

Northern Projections

Rainy River District

Human Capital Series



Tomahawk Lighthouse, Sleeman, ON

Who We Are

Northern Policy Institute

Northern Policy Institute is Northern Ontario's independent think tank. We perform research, collect and disseminate evidence, and identify policy opportunities to support the growth of sustainable Northern Communities. Our operations are located in Thunder Bay and Sudbury. We seek to enhance Northern Ontario's capacity to take the lead position on socio-economic policy that impacts Northern Ontario, Ontario, and Canada as a whole.

About the Series

This Human Capital Series is an update of an earlier series published in partnership with Northern Ontario Workforce Planning.

Workforce Planning Ontario is a network of 26 Workforce Planning Boards covering four regions across the province. Workforce Planning Boards gather intelligence on local labour market supply and demand, and work in partnership with employers, employment services, educators, researchers, economic development, government and other stakeholders to identify, understand and address labour market issues. This includes supporting and coordinating local responses to meet current and emerging workforce needs.

Given the unique geography and labour market issues that impact Northern Ontario, all 6 planning boards in the north have collaborated to form Northern Ontario Workforce Planning. They include: Algoma Workforce Investment Corporation (AWIC); Far Northeast Training Board (FNETB); The Labour Market Group (LMG); Northwest Training and Adjustment Board (NTAB); North Superior Workforce Planning Board (NSWPB); and Workforce Planning for Sudbury & Manitoulin (WPSM). FNETB and NSWPB are currently pilot sites for Local Employment Planning Councils (LEPC).

The objective of this series is to examine past and present trends in each Northern Ontario Census District and to forecast future challenges and opportunities. The author examines demographic trends as well as the labour market, including human capital composition, employment trends, the future occupational demand of the employed workforce, trends in industrial workforce composition of goods-producing and services-producing sectors, as well as labour income trends and gross domestic product (GDP).

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Author's calculations are based on data available at the time of publication and are therefore subject to change.

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He has written many reports on Northern Ontario's economic development challenges and opportunities. He was commissioned by the Ministry of Northern Development and Mines to undertake a comprehensive study of Northern Ontario's economy as a part of the research conducted for the Growth Plan for Northern Ontario. Included in the study were the identification of growing, declining and emerging industrial clusters in the region.

Professor Moazzami has also written extensively on Northern Ontario's Indigenous people and Northern Indigenous economy. Dr. Moazzami's expertise and influence reaches beyond Lakehead University and Northern Ontario. He has been a regular guest speaker at the University of Waterloo's Economic Development Program.

Executive Summary

Northwestern Ontario covers approximately 526,478 square kilometers and recorded a population of 231,691 in 2016. Increasing levels of out-migration of working-age labor force, declining fertility rates, and lower levels of immigration have resulted in an age distribution of the population in Northwestern Ontario that is different from that of Ontario. These demographic changes have a significant impact on social and economic conditions in the region. The population will continue to age in the foreseeable future, with implications for healthcare costs, supply of labour, production capacity, and the ability of the Northwestern Districts to remain economically viable.

The purpose of this report is to analyze demographic and labour market trends in Northwestern Ontario and Rainy River District. Both past and current trends are examined, as well as future projections. This report is an update to a previous report published in 2017 but with updated information using 2016 census data, as well as additional sections including sector-specific projections for future labour market demand.

Key Findings

Rainy River District's total population has declined 12.6 per cent from 1991 to 2016. The share of individuals under the age of 20 dropped from 30.9 per cent in 1991 to 24.15 per cent in 2016, while the proportion of those age 65 years and over increased from 14.1 per cent to 18.84 per cent over the same period. This trend is expected to continue, with the total population expected to decline from 19,973 in 2017 to 17,380 in 2041, and the share of individuals age 65 and over rising to 31.9 per cent in 2041. Rural areas with weak link to urban centres are still the main residence for 85.4 per cent of the population in Rainy River District. Only 4.9 per cent live in rural areas designated as having moderate link to urban centres.

With a decrease in the working-age population in Rainy River District, the labour force participation rate declined among men from 81.7 per cent in 2001 to 74.0 per cent in 2016, and stayed relatively constant among women. The employment rate, likewise, shared a similar trend, declining among men but rising among women. The labour force participation and employment rates were lower among the indigenous population. The lowest participation rates were among the on-reserve indigenous groups. However, it is forecasted that by 2030, the indigenous labour force will reach 32.05 per cent of the total labour force in Rainy River District.

The district has witnessed an upward trend in net migration in recent years. The largest improvement was among the 20-34 age range.

Postsecondary education is expected to play an increasing important role in the labour market. In 2016, 54.8 per cent of population in Rainy River District had postsecondary credentials. This percentage is even smaller among indigenous populations, just under 50 per cent. Both rates are lower than the corresponding provincial levels.

Recommendations:

Enhance access to remote and on the job educational opportunities

One potential solution to Rainy River's declining workforce size and productivity is to promote higher education through increased access to services, especially for the Indigenous population who experience lower levels of educational achievement. Providing accessible education, especially postsecondary education, will be an essential move to expand the labour force.

Continue to invest in the Indigenous population

Labour force participation rates among the Indigenous population in Rainy River were generally lower and unemployment rates higher than the rest of the population. There was also a notable difference between the Indigenous labour force on-reserve and off-reserve, with the unemployment rate among the former at 22.3 and 13.6 percent in 2016 for men and women, respectively. In contrast, the unemployment rate among the off-reserve Indigenous workforce was much lower, at 10.9 percent for men. To the extent that desire to engage in the broader economy exists, continued investments in supporting that engagement through education and skills enhancement should be made.

Continue to build on the momentum of positive net migration

Since 2014, net migration in every age group other than 65+ has experienced an upward trend. The Rainy River district should look at what has created better recent outcomes, specifically of youth, and continue to build on this positive momentum, in order to combat the declining labour force and ageing population in the coming years.

Introduction

The objective of this report is to examine past and present trends and characteristics in the economy of Rainy River District (hereafter also referred to as Rainy River) and to forecast its future challenges and opportunities. We first examine population trends in Rainy River and Northwestern Ontario. Then, we study the district's labour market. This includes its human capital composition; employment trends; the shifting occupational composition of the employed workforce; the shifting of the district's industrial composition from goods-producing to services-producing sectors; the declining share of the private sector; the district's rising dependency on the public sector; and declining labour income and gross domestic product (GDP). The aging population and its impact on future demand for healthcare and education service providers are also examined. Finally, the report estimates the impact of an aging population on demand for workers in trade occupations in the district.

The report begins by examining demographic change in Rainy River during the past three decades. We find that the district's population has declined by approximately 12.6 per cent between 1991 and 2016. This represents an average annual decline of approximately 0.5 percent. We focus on three segments of the regional population, namely Indigenous, Francophone, and Immigrants. The study looks ahead and provides projections for total and Indigenous populations of Rainy River District between 2015 and 2030. We find that the Indigenous population is the only growing segment of the regional population. From these population projections, the study estimates past, present, and future trends in the size and composition of the regional labour force. The impact of migration flows on the regional population is also discussed.

The report also examines population trends in urban and rural areas. We find that approximately 85.4 per cent of Rainy River's population live in rural areas with a weak link to urban centres. Also, approximately 9.7 per cent of the population live in very remote regions with no link to urban centres. The majority (80.0 per cent) of the Indigenous population live in rural areas with a weak link to urban centres. Moreover, approximately 18.2 per cent of the Indigenous population live in rural areas with no link to urban centres.

The next part of the study examines labour market trends, including participation, employment, and unemployment rates among various population groups between 2001 and 2016. Using demographic changes as well as labour market indicators, the study forecasts the size and composition of the future labour force in the Rainy River district.

In the section that follows, the study defines and quantitatively measures the human capital composition of Rainy River's workforce in the coming years. This section also discusses the implications of the growing application of technology in the production process and, accordingly, the future skill requirements of the workforce.

The report then discusses the consequences of shifting the composition of the employed labour force in the district from goods-producing, which is dominated by private businesses, to services-producing, which is predominantly financed by the public sector. The study also examines the shifting

occupational composition of the employed workforce, and the implication thereof for total regional income and GDP in Rainy River District.

The study concludes by looking ahead and examining the future demand for healthcare and education service providers and for trades workers in the coming years.

Data Sources:

The data used in this report are based on detailed information regarding individual census subdivisions (CSDs) in Rainy River District and Northwestern Ontario obtained through special tabulations from Statistics Canada. We have also used population forecasts based on data made available by the Ontario Ministry of Finance. Some of the data displayed below may differ slightly from census population data, in instances where a custom tabulation was used to demonstrate unique characteristics of the target geography. In these instances, the discrepancies are due to the custom tables being based on 25% sample data, as oppose to 100% population data.

Population Groups Studied

The report provides information on the following four population groups:

- The total population;
- The Francophone population, defined as individuals who report their mother tongue to be French;
- The Indigenous population, defined by Statistics Canada as persons who reported identifying with at least one Indigenous group – that is, North American Indian, Métis, or Inuit – and/or those who reported being a Treaty Indian or a registered Indian, as defined by the Indian Act, and/or those who reported they were members of an Indian band or First Nation;
- The immigrant population, defined as persons who are, or have ever been, landed immigrants in Canada.

The Geographical Specification of Northern Ontario

Northern Ontario is subdivided into the Northwest and the Northeast Economic Regions. The three most western census divisions, commonly known as districts – namely Rainy River, Kenora, and Thunder Bay – constitute Northwestern Ontario, which is also referred to as the Northwest Economic Region. The region that lies north and east of lakes Superior and Huron constitutes Northeastern Ontario, which is also referred to as the Northeast Economic Region. It includes the following census divisions: Cochrane, Timiskaming, Algoma, Sudbury, Nipissing, Manitoulin, Parry Sound, and Greater Sudbury. The federal government and FedNor also include Muskoka District in their definition of Northeastern Ontario. However, the provincial government removed the district of Muskoka from the jurisdictional area of the Ministry of Northern Development and Mines and the Northern Ontario Heritage Fund Corporation in 2004. It has continued to include Parry Sound as a Northern Ontario division.

Demographic Change in Northwestern Ontario: The Past Three Decades

Demographic Trends in Northwestern Ontario

Northwestern Ontario covers more than 526,478 square kilometres, almost 57.9 per cent of the province's total area, while accounting for only 1.72 per cent of Ontario's total population. With a population density of 0.4 persons per square kilometre, Northwestern Ontario is the province's most sparsely populated region.¹

Northwestern Ontario consists of the districts of Thunder Bay, Kenora, and Rainy River. Major communities in the region include Thunder Bay, Kenora, Dryden, Fort Frances, Sioux Lookout, Greenstone, Red Lake, Marathon, and Atikokan, as well as several dozen that are First Nations, Métis, and Inuit. Approximately 52.3 per cent of the region's entire population live in the Thunder Bay Census Metropolitan Area (CMA). Aside from the city of Thunder Bay, Kenora

is the only other municipality in the entire region with a population greater than 10,000 people.

According to Statistics Canada's census of population, Northwestern Ontario's population grew from 231,378 in 1986 to 244,117 in 1996, but it declined to 234,771 in 2001 and 231,691 in 2016 (Figure 1). There appears to have been some population growth between 2011 and 2016, though incomplete data means the trend is difficult to gauge with precision.² The major population change has been related to the size of the Indigenous population, which increased from 38,225 in 2001 to 41,600 in 2011, and to 58,950 in 2016. The rise in the Indigenous population relates to a higher fertility rate as well as increased participation in the census.

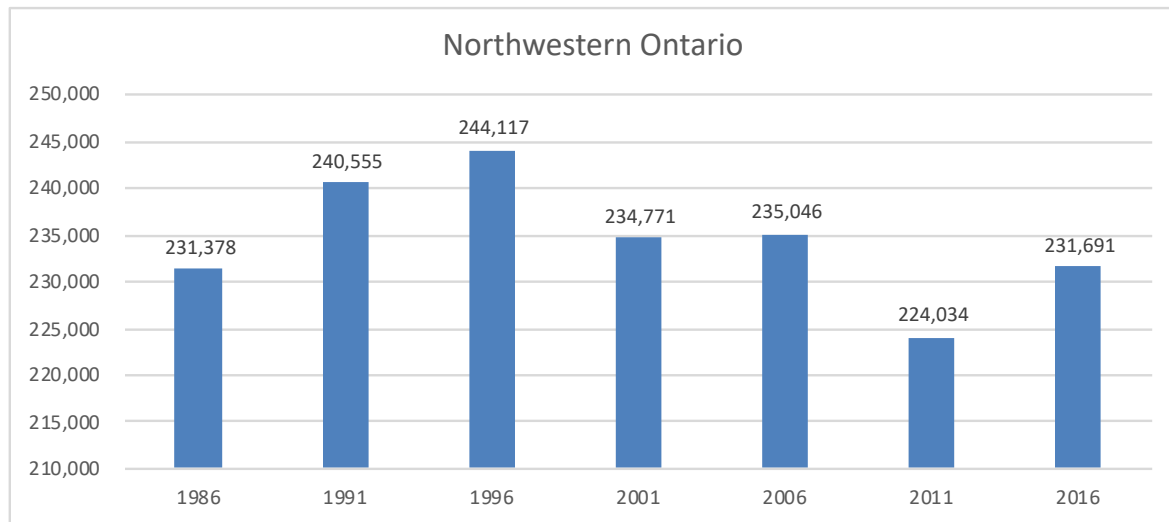


¹ On average, the population density equals 3.7 persons per square kilometre in Canada. It equals 47.6 persons per square kilometre in Thunder Bay CMA, compared to 249.58 persons per square kilometre in all CMAs in Canada.

² In 2011, a series of wild fires prevented 13 First Nations in Kenora CD from being enumerated at census time. A special collection later that year found there were 8,520 people in these communities, though these totals are not included in the census figures for 2011. Pikangikum, one of the largest First Nations in the region, was not enumerated in 2016 due to 'other' reasons. Their 2011 population count was 2,280. If they experienced the same growth rate from 2011 to 2016 as 2006 to 2011, their population would be closer to 2,500.

Fort Frances Court House, Fort Frances

Figure 1: Population Trends in Northeastern Ontario

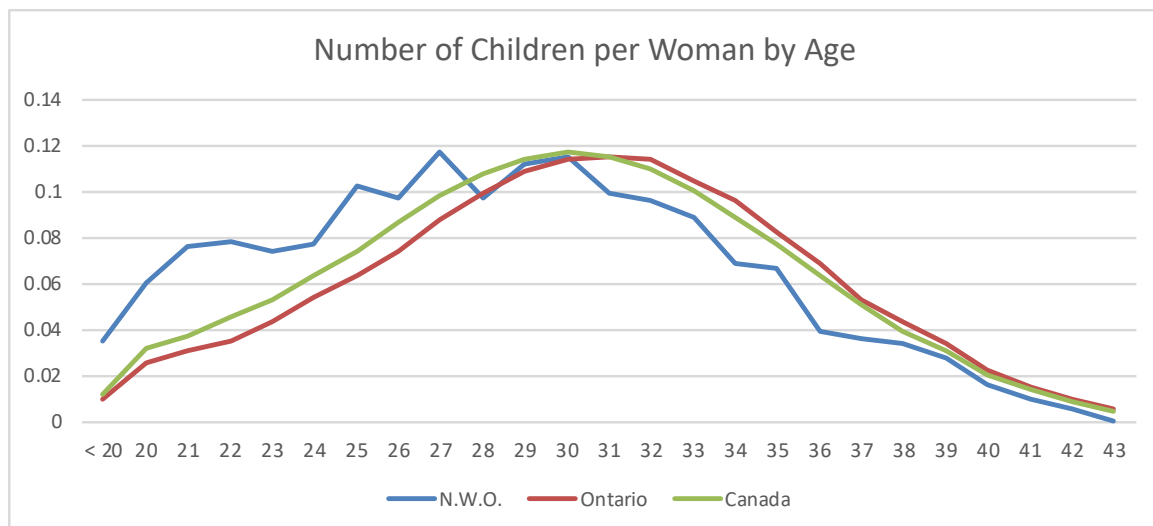


Source: Statistics Canada, Census of Population, various issues

Northwestern Ontario's share of the provincial population declined from 2.54 per cent in 1986 to 2.39 per cent in 1991, 2.06 per cent in 2001, 1.74 per cent in 2011, and 1.72 per cent in 2016. The declining population share has happened despite a higher total fertility rate in Northwestern Ontario

than that of the province or Canada. The total fertility rate is defined as the average number of children that a woman will have during her lifetime. In Canada, the total fertility rate equaled 1.61 in 2011 compared with 1.55 in Ontario and 1.77 in Northwestern Ontario (Figure 2).

Figure 2: Fertility Rate by Age in Northwestern Ontario, Ontario and Canada in 2011



Statistics Canada, 2011 National Household Survey, special tabulation

The higher fertility rate in Northwestern Ontario compared with Ontario suggests that the declining size and share of the region's population are not due to natural population change. In fact, the data suggest that the number of births exceeded the number of deaths in Northwestern Ontario between 1987 and 2007. However, the level of natural increase has been declining in Northwestern Ontario. In fact, Rainy River District experienced more deaths than births after 2005, further adding to the population decline in that region. The declining natural population increase is due

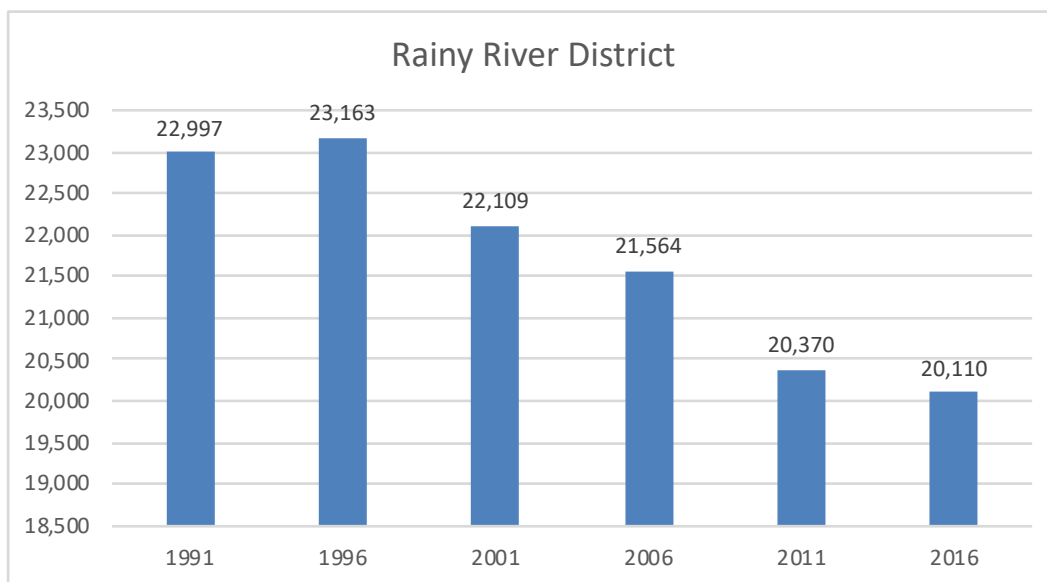
to a gradual increase in the number of deaths compared with births caused by three factors. The first factor is the aging population, which results in a greater share of the population in higher age categories and fewer women in childbearing age categories. The second factor relates to continued low fertility rates, which are significantly below the generational replacement rate of 2.1. The third factor is the out-migration of women in childbearing age categories from Northwestern Ontario.

Population Trends in Rainy River District & Northwestern Ontario

Rainy River District covers 15,485 square kilometres and recorded a population of 20,110 in 2016. It has a population density of 1.3 persons per square kilometre, which is

well below that of Ontario (14.1). According to Statistics Canada's Census of Population, Rainy River's population declined by 12.6 per cent from 1991 to 2016 (Figure 3).

Figure 3: Population Trends in Rainy River District



Source: Statistics Canada, various censuses, custom tabulation

Declining population trends can also be observed in almost all major townships, towns, and cities in Northwestern Ontario

(Table 1). As we will see later in this report, the declining population closely mirrors employment changes in the region.

Table 1: Population Trends in Major Northwestern Ontario Regions

Region	1996	2001	2006	2011	2016
Thunder Bay City	113,662	109,016	109,140	108,359	107,909
Kenora City	10,063	15,838	15,177	15,348	15,096
Fort Frances Town	8,790	8,315	8,103	7,952	7,739
Dryden City	6,711	8,198	8,195	7,617	7,749
Sioux Lookout Town	5,165	5,336	5,183	5,038	5,272
Greenstone MU	6,530	5,662	4,906	4,725	4,636
Red Lake Town	4,778	4,233	4,526	4,670	4,107
Marathon Town	4,791	4,416	3,863	3,350	3,273
Atikokan Town	4,043	3,632	3,230	2,787	2,753
Manitouowadge TP	3,395	2,949	2,300	2,105	1,937
Nipigon TP	2,210	1,964	1,752	1,630	1,642
Terrace Bay TP	2,324	1,950	1,625	1,470	1,611
Schreiber TP	1,788	1,448	901	1,125	1,059
Red Rock TP	1,258	1,233	1,063	940	895
Dorion TP	472	442	379	340	316

Source: Statistics Canada, various censuses, custom tabulation

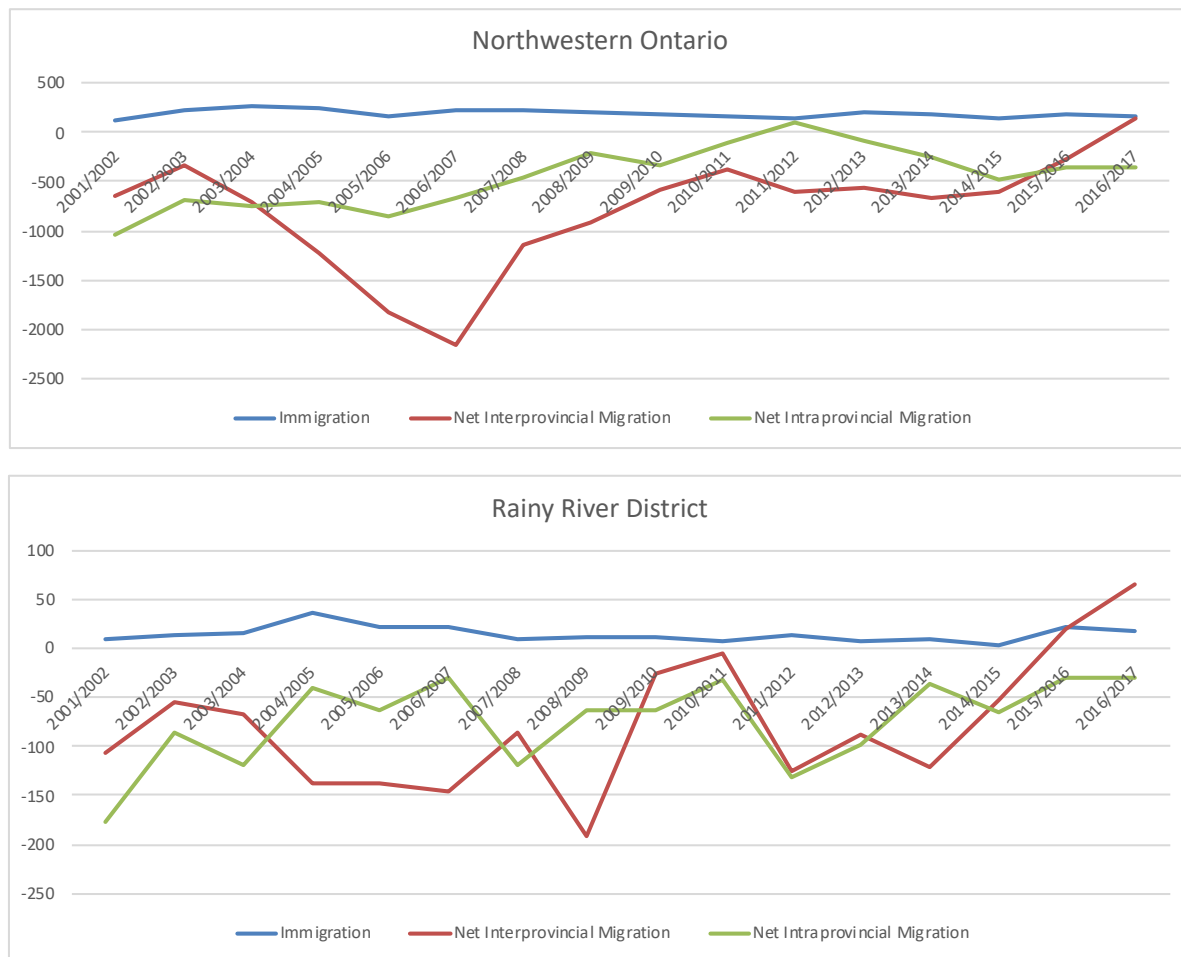
Various factors explain declining regional population. First, Northwestern Ontario and Rainy River District have been receiving disproportionately low rates of Immigrants. Net immigration is defined as the number of Immigrants to a region minus those who left. The region experienced negative net immigration between 2001 and 2016. This is one of the important factors influencing the declining population. The second and perhaps more important factor relates to out-migration.

Figure 4 shows that Northwestern Ontario and Rainy River District have experienced negative interprovincial as well as intraprovincial out-migration especially during the mid-2000s due to the collapse of the forestry industry along with the related manufacturing industries. Interprovincial migration refers to the movement of population from one province to another. During the past 30 years, net interprovincial migration into Ontario averaged 2,700 per year. However, this includes the abnormally large inflows from Quebec recorded in the years following the 1980 referendum. When those inflows are excluded, long-term net interprovincial migration

to Ontario is modestly negative. Intraprovincial migration refers to the movement of population from one census division to another within the province.

Figure 4 shows that the majority of those who choose to move appear to move out of the province. The largest portion of individuals who out-migrate to other provinces are between the ages of 20 and 34. On the other hand, the Rainy River District experienced an in-migration from other census divisions within Ontario, more than likely those in Northwestern Ontario, between 2006 and 2014. Examination of the data reveals that the intraprovincial in-migrants to Rainy River District are 35 years of age and older and that they are bringing their children with them. Overall, net out-migration has decreased over time. What are the reasons for the declining out-migration from Northwestern Ontario? Can it be related to the age profile of the movers? Can it be related to the aging of the population resulting in a smaller share of the population in their prime moving age? Figure 5 shows the age distribution of the migrants.

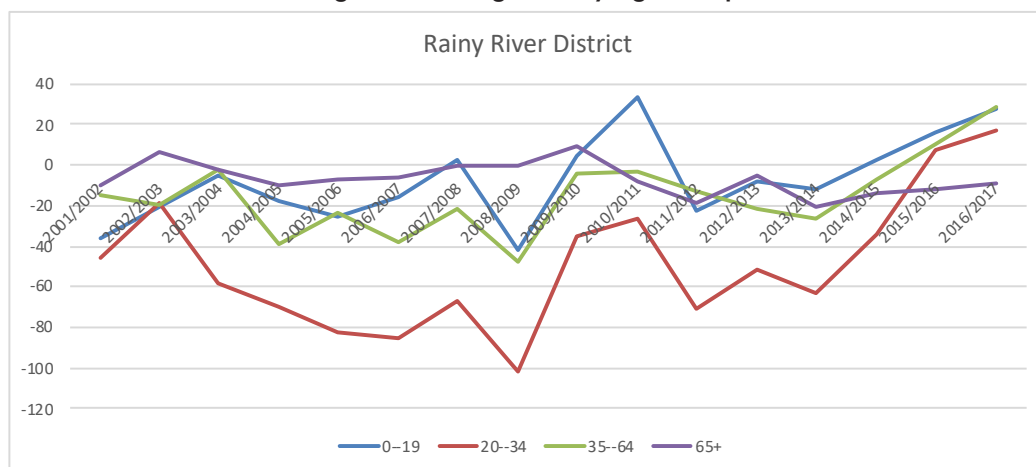
³ Ontario Ministry of Finance, Ontario Population Projections Update based on the 2011 census 2017-2041 Ontario and its 49 census divisions.

Figure 4: Net Migration Flows

Source: Author's calculations based on Statistics Canada, CANSIM database, tables 051-0063

Figure 5 shows that most movers are between the ages of 20 and 34, followed by those between the ages of 35 and 64. Figure 5 also shows that adults moving to other regions take their children with them, resulting in net out-migration

of youth ages 19 and younger. There has always been some out-migration of seniors, but the level and trend has been quite stable. The district has witnessed positive migration in recent years.

Figure 5: Net Migration by Age Group

Source: Author's calculations based on Statistics Canada, CANSIM database, tables 051-0063

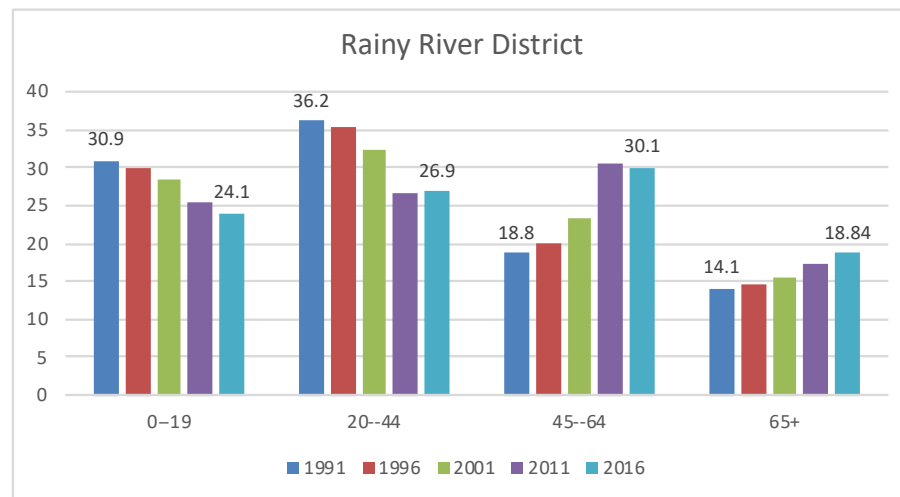
Aging of the Population in Rainy River District

In addition to out-migration of youth and low levels of immigration in the region, rising life expectancy has resulted in the aging of Rainy River's population. At the same time, the large baby-boom generation, born in the two decades following the Second World War, is now beginning to retire. The generations that followed were much smaller, primarily due to a declining fertility rate. As a result, the share of individuals in the district below the age of 20 has declined from 30.9 per cent in 1991 to 24.1 per cent in 2016, while the share of seniors rose from 14.1 per cent in 1991 to 18.8 per

cent in 2016 (Figure 6). During the same period, the share of individuals between the ages of 20 and 44 declined from 36.2 per cent to 26.9 per cent, while individuals ages 45 to 64 increased from 18.8 per cent to 30.1 per cent.

These demographic changes have had a significant impact on social and economic conditions in the district. As a result, the population will continue to age in the foreseeable future, with implications for healthcare and education costs, the supply of labour, production capacity, and the ability of Rainy River to stay economically viable.

Figure 6: Aging of Rainy River District's Population



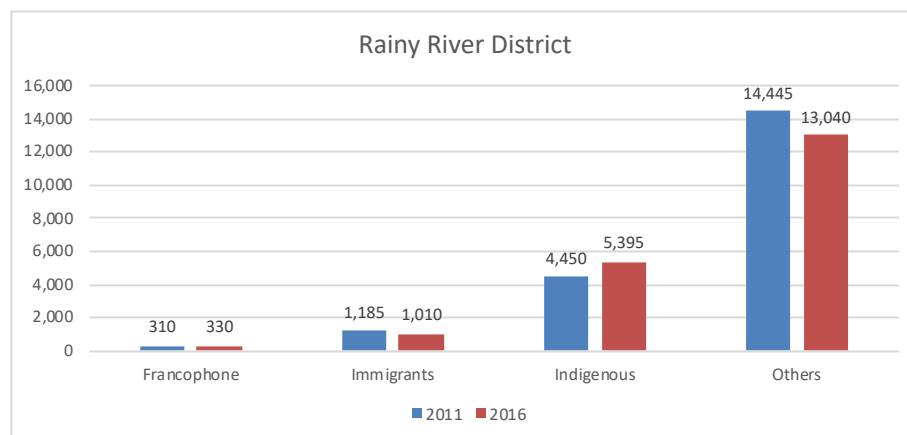
Source: Author's calculation based on Statistics Canada, Census of Population, various issues

Linguistic and Cultural Diversity of the Population in Rainy River District & Northwestern Ontario

Another aspect of demographic change in Northwestern Ontario and Rainy River relates to the cultural and linguistic

diversity of the population (Figure 7).

Figure 7: Linguistic & Cultural Diversity in Rainy River District, 2011-2016



Source: Author's calculation based on Statistics Canada, 2011 NHS and 2016 Census of Population

The total Francophone population in Rainy River stayed relatively constant between 2011 and 2016. The Immigrant population declined while the Indigenous population increased by approximately 21.2 per cent between 2011 and 2016. Indigenous peoples represent approximately 27.3 per cent of the total population in Rainy River. The total Indigenous population in Northwestern Ontario increased from 38,225 in 2001 to 41,600 in 2011 and to 58,950 in 2016. They represent approximately 25.9 per cent of the total regional population. The high Indigenous population growth is not solely due to the natural demographic process. According to Statistics Canada, the traditional demographic components of growth (fertility, mortality, and migration) are not the only factors that have affected the growth of the Indigenous population in Canada. Another phenomenon that has also affected the size, growth, and composition of the Indigenous population in recent years is referred to as a "change in reporting" or "ethnic mobility." Ethnic mobility refers to people changing the reporting of their Indigenous affiliations from a non-Indigenous identity to an Indigenous identity from one census to the next.⁴ The passage of Bill C31 in 1986 has been a factor in this ethnic mobility.

Additionally, there has been a higher participation in the census in recent years. Statistics Canada reports that some Indian reserves and settlements did not participate in the census because enumeration was not permitted, or it was interrupted before completion. In 2006, there were 22 incompletely enumerated reserves, down from 30 in 2001

and 77 in 1996.⁵ Other factors explaining higher Indigenous population growth include better and more accessible health care leading to a lower mortality rate and a decline in infant mortality.

Finally, one of the main factors explaining the rising share of the Indigenous population relates to fertility rate. The fertility rate among Indigenous women has been significantly higher than the regional average. A report by the Ontario Ministry of Health states that: "Fertility is almost exclusively the source of population growth for Aboriginal peoples in Ontario. Provincially, some in-migration of Aboriginal people takes place from other provinces but does not substantially impact population dynamics among Ontario's Aboriginal peoples although the impact may be greater in some urban areas. Although minimum information is directly available on Aboriginal fertility in Canada, INAC (Indian and Northern Affairs Canada) has reported a total fertility rate (TFR), which is the number of children a woman would have under current prevailing fertility rates, of 2.9 children in 2000 for Registered Indian women. In the same year, the TFR for Canadian women was approximately half that rate at 1.5 children."⁶

In general, the Indigenous population is much younger than the non-Indigenous population. Therefore, they will be entering the labour market in large numbers as the non-Indigenous population retires. Indigenous peoples will represent a significant share of the region's workforce in the coming years.

Population Trends in Urban & Northwestern Ontario & Rainy River District

There are many ways to define rural and urban areas. The term rural is intuitively understood as an area with low population concentration dispersed at a low density. On the other hand, the term urban is often understood as a place with high population concentration at a high density. This intuitive understanding is the basis for Statistics Canada's approach to defining an urban area as having a population of at least 1,000 and a density of 400 or more people per square kilometre.⁷ Statistics Canada offers an alternative and perhaps more appropriate definition of rural areas as "rural and small towns" as opposed to "large urban centres." This definition is based on the commuting flows between different areas. It defines urban regions as including all census metropolitan areas (CMAs) and census agglomerations (CAs). Both CMAs and CAs include the total population of neighbouring census subdivisions (CSDs). Based on the above definition of an urban region, rural and small town (RST) areas are defined as non-CMA/CA areas. RSTs are further divided into four types of zones based on

the degree of influence that large urban centres have on them.⁸ This is measured by the percentage of people who commute to work in an urban centre.

Using the above definition, Figure 8 shows the distribution of Rainy River's population among rural and urban areas. Approximately 4.9 per cent of the Rainy River population live in rural areas designated as having moderate link to urban centres. The majority (85.4 per cent) live in rural areas with a weak link to urban centres and 9.7 per cent live in very remote regions with no link to urban centres.

The majority (80.0 per cent) of the Indigenous population live in rural areas designated as relatively remote with a weak link to urban centres. Another 18.2 per cent live in very remote regions with no link to urban centres. The majority (86.4 per cent) of the Francophone population live in relatively remote rural areas with a weak link to urban centres. Similarly, approximately 86.1 per cent of the Immigrant population live in relatively remote regions.⁹

⁴ A. Signer and Rosalinda Costa, "Aboriginal Conditions in Census Metropolitan Areas, 1981-2001," Statistics Canada, 2005.

⁵ Ibid

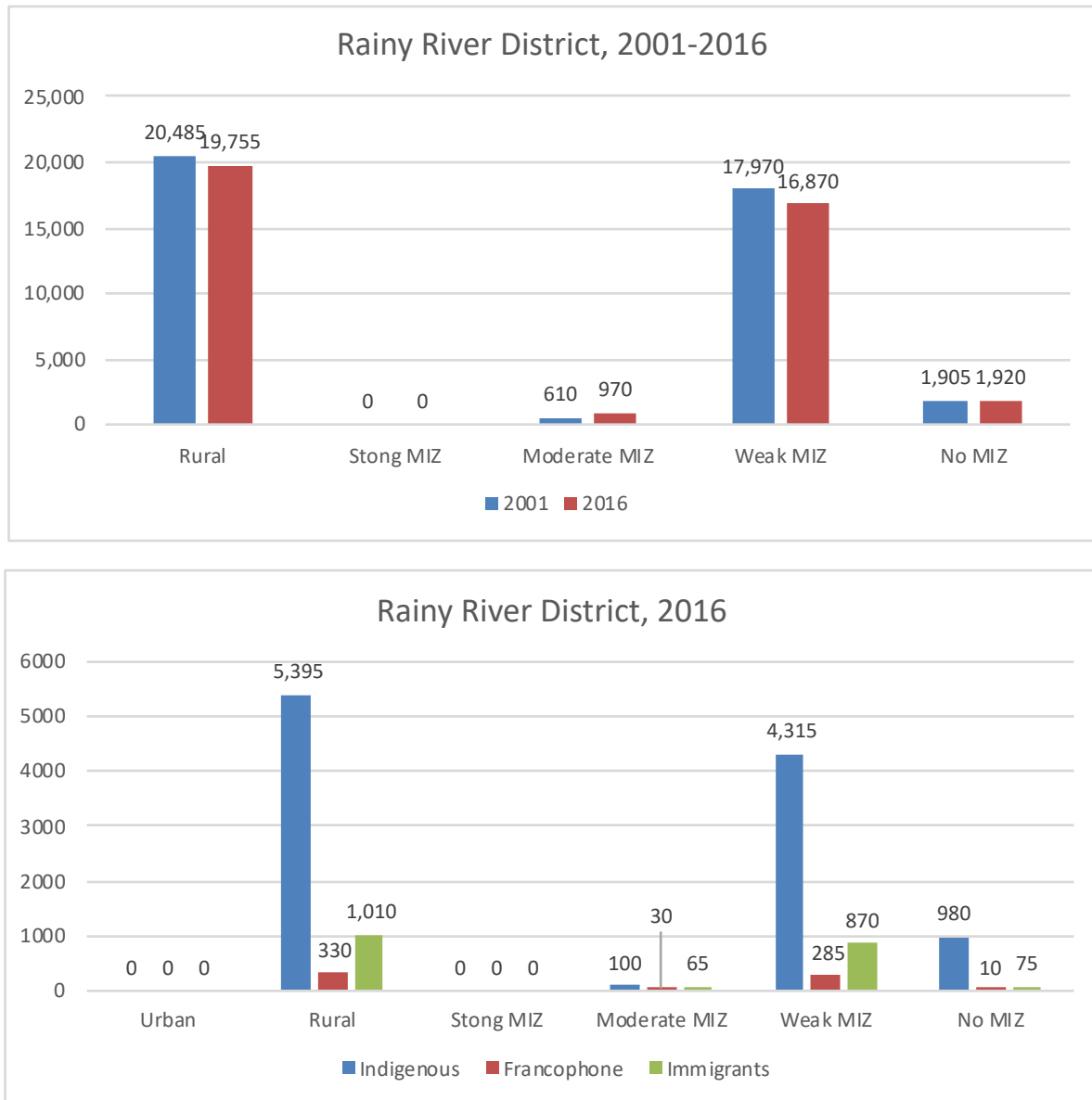
⁶ Ontario Ministry of Health and Long-Term Care, Health Analytic Branch, "First Nations Peoples in Ontario: A Demographic Portrait," January 2009, 15.

⁷ One problem with this definition is that it can lead to misleading identification of rural and urban areas. Based on this definition, Attawapiskat Indian Reserve in James Bay area is classified as an urban area.

⁸ For a definition of various zones see Roland Beshiri and Jiaosheng He, Rural and Small Town Canada Analysis Bulletin 8, No. 2 (June 2009): Catalogue No. 21-006-X.

⁹ We note that Statistics Canada classifies various census subdivisions (CSDs) within provinces that are outside CMAs and CAs into one of four metropolitan influenced zones (MIZ) according to the degree of influence (strong, moderate, weak, or no influence) that the CMAs or CAs have on them. The degree of influence is measured by the percentage of a CSD's employed labour force who commute to work in any CMA or CA (e.g., 30 per cent for strong MIZ, between 5 per cent and 30 per cent for moderate MIZ, between 0 and 5 per cent for weak MIZ).

Figure 8: Population in Urban and Rural Areas in Rainy River District



Source: Author's calculation based on Statistics Canada, 2001 and 2016 Censuses, special tabulation

Demographic Change in Rainy River District: The Next Three Decades

This part of the study provides population projections for Rainy River District, both for the total population and for the Indigenous population. Estimates for the former are based on projections by the Ontario Ministry of Finance and estimates for the latter are based on Northern Ontario's Demographic Model, developed by the author. The model is based on the Cohort Component method.¹⁰ The base year data for the projection are from Statistics Canada's 2016 census.

A few words regarding the Ministry of Finance projections are in order. First, the Ministry's estimated parameters for fertility at the census division level were modelled to maintain regional differences. The census division-to-province ratio for mean age at fertility in the most recent period was assumed to remain constant.

Second, the Ministry's mortality estimates at the census division level were developed using a ratio methodology. The government applied the Ontario-level mortality structure to each census division's age structure during the most recent three years of comparable data and calculated the expected number of deaths. It then compared these estimates to the actual annual number

of deaths in each census division during this period to create ratios of actual-to-expected numbers of deaths. These ratios were then multiplied by provincial age-specific death rates to create death rates for each census division. These rates were then applied to the corresponding census division populations to derive the number of deaths for each census division.

Third, the Ministry uses population estimates based on the 2016 Census adjusted for net undercoverage. Specifically, the projections use Statistics Canada's preliminary July 1, 2017 postcensal population estimates as a base.

Based on the Ministry's projections, Rainy River's population is expected to decline from 19,973 in 2017 to 17,380 in 2041 (Table 2). The continuing aging of Rainy River's population is also evident (Figure 9), with the share of individuals age 20 to 64 expected to decline from 56.5 per cent in 2017 to 46.5 per cent in 2041. Similarly, the share of individuals age 65 and older is expected to rise from 19.9 per cent in 2017 to 31.9 per cent in 2041.

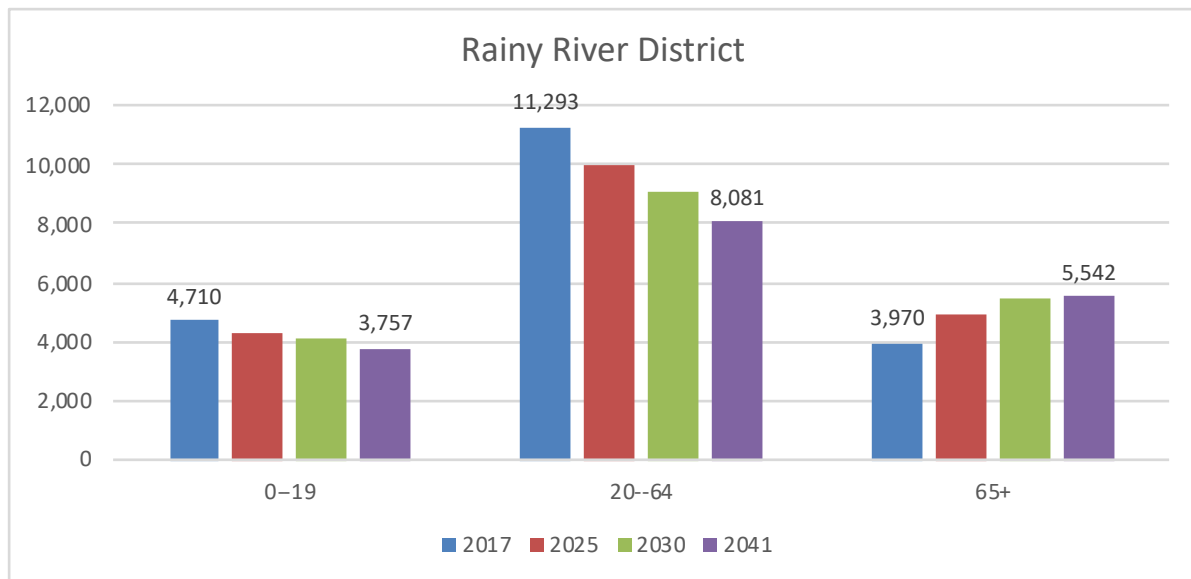


¹⁰ For a complete discussion of this model, see B. Moazzami "It's What You Know (and Where You Can Go): Human Capital and Agglomeration Effects on Demographic Trends in Northern Ontario," (Thunder Bay: Northern Policy Institute, 2015).

Table 2: Population Projections by Age Group, Rainy River District, 2017-2041

Year	0--19	20--44	45--64	65+	Total
2017	4,710	5,441	5,852	3,970	19,973
2018	4,652	5,425	5,818	4,067	19,962
2019	4,616	5,375	5,725	4,195	19,911
2020	4,549	5,318	5,640	4,327	19,834
2021	4,504	5,263	5,526	4,440	19,733
2022	4,482	5,154	5,399	4,574	19,609
2023	4,448	5,097	5,220	4,723	19,488
2024	4,383	5,072	5,062	4,851	19,368
2025	4,324	5,042	4,910	4,973	19,249
2026	4,272	5,013	4,756	5,090	19,131
2027	4,247	4,965	4,604	5,197	19,013
2028	4,209	4,914	4,498	5,275	18,896
2029	4,186	4,834	4,404	5,356	18,780
2030	4,142	4,789	4,286	5,446	18,663
2031	4,093	4,750	4,216	5,487	18,546
2032	4,079	4,698	4,136	5,515	18,428
2033	4,044	4,674	4,064	5,530	18,312
2034	4,007	4,641	4,006	5,541	18,195
2035	3,969	4,602	3,949	5,558	18,078
2036	3,924	4,559	3,898	5,580	17,961
2037	3,877	4,502	3,906	5,558	17,843
2038	3,845	4,433	3,884	5,565	17,727
2039	3,813	4,374	3,861	5,564	17,612
2040	3,784	4,306	3,839	5,567	17,496
2041	3,757	4,258	3,823	5,542	17,380

Source: Author's calculations based on the Ministry of Finance population projections

Figure 9: Population Projections by Age Group, Rainy River District, 2017-2041

Source: Author's calculations based on the Ministry of Finance population projections

Indigenous Population Projection

In making projections for the Indigenous population in Rainy River to 2030, we assume zero net migration of Indigenous people during the forecast period, since the existing evidence suggests there is relatively low mobility among the Indigenous population in the district.¹¹ The fertility rate for the Indigenous population is assumed equal to that in rural Northwestern Ontario, and the mortality rate to equal the rate for the general population of Canada based on the 2011 census.

Based on these assumptions, Table 3 and Figure 10 show that the Indigenous population in Rainy River is expected to increase from 5,340 in 2015 to 6,326 in 2030, a growth rate

of approximately 18.5 per cent. The number of individuals younger than 20 is expected to increase slightly during this period, while working-age Indigenous peoples are expected to rise from 2,855 in 2015 to 3,350 in 2030 – a n increase of approximately 17.3 per cent. The number of individuals age 65 and older is expected to rise from 440 in 2015 to 809 in 2030.

The Indigenous population's share of the district's total population is expected to increase from 27.0 per cent in 2015 to 33.7 per cent in 2030. The share of working-age Indigenous peoples (those ages 20 to 64) is expected to increase from 25.3 per cent in 2015 to 33.8 per cent in 2030.

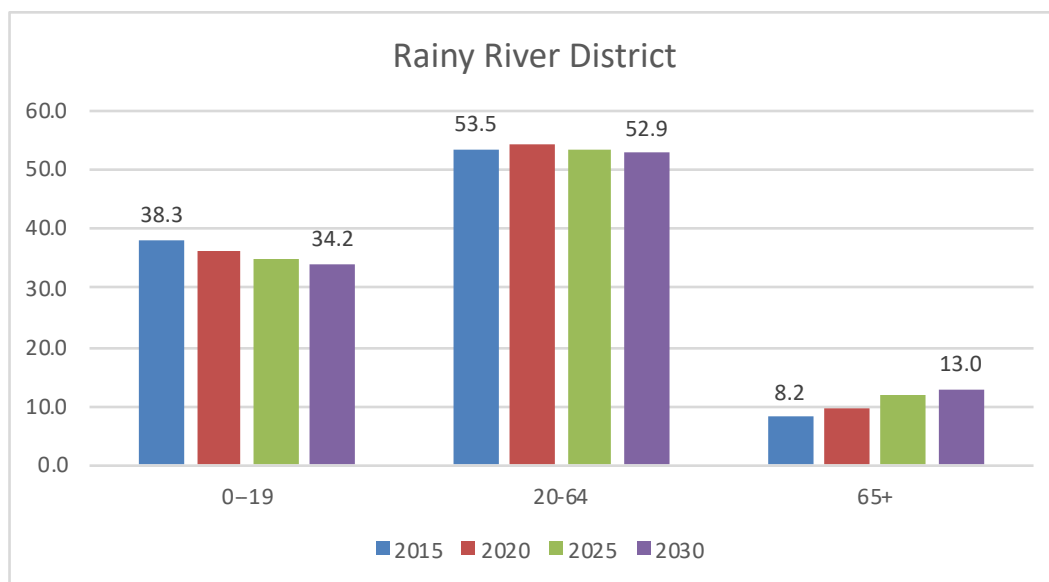
¹¹ According to the 2016 census, Aboriginal Population Profile, interprovincial migration among the Indigenous population during a one-year period (2015 to 2016) was only 1.1 per cent. Also, intraprovincial migration during the same one-year period was 5 per cent. When they moved, they mostly moved within their census division.

Table 3: Projected Indigenous Population, Rainy River District, 2015-2030

Age Group	2015	2020	2025	2030
0 - 4 years	485	488	554	593
5 - 9 years	525	543	485	551
10 - 14 years	520	509	542	484
15 - 19 years	515	498	507	540
20 - 24 years	410	476	494	502
25 - 29 years	300	372	471	488
30 - 34 years	285	327	368	467
35 - 39 years	320	258	324	364
40 - 44 years	330	342	255	320
45 - 49 years	360	315	336	251
50 - 54 years	320	363	308	328
55 - 59 years	300	296	351	298
60 - 64 years	230	291	280	333
65 - 69 years	195	193	269	258
70 - 74 years	115	159	172	237
75 - 79 years	80	110	133	145
80 + years	50	70	119	168
Total	5,340	5,611	5,968	6,326

Source: Author's calculation based on Northern Ontario's population projection model developed by the author.

Figure 10: Percentage Share of the Indigenous Population by Age Group



Source: Author's calculation based on Northern Ontario's population projection model developed by the author.

Rainy River District's Labour Force: Past, Present and Future Trends

Demographic changes have a direct impact on the supply side of the economy through their influence on the labour force. An aging population and a declining share of working age people can seriously restrain future economic development unless productivity growth accelerates or steps are taken to increase participation of older workers, youth, and other underrepresented groups in the labour force.

This study has shown that the Indigenous population represents a growing segment of both Rainy River's total population and its working-age population. A significant gap exists, however, between the level of educational achievement of Indigenous individuals and that of the general population, resulting in a severe labour market outcome disparity that affects the current and future

productive capacity of Rainy River's labour force.

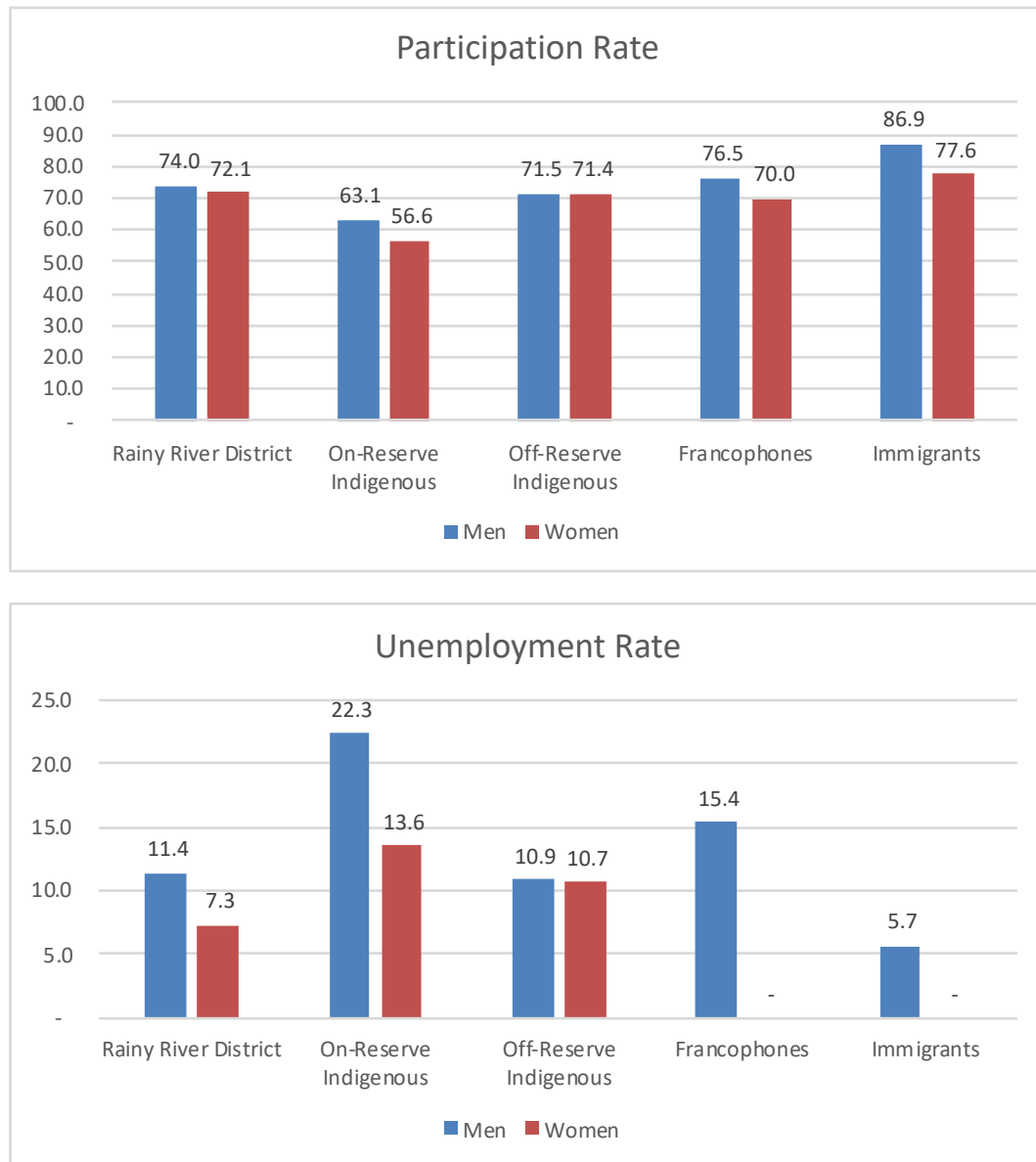
Table 4 and Figure 11 show labour market trends among the population ages 15 to 64 in the Rainy River District. As the table shows, the labour force participation rate declined among men but stayed relatively constant among women between 2001 and 2016. The employment rate decline among men but rose among women between 2001 to 2016.

In general, the labour force participation rate is lower and the unemployment rate higher among the Indigenous population. There is also a significant difference between the Indigenous labour force on-reserve and off-reserve, with the unemployment rate among on-reserve men at 22.3 per cent in 2016. In contrast, the unemployment rate among the off-reserve Indigenous men is much lower (10.9 per cent).

Table 4: Labour Market Trends, Population 15 to 64 Years of Age, Rainy River District, 2001-2016

Labour Market Outcome	Men	Men	Men	Women	Women	Women
Rainy River District	2001	2011	2016	2001	2011	2016
Total population 15 to 64 years of age	6,965	6,475	6,185	6,925	6,510	6,355
In the labour force	5,695	4,665	4,575	4,960	4,635	4,580
Employed	5,115	4,195	4,055	4,515	4,265	4,250
Unemployed	580	470	520	445	360	335
Not in the labour force	1,275	1,815	1,605	1,965	1,880	1,770
Participation rate	81.7	72	74.0	71.6	71.2	72.07
Employment rate	73.4	64.8	65.6	65.3	65.6	66.88
Unemployment rate	10.2	10.1	11.4	9.0	7.9	7.31
Indigenous Population	2001	2011	2016	2001	2011	2016
Total population 15 to 64 years of age	1,120	1,410	1,710	1,165	1,470	1,700
In the labour force	850	880	1,160	805	855	1,105
Employed	685	730	980	685	760	975
Unemployed	165	150	180	125	100	130
Not in the labour force	275	530	545	350	615	590
Participation rate	75.9	62.4	67.84	69.4	58.0	65.0
Employment rate	61.2	51.8	57.31	59.1	51.5	57.4
Unemployment rate	19.4	17.0	15.52	14.9	11.7	11.8

Source: Author's calculations based on Statistics Canada, various censuses, custom tabulation

Figure 11: Labour Force Participation and Unemployment Rates in Population 15 to 64 Years of Age, Rainy River District, 2016

Source: Author's calculations based on Statistics Canada, 2016 census, custom tabulation.

In general, Indigenous peoples tend to underperform in the labour market relative to non-Indigenous peoples. The labour force participation rate among Indigenous peoples is below the regional averages (Table 4). They are seriously underrepresented in the labour force. Their unemployment rates are also significantly higher than the regional averages. In fact, the lower labour force participation rate is partly attributable to the presence of the high unemployment rate among the Indigenous workforce. It is also partly related to the fact that the

level of educational attainment of the Indigenous labour force is below the regional average. Records show that per-student education funding of on-reserve Indigenous primary and secondary schools has been significantly lower than the provincial average in Ontario.¹² Lack of adequate funding is partly responsible for the lower level of educational achievement of the Indigenous population. We will estimate the human capital composition index for the Indigenous labour force later in this report.

¹² Office of the Parliamentary Budget Officer, "Federal Spending on Primary and Secondary Education on First Nations Reserves," December 6, 2016. www.pbo-dpb.gc.ca

Size and Composition of the Future Labour Force

To forecast the future labour force in the Rainy River District, we use detailed population projections along with information regarding participation rates for men and women in different age groups. We have assumed that the participation rates during the projection period stay constant at their 2016 level. Different assumptions regarding the participation rates would alter the labour force estimates, but only to a limited extent. The main determinants of the future labour force are the size and age distribution of the population in each jurisdiction.

Table 5 provides labour supply projections for the Rainy River District. The projections show that the labour force in the district is expected to decline from 9,151 in 2015 to 8,090 in 2030, a decline of approximately 11.6 per cent

during the projection period. During the same period, the Indigenous labour force is expected to increase from 2,247 in 2015 to 2,593 in 2030 – a rise of approximately 15.4 per cent. As a result, the share of Indigenous peoples in the total regional labour force is expected to increase from 24.5 per cent in 2015 to 32.1 per cent in 2030. What are the implications of the declining labour force for the future economic performance of Rainy River and Northwestern Ontario? What are the implications of the rising share of the Indigenous labour force? It is known that the level of educational achievement is lower among the Indigenous population. How would this affect the human capital composition of the regional labour force in the coming years? We will answer some of these questions in the next part of this report.

Table 5: Projected Labour Supply, Total and Indigenous, Rainy River District

Year	Total Labour Force	Indigenous Labour Force	Indigenous Share (%)
2015	9,151	2,247	24.55
2019	8,881	2,359	26.57
2025	8,388	2,463	29.36
2030	8,090	2,593	32.05

Source: Author's calculations based on his population projections

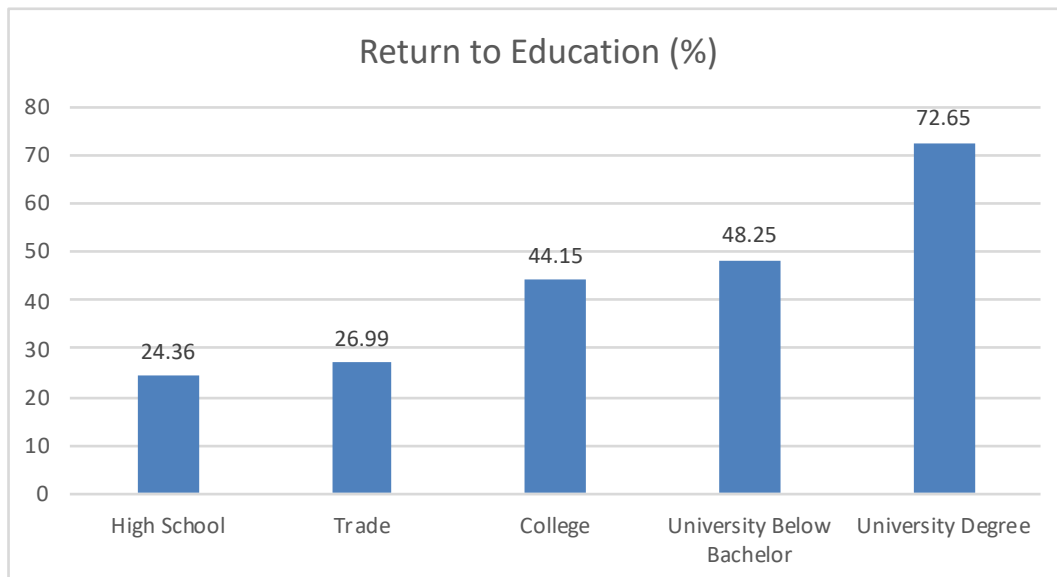
Productivity and Human Capital Composition of the Workforce in Rainy River and Northwestern Ontario

Productivity growth is directly linked to the human capital composition of the workforce. We define human capital as the stock of knowledge, skills, and abilities embodied in individuals that directly affects their level of productivity. Human capital includes skills and knowledge acquired through education and experience. Investing in human capital represents an avenue through which Northwestern Ontario can enhance productivity and minimize the impact of the declining labour force.

In order to estimate the human capital composition of the regional workforce, one needs to specify and measure a

proxy for human capital that also reflects and incorporates a measure of productivity of the workforce in each of the districts in Northwestern Ontario. To obtain such an index, we first estimate a standard earnings model using the 2006 census microdata file.¹³ We used data pertaining to all working Canadians between the ages of 15 and 64 who were not attending school and whose employment earnings were greater than \$1,000 and less than \$1 million. Those with less than a high school diploma were the benchmark or reference group. The estimated return to schooling coefficients are shown in Figure 12.

Figure 12: Return to Education in Canada (%)



Source: Author's estimates using 2006 census microdata files

The estimated return to schooling coefficients show the increased earnings, compared with the reference group, associated with different levels of education in Canada. Therefore, they represent the average rate of return to schooling at the national level. For example, obtaining a high school diploma increases a person's earnings by 24.4 per cent above the earnings of those without a high school diploma. Similarly, obtaining a trade or college diploma increases earnings by 27.0 per cent and 44.1 per cent respectively. A university degree increases earnings by an average of approximately 72.6 per cent. The return to schooling estimates

reflect higher productivity resulting from an increased level of education. The estimated return to education coefficients increase as the level of schooling rises, reflecting higher earnings commensurate with higher productivity as the level of education increases.

Then, we use the estimated return to schooling coefficients as weights to calculate a weighted average index of the share of individuals with different levels of schooling for various regions.¹⁴ The estimated index ranges from 100 if none of the area's residents have completed high school to approximately 200 if all residents have obtained a university degree.

¹³ The earnings model is as follows: $\ln Wage = \alpha + \sum \beta_i S_i + X_i \delta + \epsilon_i$, where S_i is the highest level of schooling, X_i is other control variables (which include age categories, marital status, etc.), and ϵ_i is an error term.

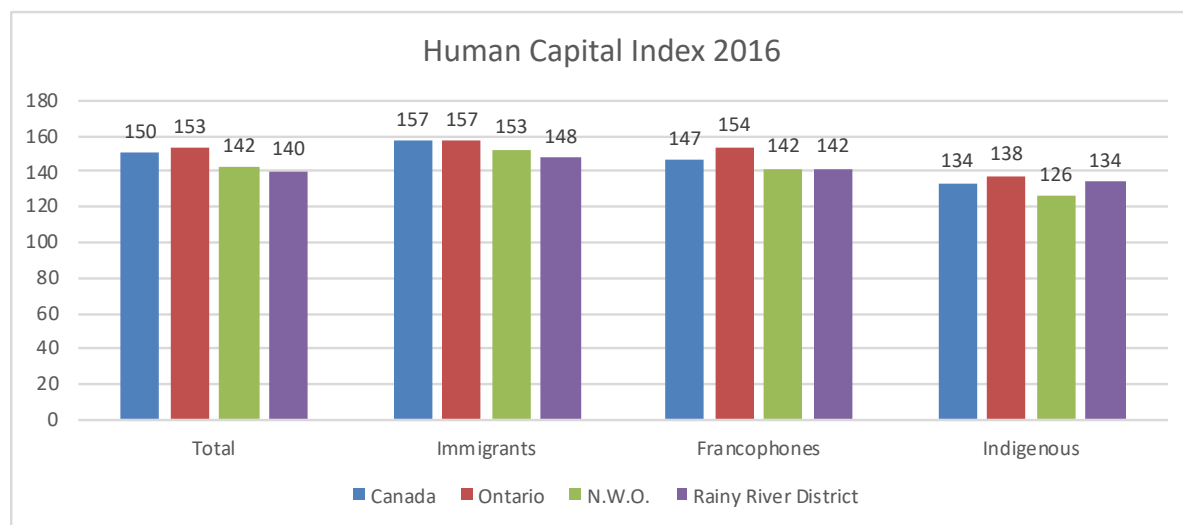
¹⁴ $HCI = \exp(\sum \beta_i S_i \text{ shares})$, where HCI stands for human capital index, exp stands for exponential, and S_i shares stand for share of the population ages 15 to 64 with S_i level of education in a given CSD. The formulation of the human capital measure is based on R.E. Hall and C.I. Jones, "Why Do Some Countries Produce So Much More Output per Worker than Others?," Quarterly Journal of Economics 114 (1) (1999): 83–116. Also see Francesco Caselli, "Accounting for Cross-Country Income Differences," unpublished first draft (November 2003).

The resulting index provides us with an estimate of the total employment and earnings potential in the region based on educational attainment. The index also allows us to effectively compare across different regions. A higher human capital index indicates a higher stock of educational attainment, knowledge, skills, and abilities for the region in question, therefore resulting in higher earnings potential. Results are shown in Figure 13.

The human capital index in Northwestern Ontario (142) is below that of Ontario (153) and Canada (150). The index

for Rainy River District is lower (140) when compared with Northwestern Ontario (142). The human capital composition of the Indigenous population is generally lower than that of the general population, reflecting a lower level of educational achievement. The index for the working-age Indigenous population in Rainy River equals 134.4, which is higher than that of the Indigenous population in Northwestern Ontario (126.1), but lower than that of the population in Ontario (137.5). The average index for Rainy River's Indigenous population is approximately six points lower than that of the total regional population.

Figure 13: Human Capital Index for Working age Population (25-64)



Source: Author's estimates based on Statistics Canada, 2016 census, special tabulation

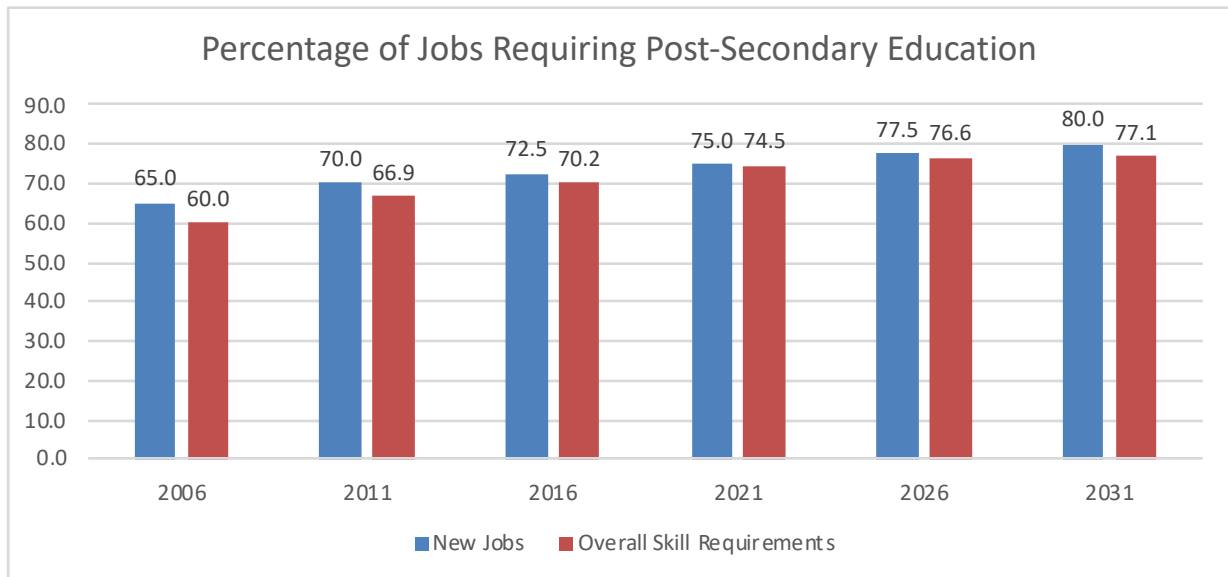
A Perfect Storm: Declining Labour Supply and Labour Productivity in Rainy River District & Northwestern Ontario

The declining supply of labour and low labour productivity in Northwestern Ontario is only half of the bad news. Recent technological advances and the emergence of the knowledge economy have changed the requirements of the labour market. Various studies suggest that by 2031 approximately 80.0 per cent of the workforce must have post-secondary credentials such as an apprenticeship, or a college or university degree. Currently, approximately 72.5 per cent of the new jobs and an average of 70.2 per cent

of all jobs require some postsecondary credentials.¹⁵ Based on various studies by the Ontario Ministry of Education, Human Resources and Skills Development Canada, BC Ministry of Skills, Training and Education, Ministry of Advanced Education and Labour Market Development in British Columbia and other government agencies, Miner Management Consultants provides estimates of the percentage of new jobs requiring postsecondary education in the coming years (Figure 14).

¹⁵R. Miner, "People without Jobs, Jobs without People: Canada's Future Labour Market," (Toronto: Miner Management Consultants, 2010).

Figure 14: Percentage of Jobs Requiring Postsecondary Education

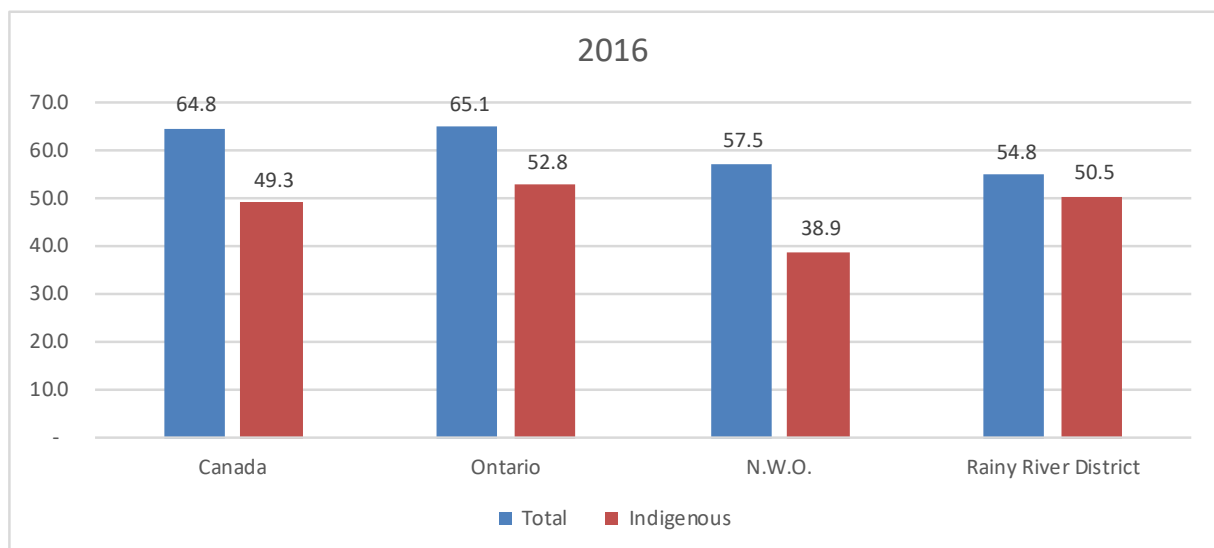


Source: Miner Management Consultants, 'Ontario's Labour Market Future: People without Jobs, Jobs without People', February 2010

What is the actual skill availability of Northwestern Ontario's labour force at the present time? Using the 2016 census and focusing on the prime working-age population ages 25 to 64, Figure 15 shows the percentage of the regional labour force who have post-secondary credentials. The skill levels of the prime working-age population in Northwestern Ontario regions are significantly lower than the skill levels of

Ontario and Canada. The average skill level in Northwestern Ontario is also significantly below the current estimated skill requirements of approximately 70.2 per cent of all jobs (Figure 14). Focusing on the prime working-age total and Indigenous workforce, Figure 15 shows that their level of skills lags behind the current and future job requirements.

Figure 15: Percentage of the Labour Force Ages 25 to 64 with Post-Secondary Credentials



Source: Author's calculations based on 2016 census, special tabulations.

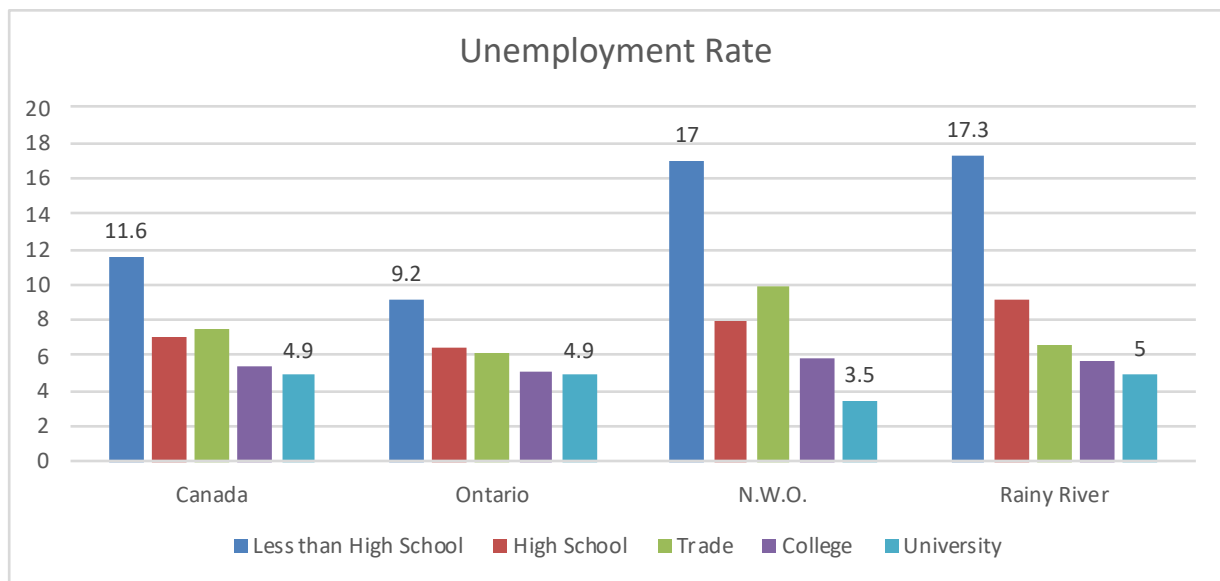
Given that the Indigenous labour force will account for a significant share of Northwestern Ontario's future workforce, it is vital to the social and economic viability of the region to adopt education policies that enable this growing segment of the regional labour force to meet the requirements of the future labour market.

Does the level of skills affect labour market performance (i.e., likelihood of employment, participation and unemployment rates)? Figure 16 shows the likelihood of participation, employment, and unemployment by highest level of educational attainment among the prime working-age population ages 25 to 64. Persons without a high school diploma have the lowest labour

force participation and employment rates. They also experience the highest unemployment rates in all regions. The participation rate increases by 14.8 per cent in Rainy River as the level of education increases to a high school diploma. It rises further by 12.3 per cent when individuals obtain a college certificate or diploma. The same holds true for other jurisdictions. In other words, one potential solution to the declining number and productivity of the region's workforce is to promote higher education either by increasing access for those living in remote regions or by adopting approaches that result in higher completion rates at the secondary and postsecondary levels.

Figure 16: Labour Force Performance by Education (%) (25-64)





Source: Author's calculations based on 2016 census, special tabulations.

The existing evidence suggests that the individuals who do not have postsecondary credentials have a higher likelihood of non-participation and face a greater probability of unemployment. This will be more so in the coming years. To the extent that the skill level of the workforce in Rainy River District is below the estimated skill requirement needed for emerging occupations, the district will face the challenges of workers whose qualifications do not match the existing jobs and jobs that cannot find qualified workers. Recently, 50 companies in advanced manufacturing, mining, and professional and scientific services were surveyed in Northern Ontario.¹⁶ Of the 50 companies surveyed, 22 had operations in Northern Ontario and other jurisdictions (multilocal) and 28 were multinationals operating in Northern Ontario. Of the 50 firms, 15 had their headquarters in Northern Ontario, 11 were located in Northwestern Ontario, and 39 were located in Northeastern Ontario.

When asked to rank barriers or factors negatively affecting their firm's growth and/or investment, companies surveyed typically identified the difficulty of finding qualified

employees as their top concern. Approximately 29.0 per cent of multilocal and 24.0 per cent of multinational firms identified finding qualified employees as the most difficult barrier they faced. Finding qualified employees ranked well ahead of transportation costs (11 per cent), government regulations (9 per cent), poor infrastructure (7 per cent), energy costs (7 per cent) and shipping costs (5 per cent). Another report by the Canadian Council of Chief Executives surveyed more than 100 of Canada's largest employers in all industrial sectors and regions of the country in March 2014. More than 70.0 per cent of the companies identified scarcity of skilled workers as the primary barrier to filling available positions.¹⁷

It appears that if the skill levels of the workforce in Rainy River District stay constant as skill requirements rise, the district will end up with people without jobs and jobs without people. Even if markets adjust to bring demand and supply of labour into balance, the social impact of having many unemployable people will be enormous.

¹⁶ B. Moazzami, HDR Decision Economics Inc. and Oraclepoll Research Limited, "Multi-national and Multi-local Enterprise Initiative, Survey of Northern Ontario Companies," 2012.

¹⁷ The Canadian Council of Chief Executives, "Taking Action for Canada: Jobs and Skills for the 21st Century," (March 2014).

The Consequences of Shifting the Composition of the Employed Labour Force in Rainy River District

The structure of Rainy River's workforce is changing due to a population that is simultaneously declining and aging. At the same time, the industrial and occupational composition of the workforce is shifting due to changing market conditions as well as technological shifts. As a result, the size and industrial makeup of the workforce has changed during the past three decades. There has been a continuous shift away from the goods-producing sector, which is dominated by private businesses, to the service-producing sector, which is predominately publicly funded. Using data from various censuses of Canada, Table 6 and Figure 17 show the changing industrial composition of the employed workforce in Rainy River District.

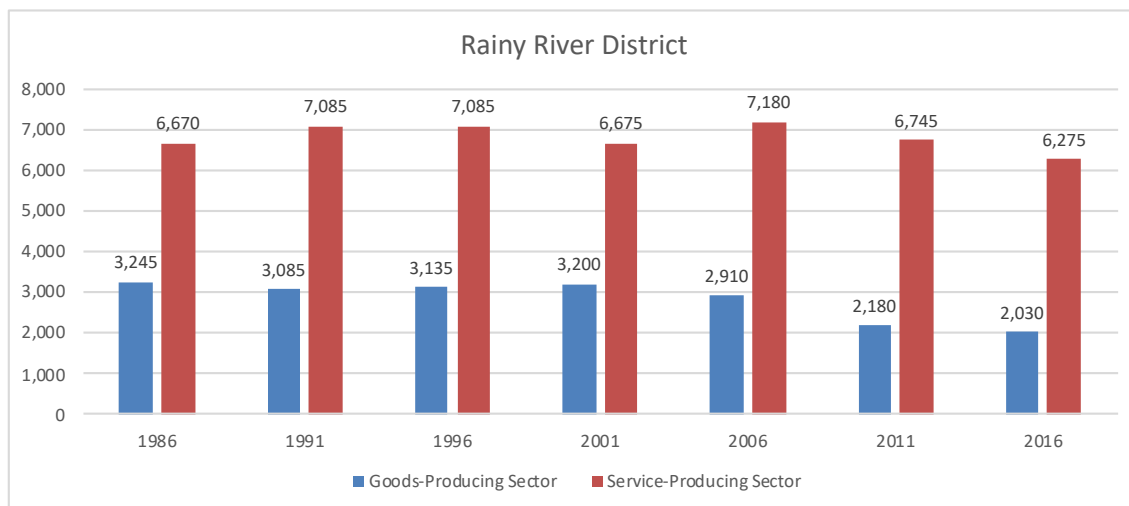
Between 1986 and 2016, total regional employment declined from 9,915 to 8,305 – a decline of approximately 16.2 per cent. As is the case with the overall regional economy, employment in the goods-producing sector has declined from 3,245 in 1986 to 2,030 in 2011, a decline of approximately 37.4 per cent. During the same time period, employment in the service-producing sector declined from 6,670 in 1986 to 6,275 in 2016 – a decrease of approximately 5.9 per cent. The share of the goods-producing sector in total regional employment has also declined from 32.7 per cent in 1986 to approximately 24.4 per cent in 2016. The share of service-producing sectors rose from 67.3 per cent in 1986 to 75.6 per cent in 2016.

Table 6: Changing the Industrial Composition of the Employed Workforce (15+) in Rainy River District

	1986	1991	1996	2001	2006	2011	2016
Goods-Producing Sector	3,245	3,085	3,135	3,200	2,910	2,180	2,030
Agriculture, fishing, and hunting	320	445	370	340	345	355	390
Logging and forestry	680	535	295	255	305	290	145
Mining and quarrying	30	85	55	55	70	200	300
Utilities	330	280	280	160	115	165	130
Construction	440	440	675	730	705	445	625
Manufacturing	1,445	1,300	1,460	1,660	1,370	725	440
Wood industries	345	180	465	720	485	80	275
Paper and allied industries	910	875	865	780	725	560	40
Service-Producing Sector	6,670	7,085	7,085	6,675	7,180	6,745	6,275
Trade	1,550	1,455	1,540	1,490	1,215	1,160	1,150
Transportation and warehousing	590	455	470	460	460	340	410
Finance, insurance, real estate, and leasing	280	340	265	330	375	285	150
Professional, scientific, and technical services	150	165	225	185	150	155	215
Educational services	700	790	850	705	835	730	845
Health care and social services	900	1,200	1,475	1,215	1,435	1,545	1,540
Accommodation and foodservices	1,115	980	915	730	915	655	580
Other services	445	495	630	855	900	840	685
Public administration	940	1,205	715	705	895	1,035	700
Total Employment	9,915	10,170	10,215	9,870	10,070	8,935	8,305

Source: Author's calculations based on various censuses, special tabulations

Figure 17: Shifting Composition of the Employed Workforce



Source: Author's calculations based on various censuses, special tabulations

A shift in the industrial structure of the workforce is accompanied by a change in the occupational distribution of the labour force (Table 7). Employment in most occupational groups declined except for health and social

science, education, and public administration. Changing size and composition of the employed workforce impacts output and income in Rainy River District (Figure 18).

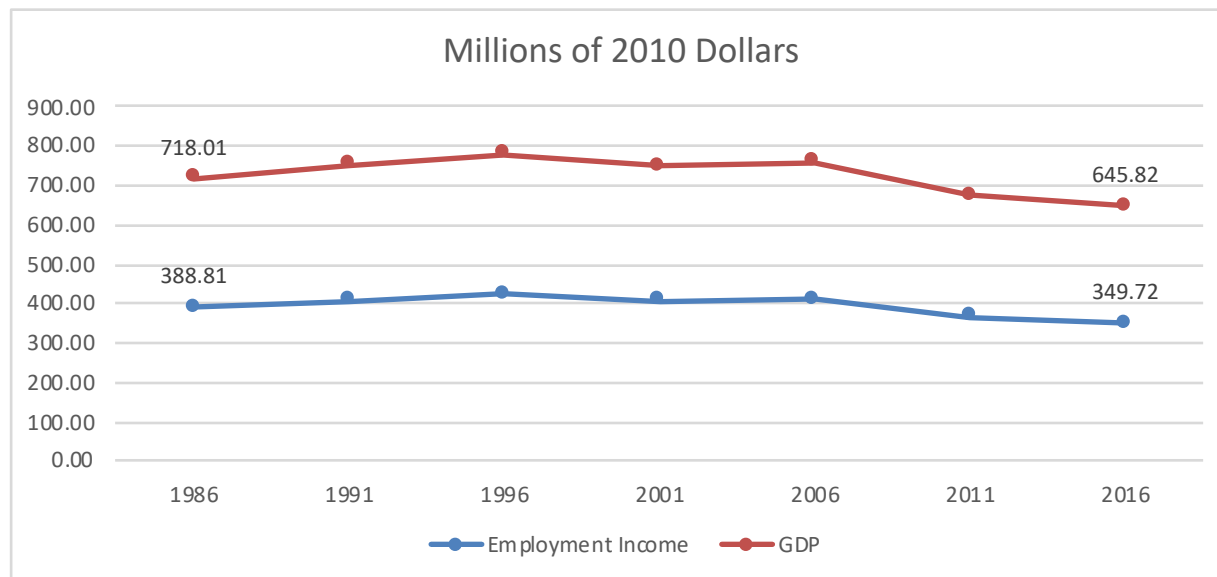
Table 7: Occupational Distribution of Employed Workforce (15 to 64) in Rainy River District

National Occupational Classification 2006	2001	2011	2016	Percentage Change (%)
A Management occupations	870	750	795	(8.6)
B Business, finance, and administrative occupations	1,255	1,040	1,055	(15.9)
C Natural and applied sciences and related occupations	310	330	310	-
D Health occupations	570	750	680	19.3
E Occupations in social science, education, government service, and religion	795	1,005	1,410	77.4
F Occupations in art, culture, recreation, and sport	145	155	145	-
G Sales and service occupations	2,230	2,060	1,790	(19.7)
H Trades, transport and equipment operators, and related occupations	1,860	1,415	1,445	(22.3)
I Occupations unique to primary industry	555	605	370	(33.3)
J Occupations unique to processing, manufacturing, and utilities	1,040	350	315	(69.7)
Total	9,630	8,460	8,315	(13.7)

Source: Author's calculations based on 2001 and 2016 censuses and 2011 NHS, special tabulations.

Figure 18 shows that total regional employment income declined by approximately 10.1 per cent between 1986 and 2016. This is partly due to declining employment and partly due to the changing occupational structure of the employed

workforce. Goods-producing sectors of the economy were among the high wage and high value-added industries in the district. Their decline has not only affected the level of output but also resulted in lower average earnings in the district.

Figure 18: Labour Income and GDP Estimate for Rainy River District

Source: Author's calculation based on Statistics Canada, various censuses, special tabulation

Looking Ahead

Aging population influences demand for government program expenditures such as health care and education. What healthcare related services will be necessary to meet the requirements of a rapidly aging regional population? How many doctors, nurses, and other types of healthcare providers do we need to train and/or attract to replace the aging healthcare providers while satisfying the growing demand for healthcare services?

Aging population also affects student enrolments, revenues, and therefore demand for various educational services in Northwestern Ontario and its districts. What would be the impact of demographic change on demand for teachers

and educators, and therefore employment and income in that sector of the regional economy?

Various regional and national surveys indicate a shortage of skilled tradespeople in various regions in Ontario and other regions of Canada. How has an aging population affected the supply and availability of tradespeople in Northwestern Ontario? Are we training enough tradespeople to satisfy our current needs and prepare for the upcoming mining and forestry renewal? Otherwise, importing such expertise will seriously reduce the economic benefits of any resource-development in Northwestern Ontario. These are questions that we will address in the last part of this report.

Population Aging and Demand for Healthcare Occupations: Future Trends

Demand for healthcare services consists of two components. The first component relates to the expected population growth or decline due to birth, death, age, and migration. These changes, which affect demand for healthcare services, are referred to as the growth component. The second component, which relates to the need to replace retiring service providers, is often referred to as the retirement-replacement component.

To estimate the growth component of total demand for healthcare services, we use our population projections for Rainy River District between 2015 and 2030.

According to the 2012 report by North West Local Health Integrated Network (LHIN), the demand for healthcare services in Northwestern Ontario is expected to increase in all sectors. Services associated with the elderly, such as long-term care, complex continuing care, and inpatient rehabilitation are expected to experience the highest growth rates.¹⁸

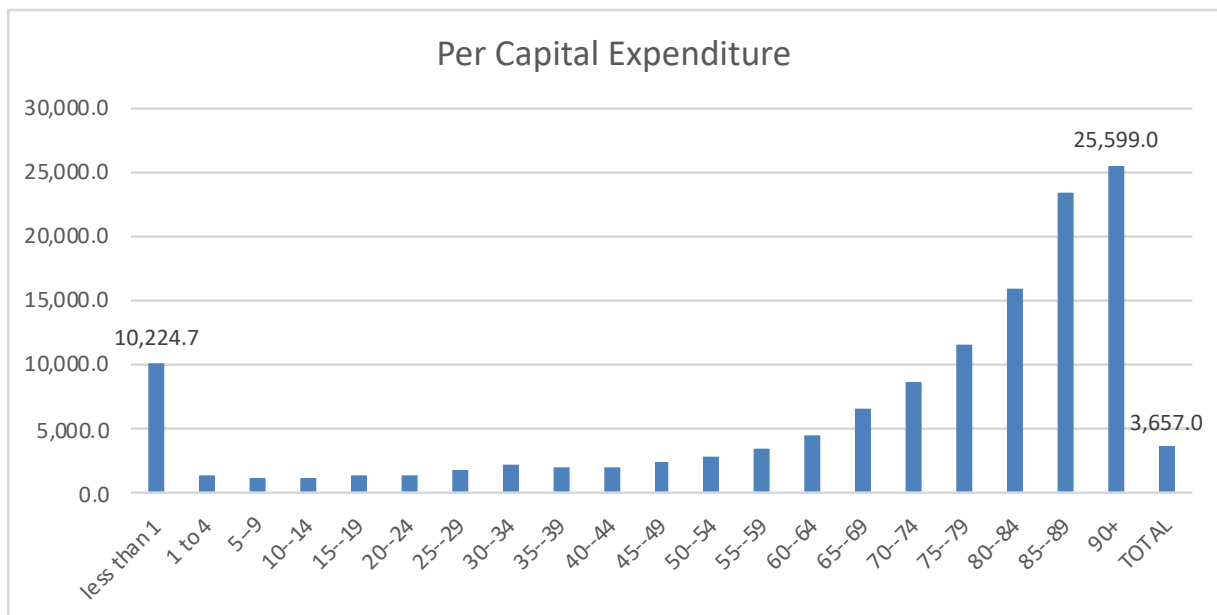
To estimate the growth component of demand, we need to estimate indicators that track demand for healthcare workers in Northwestern Ontario. The growth-demand component reflects the need for more workers to accommodate the rising demand for healthcare services caused by changes in the size and age distribution of the population. We assume that the ratio of workers to patients/residents/clients remains the same during the forecast period. It is important to note that the aging profile of the population affects demand for different occupations differently. For example, the demand for workers employed in long-term care services is expected to rise rapidly as a result of relatively faster growth of the population age 60 and older. The aging of the population may not affect demand for healthcare workers serving a younger population cohort.

¹⁸ Health Services Blueprint: "Building our Future," (PriceWaterhouseCoopers, February 2012). PriceWaterhouseCoopers.

The indicators developed in this part of the study address the need to quantitatively measure the impact of demographic changes on demand for healthcare workers in Northwestern Ontario and Rainy River District. A recent study by the Canadian Institute for Health Information provides estimates of per capita provincial health expenditures by age in Ontario for 2011.¹⁹ This is shown in Figure 19. It shows that per capita health expenditures increase significantly as the population ages. In other words, demand for healthcare resources

is positively correlated with age. Thus, per capita health expenditures by age can be used as a proxy for demand for healthcare services by different age groups. Therefore, using size and age distribution of the population in Rainy River, we can estimate an index that tracks changes in demand for healthcare services between 2015 and 2030. These healthcare demand indicators measure expected growth in demand for healthcare services, and therefore healthcare providers in the district.

Figure 19: Per Capita Health Expenditures in Ontario by Age Category

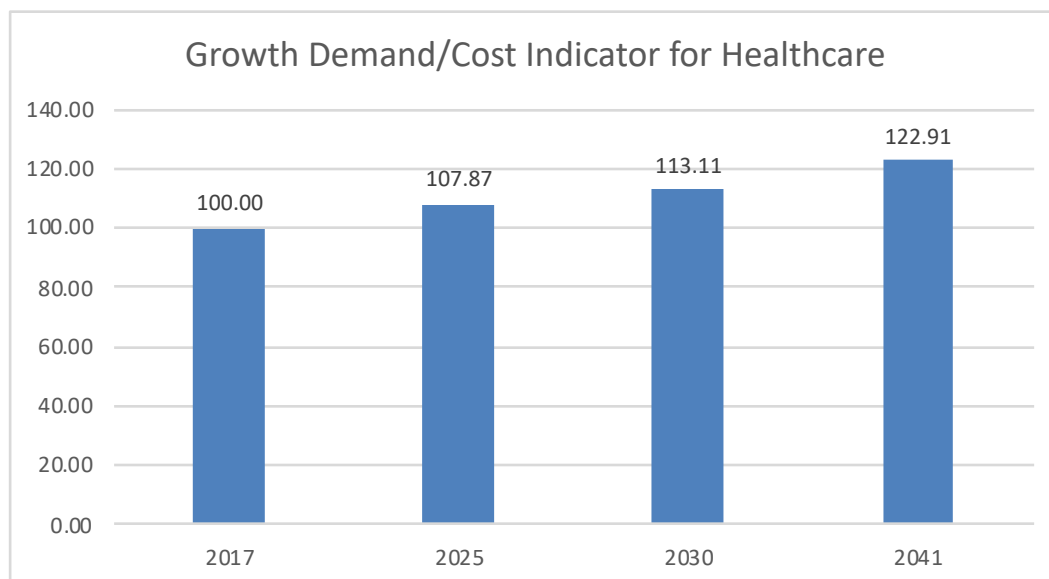


Source: Canadian Institute for Health Information, "National Health Expenditure Trends, 1975 to 2013," 2013

Using the information provided in Figure 19 and the population projections for Rainy River, Figure 20 shows the estimated growth-demand indicator for healthcare services

in Rainy River between 2015 and 2030. We have used demand for healthcare services in 2017 as the benchmark against which we measure growth and cost indicators.

¹⁹ Canadian Institute for Health Information, "National Health Expenditure Trends, 1975 to 2013," 2013.

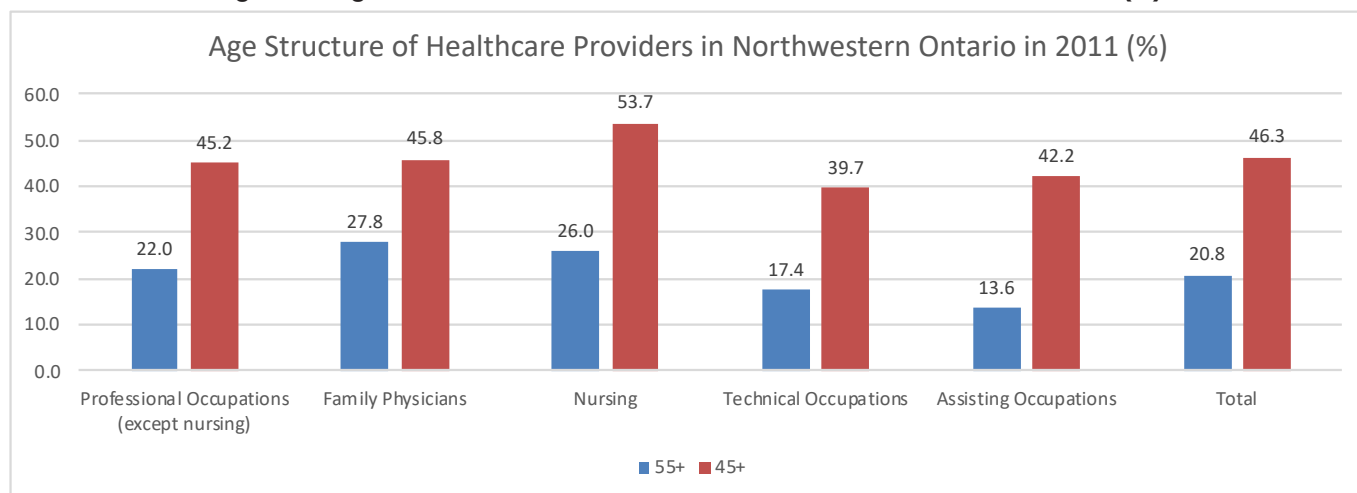
Figure 20: Projected Growth of Health care Demand in Rainy River District

Source: Author's estimate based on Ministry of Finance population projections and census data

Despite the declining regional population, Figure 20 shows that demand for healthcare services is expected to increase between 2017 and 2041. The reason is that the regional population is aging, and demand and thus cost for healthcare services rises by age. In fact, the existing data reveal that demand by seniors age 65 and older is approximately three times greater than the overall average demand.

Turning our attention to the retirement-replacement component of demand for healthcare providers, Figure

21 shows the age structure of healthcare providers in Northwestern Ontario in 2011. Overall, 20.8 per cent of healthcare providers in Northwestern Ontario were older than 55. Approximately 27.8 per cent of the family physicians and 26.0 per cent of those in nursing occupations were older than age 55. The youngest group appears to be those in the assisting occupations, with 13.6 per cent older than age 55. Approximately 46.3 per cent of all healthcare providers were older than 45. Again, those in nursing and professional occupations had the largest share of persons older than 45.

Figure 21: Age Structure of Healthcare Providers in Northwestern Ontario in 2011 (%)

Source: Author's estimate based on Ministry of Finance population projections and census data

Assuming an average retirement age of 65, Table 8 shows the retirement replacement and expansion demand for healthcare providers in Northwestern Ontario.

Table 8: Total Demand for Healthcare Providers in Northwestern Ontario

	Expansion Demand 2011-2020	Replacement Demand 2011-2020	Total Demand 2011-2020	Expansion Demand 2011-2030	Replacement Demand 2011-2030	Total Demand 2011-2030
Professional occupations (except nursing)	124	285	409	346	585	931
Family physicians	34	100	134	96	165	261
Nursing occupations	268	730	998	751	1,510	2,261
Technical occupations	206	375	581	576	855	1,431
Assisting occupations	158	225	383	444	700	1,144
Total Numbers	755	1,645	2,400	2,117	3,670	5,787
Percentage Demand (per cent)	31.5	68.5	100	36.6	63.4	100

Source: Author's estimate based on Ministry of Finance population projections and census data

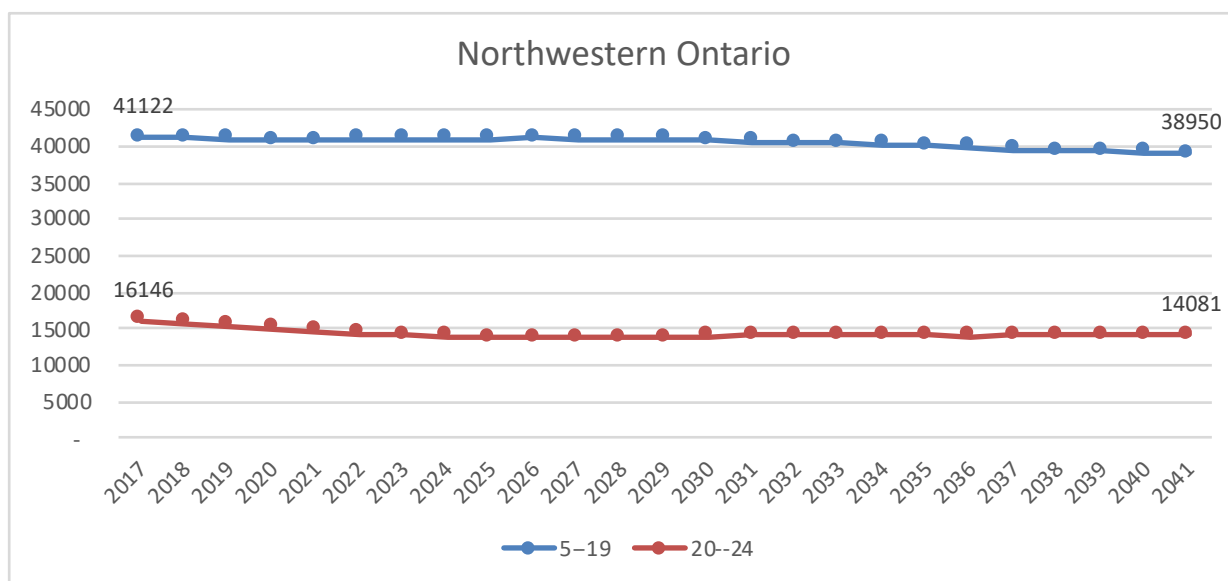
Demand for Educational Services

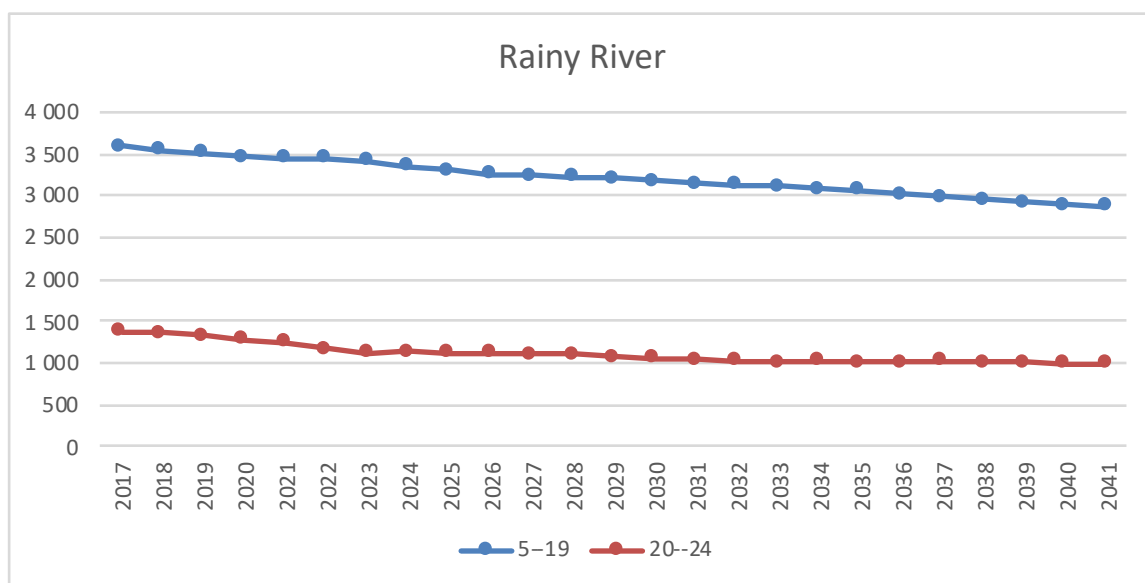
Using Ontario's Ministry of Finance population projections, Figure 22 shows projections for different age groups in Northwestern Ontario and Rainy River District. It shows that the population ages five to 19 years is expected to decline by 11.7 per cent between 2017 and 2041. Based on the above population projections, the population ages five to 19 years in Rainy River is expected to decline from 3,595 in

2017 to 2,871 in 2041. This trend primarily affects primary and secondary school enrolment.

Similarly, total regional population ages 20 to 24 years is expected to decline by 12.8 per cent between 2017 and 2041. Declining youth population influences demand for postsecondary education in Northwestern Ontario.

Figure 22: Northwestern Ontario's Population Projection by Age Category





Source: Author's estimate based on Ministry of Finance population projections and census data

As mentioned before, Indigenous peoples are the only growing segment of the regional population. The number of Indigenous children between the ages of five and 19 in Rainy River is expected to increase slightly from 1,560 in 2015 to 1,575 in 2030. Similarly, the number of Indigenous youth ages 20 to 24 is expected to increase from 410 in 2015 to 502 in 2030.

To estimate the number of employed teachers and instructors in Northwestern Ontario in the future, we need

to make two assumptions. First, we assume an average retirement age of 65. However, even though the normal retirement age is 65, one cannot be forced to retire at that age. Second, we assume that, in the long-term, the number of educators in the region is proportional to the number of students. Based on these two assumptions and using information on the age structure of education service providers in Northwestern Ontario, Table 9 shows the retirement replacement and expansion/contraction demand for educators in Northwestern Ontario.



Table 9: Demand for Educators in Northwestern Ontario

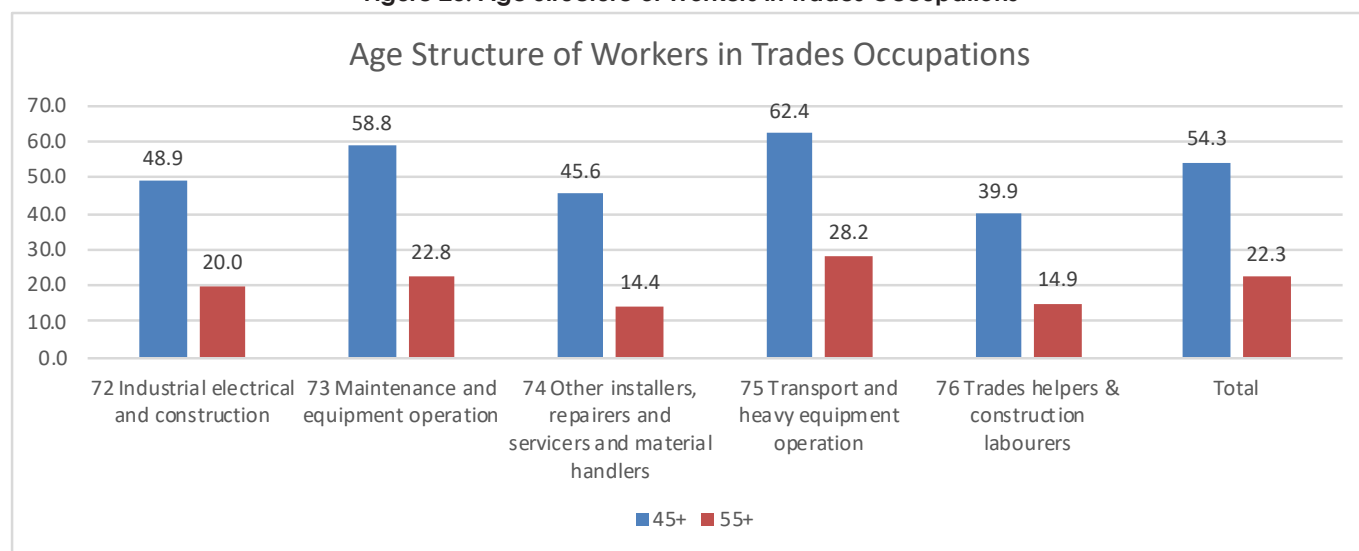
Occupations	2011-2020 Replacement Demand	2011-2020 Expansion Demand	2011-2020 Total Demand	2011-2030 Replacement Demand	2011-2030 Expansion Demand	2011-2030 Total Demand
401 University professors and postsecondary assistants	-78	145	68.81	-132	325	193
402 College and other vocational instructors	-53	110	57.29	-89	305	216
403 Secondary and elementary school teachers and educational counsellors	-242	535	293.48	-255	1,570	1,315

Source: Author's estimate based on Ministry of Finance population projections and census data

Demand for Trades Occupations in Northwestern Ontario

Assuming demand for trades occupations stays at its current level implies that the future demand is solely related to retirement replacement needs of different employers. Figure 23 shows the age structure of trades workers in Northwestern Ontario in 2011. On average, 22.3 per cent of all workers engaged in trades occupations were age 55

and older. Approximately 54.3 per cent of them were 45 and older. Transportation equipment operators and related workers had the highest percentage of people older than age 55 and trades helpers and other installers, repairers, and material handlers had the lowest share of people older than age 55.

Figure 23: Age Structure of Workers in Trades Occupations

Source: Author's estimate based on Ministry of Finance population projections and census data

Based on the assumption of no future employment growth, Table 10 shows the retirement replacement demand for trades occupations in Northwestern Ontario.

Table 10: Retirement Replacement Demand for Trades Occupations

NOC 2011 Classification	Replacement Demand 2011-2020	Replacement Demand 2011-2030
72 Industrial, electrical, and construction	1,100	2,690
73 Maintenance and equipment operation	1,055	2,725
74 Other installers, repairers and servicers, and material handlers	140	445
75 Transport and heavy equipment operation	1,300	2,875
76 Trades helpers & construction labourers	230	605
All Trades	3,825	9,340

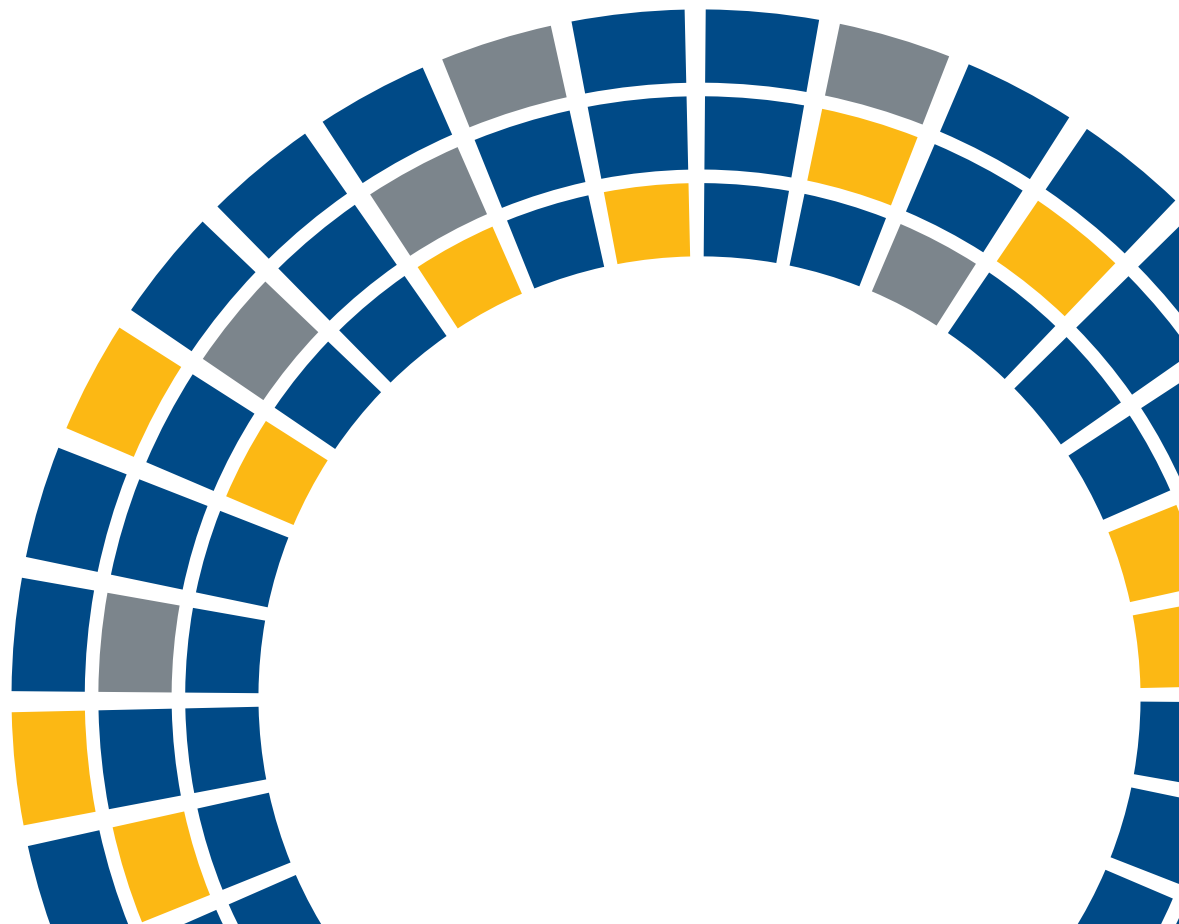
Source: Author's estimate based on Ministry of Finance population projections and census data

Table 10 shows that there is a need for 3,855 trades workers to replace the retiring tradespeople between 2011 and 2020. Transport and heavy equipment operators (1,300) represent the largest number of potential retirees between 2011 and 2020, followed by industrial, electrical, and construction trades workers (1,100), and maintenance

and equipment operators (1,055). The number of trades workers required to replace those who will potentially retire increases significantly when we extend the projection period to 2030.

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Glossary of Terms

Census Agglomeration (CA): adjacent communities that have strong workplace commuting flows to a population centre 'core.' The core must have a population of at least 10,000 in the most recent census.

Census division (CD): is the general term for provincially legislated areas (such as county, municipalité régionale de comté and regional district) or their equivalents. Census divisions are intermediate geographic areas between the province/territory level and the municipality (census subdivision).

Census Metropolitan Area (CMA): adjacent communities that have strong workplace commuting flows to a population centre 'core.' A CMA must have a total population of at least 100,000, at least half of which must live in the core.

Census Sub-Division (CSD): Municipalities or equivalent areas for census purposes. First Nations and unincorporated territories are both counted as CSDs.

Economic Region (ER): A grouping of census divisions aggregated into a standard geographic unit in order to analyze regional economic activity.

Emigrant: a person who moves from their country to permanently settle in another.

Employment Rate: The per cent of the total population over the age of 15 that is working for pay.

Human Capital: The stock of knowledge, skills, and abilities an individual acquires through education and experience that directly affects their level of productivity.

Immigrant: A person who currently is, or ever has been, a landed immigrant or permanent resident, including those who have received Canadian citizenship through naturalization.

Indigenous and Northern Affairs Canada (INAC): The name of the federal ministry that oversaw the federal government's obligations to Indigenous treaty partners. Formerly was Indian and Northern Affairs. INAC was dissolved in 2017 and restructured into two departments: Indigenous Services Canada and Crown-Indigenous Relations and Northern Affairs Canada.

Interprovincial Migration: the movement of people from one province to another.

Intra-provincial Migration: The number of people who move from one region (CD or ER) to elsewhere in the same province.

Metropolitan Influenced Zone (MIZ): A measure of the effect an urban area has on rural CSDs, based on commuter flows.

Strong MIZ: Rural CSDs where at least 30 per cent of the employed labour force commutes to any CMA or CA.

Moderate MIZ: Rural CSDs where five to less than 30 per cent of the employed labour force commutes to any CMA or CA.

Weak MIZ: Rural CSDs where more than 0 but less than five per cent of the employed labour force commutes to any CMA or CA.

No MIZ: Rural CSDs where none of the employed labour force commutes to any CMA or CA, including CSDs with an employed labour force smaller than 40 total people.

Net Immigration: The number of immigrants who came to settle permanently in a region (CD or ER) minus the number of immigrants who left that region.

Net Interprovincial Migration: The total number of people who came from other provinces or territories to settle permanently in a region (CD or ER) minus the total number of people who left that region to settle permanently in any other province or territory.

Net Intra-Provincial Migration: The total number of people who came from other parts of the same province to settle permanently in a region (CD or ER) minus the total number of people who left that region to settle in other parts of the same province.

Net Migration: The total number of people who relocated to a region (CD or ER) minus the total number of people who left that region.

Participation Rate: The per cent of the working age population employed or unemployed and actively seeking work.

Rural and Small Town (RST): CSDs that are not part of a CMA or a CA, meaning they do not have strong commuter flows to a nearby population centre 'core' of at least 10,000 people.

Total Fertility Rate: the average number of children a woman will have in her lifetime.

Unemployment Rate: The per cent of those participating in the labour force who are not working but are actively seeking paid work.

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Northern Policy Institute is Northern Ontario's independent think tank. We perform research, collect and disseminate evidence, and identify policy opportunities to support the growth of sustainable Northern Communities. Our operations are located in Thunder Bay and Sudbury. We seek to enhance Northern Ontario's capacity to take the lead position on socio-economic policy that impacts Northern Ontario, Ontario, and Canada as a whole.

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