



October 2018

## Indigenous Language Knowledge and Educational Attainment Among First Nations People: Trends Over Time

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### Recommended Citation

Bougie, E. , Kohen, D. , Guèvremont, A. (2018). Indigenous Language Knowledge and Educational Attainment Among First Nations People: Trends Over Time. *The International Indigenous Policy Journal*, 9(4) . Retrieved from: <https://ir.lib.uwo.ca/iipj/vol9/iss4/3>  
**DOI:** 10.18584/iipj.2018.9.4.3

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# Indigenous Language Knowledge and Educational Attainment Among First Nations People: Trends Over Time

## **Abstract**

This study investigated whether associations between Indigenous language knowledge and educational outcomes might be changing for cohorts of language speakers over time. Using Census and National Household Survey data, educational attainment for First Nations people aged 20 to 34 was examined at four time points (1996, 2001, 2006, and 2011), separately for those able versus unable to speak an Indigenous language and separately for those living on and off reserve. Findings point to improvements in levels of education for Indigenous language speakers among First Nations people living on and off reserve. Findings should be interpreted with caution as differences in educational attainment may reflect differences between language speakers and non-speakers that go beyond the ability to speak an Indigenous language.

## **Keywords**

First Nations, Indigenous language, educational attainment, Census, National Household Survey

## **Acknowledgments**

This study was funded by Crown–Indigenous Relations and Northern Affairs (CIRNA), formerly known as Indigenous and Northern Affairs Canada (INAC). The authors would like to thank Rubab Arim and Leanne Findlay for their comments on early versions of the manuscript.

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## Indigenous Language Knowledge and Educational Attainment among First Nations People Aged 20 to 34: Trends Over Time

In 2016, about 1 in 5 (21%) First Nations<sup>1</sup> people in Canada reported that they were able to conduct a conversation in an Indigenous language (Statistics Canada, 2017a). The proportion of First Nations people able to converse in an Indigenous language was higher among those with Registered Indian status (27%) than among those without Registered Indian status (2%); this proportion was highest among First Nations people with Registered Indian status living on reserve (45%). Many Indigenous people are learning Indigenous languages as a second language; indeed, the proportion of First Nations people able to speak an Indigenous language surpassed the proportion reporting an Indigenous mother tongue, especially among younger First Nations people (Statistics Canada, 2017a).

Indigenous languages are seen as an indicator of cultural continuity (Hallett, Chandler, & Lalonde, 2007), and learning one's Indigenous language has been associated with many positive outcomes among Indigenous children and youth, including better identity and self-esteem (Bougie, Wright, & Taylor, 2003; Wright & Taylor, 1995) and higher grades and school attendance (Guèvremont & Kohen, 2012, 2017a; Hallett, 2005). There is a significant body of research demonstrating the advantages of school programs (e.g., immersion programs) that include Indigenous languages and cultures on educational outcomes (Bell et al., 2004; Fulford, Daigle, Stevenson, & Wade, 2007; Louis & Taylor, 2001; Wright & Taylor, 1995), including literacy (Rosier & Holm, 1980) and numeracy (New Zealand Ministry of Education, 2016; Romero-Little & McCarty, 2006; Rosier & Holm, 1980).

Although Indigenous language knowledge has been associated with positive school outcomes for children and youth (Guèvremont & Kohen, 2012, 2017a), similar positive results have not been typically found for adults, particularly when examining population-based survey data sources. For instance, among adults, Indigenous language knowledge has been associated with both a lower likelihood of high school graduation (Guèvremont & Kohen, 2012; Hull, 2015; Lamb, 2014; O'Gorman & Pandey, 2015) and a lower likelihood of obtaining postsecondary education (Brade, Duncan, & Sokal, 2003; Hull, 2015).

Guèvremont and Kohen (2017b) explored potential reasons for the difference in associations of Indigenous language knowledge and education outcomes for children compared to adults in a representative sample of off-reserve First Nations aged 17 to 25 years. They found no association between Indigenous language knowledge and high school completion among their sample of off-reserve First Nations people, after accounting for important confounding variables, such as ever having attended school on a reserve, parental education, and family residential school attendance. Yet, results from this study were not in line with past research that demonstrated positive relationships for Indigenous language knowledge and education in off-reserve First Nations children (Guèvremont & Kohen, 2012, 2017a) and negative relationships among off-reserve First Nations adults (Guèvremont & Kohen, 2012).

One potential explanation for this differential association of language and education among children and adults may be that the association between Indigenous language knowledge and school outcomes is

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<sup>1</sup> Throughout this article, the term *First Nations* is used when Statistics Canada data are used for individuals who self-identified as *North American Indian or First Nations (North American Indian)*.

changing over time for different cohorts of Indigenous language speakers because each group was born at a different time and was therefore exposed to different demographic, educational, and societal influences. Using data from the 2001 Aboriginal Peoples Survey, adults who spoke an Indigenous language were less likely to have completed high school, even after controlling for socio-economic factors (Guèvremont & Kohen, 2012). However, using data from the 2012 Aboriginal Peoples Survey, and also controlling for socio-economic factors, there was no difference in educational outcomes for adult speakers and non-speakers (Guèvremont & Kohen, 2017b). These studies suggest that the nature of the association between Indigenous language knowledge and school outcomes may be changing for different cohorts over time.

There are several reasons why the association of Indigenous language knowledge with school outcomes may be changing over time. Significant developments in the late 1990s may have led to a shift in the association between educational attainment and Indigenous language knowledge; these include the release of the *Report of the Royal Commission on Aboriginal Peoples* in November 1996 (Royal Commission on Aboriginal Peoples, 1996), the federal government's response to the Report in 1997 (Indian Affairs and Northern Development, 1997), and the creation of a 4-year Indigenous languages initiative in June 1998<sup>2</sup> (Department of Canadian Heritage, 2003). The Royal Commission on Aboriginal Peoples recognized that the revitalization of traditional Indigenous languages was a key component in the creation of healthy individuals and communities; this recognition may have increased the perception of the importance of Indigenous languages and cultures among both the Indigenous and the general Canadian population.

Moreover, there is evidence that the proportion of First Nations people learning an Indigenous language as a second language is increasing over time (Norris, 2007). The gradual introduction of more second-language learners into the group of individuals with Indigenous language knowledge may contribute to a change in the group's overall profile over time, both in terms of socioeconomic characteristics and in terms of sense of cultural continuity, esteem, and identity.

Since data for those living on reserve are missing from several survey-based studies, fewer population-based studies have examined the associations between Indigenous language knowledge and education outcomes for Indigenous people living on reserve. It is important to examine the on- and off-reserve populations separately, especially since Indigenous language knowledge and educational outcomes are notably different for Indigenous people living on and off reserve. For instance, the proportion of people reporting knowledge of an Indigenous language is higher for First Nations people living on reserve (Norris, 2006; Statistics Canada, 2017a), while the proportion with postsecondary qualifications is higher for First Nations people living off reserve (Statistics Canada, 2017b). In a study using the 2011 National Household Survey, Hull (2015) showed that both on and off reserve the proportion who attained high school and postsecondary levels of education was lower among those who spoke an Indigenous language at home relative to those who did not. To our knowledge, no research to date has examined the relationship between Indigenous language knowledge and education outcomes over several time periods to examine whether the education gap between Indigenous language speakers and

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<sup>2</sup> Announced by the Minister of Canadian Heritage on June 19, 1998, this initiative provided funding to community projects with the objective of emphasizing language acquisition and retention in the home.

non-speakers is changing over time, and whether this relationship is changing in a similar way for First Nations people living on and off reserve.

In light of this, the goal of the present study was to describe, over four time periods, the educational attainment for First Nations people aged 20 to 34 who reported being able and those reporting being unable to speak an Indigenous language. This age group was chosen because it corresponded to the one used in past research (Guèvremont & Kohen, 2012) and because it allowed adequate time for individuals to complete a diploma. Using three cycles of the Census of the Population (1996, 2001, and 2006) and the 2011 National Household Survey, our research questions were as follows: (a) Is there an association between Indigenous language knowledge and educational attainment among First Nations people aged 20 to 34? (b) Is the association between Indigenous language knowledge and educational attainment changing over time? And (c) Is the association between Indigenous language knowledge and educational attainment different for First Nations people living on and those living off reserve?

## Methods

### Data

The data used were from the 1996, 2001, and 2006 Census (long form) and the 2011 National Household Survey (NHS). Several factors should be taken into account when data on Indigenous people are compared over time, including differences in methodology in the NHS, changes to the wording and format of the questions, legislative changes, changes made to the definition of reserves, differences in the list of incompletely enumerated Indian reserves, and individuals changing their reporting of Indigenous identity from one data collection period to another. In this study, two adjustments were made to compare these data over time. First, because the population for the census long form includes usual residents in collective dwellings and persons living abroad, whereas the population for the NHS excludes them (Statistics Canada, 2013a), in this study, census data have been adjusted to the same universe used for the 2011 NHS (population in private households). Second, because of changes that can occur to the geographies that define Indian reserves and Indian settlements between census years, in this study, we derived the on and off reserve population using the 2011 definition (Statistics Canada, 2014). Statistics Canada uses the definition of “on reserve” provided by Indigenous and Northern Affairs Canada (INAC). In 2011, on reserve included six census subdivision (CSD<sup>3</sup>) types legally affiliated with First Nations or Indian bands: that is, Indian reserve, Indian settlement (except for the five Yukon settlements of Champagne Landing 10, Klukshu, Two and One-Half Mile Village, Two Mile Village and Kloo Lake), Indian government district, terres réservées aux Cris, terres réservées aux Naskapis, and Nisga'a land, as well as the northern village of Sandy Bay in Saskatchewan.

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<sup>3</sup> Census subdivision (CSD) is the general term for municipalities (as determined by provincial or territorial legislation) or areas treated as municipal equivalents for statistical purposes (e.g., Indian reserves, Indian settlements, and unorganized territories).

## Sample

This study focused on individuals who self-identified as “North American Indian” or “First Nations (North American Indian)” on the census or NHS<sup>4</sup> (as a single response or in combination with another Indigenous identity<sup>5</sup>) and who were aged 20 to 34 at the time of data collection. First Nations respondents were further classified as living on or off reserve, and as being able or unable to conduct a conversation in an Indigenous language. Our study sample included those who lived in a total of 802 census subdivisions (CSDs) that were considered *on reserve* in 2011.<sup>6</sup> When appropriate, comparisons were made with non-Indigenous persons aged 20 to 34 living off reserve who were able to conduct a conversation in one of Canada’s official languages (hereafter referred to as the *non-Indigenous* population).

## Measures

Indigenous language knowledge was based on responses to a question that asked in what language or languages, other than English and French, can the respondent conduct a conversation. Respondents were classified as being able to conduct a conversation in an Indigenous language (yes or no) using the first write-in response. Another question asked about respondent’s ability to conduct a conversation in English only, in French only, in both English and French, or in none of the official languages of Canada. This question was used to restrict non-Indigenous respondents to those who were able to conduct a conversation in one of Canada’s official languages; in other words, non-Indigenous respondents who could not speak English or French were excluded from the sample.

Educational attainment refers to the highest level of schooling that a person has reached. Highest educational attainment was coded in two different ways. First, we categorized respondents as having *no diploma* or *any diploma* as highest level attained. Respondents with *no diploma* include those with no schooling and those who received some schooling but did not obtain a high school diploma. Respondents with *any diploma* include those with a secondary (high school) diploma; those with some postsecondary education; and those with a postsecondary certificate, diploma, or degree as their highest educational attainment. Respondents with “any diploma” cannot be referred to as high school graduates because some respondents with postsecondary education may not have received a high school diploma.

Second, we also categorized respondents as having *no diploma, high school diploma or equivalent, or postsecondary education* (some or completed) as highest level attained. Respondents with *postsecondary education* (some or completed) are thus a subset of the previous *any diploma* category and this was done to specifically investigate those with a postsecondary education in a separate analysis.

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<sup>4</sup> The same Aboriginal identity question was asked in the 1996, 2001, and 2006 censuses. This question reads as follows: “Is this person an Aboriginal person, that is, North American Indian, Métis or Inuit (Eskimo)?” (see Statistics Canada, 2007, Aboriginal Identity section, para. 4). The NHS Aboriginal identity question differs slightly and reads as follows: “Is this person an Aboriginal person, that is, First Nations (North American Indian), Métis or Inuk (Inuit)” (Statistics Canada, 2010, Question 18)?

<sup>5</sup> The 2006 Census gathered information on whether a person identified with the Aboriginal peoples of Canada. In this document, the term *Indigenous* is used in place of *Aboriginal*.

<sup>6</sup> In 2011, there were a total of 36 Indian reserves and Indian settlements that were “incompletely enumerated” in the NHS.

## Analyses

Cross-sectional cohort analyses described educational attainment for four time periods (1996, 2001, 2006, and 2011), separately for language speakers and non-speakers and separately for First Nations living on and off reserve. Language speakers and non-speakers in their respective area of residence (on or off reserve) were compared to each other. For the off-reserve First Nations population, comparisons with the non-Indigenous population were also conducted. These comparisons were not conducted for the on-reserve First Nations population; individuals living on reserve face greater barriers in accessing educational opportunities (Statistics Canada, 2013b) and this unique context is not amenable to comparisons with the off-reserve non-Indigenous population.

In this study, we investigated the proportion with *any diploma* and the proportion with *postsecondary education* separately. Proportions with *any diploma* were first examined, followed by an examination of proportions with *postsecondary education*.

Three types of tests were performed. First, *Z*-tests compared the proportion with any diploma and the proportion with postsecondary education for language speakers versus non-speakers at each point in time to examine group differences in educational attainment. Second, Cochran-Armitage tests for trend examined the proportion with any diploma and the proportion with postsecondary education over time to determine if the educational attainment profile of language speakers and non-speakers was improving, worsening, or staying the same. Third, we compared the trends in educational attainment for language speakers and non-speakers using the *Z* statistic of the Cochran-Armitage tests. If the absolute difference between two *Z* statistics was greater than 1.96, the two trends were said to be significantly different; otherwise, they were not (Agresti, 2002). Two trends that are significantly different from each other indicate that educational attainment over time for language speakers and non-speakers is not changing in the same direction—in other words, the gap is either decreasing or increasing.

## Results

Table 1 and Table 2 present the highest level of education attained of First Nations people aged 20 to 34 living on and off reserve by reported ability to conduct a conversation in an Indigenous language for each year. Table 1 focuses on *no diploma* and *any diploma* as highest level attained, while Table 2 focuses on *no diploma*, *high school*, and *postsecondary* education as highest level attained. Finally, Table 3 presents the trend analyses results by group. We first describe results for off-reserve First Nations people, followed by results for those living on reserve.

**Table 1. Proportion with No Diploma and Any Diploma as Highest Level of Education Attained, Population Aged 20 to 34 Years Old, Canada, 1996, 2001, 2006, and 2011**

		1996			2001			2006			2011		
		%	Lower CL	Upper CL	%	Lower CL	Upper CL	%	Lower CL	Upper CL	Lower CL	Upper CL	
<b>Non-Indigenous<sup>a</sup></b>	No diploma <sup>d</sup>	19.8	19.8	19.9	16.4	16.3	16.5	10.6	10.5	10.7	8.9	8.8	8.9
	Any diploma <sup>e</sup>	80.2	80.1	80.2	83.6	83.5	83.7	89.4	89.3	89.5	91.1	91.1	91.2
	Total	100.0			100.0			100.0			100.0		
<b>On-reserve First Nations speakers<sup>b</sup></b>	No diploma <sup>d</sup>	67.0	66.5	67.6	63.1	62.6	63.7	60.9	60.4	61.5	59.8	59.1	60.4
	Any diploma <sup>e</sup>	33.0	32.4	33.5	36.9	36.3	37.4	39.1	38.5	39.6	40.2	39.6	40.9
	Total	100.0			100.0			100.0			100.0		
<b>On-reserve First Nations non-speakers<sup>c</sup></b>	No diploma <sup>d</sup>	49.9	49.2	50.6	47.3	46.7	48.0	48.6	48.0	49.2	47.7	47.1	48.3
	Any diploma <sup>e</sup>	50.1	49.4	50.8	52.7	52.0	53.3	51.4	50.8	52.0	52.3	51.7	52.9
	Total	100.0			100.0			100.0			100.0		
<b>Off-reserve First Nations speakers<sup>b</sup></b>	No diploma <sup>d</sup>	60.0	58.5	61.4	55.5	53.8	57.2	49.0	47.2	50.9	40.3	37.0	43.5
	Any diploma <sup>e</sup>	40.0	38.6	41.5	44.5	42.8	46.2	51.0	49.1	52.8	59.7	56.5	63.0
	Total	100.0			100.0			100.0			100.0		
<b>Off-reserve First Nations non-speakers<sup>c</sup></b>	No diploma <sup>d</sup>	42.4	41.6	43.3	37.5	36.7	38.4	30.5	29.7	31.3	25.6	24.7	26.5
	Any diploma <sup>e</sup>	57.6	56.7	58.4	62.5	61.6	63.3	69.5	68.7	70.3	74.4	73.5	75.3
	Total	100.0			100.0			100.0			100.0		

*Note.* Data sources: 1996, 2001, and 2006 Census; 2011 National Household Survey. CL = confidence limit. <sup>a</sup> Non-Indigenous persons living off reserve who are able to conduct a conversation in English and/or French. <sup>b</sup> Persons who self-identified as First Nations (as a single or multiple response) and who are able to conduct a conversation in an Indigenous language. <sup>c</sup> Persons who self-identified as First Nations (as a single or multiple response) and who are unable to conduct a conversation in an Indigenous language. <sup>d</sup> This category includes persons with no schooling and persons who received some schooling but did not obtain a secondary school diploma or equivalent. <sup>e</sup> This category includes persons with secondary school diploma or equivalent (highest attainment), some postsecondary education (highest attainment), or postsecondary certificate, diploma, or degree (highest attainment).



**Table 2. Proportion with No Diploma, High School, and Postsecondary Education as Highest Level of Education Attained, Population Aged 20 to 34 Years Old, Canada, 1996, 2001, 2006, and 2011**

		1996			2001			2006			2011		
		%	Lower CL	Upper CL	%	Lower CL	Upper CL	%	Lower CL	Upper CL	%	Lower CL	Upper CL
<b>Non-Indigenous<sup>a</sup></b>	No diploma <sup>d</sup>	19.8	19.8	19.9	16.4	16.3	16.5	10.6	10.5	10.7	8.9	8.8	8.9
	High school <sup>e</sup>	29.8	29.7	29.9	28.9	28.8	29.0	29.5	29.4	29.6	28.2	28.1	28.3
	Postsecondary <sup>f</sup>	50.4	50.3	50.5	54.7	54.6	54.8	59.9	59.8	60.0	63.0	62.8	63.1
	Total	100.0			100.0			100.0			100.0		
<b>On-reserve First Nations speakers<sup>b</sup></b>	No diploma <sup>d</sup>	67.0	66.5	67.6	63.1	62.6	63.7	60.9	60.4	61.5	59.8	59.1	60.4
	High school <sup>e</sup>	14.3	13.8	14.7	17.6	17.2	18.1	18.6	18.2	19.1	20.8	20.2	21.3
	Postsecondary <sup>f</sup>	18.7	18.3	19.2	19.2	18.8	19.7	20.4	19.9	20.9	19.4	18.9	20.0
	Total	100.0			100.0			100.0			100.0		
<b>On-reserve First Nations non-speakers<sup>c</sup></b>	No diploma <sup>d</sup>	49.9	49.2	50.6	47.3	46.7	48.0	48.6	48.0	49.2	47.7	47.1	48.3
	High school <sup>e</sup>	23.1	22.5	23.7	24.6	24.0	25.2	26.9	26.3	27.4	30.1	29.5	30.7
	Postsecondary <sup>f</sup>	27.0	26.4	27.6	28.1	27.5	28.7	24.5	24.0	25.0	22.2	21.7	22.7
	Total	100.0			100.0			100.0			100.0		
<b>Off-reserve First Nations speakers<sup>b</sup></b>	No diploma <sup>d</sup>	60.0	58.5	61.4	55.5	53.8	57.2	49.0	47.2	50.9	40.3	37.0	43.5
	High school <sup>e</sup>	17.2	16.0	18.4	19.6	18.2	21.0	24.6	23.0	26.3	28.0	25.0	31.0
	Postsecondary <sup>f</sup>	22.8	21.5	24.1	24.9	23.4	26.4	26.3	24.7	28.0	31.8	28.7	34.8
	Total	100.0			100.0			100.0			100.0		
<b>Off-reserve First Nations non-speakers<sup>c</sup></b>	No diploma <sup>d</sup>	42.4	41.6	43.3	37.5	36.7	38.4	30.5	29.7	31.3	25.6	24.7	26.5
	High school <sup>e</sup>	27.4	26.6	28.2	28.8	28.0	29.6	32.7	31.9	33.5	34.6	33.7	35.6
	Postsecondary <sup>f</sup>	30.2	29.4	31.0	33.6	32.8	34.5	36.8	35.9	37.6	39.7	38.8	40.7
	Total	100.0			100.0			100.0			100.0		

*Note.* Data sources: 1996, 2001, and 2006 Census; 2011 National Household Survey. CL = confidence limit. <sup>a</sup>Non-Indigenous persons living off reserve who are able to conduct a conversation in English and/or French. <sup>b</sup>Persons who self-identified as First Nations (as a single or multiple response) and who are able to conduct a conversation in an Indigenous language. <sup>c</sup>Persons who self-identified as First Nations (as a single or multiple response) and who are unable to conduct a conversation in an Indigenous language. <sup>d</sup>This category includes persons with no schooling and persons who received some schooling but did not obtain a secondary school diploma or equivalent. <sup>e</sup>This category includes persons who have obtained a secondary or high school certificate or its equivalent and who have not obtained any higher degrees, certificates or diplomas. <sup>f</sup>This category includes persons with some postsecondary education (highest attainment) or with postsecondary certificate, diploma, or degree (highest attainment).

**Table 3. Trend Analyses Results by Group, Population Aged 20 to 34 Years Old, Canada**

	Cochran-Armitage Trend Test			Trend difference <sup>d</sup>
	Statistic (Z)	Two-sided Pr >  Z		
<b>Any diploma</b>			<b>Any diploma</b>	Z1 minus Z2
Non-Indigenous <sup>a</sup>	292.1	<.0001	On-reserve First Nations speakers and non-speakers	15.9
On-reserve First Nations speakers <sup>b</sup>	17.6	<.0001	Off-reserve First Nations speakers and non-speakers	22.5
On-reserve First Nations non-speakers <sup>c</sup>	1.7	0.0848	Non-Indigenous and off-reserve First Nations speakers	271.7
Off-reserve First Nations speakers <sup>b</sup>	20.4	<.0001	Non-Indigenous and off-reserve First Nations non-speakers	249.2
Off-reserve First Nations non-speakers <sup>c</sup>	42.9	<.0001		
<b>Postsecondary education</b>			<b>Postsecondary education</b>	Z1 minus Z2
Non-Indigenous <sup>a</sup>	-241.2	<.0001	On-reserve First Nations speakers and non-speakers	19.0
On-reserve First Nations speakers <sup>b</sup>	-2.5	0.0109	Off-reserve First Nations speakers and non-speakers	16.5
On-reserve First Nations non-speakers <sup>c</sup>	16.5	<.0001	Non-Indigenous and off-reserve First Nations speakers	232.5
Off-reserve First Nations speakers <sup>b</sup>	-8.7	<.0001	Non-Indigenous and off-reserve First Nations non-speakers	216.0
Off-reserve First Nations non-speakers <sup>c</sup>	-25.2	<.0001		

*Note.* <sup>a</sup> Non-Indigenous persons living off reserve who are able to conduct a conversation in English and/or French. <sup>b</sup> Persons who self-identified as First Nations (as a single or multiple response) and who are able to conduct a conversation in an Indigenous language. <sup>c</sup> Persons who self-identified as First Nations (as a single or multiple response) and who are unable to conduct a conversation in an Indigenous language. <sup>d</sup> If the absolute difference between the two Z statistics is > 1.96, the two trends are significantly different; otherwise, they are not.

### Off-Reserve First Nations Aged 20 to 34

As can be seen in Figure 1, off reserve, more language non-speakers had obtained *any diploma* compared to language speakers (58% vs. 40% in 1996, 62% vs. 44% in 2001, 69% vs. 51% in 2006, and 74% vs. 60% in 2011). Looking at trends over time, the proportion with *any diploma* significantly increased among both groups: from 40% in 1996 to 60% in 2011 among language speakers ( $Z = 20.4, p < 0.0001$ ), and from 58% in 1996 to 74% in 2011 among non-speakers ( $Z = 42.9, p < 0.0001$ ). Trends for Indigenous language speakers and non-speakers were significantly different from each other; the gap in the proportion with any diploma between language speakers and non-speakers remained stable at 18 percentage points between 1996 and 2006, and then decreased to 14 percentage points in 2011.

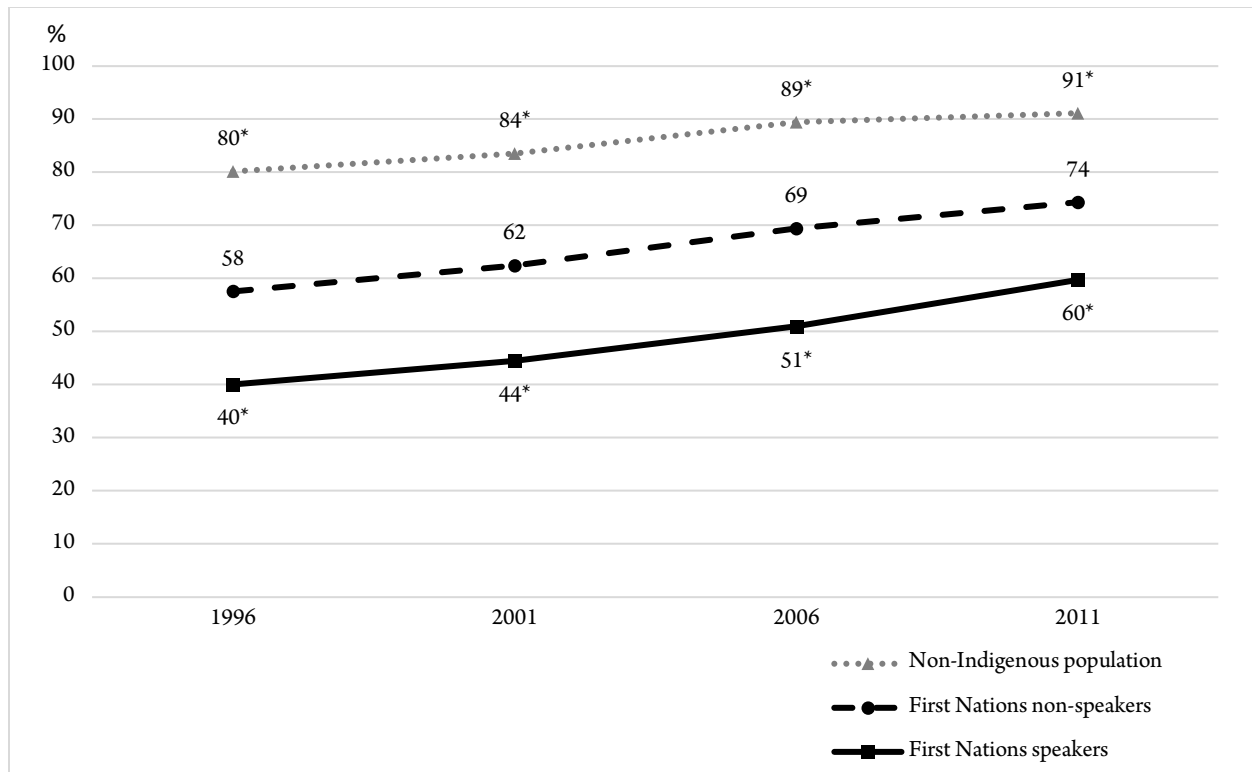
The proportion with any diploma was consistently highest among the non-Indigenous population at all time points examined. However, trends for Indigenous language speakers and non-speakers were significantly different from the trend for the non-Indigenous population; that is, the gap between the non-Indigenous population and both First Nations groups (language speakers and non-speakers) has consistently decreased over time.

Turning to postsecondary education (Figure 2), off reserve, more non-speakers had postsecondary education than did language speakers (30% vs. 23% in 1996, 34% vs. 25% in 2001, 37% vs. 26% in 2006, and 40% vs. 32% in 2011). The proportion with postsecondary education increased significantly over the four time points among both language speakers ( $Z = -8.7, p < 0.0001$ ) and non-speakers ( $Z = -25.2, p < 0.0001$ ). Trends for language speakers and non-speakers were significantly different from each other; the gap between language speakers and non-speakers with postsecondary education increased from 1996 to 2006, but then decreased in 2011.

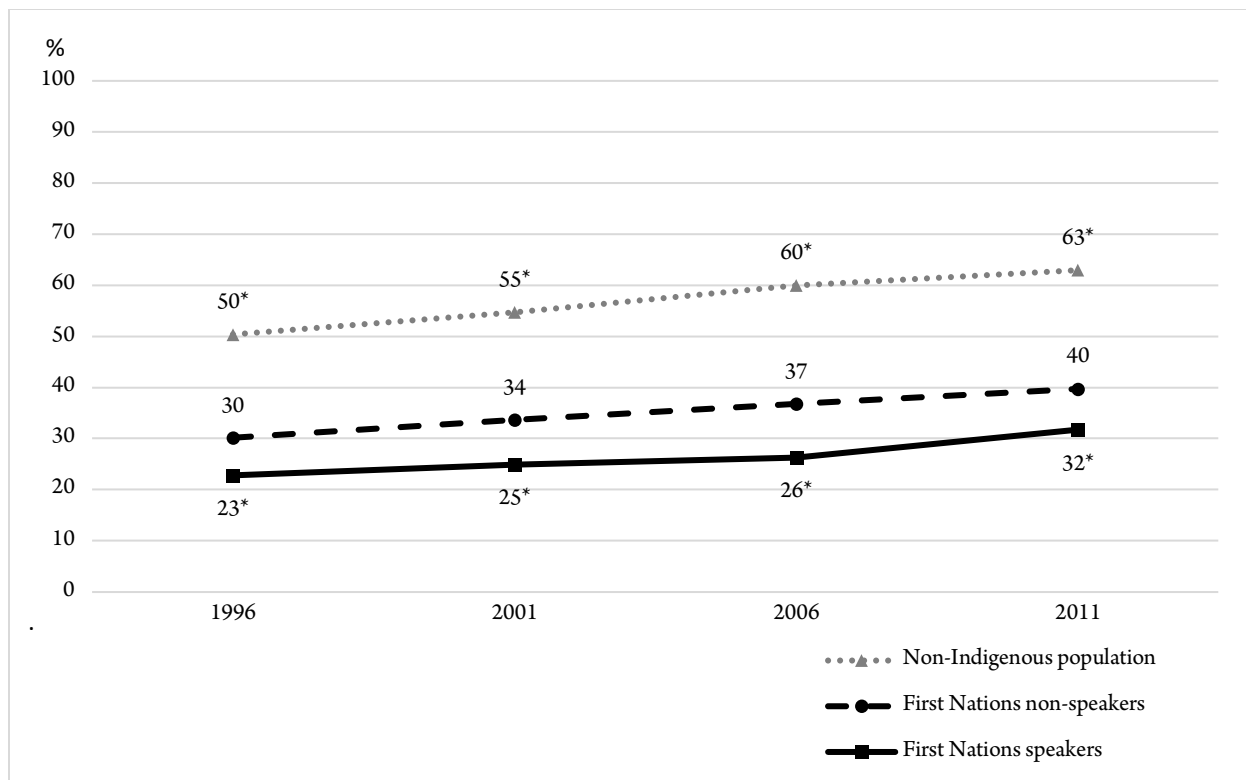
Proportionally more individuals in the non-Indigenous population had postsecondary education at all time points examined. The gap in postsecondary education between the non-Indigenous population and both language speakers and non-speakers increased from 1996 to 2006; however, in 2011, this gap decreased among language speakers and remained stable for non-speakers.

### On-Reserve First Nations Aged 20 to 34

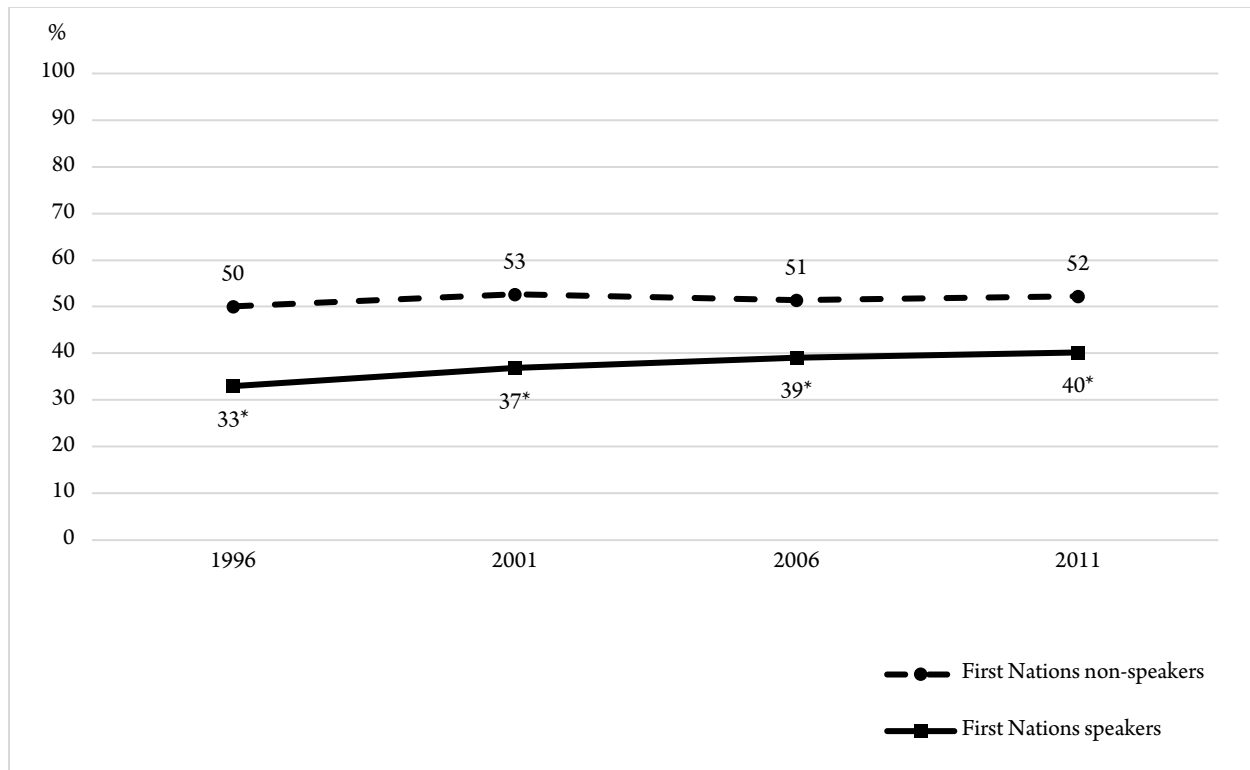
As can be seen in Figure 3, on reserve, more non-speakers had any diploma than did language speakers (50% vs. 33% in 1996, 53% vs. 37% in 2001, 51% vs. 39% in 2006, and 52% vs. 40% in 2011). Looking at trends over time, the proportion with any diploma significantly increased among language speakers ( $Z = 17.6, p < 0.0001$ ), but not among non-speakers ( $Z = 1.7, p = 0.08$ ). One-third (33%) of language speakers had obtained any diploma in 1996; by 2011, that estimate reached 40%. The proportion with any diploma among non-speakers remained relatively stable, from 50% in 1996 to 52% in 2011. Trends for language speakers and non-speakers were significantly different from each other; that is, the gap between language speakers and non-speakers with any diploma has decreased over time—from 17 percentage points in 1996 to 12 percentage points in 2011.



**Figure 1. Percent with any diploma, off-reserve First Nations and non-Indigenous population aged 20 to 34, Canada.** Data sources: 1996, 2001, and 2006 Census and 2011 National Household Survey. Significant trend for all (speakers, non-speakers, and non-Indigenous population). Trends for First Nations speakers and non-speakers are significantly different from each other. Trends for First Nations speakers and non-speakers are significantly different from non-Indigenous respondents. \*Significantly different from same-year First Nations non-speakers estimate.

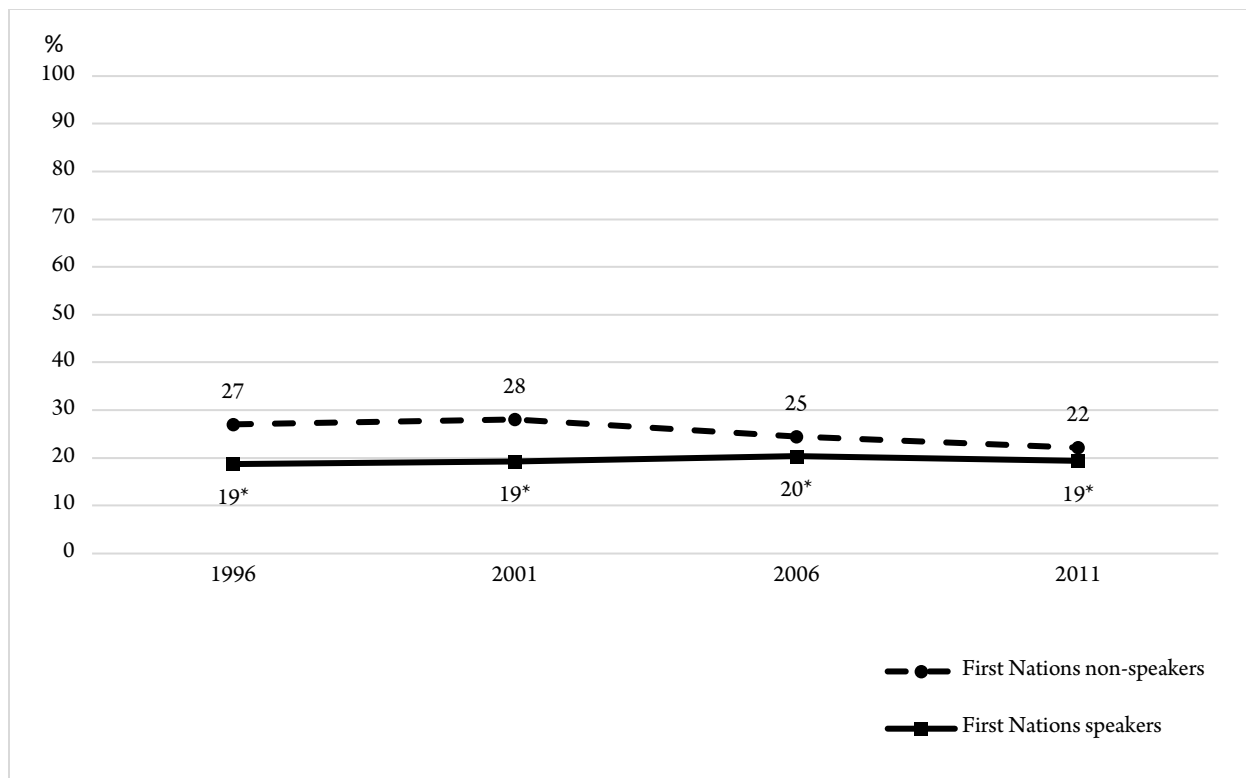


**Figure 2. Percent with postsecondary education, off-reserve First Nations and non-Indigenous population aged 20 to 34, Canada.** Data sources: 1996, 2001 and 2006 Census and 2011 National Household Survey. Significant trend for all (speakers, non-speakers, and non-Indigenous population). Trends for First Nations speakers and non-speakers are significantly different from each other. Trends for First Nations speakers and non-speakers are significantly different from non-Indigenous respondents. \*Significantly different from same-year First Nations non-speakers estimate.



**Figure 3. Percent with any diploma, on-reserve First Nations population aged 20 to 34, Canada.** Data sources: 1996, 2001 and 2006 Census and 2011 National Household Survey. Significant trend for First Nations speakers but not for non-speakers. Trends for First Nations speakers and non-speakers are significantly different. \*Significantly different from same-year First Nations non-speakers estimate.

Turning to postsecondary education, on reserve (Figure 4), more non-speakers had postsecondary education than did language speakers (27% vs. 19% in 1996, 28% vs. 19% in 2001, 25% vs. 20% in 2006, and 22% vs. 19% in 2011). Among language speakers, the proportion with postsecondary education slightly (but significantly) increased over time ( $Z = -2.5, p = 0.01$ ); this was not the case among non-speakers ( $Z = 16.5, p < 0.0001$ ), for whom the proportion with postsecondary education significantly decreased—from 27% in 1996 to 22% in 2011. Trends for language speakers and non-speakers were significantly different from each other; that is, the gap in postsecondary education between on-reserve language speakers and non-speakers has decreased over time—from 8 percentage points in 1996 to 3 percentage points in 2011. However, the gap reduction was due to the proportion of non-speakers with postsecondary education decreasing over time while the proportion of speakers with postsecondary education remained stable.



**Figure 4. Percent with postsecondary education, on-reserve First Nations population aged 20 to 34, Canada.** Data sources: 1996, 2001 and 2006 Census and 2011 National Household Survey. Significant trend for all First Nations (speakers and non-speakers). Trends for First Nations speakers and non-speakers are significantly different. \*Significantly different from same-year First Nations non-speakers estimate.

## Discussion

This study described the educational attainment of First Nations people aged 20 to 34 for four time points, separately for those who did and did not report being able to speak an Indigenous language, and for those living on and off reserve. In doing so, this study sought to examine one potential explanation for the differential association of Indigenous language knowledge and education among First Nations children and adults (Guèvremont & Kohen, 2012; Guèvremont & Kohen, 2017b); that is, that the change in association between Indigenous language knowledge and educational outcomes might be evolving over time.

Consistent with past research showing that, among adults, Indigenous language knowledge is associated with both a lower likelihood of high school graduation (Guèvremont & Kohen, 2012; Hull, 2015; Lamb, 2014; O’Gorman & Pandey, 2015) and a lower likelihood of obtaining postsecondary education (Brade et al., 2003; Hull, 2015), the educational attainment of language speakers was lower than non-speakers at all time points examined, for those living on reserve and for those living off reserve.

When examining trends over time, findings from this study revealed that no groups of language speakers had decreased educational attainment. Off reserve, Indigenous language speakers showed increases in educational attainment similar (postsecondary) or greater (any diploma) than the gains made by non-speakers, although non-speakers recognized gains as well. On reserve, Indigenous language speakers made larger gains than non-speakers in terms of having any diploma but did not show an increase or a decrease for postsecondary education. Non-speakers on reserve showed the most cautionary pattern with no change over time for any diploma and decreases in attainment for postsecondary education. Analysis of the gaps for the different time points revealed that the gaps in educational attainment between speakers and non-speakers were decreasing, for those living on and off reserve. However, for those living on reserve, this gap reduction was due to non-speakers' outcomes remaining stable (any diploma) or decreasing (postsecondary education) while increasing or staying the same for speakers.

The present study points to improvements in educational attainment for Indigenous language speakers, particularly for First Nations living off reserve in the most recent time interval examined (2006 to 2011). These findings may point to one explanation of why data from the 2001 Aboriginal Peoples Survey showed negative associations with education outcomes for adults who spoke an Indigenous language (Guèvremont & Kohen, 2012), while data from the 2012 Aboriginal Peoples Survey did not replicate negative associations between language and education outcomes for adults (Guèvremont & Kohen, 2017b). Taken together, these findings suggest that associations between Indigenous language knowledge and educational outcomes have changed for First Nations people over the time periods examined, as language speakers are “catching up” to their non-speaker counterparts, and this is demonstrated both off and on reserve.

While the percentage with any diploma increased for language speakers on reserve, it did not increase for non-speakers; there was also a decrease in the percentage with postsecondary education for non-speakers on reserve, while for speakers it remained stable. This finding may indicate a growing “shortage” of First Nations aged 20 to 34 with postsecondary education credentials on reserves among non-speakers (Hull, 2015). A study conducted by Hull (2015) suggests that large population centres, such as Census Metropolitan Areas (CMAs), attract Indigenous people with postsecondary qualifications to live and work. In the present study, post-hoc exploratory analyses revealed that on-reserve First Nations non-speakers were more likely to live on reserves that were inside a Census Metropolitan Area (CMA) or Census Agglomeration (CA), or in CMAs or CAs that have a moderate to strong metropolitan influence (that is, with a relatively high degree of integration with the core), whereas their Indigenous language speaking counterparts were more likely to live in remote reserves (see Appendix A and B). It could thus be that on-reserve First Nations non-speakers, through their greater proximity to population centres, might be more likely to move, live, and work outside of their communities to obtain postsecondary education or afterwards, pointing to the importance of both educational and employment opportunities on reserve. Although this was not directly tested in the present study, further studies, including qualitative studies, are warranted to better understand these findings.

Findings from this study must be interpreted with caution as differences in educational attainment may reflect differences between language speakers and non-speakers that go beyond the ability to speak an Indigenous language. Examples of other differences include enhanced identity and self-esteem (Wright & Taylor, 1995), as well as differences in location of educational opportunities, place of residence, and socio-demographic characteristics. Hull (2015), for instance, found that the gap in postsecondary



education attainment between speakers and non-speakers of Indigenous languages were largest in rural areas and smallest in urban areas. Drawson, Mushquash, and Mushquash (2017) have also demonstrated that the negative relationship between the proportion of people in a community speaking an Indigenous language and a community's socio-economic conditions was non-significant once remoteness was accounted for, pointing to the importance of place of residence. Guèvremont and Kohen (2017b) have shown the importance of characteristics such as ever having attended school on a reserve, parental education, and family residential school attendance in the associations between Indigenous language knowledge and high school completion. Moreover, individuals who know an Indigenous language as their mother tongue versus individuals who have learned an Indigenous language as a second language are likely two different groups of people whose characteristics likely contribute to different sets of outcomes; future research disentangling education outcomes for those with Indigenous language knowledge as a mother tongue versus those with Indigenous language knowledge as a second language is warranted. Therefore, other differences between language speakers and non-speakers likely contribute to the patterns of educational attainment observed in this study and call for the need to continue to understand these complex associations.

This study examined the relationship between Indigenous language knowledge and educational attainment using large data sets (i.e., Statistics Canada's Census and National Household Survey); while being nationally representative, these data sets contain broad socioeconomic indicators that are highly de-contextualized (Drawson et al., 2017) and this not only calls for replication but also refinements using qualitative as well as other methods. Furthermore, the current analytic lens plots together knowledge of traditional Indigenous languages with a "Western" concept—highest level of formal education attained (Drawson et al., 2017). Future research could examine outcomes that are more oriented towards Indigenous ways of knowing.

Caution should also be exercised when examining trends over time based on self-reported Indigenous identity. The composition of the Indigenous identity population is affected by both demographic factors (birth, deaths, and migration) and by response mobility. Response mobility refers to individuals changing, from one census to the next, the reporting of their affiliations from a non-Indigenous to an Indigenous identity (Statistics Canada, 2007) or vice-versa. The different "cohorts" of First Nations people aged 20 to 34 examined in the present study may thus be different in composition due to response mobility. Another limitation is that the on-reserve population was defined as per 2011 geographic boundaries and did not adjust for reserves that consistently or inconsistently took part in the census.

Taken together, these limitations emphasize the need for others to contribute to these findings to better understand the complexity involved in the relationship between knowledge of Indigenous languages and educational attainment among First Nations people. Indigenous language knowledge is associated with other factors that may temper the association with educational outcomes; these factors not only include socio-economic circumstances, place of residence, and educational opportunities, but also historical experiences, parental education, and programs that support minority-language students (Hull, 2015), as well as school attendance on reserve and family residential school attendance (Guèvremont & Kohen, 2017b).

## **Conclusion**

This study investigated the change in association between Indigenous language knowledge and educational outcomes from 1996 to 2011 among First Nations aged 20 to 34. It showed that both on and off reserve, the gap in educational attainment between Indigenous language speakers and non-speakers has narrowed over time. Future research is warranted to disentangle the independent associations of Indigenous language knowledge, socio-demographic characteristics, and area of residence on educational outcomes through multivariate and other analyses. The continued exploration of the dynamics surrounding Indigenous language knowledge and educational attainment is an important endeavour. The Truth and Reconciliation Commission of Canada (2015) has reaffirmed the importance of revitalizing and preserving Indigenous languages, and of improving education attainment levels among Indigenous Peoples. Enhancing our understanding of the interrelatedness between traditional Indigenous language knowledge and successful participation in Canada's education system is crucial for creating and maintaining healthy individuals and communities.

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## Appendix A

## Study Sample by Region Distribution, Population Aged 20 to 34 Years Old, Canada, 1996, 2001, 2006, and 2011

	1996	2001	2006	2011	
<b>Non-Indigenous<sup>a</sup></b>					
Atlantic	8.3	7.5	6.8	6.2	
Quebec, Ontario	63.2	63.4	63.5	62.7	
Prairies	15.6	16.3	17.2	18.2	
British Columbia	12.6	12.5	12.3	12.6	
Northwest Territories	0.2	0.2	0.2	0.2	
<b>On-reserve First Nations speakers<sup>b</sup></b>					
Atlantic	6.7	6.5	6.1	7.4	
Quebec, Ontario	29.0	31.0	31.6	33.1	
Prairies	59.7	58.9	57.9	56.1	
British Columbia	4.6	3.6	4.3	3.5	
Northwest Territories	x	x	x	0.05	E
<b>On-reserve First Nations non-speakers<sup>c</sup></b>					
Atlantic	7.4	6.5	6.4	5.5	
Quebec, Ontario	17.8	19.6	20.1	20.5	
Prairies	42.4	46.3	48.9	49.2	
British Columbia	32.3	27.6	24.7	24.7	
Northwest Territories	x	x	x	0.1	E
<b>Off-reserve First Nations speakers<sup>b</sup></b>					
Atlantic	3.2	4.0	3.1	2.6	E
Quebec, Ontario	28.8	27.6	30.7	20.0	
Prairies	50.0	51.3	47.7	54.3	
British Columbia	8.5	6.9	7.9	9.2	
Northwest Territories	9.6	10.1	10.7	14.0	
<b>Off-reserve First Nations non-speakers<sup>c</sup></b>					
Atlantic	3.8	4.9	4.2	7.1	
Quebec, Ontario	35.8	34.1	36.1	37.8	
Prairies	29.5	33.3	34.0	31.2	
British Columbia	27.2	24.8	22.6	21.0	
Northwest Territories	3.6	2.9	3.1	2.8	

Note. Data sources: 1996, 2001, and 2006 Census; 2011 National Household Survey. <sup>a</sup> Non-Indigenous persons living off reserve who are able to conduct a conversation in English and/or French. <sup>b</sup> Persons who self-identified as First Nations (as a single or multiple response) and who are able to conduct a conversation in an Indigenous language. <sup>c</sup> Persons who self-identified as First Nations (as a single or multiple response) and who are unable to conduct a conversation in an Indigenous language. E = use with caution. X = suppressed.

## Appendix B

Study Sample by MIZ<sup>a</sup> Distribution, Population Aged 20 to 34 Years Old, Canada, 2001, 2006, and 2011

	2001	2006	2011
<b>Non-Indigenous<sup>b</sup></b>			
Inside CMA/CA	84.2	86.1	87.3
Outside CMA/CA, strong or moderate MIZ	10.1	8.7	8.7
Outside CMA/CA, weak or no MIZ	5.7	5.2	4.0
<b>On-reserve First Nations speakers<sup>c</sup></b>			
Inside CMA/CA	7.8	10.2	9.1
Outside CMA/CA, strong or moderate MIZ	9.7	5.7	10.4
Outside CMA/CA, weak or no MIZ	82.5	84.2	80.5
<b>On-reserve First Nations non-speakers<sup>d</sup></b>			
Inside CMA/CA	18.3	18.2	18.7
Outside CMA/CA, strong or moderate MIZ	20.0	17.8	27.7
Outside CMA/CA, weak or no MIZ	61.6	64.0	53.6
<b>Off-reserve First Nations speakers<sup>c</sup></b>			
Inside CMA/CA	48.3	50.3	69.8
Outside CMA/CA, strong or moderate MIZ	5.3	4.9	6.3
Outside CMA/CA, weak or no MIZ	46.5	44.8	23.9
<b>Off-reserve First Nations non-speakers<sup>d</sup></b>			
Inside CMA/CA	76.0	77.5	81.2
Outside CMA/CA, strong or moderate MIZ	9.2	8.4	9.5
Outside CMA/CA, weak or no MIZ	14.8	14.2	9.4

*Note.* Data sources: 1996, 2001, and 2006 Census; 2011 National Household Survey. MIZ not available in the 1996 Census data. <sup>a</sup> The census metropolitan influenced zone (MIZ) is a concept that geographically differentiates the area of Canada outside census metropolitan areas (CMAs) and census agglomerations (CAs). Census subdivisions (CSDs) within provinces that are outside CMAs and CAs are assigned to one of four categories according to the degree of influence (strong, moderate, weak, or no influence) that the CMAs or CAs have on them. CSDs within the territories that are outside CAs are assigned to a separate category. <sup>b</sup> Non-Indigenous persons living off reserve who are able to conduct a conversation in English and/or French. <sup>c</sup> Persons who self-identified as First Nations (as a single or multiple response) and who are able to conduct a conversation in an Indigenous language. <sup>d</sup> Persons who self-identified as First Nations (as a single or multiple response) and who are unable to conduct a conversation in an Indigenous language.