CWS involvement or aging-out of care.

2.2.3 Study selection and data collection process

Using standard techniques, after conducting and importing searches and removing duplicates, potentially eligible articles were reviewed by title, abstract and full-text by the candidate. Full-texts of all potentially eligible studies were retrieved by the candidate and independently assessed for eligibility by the candidate and a second reviewer. Discrepancies were addressed by the candidate and the reviewer until a consensus was reached. For studies that did meet the inclusion criteria, relevant information was extracted in a standardized spreadsheet including, sample size,
population, study setting, time period, study design, sampling methods, measures, and major relevant results categorized by outcome.

2.3 Results

2.3.1 Literature search

Database and hand searching the literature yielded a total of 4,143 potentially eligible citations, of which 3,463 were unique records (Figure 2.1). After the initial title and abstract screenings, 3,426 were removed. During the full-text extraction stage another 18 studies were excluded. In total, 19 original studies met the eligibility criteria and were included in the final synthesis. Table 2.1 presents the summary table of the included studies.

2.3.2 Summary of included studies

Of the 19 included studies, 16 (84.2%) were undertaken in the United States and three were undertaken in Canada (15.8%). Cross-sectional study designs were the most common (n=11), while the remaining eight studies employed longitudinal cohort approaches. Studies frequently comprised samples of youth involved with the CWS or adults with a history of CWS involvement (n=7, 36.8%); with three additional studies specifically conducted among youth aging-out of care (15.8%). The remainder of studies were conducted among homeless and substance using youth or adult samples (n=4, 21.1%), samples from the general population of youth (n=4, 21.1%), low-income minority youth (n=1, 5.3%), and sexual minority Indigenous adults (n=1, 5.3%). Additionally, common data sources were derived from nationally representative samples of youth in care (n=7) or the general public (n=4), as well as other smaller, localized studies (n=8). All included studies relied on self-report, although a few studies used alternative methods in addition to self-report (e.g., parent interviews, social worker records, CWS administrative data, n=8). All included studies evaluated the relationship between the exposure of interest (i.e., CWS involvement) or a related-experience (e.g., out-of-home
placement, aging-out, placement type) and a measure of substance use (e.g., specific substance use pattern, injection drug use, substance use disorder). Substance use was inconsistently defined across studies, including the manner with which any or specific substance use (e.g., cannabis, cocaine, n=12), diagnoses of substance use disorders (e.g., DSM-IV substance or alcohol dependency, n=6), and substance use patterns (e.g., frequency, age at first use, n=8) were defined. Note that some studies had multiples measures of substance use (n=6).

2.3.3 The child welfare system and substance use: Prevalence and risk

Six studies (31.6%) investigated exposure to the CWS as a key explanatory variable of interest among populations other than those solely involved with the CWS (i.e., non-CWS involved populations), and all observed a significant and positive correlation between CWS exposure and substance use measures. The majority of these studies (n=4) were drawn from samples of homeless and substance using populations, of which, three were set in Vancouver, Canada. One study previously conducted by the candidate found that among street-involved youth, nearly half of the sample had been involved with the CWS (49%) and that CWS involvement was independently associated with initiating “hard” drugs (i.e., not cannabis) at a younger age compared to those without a history of CWS involvement.33,101,138,139 Another study of young Indigenous people who inject drugs reported a statistically significant association between having been placed into OHC and both increased odds of overdose and syringe sharing.138 Lastly, among homeless adults, having been placed in OHC was a significant correlate for initiating substance use before age 14, as well as current daily drug use.101 In a sample of 424 homeless youth in New York City, youth with a history of foster care had significantly higher odds of current cannabis use and having been in addiction treatment than those without such a history.139

Two additional studies were conducted among non-CWS involved populations in the U.S. Arteaga et al.113 found that exposure to the CWS before age nine was associated
with a 39% increased risk of initiating substance use at a younger age, and that the risk was greater among young women in a longitudinal study of low-income minority youth in Chicago. Lastly, McDonald et al.\textsuperscript{103} conducted a cross-sectional study utilizing data from 284,268 school-aged youth across the United States. They observed significant associations between foster care exposure and all 14 of the drug use variables considered, with the highest odds being for MDMA, heroin, LSD, and methamphetamine use (odds ratios: 2.60-2.95) among those who were in foster care.\textsuperscript{103}

2.3.4 Substance use disorders & the child welfare system

Six studies (31.6\%) examined the relationship between exposure to the CWS and a diagnosis of an alcohol or drug use disorder.\textsuperscript{113,140,141} The most common standardized diagnostic tool used was the DSM-IV (n=5). All but one study,\textsuperscript{118} found significant associations between exposure to the CWS and substance use disorders. Pilowsky and colleagues\textsuperscript{140} used data from a national probability sample of over 19,000 youth in the U.S. between the ages of 12-17, of whom, approximately two percent reported having been in foster care. They observed that having a history of foster care significantly increased the odds of both alcohol and drug dependency diagnoses.\textsuperscript{140} Another study found that involvement in the CWS before age nine increased the risk of having a substance use dependency diagnosis as a young adult by 83\%.\textsuperscript{113}

White et al.\textsuperscript{142} compared a cohort of young adults that aged-out of care (i.e., Northwest Foster Care Alumni Study) to a matched sample from the general population and found significantly elevated rates of lifetime alcohol (11.3\% vs. 7.1\%) and drug use dependency (21.0\% vs. 4.5\%). Vaughn and colleagues\textsuperscript{141} conducted a multi-site study of youth aging-out of care in Missouri and observed that 35\% of the sample met the DSM-IV criteria for a substance use disorder. Further, they found that independent living programs (ILPs) were significantly associated with substance use dependency, although these findings should be interpreted with caution as the small cell count for individuals in ILPs (n=14, 3\%) produced wide confidence intervals (95\% CI: 1.4 – 21.1).\textsuperscript{141}
2.3.5 Length and type of child welfare placement and risk of substance use

Of the ten studies that were conducted among populations currently or formerly involved with the CWS, duration, placement types as well as related experiences were measured as risk factors for substance use. These included, OHC placements, ILPs, group care placements, kinship care arrangements, number of placements, length of time spent in care. Of the five studies that assessed OHC placements, the results were equivocal, although all used samples from a nationally representative cohort study of youth involved in the CWS (the National Survey of Child and Adolescent Wellbeing [NSCAW]). One study found a protective effect for recent hard drug use among youth who remained in their home of origin during a maltreatment investigation compared to those who were placed in OHC. Conversely, Cheng and Lo found OHC placements were protective against past-month cannabis use, and Traube et al. also found a protective effect of OHC against hard drug use; however, this was only observed among youth who had experienced high levels of violence. Wall and Kohl observed a non-significant difference in the likelihood for engaging in high intensity substance use (versus no to low intensity substance use) between those placed in OHC and those who remained at home.

Four studies examined specific care placements or alternative living arrangements (e.g., group care, ILPs, kinship care) on various substance use outcomes and findings were similarly mixed. The study of youth aging-out of care in Missouri described above, found that living independently at age 18 was significantly associated with having ever used illicit substances, but not associated with polysubstance use, while group care arrangements were associated with neither measures. Another study from the same setting assessed substance use outcomes at age 17, 18, and 19 and observed elevated rates of past-month cannabis use and past-year intoxication from alcohol (although not substance use disorders) among youth who had aged-out compared to those who remained in care from the same age group. Interestingly, compared to the general
population of youth, youth aging-out of care had higher rates of substance use disorders, but not higher rates of current substance use. Lastly, among the group aged 17, those who left the CWS (i.e., aged-out early) or were living independently were significantly more likely to report recent cannabis use or alcohol intoxication, while having been in group care was associated with recent alcohol intoxication. Another study observed that having less kinship care arrangements (i.e., 0-1 placements vs. 2 or more), a placement change rate of less than 0.61 per year, and less total time in care (<0.61 years) significantly lowered the risk of alcohol dependency, however, similar findings for drug dependency were not observed. Fettes et al. conducted stratified analyses using data from the NSCAW and a community sample of youth with no CWS involvement and found significantly elevated substance use rates (except current cannabis use) among those in care. The same study found that living in a two-caregiver household and higher levels of perceived caregiver closeness were protective against various current drug and alcohol use measures. However, similar protective effects of two-parent households and high levels of parental closeness were observed among the community sample of youth (with similar effect sizes), suggesting this may be a more generalizable finding.

2.3.6 Overrepresentation of Indigenous youth in the child welfare system

A few studies included in this review assessed the relationship between Indigenous ancestry or having a history of attending an American Indian boarding school or Canadian residential school among samples of Indigenous people and substance use outcomes. Although not an objective of this review, given the previously described overrepresentation of Indigenous youth in the CWS and related trauma

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4 The American Indian boarding school system was operated by Christian churches and funded by the federal government during the 19th and 20th centuries with the mandate to assimilate Indigenous children into Euro-Christian tradition, similar to the residential school system that operated in Canada. Although it is important to note that in Canada, attendance at a residential school was legally mandated for all school-aged Indigenous children in 1920 (Blackstock, 2015). See section 3.1 for further discussion of the residential school system.
associated with colonization and assimilative child welfare policies (see section 1.4), as well as a reoccurring theme that emerged during data extraction, some comment is warranted. A study among Native Americans who identify as sexual minorities found that among men, having attended an American Indian boarding school or having been in foster care were both significant predictors of alcohol dependence. Among sexual minority Native American women, being legally adopted (compared to not being adopted), was found to be a protective factor against binge drinking, but no other significant relationships were observed. Results from the previously noted cohort study of young Indigenous adults who use illicit drugs in B.C. found that having a parent that attended a residential school significantly increased the odds of having been personally placed in OHC. Lastly, the candidate previously observed that Indigenous street-involved youth in Vancouver had over two times the odds of having been in the CWS compared to non-Indigenous street-involved youth.

2.4 Discussion

This systematic review identified a number of studies that suggest that youth involved with the CWS are at increased risk for substance use either while in care or later in adulthood. Similar to a previous narrative review, this review also found evidence to suggest that those with a history of CWS involvement experience elevated rates of substance use disorders compared to their peers. This may be partially attributed to studies included in this review that found participants with a history of government care were more likely to initiate substance use at a younger age compared to those with no reported history of care, and prior research has identified early onset as a significant predictor for subsequent substance use dependency. However, further studies investigating the relationship between the CWS and “hard” drug use or riskier substance use practices (e.g., injection drug use) among marginalized youth in care are needed to better understand this relationship.
As described in section 2.3.3, the six studies conducted among non-CWS involved populations (n=4 homeless/PWUD, n=1 sexual minority Native American adults, n=1 low income minority youth) assessed in this review found consistent evidence that exposure to the CWS was a significant correlate of various indices of substance use.\textsuperscript{33,101,113,138,139,151} Further, among these samples, having a history of CWS involvement was very common (35-65%). Given the overrepresentation of CWS involvement among homeless and substance using populations, these individuals may be some of the most marginalized youth to pass through the CWS. As previous research has established the elevated risk of housing instability among those with a history of care, particularly those who age-out,\textsuperscript{30,156,157} these findings support calls for extending the age of emancipation from the CWS and improving existing services and supports to help youth exiting the CWS to transition to independence successfully.\textsuperscript{37,42,158}

Seven studies were conducted among samples of youth involved with the CWS assessing a related structural experience (e.g., OHC vs. remaining at home, ILPs vs. other placement, aging-out early vs. remaining in care) and findings were mixed. Five studies derived data from the National Survey of Child and Adolescent Well-Being (NSCAW) and evaluated the relationship between OHC placements (versus remaining in the home of origin) and substance use. Although it should be noted substance use measures varied across studies, findings were equivocal: two found OHC to be a risk factor,\textsuperscript{119,143} two found OHC to be protective,\textsuperscript{145,148} and one reported a null association.\textsuperscript{146} Two of the studies concluded that having a history of physical abuse were stronger predictors for subsequent substance use than OHC, as well as behavioural problems and parental substance use.\textsuperscript{143,146} This is consistent with Traube and colleagues research that initially found OHC to be a risk factor for hard drug use (remaining in the home of origin was protective),\textsuperscript{119} and conducted a subsequent analysis where OHC was found to be protective, but only for youth who came from highly violent parental homes.\textsuperscript{148}
While it is perplexing that studies deriving data from the same cohort study found conflicting results concerning the relationship between OHC and various substance use measures, it is revealing of larger complexities when researching this topic. As identified by the research above, the contextual-level forces precipitating or co-occurring with exposure to the CWS (e.g., physical abuse, behavioural problems, parental substance use) may be stronger predictors of substance use than OHC placement. Additionally, the NSCAW study is a clinical study that measures psychosocial functioning over time, not substance use behaviour specifically, and limitations and inconsistencies in substance use measures are present that may impact reported findings (e.g., past-month use in adolescence and past-year use in young adulthood). Lastly, substance use data were collected by self-report and although previous research has demonstrated the validity of self-reported substance use behaviours among youth populations in general, youth in government custody may be more likely to underreport substance use compared to youth who remain in the home of origin. Taken together, it is possible the discrepant findings are indicative of systematic or random misclassification resulting from response biases that obscure the true relationship between OHC and substance use.

The four remaining studies conducted among youth in care found that ILPs, group home placements, longer time spent in care, and higher number of placements were all associated with various alcohol and drug use outcomes. Additionally, three of the studies described above assessed the relationship between kinship care and substance use, and found: kinship care (vs. remaining at home) to be protective against escalating substance use, higher number of kinship care placements (≥2 vs. <2) associated with recent diagnosis of alcohol dependency but not substance use dependency and lastly, a null association between kinship care and eight varied substance use outcomes when compared to foster care placement. Differences in comparison groups and how measures were defined likely explain the above noted inconsistencies. For example, White and colleagues observed kinship care to be a risk factor for subsequent alcohol
dependency. However, the study is vulnerable to measurement bias as informal care arrangements (e.g., staying with friends) were included in the definition of kinship care, and as peer alcohol and drug use is a known risk factor for subsequent use,\textsuperscript{118,160} the results may be overestimated. Similarly, Berzin et al.\textsuperscript{32} used a broad definition of independent living that included both state-structured ILPs and leaving the CWS early to live independently, concluding that the transition to less restrictive settings was a potential risk factor for substance use among youth. However, given that the type of placement is frequently governed by individual, social and structural factors (e.g., behavioural problems, strong family ties, CWS resource constraints), findings of placement type as a risk factor for substance use are susceptible to unmeasured confounding. For instance, it is known that ILPs and group care placements frequently serve the highest risk or “hardest to house” youth in the CWS compared to less restrictive settings (e.g., kinship or foster care), and therefore youth placed in these settings are expected to have a higher pre-existing risk profiles for initiating or engaging in substance use.\textsuperscript{161-164} Additionally, it should be noted that ILPs constitute a wide range of programs and services depending on jurisdiction. The majority of ILPs are offered to youth from the age of 16 to time of emancipation from the CWS and provide housing, furniture, a monthly allowance, and other varied support services (e.g., financial management, life-skills, addiction treatment).\textsuperscript{165,166} While child protection social workers are required to make regular house visits, policy and practice are frequently misaligned due to large caseloads and scarce resources.\textsuperscript{167} As a result, youth as young as 16 may be left to live relatively alone and free of supervision. In this context, it is understandable why ILPs in this review were associated with worse substance use outcomes. Indeed, in two of the three studies that examined the relationship between ILPs and substance use, youth were under 18 years old.\textsuperscript{118,141} Given the state of the evidence, particularly the methodological concerns with measurements and comparison groups, it remains unclear what the unique contribution
various care placements and OHC have in relation to substance use among youth involved with the CWS.

As the purpose of this review is to inform future child welfare policy, it is important to distinguish between ILPs as described above and independent living or supportive housing interventions that serve youth after the age of emancipation into their early twenties. For example, one of the largest extended independent living programs in the U.S., the Lighthouse independent living program,\textsuperscript{168} is available to vulnerable youth aged 17-24 across the state of Ohio. Previous evaluations found moderate success for youth across three outcomes at the end of the program: attainment of high school education or equivalency, employment, and transitioning into private independent living.\textsuperscript{162} However, the authors noted that a multitude of risk factors (e.g., delinquency, mental health issues, substance use, negative peer involvement, learning disabilities) were highly prevalent among participants and that these factors were negatively correlated with achieving one or more outcomes.\textsuperscript{161,162} Future research of existing ILPs and innovative programs like the Lighthouse independent living program should be rigorously evaluated. For instance, there may be opportunities to utilize quasi-experimental study designs and randomize youth to innovative ILPs and supportive housing interventions or exiting care at the age of emancipation as usual in order to address unmeasured confounding and selection effects (e.g., youth that choose to remain in care or utilize interventions may be more likely to have favourable outcomes regardless of program engagement). However, given high rates of homelessness and other negative health outcomes among youth after aging-out of the CWS, it may be unethical to engage in randomization of housing and further research is needed.

Limitations of this review are common to other systematic reviews. It is possible that some eligible studies were missed with the search strategy employed. For example, as only studies in English-language and American and Canadian settings were considered, findings from this review may have limited generalizability outside of North
America. Further, as only original research that had been peer-reviewed and included a measure of association was eligible for inclusion, some sources of data (e.g., grey literature) and alternative study designs (e.g., qualitative) may have been missed that could help contextualize the findings of this review. Ultimately, the candidate acknowledges that the selection and synthesis of eligible studies is a subjective process. Another major limitation of this review is due to the inconsistency in substance use measures across included studies (e.g., type, frequency, lifetime or recent use). For example, cannabis was included with all other drugs (e.g., heroin, crack, cocaine) in a plurality of studies (n=8), while assessed separately or not at all in others. Due to the high prevalence and less severe health-related harms associated with cannabis use, future research should differentiate cannabis from hard substance use. Similarly, frequency of substance use was measured inconsistently as “ever” or “lifetime” use (n=3) to past-year (n=4) or past-month (n=7) to daily use (n=1). Collectively, these inconsistencies made it challenging to draw robust conclusions of the relationship between the CWS and substance use. Future systematic reviews investigating this research question may benefit from restricting to studies that used standardized measures or diagnostic criteria such as the DSM-IV for substance use disorders. Lastly, a meta-analysis of standardized measures of substance use (e.g., cannabis use, substance use disorders) and the CWS is needed.

In summary, while this review found evidence to suggest that youth involved with the CWS are at an elevated risk for substance use initiation and dependency, the existing evidence was unable to contextualize this relationship further in relation to placement types among samples of youth in care. Among studies drawing on non-CWS involved populations assessed herein, having a history of CWS involvement was a consistent predictor of various substance use outcomes. Further, among studies sampling homeless and substance using populations, the prevalence of CWS exposure was alarmingly high, supporting calls to improve services aimed at transitioning youth to independence and
extending the tenure of care placements. Evidence-based interventions to prevent or mitigate harms associated with substance use and other negative health-related outcomes commonly experienced after youth exit the CWS are needed. Extended care programs like the Independent living program serving youth in Ohio are promising interventions and should be rigorously evaluated and scaled-up. While developing this evidence-base may assist policymakers in allocating limited funding, what is clear from the extant literature is that youth involved with the CWS are a vulnerable population that experience multiple health and social disparities over the life course and resources to address these disparities are urgently needed.
Figure 2.1 Flowchart of systematic review acquisition, screening and article selection process (Moher et al., 2009)

- **Identification**
  - Records identified through database searching (n = 4,132)
  - Additional records identified through other sources (n = 8)

- **Screening**
  - Records after duplicates removed (n = 3,463)
  - Records excluded based on title & abstract screen (n = 3,426)

- **Eligibility**
  - Full-text articles assessed for eligibility (n = 37)
  - Full-text articles excluded, with reasons (n = 18)

- **Included**
  - Studies included in qualitative synthesis (n = 19)
<table>
<thead>
<tr>
<th>Author &amp; date</th>
<th>Study Location</th>
<th>Study Design (data source)</th>
<th>Study Period</th>
<th>Participant Characteristics</th>
<th>Exposure(s)</th>
<th>Comparison Group/Condition</th>
<th>Outcome(s)</th>
<th>Main Findings</th>
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</thead>
<tbody>
<tr>
<td>Arteaga et al. (2010)</td>
<td>Chicago, United States</td>
<td>Cohort</td>
<td>2008</td>
<td>1208 low-income minority youth followed since birth up to the age of 26 (1989-2008)</td>
<td>CWS involvement</td>
<td>Matched sample of low-income minority youth with no involvement in the CWS</td>
<td>Age at first substance use; cannabis/hard drug use; substance use dependency (DSM-IV)</td>
<td>Involvement in CWS &lt;9 significant predictor of higher prevalence of substance use by age 26, earlier initiation of substance use (HR = 1.39, p&lt;0.01) and dependency diagnosis (HR=1.83, p&lt;0.01)</td>
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<tr>
<td>Barker et al. (2014)</td>
<td>Vancouver Canada</td>
<td>Cross-sectional (ARYS)*</td>
<td>2005 - 2012</td>
<td>937 street-involved youth 14-26 at enrollment</td>
<td>CWS involvement</td>
<td>No history of CWS involvement</td>
<td>Age at first substance use</td>
<td>49% of cohort had been in CWS. Younger age at first hard drug use (AOR=1.10; 95% CI:1.05-2.85) associated with a history of CWS</td>
</tr>
<tr>
<td>Berzin et al. (2011)</td>
<td>United States</td>
<td>Cross-sectional (NLSY97)*</td>
<td>1997 - 2007</td>
<td>8834 youth and young adults (age&lt;28) from general population</td>
<td>Foster care placement</td>
<td>Matched sample of youth with no CWS involvement</td>
<td>Any cannabis or hard drug use ever</td>
<td>Drug use was associated with independent living (OR=2.4; 95%CI:1.6-3.5).</td>
</tr>
<tr>
<td>Casanueva et al. (2014)</td>
<td>United States</td>
<td>Longitudinal (NSCAW)*</td>
<td>1999-2007</td>
<td>1,004 adolescents involved with the CWS followed from 11-21 years old</td>
<td>OHC placement, kinship care, group home</td>
<td>Remaining in the home of origin during CWS involvement</td>
<td>Cannabis and any other illicit drug use trajectories (Latent curve models)</td>
<td>60% of sample had used an illicit drug before aging-out. OHC higher initial odds of cannabis and other drug use, but not over time; kinship care associated with lower levels of drug use over time. Group home not</td>
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<tr>
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<td>Cedar Project Partnership et al. (2015)</td>
<td>British Columbia, Canada</td>
<td>Cross-sectional (Cedar Project)</td>
<td>2003 – 2007</td>
<td>605 Indigenous youth (14-30) who inject drugs</td>
<td>OHC placement</td>
<td>No history of CWS involvement</td>
<td>Drug use risk behaviours</td>
<td>65% prevalence of OHC placements. Having a history of CWS involvement was independently associated with having ever OD (AOR=2.7; 95%CI:1.6-4.5), shared a rig ever (AOR=2.0; 95%CI:1.2-3.4) and recent rig sharing (AOR:2.4 95%CI:1.2-4.8)</td>
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<td>Cheng et al. (2011)</td>
<td>United States</td>
<td>Longitudinal (NSCAW)</td>
<td>1999 – 2004</td>
<td>1797 youth currently involved with CWS under 11 years old</td>
<td>OHC placement</td>
<td>Remaining in the home of origin during CWS involvement</td>
<td>Cannabis use in last 30 days</td>
<td>In multivariable GEE, OHC was negatively associated with recent cannabis use (AOR=0.63, p&lt;0.05)</td>
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<tr>
<td>Fettes et al. (2013)</td>
<td>United States</td>
<td>Cross-sectional (NSCAW &amp; ADD Health)d</td>
<td>2000 - 2001</td>
<td>5175 youth ages: 12-14 (730 involved with CWS [NSCAW], 4445 school-aged general population of youth [ADD Health])</td>
<td>2-parent or caregiver household, perceived parent/caregiver closeness</td>
<td>Not living in a 2-parent/caregiver household (binary), low levels of perceived parental/caregiver closeness (continuous)</td>
<td>Alcohol, cannabis, inhalant, other illicit hard drug use measured in last 30 days and life-time</td>
<td>Higher substance use rates among CWS youth than ADD Health sample, with the exception of alcohol and current marijuana use. Being in a two- caregiver household was significantly protective of current alcohol use (AOR=0.35) and perceived caregiver closeness was protective of current alcohol (AOR=0.51),</td>
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<td><strong>Author &amp; date</strong></td>
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<td>McDonald et al. (2014)</td>
<td>United States</td>
<td>Cross-sectional (CTCYS)</td>
<td>2000 - 2002</td>
<td>284,268 youth in grades 6-12 (1,442 foster care youth, 282,826 general population)</td>
<td>Foster care placement</td>
<td>No history of CWS involvement</td>
<td>Various substance use variable (e.g., MDMA, heroin, LSD, cocaine) in last 30 days</td>
<td>Due to the large sample size, significant associations were found between foster care placement and all drug use variables; especially for MDMA, heroin, LSD, and methamphetamine use (AORs: 2.60-2.95)</td>
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<tr>
<td>Narendorf et al. (2010)</td>
<td>Missouri, United States</td>
<td>Longitudinal</td>
<td>2001 - 2003</td>
<td>325 youth aging-out of the CWS (ages: 17-19)</td>
<td>Various aspects of CWS (e.g., aging-out of care, early exit from care, ILPs, group care)</td>
<td>Remaining in the CWS, not being housed in ILPs, not being housed in group care</td>
<td>Being drunk in last six months or past-year, cannabis use last 30 days, hard drug use last 30 days, drug dependency (DSM-IV)</td>
<td>Significant increases in rates of alcohol and substance use over the three time periods (age 17, 18, 19). Compared to general population of youth, youth aging-out of care had higher SUD. ILPs, exiting CWS early and group care were associated with elevated odds of recent cannabis and alcohol use.</td>
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<tr>
<td>Patterson et al. (2015)</td>
<td>Vancouver Canada</td>
<td>Cross-sectional</td>
<td>2009 - 2011</td>
<td>442 homeless adults recruited</td>
<td>OHC placement</td>
<td>Homeless adults without a history of OHC</td>
<td>Initiation of alcohol and drug use before</td>
<td>OHC placement was independently associated with early initiation of</td>
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<td>Pilowsky et al. (2006)</td>
<td>United States</td>
<td>Cross-sectional (National Household on Drug Abuse)</td>
<td>2000</td>
<td>19,430 school-aged youth (ages: 12-17)</td>
<td>OHC placement</td>
<td>No history of CWS involvement</td>
<td>Any alcohol or drug use, alcohol or drug abuse (DSM-IV), alcohol or drug dependence (DSM-IV) in the last year</td>
<td>age 14, daily drug use (AOR=2.54, 95% CI:1.60-4.05) and drugs (AOR=2.49, 95% CI:1.56-3.96), and daily drug use (includes cannabis) (AOR=1.64 CI:1.01-2.65)</td>
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<tr>
<td>Thompson &amp; Hasin (2011)</td>
<td>New York City, United States</td>
<td>Cross-sectional</td>
<td>2007 - 2008</td>
<td>424 homeless young adults (ages: 14-21)</td>
<td>Foster care placement</td>
<td>No history of foster care</td>
<td>Current (self-defined) cannabis or alcohol use in previous 30-days</td>
<td>Homeless youth who had been in foster care were more likely to use cannabis (AOR=3.30, p&lt;0.05) and less likely to use alcohol, although the latter finding was not statistically significant (AOR=0.88).</td>
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<tr>
<td>Traube et al. (2012)</td>
<td>United States</td>
<td>Longitudinal (NSCAW)</td>
<td>1999 - 2002</td>
<td>827 youth involved with the CWS (ages: 11-14)</td>
<td>OHC placement</td>
<td>Remaining in the home of origin during CWS involvement</td>
<td>Social drug use (e.g., alcohol, tobacco) and hard drug use (e.g., cocaine, heroin, cannabis) in last 30 days</td>
<td>Remaining at home was a protective factor against hard drug use compared to those placed in OHC (OR=0.43; 95% CI:0.20-0.93). Not statistically significant between social drug use and remaining at</td>
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<tr>
<td>Traube et al. (2016)</td>
<td>United States</td>
<td>Longitudinal (NSCAW)</td>
<td>1999 - 2002</td>
<td>1,178 youth, 11 years old or older, involved with CWS</td>
<td>OHC placement x history of parental violence (interaction term)</td>
<td>Remaining in home of origin during CWS involvement</td>
<td>Cannabis, alcohol and hard drug use</td>
<td>OHC placement x history of violence protective factor for hard drug use at baseline and 18 months; cannabis use at 18 months, but not statistically significant for alcohol use.</td>
</tr>
<tr>
<td>Vaughn et al. (2007)</td>
<td>Missouri, United States</td>
<td>Cross-sectional</td>
<td>2001 - 2003</td>
<td>406 17-year-old youth aging-out of the CWS</td>
<td>Various CWS placements (e.g., group homes, kinship care)</td>
<td>Non-kin foster care placement</td>
<td>Ever used illicit substances, poly substance use, substance dependency (DSM-IV), marijuana, stimulants, depressants, alcohol, and current substance use</td>
<td>Independent living was associated with having ever used illicit substances, substance use dependency, and cannabis, alcohol, and current substance use (all p&lt;0.05). Group home placement was associated with substance use dependency (p=0.02). Kinship care was not significantly associated with any outcome.</td>
</tr>
<tr>
<td>Wall &amp; Kohl (2007)</td>
<td>United States</td>
<td>Cross-sectional (NSCAW)</td>
<td>No date specified</td>
<td>912 youth in OHC (ages: 11-15)</td>
<td>OHC placement</td>
<td>Remaining in the home of origin during CWS involvement</td>
<td>Substance use (composite variable based on the frequency and ‘severity’ of the drug [e.g., hard drug=7 vs. alcohol=3])</td>
<td>Substance use rates were similar across placement types. Remaining in the home of origin (vs. OHC) was not significantly associated with moderate/high substance use score (≥7) (OR=0.48; 95% CI:0.13-1.82)</td>
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<td>--------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------</td>
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<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>White et al. (2008)</td>
<td>United States</td>
<td>Retrospective cohort</td>
<td>2000 – 2002</td>
<td>479 young adults who aged-out of care between 1988-98 (ages:14-18)</td>
<td>Various aspects related to CWS (e.g., length of time in care, placement rate change, kinship care arrangements)</td>
<td>≥5.9 years in care; ≥1.23 placements per year; ≥2 kinship care arrangements</td>
<td>No 12-month alcohol and/or drug dependence</td>
<td>Less time in care (&lt;0.61 years, OR=2.1), lower placement rate change (&lt;0.61 per year, OR=3.1), and less kinship care living arrangements (0, OR=4.2; 1, OR=2.9) were associated with not having an alcohol dependency. Only less time in care was associated with not having a drug dependency (&lt;0.61 years, OR=3.3). (p&lt;0.05)</td>
</tr>
<tr>
<td>Yarnell et al. (2016)</td>
<td>United States</td>
<td>Longitudinal (NSCAW)</td>
<td>1999 - 2002</td>
<td>1178 youth in OHC (ages: 11-16)</td>
<td>OHC placement over time</td>
<td>No comparison group</td>
<td>Change in rates of alcohol, cannabis and hard drug use</td>
<td>Over 36-month study period, average alcohol use increased significantly (p&lt;0.05), whereas, cannabis use only increased in the second time period (18-36 months, p&lt;0.05). Hard drug use did not change over the time periods.</td>
</tr>
<tr>
<td>Yuan et al. (2014)</td>
<td>United States</td>
<td>Cross-sectional</td>
<td>2005 - 2007</td>
<td>451 Indigenous sexual minority adults (ages: 18-63) stratified by gender</td>
<td>History of OHC</td>
<td>No history of OHC</td>
<td>Alcohol dependence, hazardous use and binge drinking (defined as being intoxicated for)</td>
<td>Having a history of OHC was associated with alcohol dependence (OR=3.46) among sexual minority males. No similar significant variables among sexual minority females.</td>
</tr>
<tr>
<td>Author &amp; date</td>
<td>Study Location</td>
<td>Study Design (data source)</td>
<td>Study Period</td>
<td>Participant Characteristics</td>
<td>Exposure(s)</td>
<td>Comparison Group/Condition</td>
<td>Outcome(s)</td>
<td>Main Findings</td>
</tr>
<tr>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>∫2 days in past-year)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a) ARYS=At Risk Youth Study; b) NLSY97=National Longitudinal Survey of Youth; c) NSCAW=National Survey of Child and Adolescent Wellbeing; d) ADD Health=Adolescent to Adult Health; e) CTCYS=Communities that Care Youth Survey; f) CIS=Canadian Incidence Study of Reported Child Abuse and Neglect; g) NFCAS=Northwest Foster Care Alumni Study
Chapter 3: Intergenerational trauma: The relationship between residential schools & the child welfare system among young people who use drugs\textsuperscript{5}

3.1 Introduction

As briefly discussed in section 1.4, Indigenous communities have suffered the harms of colonization at the hands of what was British North America and now is Canada for hundreds of years.\textsuperscript{81-84} One of the most damaging aspects of this relationship in Canada was the historical trauma inflicted by the residential school system. Beginning in the late 1800s, a system of boarding schools for Indigenous school-aged children was established across the country as a church-state partnership designed with the purpose to “kill the Indian in the child,” and further the ultimate goal of eliminating the “Indian problem.”\textsuperscript{170,171} To this end, Indigenous children were forbidden to speak their native language, engage in spiritual practices, maintain cultural traditions, and were frequently and purposely placed in schools that were a considerable distance from their communities severing family ties.\textsuperscript{13} Further, due to a combination of inadequate funding, shelter, basic public health, and nutrition – including government sanctioned, highly unethical nutritional experiments\textsuperscript{172} – Indigenous children frequently succumbed to preventable diseases while attending a residential school.\textsuperscript{170,173,174} More recently, horrific accounts of sexual, physical and emotional abuse have been documented and a number of former residential school staff have been convicted in courts of law for their part in these crimes.\textsuperscript{170,174}

By 1920, attendance in residential schools was legally mandated for all school-aged Indigenous children. During the height of the residential school system in the 1930-40s, it is estimated that 20\% of the total Indigenous population across Canada, or

approximately 90,000-100,000 children, were institutionalized. While the majority of residential schools were shut down by the 1950-60s, the last government-funded school closed in Saskatchewan in 1996. The government policies that followed the residential school era continued to harm Indigenous families and communities. During what has been labeled the “Sixties Scoop,” thousands of Indigenous children were apprehended by Canadian child welfare agencies and placed in predominantly non-Indigenous homes – many were sold to wealthy white families in the U.S. and Europe.

Today, many researchers and advocates argue that Canadian child welfare systems continue the legacy of the residential school system. As detailed in section 1.4, Indigenous youth and families are vastly overrepresented at every stage of child welfare cases, from investigations to out-of-home care placements. Addressing the disproportionate number of Indigenous children in the CWS is a critical priority for the overall health and wellbeing of Indigenous communities. It is clear for those with lived experience that intergenerational trauma, defined as the shared collective experiences of sustained and numerous attacks on a specific group identity or affiliation (e.g., ethnicity, religious) that may accumulate over generations, has led to a host of health and social disparities commonly experienced among Indigenous Peoples. However, few quantitative or epidemiological research studies have been conducted in this area and, tragically, certain segments of the Canadian population continue to deny or refuse to acknowledge the links between colonization and present-day health and social disparities. This lack of recognition hinders reconciliation efforts and possibly undermines progress towards investing in policies and programs that might help reduce the disproportionate number of Indigenous children in the CWS.

As noted in section 1.7, a previous study conducted by the candidate in the same setting found that Indigenous street-involved youth had over two times the odds of having been involved with the CWS; however, it was hypothesized that familial exposure to the residential school system may account for this observed association.
While the influence of intergenerational trauma associated with the residential school system on present-day inequities including the overrepresentation of Indigenous children in the CWS is complex, the present study sought to assess whether familial exposure to the residential school system was associated with an increased likelihood of personal involvement with the CWS among a cohort of youth and young adults who use drugs (PWUD) in Vancouver, Canada.

3.2 Methods

Data for these analyses were obtained from the VIDUS and ARYS studies as detailed in section 1.8

3.2.1 Study sample

The present study combined data from young adults in the VIDUS cohort (participants aged <35 years at baseline) and ARYS from December 1, 2011 and May 31, 2016, as measures for the main explanatory variable of interest (i.e., immediate familial residential school system exposure) were added to the study instrument in December, 2011. Further, the primary analysis was restricted to participants who self-identified as being of Indigenous ancestry, defined in this context as First Nations, Métis, Inuit or Aboriginal. Lastly, the Western Aboriginal Harm Reduction Society (WAHRS), a community group of urban Indigenous PWUD in Vancouver, was consulted and provided support for the study aims in the present analyses, as well as the residential school measures being added to the study instrument prior to this study. WAHRS board members and an Indigenous youth peer researcher with lived experience of the CWS were consulted throughout the study process and co-authored the manuscript submitted for peer-review (KS, MT, LL).

3.2.2 Study design

The candidate designed two analyses, both evaluating the likelihood of being personally placed into government care among younger PWUD. The primary outcome
of interest for both analyses was having a history of involvement with the CWS defined as, having ever been placed in an orphanage, foster home, group home, been a ward of the state, or away from parents for longer than a month (not including vacations) before turning the legal age of majority. The primary explanatory variable of interest was immediate familial residential school exposure defined as having a parent or grandparent that was institutionalized by the residential school system. This measure was categorized into three mutually exclusive categories: no immediate familial residential school system exposure (reference category); grandparental exposure (but no parental exposure) to a residential school; and parental exposure or parental and grandparental exposure to a residential school. The objective of the main analysis was to assess the intergenerational influence of the residential school system on the likelihood for personal CWS involvement among younger Indigenous PWUD after controlling for potential confounders.

For the secondary analysis, the candidate sought to assess whether Indigenous youth were still at an increased risk for CWS involvement if they did not have immediate familial residential school exposure, defined as not having a parent or a grandparent that attended a residential school. To do this, the likelihood of CWS involvement was compared between non-Indigenous participants and Indigenous participants who reported no immediate familial exposure to the residential school system.

3.2.3 Variable selection and analytic technique

Possible confounders were identified based on previous literature for a known or hypothesized association with CWS involvement (i.e., primary outcomes of interest). These included: sex (female vs. male), age (per year older), high school completion (yes vs. no), history of incarceration, defined as spending at least one night in juvenile detention, jail or prison (yes vs. no), childhood maltreatment (severe/moderate vs. low/none), and history of injecting drugs (yes vs. no). Childhood maltreatment was defined using the Childhood Trauma Questionnaire, a validated 25-item measure to
detect various types of childhood neglect and abuse previously used among street-involved and substance using populations. We first stratified descriptive characteristics by history of CWS involvement (yes vs. no). We then evaluated the bivariable association between each explanatory variable and the outcome of interest using logistic regression. For both the primary and sub-analysis, a fixed multivariable logistic regression model was employed. All statistical analyses were performed using SAS software version 9.4 (SAS, Cary, NC). All p-values are two sided.

3.3 Results

Over the study period, 675 PWUD under the age of 35 were enrolled into VIDUS and ARYS and were eligible for these analyses. Among this sample, 259 (38.4%) were female and the median age at baseline was 23.3 (Interquartile range [IQR]: 21.1 – 27.4) years. Among the 267 (39.6%) PWUD who identified as being of Indigenous ancestry, 179 (67.0%) were First Nations, 29 (10.7%) were Métis, and 9 (3.4%) identified as Aboriginal (no participants identified as Inuit). Among Indigenous PWUD, 90 (18.1%) reported no immediate familial exposure to the residential school system (median age = 23.7, IQR: 21.1 – 29.6), 73 (27.3%) reported having a grandparent (but no parent) that attended a residential school (median age = 22.5, IQR: 21.1 – 24.7), and 104 (39.0%) reported having either a parent or both a parent and a grandparent that attended a residential school (median age = 24.7, IQR: 22.4 – 30.0).

The descriptive statistics, bivariable and multivariable findings for the primary analysis are presented in Table 3.1. In multivariable analysis, adjusting for sex, age, high school completion, incarceration, childhood maltreatment, and injection drug use, Indigenous PWUD who reported having a grandparent that attended a residential school had a non-significant increase in the odds of having been personally involved in the CWS compared to Indigenous PWUD who reported no immediate familial exposure (adjusted odds ratio [AOR] = 1.35, 95% confidence interval [CI]: 0.66 – 2.72). However, Indigenous
PWUD who reported having a grandparent or both a parent and grandparent that attended a residential school were significantly more likely to have been personally involved in the CWS (AOR = 2.01; 95% CI: 1.03 – 3.93). Figure 3.1 presents the point estimates and confident intervals for the primary analysis.

In the secondary analysis (Table 3.2), there was not a detectable difference in the likelihood for having been involved with the CWS between Indigenous PWUD with no immediate familial residential school exposure and non-Indigenous PWUD (AOR = 0.66, 95% CI: 0.39 – 1.10).

### 3.4 Discussion

In the present study, younger Indigenous PWUD who had either a parent or both a grandparent and a parent that attended a residential school, were found to have more than two times the odds of having been personally involved with the CWS compared to Indigenous PWUD with no family exposure. Those with a grandparent (but no parent) that attended a residential school also had increased odds of being in the CWS, however, this association did not meet conventional statistical significance. Further, a non-significant difference in the likelihood for being personally involved with the CWS was observed between Indigenous and non-Indigenous PWUD when controlling for familial exposure to the residential school system among this sample. This is rather remarkable given that previous analyses conducted by the candidate found Indigenous street-involved youth had over two times the odds of having a history of CWS involvement compared to their non-Indigenous counterparts, when familial residential school exposure was not controlled for.\(^{33}\)

These findings contribute empirical evidence to the lived knowledge that the intergenerational trauma associated with the residential school system continues to negatively impact Indigenous families and communities today. As residential schools cut off Indigenous students from their families, communities, and cultures and school staff
commonly used control, punishment, coercion, and fear – in addition to the personal abuses and victimization students incurred – many residential school survivors experienced difficulties and barriers with engaging in healthy relationships and healthy parenting towards their own children.\textsuperscript{174,179,187} Prior research has found that residential school survivors experience a host of risk factors associated with diminished parental capacity including, elevated rates of problematic alcohol and drug use, fetal alcohol syndrome, domestic violence, poor physical health, as well as mental health issues and suicidal behaviours compared to those who did not attend a residential school.\textsuperscript{188-190}

Emerging research has begun to explore the historical trauma inflicted by the residential school system on the health and wellbeing of subsequent generations of Indigenous youth and families. Preliminary research and survey data from nationally representative samples of Indigenous Peoples in Canada reported that youth and young adult-children of residential school survivors experience increased negative mental and physical health issues including suicidal ideation and attempts compared to Indigenous individuals without a parent that attended a residential school.\textsuperscript{81,189,191-194} However, very few studies have examined the relationship between the residential school system and the CWS. As identified by the systematic review, one previous study of urban Indigenous PWUD across B.C. examined negative health outcomes and HIV risk behaviour associated with having been in government care. Among findings, having a parent that attended a residential school was a significant correlate of being personally placed in government care.\textsuperscript{138} As described in section 1.4, child neglect comprises the majority of neglect charges and substantiated maltreatment cases among Indigenous families involved in the CWS.\textsuperscript{10,85} Furthermore, the relationship between neglect and indirect indicators of poverty (e.g., housing instability, food insecurity, school absenteeism) has been previously described.\textsuperscript{76,78} This is supported by research among Indigenous people in Canada, as previous analyses of data from nearly 5,000 Indigenous children living off-reserve (aged 6-14) across the country found that parental residential school attendance
was associated with lower socioeconomic status, living in a larger household, food insecurity, and poor educational outcomes. Although the present study’s findings were conducted among Indigenous people who use drugs and therefore may not be generalizable to all populations of Indigenous people, when taken together, the evidence suggests that Indigenous families are in need of support and resources more than the CWS.

Some progress has been made with regard to the overrepresentation of Indigenous children and youth in the CWS. The 1990s saw an influx of Indigenous child welfare agencies on- and off-reserve assume responsibility for delivering services to Indigenous families. However, these efforts have been hampered by unstable, inequitable and inadequate funding structures, restrictive and culturally inappropriate provincial and territorial child welfare laws, and a lack of physical and personnel resources. Some amendments to child welfare statutes have been legislated across the country including, band notification of placements, prioritization of kinship care, promotion and preservation of cultural connections, and Indigenous involvement in case management and service delivery. Yet, legislation remains unstandardized across jurisdictions and serious concerns about Indigenous child welfare services remain; particularly, that they are vastly underfunded, under-resourced, and continue to operate on colonial premises and laws.

Common limitations to this dissertation are presented in section 6.3 but limitations specific to the present analyses are listed here. Findings presented in these analyses may not be generalizable to other populations of Indigenous people, particularly those who do not use substances or are not street-involved. Further, due to the relatively small sample size of Indigenous participants without immediate familial residential school exposure (n=90), there is the possibility that the non-significant findings in the secondary analysis were due to random error and further research with larger samples is warranted. Conversely, it is also possible that some of our sample may have been misclassified as
having no immediate familial residential school exposure due to the immense shame and trauma commonly experienced by residential school survivors resulting in participants unknowingly underreporting their family’s status and our estimates being attenuated.

In closing, the current study provides empirical evidence that colonial practices continue to affect present-day health and social disparities experienced by Indigenous families. It is important to note that our data do not provide direction on how to best address the ongoing impacts of the residential school system. Documenting these connections provides a foundation from which to advocate for increased support and investment in Indigenous-led approaches to address the intergenerational trauma associated with both residential schools and the CWS. Furthermore, our findings point to the need to address upstream issues that exacerbate and perpetuate the overrepresentation of Indigenous children and families in the CWS. Poverty, addiction, family violence, housing, sanitation, food security, and inequitable access to education and other resources remain serious impediments to progress in this realm. As the Truth and Reconciliation Commission of Canada poignantly stated in their final report, “The direct connection between Aboriginal poverty and high child-welfare apprehensions has been known for half a century. Yet, Aboriginal children are still taken away from their parents because their parents are poor.”174 As Canada faces its colonial history, the public and policymakers should no longer ignore a growing body of empirical evidence regarding the impacts of the residential school system and continued assimilative child welfare policies on the health and social wellbeing of Indigenous people today.
Table 3.1 Descriptive statistics, bivariable and multivariable logistic regression analyses assessing impact of familial exposure to the residential school system (RSS) on personal involvement with the CWS among younger Indigenous PWUD (n=267)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Yes n = 178, n (%)</th>
<th>No n = 89, n (%)</th>
<th>Odds Ratio, (95% CI)</th>
<th>p-value</th>
<th>Adjusted Odds Ratio, (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Familial RSSb exposure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No RSS exposure</td>
<td>53 (58.9)</td>
<td>37 (41.1)</td>
<td>Reference</td>
<td></td>
<td>Reference</td>
<td>-</td>
</tr>
<tr>
<td>Grandparent RSS exposure</td>
<td>48 (65.8)</td>
<td>25 (34.2)</td>
<td>1.34 (0.71 – 2.54)</td>
<td>0.370</td>
<td>1.35 (0.66 – 2.72)</td>
<td>0.411</td>
</tr>
<tr>
<td>Parent or parent and grandparent RSS</td>
<td>77 (74.0)</td>
<td>27 (26.0)</td>
<td>1.99 (1.09 – 3.65)</td>
<td>0.026</td>
<td>2.01 (1.03 – 3.93)</td>
<td>0.040</td>
</tr>
<tr>
<td>Age (per year older)</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Median</td>
<td>23.6</td>
<td>24.0</td>
<td>0.99 (0.94 – 1.05)</td>
<td>0.811</td>
<td>0.96 (0.89 – 1.03)</td>
<td>0.200</td>
</tr>
<tr>
<td>IQRc</td>
<td>(21.2 – 28.3)</td>
<td>(22.0 – 27.4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>85 (66.4)</td>
<td>43 (33.6)</td>
<td>0.98 (0.59 – 1.63)</td>
<td>0.931</td>
<td>1.03 (0.58 – 1.83)</td>
<td>0.929</td>
</tr>
<tr>
<td>Male</td>
<td>93 (66.9)</td>
<td>46 (33.1)</td>
<td>Reference</td>
<td></td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>High school completion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>55 (63.2)</td>
<td>32 (46.8)</td>
<td>0.80 (0.47 – 1.37)</td>
<td>0.424</td>
<td>0.88 (0.49 – 1.57)</td>
<td>0.655</td>
</tr>
<tr>
<td>No</td>
<td>122 (68.2)</td>
<td>57 (31.8)</td>
<td>Reference</td>
<td></td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>Incarceration</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>139 (68.4)</td>
<td>64 (31.6)</td>
<td>1.48 (0.90 – 2.42)</td>
<td>0.121</td>
<td>1.66 (0.83 – 3.34)</td>
<td>0.153</td>
</tr>
<tr>
<td>No</td>
<td>36 (59.0)</td>
<td>25 (61.0)</td>
<td>Reference</td>
<td></td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>Childhood maltreatment</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Severe/moderate</td>
<td>125 (68.3)</td>
<td>58 (31.7)</td>
<td>1.16 (0.62 – 2.18)</td>
<td>0.633</td>
<td>1.32 (0.68 – 2.56)</td>
<td>0.414</td>
</tr>
<tr>
<td>Low/none</td>
<td>37 (64.9)</td>
<td>20 (35.1)</td>
<td>Reference</td>
<td></td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>Injection drug use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>127 (69.8)</td>
<td>55 (30.2)</td>
<td>1.54 (0.90 – 2.63)</td>
<td>0.115</td>
<td>2.07 (1.07 – 4.01)</td>
<td>0.030</td>
</tr>
<tr>
<td>No</td>
<td>51 (60.0)</td>
<td>34 (40.0)</td>
<td>Reference</td>
<td></td>
<td>Reference</td>
<td></td>
</tr>
</tbody>
</table>

Note: a CI = confidence interval; b RSS = residential school system; c IQR = interquartile range; PWUD = people who use drugs
Table 3.2 Secondary analysis assessing the relationship between ethnicity and involvement with the child welfare system among younger PWUD (n=498)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Child welfare exposure</th>
<th></th>
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<th></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Yes n = 241, n (%)</td>
<td>No n = 257, n (%)</td>
<td>Odds Ratio, (95% CI)</td>
<td>p-value</td>
<td>Adjusted Odds Ratio, (95% CI)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Indigenous</td>
<td>188 (46.1)</td>
<td>220 (53.9)</td>
<td>0.59 (0.38 – 0.94)</td>
<td>0.029</td>
<td>0.66 (0.39 – 1.10)</td>
</tr>
<tr>
<td>Indigenous with no immediate familial RSS* exposure</td>
<td>53 (58.9)</td>
<td>37 (41.1)</td>
<td>Reference</td>
<td></td>
<td>Reference</td>
</tr>
<tr>
<td>Age (per year older)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Median</td>
<td>22.7</td>
<td>23.4</td>
<td>0.98 (0.94 – 1.01)</td>
<td>0.231</td>
<td>0.98 (0.93 – 1.02)</td>
</tr>
<tr>
<td>IQR*</td>
<td>(20.5 – 27.3)</td>
<td>(21.2 – 28.0)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>95 (54.6)</td>
<td>79 (45.4)</td>
<td>1.47 (1.01 – 2.12)</td>
<td>0.043</td>
<td>1.36 (0.88 – 2.11)</td>
</tr>
<tr>
<td>Male</td>
<td>146 (45.1)</td>
<td>178 (54.9)</td>
<td>Reference</td>
<td></td>
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<td>High school completion</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>78 (38.6)</td>
<td>124 (61.4)</td>
<td>0.50 (0.34 – 0.72)</td>
<td>&lt;0.001</td>
<td>0.56 (0.37 – 0.84)</td>
</tr>
<tr>
<td>No</td>
<td>161 (55.9)</td>
<td>127 (44.1)</td>
<td>Reference</td>
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</tr>
<tr>
<td>Incarceration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>173 (55.1)</td>
<td>141 (44.9)</td>
<td>2.12 (1.46 – 3.09)</td>
<td>&lt;0.001</td>
<td>2.78 (1.75 – 4.41)</td>
</tr>
<tr>
<td>No</td>
<td>66 (36.7)</td>
<td>114 (63.3)</td>
<td>Reference</td>
<td></td>
<td>Reference</td>
</tr>
<tr>
<td>Childhood maltreatment</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Severe/moderate</td>
<td>166 (51.1)</td>
<td>159 (48.9)</td>
<td>1.68 (1.08 – 2.60)</td>
<td>0.021</td>
<td>1.77 (1.11 – 2.81)</td>
</tr>
<tr>
<td>Low/none</td>
<td>43 (38.4)</td>
<td>69 (61.6)</td>
<td>Reference</td>
<td></td>
<td>Reference</td>
</tr>
<tr>
<td>Injection drug use</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>162 (48.8)</td>
<td>170 (51.2)</td>
<td>1.05 (0.72 – 1.52)</td>
<td>0.800</td>
<td>1.06 (0.66 – 1.71)</td>
</tr>
<tr>
<td>No</td>
<td>79 (47.6)</td>
<td>87 (52.4)</td>
<td>Reference</td>
<td></td>
<td>Reference</td>
</tr>
</tbody>
</table>

Note: *CI = confidence interval; RSS = residential school system; IQR = interquartile range; PWUD = people who use drugs
Figure 3.1 Primary analysis depicting point estimates and 95% confidence intervals for CWS involvement among younger Indigenous PWUD (n=267)
Chapter 4: History of being in government care associated with younger age at injection initiation among street-involved youth

4.1 Introduction

Injection drug use continues to be a major driver of HIV and hepatitis C (HCV) infection and related harms worldwide. This is concerning given international estimates that the median age for injection initiation is 19 years old, suggesting that more than half of people who inject drugs initiated in adolescence or as young adults. Much research to-date has suggested initiating injection drug use at a younger age is associated with high-risk practices and a range of harms such as, binge drug use, sex work, incarceration, infectious disease transmission, and mortality. Relatedly, prior research has found that the majority of HIV and HCV infections occur within the first two years of initiation, presenting a significant challenge to public health programming in this area as the window to intervene is fleeting.

More recent research has focused on the significant role of structural forces (e.g., housing instability, barriers to addiction treatment) in injection initiation among vulnerable individuals. However, the systematic review presented in Chapter 2 identified an unexplored relationship between exposure to the CWS and injection initiation among marginalized youth in care. This is a considerable gap in the literature as the review also found evidence that youth in care are at increased risk for early initiation of hard drug use, and previous research has found non-injection hard and prescription drug use to be a significant predictor for subsequent injection initiation. Given these harms, the small window for intervening to prevent infectious disease transmission, as well as the recognition that structural forces have a significant role in injection initiation, the candidate hypothesized that the CWS may be a risk environment.

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6 A version of this chapter has been previously published and is re-printed here with permission. Barker B, Kerr T, Dong H, Wood E, DeBeck K. History of being in government care associated with younger age at injection initiation among a cohort of street-involved youth, Drug and Alcohol Review 2017;36(5):639-642.
for early injection initiation among high-risk youth in care. Therefore, the current analysis sought to investigate whether having a history of being in government care is associated with having initiated injection drug use at a younger age among street-involved youth who inject drugs.

4.2 Methods

Data for this analysis were obtained from the ARYS cohort as described in section 1.8.

4.2.1 Study sample

The present study was restricted to street-involved youth who reported having injected drugs either at baseline or over the study period from September 1, 2005 to November 31, 2017.

4.2.2 Variable selection and analytic technique

The primary outcome of interest for this analysis was age at first injection drug use, defined as the age youth reported the first time they used a needle to “chip, fix or muscle” (<18 years of age vs. ≥18 years of age). Age 18 was selected as the cut-off as it was the median age of injection initiation among the sample, it is the age of emancipation from the CWS in most jurisdictions (i.e., every province and territory in Canada with the exception of B.C., New Brunswick, Northwest Territories, and Yukon), and is also generally seen as a legal and developmentally important transition from adolescence to young adulthood. At baseline, participants were asked to report any history of injection drug use, which was subsequently asked at each study follow-up interview to assess injection initiation over the study period. The primary explanatory variable of interest was having a history of CWS involvement as previously defined in section 3.2.1. To adjust for variables hypothesized to be associated with both CWS involvement and injection initiation, a range of potential confounders were included: sex (female vs. male); age at interview (per year older); ethnicity (Caucasian vs. other); guardian or parental
alcohol and/or drug use (yes vs. no); childhood maltreatment (severe/moderate vs. low/none). First, descriptive characteristics were stratified by age at injection initiation (<18 vs. ≥18). Next, bivariable associations between each explanatory variable and the outcome of interest were evaluated using logistic regression. To evaluate the relationship between age at injection initiation and having a history of CWS involvement, all variables described above were adjusted in a fixed multivariable logistic regression model. All statistical analyses were performed using SAS software version 9.4 (SAS, Cary, NC). All p-values are two sided.

4.3 Results

Over the study period, 1458 youths enrolled in the ARYS cohort among whom, 815 reported injection drug use at baseline (n=663, 81.3%) or over study follow-up (n=152, 18.7%) and were included in this analysis. Compared to ARYS participants who were injecting naïve and therefore illegible for this analysis, participants in our study were more likely to be older (p<0.001) and Caucasian (p=0.010); however, there were no significant differences detected for sex (p=0.407) or CWS involvement (p=0.067) between groups. Among this sample, 265 (32.5%) were female and the median age was 22.1 (IQR: 20.4 – 23.9). In total, 298 (36.6%) participants reported initiating injection drug use before the age of 18.

The results of the descriptive statistics, bivariable and multivariable analyses are presented in Table 4.1. After adjusting for sex, age, ethnicity, parental or guardian substance use, and childhood maltreatment, having a history of being in government care remained significantly and positively associated with initiating injection drug use before age 18 (AOR = 1.44; 95% CI: 1.04 – 2.01).
4.4 Discussion

Over half the sample of street-involved youth who inject drugs included in the present study reported having been in government care at some point in their childhood (52.9%), which is consistent with other studies conducted among street-involved and substance using populations. After adjusting for multiple adverse childhood experiences and factors associated with injection initiation, having been involved with the CWS was independently associated with initiating injection drug use before age 18. This is the first study that we know of to assess the relationship between exposure to the CWS and injection initiation among a sample of high-risk youth. Although the present study cannot establish causation, these findings suggest that the CWS may act as a risk environment for high-risk youth in care and clearly highlight that targeted prevention and intervention programs are needed for this population.

Youth in government care frequently lack strong familial support and positive adult role models, compounded by histories of trauma and abuse, resulting in increased social and economic vulnerabilities – all of which may contribute to the observed increased risk for injection initiation at a younger age. Prior research has demonstrated the protective effect of parental monitoring and closeness, school engagement, and positive social networks against youth substance use. For example, an American study using a nationally representative sample of youth involved with the CWS found that having a “protective” adult relationship (e.g., confidant, mentor, advocate) moderated the relationship between adverse childhood experiences (e.g., trauma, abuse, neglect) and subsequent substance use and delinquency in adolescence. Relatedly, the majority of initiation events are facilitated by another person who injects drugs, typically an older friend or sexual partner. For vulnerable youth in care, interventions that facilitate the development of positive social networks with strong adult role models and natural mentors may mitigate substance use initiation and escalating behaviours like initiating injection drug use.
While evidence-based interventions to improve social networks and promote healthy adult relationships are needed for youth at-risk of initiating injection drug use, attention to structural forces related to injection initiation among this population is imperative. While our data cannot speak to whether youth initiated injection drug use while in out-of-home care, it does suggest that CWS involvement is a significant risk factor for injection initiation. This is particularly concerning in the B.C. context given recent government reports indicating that youth in care experience elevated rates of substance use and related harms including mortality, compared to the general population of youth (see section 1.2).\textsuperscript{61,134} The B.C. Representative for Children and Youth, an independent nonpartisan officer of the legislature with the mandate to advocate for youth in care and oversee MCFD, has released multiple reports over the last several years documenting the rise of substance use and related injuries among youth in care.\textsuperscript{134,214,215} Previous reports documented the lack of a comprehensive addiction treatment system with a single entry point to address youth substance use and that as a result, piecemeal and poorly resourced community services are left to fill the gap with varying availability and accessibility across the province.\textsuperscript{214,215} However, the focus and resulting recommendations of these reports were abstinence in nature, such as increased number of publicly-funded residential treatment beds and withdrawal management services (i.e., detox), with reference to harm reduction services notably absent or minimal. The most recently report included the voices of over a hundred youth formerly or currently in care that use substances and represented a radical departure from the status quo in conceptualizing how to address substance use among youth in government care.\textsuperscript{134} Based on focus groups with youth in care who use substances, the new-Representative recommended integrating evidence-based harm reduction approaches into child welfare policy and programming that encompass a suite of services and training. These include: youth-specific and low barrier safe consumption services, needle exchanges, opioid substitution therapy (e.g., buprenorphine, methadone), as well as training for foster
parents, social workers, and educators regarding youth substance use to prevent placement breakdowns, expulsions, and possible homelessness and entrenchment in drug use scenes. These recommendations are supported by research findings on the structural determinants of substance use and injection initiation. Previous studies of drug use trajectories have consistently found homelessness to be a strong predictor for injection initiation, progression to regular use and relapse compared to those who were stably housed.

Indeed, evidence suggests housing is one of the most important social determinants of health and given that both, street-involved and CWS involved youth experience difficulty accessing and sustaining housing, increasing the public stock of low barrier, youth-focused housing that does not require abstinence is imperative.

Limitations common to all the chapters presented in this dissertation are described in section 6.3. As noted above, our study design cannot ascertain temporality and our study instrument does not provide a measure for age of entry into the CWS. Therefore, it is possible that the outcome of interest (i.e., initiating injection drug use before the age of 18) may have preceded exposure to the CWS, particularly in settings where government care is provided past age 18 (e.g., B.C.).

In conclusion, this study found that having a history of being in government care was associated with initiating injection drug use before the age of 18 and that the CWS may act as a risk environment for vulnerable youth in care. Given the high prevalence of substance use among youth in care and the harms associated with initiating injection at a younger age, integrating harm reduction approaches into child welfare policy and programming to address youth substance use is urgently needed. As abstinence-based models have been proven largely inadequate in preventing or treating substance use, educating youth, foster parents, teachers, and other caregivers in how to mitigate harms associated with substance use and promote safer drug use practices is highly recommended.
Table 4.1 Descriptive statistics stratified by age at injection initiation (<18 vs. ≥18). Bivariable and multivariable analyses of factors associated with initiating injection drug use before age 18 among street-involved youth (n=815)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Age at Injection Initiation</th>
<th>Odds Ratio, (95% CI)</th>
<th>p-value</th>
<th>Adjusted Odds Ratio, (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;18 n = 298, n (%)</td>
<td>≥18 n = 517, n (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>&lt;18</td>
<td>≥18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>21.3ᵇ (19.3–23.6)ᵇ</td>
<td>22.5ᵇ (20.9–24.1)ᵇ</td>
<td>&lt;0.001</td>
<td>0.84 (0.79–0.89)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>CWS involvement</td>
<td>Yes</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>181 (60.7)</td>
<td>250 (48.4)</td>
<td>1.65 (1.24–2.21)</td>
<td>&lt;0.001</td>
<td>1.44 (1.04–2.01)</td>
</tr>
<tr>
<td>Age at time of interview</td>
<td>Per year older</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>21.3ᵇ (19.3–23.6)ᵇ</td>
<td>22.5ᵇ (20.9–24.1)ᵇ</td>
<td>&lt;0.001</td>
<td>0.84 (0.79–0.89)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Sex</td>
<td>Female</td>
<td>Male</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>111 (37.3)</td>
<td>187 (62.8)</td>
<td>1.40 (1.04–1.89)</td>
<td>0.029</td>
<td>1.15 (0.82–1.61)</td>
</tr>
<tr>
<td>Ethnicity</td>
<td>Caucasian</td>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>218 (73.2)</td>
<td>78 (26.2)</td>
<td>1.48 (1.08–2.03)</td>
<td>0.016</td>
<td>1.56 (1.09–2.24)</td>
</tr>
<tr>
<td>Parent/guardian substance use</td>
<td>Yes</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>244 (81.9)</td>
<td>50 (16.8)</td>
<td>1.39 (0.96–2.02)</td>
<td>0.077</td>
<td>1.24 (0.82–1.88)</td>
</tr>
<tr>
<td>Childhood maltreatment</td>
<td>Severe/moderate</td>
<td>Low/none</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>219 (73.5)</td>
<td>52 (17.4)</td>
<td>2.18 (1.52–3.11)</td>
<td>&lt;0.001</td>
<td>1.90 (1.30–2.77)</td>
</tr>
</tbody>
</table>

Note: ᵃCI = confidence interval; ᵇmedian; ᵇIQR = interquartile range
Chapter 5: Long-term benefits of providing transitional services to youth aging-out of the child welfare system: Evidence from a cohort of young people who use drugs

5.1 Introduction

As detailed in section 1.3, a rising proportion of young people are living in the parental home well into their twenties while pursuing postsecondary education, vocational training or working and saving to gradually transition to independence. For youth who age-out of the CWS, this elongated transition period is frequently absent and many youth experience an abrupt termination of services and supports, including their care placement, at the legal age of majority. Similarly, section 1.4 presented a high-level overview of evolving child welfare policies and programs aimed at mitigating high rates of housing instability and other negative health-related outcomes common among youth who age-out of the CWS. While governments are increasingly investing in extended care supports and services to help youth age-out more gradually, these programs typically have strict eligibility criteria where youth must be engaged in school (e.g., high school, equivalency, postsecondary), vocational training, or working a certain number of hours per month. In some jurisdictions like B.C. however, engagement with mental health and addiction treatment programs qualify for extended care support.

Given criticisms regarding the restrictive requirements to access current transitional programs and extended care support, the present study sought to assess whether utilization of a greater number of transitional services was associated with improved health and social outcomes later in life among PWUD who aged-out of care. The candidate then documented reports of service utilization, availability, barriers, and interest across seven categories of transitional services. This study also sought to measure unmet demand for transitional services by documenting interest in engaging with
additional transitional services and supports had these services been offered at the time of emancipation from the CWS.

5.2 Methods

Data for these analyses were obtained from the VIDUS and ARYS studies as detailed in section 1.8.

5.2.1 Study sample

The present analysis was restricted to participants who reported having aged-out of the CWS in the last 20 years and were seen for at least one study visit between December 1, 2014 to November 31, 2017, as measures for this analysis were developed by the candidate and available for this sample period.

5.2.2 Study design and variable selection

Among those who reported having aged-out of the CWS, a subset of questions was asked including: “As you were transitioning out of government care, were the following programs made available to you?” Interviewers then listed seven categories of transitional services with examples for participants. These were: financial support (e.g., social assistance, disability allowance); independent living/Agreement with Young Adults (e.g., housing support, rent, furniture, meals); educational support (e.g., high school equivalency, community college, tuition support); employment services (e.g., resume building, interview skills, work placements); life-skills training (e.g., budgeting, meal preparation, conflict resolution); medical services (e.g., health care, PharmaCare, dental, vision); and counselling (e.g., addiction treatment, therapy). For each category participant responses were coded as either: “utilized,” defined as having accessed and engaged with the service; “available but uninterested,” defined as being offered the service but chose not to access it; “attempted but experienced a barrier,” defined as having attempted to access the service but experienced a barrier or was unable to complete the program; or “unavailable but interested,” defined as having been unaware
of the service, or the service being unavailable, but was interested and willing to engage with the service if it had been offered. It should be noted that while our study setting has a universal health care system, certain pharmaceutical, dental, and vision costs are not fully covered by the public system.

The primary objective of this study was to evaluate the relationship between having received a higher number of transitional services at the time of emancipation from the CWS and past-six-month health and social outcomes at the last study visit. To do this we grouped the primary outcome of interest into three levels: having accessed ≤1 service (reference category); having accessed 2-3 services; and having accessed 4-7 services. These levels were determined based on the distribution of responses. Explanatory variables of interest were selected based on their policy relevance to the aforementioned services or previously identified in research as being associated with service utilization for youth aging-out of the CWS and hypothesized to be confounders. These included: age at last study visit (per year younger); sex (female vs. male); sexual orientation (lesbian, gay, bisexual, two-spirited [LGBT] vs. heterosexual); high school completion or equivalency (yes vs. no); past-six-month homelessness (yes vs. no); past-six-month employment, defined as having a regular job, temporary work, or being self-employed (yes vs. no); history of incarceration, defined as spending at least one night in juvenile detention, jail or prison (yes vs. no); past-six-month heavy alcohol use, defined according to the National Institute on Alcohol Abuse and Alcoholism (NIAAA) criteria for “heavy” or “at-risk” drinking; average of >3 alcoholic drinks per occasion or >7 drinks per week for women, and an average of >4 alcoholic drinks per occasion or >14 drinks in total per week for men; past-six-month daily non-injection or injection drug use (yes vs. no); and Indigenous ancestry (First Nations, Métis, Inuit, Aboriginal vs. other). Indigenous ancestry was included as an explanatory variable of interest given the overrepresentation of Indigenous youth in the CWS and among street-involved populations.
The candidate also wanted to investigate whether specific transitional service utilization was associated with the program’s intended outcome. As such, sub-analyses were conducted to assess the relationship between: i.) educational support utilization and high school completion as well as, ii.) employment services utilization and past-six-month employment.

### 5.2.3 Analytic technique

As a first step, the bivariable association between each explanatory variable and levels of the outcome variable (transitional service utilization) were estimated using logistic regression. Next, two fixed multivariable logistic regression models were constructed to assess factors independently associated with different levels of transitional service utilization. We then reported descriptive statistics including counts of service utilization, availability, barriers, and interest across the seven categories of transitional services. The interest response was used to assess willingness to engage with transitional services, which we have previously demonstrated the validity of using willingness measures to predict engagement with health interventions among PWUD. Lastly, bivariable associations were estimated for the two sub-analyses described above. All statistical analyses were performed using SAS software version 9.4 (SAS, Cary, NC). All p-values are two sided.

### 5.3 Results

Over the study period 217 PWUD reported having aged-out of the CWS in the previous 20 years and were therefore eligible for the current analyses. Among this sample 82 (37.8%) were female, 90 (41.9%) identified as being of Indigenous ancestry and 47 (21.9%) identified as a sexual minority. The median number of years since aging-out was 8.4 (IQR: 5.1 – 12.7), and the median age at last study visit was 26.4 (IQR: 23.1 – 30.7). Further, 38.6% reported completing high school or equivalency, 37.5% reported being currently employed, 41.4% were currently homeless, and 81.1% had a history of
incarceration. Table 5.1 provides the descriptive statistics for sociodemographic and behavioural characteristics at last study visit, with the exception of sex, Indigenous ancestry, sexual orientation, and high school completion which were measured at the baseline study visit.

Table 5.2 reports service utilization, availability (but uninterested), attempts (but experienced a barrier), and interest (but unavailable) across the seven transitional service categories. As displayed, reported service utilization was highest for financial support (61.8%), independent living programs [ILPs] (49.8%) and medical services (44.7%). Reported service utilization was comparatively low for counselling (28.1%), life-skills training (24.4%), employment services (21.2%), and educational support (16.6%). Reported interest and willingness to engage was high across all service categories among those who did not, or were unable to, utilize services: employment services (78.4%), life-skills training (78.3%), medical services (76.1%), financial support (74.2%), ILPs (71.3%), educational support (64.8%), and counselling (64.1%).

Table 5.3 and 5.4 present the bivariable and multivariable logistic regression analyses respectively. In multivariable analyses, compared to individuals who utilized ≤1 service, those who utilized 4-7 services while aging-out of the CWS were significantly less likely to have experienced past-six-month homelessness (AOR = 0.29, 95% CI: 0.12 – 0.70) or engaged in past-six-month daily non-injection or injection drug use (AOR = 0.35, 95% CI: 0.13 – 0.93), and significantly more likely to be younger (AOR = 1.13, 95% CI: 1.03 – 1.24). A significant protective effect was also observed between having utilized 2-3 services while aging-out (vs. accessing ≤1 service) and experiencing past-six-month homelessness (AOR = 0.48, 95% CI: 0.24 – 0.97). Similar patterns in effect estimates were observed between the levels of service utilization for past-six-month daily non-injection or injection drug use (AOR = 0.74, 95% CI: 0.31 – 1.80) and younger age (AOR = 1.08, 95% CI: 1.00 – 1.17) – although these did not meet conventional statistical significance (p=0.51 and p=0.06 respectively).
Lastly, in sub-analyses, compared to PWUD that aged-out but did not utilize educational support while exiting the CWS, those who did had a non-significant increase in the odds of having completed high school (unadjusted odds ratio [OR] = 1.63, 95% CI: 0.79 – 3.38). Similarly, compared to individuals who did not utilize employment services, those who did had a non-significant increase in the odds of reporting recent employment (OR = 1.72, 95% CI: 0.89 – 3.33) [results not shown].

5.4 Discussion

Findings presented from these analyses indicate that increased service utilization while transitioning to independence is associated with beneficial long-term impacts among vulnerable participants exiting the CWS. Approximately half the sample of PWUD who aged-out of care reported utilizing financial, independent living and medical services and supports at the time of emancipation. Further, participants who were able to utilize a higher number of transitional services while aging-out were significantly less likely to report current housing instability or high intensity substance use practices. Findings also highlight significant gaps in service provision and unmet demand among PWUD that aged-out of care. Specifically, the sample reported low utilization rates for education, employment and life-skills training services, and high rates of reported interest and willingness to engage with these services.

This study also found that younger participants were significantly more likely to report having utilized 4-7 transitional services at the time of emancipation from the CWS compared to older participants. As previously described, there have been considerable changes to legislation, policy and programming to improve stability and outcomes for youth aging-out of care in B.C. and elsewhere in recent decades. Given this context, this finding is likely a reflection, at least in part, of successful efforts by child welfare ministries to improve service delivery over time. As previously described, the B.C. Government has invested significant funds into various programs and supports for youth
emancipated from the CWS and similar programs exist elsewhere in Canada and the U.S. And while study findings also demonstrate significant gaps in child welfare policy and programming for PWUD that aged-out of care, it is promising that younger participants in the study sample were significantly more likely to report having utilized a higher number of transitional services.

The majority of research on service utilization and associated impacts among youth leaving care are evaluations of novel interventions or studies that measure short-term outcomes associated with wider policy change. A large, long-running cohort study of youth aging-out of care in Illinois, Wisconsin and Iowa investigated “independent living” service utilization across seven categories of services (i.e., general education, college preparatory, job search, employment, financial literacy, housing), and found that despite service availability, utilization was relatively low at baseline (i.e., prior to ages 17-18 = 29.7%) and both follow-up interviews (i.e., ages 18-19 = 18.7%, ages 19-21 = 12.2%). Interestingly, remaining in care past the age of 17 (per month longer) was found to be a significant predictor of service utilization across all domains at both follow-up periods. Prior to the Fostering Connections Act of 2008, Illinois supported youth in care until their 21st birthday while youth aged-out at 18 years old in Wisconsin and Iowa. An earlier report from the same study noted that although youth in Illinois were less likely to have utilized all service areas by their 18th birthday, by age 21, they were more likely to have utilized the majority of service areas compared to peers in Wisconsin and Iowa. Although the potential for selection bias should be acknowledged, as samples were not random and the choice to remain in care may mean that those youth were more likely to have favourable outcomes regardless, these data contribute to the emerging evidence-base for formally extending the age of emancipation from the CWS.

Among PWUD who aged-out of care, no statistically significant improvements in educational or employment outcomes were found to be associated with utilizing a higher
number of transitional services; and educational support and employment services had the lowest reported utilization rates (16.6% and 21.2% respectively), as well as high unmet demand (64.8% and 78.4%). Further, our sub-analyses investigating program-specific utilization and a corresponding intended outcome found non-significant relationships between education service utilization and high school completion, as well as employment service utilization and recent employment. This is consistent with the aforementioned study assessing service utilization among youth aging-out of care across three states in America that found non-detectable differences in the odds of having received educational services and being enrolled in school or having completed grade 11, as well as having received employment services and current or lifetime employment. Similar findings have been reported from qualitative and ethnographic work undertaken in our study setting among street-involved youth whom have repeatedly identified a need for additional education and employment programs and supports. Accounts from these studies suggest that the lack of educational and employment opportunities in youths’ lives have contributed to high intensity substance use and entrenchment in street-life. Taken together, these findings suggest that current service provision and programming in this area may be inadequate to meet demand and poorly targeted for those who are most in need of support.

A wealth of research has established the link between aging-out of the CWS and subsequent homelessness, and previous research has demonstrated moderate success of various supportive housing interventions and ILPs at mitigating subsequent housing instability among young people exiting the CWS. Aligned with this research, this study found that among a high-risk sample of PWUD that aged-out of care, those who were able to utilize a higher number of transitional services were less likely to report current homelessness. Further, it was observed that participants who were able to utilize a higher number of services while aging-out of care, were significantly less likely to report engaging in daily drug use. Youth in care who use drugs face significant barriers to
accessing addiction treatment services while aging-out of the CWS, and to our knowledge, no studies have evaluated the relationship between the cumulative number of transitional services utilized and substance use outcomes, particularly long-term outcomes. As the systematic review and analyses presented in Chapter 4 found, youth in government care initiate substance use at an earlier age and experiment with “harder” drugs compared to peers. Early initiation of non-injection and injection drug use has been found to be associated with high intensity and riskier drug use practices (e.g., syringe sharing), overdose, and HIV and HCV acquisition. Taken together, these findings suggest that increasing access to transitional services among high-risk youth aging-out of care may mitigate future high intensity substance use. Lastly, as we also found significant unmet demand and interest across all service categories, these findings support calls for making current transitional programs (e.g., AYAs) low barrier. By making current programming low barrier, youth at the highest risk for harm may be able to benefit from long-term improvements in housing and substance use outcomes as the present study findings indicate.

Limitations specific to these analyses are described here (see section 6.3 for general limitations). Given the risk environment that PWUD and street-involved populations operate within, and the potential number of years since participants in our study have aged-out (median years since aged-out of CWS: 8.4, IQR: 5.1-12.7), our study may be susceptible to recall bias. To mitigate the magnitude of recall bias, the candidate restricted the sample to participants who had aged-out in the last 20 years and as detailed in section 6.3, interviewers use a number of techniques to improve participant recall. Additionally, the candidate acknowledges the possibility of unmeasured confounding in our study. Specifically, participants who accessed a higher number of services while aging-out of the CWS may have done so in part, due to pre-existing factors that our study instrument was unable to capture.
In spite of these limitations, this study represents one of the first to measure the relationship between transitional services utilization at the time of emancipation from the CWS and subsequent long-term health and social outcomes among a high-risk population that aged-out of care. There have been notable improvements in policy and programming for youth aging-out of care in recent decades and our finding that younger participants in our study were more likely to have utilized a higher number of services is likely a reflection of this progress. Further, we observed that this understudied population of high-risk youth benefit significantly from utilizing transitional services when leaving care. This has important policy implications for the current eligibility criteria of transitional services that systemically favours higher functioning youth. We also noted significant gaps in service delivery for this population, with sub-optimal levels of service engagement for employment, education and life-skills training, as well as high rates of reported interest and willingness to engage across all service categories. Given the findings of improved long-term health and social outcomes associated with increased service utilization and high rates of unmet demand for transitional services, this study supports growing calls for decision-makers to remove barriers to transitional service programming and to extend the formal age of emancipation for all youth in care.
Table 5.1 Sociodemographic and recent substance use patterns among PWUD that aged-out of the CWS

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>n = 217 (n%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median age at last study visit (IQR)</td>
<td>26.4 (23.1 – 30.7)</td>
</tr>
<tr>
<td>Median years since aged-out (IQR)</td>
<td>8.4 (5.1 – 12.7)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>82 (37.8%)</td>
</tr>
<tr>
<td>Male</td>
<td>135 (62.2%)</td>
</tr>
<tr>
<td>Indigenous ancestry</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>90 (41.9%)</td>
</tr>
<tr>
<td>No</td>
<td>125 (58.1%)</td>
</tr>
<tr>
<td>Sexual orientation</td>
<td></td>
</tr>
<tr>
<td>LGBTc</td>
<td>47 (21.9%)</td>
</tr>
<tr>
<td>Heterosexual</td>
<td>168 (78.1%)</td>
</tr>
<tr>
<td>High school completion</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>83 (38.6%)</td>
</tr>
<tr>
<td>No</td>
<td>132 (61.4%)</td>
</tr>
<tr>
<td>Homelessb</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>89 (41.4%)</td>
</tr>
<tr>
<td>No</td>
<td>126 (58.6%)</td>
</tr>
<tr>
<td>Employedb</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>81 (37.5%)</td>
</tr>
<tr>
<td>No</td>
<td>135 (62.5%)</td>
</tr>
<tr>
<td>History of incarceration</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>177 (81.1%)</td>
</tr>
<tr>
<td>No</td>
<td>39 (18.9%)</td>
</tr>
<tr>
<td>Heavy alcohol useb</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>39 (18.2%)</td>
</tr>
<tr>
<td>No</td>
<td>175 (81.8%)</td>
</tr>
<tr>
<td>Daily hard drug useb,cd</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>168 (77.4%)</td>
</tr>
<tr>
<td>No</td>
<td>49 (23.6%)</td>
</tr>
</tbody>
</table>

Note: a IQR = interquartile range; b refers to behaviour or characteristic in the past-six-months; c LGBT = lesbian, gay, bisexual, or two-spirited; d reported daily use of injection or non-injection heroin, crystal methamphetamine, crack-cocaine, and/or cocaine over the past-six-months
### Table 5.2 Observations of reported service utilization, availability, barriers, and interest across seven categories of transitional services among PWUD and who aged-out of CWS (n=217)

<table>
<thead>
<tr>
<th>Transitional Service</th>
<th>Utilized</th>
<th>Did not Utilize&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Non-response&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes n (%)</td>
<td>No&lt;sup&gt;a&lt;/sup&gt; n (%)</td>
<td>Available but Uninterested</td>
</tr>
<tr>
<td>Financial support</td>
<td>134 (61.8%)</td>
<td>66 (30.4%)</td>
<td>7 (10.6%)</td>
</tr>
<tr>
<td>ILPs&lt;sup&gt;c&lt;/sup&gt;</td>
<td>108 (49.8%)</td>
<td>80 (36.9%)</td>
<td>7 (8.8%)</td>
</tr>
<tr>
<td>Educational support</td>
<td>36 (16.6%)</td>
<td>145 (66.8%)</td>
<td>29 (20.0%)</td>
</tr>
<tr>
<td>Employment services</td>
<td>46 (21.2%)</td>
<td>125 (57.6%)</td>
<td>13 (10.4%)</td>
</tr>
<tr>
<td>Life-skills training</td>
<td>53 (24.4%)</td>
<td>115 (53.0%)</td>
<td>11 (9.6%)</td>
</tr>
<tr>
<td>Medical services</td>
<td>97 (44.7%)</td>
<td>88 (40.6%)</td>
<td>10 (11.4%)</td>
</tr>
<tr>
<td>Counselling</td>
<td>61 (28.1%)</td>
<td>103 (47.5%)</td>
<td>20 (19.4%)</td>
</tr>
</tbody>
</table>

Note: <sup>a</sup> Percentages displayed in the 3 ‘Did not Utilize’ columns are calculated using the denominator presented in the ‘No’ column for each service category respectively; <sup>b</sup> non-response percentages calculated using total sample as denominator; <sup>c</sup> ILPs = independent living programs
Table 5.3 Bivariate logistic regression analyses assessing the relationship between transitional service utilization and health and social outcomes among PWUD and who aged-out of CWS (n=217)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Accessed 2-3 services (n=88) vs. ≤1 service (n=75)</th>
<th>Accessed 4-7 services (n=54) vs. ≤1 service (n=75)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Odds Ratio (95% CI) p-value</td>
<td>Odds Ratio (95% CI) p-value</td>
</tr>
<tr>
<td>Younger age</td>
<td>1.04 (0.98 – 1.11) 0.184</td>
<td>1.08 (1.00 – 1.16) 0.048</td>
</tr>
<tr>
<td>Female sex</td>
<td>1.20 (0.63 – 2.29) 0.580</td>
<td>1.60 (0.78 – 3.29) 0.201</td>
</tr>
<tr>
<td>Indigenous ancestry</td>
<td>0.88 (0.47 – 1.66) 0.702</td>
<td>1.32 (0.65 – 2.68) 0.442</td>
</tr>
<tr>
<td>LGBT&lt;sup&gt;b&lt;/sup&gt;</td>
<td>1.97 (0.88 – 4.39) 0.098</td>
<td>2.09 (0.86 – 5.06) 0.103</td>
</tr>
<tr>
<td>High school diploma</td>
<td>0.71 (0.37 – 1.34) 0.286</td>
<td>0.88 (0.43 – 1.80) 0.731</td>
</tr>
<tr>
<td>Homeless&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.64 (0.35 – 1.20) 0.164</td>
<td>0.43 (0.21 – 0.91) 0.027</td>
</tr>
<tr>
<td>Employed&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.94 (0.49 – 1.79) 0.840</td>
<td>1.42 (0.70 – 2.91) 0.334</td>
</tr>
<tr>
<td>Incarceration</td>
<td>1.20 (0.53 – 2.70) 0.666</td>
<td>0.90 (0.37 – 2.16) 0.809</td>
</tr>
<tr>
<td>Heavy alcohol use&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.49 (0.22 – 1.10) 0.085</td>
<td>0.65 (0.27 – 1.59) 0.347</td>
</tr>
<tr>
<td>Daily drug use&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.76 (0.35 – 1.67) 0.496</td>
<td>0.46 (0.20 – 1.05) 0.064</td>
</tr>
</tbody>
</table>

Note: <sup>a</sup> CI = confidence interval; <sup>b</sup> LGBT = lesbian, gay, bisexual, two-spirited; <sup>c</sup> refers behaviour or characteristic in the past-six-months
Table 5.4 Multivariable logistic regression analyses assessing the relationship between transitional service utilization and health and social outcomes among PWUD and who aged-out of CWS (n=217)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Accessed 2-3 services (n=88) vs. ≤1 service (n=75)</th>
<th>p-value</th>
<th>Adjusted Odds Ratio (95% CI)</th>
<th>p-value</th>
<th>Adjusted Odds Ratio (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Younger age</td>
<td>1.08 (1.00 – 1.17)</td>
<td>0.063</td>
<td>1.13 (1.03 – 1.24)</td>
<td>0.011</td>
<td></td>
</tr>
<tr>
<td>Female sex</td>
<td>1.02 (0.50 – 2.12)</td>
<td>0.947</td>
<td>1.26 (0.53 – 3.01)</td>
<td>0.604</td>
<td></td>
</tr>
<tr>
<td>Indigenous ancestry</td>
<td>0.94 (0.48 – 1.88)</td>
<td>0.872</td>
<td>1.52 (0.66 – 3.49)</td>
<td>0.327</td>
<td></td>
</tr>
<tr>
<td>LGBT&lt;sup&gt;b&lt;/sup&gt;</td>
<td>2.25 (0.90 – 5.66)</td>
<td>0.083</td>
<td>2.86 (0.96 – 8.48)</td>
<td>0.059</td>
<td></td>
</tr>
<tr>
<td>High school diploma</td>
<td>0.60 (0.30 – 1.20)</td>
<td>0.148</td>
<td>0.86 (0.37 – 1.99)</td>
<td>0.719</td>
<td></td>
</tr>
<tr>
<td>Homeless&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.48 (0.24 – 0.97)</td>
<td>0.041</td>
<td>0.29 (0.12 – 0.70)</td>
<td>0.006</td>
<td></td>
</tr>
<tr>
<td>Employed&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.86 (0.40 – 1.85)</td>
<td>0.709</td>
<td>1.06 (0.44 – 2.51)</td>
<td>0.901</td>
<td></td>
</tr>
<tr>
<td>Incarceration</td>
<td>2.38 (0.88 – 6.44)</td>
<td>0.088</td>
<td>1.44 (0.49 – 4.21)</td>
<td>0.509</td>
<td></td>
</tr>
<tr>
<td>Heavy alcohol use&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.39 (0.16 – 0.95)</td>
<td>0.034</td>
<td>0.47 (0.16 – 1.36)</td>
<td>0.163</td>
<td></td>
</tr>
<tr>
<td>Daily drug use&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.74 (0.31 – 1.80)</td>
<td>0.513</td>
<td>0.35 (0.13 – 0.93)</td>
<td>0.034</td>
<td></td>
</tr>
</tbody>
</table>

Note:  <sup>a</sup> CI = confidence interval;  <sup>b</sup> LGBT = lesbian, gay, bisexual, two-spirited;  <sup>c</sup> refers to behaviour or characteristic in the past-six-months
Chapter 6: Conclusions

6.1 Summary of findings and overall contributions of this study

The present dissertation began with an overview of current evidence regarding the health and social inequities associated with CWS involvement. The findings of the systematic review presented in Chapter 2 suggest that youth involved with the CWS are at increased risk for substance use, particularly early initiation and increased likelihood for developing a substance use disorder. Furthermore, several included studies of homeless and street-involved populations found that histories of CWS involvement were highly prevalent (35-65%), supporting this dissertation’s justification for studying cohorts of young people who use drugs and experience high rates of street and CWS involvement. Addressing the important gaps identified in the literature, Chapters 3-5 used empirical data from the ARYS and VIDUS cohorts (Chapter 4 exclusively used ARYS data) to illuminate the intersection of social, structural, political, and environmental forces related to the CWS, and document health and social outcomes associated with exposure to the CWS among marginalized youth.

This dissertation makes several novel contributions to the evidence-base with important policy implications for youth in government care in B.C. and beyond. First, this dissertation provides a synthesis of current research in the area of the CWS and its role in observed elevated rates of substance use (Chapter 2), as well as identifying key issues in need of response including injection initiation. Another area of importance identified regards recognizing and responding to the ongoing impacts of colonization as well as the limitations of current policy and programming of transitional services for youth who are aging-out of care. Given the rapidly changing context of child welfare policy and programming in North America, it is hoped that increased attention to these issues will provide direction for how decision-makers and child welfare ministries can better address high rates of substance use, housing instability and other harms
experienced by youth in care. The following sub-sections (sub-sections 6.1.2-6.1.3) illuminate the contributions to the literature specifically pertaining to the effects of colonization and its relationship with the CWS, injection initiation among street-involved youth with a history of CWS exposure, and service-related issues associated with aging-out of the CWS.

6.1.1 Contributions to the literature on colonization

The ongoing harms associated with colonization are increasingly documented in the peer-reviewed literature, yet, they remain under-recognized by large segments of Settler society. As identified through the systematic review, understanding the relationship between colonization and the overrepresentation of Indigenous families involved with the CWS today was of central importance to the current dissertation. The findings from the empirical analyses presented in Chapter 3 contribute to, and expand upon broader understandings of the links between colonization and present-day health and social disparities experienced by Indigenous Peoples. Specifically, among our high-risk sample of younger Indigenous PWUD, familial residential school exposure was common, with 63.3% of participants reporting having at least one grandparent or parent that attended a residential school. In addition to affirming the lived knowledge of the harms and intergenerational impact of the residential school system, Chapter 3 represents the first study to demonstrate a relationship between proximity of family member that attended a residential school (i.e., grandparent, parent) and increased likelihood for having been personally involved with the CWS among younger Indigenous PWUD. Further, when controlling for immediate residential school exposure (i.e., no parent or grandparent), a non-significant difference in the odds of having been in the CWS was observed among Indigenous and non-Indigenous PWUD. Given the candidate’s previous study findings of an elevated risk for CWS involvement among Indigenous street-involved youth when familial residential school exposure was not controlled for (which was included in the systematic review, see section 2.3.6), Chapter 3’s findings suggest
that the intergenerational impact of the residential school system is a strong contributing factor to the overrepresentation of Indigenous youth in care today. This has critical implications not only for child welfare policy and practice, but also reconciliation efforts between Settler Canadians, the Canadian Government and Indigenous Peoples.

6.1.2 Contributions to the literature on initiation of injection drug use

Another area of inquiry identified by the systematic review was the potential relationship between the CWS and initiation of injection drug use. While there was emerging evidence to support the contention that youth in care are at increased risk of substance use, no previous studies examining this link with injection initiation were available in the published literature. By conceptualizing the CWS as a risk environment for drug-related harms, including injection initiation, Chapter 4 was able to empirically test the hypothesis that having been involved with the CWS would be independently associated with initiating injection drug use at a younger age among street-involved youth. Consistent with previous research, over half the sample of street-involved youth who inject drugs were found to have a history of being in government care. After controlling for a range of sociodemographic and antecedent risk factors (e.g., adverse childhood experiences) associated with both CWS involvement and injection initiation, having a history of being in government care was independently associated with initiating injection drug use before age 18.\(^7\) Given the associated risks with early injection initiation (e.g., HIV risk behaviour, overdose, infectious disease transmission) and increased likelihood of life-time dependency,\(^{234-236}\) our study findings highlight that youth in care who use drugs could benefit from supports and services informed by a harm

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\(^7\) Age 18 was selected as a theoretically-plausible cut-off point for these analyses. Age 18 is widely recognized as a legal and developmental milestone in the transition from adolescence to adulthood. As well, age 18 is the age of emancipation from the majority of child welfare systems in Canada (with the exception of B.C., New Brunswick, Northwest Territories, and Yukon).
reduction approach to prevent and interrupt escalating harmful substance use practices such as injection initiation.

6.1.3 Contributions to the literature on service utilization and aging-out

The final area of investigation for this dissertation involved exploring to what extent current supports and services for youth aging-out of care are adequate, equitable and inclusionary in nature. The systematic review in Chapter 2 indicated an absence of investigation into long-term outcomes associated with aging-out of care or receipt of transitional services (e.g. independent living programs). Chapter 5 of this dissertation sought to investigate utilization, availability, barriers, and interest in transitional services at the time of emancipation from the CWS, as well as evaluate whether service utilization was associated with improved subsequent long-term health and social outcomes among PWUD who aged-out of care. Given the restrictive eligibility criteria of existing programs and services for youth aging-out of the CWS, it was hypothesized that reported transitional service utilization would be low among this high-risk sample of PWUD who aged-out of care. However, approximately half the study sample reported utilizing financial services (61.8%), independent living services (49.8%), and medical services (44.7%) while aging-out of care. Further, younger PWUD who aged-out of care were significantly more likely to report having accessed a higher number of transitional services at the time of emancipation from care compared to older participants. These findings highlight some successes and improvements in policy and programming for youth aging-out of care in recent decades. Additionally, among PWUD who aged-out of care, accessing a higher number of transitional services was significantly associated with subsequent long-term health-related improvements, namely, reductions in high intensity drug use patterns and housing instability. Chapter 5 also documented considerable gaps in service delivery and unmet demand among this population. Specifically, low reported utilization rates were found for counselling (28.1%), life-skills training (24.4%), employment (21.2%), and education programs (16.5%), and unmet demand was high.
across all service categories (62.1 – 78.4%). Taken together, these findings suggest that this understudied population of younger PWUD who aged-out of care do benefit from transitional service utilization and are interested and willing to engage with these services. The study further identifies targeted opportunities to make existing services lower barrier to improve outcomes (e.g., education and employment) and supports calls for extending the age of emancipation from care.

6.2 Reflecting on study methods: strengths and limitations

An overall strength of the empirical analyses presented in this dissertation is the use of data obtained from two long-running cohorts of PWUD, one of street-involved youth (ARYS) and one of adults who inject drugs (VIDUS). This facilitated the examination of antecedent factors (e.g., familial exposure to the residential school system) associated with increased risk for CWS involvement and related exposures (e.g., aging-out) on short and long-term health and social outcomes, as well as indirect evaluations of policy changes on outcomes. The large sample sizes of these cohort studies also permitted multivariable analyses that adjusted for a range of potential confounders. By focusing on a high-risk population of younger PWUD with elevated rates of street and CWS involvement, this dissertation provides empirical evidence to improve the health and wellbeing of some of the most marginalized youth to pass through the CWS.

In particular, as a Settler Canadian, the candidate wanted to ensure the line of inquiry presented in Chapter 3 was of value to the affected community. To this end, the candidate developed a collaborative relationship with a community group of urban Indigenous PWUD, the Western Aboriginal Harm Reduction Society (WAHRS), as well as other individuals with lived experience of the residential school system and the CWS. WAHRS provided support for the study aims and the residential school system exposure measures being added to the study instrument prior to this dissertation. For the present dissertation work, WAHRS board members and an Indigenous youth peer researcher
with lived experience of the CWS were regularly involved throughout the process, co-authored the manuscript submitted for peer-review publication and co-presented the findings at a local conference. This facilitated a deeper understanding of living with historical and intergenerational trauma through sharing personal stories, with the intention of supporting culturally appropriate interpretations and dissemination of findings.

As with all research, this dissertation has methodological limitations. While methodological limitations specific to each data-driven analysis have been presented in the corresponding discussion section for each empirical chapter (Chapters 3-5), there are overarching limitations that warrant comment here. First, as with all community-recruited cohorts, VIDUS and ARYS participants were not randomly sampled and therefore may not be statistically representative of other populations involved with the CWS, street-life or drug use. Indeed, as previously stated, the use of VIDUS and ARYS participants with a history of CWS involvement in this dissertation represents a unique, highly marginalized sample of individuals to pass through the CWS and the findings are not intended to be generalizable to all youth in care. However, to maximize the representativeness of samples of PWUD, extensive street-based outreach efforts were employed by trained field staff and youth peer outreach workers with in-depth knowledge of Vancouver’s street and drug scene and strong relationships with PWUD and street youth.

Another potential limitation of the study methods utilized by this dissertation includes the reliance on self-reported measures, which are susceptible to various biases, in particular socially desirable reporting and recall bias. Given the traumatic nature of and length of time since many adverse childhood experiences occur, poor recall may be particularly pertinent. However, previous research has found reporting of adverse childhood experiences to be largely valid among older youth and adult populations. Similarly, interviewers employ several memory tools, including calendars and prompts
that have been shown to reduce the magnitude of recall bias among PWUD.\textsuperscript{239} When discussing experiences related to aging-out for example, interviewers provide the context that aging-out typically occurs at age 18 or 19 and cross-check previously given responses to improve participant recall. Additionally, study findings may be susceptible to socially desirable reporting given the sensitive and illicit nature of some of the questions (e.g., sexual abuse, childhood trauma, substance use). During data collection, sensitive questions are intentionally placed later in the interview process to allow interviewers to build rapport with participants and extra efforts are made to assure confidentiality and anonymity. Furthermore, previous research has demonstrated the validity of self-reported substance use and related risk behaviours among youth\textsuperscript{159} and adult drug using populations.\textsuperscript{240}

Issues of unmeasured confounding and temporality are common when conducting observational research. While the study instrument captures a number of adverse childhood experiences (e.g., childhood maltreatment, trauma, parental substance use, living situation), and experiences related to the CWS (e.g., aging-out, number of placements, type of care arrangement), there are measures that were not captured by the study instrument (e.g., length of time in care, age at entry into care) and may bias findings. For instance, unmeasured social, structural and environmental forces preceding CWS involvement such as, childhood poverty and parental risk factors (e.g., mental health concerns, history of childhood maltreatment or CWS involvement) may confound and attenuate findings reported herein. Further, given the cross-sectional study design of the data-driven analyses, temporality cannot be ensured. For Chapter 3 however, the sample was restricted to participants under the age of 35 after the bulk of residential schools had been closed in the 1950s; and although the last school was closed in 1996 and it is unlikely an Indigenous participant was placed into the CWS at the same time their parent was institutionalized in a residential school. Similarly, the analyses presented in Chapter 5 were restricted to individuals who aged-out of the CWS in the last 20 years.
(median years since aged-out: 8.4 (5.1 – 12.7) and outcomes of interest were measured at the last study visit. For these reasons, in both Chapter 3 and 5 we are confident that the exposure of interest (i.e., familial residential school exposure and transitional service utilization) preceded the outcomes of interest in the vast majority of cases and that the anticipated impacts of these biases, if present, are negligible.

6.3 Policy implications and recommendations

Specific policy implications and recommendations stemming from each empirical analysis are included in the discussion section of Chapters 3-5. The following discussion represents the overarching implications and recommendations arising from the cumulative body of research presented in this dissertation.

The sheer prevalence of CWS involvement among street-involved youth and younger PWUD sampled for this dissertation indicates that the CWS is insufficient at protecting youth in its custody from subsequent substance use, housing instability and other negative health-related outcomes. This is increasingly relevant in the B.C. context, as the number of substance use-related critical injury reports8 to the Office of the Representative of Children and Youth doubled in 2017,134 as well as the elevated rates of substance use-related mortality among young people with a history of CWS involvement found by the B.C. Coroners Service Death Review Panel (see section 1.2).61 The dominant policy and treatment response for youth substance use and dependency remains an abstinence-based, individual-level behavioural approach.134,241-243 This is problematic given the established inadequacies of abstinence-based approaches to prevent substance use initiation or promote behavioural change (e.g., public service announcements),244,245 and the known harms associated with abstinence-based treatment models when used in

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8 Substance use-related critical injury reports are defined as incidents that involve youth using substances in a way that causes a critical injury or death (e.g., severe intoxication, overdose).
isolation (e.g., residential treatment services, withdrawal management/detox). These harms include elevated rates of post-treatment relapse, non-fatal and fatal overdose and HIV and HCV transmission (when comparing individuals who underwent withdrawal management compared to those who were treatment naïve). The research presented in this dissertation provides scientific evidence to support recent youth in care and advocate calls for a harm reduction framework to be implemented by child welfare and related-ministries (e.g., health, education). These include youth-specific, low-barrier safe consumption services, supportive housing programs that do not require abstinence, and foster parent harm reduction and youth substance use training.

Evidence from this dissertation also support calls to extend care placements and the provision of supportive housing to gradually transition youth leaving the CWS to independence. Furthermore, the results presented herein suggest that some of the most vulnerable youth in care may be systemically excluded from accessing existing programs and services for youth aging-out of care, given restrictive eligibility criteria of existing programs and observed high rates of unmet demand among PWUD who aged-out of care. This is concerning given it also found evidence that this population experiences long-term improvements in health and social outcomes associated with service utilization. In the short-term, decision-makers are urged to make existing programs and supports such as Agreements with Young Adults (AYAs) universally accessible to all youth in care. In the longer-term, child welfare policy for the age of emancipation and related extended supports and services should be reflective of contemporary society with legislated mechanisms to adapt to evolving socio-demographics and cultural norms. Meaning, the age youth are emancipated from care placements and government support should be aligned with the average age the general population of youth “age-out” of their home of origin and financial dependency. However, after youth in care reach the legal age of majority, remaining in a care placement or part of a supportive housing program would be a personal choice as a legal adult, but would give youth a “safety-net” to
explore independence similar to what many from the general population of young people in B.C. are afforded. Ultimately, in its current form, the CWS expects youth who often have less in terms of emotional, financial and social support to do more than what is expected of the average youth in the general population.

This dissertation also provides compelling empirical evidence that the legacy of the residential school system continues to harm Indigenous families today. As previously noted, the majority of Indigenous children and youth who come into contact with the CWS are for suspected or substantiated charges of neglect, and neglect is strongly correlated with poverty and colonization. Both the Truth and Reconciliation Commission of Canada and Special Advisor Grand Chief Ed John on Indigenous child welfare in B.C. have called for addressing the social, structural and environmental factors associated with child neglect and provide vulnerable Indigenous families with support and access to resources to keep families together. While there are many policy implications resulting from the analyses presented in Chapter 3, the data does not provide direction on how best to address the ongoing impacts of the residential school system and as a Settler Canadian, the candidate does not want to be prescriptive in recommendations. The Delegated Aboriginal Agencies and increasing mandates for Indigenous-controlled child protection and related family services are promising developments and represent a growing recognition that Indigenous-led, community-driven solutions to health and social inequities experienced by Indigenous Peoples are warranted. However, MCFD has not approved a new Delegated Aboriginal Agency since 2012 and Indigenous communities have been vocal in their frustration over bureaucratic delays, poor communication and capacity issues with the ministry. As supported by the data presented in this dissertation, further investment in Indigenous-led approaches to addressing the historical trauma associated with the residential school system and the CWS is warranted.
6.4 Directions for future research

The findings from the analyses herein presented a number of promising policy responses, however further research is needed to develop robust policy responses and evidence-based interventions to improve outcomes for youth in care.

First, this research focused on the experiences of PWUD with a history of CWS involvement and did not explore the perspectives of social workers, foster parents, or youth in care more generally. To develop comprehensive and effective policy change and interventions, other stakeholder groups must be included. With respect to implementing a harm reduction approach to substance use for youth in care for instance, including the voices and perspectives of youth currently or formerly in care, foster parents and social workers may identify opportunities and challenges that will be vital to changing practice. Relatedly, although younger PWUD have reported accessing and utilizing harm reduction services, less is known about whether existing services are similarly effective at reducing drug-related harms among youth as has been shown among adults. Given that younger PWUD frequently experience barriers in accessing health and social services, future research assessing the impact of harm reduction service utilization and barriers among younger PWUD with a history of care is needed in order to successfully integrate evidence-based harm reduction interventions within child welfare policy and programming prior to significant investment and scale-up.

Other marginalized groups of youth in care are not represented in the present research. For example, previous research has shown that sexual minority and non-binary gender youth are overrepresented in the CWS and have unique experiences, vulnerabilities and needs compared to heterosexual and cis-gender youth in care. Similarly, previous research has found sexual minority and non-binary individuals are overrepresented in street-involved youth and homeless populations. Given the overlap between these populations, future research should examine the characteristics, needs and outcomes associated with sexual minority and non-binary youth in care who
experience subsequent street-involvement and substance use. More generally, although this dissertation sought to document willingness to engage in transitional services for youth aging-out of care by measuring unmet demand, prioritizing the voices of youth and young adults with lived experience using qualitative research methods would add depth and nuance to the quantitative findings presented here.

The systematic review highlighted the need for future research examining the role of the CWS in substance use outcomes to control for common unmeasured confounders and antecedent risk factors (e.g., adverse childhood experiences). It also identified the importance for future research and program evaluations distinguishing between independent living programs that serve youth before the age of emancipation (e.g., 16-18 years old) and novel extended care programs to help youth post-emancipation to transitional gradually to independence with supportive housing and related services. Further, longitudinal and quasi-experimental study designs are required to more rigorously evaluate long-term outcomes associated with program utilization. Given the increase in various transitional programs and services to support youth aging-out of care in recent decades, future research using quasi-experimental study designs to randomize youth to novel pilot programs or treatment as usual (i.e., existing programs and supports available) would provide robust estimates of the impact of novel programming on health and social outcomes. As decision-makers would be more willing to invest in novel programming with robust evidence of improved outcomes, the next step may be feasibility studies to assess the strengths and weaknesses of large-scale implementation, particularly tailoring aspects of programs to different community needs (e.g., rural, urban, Indigenous communities). However, as noted in Chapter 2, it may not be ethical to randomize youth to an extended care or supportive housing program or to “age-out as usual” given observed rates of homelessness and related harms experienced by youth after exiting the CWS. Researchers seeking to evaluate novel interventions for youth aging-out of care will need to employ innovative study designs. One potential option is
a response-conditional crossover trial where if a study participant randomized to “treatment as usual” (i.e., aging-out as usual) starts to deteriorate they are moved or “crossed over” to the therapeutic intervention under examination (e.g., extended care placement, supportive housing). Ultimately, researchers seeking to evaluate novel extended care interventions will need to weigh ethical considerations against the requirements of funders and decision-makers for robust evidence.

6.5 Conclusions

In closing, this dissertation sought to provide scientific evidence to improve the health and wellbeing of youth involved in the CWS. Specifically, by focusing on a population of younger PWUD with high rates of street and CWS involvement, it sought to provide evidence on an understudied and marginalized population of young people to pass through the CWS. The collection of studies herein demonstrated the importance of understanding how past and current social, structural and environmental forces shape health and social trajectories among those involved with the CWS over the life course, from childhood maltreatment to CWS involvement, experiences while in care, to aging-out and beyond. This dissertation conceptualized the CWS as a risk environment for vulnerable youth in care at risk of injection initiation, but also identified opportunities to improve provision and access to transitional services and supports for youth as they move towards independence to prevent short- and long-term drug-related harms and other negative health outcomes among this population. Among younger Indigenous PWUD, familial exposure to the residential school system was highly prevalent and those who had a parent (or both a parent and grandparent) that attended a residential school were significantly more likely to have been placed into care than Indigenous PWUD who reported no immediate family exposure. Evidently, the unaddressed historical trauma of colonization is still negatively affecting Indigenous youth and families, and investment
in Indigenous-led and upstream approaches to prevent child maltreatment, support vulnerable families and heal communities are urgently needed.
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