

Catalogue no. 41-20-0002  
ISBN 978-0-660-47046-7

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Release date: April 6, 2023

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# Childhood factors associated with the completion of a high school diploma or equivalency certificate or higher among First Nations children living off reserve, Métis and Inuit children

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## Acknowledgment

This study was funded by Indigenous Services Canada (ISC).

## Abstract

Using a longitudinal dataset created through the linkage of the 2006 Indigenous Peoples Survey (IPS; formerly called the Aboriginal Peoples Survey) and the 2016 long-form Census, this study examines childhood factors that are associated with the completion of a high school diploma or equivalency certificate or higher among off-reserve First Nations, Métis and Inuit children. The report presents childhood characteristics correlated with high school completion or higher by Indigenous group. Further, using a pooled sample, it examines the association between childhood factors and the outcome using multivariate analysis to account for confounding factors.

Indigenous children living in some regions were more likely to complete high school or higher than those in other regions. First Nations (55.0%) and Métis children (66.3%) living in the Prairies region, were less likely to have completed high school or higher by 2016 compared with those in Ontario (68.9% and 77.5%, respectively). Inuit children who were living in Inuit Nunangat (38.1%) were less likely to complete high school or higher education than those living outside Inuit Nunangat (66.5%). Among First Nations and Métis boys and girls, those who were older were almost twice as likely to have completed high school or greater education compared with younger ones. Among Inuit, older boys (56.5%) were more likely to complete high school or higher than younger ones (29.7%<sup>1</sup>), but this relationship was not seen among girls. In all three groups, children living in suitable housing (i.e., not in crowded housing), were more likely to complete high school or higher education than those in unsuitable housing. This was evident among both Métis and Inuit boys and girls, but only among First Nations boys. The suitability of the housing did not play a significant role in First Nations girls completing high school or higher education. First Nations and Métis children who lived in two-parent households were more likely to complete high school or greater education than those in lone-parent households, but this relationship was not seen among Inuit children.

Results of the logistic regression model show that age, household crowding, household income, and academic performance as children are associated with having completed high school or higher education. Older children had nearly three times higher odds (Odds ratio<sup>1</sup> or OR=2.75) than those who were younger to have completed high school or higher education. Indigenous boys who lived in unsuitable housing during childhood had nearly half the odds (OR=0.52) of completing high school or higher education than those who lived in suitable housing. While a trend towards increasing odds of high school completion or higher was seen with increasing household income, it was only among Indigenous girls that a significant result was observed. Those living in the third (OR=2.67) and fourth (OR=4.23) quartile of household income had about three and four times, respectively, higher odds of completing high school or higher education compared with those in first quartile of household income. Finally, perceived academic performance in childhood was predictive of high school completion or greater education. In fact, odds of completion increased with increasing academic performance. Boys whose performance was very good during childhood had twice the odds (OR=2.17) of completing high school or higher education than those whose performance was average. In contrast, girls whose performance was very poor or poor had 73% lower odds of completing this level of education than girls whose performance was average.

After adjusting for other childhood factors, region of residence, household type, familial residential school experience, prior attendance in an early childhood development program and ability to speak and/or understand an Indigenous language were not significantly associated with completion of high school or greater education.

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1. An odds ratio is the measure of association between a variable and an outcome (in this case, the completion of a high school diploma or equivalency certificate or higher level of education).

The findings of the study are in line with previous research and offer potential policy levers for developing programs and policies to increase the rates of high school completion or higher education among First Nations children living off reserve, Métis and Inuit children.

## Background

It is widely known that education is beneficial for one's life trajectory. High school completion, which is often a requirement for enrolling in postsecondary education, is an important stepping stone for improving educational outcomes. Improving the educational outcomes of Indigenous people will consequently improve social conditions as it has been demonstrated that educational attainment leads to better employment and income (Richards, 2014). While education is beneficial for all, the education system has long been limited to a Western perspective. There have been many calls to change school curricula across the country to better reflect the history of Indigenous peoples as well as calls for increased funding and investment specifically for Indigenous students (Gordon and White, 2014; TRC, 2015). It is therefore critical to gain a better understanding of the conditions that lead to high school completion or higher education among Indigenous peoples in order to design effective educational policies.

The completion of a high school diploma or its equivalency can be explained by various sociodemographic characteristics such as gender and age. Off-reserve First Nations girls are more likely than boys to be succeeding at school (Bougie, 2009). Similarly, on-reserve and in northern First Nations communities, females and youth aged 12 to 14 years old were more likely to have mostly A's on their last report card and good school attendance, when compared to males and older children (First Nations Information Governance Centre, 2020). According to data from the 2012 Indigenous Peoples Survey (IPS; formerly the Aboriginal Peoples Survey), Métis and Inuit women aged 18 to 44 were also more likely to be high school completers than their male counterparts (Arriagada, 2016). Educational attainment was also found to differ by Indigenous identity: 60% of First Nations people living off reserve, 68% of Métis and 38% of Inuit had completed a regular high school diploma according to 2017 IPS data (O'Donnell and Arriagada, 2019).

Furthermore, provincial and territorial differences must be taken into account as education is a provincial jurisdiction and multiple studies have found that there were differences in high school non-completion rates for Indigenous populations across provinces and territories (O'Donnell and Arriagada, 2019; Gordon and White, 2014).

Another characteristic that was found to be a critical factor for high school completion among Indigenous people is academic performance during childhood: Indigenous children who perform well at school continue to find educational success later on in life (Frenette, 2011).

It is also worth noting that many Indigenous students complete high school later in life through an equivalency program (Bougie et al., 2013; O'Donnell and Arriagada, 2019). According to the 2017 IPS, 10% of Indigenous adults aged 20 and older had completed an equivalency program whereas 63% had completed a high school diploma, indicating that a portion of the Indigenous population returns to school later in life to obtain high school credentials (O'Donnell and Arriagada, 2019). It was found that early parenthood was associated with both leaving school without a high school diploma as well as returning to school. Furthermore, Wilk, White and Guimond (2009) found that "Métis students continue to pursue post-secondary education into their late 30's" (p. 57).

For Indigenous and non-Indigenous children alike, family income has a strong association with educational attainment. Ferguson et al. (2007) provides a thorough summary of studies on household poverty and its "...large, pervasive and persistent influence over school achievement." Off-reserve First Nations children living in a higher income households had higher levels of perceived achievement at school (Bougie, 2009). However, although Indigenous children were more likely to be doing "very well or well" at school if living in a high-income household, they were less likely to be doing well at school if living in a large household (i.e., 6 people or more) (Bougie & Senécal, 2010). To end Indigenous child poverty, Macdonald and Wilson (2013) suggest that efforts should focus on the underlying causes: access to education and employment opportunities, training in entrepreneurship and ending racism.

In on-reserve and northern First Nations communities, parental level of education is a particularly strong predictor of a child's educational success. Children whose parents had university degrees had greater odds of having mostly

A's on their last report card, when compared to children whose parents had less than high school (First Nations Information Governance Centre, 2020). Having parents with post-secondary education was also significantly associated with lower absenteeism among Inuit children (Arim et al., 2016).

As shown in previous studies, having parents who attended a residential school is associated with lower perceived achievement at school (Bougie, 2009). Parental residential school attendance, mediated through certain household characteristics, appears to have a negative effect on children. Parents who attended residential schools were more likely to live in larger households with lower levels of income; this effect persists across generations and could be negatively associated with the educational attainment of children (Bougie & Sénécal, 2010). Furthermore, O'Donnell and Arriagada (2019) also found a larger proportion of Indigenous people with a high school diploma had no family history of residential school attendance compared to those who had one (71% vs. 57%). The impacts of residential schools on the educational attainment of Indigenous peoples must be understood through the intergenerational trauma that affected them whether they attended residential schools or not (TRC, 2015).

Some research has suggested that a curriculum which includes Indigenous history and customs is positively correlated with high school graduation (O'Gorman & Pandey, 2015). Other factors, such as the ability to speak an Indigenous language, may also play a role (Bougie & Sénécal, 2010). For children living in Inuit Nunangat, daily exposure to an Inuit language outside the home had a positive and statistically significant effect on educational success (Arim et al., 2016).

In contrast, Bougie et al. (2018) found that educational attainment was lower for those who spoke an Indigenous language, across all time periods examined, on and off reserve. Off reserve, those who spoke an Indigenous language made greater gains in educational attainment over time, compared to those who did not speak an Indigenous language; on reserve, Indigenous speakers made greater gains than non-speakers in terms of completion of any diploma, but did not show any difference in terms of postsecondary education. Also, the authors found that learning an Indigenous language in school may have more positive benefits for Inuit children because they are more likely to have learned the language before starting school (Bougie et al, 2018). Arim et al. (2016) found that "Inuit children with daily exposure to an Inuit language outside of their home were less likely to have repeated a grade" (p. 43). On the other hand, O'Gorman & Pandey (2015) found that being taught an Indigenous language was negatively correlated with high school graduation.

Considering the purpose of this study, it is important to look at how different authors explain how diverse Indigenous populations reach educational attainment. Qiu and Wu (2011) explain that in order to have a complete understanding of a student's academic performance, both the individual and the school's characteristics must be considered. The conceptual model introduced by Kyriakides (2006) came up with 4 levels to explain what they call 'educational effectiveness': the national level, the school level, the class level as well as the student level (Nilsen, Gustafsson & Blömeke, 2016). Another theory focuses on the interaction between financial and non-financial barriers to explain the impact on people's access to post-secondary education (Tian, 2012).

On the other hand, these models, while helpful to understand the complexity of educational attainment, do not take into account the reality and history of Indigenous peoples in Canada. Education is synonymous with trauma for a lot of Indigenous individuals as generations had to attend residential schools where they endured physical, psychological, sexual and spiritual abuse (Corrado and Cohen, 2003). As a result, Indigenous peoples may have a different rapport with schools, teachers and education compared to the non-Indigenous population. Therefore, our conceptual framework needs to acknowledge there is a different context surrounding education for Indigenous peoples and we cannot assume the previously discussed models can be applied in the same way to the Indigenous population. It is equally important to acknowledge that not all Indigenous individuals have had the same experiences, nor do they all respond the same way to traumatic experiences.

## Data and Methods

### Integrated Dataset

The 2006 Indigenous Peoples Survey<sup>2</sup> was integrated with the 2016 Census long-form data to build a longitudinal dataset to examine associations between characteristics and outcomes at two time points that are ten years apart. Respondents' names, date of birth and sex were used to link the two datasets using probabilistic linkage. Linking sample survey datasets is a novel approach to piecing together longitudinal data which involves conducting a record linkage between samples and re-weighting the linked records to ensure that they are representative of the target population. In this case, the target population was persons aged 6 years or older, living in private dwellings in Canada, excluding Indian settlements and Indian reserves, who identified as Indigenous or reported having Indigenous ancestry and who were still alive at the time of the 2016 Census of Population.

Combining these two sources of information allows one to identify the same individuals in the two surveys and, thus, it becomes possible to examine the association between the experiences of Indigenous children, youth and adults in 2006 and their outcomes in 2016 as young adults or older adults. The IPS and the Census are both rich sources of information that complement each other. For example, the 2006 IPS includes content on household income, health care utilization, learning among children and youth, residential school experiences of individuals, parents/guardians and participation in cultural activities, whereas the 2016 Census contains content on educational attainment, labour force participation and income.

### Sample and Population of Interest

The focus of this study was to examine the association between childhood factors and educational outcomes in early adulthood. As a result, the sample was restricted to those who were 8 to 14 years in 2006. These children could be reasonably expected to have completed high school in 2016 when they would be 18 to 24 years old, since the typical student graduates from high school when they are 18 years old. The population of interest was also limited to this age group for methodological reasons: the 2006 IPS data included respondents aged from 6 to 14 years old; thus, the oldest age that can be included is 14 years (24 years in 2016). Those aged 6 and 7 were excluded as these children were not expected to have completed high school by 2016 when they would have been 16 and 17.

The final analytical sample consisted of 2,275 First Nation children living off reserve, Métis and Inuit children and who were 18 to 24 years old in the 2016 Census.

### Measuring High School Completion

In 2007, the Canadian Council on Learning, in collaboration with First Nations, Métis and Inuit partners, developed the *Holistic Lifelong Learning Model*. This novel framework provides a conception of Indigenous learning as a holistic and lifelong process. Although “redefining success” within the context of Indigenous education has been examined in other publications, this important topic is out-of-scope for the current study, which is constrained by the design and contents of the 2006 Indigenous Peoples Survey, as well as the 2016 Census. The outcome that is examined in this study is “high school completion or higher”, as measured by the 2016 Census. Those who have not completed high school include individuals who are currently attending school and those who are not.

### Statistical Methods

In the first part of the results section, cross-tabulations between high school completion or higher and socio-demographic characteristics were produced to examine the correlations between them. Bootstrap weights that were specifically developed for this linked data were used to calculate variance estimates, which were then employed to conduct significance testing. In the second part of the results section, associations were examined after controlling for independent variables using logistic regression modeling.

$$(Y = \beta_0 + \beta_1 X_1 + \dots + \beta_p X_p + \text{residual})$$

2. Previously called “Aboriginal Peoples Survey.”

The adjusted model allows one to run all independent variables simultaneously in order to see if each independent variable is associated with high school completion or higher when controlling for all the remaining variables. The article presents the odd ratios (OR) of having completed a high school diploma or its equivalency or higher versus not having completed high school or its equivalency.

The selection of independent variables was informed by previous literature and conceptual models of high school completion and educational attainment mentioned earlier as well as by input from subject-matter experts including National Indigenous Organizations (NIOs). For regression analysis, all three Indigenous groups were combined in order to increase the sample size. The present study combines all Indigenous groups for methodological purposes only: it is important to recognize the heterogeneity of the Indigenous populations. Distinction-based research should always be encouraged but it was not possible in the present case.

### **Childhood factors:**

Some provinces and territories were grouped to increase cell sizes and get publishable results. Atlantic provinces were grouped into one category as were the Prairie provinces, and the Territories. To derive the variable for living inside a census agglomeration (CA) / census metropolitan area (CMA) or outside, areas that were strong, medium, weak or no metropolitan influenced zones (MIZ), were coded as “Outside CMA/CA” while the other areas were coded as “Inside CMA/CA.” For breakdowns by Indigenous identity, only those who identified with a single Indigenous group were included. As a result, those who identified with multiple Indigenous groups such as First Nations and Métis or Métis and Inuit were excluded. Data on parental education were not collected in the 2006 IPS; however, data on the highest level of education of the person most knowledgeable (PMK) about the child were collected. In this analysis, they were grouped into those with a high school diploma or equivalent or higher education and those without. Household types were categorized as those that were a lone-parent household and those in a two-parent household. Self-reported household income was used to generate household income quartiles by province and territory. Housing suitability, which is a measure of household crowding, indicates if the house has enough bedrooms for the size and make-up of resident households, according to National Occupancy Standard (NOS) requirements. For this analysis, “unsuitable housing” was defined as those dwellings that had a bedroom shortfall, and “suitable housing” were dwellings with no bedroom shortfall.

### **Academic characteristics:**

PMKs were asked to report school performance through this question “Based on your knowledge of his/her school work, including report cards, overall, how well is he/she doing at school this year?” and these response categories: Very good, Good, Average, Poorly, Very poorly. For this analysis, “Very poor” and “Poor” were combined into one category while the others were kept separate. PMKs were also asked about attendance in an early childhood development program (ECD) and whether it was an Indigenous or non-Indigenous program.

In order to measure family history of residential school experience, questions from the 2006 IPS which asked whether the child had a parent or a grandparent who attended “a federal residential school or a federal industrial school” were used. A variable was created with categories such as “at least one parent or at least one grandparent” and “neither parent nor grandparent” while the missing values were added as a third category considering many respondents may have refused to answer the questions due to their sensitive nature.

Other characteristics were considered initially but since they were not significantly associated with the outcome in bivariate analysis, they were excluded from the multivariate analysis. These included perceived school quality, frequency of participation in culturally-related activities, and frequency of spending time with Elders.

In order to ensure that the statistical model fits the data, some diagnostic tests were conducted including those to test for multicollinearity. Based on the literature, some independent variables in the model were expected to be correlated (for example, household income and household crowding). After testing for polychoric correlation, results showed that while there was indeed some correlation between certain variables (household income was correlated with crowding as well as household type), the correlation was not strong enough to make the model problematic and it was thus decided to keep the model as is.

## Results

### Study population:

According to the 2006 IPS, which covers First Nations people living off reserve, Métis and Inuit, 53.3% of Indigenous children aged 8 to 14 were First Nations, while 40.9% and 5.7% were Métis and Inuit, respectively<sup>3</sup> (Table 1). A large proportion of First Nations children lived in Ontario (27.9%), the Prairie provinces (33.8%) and British Columbia (21.1%). Métis children lived predominantly in the Prairies (51.6%) while the majority of Inuit children lived inside Inuit Nunangat<sup>4</sup> (77.3%), the traditional homeland of Inuit in Canada.

Next, the distributions of the total population of interest, as well as those with and without a high school diploma or equivalency certificate or higher education (referred to as “high school completion or higher” in the following text) by province and residence and inside a CMA/CA in 2006 were examined to see if there were any under- or over-representations. Although First Nations young adults represent 53.3% of the Indigenous population covered in the IPS, they are underrepresented among those with high school completion or higher (51.7%). Inuit are similarly underrepresented, as they make up 5.7% of the total covered Indigenous population, but only 3.8% of the population possess a high school diploma or higher education. On the other hand, Métis young adults, who represent 40.9% of the total population of interest, are overrepresented among those with a high school diploma or higher (44.5%).

Approximately 40% of Indigenous children lived in the Prairie provinces. However, these children only make up 36.1% of Indigenous children who completed high school or higher education by 2016, pointing to potential gaps in high school completion in these provinces. In contrast, 17.7% of Indigenous children lived in British Columbia, yet 21.4% of them had completed high school or higher education by 2016.

In addition, while just under two-thirds (63.2%) of the children lived inside a CMA/CA in 2006, just over two-thirds (66.2%) of those who lived in these agglomerations had completed high school or higher education by 2016 suggesting an over-representation among those living inside a CMA/CA.

3. Indigenous identity of the child reported in the 2006 IPS may be different than the one reported in the 2016 Census. For consistency purposes and due to methodological limitations, the Indigenous identity used in this analysis is the one reported in 2006.  
4. Further breakdowns by Inuit Nunangat region were not possible because of sample size limitations.



**Table 1**  
**Percentage of Indigenous children with and without a high school diploma or equivalency certificate or higher, by selected characteristics during childhood, 2016**

Characteristics <sup>1</sup>	Total	No high school diploma or equivalency certificate	With high school diploma or higher education
		percent	
<b>Indigenous identity</b>			
First Nations	53.3	56.6	51.7
Métis	40.9	33.9	44.5
Inuit	5.7	9.5	3.8
<b>Province or region of residence</b>			
Atlantic	5.9	6.2 <sup>E</sup>	5.8
Quebec	7.6	8.2	7.4
Ontario	23.0	19.4 <sup>E</sup>	24.8
Prairies	39.4	46.2	36.1
British Columbia	17.7	10.4 <sup>E</sup>	21.4
Territories	6.2	9.8	4.5
<b>Residence inside or outside CMA/CA</b>			
Inside CMA/CA	63.2	57.0	66.2
Outside CMA/CA	36.8	43.0	33.8
<b>Age (2006)</b>			
8 to 10 years	42.7	55.7	36.2
11 to 14 years	57.3	44.3	63.8
<b>Sex</b>			
Male	51.2	58.0	47.7
Female	48.8	42.0	52.3
<b>Housing suitability</b>			
Suitable	81.1	71.2	86.0
Not suitable	18.9	28.8	14.0
<b>Household type</b>			
Lone-parent household	35.9	42.9	32.4
Two-parent household	64.1	57.2	67.6
<b>PMK's completion of high school diploma or equivalency certificate</b>			
PMK has high school diploma or equivalency certificate	69.6	55.0	76.9
PMK does not have high school diploma or equivalency certificate	30.4	44.9	23.1
<b>Household total income quartiles</b>			
First quartile	25.0	33.4	20.7
Second quartile	25.0	29.5	22.7
Third quartile	25.3	22.3	26.7
Fourth quartile	24.8	14.8 <sup>E</sup>	29.8
<b>Familial residential school attendance</b>			
At least one parent OR at least one grandparent	22.4	27.6 <sup>E</sup>	19.9
Neither parent AND neither grandparent	64.0	56.7	67.6
Don't know/Refusal/Not stated	13.6	15.7	12.5
<b>Perceived academic performance<sup>2</sup></b>			
Very good	42.1	33.8	46.2
Good	30.0	30.6	29.8
Average	22.4	27.9	19.7
Very poor to poor	5.5	7.8 <sup>E</sup>	4.3
<b>Early childhood development program attendance</b>			
Did not attend an early childhood development program	40.0	44.6	37.7
Attended an Indigenous early childhood development program	13.3 <sup>E</sup>	19.3 <sup>E</sup>	10.3 <sup>E</sup>
Attended a non-Indigenous early childhood development program	46.7	36.1	52.0
<b>Ability to speak and/or understand an Indigenous language</b>			
Can speak and understand	16.7	25.1	12.4 <sup>E</sup>
Cannot speak but can understand	26.6	26.3 <sup>E</sup>	26.7
Can neither speak nor understand	56.7	48.6	60.9

<sup>E</sup> Use with caution

1. Characteristics during childhood are measured with the 2006 Indigenous Peoples Survey.

2. Child's academic performance are measured "as perceived" by the PMK. The child's academic performance is not based on collected report cards information.

Source: Integrated 2006 Indigenous Peoples Survey and 2016 Census.

## Age, caregiver's level of education, household income and academic performance are related to completing high school or higher education in all three Indigenous groups

At the national level, 64.7% of First Nations children living off reserve as well as 72.5% of Métis children had completed high school or higher education by 2016 (Table 3). For the Inuit population, it was 44.5%. Among First Nations children, the lowest percentage was observed in the Prairies provinces, where 55.0% had completed a secondary school or higher education. This was significantly lower than those in Ontario (68.9%), the province of reference in this analysis. The Prairie provinces was also the region where the lowest percentage of high school or higher education completion was observed among Métis children (66.3%). Among Inuit, two thirds (66.5%) of those living outside Inuit Nunangat had completed a high school diploma or its equivalency or higher compared to 38.1% for those who lived inside Inuit Nunangat.

As a first step towards examining association between childhood factors and high school completion or higher, bivariate relationships between the two were examined separately by Indigenous group. These factors were identified through a literature review, but analysis was limited to factors for which data were collected in the 2006 IPS.

Across the two age groups examined, a statistically significant difference was observed between the percentage of First Nations children aged 8 to 10 years (55.1%) and those aged 11 to 14 years (72.3%) in 2006 who went on to complete a high school or higher education by 2016. Among boys, 51.0% of those aged 8 to 10 years and 64.2% of those aged 11 to 14 years had completed high school or higher education whereas among girls, it was 59.1% and 81.6%, respectively (Table 2). Similar trends were seen among Métis boys and girls. However, among Inuit, this was true among boys, but among girls, the difference was not statistically significant (39.1% in the younger age group vs. 49.3% in the older age group).

Housing suitability was significantly correlated with completing high school or higher education but varied by sex among First Nations and Métis children. First Nations boys living in suitable housing (62.5%) were more likely to have completed high school or higher education than those in unsuitable housing (44.5%<sup>F</sup>). However, such a relationship did not exist among First Nations girls. Among Métis, both boys (71.9%) and girls (79.3%) in suitable housing were more likely to have completed high school or higher education than boys (52.5%<sup>F</sup>) and girls (58.1%) who did not live in such housing. This was also the case among Inuit. Boys (55.4%) and girls (52.9%) in suitable housing were more likely to complete high school or higher education than boys (28.9%<sup>F</sup>) and girls (35.6%) in unsuitable housing.

Household type was related to high school completion or higher but only among First Nations and Métis children and with some sex differences. First Nations children in two-parent households (68.3%) were more likely to complete high school or higher education than those in lone-parent households (59.2%). This was also the case for Métis children (76.5% vs. 63.4%). However, unlike First Nations children among whom no sex differences were seen, only Métis boys in two-parent families (74.5%) were more likely than their counterparts in lone-parent families (59.0%) to complete high school or higher education. No relationship between household type and high school completion emerged among Inuit (44.7% vs. 47.8%, respectively).

The educational attainment of a child's caregiver appeared to be an important determinant of high school completion or higher. Among First Nations children whose caregiver had a high school diploma or higher, 70.5% had obtained a high school diploma. This is compared to 50.0% of those whose caregiver did not have a high school diploma (Table 2). The same trend was observed for Métis (75.4% of those whose caregiver completed high school or higher had graduated high school vs. 55.6% for those whose caregiver did not complete high school or its equivalency) and Inuit (56.7% vs. 37.4%) children.

Another important correlate of high school completion was household income. A larger percentage of Indigenous children who lived in higher income households in 2006 had obtained a high school diploma or higher by 2016. Among First Nations children, a clear trend was observed across household income quartiles, as 53.9% in the first quartile, 61.6% in the second quartile, 73.6% in the third quartile, and 76.3% in the fourth quartile had obtained a high school diploma or higher. Furthermore, the differences between the first and third quartiles, as well as the first and fourth quartiles were statistically significant (Table 2). For Métis children, 63.7% of those in the first quartile had completed a high school diploma or its equivalency or higher compared to 86.0% for those who were in the fourth

quartile. Among Inuit, the trends appeared to be somewhat different. Those in the second (42.5%), third (48.6%) and fourth (58.3%) quartiles were more likely to complete high school or higher education than those in the first quartile (21.2%<sup>E</sup>) suggesting notably worse outcomes among those in the lowest quartile.

The data show that there is no correlation between high school completion or higher and familial residential school attendance. When looking at the impact of the latter, there were no significant differences in the percentage of First Nations, Métis and Inuit children who had obtained a high school diploma or higher education in 2016 between those who had at least one parent or grandparent who attended a residential school and those who had not.

Perceived academic performance, as reported by the child's caregiver, appears to have a strong relationship with high school completion or higher education for First Nations children living off reserve and Métis children. Among First Nations children whose perceived academic performance during childhood was "very good", 71.7% had obtained a high school diploma or its equivalency or higher in 2016 compared to 55.1% of those whose perceived academic performance was "average", a statistically significant difference (Table 2). Similarly for Métis children, 78.1% of those whose perceived academic performance was 'very good' had a high school diploma or its equivalency or higher education while it was the case for 66.0% of those with an 'average' perceived academic performance. Perceived academic performance during childhood of Inuit did not appear to have an impact on their educational attainment.

Among First Nations boys, there was a statistically significant difference in the likelihood of completing high school or higher in young adulthood between those who did not attend an early childhood development (ECD) program (50.8%) and those who attended a non-Indigenous ECD program (68.3%) (Table 2). Among Métis children, 67.6% of those who did not attend an ECD program had obtained a high school diploma or greater education which was significantly less than those who attended a non-Indigenous ECD program (77.9%). For Métis girls, but not boys, there was a statistically significant difference (66.8% vs. 83.7%) between those who did not attend an ECD program compared with those who attended a non-Indigenous program (Table 3). There was no impact of early childhood development program attendance on Inuit children's high school completion or higher education.

Furthermore, knowing an Indigenous language also appears to be correlated with high school completion or higher education among Métis and Inuit. For Métis girls, 44.7%<sup>E</sup> of those who could both speak and understand an Indigenous language had a high school or higher education compared to 78.3% for those who could neither speak nor understand an Indigenous language. This trend was not observed for Métis boys. Speaking or understanding an Indigenous language also was related to educational attainment of Inuit children: 40.3% of those who can speak and understand an Indigenous language completed high school or its equivalency or higher whereas it was 73.8%<sup>E</sup> for those who can neither speak nor understand.

Other socioeconomic and demographic characteristics considered here were not significantly correlated with completion of high school or higher education for First Nations children living off reserve, Métis and Inuit children. These included living inside or outside a CMA/CA, household type, ability to speak and/or understand an Indigenous language (Tables 2-4), perceived school quality, frequency of participation in culturally-related activities and frequency of spending time with Elders (data not shown).

**Table 2**  
**Percentage of First Nations children who completed a high school education or higher, by sex and selected characteristics during childhood, 2016**

Characteristics <sup>1</sup>	Total	Male	Female
		percent	
<b>Province or region of residence</b>			
Canada	64.7	58.6	71.0
Atlantic	56.5 <sup>E</sup>	F	71.1 <sup>E</sup>
Quebec	61.0 <sup>E</sup>	F	72.4
Ontario (ref.)	68.9	65.7	72.8 <sup>E</sup>
Prairies	55.0*	50.3	60.1
British Columbia	79.6	72.8	84.7
Territories	57.8	51.9 <sup>E</sup>	65.6
<b>Residence inside or outside CMA/CA</b>			
Inside CMA/CA (ref.)	67.3	61.6	72.5
Outside CMA/CA	59.0	53.2	67.0
<b>Age (2006)</b>			
8 to 10 years (ref.)	55.1	51.0	59.1
11 to 14 years	72.3*	64.2*	81.6*
<b>Housing suitability</b>			
Suitable (ref.)	68.2	62.5	73.9
Not suitable	49.6*	44.5 <sup>E*</sup>	56.7 <sup>E</sup>
<b>Household type</b>			
Lone-parent household	59.2*	53.6	65.3
Two-parent household (ref.)	68.3	62.7	74.1
<b>PMK's completion of high school diploma or equivalency certificate</b>			
PMK has high school diploma or equivalency certificate (ref.)	70.5	65.0	76.1
PMK does not have high school diploma or equivalency certificate	50.0*	44.0 <sup>E*</sup>	57.2 <sup>E</sup>
<b>Household total income quartiles</b>			
First quartile (ref.)	53.9	50.3 <sup>E</sup>	57.6
Second quartile	61.6	58.2	65.6
Third quartile	73.6*	62.7	83.4*
Fourth quartile	76.3*	68.3	84.3*
<b>Familial residential school attendance</b>			
At least one parent OR at least one grandparent	56.7	50.6 <sup>E</sup>	62.4
Neither parent AND neither grandparent (ref.)	69.8	64.6	75.5
Don't know/Refusal/Not stated	62.2	52.8	74.2
<b>Perceived academic performance<sup>2</sup></b>			
Very good	71.7*	72.2*	71.3
Good	64.8	58.9	70.1
Average (ref.)	55.1	44.3 <sup>E</sup>	73.3
Very poor to poor	47.8 <sup>E</sup>	46.2 <sup>E</sup>	F
<b>Early childhood development program attendance</b>			
Did not attend an early childhood development program (ref.)	61.0	50.8	70.9
Attended an Indigenous early childhood development program	52.0	47.3 <sup>E</sup>	F
Attended a non-Indigenous early childhood development program	72.4	68.3*	77.0
<b>Ability to speak and/or understand an Indigenous language</b>			
Can speak and understand	53.7	49.6 <sup>E</sup>	59.0
Cannot speak but can understand	64.8	57.8 <sup>E</sup>	71.4
Can neither speak nor understand (ref.)	67.3	61.0	73.8

<sup>E</sup> Use with caution

F Too unreliable to be published

\* Significantly different from reference group (ref.) ( $p < 0.05$ )

1. Characteristics during childhood are measured with the 2006 Indigenous Peoples Survey.

2. Child's academic performance are measured "as perceived" by the PMK. The child's academic performance is not based on collected report cards information.

Source: Integrated 2006 Indigenous Peoples Survey and 2016 Census.

**Table 3**  
**Percentage of Métis children who completed a high school education or higher, by sex and selected characteristics during childhood, 2016**

Characteristics <sup>1</sup>	Total	Male percent	Female
<b>Province or region of residence</b>			
Canada	72.5	69.5	75.5
Atlantic	79.7	76.0	F
Quebec	78.8	82.7	74.1
Ontario (ref.)	77.5	78.1	77.0
Prairies	66.3*	62.8	70.4
British Columbia	81.7	77.5	87.0
Territories	65.6	F	F
<b>Residence inside or outside CMA/CA</b>			
Inside CMA/CA (ref.)	74.2	71.7	76.6
Outside CMA/CA	69.5	65.7	73.4
<b>Age (2006)</b>			
8 to 10 years (ref.)	62.1	59.3	65.1
11 to 14 years	79.4*	76.7*	82.2*
<b>Housing suitability</b>			
Suitable (ref.)	75.4	71.9	79.3
Not suitable	55.8*	52.5 <sup>E*</sup>	58.1*
<b>Household type</b>			
Lone-parent household	63.4*	59.0*	68.4
Two-parent household (ref.)	76.5	74.5	78.5
<b>PMK's completion of high school diploma or equivalency certificate</b>			
PMK has high school diploma or equivalency certificate (ref.)	78.4	74.9	81.9
PMK does not have high school diploma or equivalency certificate	55.6*	55.8*	55.2*
<b>Household total income quartiles</b>			
First quartile (ref.)	63.7	64.9	62.1 <sup>E</sup>
Second quartile	63.1	60.2	65.3
Third quartile	70.3	64.4	76.3
Fourth quartile	86.0*	82.9	89.5*
<b>Familial residential school attendance</b>			
At least one parent OR at least one grandparent	76.9	75.2	78.7
Neither parent AND neither grandparent (ref.)	72.9	69.8	76.4
Don't know/Refusal/Not stated	65.2	F	68.6
<b>Perceived academic performance<sup>2</sup></b>			
Very good	78.1*	72.2	82.7*
Good	70.8	65.5	75.6
Average (ref.)	66.0	68.3	61.7
Very poor to poor	70.4	77.8	F
<b>Early childhood development program attendance</b>			
Did not attend an early childhood development program (ref.)	67.6	68.4	66.8
Attended an Indigenous early childhood development program	60.9	F	70.8
Attended a non-Indigenous early childhood development program	77.9*	72.6	83.7*
<b>Ability to speak and/or understand an Indigenous language</b>			
Can speak and understand	49.1*	53.3 <sup>E</sup>	44.7 <sup>E*</sup>
Cannot speak but can understand	73.4	73.3	73.4
Can neither speak nor understand (ref.)	74.4	70.8	78.3

<sup>E</sup> Use with caution

F Too unreliable to be published

\* Significantly different from reference group (ref.) ( $p < 0.05$ )

1. Characteristics during childhood are measured with the 2006 Indigenous Peoples Survey.

2. Child's academic performance are measured "as perceived" by the PMK. The child's academic performance is not based on collected report cards information.

Source: Integrated 2006 Indigenous Peoples Survey and 2016 Census.

**Table 4**  
**Percentage of Inuit children who completed a high school education or higher, by sex and selected characteristics during childhood, 2016**

Characteristics <sup>1</sup>	Total	Male	Female
		percent	
<b>Residence inside or outside Inuit Nunangat</b>			
Canada	44.5	44.0	44.9
Inside Inuit Nunangat (ref.)	38.1	38.7	37.6
Outside Inuit Nunangat	66.5*	65.4*	67.4 <sup>E*</sup>
<b>Residence inside or outside CMA/CA</b>			
Inside CMA/CA (ref.)	50.0 <sup>E</sup>	F	F
Outside CMA/CA	43.7	44.0	43.8
<b>Age (2006)</b>			
8 to 10 years (ref.)	34.2	29.7 <sup>E</sup>	39.1
11 to 14 years	52.9*	56.5*	49.3
<b>Housing suitability</b>			
Suitable (ref.)	54.2	55.4	52.9
Not suitable	32.4*	28.9 <sup>E*</sup>	35.6*
<b>Household type</b>			
Lone-parent household	44.1	F	47.8
Two-parent household (ref.)	45.0	45.4	44.7
<b>PMK's completion of high school diploma or equivalency certificate</b>			
PMK has high school diploma or equivalency certificate (ref.)	56.7	51.9	61.6
PMK does not have high school diploma or equivalency certificate	37.4*	40.3	34.8*
<b>Household total income quartiles</b>			
First quartile (ref.)	21.2 <sup>E</sup>	F	F
Second quartile	42.5*	37.6	46.3*
Third quartile	48.6*	50.0*	45.6 <sup>E*</sup>
Fourth quartile	58.3*	59.0*	F*
<b>Familial residential school attendance</b>			
At least one parent OR at least one grandparent	44.1	42.1	45.9 <sup>E</sup>
Neither parent AND neither grandparent (ref.)	46.0	48.3	44.4
Don't know/Refusal/Not stated	42.2	40.3	45.5 <sup>E</sup>
<b>Perceived academic performance<sup>2</sup></b>			
Very good	47.1	46.2	47.9
Good	44.4	46.8	42.2 <sup>E</sup>
Average (ref.)	46.1	46.2	45.1 <sup>E</sup>
Very poor to poor	F	F	F
<b>Early childhood development program attendance</b>			
Did not attend an early childhood development program (ref.)	48.7	45.7	52.5
Attended an Indigenous early childhood development program	39.8	37.7 <sup>E</sup>	42.3
Attended a non-Indigenous early childhood development program	48.2	53.8 <sup>E</sup>	F
<b>Ability to speak and/or understand an Indigenous language</b>			
Can speak and understand	40.3*	41.0	39.5*
Cannot speak but can understand	F	F	F
Can neither speak nor understand (ref.)	73.8 <sup>E</sup>	66.7 <sup>E</sup>	F

<sup>E</sup> Use with caution

F Too unreliable to be published

\* Significantly different from reference group (ref.) (p < 0.05)

1. Characteristics during childhood are measured with the 2006 Indigenous Peoples Survey.

2. Child's academic performance are measured "as perceived" by the PMK. The child's academic performance is not based on collected report cards information.

Source: Integrated 2006 Indigenous Peoples Survey and 2016 Census.

## **After adjusting for other factors, older children, those living in suitable housing, in richer households and those who had performed better in school during childhood had greater odds of completing high school or higher education, but this varied by sex**

While bivariate analysis enables the examination of correlations between the outcome and each independent variable individually, it is important to examine associations when controlling for all the other variables of the model. To this end, multivariate analysis was undertaken, the results of which are presented in Table 5. In order to increase the sample size required for this analysis, the three Indigenous groups were combined.

After adjusting for other factors, among Indigenous children, their region of residence was not found to be significantly associated with whether individuals had completed a high school education or higher or not.

Indigenous children who were 11 to 14 years old had significantly greater odds (OR=2.75) of having completed high school or higher 10 years later, compared to those aged 8 to 10 years. These results demonstrate age has one of the strongest associations with high school completion or higher among the selected characteristics that were examined. This finding confirms observations from previous studies that suggest some Indigenous students tend to complete high school later in life through an equivalency program (Bougie et al., 2013). In addition, the association appears to be stronger among girls than boys, as girls aged 11 to 14 had greater odds (OR=3.74) of having obtained a high school diploma or higher compared to those aged 8 to 10 years. In comparison, older boys had 2.21 times higher odds of completing high school or higher education than younger boys.

Indigenous children living in unsuitable housing had 46% lower odds of high school completion or higher education than those living in suitable housing. This was similar among boys and girls, but the association was significant only among boys (OR=0.52) and not among girls (OR=0.56,  $p=0.0596$ ). Also, in contrast to bivariate findings which indicated that caregiver's level of education was related to high school completion or higher in all three groups, no significant association emerged between caregiver's level of education and the educational outcome among both boys (OR=0.60;  $p=0.0863$ ) and girls (OR=0.44;  $p=0.099$ ).

Household income as seen in bivariate analyses was significantly associated with the outcome. Indigenous children who were in the third (OR=1.79) and fourth (OR=2.56) household income quartiles during childhood had significantly greater odds of having obtained a high school diploma or higher, compared to those in the first household income quartile. The association was significant for Indigenous girls: those who were in the third (OR=2.67) and fourth (OR=4.23) household income quartiles had about three or four times greater odds of having obtained a high school diploma or higher than those in the first household income quartile.

Perceived academic performance during childhood was another important factor that was associated with high school completion or higher education. Among Indigenous children, those whose caregiver rated their academic performance as "very good" had double the odds (OR=2.03) of having obtained a high school diploma or higher compared to those whose caregivers rated their child's academic performance as "average". In fact, odds of high school completion or higher appeared to increase with academic performance. This trend was observed among boys and girls. For girls, academic performance rated as "poor or very poor" by the caregiver appeared to decrease the odds (OR=0.27) of completing high school or higher education.

No significant association was evident between attendance in an ECD program or familial residential school experience, and high school completion or higher.

**Table 5**  
**Adjusted odds ratios (stratified by sex) of Indigenous children who completed a high school education or higher, by selected characteristics during childhood, 2016**

Characteristics <sup>1</sup>	Total	Male	Female
	Odds ratio		
<b>Province or region of residence</b>			
Atlantic	0.68	0.61	0.73
Quebec	0.89	0.91	0.77
Ontario (ref.)	1.00	1.00	1.00
Prairies	0.69	0.76	0.60
British Columbia	1.67	1.40	2.00
Territories	0.70	0.95	0.44
<b>Residence inside or outside CMA/CA</b>			
Inside CMA/CA (ref.)	1.00	1.00	1.00
Outside CMA/CA	0.75	0.71	0.87
<b>Age (2006)</b>			
8 to 10 years (ref.)	1.00	1.00	1.00
11 to 14 years	2.75*	2.21*	3.74*
<b>Housing suitability</b>			
Suitable (ref.)	1.00	1.00	1.00
Not suitable	0.54*	0.52*	0.56
<b>Household type</b>			
Lone-parent household	0.92	0.81	1.04
Two-parent household (ref.)	1.00	1.00	1.00
<b>PMK's completion of high school diploma or equivalency certificate</b>			
PMK has high school diploma or equivalency certificate (ref.)	1.00	1.00	1.00
PMK does not have high school diploma or equivalency certificate	0.53	0.60	0.44
<b>Household total income quartiles</b>			
First quartile (ref.)	1.00	1.00	1.00
Second quartile	1.28	1.23	1.32
Third quartile	1.79*	1.27	2.67*
Fourth quartile	2.56*	1.78	4.23*
<b>Familial residential school attendance</b>			
At least one parent OR at least one grandparent	0.76	0.70	0.83
Neither parent AND neither grandparent (ref.)	1.00	1.00	1.00
Don't know/Refusal/Not stated	0.88	0.75	1.02
<b>Perceived academic performance<sup>2</sup></b>			
Very good	2.03*	2.11*	1.66
Good	1.25	1.16	1.16
Average (ref.)	1.00	1.00	1.00
Very poor to poor	0.55	0.71	0.27*
<b>Early childhood development program attendance</b>			
Did not attend an early childhood development program (ref.)	1.00	1.00	1.00
Attended an Indigenous early childhood development program	1.00	0.90	1.00
Attended a non-Indigenous early childhood development program	1.36	1.34	1.33
<b>Ability to speak and/or understand an Indigenous language</b>			
Can speak and understand	0.80	0.83	0.76
Cannot speak but can understand	1.14	1.06	1.24
Can neither speak nor understand (ref.)	1.00	1.00	1.00

\* Significantly different from reference category (ref.) (p < 0.05)

1. Characteristics during childhood are measured with the 2006 Indigenous Peoples Survey.

2. The child's academic performance is measured "as perceived" by the PMK. The child's academic performance is not measured directly with school-level and report cards information.

Source: 2006 Indigenous Peoples Survey Linked to the 2016 Census.



## Discussion

The aim of this study was to identify childhood factors that are associated with completion of high school or higher education among First Nations children living off reserve, and Métis and Inuit children using a novel linked dataset linking the 2006 IPS and Census 2016 long-form datasets. Results from the logistic regression model show that multiple factors are associated with high school completion or higher education. These include the age of the child, household crowding, income and the perceived academic performance of the child.

Results show that Indigenous children aged 11 to 14 years old (aged 21 to 24 in 2016) have much greater odds of having completed high school or higher education in young adulthood than those aged 8 to 10. These findings are aligned with the literature which suggest that Indigenous people do not all have a direct path to high school completion: some may leave school temporarily, but eventually return and complete the requirements for a high school diploma through an equivalency program (Bougie et al., 2013).

While both boys and girls of older age were more likely to complete high school or higher, the association appeared to be more pronounced among girls when compared with boys. This finding could be explained by the fact that younger mothers tend to leave high school without completing their degree but also tend to return to school at a later time (O'Donnell and Arriagada, 2019). The various responsibilities associated with caring for children makes it a challenge to pursue an education. While equivalency programs such as the General Educational Development (GED) test, and courses such as Adult Basic Education (ABE) as well as the Academic and Career Entrance (ACE) certificate are offered by academic institutions to allow people to return to school, these programs and courses can vary by province and territory (O'Donnell and Arriagada, 2019).

Future research could measure the accessibility of such programs and courses for young Indigenous parents. Prevalence among off-reserve Indigenous adults, aged 20 and over, upgrading or completing a high school equivalency program was significantly higher among those who became parents during their teenage years, with almost one in five individuals choosing this path (O'Donnell and Arriagada, 2019). Further analysis could explore to what extent early motherhood plays a role in delaying high school completion and whether a similar phenomenon exists for teenage fathers.

Another household characteristic that was found to be significantly associated with educational attainment was housing suitability or crowding. Results demonstrate that Indigenous children in unsuitable housing had lower odds of completing high school or higher education compared to those who live in a non-crowded household. The association was significant among boys but not girls. A previous study has shown that the impact of crowding is significant only for those aged 15 to 18 and a potential cause could be due to older children “being forced to take on more adult responsibilities, such as childcare, which can limit their ability to study” (Lopoo and London, 2016, p. 718). The current model does not allow one to verify this hypothesis as the sample did not include children older than 14. A recent report published by the Congress of Aboriginal Peoples found that housing suitability was not a significant factor regarding high school completion, but it did have a positive influence on school attendance (CAP, 2021). Since this report was using cross-sectional data, further research could explore the impacts of living in a suitable household using longitudinal data as one's housing situation can change over time.

Educational attainment of the child's caregiver was not significantly associated with high school completion or higher. Previously, the role of parental education has been shown to be important, even after taking into account parental income (St-Denis and Renée, 2022). However, because the association was not examined by sex or gender or by different population groups, it was not clear if this relationship would also be seen among Indigenous and other population groups. Other studies have suggested that the relationship between parental education and children's educational achievement varies by population group (David-Kean, 2005). In the European American sample, parents' education had both direct and indirect effect on children's achievement while it had only an indirect effect in the African-American sample. The indirect effects are mediated by provision of warm parent-child interaction in the home and the amount of reading by the child along with the number of books in the home. Whether the role of parental education is indirect in the case of Indigenous children remains to be investigated.

Household income during childhood is another strong determinant of high school completion or higher education. Results of the logistic regression show that Indigenous children that were in the third and fourth quartile of household income have greater odds of completing high school or higher than children in the first quartile. When examined

by sex, an association was only apparent among girls despite a trend of increasing odds with increasing income in both sexes. The impact of household income found in the results are aligned with past findings that “family income and socioeconomic status is related to educational success of children” (FNIGC, 2020, p. 8). More specifically, it has been found that “poverty decreases a child’s readiness for school through aspects of health, home life, schooling and neighbourhoods” (Ferguson et al., 2007, p. 701). More analysis should be done to explore why the household income is associated with high school completion or higher among Indigenous girls but not their male counterparts after adjusting for other factors. Previous studies examining the relative role of parental income and parental education suggest that income has a statistically significant association with children’s education after accounting for parental education. However, the association was not examined by sex or gender or by different population groups. This study, thus, adds to the growing literature in this field.

The Truth and Reconciliation Commission’s final report (2015) recognizes that residential schools have had lasting and far-reaching effects on survivors and their children. The devastating legacy of residential schools “...has led to the chronic unemployment or under-employment, poverty, poor housing, substance abuse, family violence, and ill health that many former students of the schools have suffered as adults” (p. 145). In the current study, a lack of association between familial residential school attendance and education completion was observed. The logistic regression model does suggest that Indigenous young adults with at least one parent or grandparent who attended a residential school had smaller odds of completing high school or higher (OR=0.76), which is in line with the literature, but this finding was not statistically significant. Further analysis is required to better understand the interactions between familial residential school attendance and other characteristics, such as household size and household income.

Perceived academic performance as a child continued to be significantly associated with completion of high school or higher education even after considering household income, housing suitability and age, which is a significant finding. It also displayed a strong dose-response relationship with better rating of academic performance resulting in increasing odds of high school completion or higher education in both girls and boys.

The ability to speak and/or understand an Indigenous language was not associated with high school completion or higher education. A multivariate model of all three Indigenous groups suggests that Indigenous young adults who could speak and understand an Indigenous language during childhood had smaller odds (OR=0.80) of having obtained a high school diploma or higher, when compared to those who could neither speak nor understand an Indigenous language. However, this finding was not statistically significant. The association between knowledge of an Indigenous language and educational outcomes may be changing over time, as different cohorts of Indigenous speakers are progressing through life while important social and cultural changes are taking place (Bougie et al., 2018). Further analysis on the impact of Indigenous languages is required.

## Strengths and limitations of the study

The linked dataset is a longitudinal dataset which integrates data collected at two time points. As a result, it offers the potential to examine association between factors that existed during childhood and outcomes that occur during young adulthood in the population of First Nations children living off reserve, Métis and Inuit children without the limitations of long-term recall bias. Further, the large representative sample allows for examination of rates and factors in many subpopulations based on gender, geographic areas, age group, household income, etc. and enable estimation of rates and outcomes that are representative of the 2006 IPS target population. Validation analysis suggests that it is not only representative of the 2006 Indigenous population represented by the 2006 IPS sample but also the 2016 Indigenous population based on the distribution of socioeconomic characteristics (forthcoming publication).

It also allows one to take advantage of the rich data collected in the post-censal IPS including school performance, familial residential school attendance and knowledge of an Indigenous language. Some of these data are not usually collected in other social surveys at Statistics Canada. Specifically, in this study, the use of multivariate analysis allows one to examine the association of childhood factors while taking into account other potential confounding factors.

However, some of the limitations of the data and the analysis need to be acknowledged. Since the dataset was created by linking two datasets, some records may not have linked or may have incorrectly linked. Even though

new weights were designed to consider the linkage rates, non-links may have reduced the representative nature. Also, even though it is a longitudinal dataset, no causality can be ascribed based on the findings. Furthermore, the inclusion of the educational attainment of both parents in multivariate analysis has been shown previously to be important. However, in the 2006 IPS, only data on the person most knowledgeable about the child were collected. As a result, the role of both caregivers' education could not be examined.

In addition, response mobility related to identity, or the change in the Indigenous group that individuals identify with from one survey to another may have impacted analysis and interpretation. Furthermore, comparison with the non-Indigenous population was impossible considering the data source for the population of interest was the IPS which does not cover non-Indigenous individuals. Finally, those not enumerated by the Census or IPS are excluded. These include those not living in private households at the time of the Census including those in hospitals, nursing homes, retirement homes and prisons as well as those experiencing homelessness. Bias may exist if those covered in the surveys are systematically different than those not covered; if people who do not respond to surveys (or those who are more difficult to reach) share common characteristics, results will not account for these people hence the bias. In addition, in urban areas, Indigenous people have been suggested to be undercounted (Rotondi, O'Brien et al., 2017). The coverage gaps in the two surveys (2006 IPS and the 2016 Census) may have also compounded the undercoverage rates.

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