

Catalogue no. 89-653-X2016009  
ISBN 978-0-660-03892-6

## Aboriginal Peoples Survey, 2012

# Assessing the social determinants of self-reported Inuit health in Inuit Nunangat

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Release date: February 22, 2016



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- .. not available for a specific reference period
- ... not applicable
- 0 true zero or a value rounded to zero
- 0<sup>s</sup> value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
- <sup>P</sup> preliminary
- <sup>r</sup> revised
- X suppressed to meet the confidentiality requirements of the *Statistics Act*
- <sup>E</sup> use with caution
- F too unreliable to be published
- \* significantly different from reference category ( $p < 0.05$ )

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## Introduction

The health and well-being of the Inuit population falls below that of the total population in Canada (Chief Public Health Officer, 2008). Evidence of this health gap includes lower levels of excellent or very good self-reported health (Wallace, 2014; Gionet & Roshanafshar, 2013; Tait, 2008) and lower levels of excellent or very good self-reported mental health (Gionet & Roshanafshar, 2013). Inuit are more likely to report respiratory conditions such as asthma (Gionet & Roshanafshar, 2013) and tuberculosis, compared with the non-Aboriginal population in Canada (Public Health Agency of Canada, 2015). Furthermore, Inuit have shorter life expectancies and higher infant mortality rates, compared with the total population in Canada (Wilkins et al., 2008).

Inuit Tapiriit Kanatami—the national organization of Inuit in Canada—has stated that “this health gap in many respects is a symptom of poor socio-economic conditions in Inuit communities which are characterized by high poverty rates, low levels of education, limited employment opportunities, and inadequate housing conditions” (Inuit Tapiriit Kanatami, 2014). These factors are known as social determinants of health. The World Health Organization has defined social determinants of health as “the conditions in which people are born, grow, live, work and age, including the health system” (World Health Organization, 2013).

Inuit Tapiriit Kanatami has developed an Inuit-specific set of social determinants of Inuit health, through consultation and review of available literature (Inuit Tapiriit Kanatami, 2014). In total, the report identified eleven determinants of health for Inuit in Canada. These were quality of early childhood development, culture and language, livelihoods, income distribution, housing, personal safety and security, education, food security, availability of health services, mental wellness and the environment.

This analysis uses data from the 2012 Aboriginal Peoples Survey (APS) to examine relationships between self-reported health and some of the social determinants of health, as identified by Inuit Tapiriit Kanatami. The APS does not contain data on topics such as the environment or early childhood development, and so, it was not possible to examine indicators of these social determinants of health within the analysis.

## Methods and data source

This analysis examines the relationships between social determinants of health and excellent or very good health. The social determinants chosen for analysis were based on the Inuit-specific health determinants outlined in Inuit Tapiriit Kanatami's (ITK) 2014 discussion paper *Social Determinants of Inuit Health in Canada*.<sup>1</sup> Data from the 2012 APS were used to explore elements of social determinants of health and their relationship to the self-reported health of Inuit.

As younger Inuit are more likely to report excellent or very good health compared with older Inuit (Wallace, 2014) the analysis was conducted for those aged 15 to 24 and 25 to 54, separately. Existing literature suggests that different determinants may be more important depending on one's stage of life (Reading & Wien, 2009). For example, access to health care may be more important to aging adults, as health declines with age.

Health, including social determinants of health, differs for Inuit living inside Inuit Nunangat, compared with those living outside Inuit Nunangat (Wallace, 2014). As such, the analysis was restricted to Inuit living in Inuit Nunangat.

Self-reported health was chosen for analysis as it is a general indicator of overall health, and has proven to be a reliable indicator of health across cultures and socioeconomic circumstances (Burström & Fredlund, 2001; DeSalvo et al., 2005; Rohrer et al., 2007). It also allows respondents to consider multiple factors in determining their level of health; self-reported health may be influenced by one's own sense of well-being, information from health professionals (a diagnosis of a chronic condition, for example), personal health behaviors (exercise, diet, smoking, etc.). In focusing on excellent or very good health, the intention was to identify the characteristics which best predict optimal health.

This analysis was based on a sample of 2,925 Inuit aged 15 to 54 years from the 2012 APS. The item non-response rate for self-reported health was not included in the calculation of the proportions in "excellent" or "very good" health. Item non-response refers to responses of 'don't know', 'refusal' or 'not stated' to a particular question. The item non-response rate for this question was 7%. For more information about the 2012 APS and item non-response, please refer to the [Aboriginal Peoples Survey, 2012: Concepts and Methods Guide](#) (Cloutier & Langlet, 2013).

### Multivariate logistic regression

Multivariate logistic regression modeling was used to test the relationship between the various social determinants of health and the likelihood of reporting excellent or very good health versus fair, poor or very poor health, which followed a bivariate analysis of the same determinants. The analysis tests the independent relationship between a specific social determinant of health and the probability of being in excellent or very good health when the remaining social determinants are held constant (i.e., set to the mean value). Separate models were tested for younger Inuit—defined as those aged 15 to 24 years—and those aged 25 to 54 years. The sample of those aged 55 years and over was not large enough to conduct multivariate analysis, and so this group was excluded from this research.

Unadjusted and adjusted probabilities were estimated with variance estimation obtained using the bootstrap weights available on the APS master file. The unadjusted probability refers to the likelihood of being in excellent or very good health for those with and without a social determinant of health. The adjusted—or predicted—probability refers to the likelihood of being in excellent or very good health, when other factors in the model are controlled for.

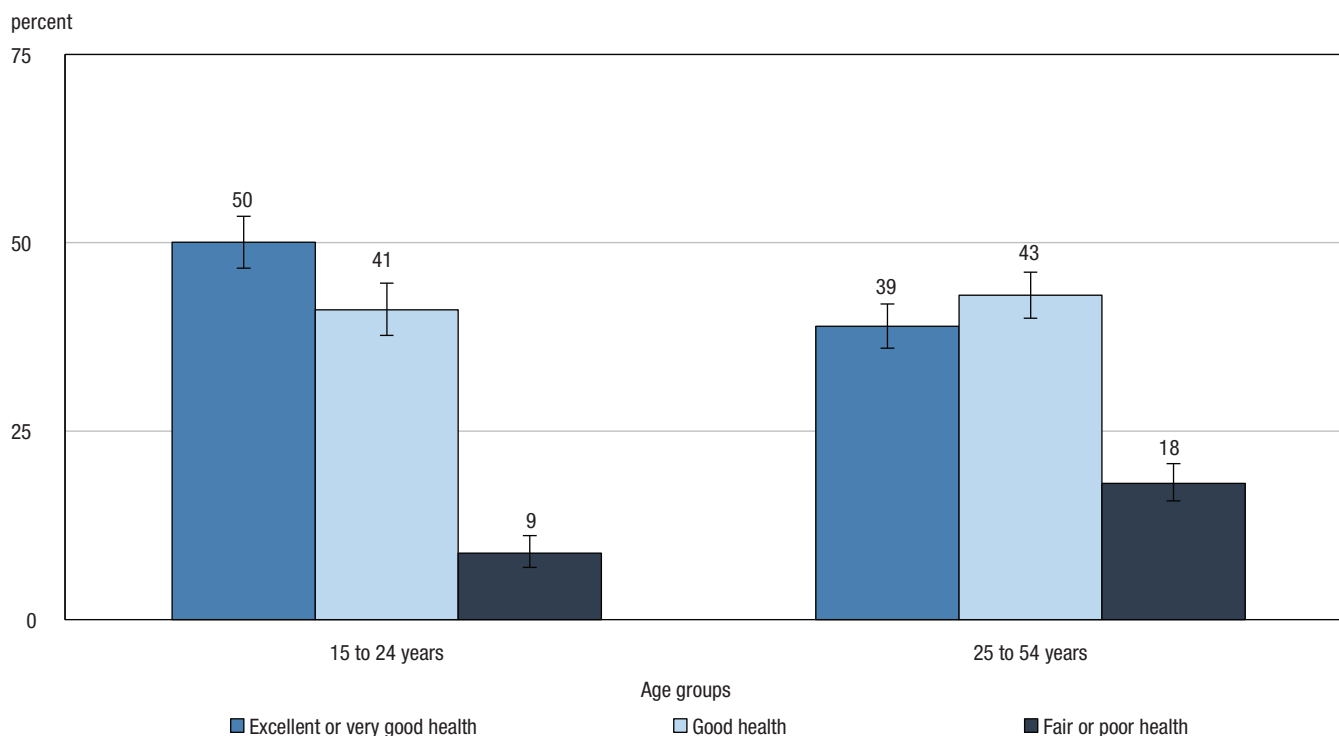
Missing categories—both item non-response and valid skips—for each categorical variable were included in the model but were not interpreted or presented in tables. All social determinants irrespective of significance were retained in the final model due to their theoretical importance.

1. For more information on how the 2012 APS was used to measure these determinants, see Appendix A.

## The proportion that reported excellent or very good health varied by age group

According to the 2012 Aboriginal Peoples Survey, half (50%) of Inuit aged 15 to 24 years of age reported excellent or very good health. Of the total population of Canada aged 15 to 24 years, 69% reported excellent or very good health (Wallace, 2014). Among Inuit aged 25 to 54 years, 39% reported excellent or very good health compared with 64% of the total population of Canada aged 25 to 54 years (Wallace, 2014).

**Chart 1**  
Self-reported health for Inuit aged 15 to 24 and 25 to 54 years, Inuit Nunangat, 2012



Source: Aboriginal Peoples Survey, 2012.

## Among younger Inuit, higher educational attainment was associated with higher levels of excellent or very good health

Younger Inuit were more likely to have reported excellent or very good health if they had a high school education or post-secondary education. Just over four-in-ten (41%) of those with less than high school were predicted to be in excellent or very good health, compared with 55% of those who had graduated from high school. Those who had completed post-secondary education and those who were currently attending school also had a higher probability of being in excellent or very good health when compared with those with less than high school (62% and 57% versus 41%, respectively). Table 1 shows the unadjusted and adjusted probabilities of being in excellent or very good self-reported health by selected characteristics, for Inuit aged 15 to 24 years.

The involvement of family is a central feature of Inuit culture (Inuit Tapiriit Kanatami, 2015). The 2012 APS asked respondents to rate the strength of family ties among family members who lived in another household but within the same community. Younger Inuit with strong or very strong family ties had a higher probability to be in excellent or very good health compared with those who rated their family ties as moderate, weak or very weak (55% versus 43%).

In 2012, Inuit aged 15 years and over were three times more likely to report smoking cigarettes daily than the total population in Canada in the same age group (Wallace, 2014). Younger Inuit who were daily smokers were less likely to be in excellent or very good health, after controlling for other factors. Less than half (47%) of daily smokers were predicted to be in excellent or very good health compared with 55% of those who smoked occasionally or not at all.

Household crowding was also negatively associated with excellent or very good self-reported health. Younger Inuit who lived in a crowded dwelling—defined here as living in a dwelling with more than one person per room—had a lower probability of being in excellent or very good health (46% versus 54%). Past studies have shown that Inuit—particularly those living in Inuit Nunangat—were more likely to live in a crowded dwelling than the total population in Canada (Wallace, 2014).

Just as obesity has been linked to a number of negative health outcomes (Statistics Canada, 2011) it was associated with a lower probability of being in excellent or very good health for Inuit aged 15 to 24. Close to one-third (32%) of those with a body mass index in the “obese” range were predicted to be in excellent or very good health compared to 52% of those who were underweight, normal weight or overweight.

While the date of the last visit to a dental professional was correlated with self-reported health it was not associated when other factors were accounted for. Limited access to dental care has been identified as an ongoing health issue in Inuit Nunangat (Health Canada, 2011). Younger Inuit who had not seen a dental professional in the last three years were less likely to report excellent or very good health compared with those who had seen a dental professional in the previous three years (36% versus 52%); but when other factors were controlled for, this difference was no longer significant.

### **Inuit aged 25 to 54 years who experienced difficulties accessing health care were less likely of being in excellent or very good health**

As health tends to decline with age, the likelihood of reporting excellent or very good health was lower among those aged 25 to 54 years than those aged 15 to 24 years. Table 2 shows the unadjusted and adjusted probabilities of being in excellent or very good self-reported health by selected characteristics, for Inuit aged 25 to 54 years.

Access to health care services is limited within Inuit Nunangat and was found to be associated with self-perceived health for working-age adults (Tjepkema et al., 2010; Distasio et al., 2004). Health care access was associated with reporting excellent or very good health, among Inuit who were 25 to 54 years of age, which may in part relate to age-related declines in health and the subsequent need for health care. Respondents on the 2012 APS were asked if there was a time in the previous 12 months when they felt that they needed health care but did not receive it. One-quarter (24%) of those who reported such an occurrence were predicted to be in excellent or very good health compared with 41% of those who did not report a time in the previous 12 months when health care was needed but not received.

The problem of food security for Inuit has been well-documented (Wallace, 2014; Rosol et al. 2011; Huet, Rosol & Egeland, 2012). Just over one-third (35%) of Inuit aged 25 to 54 years who had low or very low food security were predicted to be in excellent or very good health, after accounting for other factors, while the probability for those with high or marginal food security was greater, at 43%.

The probability of Inuit aged 25 to 54 years being in excellent or very good health was also associated with housing conditions. One-third (33%) of those who lived in a dwelling that was in need of major repairs were predicted to be in excellent or very good health compared with 41% of those who lived in a dwelling that only needed regular maintenance or minor repairs.

As was the case with younger Inuit, the probability of being in excellent or very good self-reported health was positively associated with strong family ties for those aged 25 to 54 years. The adjusted probability of those who reported strong or very strong family ties was higher (42%) than for those who reported moderate, weak or very weak family ties (34%).

The presence of a diagnosed mental health condition was associated with self-reported health. Inuit aged 25 to 54 years who had been diagnosed with a mood or anxiety disorder were less likely to be in excellent or very good health compared with those who had not (27% versus 40%). Inuit aged 25 to 54 years also had a lower probability of being in excellent or very good health if they had not completed high school. Just over one-third (35%) of those who had not completed high school were predicted to be in excellent or very good health compared with 46% of those who had completed postsecondary.

Inuit between 25 and 54 who were obese—according to the body mass index and cut-offs defined by the World Health Organization (World Health Organization, 1995)—were less likely to be in excellent or very good health than those who were underweight, normal weight or overweight. One-third (33%) of those who were obese were predicted to be in excellent or very good health compared to (42%) of those in the reference category. It is worth noting that there was no significant difference in the unadjusted probabilities between those who were obese and those who were underweight, normal weight or overweight—the difference was only identifiable when other social determinants were controlled for.

Even after controlling for other determinants, Inuit women aged 25 to 54 years were less likely to be in excellent or very good health than men. Just over one-third (36%) of Inuit women were predicted to be in excellent or very good health, after controlling for other factors, compared with 42% of men.

As with younger Inuit, Inuit aged 25 to 54 years were more likely to be in excellent or very good health if they had visited a dental professional in the last three years compared with those who had not (42% versus 33%). Similarly, those who were employed at a job or business or who participated in a traditional activity at least once per week were more likely to be in excellent or very good health than those who were neither employed nor regularly active in a traditional activity (41% versus 30%). However, these results—for both those who had visited a dental professional and those employed or active in a traditional activity—were only evident at the bivariate level, and did not show an association when the other factors were taken into account.

**Table 1**  
**Unadjusted and adjusted probabilities relating selected characteristics to excellent or very good self-reported health, Inuit aged 15 to 24 years, Inuit Nunangat, 2012**

Selected characteristics	Unadjusted probabilities	95% Confidence Interval		Adjusted probabilities	95% Confidence Interval	
		from	to		from	to
Sex						
Men (ref)	0.50	0.45	0.55	0.51	0.46	0.56
Women	0.50	0.46	0.55	0.50	0.45	0.54
Smoking						
Smokes cigarettes daily	0.46***	0.41	0.50	0.47*	0.43	0.51
Smokes occasionally or not at all (ref)	0.59	0.53	0.64	0.55	0.50	0.61
Alcohol consumption						
Heavy, frequent drinker	0.37	0.24	0.52	0.41	0.27	0.57
Not a heavy, frequent drinker (ref)	0.51	0.47	0.54	0.50	0.47	0.54
Body Mass Index						
Underweight, normal weight or overweight (ref)	0.52	0.48	0.56	0.52	0.47	0.56
Obese	0.33**	0.24	0.45	0.32***	0.23	0.42
Total Household Income						
Lowest income quartile (ref)	0.44	0.36	0.52	0.48	0.40	0.56
Not in lowest income quartile	0.52	0.48	0.56	0.51	0.47	0.55
Education - Highest level attained						
Currently enrolled in school	0.60***	0.54	0.65	0.57***	0.51	0.63
Less than high school (ref)	0.39	0.33	0.45	0.41	0.36	0.47
High school	0.55**	0.47	0.63	0.55**	0.47	0.63
Completed post-secondary	0.64***	0.52	0.75	0.62**	0.50	0.73
Livelihood						
Employed at a job or business or active in a traditional activity (ref)	0.50	0.46	0.54	0.49	0.45	0.53
Neither employed nor active in a traditional activity	0.51	0.44	0.58	0.53	0.47	0.60
Household crowding						
One person or fewer per room (ref)	0.56	0.51	0.61	0.54	0.49	0.59
More than one person per room	0.46*	0.41	0.51	0.46*	0.42	0.51
Dwelling in need of repairs						
Only regular maintenance or minor repairs are needed (ref)	0.52	0.48	0.56	0.51	0.47	0.55
Major repairs are needed	0.46	0.38	0.55	0.49	0.40	0.57
Food Security						
High or marginal food security (ref)	0.55	0.49	0.60	0.51	0.46	0.56
Low or very low food security	0.49	0.44	0.54	0.51	0.46	0.56
Difficulty accessing health care						
There was a time when health care was needed but not received	0.43	0.32	0.54	0.48	0.37	0.58
No time when health care was needed but not received (ref)	0.52	0.48	0.55	0.50	0.47	0.54
Last time visited a dental professional						
Within the last 3 years (ref)	0.52	0.48	0.56	0.51	0.47	0.54
At least 3 years since a dental professional was seen	0.36*	0.26	0.48	0.42	0.32	0.54
Ability to speak an Inuit language						
Speaks an Inuit language very or relatively well (ref)	0.51	0.46	0.55	0.52	0.47	0.56
Speaks an Inuit language with effort or only a few words	0.50	0.44	0.56	0.48	0.42	0.54
Does not speak an Inuit language	0.43	0.32	0.55	0.43	0.32	0.54
Strength of family ties						
Strong or very strong family ties (ref)	0.56	0.52	0.61	0.55	0.50	0.59
Moderate to very weak family ties	0.43***	0.37	0.49	0.43**	0.37	0.49
Presence of a mood or anxiety disorder						
Diagnosed with a mood or anxiety disorder	0.36	0.23	0.52	0.38	0.26	0.52
Not diagnosed with a mood or anxiety disorder (ref)	0.52	0.48	0.55	0.51	0.47	0.55
History of residential school attendance						
Personal or family history of residential school attendance	0.51	0.46	0.56	0.50	0.45	0.55
No family history of residential school attendance (ref)	0.54	0.45	0.62	0.53	0.44	0.61
Population centre size						
Rural area (ref)	0.48	0.44	0.52	0.49	0.45	0.53
Small population centre	0.55	0.48	0.62	0.53	0.46	0.60

\* Statistically different from reference group ( $p < .05$ )

\*\* Statistically different from reference group ( $p < .01$ )

\*\*\* Statistically different from reference group ( $p < .001$ )

(ref) Reference category

**Notes:** The values in the table were computed using a logistic regression model. The adjusted probabilities were computed by testing the relationship between a specific social determinant of health and the probability of being in excellent or very good self-reported health when the remaining variables were held constant (i.e., set to the mean value).

**Source:** 2012 Aboriginal Peoples Survey



**Table 2**  
**Unadjusted and adjusted probabilities relating selected characteristics to excellent or very good self-reported health, Inuit aged 25 to 54 years, Inuit Nunangat, 2012**

Selected characteristics	Unadjusted probabilities	95% Confidence Interval		Adjusted probabilities	95% Confidence Interval	
		from	to		from	to
Sex						
Men (ref)	0.43	0.39	0.48	0.42	0.38	0.46
Women	0.35**	0.31	0.39	0.36*	0.32	0.40
Smoking						
Smokes cigarettes daily	0.37	0.34	0.41	0.38	0.34	0.41
Smokes occasionally or not at all (ref)	0.43	0.38	0.48	0.41	0.36	0.46
Alcohol consumption						
Heavy, frequent drinker	0.34	0.22	0.47	0.35	0.25	0.47
Not a heavy, frequent drinker (ref)	0.40	0.37	0.43	0.40	0.37	0.43
Body Mass Index						
Underweight, normal weight or overweight (ref)	0.42	0.38	0.46	0.42	0.38	0.46
Obese	0.37	0.31	0.43	0.33**	0.28	0.39
Total Household Income						
Lowest income quartile (ref)	0.37	0.31	0.43	0.41	0.36	0.47
Not in lowest income quartile	0.40	0.36	0.43	0.38	0.35	0.41
Education - Highest level attained						
Less than high school (ref)	0.34	0.29	0.38	0.35	0.30	0.39
High school	0.41	0.35	0.46	0.40	0.35	0.45
Completed post-secondary	0.47***	0.42	0.53	0.46**	0.40	0.51
Livelihood						
Employed at a job or business or active in a traditional activity (ref)	0.41	0.38	0.44	0.40	0.37	0.43
Neither employed nor active in a traditional activity	0.30*	0.24	0.38	0.33	0.26	0.41
Household crowding						
One person or fewer per room (ref)	0.39	0.35	0.43	0.38	0.34	0.42
More than one person per room	0.39	0.34	0.43	0.39	0.35	0.44
Dwelling in need of repairs						
Only regular maintenance or minor repairs are needed (ref)	0.42	0.39	0.45	0.41	0.38	0.44
Major repairs are needed	0.30***	0.25	0.36	0.33*	0.28	0.39
Food Security						
High or marginal food security (ref)	0.46	0.42	0.51	0.43	0.38	0.47
Low or very low food security	0.33***	0.29	0.37	0.35*	0.31	0.39
Difficulty accessing health care						
There was a time when health care was needed but not received	0.24***	0.18	0.31	0.24***	0.18	0.31
No time when health care was needed but not received (ref)	0.41	0.38	0.45	0.41	0.38	0.44
Last time visited a dental professional						
Within the last 3 years (ref)	0.42	0.38	0.45	0.40	0.37	0.44
At least 3 years since a dental professional was seen	0.33*	0.26	0.40	0.35	0.28	0.42
Ability to speak an Inuit language						
Speaks an Inuit language very or relatively well (ref)	0.38	0.34	0.42	0.39	0.35	0.42
Speaks an Inuit language with effort or only a few words	0.42	0.36	0.48	0.39	0.34	0.45
Does not speak an Inuit language	0.43	0.34	0.53	0.40	0.31	0.49
Strength of family ties						
Strong or very strong family ties (ref)	0.43	0.39	0.47	0.42	0.38	0.46
Moderate to very weak family ties	0.32**	0.27	0.37	0.34*	0.29	0.39
Presence of a mood or anxiety disorder						
Diagnosed with a mood or anxiety disorder	0.26**	0.19	0.35	0.27*	0.18	0.37
Not diagnosed with a mood or anxiety disorder (ref)	0.40	0.37	0.44	0.40	0.37	0.43
History of residential school attendance						
Personal or family history of residential school attendance	0.42	0.38	0.45	0.41	0.37	0.44
No family history of residential school attendance (ref)	0.37	0.29	0.45	0.39	0.31	0.47
Population centre size						
Rural area (ref)	0.38	0.34	0.41	0.39	0.35	0.42
Small population centre	0.41	0.36	0.47	0.40	0.34	0.45

\* Statistically different from reference group ( $p < .05$ )

\*\* Statistically different from reference group ( $p < .01$ )

\*\*\* Statistically different from reference group ( $p < .001$ )

(ref) Reference category

**Notes:** The values in the table were computed using a logistic regression model. The adjusted probabilities were computed by testing the relationship between a specific social determinant of health and the probability of being in excellent or very good self-reported health when the remaining variables were held constant (i.e., set to the mean value).

**Source:** 2012 Aboriginal Peoples Survey

## Limitations and Future Research

The present research is a preliminary examination of the social determinants of health framework and their relationship to self-reported health among Inuit in Inuit Nunangat. While care was taken to correctly match social determinants with a representative variable, additional dimensions of the social determinants of health not measured by the 2012 APS do exist and may be important predictors of health status, including quality of early childhood development and the environment. Moreover, for those social determinants that could be measured, the variables used in the logistic regression model may only cover certain aspects of the determinants they represent.

Self-reported health was the chosen health outcome in the present study. While self-reported health has been used across cultures and socio-economic groups, there is a possibility for different interpretations of the response categories. Subsequent research would benefit from an examination of the relationship between social determinants and objective health outcomes, including chronic conditions and activity limitations.

The social, economic and cultural environment differs within and outside Inuit Nunangat, which limits the ability to generalize the relationships between social determinants and perceived health to Inuit residing outside Inuit Nunangat. It may be of interest to examine whether the same influential social determinants of health exist for Inuit residing outside Nunangat. Future research could also examine which social determinants are particularly relevant for each region of Inuit Nunangat. While Wallace (2014) and others have noted the health gap between Inuit and the total population, it remains unknown to what extent the gap can be attributed to the differences in the socio-economic conditions.

A given social determinant can not only have a direct impact on health, but may also affect conditions influencing other social determinants (Reading & Wien, 2009; Inuit Tapiriit Kanatami, 2014). For instance, poor quality housing has been shown to be associated with both physical and mental health outcomes (Chief Public Health Officer of Canada, 2008). At the same time, disparities in housing have been linked to employment, educational attainment, and food security all of which directly relate to health outcomes (NCCAH, 2009-2010). From a policy standpoint, it is informative to identify social determinants of health which predict health over and above the effect of all social determinants proposed within the ITK model (2014).

While the literature highlights a number of social determinants that may impact overall health, some did not show an association with self-reported health. For instance, while income is considered an important social determinant of health in numerous studies, it was not correlated with self-reported health for either age group. It is worth noting that non-significant findings are not necessarily definitive—simply because an association between two concepts was not identified does not mean one does not exist. Rather, the lack of significance may be the result of a number of factors, such as sample size or differences between Inuit Tapiriit Kanatami's conceptual model and the variables available on the 2012 Aboriginal Peoples Survey.

Finally, the 2012 Aboriginal Peoples Survey is a cross-sectional data source. As such, the results do not imply the existence of a causal relationship between self-reported health and the social determinants of health.

## Conclusions

Overall, three of the social determinants in this study were significantly associated with self-reported health for both younger Inuit (15 to 24 years of age) and those aged 25 to 54 years. These were the strength of family ties, educational attainment and obesity. Strong or very strong family ties were associated with higher levels of excellent or very good health, while those with less than a high school education and those who were obese were associated with lower levels of excellent or very good health.

For younger Inuit, daily smoking and household crowding were associated with lower levels of excellent or very good health, after accounting for other factors. For Inuit aged 25 to 54 years, those who lived in a dwelling that needed major repairs, had low or very low food security, reported difficulties accessing health care or were diagnosed with a mood or anxiety disorder were less likely to report excellent or very good health. Inuit women were also less likely to report excellent or very good health than men, among those aged 25 to 54 years, even after controlling for other factors.

That the associated determinants of health differ across age groups is consistent with the life-course perspective advanced by prior research (Reading & Wien, 2009). Furthermore, while all eleven determinants could not be used in this analysis, Inuit Tapiriit Kanatami's theoretical model provided an excellent basis for studying the social determinants of health and how they relate to self-reported health among Inuit (2014).

## Appendix A

### Inuit Tapiriit Kanatami's conceptual model on the social determinants of Inuit health

The following represents the 11 determinants of health from Inuit Tapiriit Kanatami's model and—in cases where these determinants could be measured—how they were approximated using APS data, in order to study their relation to self-reported health.

#### 1) Culture and Language

**Ability to speak an Inuit language** – This study categorizes the ability to speak an Inuit language using three levels: 1) speaks an Inuit language very well or relatively well, 2) speaks an Inuit language with effort or only a few words and 3) does not speak an Inuit language.

**Strength of family ties** – Family, according to Inuit Tapiriit Kanatami, is “the foundation of Inuit culture” (2015). This variable refers to the reported strength of family ties—rated from 0 to 5—among family members living in different household but in same community. The relationship between strength of family ties was tested by positing “strong” or “very strong” reported ties (score of 4 or 5) versus responses of “moderate”, “weak”, “very weak” or “no family” (score of 3, 2, 1 or 0).

#### 2) Livelihoods

**Employed at a job or business or active in a traditional activity** – Livelihoods, within Inuit Tapiriit Kanatami's framework is meant to “encompass a wide range of social factors beyond concepts such as employment” (Inuit Tapiriit Kanatami, 2014). The 2012 APS asked respondents about a number of activities over the previous year. These were:

- In the last year, did you make clothing or footwear?
- In the last year, did you make arts or crafts, for example, carvings, drawings, jewellery?
- In the last year, did you hunt, fish or trap?
- In the last year, did you gather wild plants, for example, berries, rice or sweet grass?

If the respondent was engaged in one or more of these so-called “traditional activities” at least once per week or more or the respondent was employed at a job or business they were considered “employed or active in a traditional activity”. Otherwise they were “neither employed nor active in a traditional activity.”

#### 3) Income distribution

Income distribution is listed as a determinant of health as it leads “to marginalization, limiting access to education, employment, good housing and nutritious food” (Inuit Tapiriit Kanatami, 2014).

**Household income** – This variable was split between those in the lowest income quartile versus those who were in the second, third or fourth quartiles. The income measure used was total household income, adjusted for household size and after tax.

#### 4) Housing

“Adequate housing refers to housing that is affordable (costing less than 30% of before-tax income), does not require major repairs and is not overcrowded” (Inuit Tapiriit Kanatami, 2014).

**Dwelling in need of repairs** – The 2012 APS asked respondents if their dwelling was in need of repairs. The variable was defined as dwelling in need of minor repairs or regular maintenance only versus dwelling in need of major repairs.<sup>2</sup>

**Household crowding** – Calculating the number of persons per room is a common measure of household crowding.<sup>3</sup> This variable was defined as one person or fewer per room versus more than one person per room.

#### 5) Personal safety and security

Inuit Tapiriit Kanatami’s model stresses the importance of safety and security to health. This encompasses a wide range of activities and characteristics, from high risk behaviours such as drug and alcohol abuse to the lasting impacts of residential schools. However, the survey did not ask respondents about issues such as violence or abuse.

**Smoking** – Smoking was included under personal safety and security, as it is a behaviour that carries significant health risks. The variable was defined as those who smoked cigarettes daily versus those who smoked less frequently or not at all.

**Alcohol consumption** – Heavy, frequent drinking is defined as consuming 5 or more drinks on one occasion more than once per week. The variable was defined as heavy frequent drinkers versus those who were not. The relationship between alcohol consumption and health is complicated by the existence of restricted alcohol access in various communities within Inuit Nunangat. These communities are often more isolated with fewer opportunities and limited access to socio-economic and health care resources along with costly living conditions (Berman, 2014).

**History of residential school attendance** – The impact of residential and federal industrial schools is well documented, and has been noted to have an impact beyond those immediately affected into multiple generations (Spear, 2014). This variable was defined as the respondent having personal or family history of residential school attendance versus no family history of residential school attendance.

**Body mass index** – While the use of traditional body mass index calculations has been called into question for assessing the Inuit population (Charbonneau-Roberts et al., 2005; Young et al., 2007) the connection between various health outcomes and obesity is well-established (Statistics Canada, 2011). Therefore obesity is considered a risk to personal safety and security. This variable was defined as “underweight, normal weight or overweight” versus “obese”. The cut-offs were based on the international standards according to the World Health Organization for those aged 18 years and over (World Health Organization, 1995) and “Cole’s method” for those aged 15 to 17 years (Cole et al., 2000).

#### 6) Education

Inuit Tapiriit Kanatami identified education as a key determinant of Inuit health. Education touches many aspects of life that are closely tied to health, such as income and livelihoods.

**Highest level attained** – This variable was defined as ‘less than high school’ versus ‘high school’<sup>4</sup> and ‘completed post-secondary’. For the 15 to 24 years age group, an additional category was included for those ‘currently enrolled in school’.

2. The concept of major repairs refers to defective wiring or plumbing or structural problems with walls, floors, and ceilings.

3. Rooms includes kitchens, bedrooms and finished rooms in the attic or basement - excludes bathrooms, halls, vestibules and rooms used solely for business purposes.

4. The category high school includes those who have taken some post-secondary education, but have not completed.

## 7) Food Security

Food security is defined as having “physical and economic access to sufficient, safe, and nutritious food to meet... dietary needs and food preferences for an active and healthy life” (Food and Agricultural Organization, 1996).

**Level of food security** – The food security scale on the 2012 APS was derived from six questions on the survey, which asked about personal and household food security. Two of the questions asked respondents about how often specific scenarios were true. These were:

- “The food that (you / you and other household members) bought just didn’t last, and there wasn’t any money to get more.”
- “(You / You and other household members) couldn’t afford to eat balanced meals.”

The other four questions asked respondents if they skipped or cut the size of meals, the frequency of skipping or cutting meals, if the respondent ever ate less than they felt they should and if the respondent was ever hungry because they could not afford enough food. The variable was defined from this scale as those with high or marginal food security versus low or very low food security.

## 8) Availability of health services

The ability to access appropriate health care is of specific concern within Inuit Nunangat:

Access to health care is often limited in Inuit communities, many of which are served by a health centre staffed by a nurse or nurse practitioner. Moreover, recruitment, retention and training of health personnel are often issues that further hinder access to primary care.

(Wallace, 2014).

To address this social determinant, two variables were used.

**Difficulty accessing health care** – The 2012 APS asked respondents if they had seen a number of health professionals over the previous 12 months. Furthermore, respondents were asked if there was a time in the previous 12 months when health care was needed but not received; the variable was then defined as those who answered “yes” versus those who answered “no”.

**Last visit to a dental professional** – Dental care was identified as an important social determinant of health, as research points to the link between oral health and chronic conditions including diabetes and respiratory disease (Health Canada, 2008; Gionet & Roshanafshar, 2013). This variable was defined as those who had visited a dental professional within the last 3 years versus those whose last visit was at least 3 years ago.

## 9) Mental wellness

**Presence of a mood or anxiety disorder** – The 2012 APS asked respondents about a number of chronic conditions. Among them were two questions asking if the respondent had ever been diagnosed with a mood disorder such as depression, bipolar disorder, mania or dysthymia and if they had been diagnosed with an anxiety disorder such as a phobia, obsessive-compulsive disorder or a panic disorder. The variable was defined as those diagnosed with a mood or anxiety disorder versus those who were not.

It is worth noting, however, that limited access to health professionals who could diagnose such a condition may limit the explanatory power of this variable.

## **10) Environment**

The APS does not contain any variables that can capture either environmental factors by geography or environmental perceptions by respondents. As a result, the social determinant could not be analyzed.

## **11) Quality of Early Childhood Development**

The 2012 APS did not include any questions on early childhood development. As a result, the social determinant could not be analyzed.

### **Other variables**

The multivariate analysis also controls for sex and geography. Geography uses population centre size from the National Household Survey, comparing rural areas (less than 1,000 people) to small population centres (1,000 to 29,999).

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