Gender Differences in Binge Drinking and Self-Rated Mental Health Among the Indigenous Populations of Canada: Investigating the Role of Social Capital

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Abstract
Throughout the history of Canada colonialism has affected Indigenous women in more severe ways, which has in turn resulted in very different health outcomes for Indigenous women compared to Indigenous men. Despite this history there is a noticeable lack of papers examining the influence of gender on mental health in the recent literature on the Indigenous populations of Canada. Our paper seeks to add to the current literature by using the 2012 cycle of the Aboriginal Peoples Survey to examine gender differences in self-rated mental health (SRMH) and binge drinking. We also examine social capital as a potential moderator in the relationship between gender and SRMH/binge drinking. Our results suggest Indigenous women have lower odds of reporting weekly binge drinking, but higher odds of reporting fair/poor SRMH. Social capital from sources specific to Indigenous communities is associated with lower odds of weekly binge drinking among Indigenous men. Meanwhile the strength of family ties is associated with lower odds of reporting fair/poor self-rated health among both Indigenous men and women. However, these results vary among the different Indigenous populations of Canada.

Introduction

In the recent literature on the mental health of Indigenous people in Canada, there is a noticeable lack of papers examining the influence of gender (Nelson and Wilson, 2017). This literature gap is surprising considering significant evidence that minority groups' experiences with systemic racism can be extremely gendered (Beauboeuf-Lafontant, 2007; Brown, 2003). In the past, colonial instruments, such as the residential school system or the "60's scoop", often affected Indigenous women in unique and more severe ways (Lawrence, 2003; Robertson, 2006). These gender differences in exposure to colonialism and racism in turn cause differences in disease rates and in interactions with the health care system (Browne, 2007).

The goal of this paper, therefore, is to add to the current literature on gender and the mental health of Indigenous people in Canada. Using data from the 2012 Aboriginal Peoples Survey (APS) we will examine the relationship between gender and two predictors of mental illness: self-rated mental health and binge drinking. We will also study the potential role of social capital as a moderator in the relationship. SRMH and binge drinking are useful tools for broadly examining mental health, since they both act as predictors for mental health disorders: the two measures are related to mental health, but the presence of poor self-rated mental health or binge drinking does not necessarily conclude a mental health disorder. This is especially helpful when studying Indigenous populations that often face barriers to health services, both due to discrimination and geography, which may impact rates of medically diagnosed mental illness.

The Significance of Self-Rated Mental Health and Binge Drinking

Research suggests that SRMH is an important predictor of overall self-rated health, more so than self-rated physical health (Levinson and Kaplan, 2014). Poor/fair ratings are also significantly more likely among those reporting a diagnosed mental disorder and those meeting the criteria for past-month depression (Mawani and Gilmour, 2010). Moreover, data from both the Indigenous population in Canada and general Canadian population has demonstrated an association between fair/poor self-rated mental health and higher levels of distress (Bougie, Arim, Kohen, & Findlay 2016; Mawani and Gilmour, 2010). Finally, poor self-rated mental health is significantly associated with reporting suicidal ideation within the previous year (Corna, Cairney, & Streiner, 2010).

While SRMH is not a perfect predictor of mental morbidities (Mawani and Gilmour, 2010), the measure offers a more holistic approach to studying mental health and is associated with various negative mental health outcomes. The holistic aspect may also have special significance in research on Indigenous populations, as several Indigenous scholars stress the importance of holistic health to many Indigenous people (Ahenakew, 2011). Low SRMH is also linked to negative mental health outcomes that are currently prevalent in serious numbers in the Indigenous populations of Canada—such as emotional distress and suicidal ideation—further supporting the measures' significance (Nelson & Wilson, 2017).

Binge drinking—typically operationalized as five or more drinks on one occasion—is another serious issue facing Indigenous communities, and is especially important to the youth of these communities who are much more likely than non-Indigenous youth to engage in binge drinking (Archer, Kazemi, & Akhtar-Danesh, 2012; Elton-Marshall, Leatherdale, & Burkhalter, 2011). While the act of binge drinking in itself does not signify a mental health issue—besides the potential for alcohol dependency—binge drinking is associated with many of the same negative mental health outcomes as SRMH. Excessive alcohol use corresponds with rates of suicidal ideation and attempts, as well as self-reported feelings of depression and anxiety (Choi

& DiNitto, 2011; Sung et al., 2016; Glasheen, Pemberton, Lipari, Copello, & Matson, 2015; Mason & Cabieses 2015). Therefore, both SRMH and binge can offer insight into wellbeing and a variety of mental health outcomes, albeit in different ways.

Gender Differences in Health and Intersections with Indigenous Identity

Gender is increasingly recognized as a key social determinant of health, due in part to noticeable gender differences in a variety of health outcomes (Phillips, 2005; WHO, 2010). These differences are not always unidirectional—in many countries women have higher average life expectancies than men, but consistently report a lower average quality of health (Read & Gorman, 2010; WHO, 1998). There are also significant gender diffences in many predictors of health, for example women are on average more socioeconomically disadgvantaged and face more job precarity than men (Campos-Serna et al., 2013; Gorman, 2010). However, young men typically engage in more risky behaviours than women, such as recreational drug use, which can negatively impact their health later in life (Gorman, 2010). In regards to the outcomes of this study, the literature on gender and SRMH is currently very mixed—some studies report differences between men and women while others contradict that claim (Ahmad, Jhajj, Stewart, Burghardt, & Bierman, 2014). Conversely, research on binge drinking among Canadian populations consistently suggests that men engage in more binge drinking than women, (Elton-Marshall et al., 2011; Firestone, Tyndall, & Fischer, 2015; Matheson, White, Moineddin, Dunn, & Glazier, 2011).

The relationship between gender and health outcomes can be even more salient among marginalized populations, as the experiences of marginalized communities are often extremely gendered (Beauboeuf-Lafontant, 2007; Brown, 2003). These differences in experience are sometimes explained through the theory of *intersectionality*. Intersectionality, as applied to health research, calls for examining attributes such as race and gender not as individual social determinants, but as intersecting axes of inequality (Veenstra, 2011). From an intersectional perspective, the health of Indigenous women should be understood not as an additive effect of gender plus Indigenous identity, but as the result of the unique social position of Indigenous women (Veenstra, 2011). Furthermore, each of the separate Indigenous populations in Canada may have entirely different outcomes due to the unique social axis they occupy.

Despite the importance of these intersections, there is a noticeable absence of research on gender differences in SRMH among the Indigenous populations of Canada. Several studies have examined gender differences in binge drinking among Indigenous populations in Canada, although the results are inconvlusive (Elton-Marshall et al., 2011; Firestone, Tyndall, & Fischer, 2015; Fraser, Chachamovich, & Kirmayer, 2014; Matheson, White, Moineddin, Dunn, & Glazier, 2011). A recent study on heavy drinking among First Nations and Métis in Canada using the Aboriginal Peoples Survey (APS) found that men had significantly higher rates of heavy drinking (Ryan, Cooke, & Leatherdale, 2016). As we are using the same survey as Ryan, Cooke, and Leatherdale, we are expecting similar results, although we also hope to expand on their findings by examining the First Nations, Métis, and Inuit populations separately. This will help account for the different experiences of the three different groups, and the unique social positions they occupy.

Social Capital and Health

Social capital can be broadly defined as relationships, networks, and norms that individuals can access to serve their interests (Hunter, 2000). Previous research on a variety of different

populations and contexts has linked social capital variables—community participation, trust, cohesion, family connections, etc.—to self-rated mental health, psychological wellbeing, and other mental health outcomes (Frank, Davis, & Elgar, 2014; Fujiwara & Kawachi, 2008; Hamano et al., 2010; Nieminen et al., 2010). A substantial portion of the literature on social capital and alcohol/substance use focuses on adolescents or university-age young adults (Aslund & Nilsson, 2013; Demant & Järvinen, 2010; Kawachi, 2009; Weitzman & Chen, 2004), and the research that does examine adult populations has revealed conflicting results. For example, Nieminen et al. (2013) found that higher social participation was associated with non-excessive alcohol consumption, but social support and trust were not. However, Lindstrom (2005) found no association between high alcohol consumption and social participation, but did find a connection between trust and alcohol consumption among men. Meanwhile, Greiner et al. (2004) found no connection between community involvement and binge drinking in their study. Overall there is an absence of conclusive literature examining alcohol consumption and social capital in populations comparable to the one studied in this paper.

In this paper, we further extend the definition of social capital to include capital coming from Indigenous networks and norms. In the literature, proxies for this have included participation in traditional Indigenous activities and involvement in an Indigenous community (Hunter, 2000). Throughout the last few centuries, colonialism in Canada has worked to undermine many Indigenous people's access to Indigenous networks, norms, and relationships, and has also caused many of the aforementioned mental health problems that Indigenous communities face today (Ahenakew, 2011; Brave Heart et al. 2012). In this way the effects of colonialism create a potential relationship between social capital and mental health problems, which justifies studying if social capital from Indigenous sources acts on the relationship between gender and predictors of mental illness.

Methods

This study draws from the 2012 cycle of the Aboriginal Peoples Survey (APS), which targeted the Indigenous population of Canada, 6 years of age and over, excluding people living on reserves or in certain First Nations communities. We further limited our analysis to respondents age 19 through 44. The lower limit signifies the age at which drinking is legal in all Canadian provinces and the upper limit was imposed by three of the selected social capital variables, which were only posed to respondents younger than 45 years old. As our analysis looks at two distinct dependent variables—binge drinking and SRMH—we created two separate analytic samples. In other words, in our models examining binge drinking we excluded respondents with missing responses to the questions on binge drinking, the independent variables, and the control variables. However, we did not exclude respondents with missing responses to the SRMH question. Similarly, in the models examining SRMH, we did not exclude respondents with missing responses to the question on binge drinking.

When completing the APS, respondents were asked which of the three distinct Indigenous groups in Canada they identify as: First Nations, Métis, or Inuit. The three groups differ substantially both in terms of history and culture, and in terms of current socioeconomic environments and health outcomes (Nelson & Wilson, 2017; O'Donnell & Wallace, 2011). To address these differences, we have attempted to separate the three populations in our analysis where we could. Furthermore, we excluded respondents who identified as belonging to more than one Indigenous group to simplify analysis.

Self-Rated Mental Health and Binge drinking

SRMH was determined by asking respondents to rate their general mental health as excellent, very good, good, fair, or poor. For the two logistic regression models this variable was recoded as excellent/very good/good (*reference category*) versus fair/poor. The APS also asked respondents how often in the past 12 months they have consumed five or more drinks on one occasion. Respondents could choose from never, less than once a month, once a month, 2 to 3 times a month, once a week, and more than once a week. This variable was recoded as non-weekly (*reference category)* versus weekly binge drinking.

Social Capital Specific to Indigenous Populations

The social capital variable was derived from six separate variables selected based on the discussion of social capital and Indigenous specific health factors in the introduction: speaking an Indigenous language, weekly exposure to an Indigenous language inside or outside the home, participation in traditionally Indigenous activities within the past twelve months (hunting, fishing, trapping, gathering of wild plants, making clothing/footwear, making arts or crafts), support for Indigenous culture in school, participation in Indigenous cultural activities after school, and time spent with elders after school. The last three variables refer specifically to the last year that the respondent was in school, and are helpful for capturing school-age exposure to networks and norms that could provide social capital. The presence of four or more of these variables was categorized as "high levels of social capital" while three or less corresponded to "low levels of social capital" (*reference category*). While responses to these variables may vary greatly between individual Indigenous groups and nations, they may still signify strong sources of exposure to norms and networks.

Family Ties in Community

In addition to examining social capital arising from access to Indigenous networks and norms, we also included a variable corresponding with a more traditional definition of social capital—family ties in community. Respondents were asked to rank the strength of their ties to family members living within their community—but in a different household—on a scale from 1-5. For the regression models this variable was dichotomized as weak ties (*reference category)*—ratings 1-3 or no family in community—versus strong ties—ratings 4 and 5. To avoid confusion, in the rest of the paper this variable is referred to as "strength of family ties" while the variable examining social capital arising from Indigenous sources is referred to as "Indigenous-specific social capital"

Socioeconomic and Demographic Control Variables

The following variables were controlled for in the regression models: age, education, income, and rural/urban geography. Three income tertiles were derived from a continuous income variable that allowed respondents to input their exact annual income from the preceding year, including negative values. Education included three categories: no secondary degree, secondary degree or equivalent (including respondents with some post-secondary education but no degree), and post-secondary certificate/degree/diploma. Finally, urban and rural designations were based on whether or not the respondent lived in an area designated as a census metropolitan area (CMA). The total population of a CMA must be greater than 100,000 people, and at least 50,000

of those people must inhabit the population center—or core—of the CMA (Statistics Canada, 2015).

Statistical Analysis

Data analysis for this paper included three logistic regression models. The first model tested if gender predicted weekly binge drinking and fair/poor SRMH, while adjusting for age, education, income, and urban/rural environment. The second was a logistic regression that only examined the relationship between *social capital* and SRMH/binge drinking—without including *strength of family ties*—while controlling for the same factors. Finally, the third model tested the predictive power of *Indigenous specific social capital* and *strength of family ties in community* on fair/poor self-rated mental health and weekly binge drinking for men and women separately. All models were estimated with the bootstrap weights provided by Statistics Canada, which help adjust and compensate for the APS's sampling frame.

Results

Table 1 displays summary statistics for the first sample population—derived using the binge-drinking variable. Among male respondents a higher proportion indicated that they engage in weekly binge drinking (0.16) than among females (0.08). A higher proportion of male respondents were also in the top income tertile (42% of men; 28% of women). However, a higher proportion of females had obtained a post-secondary diploma (52% of women; 40% of men) and a smaller portion had obtained no diploma (14% of women; 20% of men). Overall, 56% of the entire sample population was female and 44% was male.

Table 1: Descriptive Statistics for Binge Drinking Population

Variable	Among Males	Among Females
Weekly Binge Drinking		
No	0.84	0.92
Yes	0.16	0.08
Indigenous-Specific Social Capital		
Low-Levels	0.75	0.73
High-Levels	0.25	0.27
Family Ties in Community		
Weak	0.36	0.32
Strong	0.64	0.68
Rural/Urban		
Urban	0.74	0.78
Rural	0.26	0.22
Education		
No Diploma	0.20	0.14
Secondary School Diploma	0.40	0.34
Post-Secondary Diploma	0.40	0.52
Income Tertile		
Less than $14,000	0.28	0.32
$14,000-$35,700	0.30	0.40
More than $35,700	0.42	0.28
Age	31	31
Identity		
First Nations	0.50	0.53
Métis	0.45	0.42
Inuit	0.05	0.05
Gender	0.46	0.54

Table 2 contains the results from the multivariate logistic regression of weekly binge drinking on gender and the control variables. Gender was significantly associated with weekly binge drinking in all subsamples except for the Inuit population. Female respondents were less likely to engage in weekly binge drinking in general (OR=0.43, CI=0.35-0.54), and this was also true for First Nations (OR=0.42, CI=0.31-0.58) and Métis respondents (OR=0.39, CI=0.27-0.56) as well. Of the control variables, having a post-secondary diploma was associated with lower odds of weekly binge drinking, but only when examining the total (OR=0.67, CI=0.49-0.90) and Métis (OR=0.56, CI=0.36-0.86) populations.

Table 2: Logistic Regression for weekly binge drinking regressed on gender—separated by Indigenous identity

Variable	Odds Ratio (Confidence Interval)
Total Population	
Gender	
Male	—
Female	0.43 (0.35-0.54)*
Age	0.99 (0.98-1.01)
Income Tertile	
Less than $14,000	—
$14,000-$35,700	1.02 (0.79-1.32)
More than $35,700	0.91 (0.66-1.25)
Rural/Urban	
Urban	—
Rural	0.94 (0.75-1.17)
Education	
No Diploma	—
Secondary School Diploma	0.87 (0.65-1.16)
Post-Secondary Diploma	0.67 (0.49-0.90)*
First Nations Population	
Gender	
Male	—
Female	0.42 (0.31-0.58)*
Age	0.99 (0.97-1.01)
Income Tertile	
Less than $14,000	—
$14,000-$35,700	1.13 (0.78-1.65)
More than $35,700	1.04 (0.65-1.68)
Rural/Urban	
Urban	—
Rural	0.81 (0.56-1.17)
Education	
No Diploma	—
Secondary School Diploma	0.94 (0.61-1.46)
Post-Secondary Diploma	0.78 (0.50-1.21)

Métis Population	
Gender	
Male	—
Female	0.39 (0.27-0.56)*
Age	1.00 (0.97-1.02)
Income Tertile	
Less than $14,000	—
$14,000-$35,700	0.88 (0.59-1.32)
More than $35,700	0.76 (0.49-1.19)
Rural/Urban	
Urban	—
Rural	1.14 (0.80-1.63)
Education	
No Diploma	—
Secondary School Diploma	0.77 (0.51-1.17)
Post-Secondary Diploma	0.56 (0.36-0.86)*
Inuit Population	
Gender	
Male	—
Female	0.69 (0.42-1.13)
Age	0.98 (0.94-1.03)
Income Tertile	
Less than $14,000	—
$14,000-$35,700	1.08 (0.58-2.00)
More than $35,700	1.03 (0.51-2.07)
Rural/Urban	
Urban	—
Rural	0.52 (0.25-1.07)
Education	
No Diploma	—
Secondary School Diploma	1.06 (0.60-1.88)
Post-Secondary Diploma	0.58 (0.32-1.06)

95% confidence intervals; *p<0.05

Table 3: Logistic regression for weekly binge drinking regressed on social capital and family ties in community—separated by identity and gender

	Total Sample Population	
	Odds Ratio for Males (Confidence Interval)	Odds Ratio for Women (Confidence Interval)
Indigenous-Specific Social Capital		
Low-Levels	—	—
High-Levels	0.68 (0.51-0.91)*	0.91 (0.64-1.30)
Family Ties in Community		
Weak	—	—
Strong	1.03 (0.76-1.38)	0.76 (0.54-1.09)
	First Nations	
	Odds Ratio for Males (Confidence Interval)	Odds Ratio for Women (Confidence Interval)
Indigenous-Specific Social Capital		
Low-Levels	—	—
High-Levels	0.53 (0.35-0.81)*	0.69 (0.41-1.16)
Family Ties in Community		
Weak	—	—
Strong	1.11 (0.72-1.70)	0.61 (0.38-0.97)*
	Métis	
	Odds Ratio for Males (Confidence Interval)	Odds Ratio for Women (Confidence Interval)
Indigenous-Specific Social Capital		
Low-Levels	—	—
High-Levels	0.96 (0.60-1.56)	0.89 (0.47-1.70)
Family Ties in Community		
Weak	—	—
Strong	1.00 (0.66-1.53)	0.98 (0.52-1.83)
	Inuit	
	Odds Ratio for Males (Confidence Interval)	Odds Ratio for Women (Confidence Interval)
Indigenous-Specific Social Capital		
Low-Levels	—	—
High-Levels	0.36 (0.14-0.94)*	3.02 (1.10-8.36)*
Family Ties in Community		
Weak	—	—
Strong	0.98 (0.49-1.94)	1.35 (0.72-2.53)

95% confidence intervals; *p<0.05

Table 3 displays the results from the regression of weekly binge drinking on Indigenous-specific social capital and the strength of family ties in the community. The results are separated by both gender and Indigenous identity, to facilitate comparison between the different populations. The control variables are not included in table 3, to make it easier to interpret, but the complete results of the regression are included in the Appendix (Table A, Appendix A). Furthermore, while we ran a model regressing weekly binge drinking only on *Indigenous-specific social capital*—without *strength of family ties*—adding the *family ties* variable to the model only affected the significance of the relationship between the dependent and independent variables among Inuit males—and had no other effects. For this reason, the model was included in the appendix (Table C, Appendix A), but not in the body of the results section.

The results from table 3 suggest that male respondents with high levels of Indigenous-specific social capital—i.e. indicated the presence of four or more social capital variables—were 32% less likely to report weekly binge drinking (CI=0.51-0.91) than male respondents with low levels of social capital. However, a significant relationship between Indigenous-specific social capital and binge drinking in not found among female respondents. Among First Nations respondents we find almost identical results to those found among all Indigenous respondents. High levels of Indigenous-specific social capital are only significantly associated with lower odds of weekly binge drinking among men (OR=0.53, CI=0.35-0.81). However, female First Nations respondents with strong family ties in the community were also less likely to engage in weekly binge drinking (OR=0.61, CI=0.38-0.97)—this is not observed among all Indigenous respondents, Métis respondents, or Inuit respondents. While high levels of Indigenous-specific social capital were significantly associated with lower odds of weekly binge drinking for both Indigenous and First Nations males, this relationship is not significant among Métis men.

Inuit men with high levels of Indigenous-specific social capital were also significantly less likely to report weekly binge drinking (OR=0.36, CI=0.14-0.94). However, as mentioned this relationship was not significant when the model was run without the *strength of family ties* variable (OR=0.36, CI=0.13-1.01, Table C, Appendix A). While this suggests that Indigenous-specific social capital and the strength of family ties may be related among the Inuit population, the relatively small sample size of the Inuit population (5% of the male sample population) makes it difficult to emphasize this finding. Similarly, among Inuit women high levels of social capital was associated with much *higher* odds of reporting weekly binge drinking (OR=3.02, CI=1.10-8.36). However, again the importance of the result is limited by the small sample size, and the very large confidence interval.

Table 4 presents summary statistics from the second sample population, which was defined using the self-rated mental health variable. A higher proportion of female respondents (0.14) reported fair/poor SRMH than male respondents (0.09), the opposite of the statistics on weekly binge drinking. The remaining statistics were very similar to those from the first sample, with a higher proportion of women having obtained a post-secondary diploma (0.51 among females; 0.40 among males), and a higher proportion of men reporting a top-tertile income (0.42 among males; 0.28 among females). Overall, women made up 57% of this second sample.

Table 4: Descriptive Statistics for Self-Rated Mental Health Population

Variable	Among Males	Among Females
Self-Rated Mental Health		
Good/Very Good/Excellent	0.91	0.86
Fair/Poor	0.09	0.14
Indigenous-Specific Social Capital		
Low-Levels	0.74	0.72
High-Levels	0.26	0.28
Family Ties in Community		
Weak	0.36	0.33
Strong	0.64	0.67
Rural/Urban		
Urban	0.74	0.76
Rural	0.26	0.24
Education		
No Diploma	0.21	0.16
Secondary School Diploma	0.39	0.33
Post-Secondary Diploma	0.40	0.51
Income Tertile		
Less than $13,700	0.28	0.32
$13,700-$34,900	0.30	0.40
More than $34,900	0.42	0.28
Age	31	32
Identity		
First Nations	0.51	0.54
Métis	0.43	0.41
Inuit	0.06	0.05
Gender	0.43	0.57

Table 5: Logistic Regression for self-rated mental health regressed on gender—separated by Indigenous identity

Variable	Odds Ratio (Confidence Interval)
Total Population	
Gender	
Male	—
Female	1.56 (1.22-2.00)*
Age	1.03 (1.02-1.05)*
Income Tertile	
Less than $13,700	—
$13,700-$34,900	0.83 (0.63-1.09)
More than $34,900	0.50 (0.34-0.73)*
Rural/Urban	
Urban	—
Rural	0.56 (0.40-0.79)*
Education	
No Diploma	—
Secondary School Diploma	0.55 (0.39-0.77)*
Post-Secondary Diploma	0.37 (0.27-0.51)*
First Nations Population	
Gender	
Male	—
Female	1.63 (1.13-2.34)*
Age	1.04 (1.01-1.06)*
Income Tertile	
Less than $13,700	—
$13,700-$34,900	0.90 (0.61-1.33)
More than $34,900	0.56 (0.31-1.00)
Rural/Urban	
Urban	—
Rural	0.60 (0.32-1.13)
Education	
No Diploma	—
Secondary School Diploma	0.41 (0.25-0.68)*
Post-Secondary Diploma	0.28 (0.18-0.44)*

Métis Population	
Gender	
Male	—
Female	1.49 (1.05-2.11*)
Age	1.03 (1.00-1.05)
Income Tertile	
Less than $13,700	—
$13,700-$34,900	0.76 (0.51-1.12)
More than $34,900	0.45 (0.27-0.75)*
Rural/Urban	
Urban	—
Rural	0.55 (0.36-0.83)*
Education	
No Diploma	—
Secondary School Diploma	0.84 (0.54-1.30)
Post-Secondary Diploma	0.55 (0.35-0.86)*
Inuit Population	
Gender	
Male	—
Female	1.36 (0.80-2.29)
Age	1.03 (0.99-1.06)
Income Tertile	
Less than $13,700	—
$13,700-$34,900	0.57 (0.29-1.11)
More than $34,900	0.28 (0.13-0.62)*
Rural/Urban	
Urban	—
Rural	0.54 (0.24-1.20)
Education	
No Diploma	—
Secondary School Diploma	0.88 (0.46-1.66)
Post-Secondary Diploma	0.76 (0.35-1.65)

95% confidence intervals; *p<0.05

Table 5 displays the results from the multivariate logistic regression of fair/poor SRMH on gender and the control variables. Similar to the results from the regression of weekly binge drinking on gender, gender was significantly associated with reporting fair/poor SRMH in all subpopulations, except among Inuit respondents. Female respondents were more likely to report fair/poor self-rated mental health—as opposed to good, very good, or excellent—in the general Indigenous, First Nations, and Métis populations (OR=1.48, CI=1.14-1.91; OR=1.63, CI=1.12-2.36; OR=1.44, CI=1.01-2.05 respectively). Age was significantly associated with SRMH in the

total (OR=1.03, CI=1.02-1.05) and First Nations (OR=1.04, CI=1.01-1.06) populations, with each one-year increase in age associated with higher odds of reporting fair/poor SRMH. Being in the top income tertile lowered the odds of reporting fair/poor SRMH in the total (OR=0.50, CI=0.34-0.73), Métis (OR=0.45, CI=0.27-0.75), and Inuit (OR=0.28, CI=0.13-0.62) populations. Living in a rural locale—i.e. outside of a CMA—was significantly associated with lower odds of reporting fair/poor SRMH among the general sample population (OR=0.56, CI=0.40-0.79) and

Table 6 displays the results of the regression of fair/poor self-rated mental health on Indigenous-specific social capital and the strength of family ties in the community. The control variables were not included in this table, but are included in the appendix (Table B, Appendix A). Although we also ran a regression of fair/poor SRMH only on *social capital*—without *family ties*—introducing family ties had no effect on the relationship between social capital and SRMH—i.e. it was insignificant in every population with or without including *family ties*. For this reason, the results of the regression only on *social capital* are included in the appendix (Table D, Appendix A) and not in the main body. Among the sample population as a whole, Indigenous-specific social capital was not significantly associated with the odds of reporting fair/poor SRMH among males or females. However, both male and female respondents with strong family ties in their community were significantly less likely to report fair/poor SRMH than respondents with weak family ties (OR=0.43, CI=0.28-0.65; OR=0.49, CI=0.36-0.67 respectively). The same relationship held true among First Nations respondents (OR=0.36, CI=0.19-0.66 for male respondents; OR=0.59, CI=0.38-0.91 for female respondents) and Métis respondents (OR=0.50, CI=0.30-0.85 for male respondents; OR=0.35, CI=0.22-0.56 for female respondents). The relationship was also true among female Inuit respondents (OR=0.46, CI=0.23-0.92), but not among males.

Table 6: Logistic regression for fair/poor self-rated mental health regressed on social capital and family ties in community—separated by identity and gender

	Total Sample Population	
	Odds Ratio for Males (Confidence Interval)	Odds Ratio for Women (Confidence Interval)
Indigenous-Specific Social Capital		
Low-Levels	—	—
High-Levels	0.85 (0.56-1.28)	1.13 (0.80-1.59)
Family Ties in Community		
Weak	—	—
Strong	0.43 (0.28-0.65)*	0.49 (0.36-0.67)*
	First Nations	
	Odds Ratio for Males (Confidence Interval)	Odds Ratio for Women (Confidence Interval)
Indigenous-Specific Social Capital		
Low-Levels	—	—
High-Levels	0.75 (0.43-1.29)	1.04 (0.66-1.66)
Family Ties in Community		
Weak	—	—
Strong	0.36 (0.19-0.66)*	0.59 (0.38-0.91)*
	Métis	
	Odds Ratio for Males (Confidence Interval)	Odds Ratio for Women (Confidence Interval)
Indigenous-Specific Social Capital		
Low-Levels	—	—
High-Levels	1.02 (0.53-1.96)	1.25 (0.66-2.35)
Family Ties in Community		
Weak	—	—
Strong	0.50 (0.30-0.85)*	0.35 (0.22-0.56)*
	Inuit	
	Odds Ratio for Males (Confidence Interval)	Odds Ratio for Women (Confidence Interval)
Indigenous-Specific Social Capital		
Low-Levels	—	—
High-Levels	2.79 (0.91-8.57)	1.54 (0.59-3.97)
Family Ties in Community		
Weak	—	—
Strong	0.54 (0.27-1.09)	0.46 (0.23-0.92)*

95% confidence intervals; *p<0.05

Discussion

The results in this paper offer an important contribution to the overall debate on gender differences in SRMH scores. Ahmad et al.'s (2014) scoping review on SRMH found contradictory evidence on the relationship between gender and self-rated mental health—some papers concluded that women reported poorer SRMH, and others found no difference between men and women. Among papers specifically examining Canadian populations the evidence on the relationship between gender and self-rated health is also mixed (Cohen & Patten, 2005; Lin, Chan, & Goering, 1998; Mawani & Gilmour, 2010). However, results from the Canadian Community Health Survey—a large scale, cross-sectional health survey also administered by Statistics Canada—suggest that women were significantly more likely than men to report fair/poor SRMH (Cohen & Patten, 2005; Mawani & Gilmour, 2010). Similar to the CCHS results, we found that Indigenous, First Nations, and Métis women were significantly more likely to report fair/poor SRMH than male respondents. Future research could perhaps compare the strength of the relationship between gender and SRMH, between the Indigenous and general populations of Canada to see if gender is a more important predictor of SRMH in one of the two populations.

The results from the regression of weekly binge drinking on gender demonstrated that Indigenous, First Nations, and Métis females had lower odds of engaging in weekly binge drinking than Indigenous, First Nations, and Métis males. This was the result we expected based on the findings of Ryan et al. (2016)—who used the APS data in their study on heavy drinking—and it is in line with research on binge drinking in the general population of Canada (Matheson et al. 2011; Statistics Canada, 2012). However, there are two important distinctions between our results and the conclusions of Ryan et al. (2016). Firstly, Ryan et al.'s (2016) study examined determinants of *heavy drinking*—defined by Statistics Canada as consuming five or more drinks, on one occasion, one or more times per month (Statistics Canada, 2012). In other words, heavy drinking refers to monthly binge drinking, whereas our study was concerned with weekly versus non-weekly binge drinking. Differences in the operationalization of binge drinking are frequent in the literature, with studies examining everything from yearly to daily consumption of alcohol (Choi & DiNitoo, 2011; Elton-Marhsall et al., 2011; Mason-Jones & Cabieses, 2015; Matheson et al., 2010; Ryan et al., 2016). Our results extend the findings of Ryan et al. (2016) to weekly-binge drinkers, a population that is potentially more vulnerable to depressive symptoms, as well as problems with alcohol abuse and associated suicidal ideation/attempts (Fillmore & Jude, 2011; Choi & DiNitoo, 2011; Sung et al., 2016).

While Ryan et al. (2016) compared the odds of heavy drinking between First Nations and Métis, they did not test if gender was a significant predictor of heavy drinking in each of the separate Indigenous populations. Our results suggest that gender was not a significant predictor of binge drinking among the Inuit population of Canada. Similarly, while the relationship between gender and SRMH among Inuit respondents went in the expected direction, the relationship was not significant. These results reinforce the importance of examining the different Indigenous populations separately to account for current differences in socioeconomic statuses and environments, and for the distinct culture and history of each group (Nelson & Wilson, 2017; O'Donnell & Wallace, 2011). Furthermore, taking an intersectional approach and stratifying the results by both Indigenous identity *and* gender is also important, given the uniqueness of the three populations of Indigenous women in Canada in terms of both demographics and history (Lawrence, 2003; O'Donnell & Wallace, 2011).

It is difficult to form definitive conclusions regarding the relationships between the control variables included in our models and the dependent variables, due to the fact that no single control variable was significant in every population. In our analysis of binge drinking, the only control variable significantly associated with weekly binge drinking was having a post-secondary diploma, and only when examining the entire population or the Métis population. This is in line with the results reported by Ryan et al. (2016), who found little relationship between heavy drinking and their socioeconomic/demographic variables. In analyzing SRMH, we found that age, income, rural/urban geography, and education were all significantly associated with SRMH among our entire sample population. However, the relationship between each control variable and SRMH was much more varied when we examined each Indigenous population separately—for example, among the Inuit population *only* income was significantly associated with SRMH. The literature on SRMH suggests that higher levels of income and education are both associated with better SRMH, while older age and rural residence are associated with better SRMH in some studies but not others (Ahmad et al., 2014; Mawani & Gilmour, 2010; Mossey & Shapiro, 1982; Rohrer, Borders, & Blanton, 2005). Overall, these results too suggest the importance of examining the determinants of SRMH in each Indigenous population separately. However, as this paper was not focused on these socioeconomic and demographic variables, we cannot provide a more in-depth analysis.

The results from the regression of weekly binge drinking on social capital and family ties further demonstrate the utility of stratifying the Indigenous population of Canada by gender and identity. We found that Indigenous-specific social capital was significantly associated with lower odds of weekly binge drinking, but only when examining Indigenous or First Nations men. In the literature, substance use among Indigenous populations has been linked to colonialism and the damages it caused to Indigenous cultures and communities (Braveheart, 2011; Duran, 2006; Whitbeck, Adams, Hoyt, & Chen, 2004a). Reconnection to these communities and cultures is proposed as a possible protective factor against—and cure for—alcohol related issues (Duran, 2006, Ryan et al., 2016; Whitbeck, Chen, Hoyt, & Adams, 2004b). Our results suggest that the relationship between Indigenous-specific sources of social capital—plus the protective effects they may provide—and binge drinking is more important for men than women. In addition, this relationship does not appear to be important in predicting, or protecting against, binge drinking among Métis men. Given that Ryan et al., (2016) found that Métis identity did not significantly affect the odds of heavy drinking, this again illustrates the importance of treating the distinct Indigenous populations in Canada as separate groups.

Among the Inuit population, the regression of binge drinking on social capital and family ties yielded very interesting results. For one, high levels of Indigenous specific social capital were significantly associated with lower odds of weekly binge drinking among Inuit men, but only when *family ties* were included in the model. Meanwhile, among Inuit women high levels of Indigenous specific social capital were associated with much *higher* odds of reporting weekly binge drinking. However, it is important to not put undue emphasis on these results, due to the low sample size and large confidence intervals. The reason for these unique results is likely due to the unique geographic, demographic, and socioeconomic characteristics of the Inuit population in Canada. The 2011 National Household Survey—from which the sample population of the APS is derived—found that 73% of Inuit respondents lived in Inuit Nunangat—regarded as the original territory or homeland of the Inuit people (Wallace, 2014). Inside Nunangat, there are marked regional variations in binge drinking and social capital. For example, the highest prevalence of heavy drinking, very-strong/strong family ties, and

hunting/fishing/trapping/gathering were all reported in a region called Nunatsiavut (Wallace, 2014). However, the region of Inuvialuit reported the second highest prevalence of heavy drinking and strong/very-strong family ties, but the lowest prevalence of hunting/fishing/ trapping/gathering (Wallace, 2014). Depending on what regions were most represented in our relatively small analytic Inuit sample, the results could be very different. Therefore, instead of generalizing to the entire Inuit population, these interesting results should be taken as a basis for future, more in depth research into the determinants of binge drinking among the Inuit population of Canada.

Overall, the strength of family ties was not significantly associated with binge drinking, expect for among First Nations women. However, the extent of the conclusions that can be drawn from these results are limited, since this variable only captures one aspect of what might be included in a typical measure of social capital. For example, someone could have strong ties to neighbors or other community members, but not their family members. Furthermore, the contradictory nature of the literature on social capital and alcohol consumption makes it difficult to compare First Nations women to other populations (Greiner et al., 2004; Lindstrom, 2005; Niemenen et al., 2013).

In the results from the final regression model—examining SRMH—strength of family ties provided much more information. Strong family ties in the community were significantly associated with lower odds of reporting fair/poor SRMH in every single sample population except for the Inuit, whereas Indigenous-specific social capital is not significant in any population. It could be that the strength of family ties is representing something besides social capital—perhaps familial support. However, it is also possible that these two variables genuinely capture different types of social support. In regard to respondents' perception of their mental health, immediate connections to social networks through family are more important. Meanwhile the odds of engaging in binge drinking, a harmful behavior, are lower among First Nations men who are deeply ingrained in the social networks of their communities. It might be worthwhile to perform a more robust comparison of Indigenous-specific social capital and a more typical operationalization of social capital—using a survey specifically designed to address this question—in order to gain further understanding into the role of social capital on the mental health of Indigenous populations.

One of the limitations of using the 2012 cycle of the APS is that the sample was limited to off-reserve Indigenous populations. On-reserve Indigenous populations may be exposed to different physical environments, and have different cultural and historical experiences than off-reserve Indigenous populations. For example, Skinner, Hanning, and Tsuji (2012) found that the prevalence of food insecurity among on-reserve First Nations population in Ontario was more than double the prevalence in off-reserve Indigenous households. Off-reserve Indigenous populations are also less likely to speak an Indigenous language or have attended a residential school system (Reading & Wien, 2009). Therefore, Indigenous-specific social capital or family ties could play a very different role in on-reserve Indigenous populations. A future avenue of research could be to examine the relationship between social capital and mental health outcomes in the on-reserve population using the *First Nations Regional Health Survey* (FNHRS)—a First Nations governed national health survey that specifically focuses on northern and on-reserve First Nations populations in Canada (FNIGC, 2017),

The results of this paper are also limited by the self-reported nature of the dependent variables—self-rated mental health and the self-reported frequency of consuming five or more drinks in one sitting. Binge drinking is particularly vulnerable to under reporting. Those who

drink frequently or heavily are more likely to under report their drinking, and respondents to self-reported drinking questions typically report median rather mean alcoholic consumption (Boniface, Kneale, & Shelton, 2014; Stockwell et al. 2004). Our analysis was further limited by the upper age limit—45 years old—imposed by several of the social capital variables. Older populations may have different experiences with Indigenous-specific social capital—for example, the percentage of Indigenous people who speak an Indigenous language varies greatly with age (Reading & Wien, 2009). Finally, since the results from this paper were based on male/female identities they cannot be generalized to all Indigenous populations, such as those who identify as *two-spirit*—a term traditionally used by certain Indigenous groups to indicate a gender identity different from the typical conceptions of male and female (Mayo Jr & Sheppard, 2012). However, the authors could not find any studies indicating the percentage of the Indigenous population of Canada that identify as *two-spirit,* so it is unknown how substantially this would affect the generalizability of results.

Conclusion

Using data from the 2012 cycle of the Aboriginal Peoples Survey, we investigated gender differences in self-rated mental health and binge drinking among the Indigenous populations of Canada. We also examined social capital as a possible predictor of SRMH and binge drinking among the different populations. Our analysis revealed significant gender differences in the odds of reporting fair/poor SRMH and binge drinking, although these differences were not constant across all three Indigenous populations. We also found evidence of a relationship between our health outcomes and different types of social capital, although again the strength and direction of this relationship varied. Beyond addressing a critical gap in the literature on gender differences in SRMH, our results also provide significant support for examining the intersection between gender and Indigenous identity. They also support treating Canada's Indigenous populations separately, when possible, so as to properly address the unique experiences of the three populations.

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Appendix

Table A: Logistic regression for weekly binge drinking regressed on social capital and family ties in community—with control variables

	Total Sample Population	
	Odds Ratio for Males (Confidence Interval)	Odds Ratio for Women (Confidence Interval)
Indigenous-Specific Social Capital		
Low-Levels	—	—
High-Levels	0.68 (0.51-0.91)*	0.91 (0.64-1.30)
Family Ties in Community		
Weak	—	—
Strong	1.03 (0.76-1.38)	0.76 (0.54-1.09)
Age	0.98 (0.96-1.00)	1.01 (0.54-1.09)
Income		
Less than $14,000	—	—
$14,000-$35,700	1.06 (0.73-1.52)	0.97 (0.67-1.40)
More than $35,700	1.01 (0.65-1.57)	0.73 (0.47-1.14)
Rural		
Urban		
Rural	—	—
	1.08 (0.80-1.45)	0.85 (0.59-1.23)
Education		
No Diploma		
Secondary Diploma	—	—
Post-Secondary Diploma	0.82 (0.56-1.19)	0.94 (0.61-1.45)
	0.66 (0.44-0.97)*	0.69 (0.44-1.07)
	First Nations	
	Odds Ratio for Males (Confidence Interval)	Odds Ratio for Women (Confidence Interval)
Indigenous-Specific Social Capital		
Low-Levels	—	—
High-Levels	0.53 (0.35-0.81)*	0.69 (0.41-1.16)
Family Ties in Community		
Weak	—	—
Strong	1.11 (0.72-1.70)	0.61 (0.38-0.97)*
Age	0.97 (0.94-0.999)*	1.01 (0.98-1.04)
Income		
Less than $14,000	—	—
$14,000-$35,700	1.32 (0.76-2.27)	0.98 (0.59-1.62)

More than $35,700	1.28 (0.66-2.51)	0.71 (0.39-1.29)
Rural		
Urban		
Rural	—	—
	0.87 (0.53-1.42)	0.84 (0.50-1.41)
Education		
No Diploma		
Secondary Diploma	—	—
Post-Secondary Diploma	0.94 (0.54-1.66)	0.91 (0.49-1.67)
	0.83 (0.46-1.52)	0.77 (0.43-1.38)
	Métis	
	Odds Ratio for Males (Confidence Interval)	Odds Ratio for Women (Confidence Interval)
Indigenous-Specific Social Capital		
Low-Levels	—	—
High-Levels	0.96 (0.60-1.56)	0.89 (0.47-1.70)
Family Ties in Community		
Weak	—	—
Strong	1.00 (0.66-1.53)	0.98 (0.52-1.83)
Age	1.00 (0.97-1.03)	1.00 (0.97-1.03)
Income		
Less than $14,000	—	—
$14,000-$35,700	0.86 (0.52-1.43)	0.89 (0.47-1.66)
More than $35,700	0.79 (0.45-1.40)	0.64 (0.28-1.43)
Rural		
Urban		
Rural	—	—
	1.43 (0.93-2.19)	0.71 (0.33-1.53)
Education		
No Diploma		
Secondary Diploma	—	—
Post-Secondary Diploma	0.65 (0.39-1.08)	1.22 (0.54-2.77)
	0.49 (0.29-0.82)*	0.81 (0.35-1.85)
	Inuit	
	Odds Ratio for Males (Confidence Interval)	Odds Ratio for Women (Confidence Interval)
Indigenous-Specific Social Capital		
Low-Levels	—	—
High-Levels	2.79 (0.91-8.57)	1.54 (0.59-3.97)
Family Ties in Community		
Weak	—	—
Strong	0.54 (0.27-1.09)	0.46 (0.23-0.92)*

Age		0.96 (0.91-1.03)	1.00 (0.97-1.04)
Income			
	Less than $14,000	—	—
	$14,000-$35,700	0.91 (0.40-2.05)	1.28 (0.62-2.67)
	More than $35,700	0.93 (0.40-2.16)	
Rural			
	Urban	—	—
	Rural	0.98 (0.28-3.4)	1.21 (0.56-2.61)
Education			
	No Diploma	—	—
	Secondary Diploma	1.05 (0.51-2.19)	1.12 (0.55-2.28)
	Post-Secondary Diploma	0.59 (0.26-1.36)	0.56 (0.24-1.29)

95% confidence intervals; *p<0.05

Table B: Logistic regression for Fair/Poor Self-Rated Mental Health regressed on social capital and family ties in community—with control variables

	Total Sample Population	
	Odds Ratio for Males (Confidence Interval)	Odds Ratio for Women (Confidence Interval)
Indigenous-Specific Social Capital		
Low-Levels	—	—
High-Levels	0.85 (0.56-1.28)	1.13 (0.80-1.59)
Family Ties in Community		
Weak	—	—
Strong	0.43 (0.28-0.65)*	0.49 (0.36-0.67)*

Age	1.02 (1.00-1.06)	1.03 (1.01-1.06)*
Income		
Less than $13,700	—	—
$13,700-$34,900	0.51 (0.33-0.79)*	0.99 (0.69-1.42)
More than $34,900	0.49 (0.26-0.91)*	0.48 (0.31-0.74)
Rural		
Urban	—	—
Rural	1.07 (0.60-1.89)	0.38 (0.28-0.53)*
Education		
No Diploma	—	—
Secondary Diploma	0.80 (0.47-1.36)	0.44 (0.28-0.68)*
Post-Secondary Diploma	0.31 (0.19-0.52)	0.40 (0.26-0.61)*
	First Nations	
	Odds Ratio for Males (Confidence Interval)	Odds Ratio for Women (Confidence Interval)
Indigenous-Specific Social Capital		
Low-Levels	—	—
High-Levels	0.75 (0.43-1.29)	1.04 (0.66-1.66)
Family Ties in Community		
Weak	—	—
Strong	0.36 (0.19-0.66)*	0.59 (0.38-0.91)*
Age	1.03 (0.99-1.08)	1.04 (1.01-1.07)*
Income		
Less than $13,700	—	—
$13,700-$34,900	0.47 (0.25-0.89)*	1.08 (0.65-1.81)
More than $34,900	0.55 (0.23-1.36)	0.50 (0.27-0.92)*
Rural		
Urban	—	—
Rural	1.10 (0.46-2.64)	0.35 (0.22-0.58)*
Education		
No Diploma	—	—
Secondary Diploma	0.72 (0.35-1.45)	0.27 (0.15-0.50)*
Post-Secondary Diploma	0.19 (0.09-0.41)*	0.30 (0.17-0.54)*
	Métis	
	Odds Ratio for Males (Confidence Interval)	Odds Ratio for Women (Confidence Interval)

Indigenous-Specific Social Capital		
Low-Levels	—	—
High-Levels	1.02 (0.53-1.96)	1.25 (0.66-2.35)
Family Ties in Community		
Weak	—	—
Strong	0.50 (0.30-0.85)*	0.35 (0.22-0.56)*
Age	1.02 (0.98-1.06)	1.03 (0.99-1.06)
Income		
Less than $13,700	—	—
$13,700-$34,900	0.54 (0.29-1.02)	0.89 (0.53-1.48)
More than $34,900	0.41 (0.20-0.89)*	0.45 (0.22-0.91)
Rural		
Urban	—	—
Rural	1.05 (0.57-1.91)	0 .43 (0.26-0.73)*
Education		
No Diploma	—	—
Secondary Diploma	0.95 (0.51-1.78)	0.91 (0.48-1.75)
Post-Secondary Diploma	0.53 (0.28-1.01)	0.64 (0.34-1.23)
	Inuit	
	Odds Ratio for Males (Confidence Interval)	Odds Ratio for Women (Confidence Interval)
Indigenous-Specific Social Capital		
Low-Levels	—	—
High-Levels	0.36 (0.14-0.94)*	3.02 (1.10-8.36)*
Family Ties in Community		
Weak	—	—
Strong	0.98 (0.49-1.94)	1.35 (0.72-2.53)
Age	1.04 (0.99-1.09)	1.02 (0.97-1.07)
Income		
Less than $13,700	—	—
$13,700-$34,900	0.50 (0.23-1.09)	0.59 (0.22-1.60)
More than $34,900	0.19 (0.07-0.54)*	0.39 (0.13-1.20)
Rural		
Urban	—	—
Rural	0.77 (0.19-3.11)	0.30 (0.12-0.75)*
Education		

No Diploma	—	—
Secondary Diploma	0.69 (0.29-1.67)	1.11 (0.50-2.48)
Post-Secondary Diploma	0.82 (0.37-1.80)	0.76 (0.26-2.22)

95% confidence intervals; *p<0.05

Table C: Logistic regression for weekly binge drinking regressed on social capital only

	Total Sample Population	
	Odds Ratio for Males (Confidence Interval)	Odds Ratio for Women (Confidence Interval)
Indigenous-Specific Social Capital		
Low-Levels	—	—
High-Levels	0.68 (0.51-0.90)*	0.92 (0.65-1.31)
Age	0.98 (0.96-1.00)	1.01 (0.98-1.02)
Income		
Less than $14,000	—	—
$14,000-$35,700	1.06 (0.73-1.52)	0.98 (0.68-1.41)
More than $35,700	1.01 (0.66-1.57)	0.73 (0.68-1.41)
Rural		
Urban	—	—
Rural	1.08 (0.81-1.45)	0.83 (0.58-1.21)
Education		
No Diploma	—	—
Secondary Diploma	0.82 (0.56-1.19)	0.93 (0.60-1.43)
Post-Secondary Diploma	0.66 (0.44-0.97)*	0.67 (0.44-1.04)
	First Nations	
	Odds Ratio for Males (Confidence Interval)	Odds Ratio for Women (Confidence Interval)
Indigenous-Specific Social Capital		
Low-Levels	—	—
High-Levels	0.54 (0.36-0.81)*	0.70 (0.42-1.16)
Age	0.97 (0.94-0.998)*	1.01 (0.98-1.04)
Income		
Less than $14,000	—	—
$14,000-$35,700	1.31 (0.76-2.62)	1.00 (0.61-1.67)
More than $35,700	1.29 (0.66-2.50)	0.73 (0.40-1.35)
Rural		
Urban	—	—

Rural	0.87 (0.54-1.43)	0.84 (0.50-1.43)
Education		
No Diploma	—	—
Secondary Diploma	0.95 (0.53-1.69)	0.90 (0.49-1.67)
Post-Secondary Diploma	0.84 (0.46-1.53)	0.74 (0.41-1.32)
	Métis	
	Odds Ratio for Males (Confidence Interval)	Odds Ratio for Women (Confidence Interval)
Indigenous-Specific Social Capital		
Low-Levels	—	—
High-Levels	0.96 (0.59-1.57)	0.89 (0.47-1.69)
Age	1.00 (0.97-1.02)	1.00 (0.96-1.03)
Income		
Less than $14,000	—	—
$14,000-$35,700	0.86 (0.52-1.43)	0.89 (0.47-1.66)
More than $35,700	0.79 (0.45-1.40)	0.64 (0.28-1.44)
Rural		
Urban	—	—
Rural	1.43 (0.94-2.18)	0.70 (0.33-1.52)
Education		
No Diploma	—	—
Secondary Diploma	0.65 (0.39-1.08)	1.22 (0.54-2.75)
Post-Secondary Diploma	0.49 (0.29-0.82)	0.81 (0.36-1.81)
	Inuit	
	Odds Ratio for Males (Confidence Interval)	Odds Ratio for Women (Confidence Interval)
Indigenous-Specific Social Capital		
Low-Levels	—	—
High-Levels	0.36 (0.13-1.01)	2.91 (1.05-8.06)*
Age	0.96 (0.91-1.03)	1.00 (0.96-1.04)
Income		
Less than $14,000	—	—
$14,000-$35,700	0.91 (0.40-2.03)	1.30 (0.62-2.74)
More than $35,700	0.93 (0.39-2.23)	1.25 (0.57-2.73)
Rural		
Urban	—	—
Rural	0.97 (0.28-3.41)	0.34 (0.12-0.96)*

Education		
No Diploma	—	—
Secondary Diploma	1.05 (0.51-2.19)	1.10 (0.54-2.28)
Post-Secondary Diploma	0.59 (0.25-1.38)	0.55 (0.24-1.27)

95% confidence intervals; *p<0.05

Table D: Logistic regression for fair/poor self-rated mental health regressed on social capital only

	Total Sample Population	
	Odds Ratio for Males (Confidence Interval)	Odds Ratio for Women (Confidence Interval)
Indigenous-Specific Social Capital		
Low-Levels	—	—
High-Levels	0.85 (0.57-1.28)	1.13 (0.80-1.59)
Age	1.03 (1.00-1.06)	1.03 (1.01-1.06)*
Income		
Less than $13,700	—	—
$13,700-$34,900	0.51 (0.33-0.78)*	0.99 (0.69-1.41)
More than $34,900	0.47 (0.25-0.88)*	0.48 (0.31-0.75)*
Rural		
Urban	—	—
Rural	1.02 (0.57-1.83)	0.37 (0.27-0.51)*
Education		
No Diploma	—	—
Secondary Diploma	0.77 (0.45-1.32)	0.44 (0.29-0.68)*
Post-Secondary Diploma	0.30 (0.18-0.50)	0.39 (0.26-0.59)*
	First Nations	
	Odds Ratio for Males (Confidence Interval)	Odds Ratio for Women (Confidence Interval)
Indigenous-Specific Social Capital		
Low-Levels	—	—
High-Levels	0.74 (0.43-1.27)	1.05 (0.66-1.64)
Age	1.04 (0.99-1.09)	1.04 (1.01-1.07)
Income		
Less than $13,700	—	—
$13,700-$34,900	0.49 (0.26-0.95)*	1.08 (0.65-1.78)
More than $34,900	0.53 (0.21-1.37)	0.50 (0.27-0.93)*

Rural		
Urban	—	—
Rural	1.08 (0.43-2.74)	0.36 (0.22-0.58)*
Education		
No Diploma	—	—
Secondary Diploma	0.69 (0.33-1.44)	0.28 (0.16-0.50)*
Post-Secondary Diploma	0.19 (0.09-0.40)*	0.30 (0.17-0.52)*
	Métis	
	Odds Ratio for Males (Confidence Interval)	Odds Ratio for Women (Confidence Interval)
Indigenous-Specific Social Capital		
Low-Levels	—	—
High-Levels	1.06 (0.55-2.04)	1.27 (0.66-2.44)
Age	1.02 (0.99-1.06)	1.03 (0.99-1.07)
Income		
Less than $13,700	—	—
$13,700-$34,900	0.51 (0.28-0.95)*	0.89 (0.53-1.49)
More than $34,900	0.41 (0.19-0.85)*	0.45 (0.23-0.91)*
Rural		
Urban	—	—
Rural	0.99 (0.54-1.79)	0.37 (0.22-0.62)*
Education		
No Diploma	—	—
Secondary Diploma	0.90 (0.49-1.66)	0.86 (0.47-1.58)
Post-Secondary Diploma	0.50 (0.26-0.95)*	0.61 (0.33-1.12)
	Inuit	
	Odds Ratio for Males (Confidence Interval)	Odds Ratio for Women (Confidence Interval)
Indigenous-Specific Social Capital		
Low-Levels	—	—
High-Levels	2.32 (0.78-6.89)	1.62(0.61-4.28)
Age	1.04 (0.99-1.09)	1.02 (0.97-1.07)
Income		
Less than $13,700	—	—
$13,700-$34,900	0.50 (0.23-1.08)	0.58 (0.21-1.56)
More than $34,900	0.18 (0.06-0.53)*	0.36 (0.11-1.19)
Rural		
Urban	—	—

Rural	0.74 (0.17-3.26)	0.29 (0.11-0.73)*
Education		
No Diploma	—	—
Secondary Diploma	0.70 (0.28-1.75)	1.08 (0.48-2.41)
Post-Secondary Diploma	0.80 (0.36-1.74)	0.83 (0.27-2.61)

95% confidence intervals; *p<0.05