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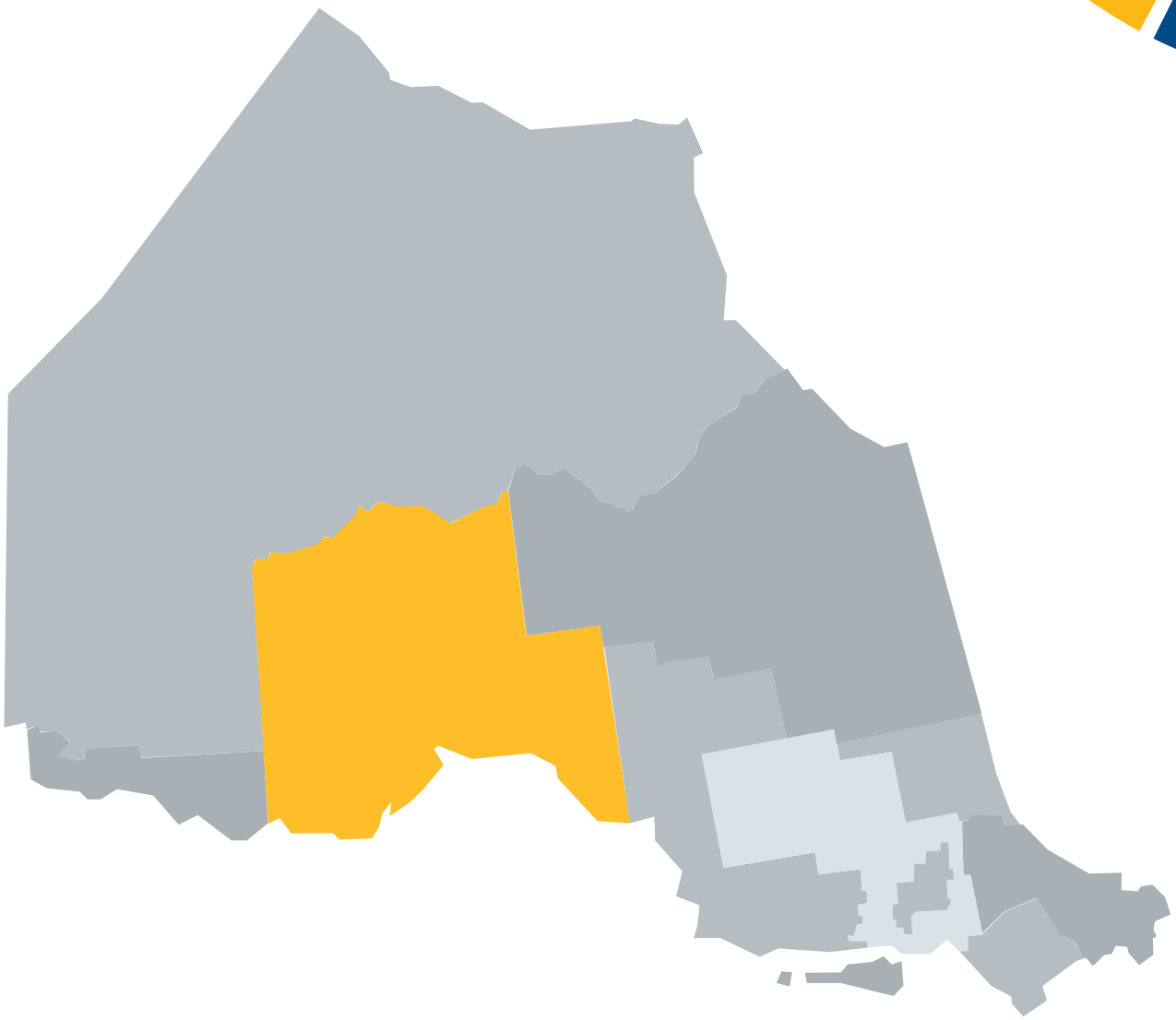

Northern Projections

# Thunder Bay District

Human Capital Series

Local Employment Planning Council

Dr. Bahktiar Moazzami

northernpolicy.ca


Tourist Pagoda, Thunder Bay

# 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.

## Local Employment Planning Council

The Local Employment Planning Council (LEPC) is one of the eight pilot project sites funded in part by the Government of Canada and the Government of Ontario.

The LEPC will be working with 35 local communities to develop labour market information that is relevant to Northern stakeholders such as businesses, employers, employees and employment and training service providers.

We will be working to develop and strengthen partnerships, foster integrated planning and coordinate services.

Local Employment
Planning Council

Madge Richardson -Executive Director
**www.nswpb.ca**
Thunder Bay District

## 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).

# Who We Are

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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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# About the Author

## Dr. Bahktiar Moazzami

Dr. Moazzami has taught Economics and Econometrics at Lakehead University since 1988. He is well known for his research activities particularly related to Northern Ontario.

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 Thunder Bay 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

Thunder Bay District has experienced a consecutive decrease in population over six census periods, from 158,810 in 1991 to 146,048 in 2016. This decline is attributed to several factors, including a decreasing fertility rate, significant interprovincial and intraprovincial out-migration due to the collapse of the forestry and related manufacturing industries, low immigration, and an aging population.

The population is estimated to continue to decline from 148,100 in 2017 to 144,444 in 2041, an approximate 2.5 per cent drop. The problem of an aging population is forecasted to become more severe, with the share of seniors (65 years old and over) growing from 19.8 per cent in 2017 to 30.4 per cent in 2041. On the contrary, the indigenous population is projected to increase by about 21.5 per cent.

This demographic change in population has resulted in changes to the supply side of the labour market. The labour force in Thunder Bay District has been declining since 2001. The size of the labour force decreased from 76,485 to 69,935. The labour force participation rate declined among men but rose slightly among women over the same period. Focusing on the Francophone population, both men and women have declined participation and employment rates, like Indigenous men and women. However, the Indigenous labour force is expected to have a 13.7 per cent increase in 2030, while the total labour force is expected to drop 11.1 per cent.

Despite of the change in the size of the labour force, the percentage of the working-age labour force with postsecondary credentials is higher in Thunder Bay District than in Northwestern and Northeastern Ontario as a whole. The study also found that the reliance on goods-producing sectors in Thunder Bay District has decreased significantly between 1986 to 2016, while reliance on service producing sectors has slightly increased. Furthermore, the number of people employed in natural and applied science, health and social science, education, and public administration has increased since 2001.

## Recommendations:

### Reverse the trends

Thunder Bay's population and labour force are shrinking and aging. The district has seen many people move away, and relatively few move in. As a result, Thunder Bay should focus on newcomer attraction in order to restore sustainable ratios of workers to dependents. In addition, the district should develop youth retention strategies that will stem the tide of youth outmigration.

### Continue to foster female participation in the labour force

It is evident that men have higher participation and employment rates compared to women in different target groups (total population, Francophones, immigrants, and indigenous population) from 2011 to 2016. As such, encouraging more females to join the labour market will be key to increasing the labour market size and variety in Thunder Bay District. Fortunately, participation and employment rates of women has increased from 2001 to 2016.

### Make indigenous education the number one priority in the region

Indigenous people in Thunder Bay District have lower educational levels when comparing to the average for indigenous people in Ontario. 47.1 per cent of indigenous peoples in Thunder Bay District aged 25 to 64 have postsecondary credentials, which is around 15 percentage points lower than the total population, and 5.7 per cent lower than the indigenous population in Ontario. Additionally, the indigenous share of the labour force is forecasted to increase from 12.23 per cent in 2019 to 15.18 per cent in 2030. The projections indicate a need to promote and improve education among indigenous peoples, which will also benefit the local labour market and economy.

# Introduction

The objective of this report is to examine past and present trends and characteristics in the economy of Thunder Bay District (hereafter also referred to as Thunder Bay and not to be confused with the City of Thunder Bay) and to forecast its future challenges and opportunities. We first examine population trends in Thunder Bay 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 Thunder Bay over the past three decades. We find that the district's population declined by approximately eight per cent between 1991 and 2016. We focus on three segments of the regional population, namely Indigenous peoples, Francophones, and Immigrants. The study then looks ahead and provides projections for total and Indigenous populations of Thunder Bay District from 2015 to 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 83.1 per cent of Thunder Bay's population live in urban areas and 16.9 per cent live in rural areas. The majority (69.3 per cent) of the Indigenous population live in urban areas. These are mostly the off-reserve population in the district. Approximately 30.7 per cent of the Indigenous population live in rural areas.

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 Thunder Bay district.

In the section that follows, the study defines and quantitatively measures the human capital composition of Thunder Bay'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 subsequently looks at 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 Thunder Bay District.

The study concludes by looking ahead and examining the future demand for healthcare and education service providers, and for trades' workers.

## Data Sources:

The data used in this report is based on detailed information regarding individual census subdivisions (CSDs) in Thunder Bay 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 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.

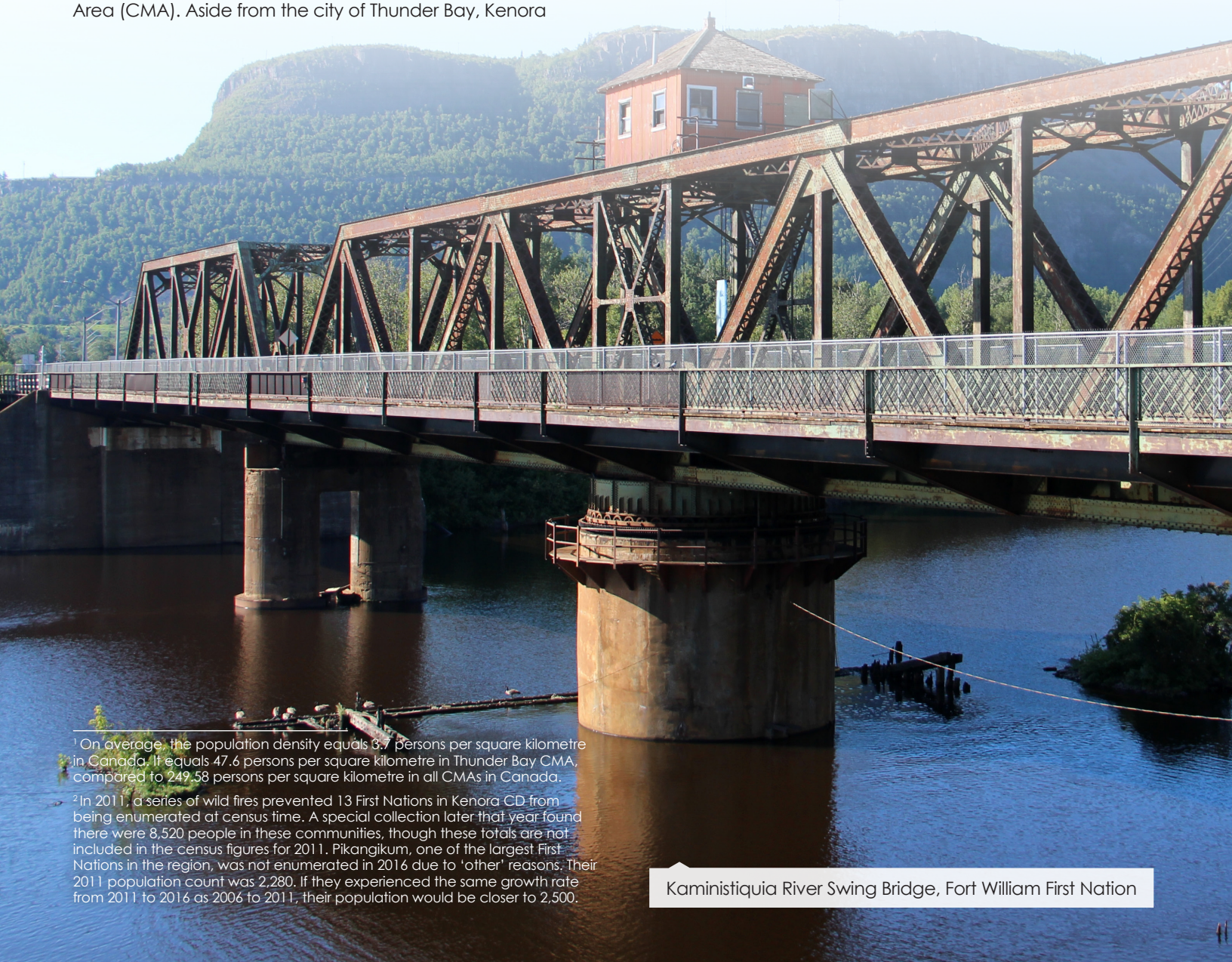
# Demographic Change in Northwestern Ontario: The Past Three Decades

## 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.

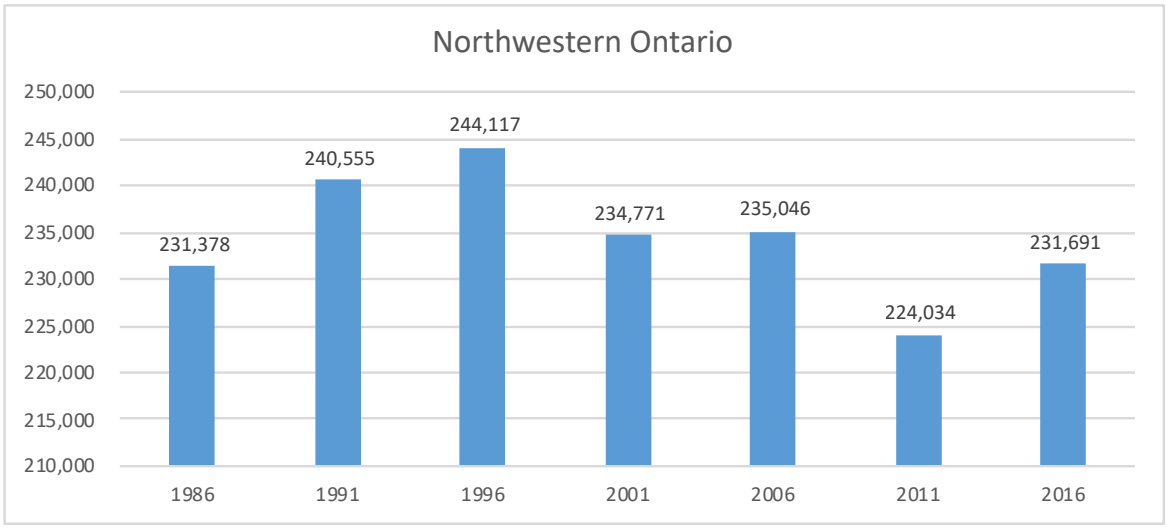


Kaministiquia River Swing Bridge, Fort William First Nation

[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.

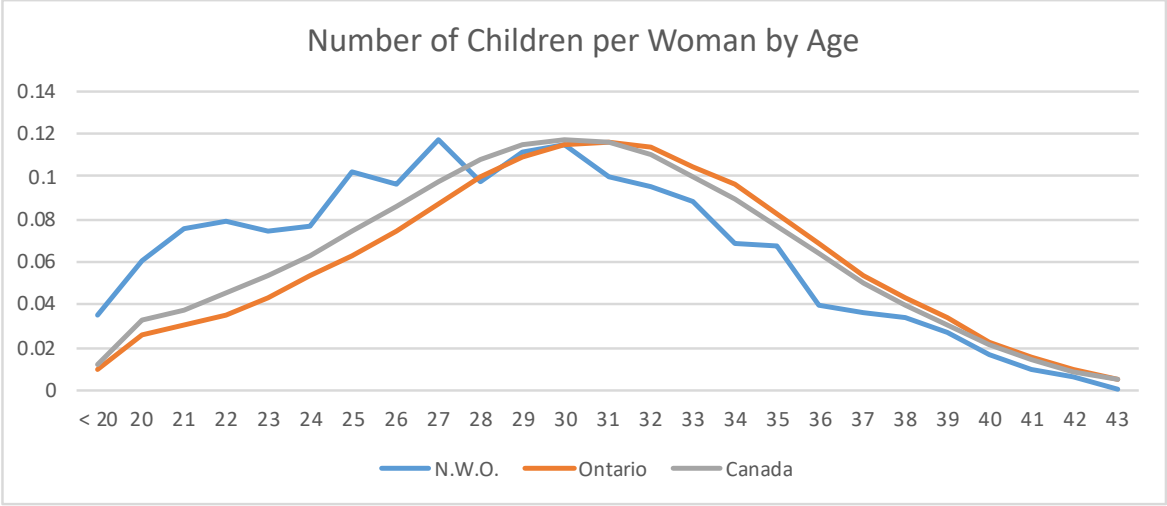
**Figure 1: Population Trends in Northwestern Ontario**




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 even though the total fertility rate in Northwestern Ontario has been significantly greater than the provincial and Canadian rates. The total fertility rate is defined as the average number of children that a woman will have over the course of her life. In Canada, the total fertility rate equaled 1.61 in 2011 compared to 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**



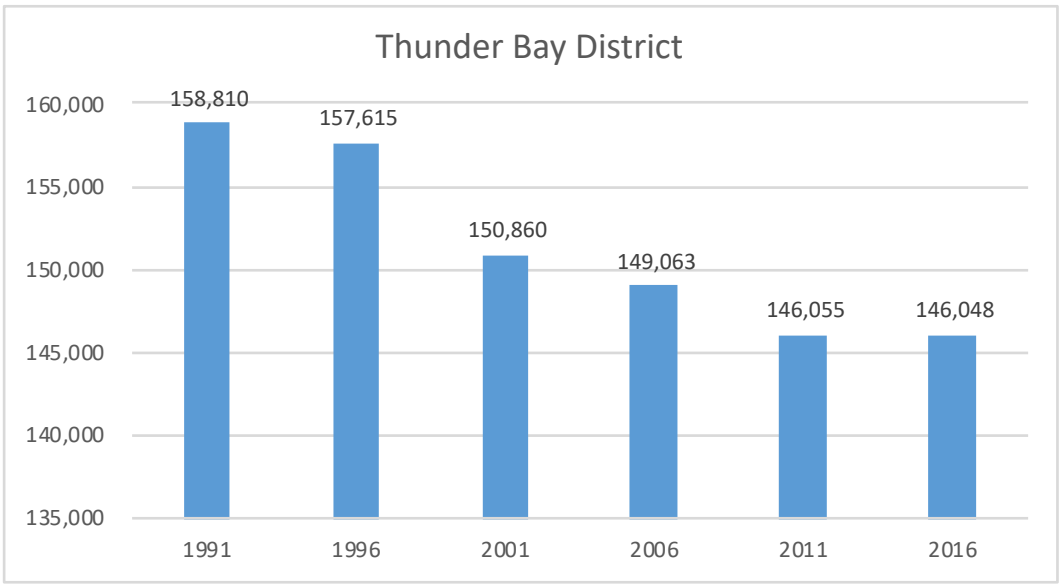

Statistics Canada, 2011 National Household Survey, special tabulation

The higher fertility rate in Northwestern Ontario compared to that of 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, Thunder Bay 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 to births, which is the result of three factors. First is the aging population, which results in a greater share of population in higher age categories and fewer women in childbearing age categories. The second factor is the continuation of the low fertility rates, which are significantly below the generational replacement rate of 2.1. The third factor is the outmigration of women in the childbearing age demographics from Northwestern Ontario.

## Population Trends in Thunder Bay District & Northwestern Ontario

Covering 103,720 square kilometres, Thunder Bay District recorded a population of 146,048 in the 2016 census. It has a population density of 1.4 persons per square kilometre, which is well below that of Ontario (14.8). According to Statistics Canada's census of population, Thunder Bay's population declined from 158,810 in 1991 to 146,048 in 2016 – an eight per cent decline (Figure 3).

**Figure 3: Population Trends in Thunder Bay District**




Source: Statistics Canada, various censuses, custom tabulation

Declining population trends can also be observed in almost 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 |
| Manitouwadge 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

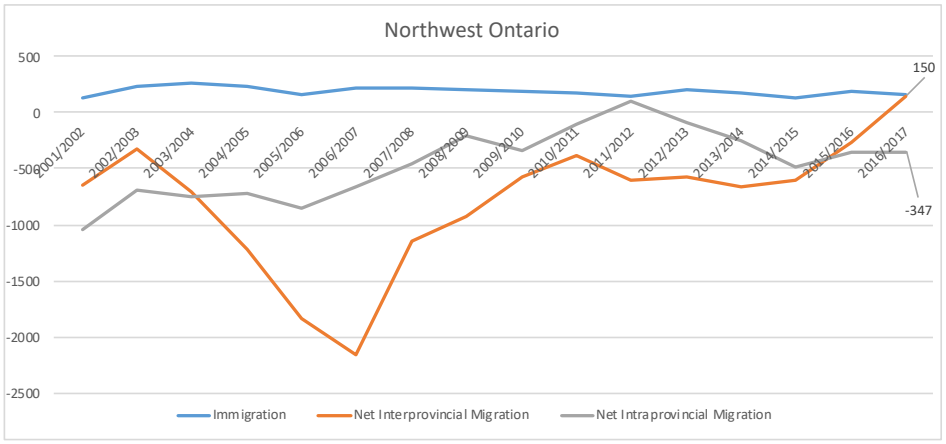
Various factors explain declining regional population. First, Northwestern Ontario and Thunder Bay have disproportionately low rates of immigration. Net immigration is defined as the number of Immigrants to a region minus those who left. The region experienced negative net immigration between 2001 and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

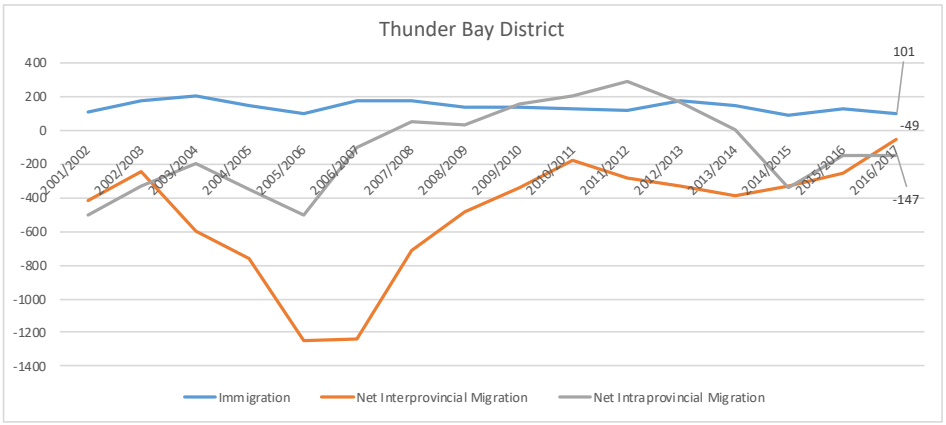
Figure 4 shows that Northwestern Ontario and Thunder Bay District have experienced significant interprovincial as well as intraprovincial out-migration, especially during the mid-2000s, due to the collapse of the forestry industry and related manufacturing industries. Interprovincial migration refers to the movement of population from one province to another. Over the past 30 years, net interprovincial migration into Ontario averaged 2,700 per year. However, this average includes the abnormally large inflows from Quebec recorded in the years following the 1980 referendum. When those inflows are excluded, the long-term net interprovincial migration to Ontario is modestly negative.[3] 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. Most of the individuals who out-migrate to other provinces are between the ages of 20 and 34. On the other hand, the Thunder Bay 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 Thunder Bay 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 population, resulting in a smaller share of the population in the prime moving demographic? Figure 5 shows the age distribution of these 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**

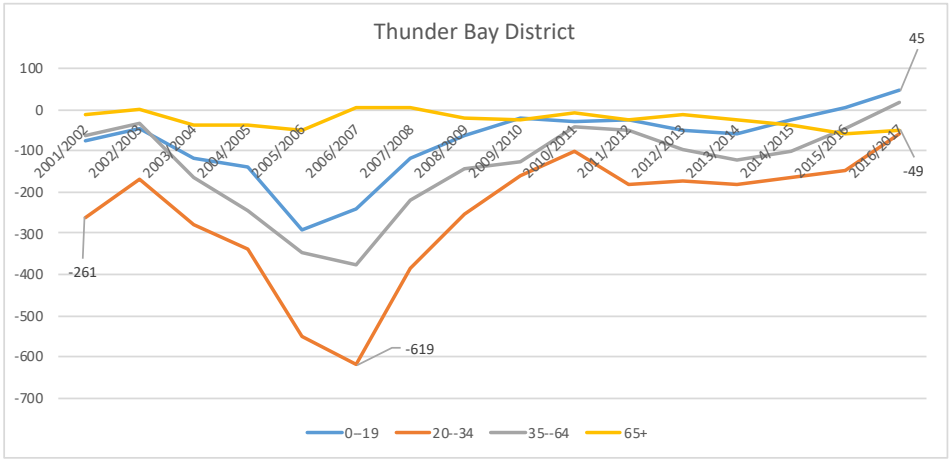



Source: Author's calculations based on Statistics Canada, CANSIM database, tables 051-0063

Figure 5 reveals 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 under. There has always been some out-migration of seniors, but the level and trend has been quite stable.

**Figure 5: Net Migration by Age Group**



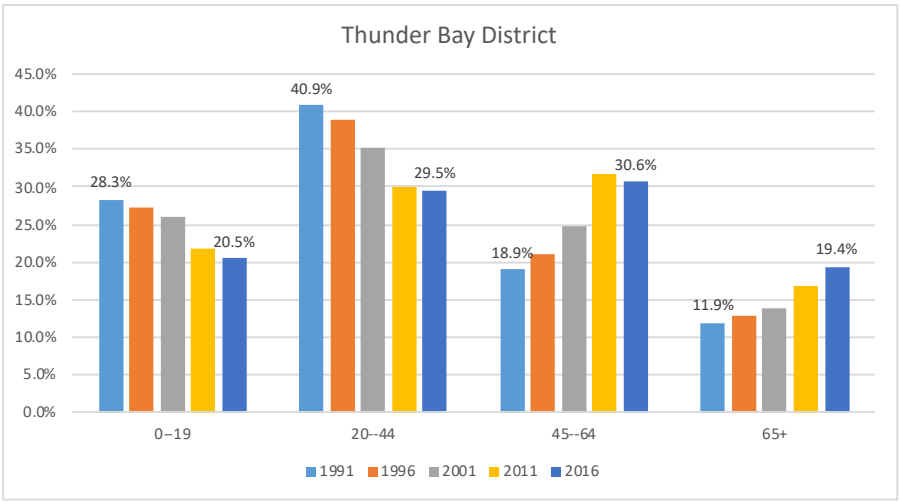

Source: Author's calculations based on Statistics Canada, CANSIM database, tables 051-0063

## Aging of the Population in Thunder Bay District

In addition to out-migration of youth and low levels of immigration in the district, rising life expectancy has resulted in the aging of Thunder Bay'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 declined from 28.3 per cent in 1991 to 20.5 per cent in 2016, and the share of seniors rose from 11.9 per cent in 1991 to 19.4 per cent in 2016 (Figure 6). During the same period, the share of individuals between the ages of 20 and 44 declined from 40.9 per cent to 29.5 per cent, and the share of individuals ages 45 to 64 increased from 18.9 per cent to 30.6 per cent.

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

**Figure 6: Aging of Thunder Bay District's Population**

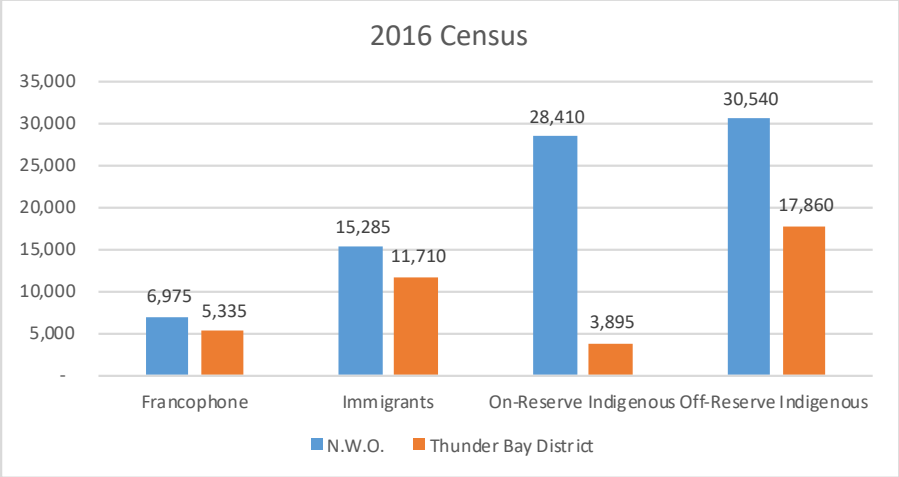



Source: Author's calculation based on Statistics Canada, Census of Population, various issues

## Linguistic and Cultural Diversity of the Population in Thunder Bay District & Northwestern Ontario

Another aspect of demographic change in Northwestern Ontario and Thunder Bay District relates to the cultural and linguistic diversity of the population (Figure 7). The total Francophone population in Northwestern Ontario declined from 8,330 in 2001 to 6,750 in 2011 but rose marginally to 6,975 in 2016. The Francophone population in Northwestern Ontario is concentrated in Atikokan, Greenstone, Ignace, Manitouwadge, Marathon, and Thunder Bay.

**Figure 7: Linguistic & Cultural Diversity in Northwestern Ontario & Thunder Bay District in 2016**




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

The total Indigenous population in Northwestern Ontario increased from 38,225 in 2001 to 41,600 in 2011 and to 58,950 in 2016. Indigenous peoples represent approximately 14.9 per cent of the total population in Thunder Bay District. 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 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 Indigenous 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 rate among Indigenous women has been significantly higher than the regional average. A report by the Ontario Ministry of Health and Long-Term Care 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, Indigenous peoples will be entering the labour market in large numbers as the non-Indigenous population is retiring. They will represent a significant share of the region's workforce in the coming years.

The Immigrant population in Northwestern Ontario declined from 19,870 in 2001 to 15,285 in 2016. The majority (76.6 per cent) of this population live in Thunder Bay District.

## Population Trends in Urban & Rural Northwestern Ontario & Thunder Bay 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. An alternative and perhaps a more appropriate definition of rural area proposed by Statistics Canada is "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. This is measured by the percentage of people who commute to work into an urban centre.

Using the above definition, Figure 8 shows the distribution of Thunder Bay District's population among rural and urban areas. Approximately 83.1 per cent of Thunder Bay's population live in urban areas. The rest (16.9 per cent) live in rural areas. The majority (69.3 per cent) of the Indigenous population live in urban areas. This is most of the off-reserve population in the district. Approximately 30.7 per cent of the Indigenous population live in rural areas. Among these rural residents, 78.9 per cent live in relatively remote areas with a weak or no link to urban centres. These are mostly on-reserve Indigenous peoples living in remote Northwestern Ontario regions. Approximately 56.5 per cent of the Francophone and 89.6 per cent of the Immigrant population live in urban centres.

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

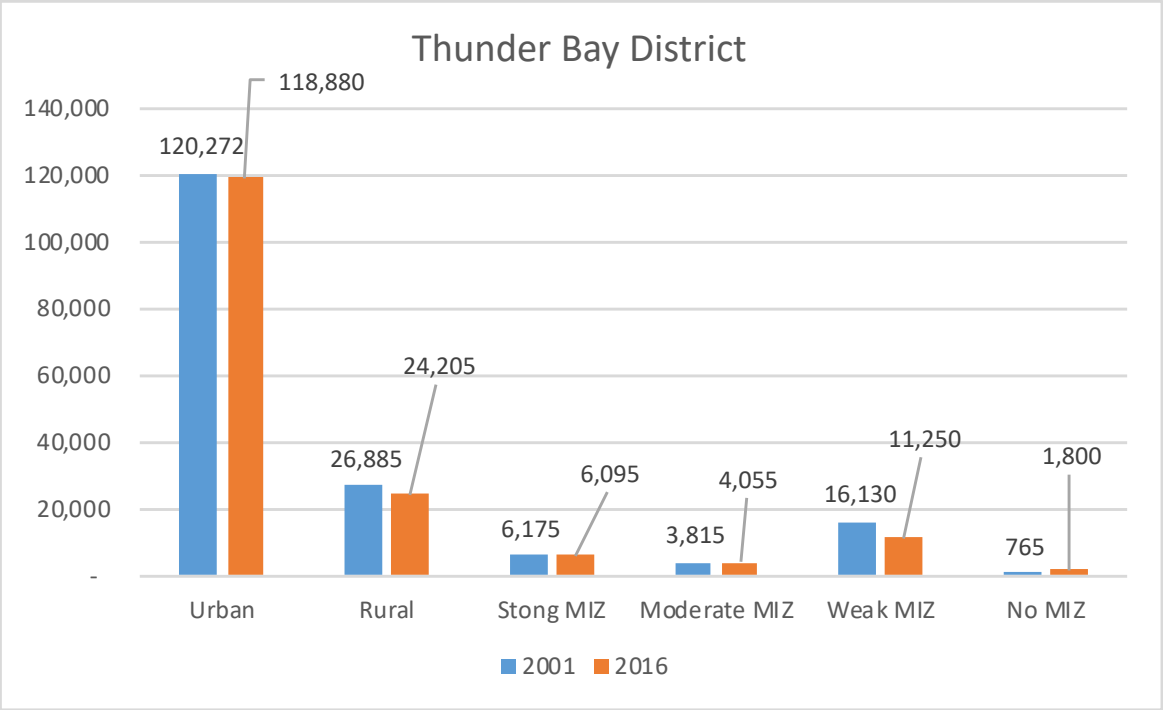
[5] Ibid

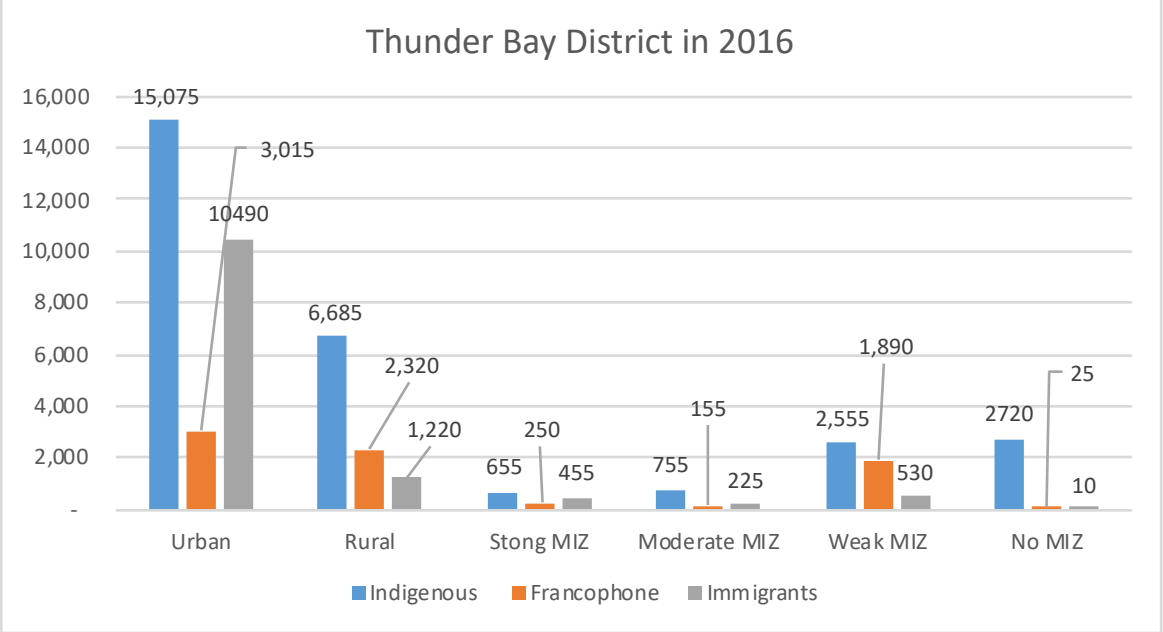
[6] Ontario Ministry of Health and Long-Term Care, Health Analytic Branch, "First Nations Peoples in Ontario: A Demographic Portrait," January 2009, 15.

[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.

**Figure 8: Population in Urban and Rural Areas in Thunder Bay District**




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

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).

# Demographic Change in Thunder Bay District: The Next Three Decades

This part of the study provides population projections for Thunder Bay District, both for the total and 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. 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 over 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 over 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 were then applied to the corresponding census division population to derive the number of deaths for each 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, Thunder Bay District's population is expected to decline from 148,100 in 2017 to 144,444 in 2041 (Table 2). The continuing aging of Thunder Bay's population is also evident (Figure 9), with the share of individuals ages 20 to 64 expected to decline from 60.4 per cent in 2017 to 51.2 per cent in 2041. Similarly, the share of individuals ages 65 and older is expected to rise from 19.8 per cent in 2017 to 30.4 per cent in 2041.


Canadian Pacific Railway, Thunder Bay, ON

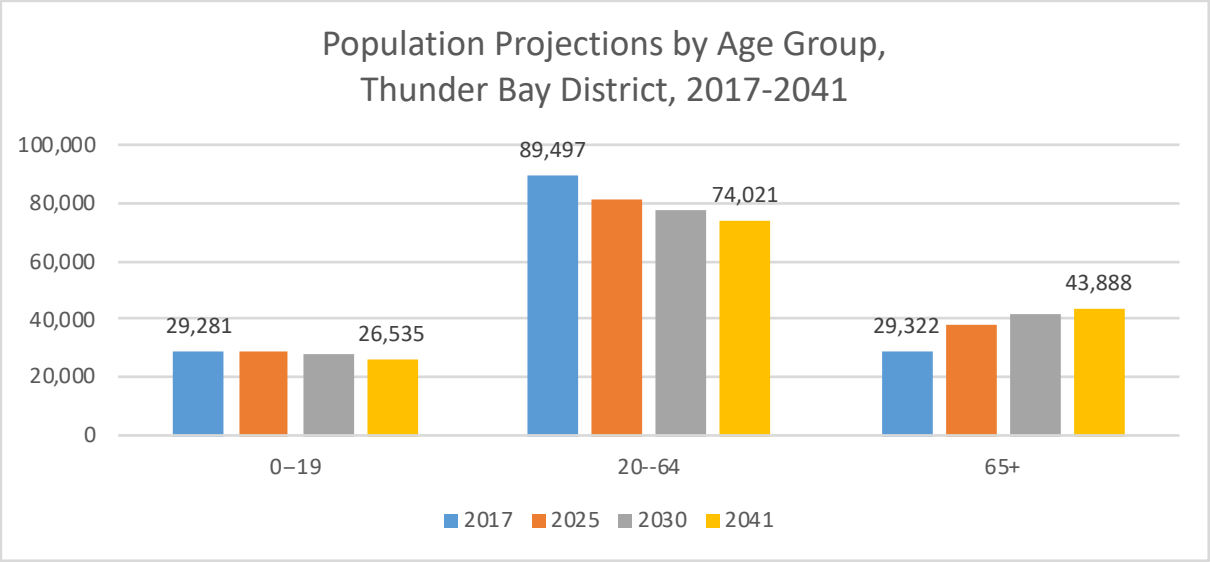
[9] For a complete discussion of this model, see B. Moazzami "It's What You Know (and Where You Can Go): Human Capital and Agglomeration Effects on Demographic Trends in Northern Ontario," (Thunder Bay: Northern Policy Institute, 2015).

**Table 2: Population Projections by Age Group, Thunder Bay District, 2017-2030**

| Year | 0--19 | 20--44 | 45--64 | 65+ | Total |
|---|---|---|---|---|---|
| 2017 | 29,281 | 45,270 | 44,227 | 29,322 | 148,100 |
| 2018 | 29,202 | 45,184 | 43,473 | 30,357 | 148,216 |
| 2019 | 29,000 | 45,224 | 42,656 | 31,394 | 148,274 |
| 2020 | 28,899 | 45,081 | 41,887 | 32,442 | 148,309 |
| 2021 | 28,841 | 44,892 | 41,190 | 33,362 | 148,285 |
| 2022 | 28,781 | 44,769 | 40,192 | 34,459 | 148,201 |
| 2023 | 28,767 | 44,587 | 39,195 | 35,566 | 148,115 |
| 2024 | 28,718 | 44,408 | 38,242 | 36,656 | 148,024 |
| 2025 | 28,687 | 44,064 | 37,422 | 37,753 | 147,926 |
| 2026 | 28,616 | 43,841 | 36,549 | 38,811 | 147,817 |
| 2027 | 28,548 | 43,611 | 35,827 | 39,710 | 147,696 |
| 2028 | 28,493 | 43,390 | 35,042 | 40,635 | 147,560 |
| 2029 | 28,361 | 43,169 | 34,488 | 41,390 | 147,408 |
| 2030 | 28,189 | 42,922 | 34,079 | 42,051 | 147,241 |
| 2031 | 28,045 | 42,665 | 33,784 | 42,562 | 147,056 |
| 2032 | 27,919 | 42,342 | 33,653 | 42,941 | 146,855 |
| 2033 | 27,791 | 42,045 | 33,650 | 43,152 | 146,638 |
| 2034 | 27,655 | 41,626 | 33,739 | 43,385 | 146,405 |
| 2035 | 27,489 | 41,179 | 33,857 | 43,631 | 146,156 |
| 2036 | 27,298 | 40,835 | 33,804 | 43,958 | 145,895 |
| 2037 | 27,081 | 40,472 | 33,999 | 44,069 | 145,621 |
| 2038 | 26,941 | 40,119 | 34,210 | 44,068 | 145,338 |
| 2039 | 26,800 | 39,801 | 34,445 | 44,000 | 145,046 |
| 2040 | 26,664 | 39,489 | 34,622 | 43,972 | 144,747 |
| 2041 | 26,535 | 39,247 | 34,774 | 43,888 | 144,444 |

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

**Figure 9: Population Projections by Age Group, Thunder Bay 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 Thunder Bay District to 2030, we assume zero net migration of Indigenous peoples over the forecast period, since the existing evidence suggests there is relatively low mobility among the Indigenous population in the district. The fertility rate for the Indigenous population is assumed to equal that in rural Northwestern Ontario, and the mortality rate is assumed 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 Thunder Bay is expected to increase from 21,785 in 2015 to 26,462 in 2030, a growth rate of approximately 21.5 per cent. The number of individuals under the age of 20 is expected to increase slightly during this period, while working-age Indigenous peoples are expected to rise from 12,370 in 2015 to 14,201 in 2030 – an increase of approximately 14.8 per cent. The number of individuals ages 65 and older is expected to rise from 1,370 in 2015 to 3,198 in 2030.

The Indigenous population's share of the total district's population is expected to increase from 15.2 per cent in 2015 to 18.0 per cent in 2030. The share of working-age Indigenous peoples (those ages 20 to 64) is expected to increase from 14.2 per cent in 2015 to 18.5 per cent in 2030.

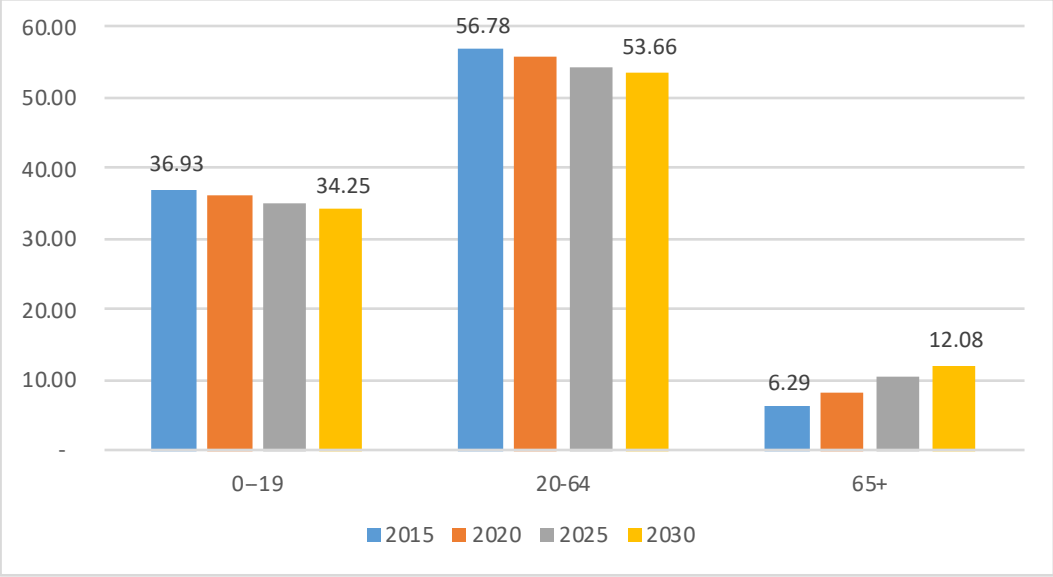
[10] According to the 2016 census, Aboriginal Population Profile, interprovincial migration among the Indigenous population during a one-year period (2015 to 2016) was only 1.1 per cent. Also, intraprovincial migration during the same one-year period was 5 per cent. When they moved, they mostly moved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

**Table 3: Projected Indigenous Population, Thunder Bay District, 2015-2030**

| Age Group | 2015 | 2020 | 2025 | 2030 |
|---|---|---|---|---|
| 0 - 4 years | 1,965 | 2,183 | 2,360 | 2,508 |
| 5 - 9 years | 2,115 | 2,053 | 2,171 | 2,348 |
| 10 - 14 years | 2,055 | 2,147 | 2,049 | 2,167 |
| 15 - 19 years | 1,910 | 1,993 | 2,138 | 2,040 |
| 20 - 24 years | 2,010 | 1,895 | 1,974 | 2,119 |
| 25 - 29 years | 1,610 | 1,934 | 1,874 | 1,952 |
| 30 - 34 years | 1,370 | 1,499 | 1,916 | 1,856 |
| 35 - 39 years | 1,300 | 1,354 | 1,483 | 1,896 |
| 40 - 44 years | 1,255 | 1,288 | 1,339 | 1,467 |
| 45 - 49 years | 1,295 | 1,251 | 1,266 | 1,315 |
| 50 - 54 years | 1,290 | 1,290 | 1,220 | 1,235 |
| 55 - 59 years | 1,255 | 1,244 | 1,247 | 1,180 |
| 60 - 64 years | 985 | 1,147 | 1,178 | 1,181 |
| 65 - 69 years | 595 | 829 | 1,059 | 1,089 |
| 70 - 74 years | 380 | 501 | 734 | 936 |
| 75 - 79 years | 210 | 294 | 419 | 615 |
| 80 + years | 185 | 268 | 390 | 558 |
| **Total** | **21,785** | **23,167** | **24,819** | **26,462** |

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.

# Thunder Bay 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 Thunder Bay District's total population and its working-age population. A significant gap exists, however, between the level of educational achievement of Indigenous peoples and that of the general population, resulting in a severe labour market outcome disparity that affects the current and future productive capacity of Thunder Bay's labour force.

Table 4 and Figure 11 show labour market trends among the population aged 15 to 64 in the Thunder Bay District. As the table shows, both the total population and the labour force in the district declined slightly between 2001 and 2016. The labour force participation rate declined among men, but rose slightly among women over the same period. On the other hand, the employment rate rose among men and women between 2001 and 2016. The unemployment rate declined slightly for men and women.

Labour force participation and employment rates among Francophone men and women in the Thunder Bay District declined slightly between 2001 and 2016. A similar trend is observed for male immigrants while the participation of female immigrants rose by 4.8 per cent during the above period. There was also a significant difference between the Indigenous labour force on-reserve and off-reserve. The unemployment rate among on-reserve men was 30.8 per cent in 2016, but the unemployment rate among off-reserve Indigenous men was much lower (12.1 per cent).

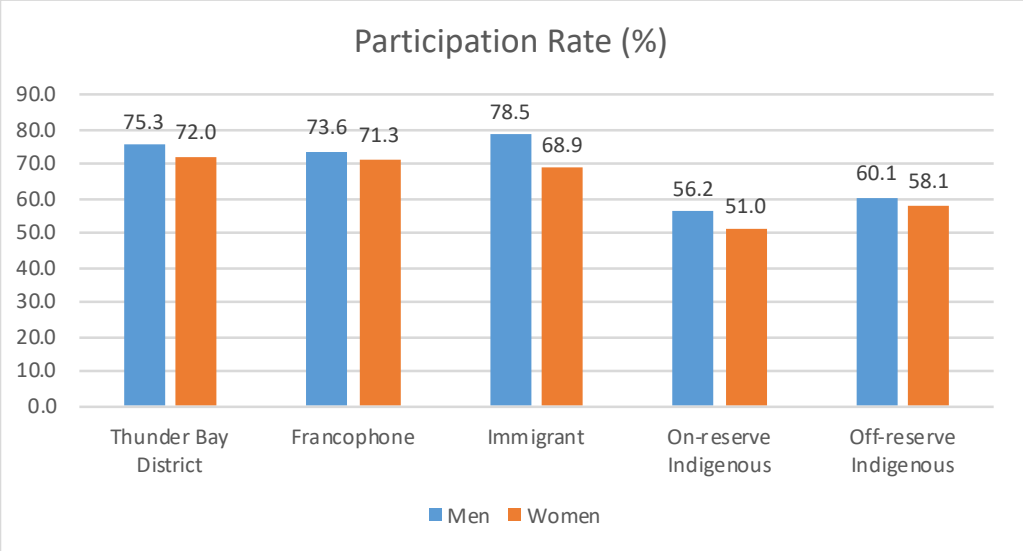
**Table 4: Labour Market Trends, Population 15 to 64 Years of Age, Thunder Bay District, 2001-2016**

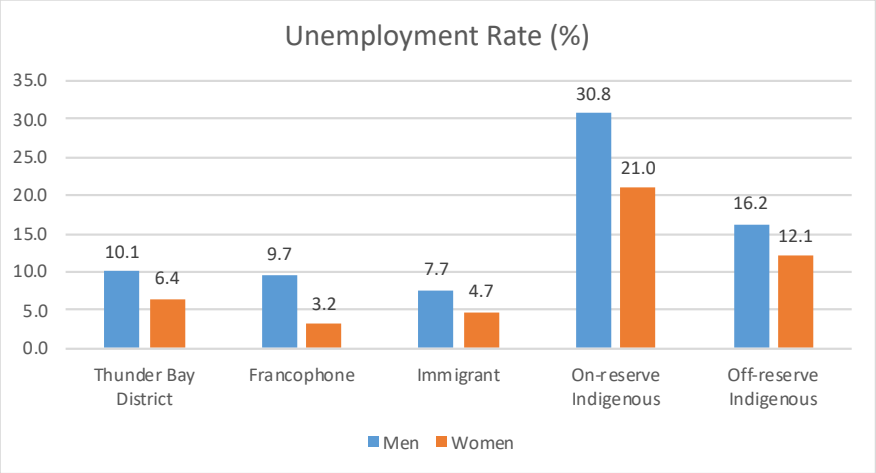
| Labour Market Outcome | Men | Men | Women | Women |
|---|---|---|---|---|
| **Thunder Bay District** | **2001** | **2016** | **2001** | **2016** |
| Total population 15 to 64 years of age | 50,445 | 47,340 | 50,160 | 47,600 |
| In the labour force | 40,755 | 35,655 | 35,730 | 34,280 |
| Employed | 36,290 | 32,060 | 33,130 | 32,080 |
| Unemployed | 4,460 | 3,595 | 2,600 | 2,200 |
| Not in the labour force | 9,695 | 11,685 | 14,430 | 13,320 |
| Participation rate | 80.8 | 75.32 | 71.2 | 72.02 |
| Employment rate | 71.9 | 67.72 | 66 | 67.39 |
| Unemployment rate | 10.9 | 10.08 | 7.3 | 6.42 |
| **Francophone Population** | **2001** | **2016** | **2001** | **2016** |
| Total population 15 to 64 years of age | 2,525 | 1,760 | 2,395 | 1,760 |
| In the labour force | 2,095 | 1,295 | 1,740 | 1,255 |
| Employed | 1,870 | 1,175 | 1,615 | 1,220 |
| Unemployed | 225 | 125 | 125 | 40 |
| Not in the labour force | 430 | 465 | 650 | 505 |
| Participation rate | 83 | 73.58 | 72.7 | 71.31 |
| Employment rate | 73.9 | 66.76 | 67.4 | 69.32 |
| Unemployment rate | 11 | 9.65 | 7.2 | 3.19 |

| Labour Market Outcome | Men | Men | Women | Women |
|---|---|---|---|---|
| **Immigrant Population** | **2001** | **2016** | **2001** | **2016** |
| Total population 15 to 64 years of age | 4,750 | 2,980 | 4,585 | 2,910 |
| In the labour force | 3,755 | 2,340 | 2,940 | 2,005 |
| Employed | 3,480 | 2,155 | 2,795 | 1,905 |
| Unemployed | 275 | 180 | 140 | 95 |
| Not in the labour force | 995 | 640 | 1,645 | 905 |
| Participation rate | 79 | 78.52 | 64.1 | 68.90 |
| Employment rate | 73.3 | 72.32 | 61 | 65.46 |
| Unemployment rate | 7.3 | 7.69 | 4.8 | 4.74 |
| **Indigenous Population** | **2001** | **2016** | **2001** | **2016** |
| Total population 15 to 64 years of age | 3,840 | 6,790 | 4,520 | 7,495 |
| In the labour force | 2,795 | 4,035 | 2,555 | 4,275 |
| Employed | 2,070 | 3,275 | 2,120 | 3,695 |
| Unemployed | 720 | 760 | 430 | 575 |
| Not in the labour force | 1,050 | 2,760 | 1,965 | 3,220 |
| Participation rate | 72.8 | 59.43 | 56.5 | 57.04 |
| Employment rate | 54 | 48.23 | 46.9 | 49.30 |
| Unemployment rate | 25.8 | 18.84 | 17 | 13.45 |

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, Thunder Bay 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 (Figure 11). 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 significntly lower than the provincial average in Ontario.[11] Lack of adequate funding is partly responsible for a lower level of educational achievement among the Indigenous population. We will estimate the human capital composition index for the Indigenous labour force later in this report.

## Size and Composition of the Future Labour Force

To forecast the future labour force in the Thunder Bay 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 Thunder Bay District. The projections show that the labour force in the district is expected to decline from 69,939 in 2015 to 62,182 in 2030 – approximately 11.1 per cent. During the same period, the Indigenous labour force is expected to increase from 8,299 in 2015 to 9,439 in 2030, a rise of approximately 13.7 per cent. As a result, the share of Indigenous peoples in the total regional labour force is expected to increase from 11.9 per cent in 2015 to 15.2 per cent in 2030. What are the implications of the declining labour force for the future economic performance of Thunder Bay and Northwestern Ontario? What are the implications of the rising share of the Indigenous labour force? It is known that the Indigenous population has a lower level of educational achievement. How would this affect the human capital composition of the regional labour force in the coming years? We will try to answer some of these questions in the next section of this report.

**Table 5: Projected Labour Supply, Total and Indigenous, Thunder Bay District**

| Year | Total Labour Force | Indigenous Labour Force | Indigenous Share (%) |
|---|---|---|---|
| 2015 | 69,939 | 8,299 | 11.87 |
| 2019 | 70,731 | 8,655 | 12.23 |
| 2025 | 65,524 | 9,087 | 13.86 |
| 2030 | 62,182 | 9,439 | 15.18 |

Source: Author's calculations based on his population projections

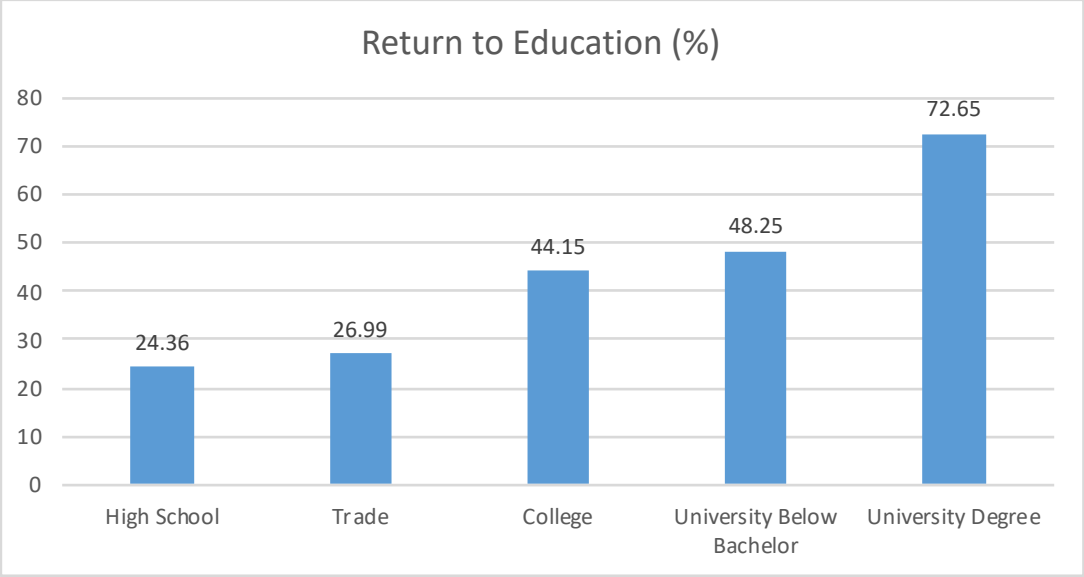
[11] Office of the Parliamentary Budget Officer, "Federal Spending on Primary and Secondary Education on First Nations Reserves," December 6, 2016.

# Productivity and Human Capital Composition of the Workforce in Thunder Bay 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.[12] 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 to 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 72.6 percent. 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.[13] 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.

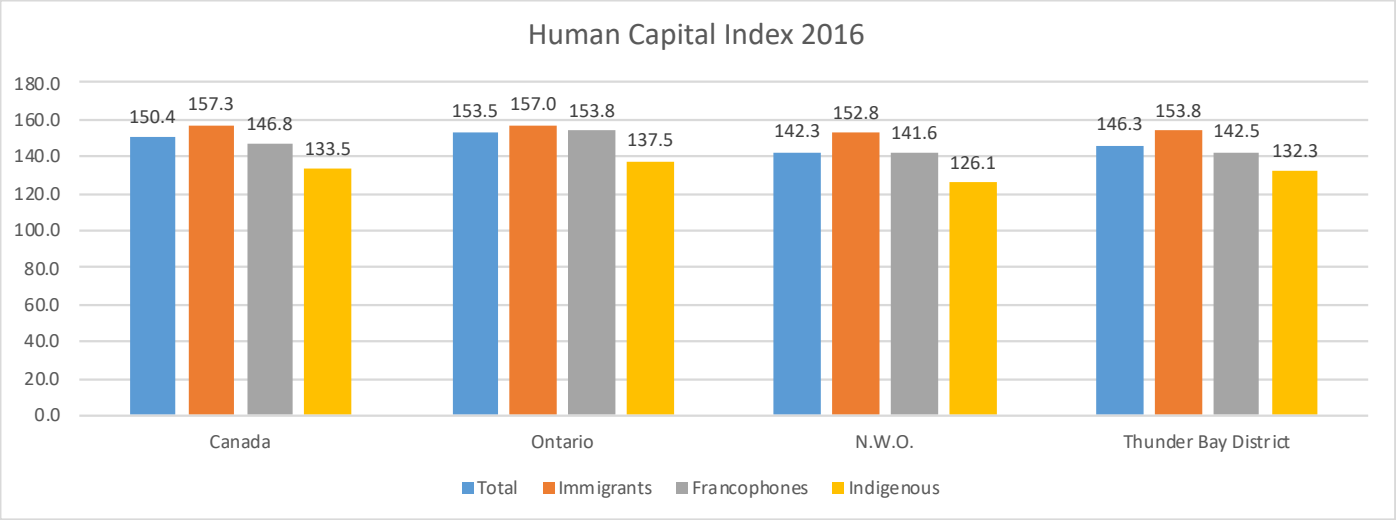
[12] The earnings model is as follows: $\ln Wage = \alpha + \Sigma\beta_i S_i + X_i\delta_i + \varepsilon_i$, where $S_i$ is the highest level of schooling, $X_i$ is other control variables (which include age categories, marital status, etc.), and $\varepsilon_i$ is an error term.

[13] HCI = exp{Σβi . Si shares), where HCI stands for human capital index, exp stands for exponential, and Si shares stand for share of the population ages 15 to 64 with Si 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 is below that of both Ontario and Canada. The index is higher for Thunder Bay District than that of Northwestern Ontario. 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 Ontario equals 137.5, which is higher than the indexes for Northwestern Ontario and Thunder Bay's Indigenous population. The average index for Northwestern Ontario's Indigenous population is approximately 16.2 points lower than that of the total regional population.

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



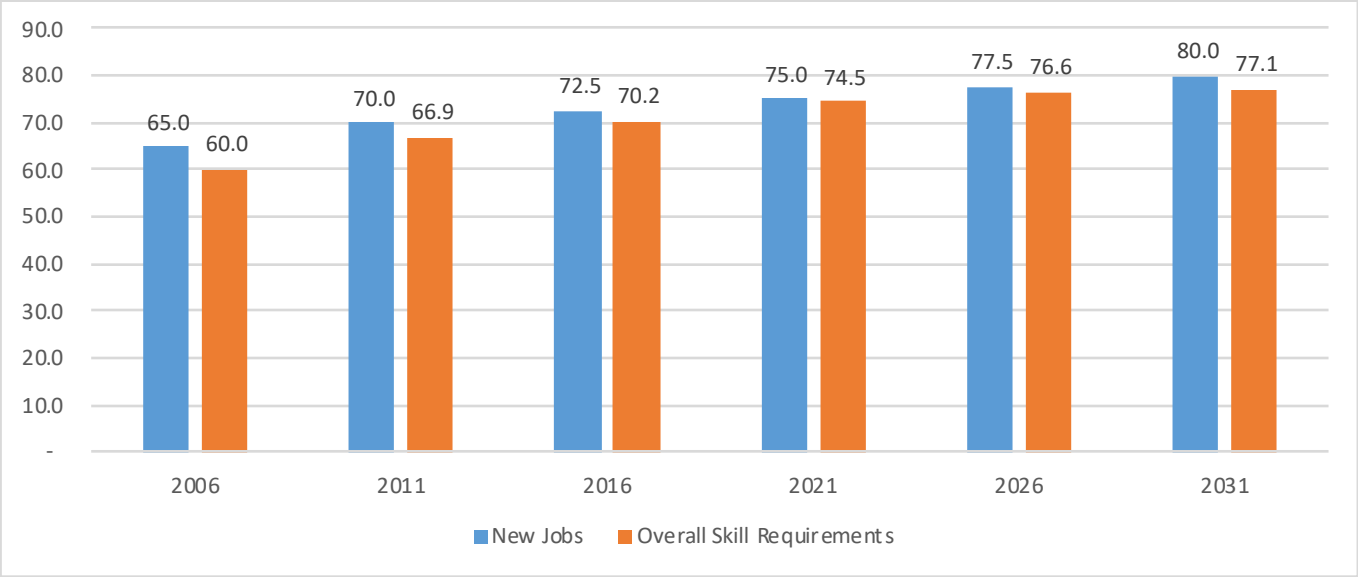

Source: Author's estimates based on Statistics Canada, 2016 census, special tabulation

## A Perfect Storm: Declining Labour Supply and Labour Productivity in Thunder Bay District & Northwestern Ontario

The declining supply of labour and low labour productivity in Northwestern Ontario are 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 postsecondary credentials such as an apprenticeship, a college diploma, or university degree. Currently, 70 per cent of the new jobs and an average of 66.9 per cent of all jobs require some post-secondary credential.[14] 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).

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

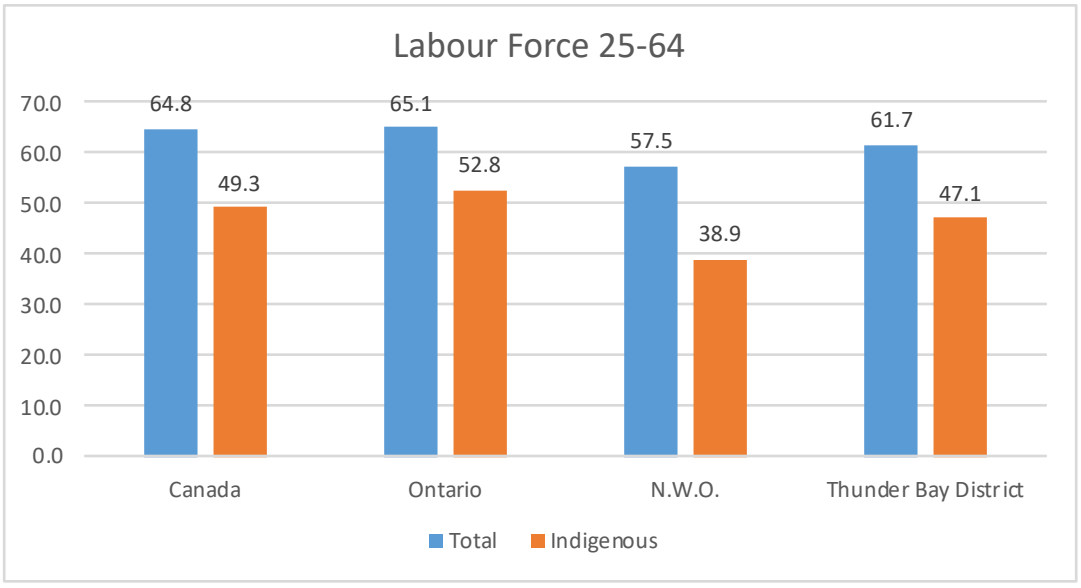
**Figure 14: Percentage of Jobs Requiring Postsecondary Education**




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 postsecondary credentials. The skill levels of the prime working-age population in Northwestern Ontario regions are significantly lower than the skill levels in Ontario and Canada. The average skill level in Northwestern Ontario is also significantly below the current percentage (70.2) of jobs requiring postsecondary education (Figure 14). Focusing on the prime working-age Indigenous workforce, Figure 15 shows that the current skill level lags behind current and future job requirements.

**Figure 15: Percentage of the Labour Force Aged 25 to 64 with Postsecondary Credentials, 2016**



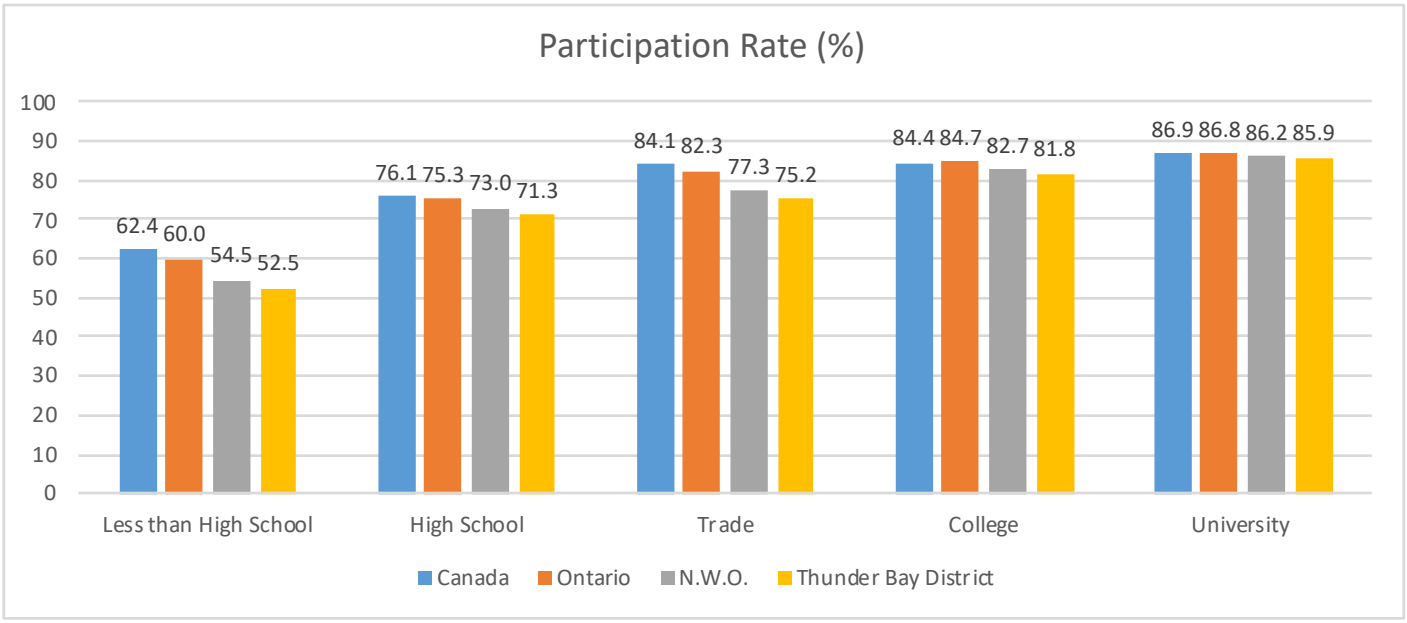

Source: Author's calculations based on 2016 census, special tabulations.

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.

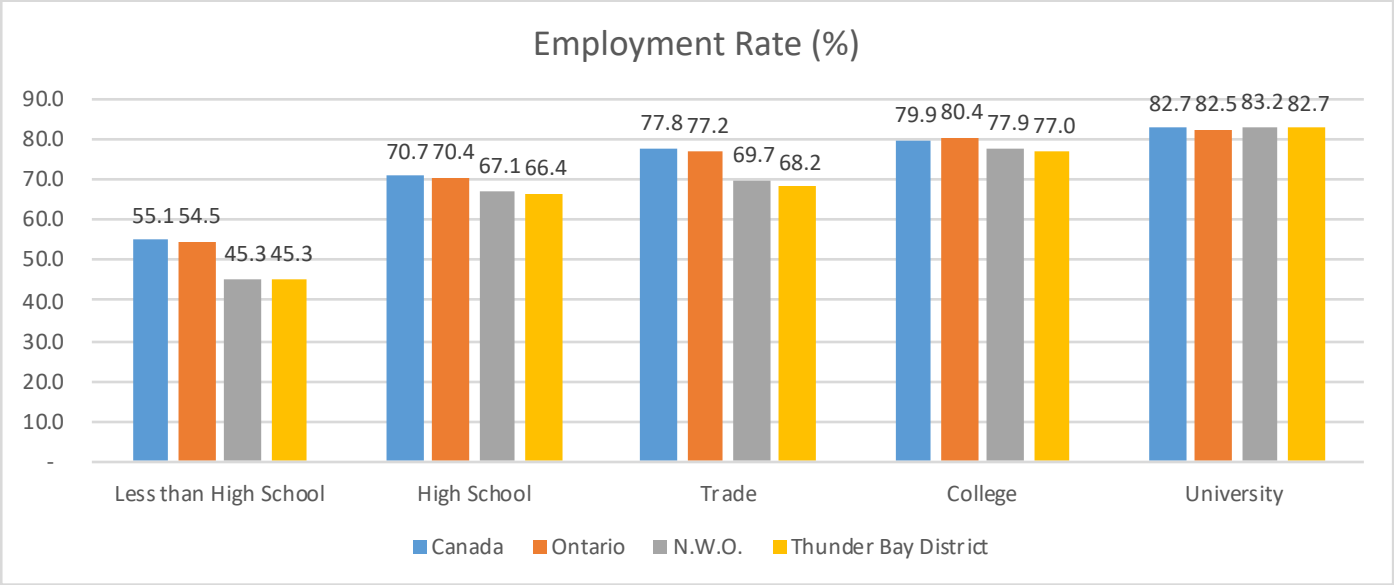
Does the skill level affect labour market performance (i.e., likelihood of employment, participation, and unemployment rates)? Figure 16 shows the likelihood of participation, employment, and unemployment by highest level of educational attainment among the prime working-age population ages 25 to 64. 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 18.8 per cent in Thunder Bay District as the level of education increases to a high school diploma. It rises an additional 10.5 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 numbers 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.

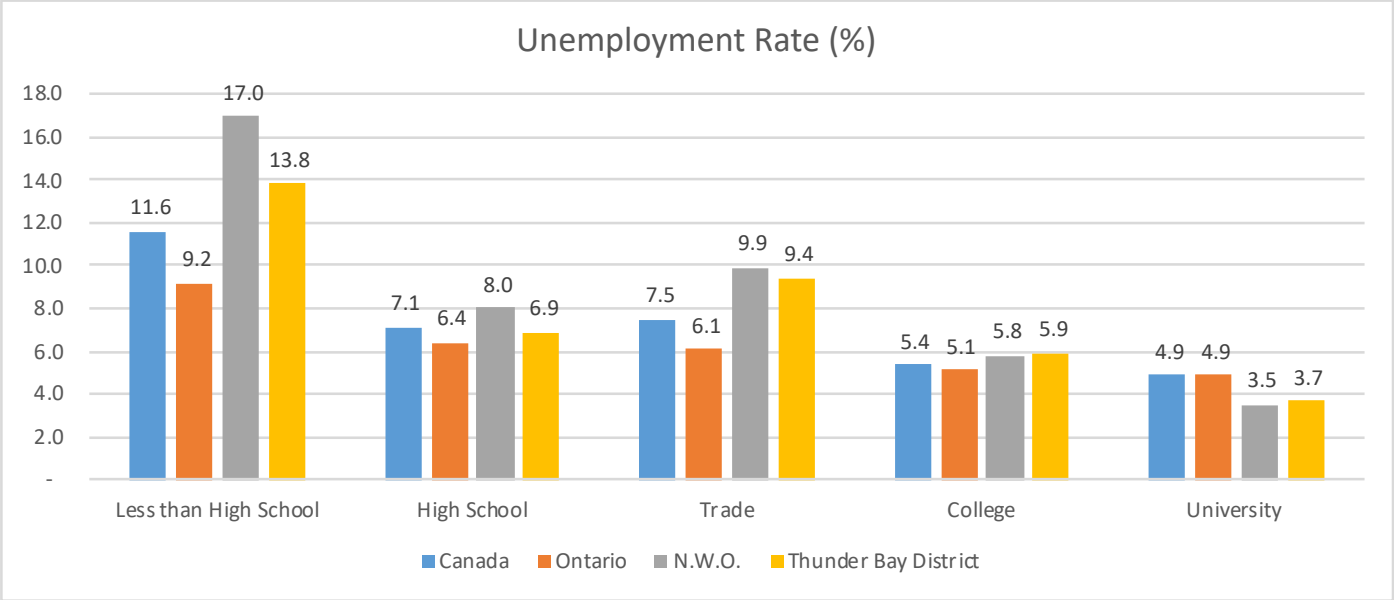
The existing evidence suggests that the individuals who do not have postsecondary credentials have a higher likelihood of non-participation and face a greater probability of unemployment. This will be more so in the coming years. Given that the skill level of the workforce in Thunder Bay District is 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.[15] Of the 50 companies surveyed, 22 had operations in Northern Ontario and other jurisdictions (multi-locational) and 28 were multi-nationals operating in Northern Ontario. Of these 50 firms, 15 had their headquarters in Northern Ontario. 11 of the firms were located in Northwestern Ontario, and 39 were located in Northeastern Ontario

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




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




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

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 multi-locational and 24.0 per cent of multi-national firms identified it as their main barrier. It 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.

It appears that if the skill levels of the workforce in Thunder Bay District stay constant as skill requirements rise, the result will be people without jobs and jobs without people in the district. 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] 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 Thunder Bay District

The structure of Thunder Bay'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 and technological advances. 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, dominated by private businesses, to the service-producing sector, which is predominately publicly funded. Using data from Canadian censuses, Table 6 and Figure 17 show the changing industrial composition of the employed workforce in Thunder Bay District.

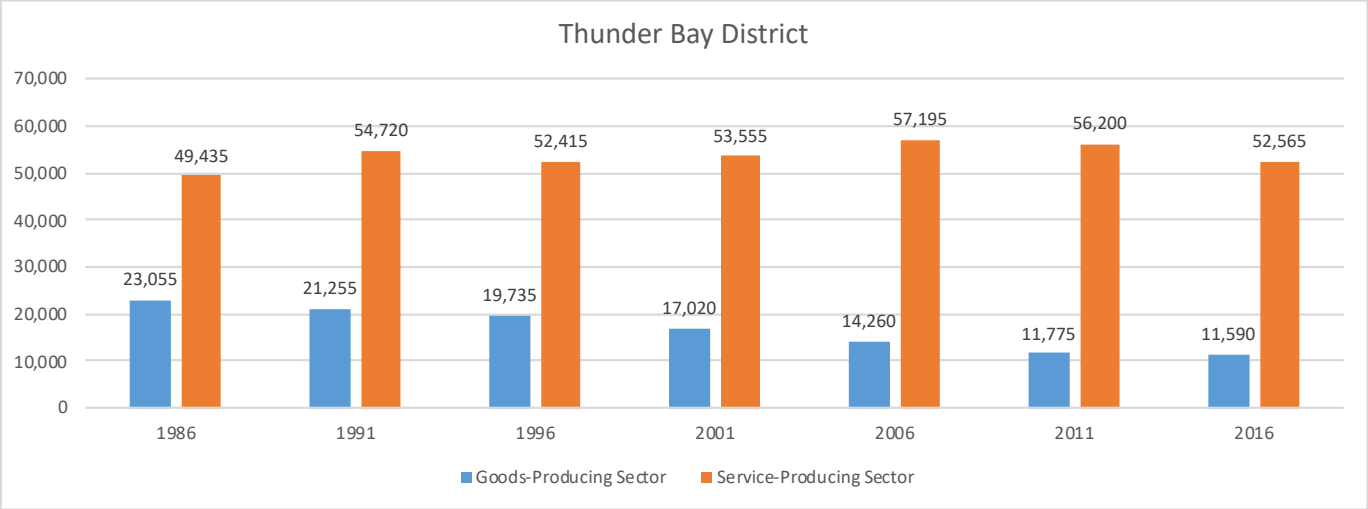
Between 1986 and 2016, total regional employment declined from 72,490 to 64,155 – approximately 11.5 per cent. As is the case with the overall regional economy, employment in the goods-producing sector declined from 23,055 in 1986 to 11,590 in 2011, or approximately 50.0 per cent. During the same time, the service-producing sector has grown by approximately 6.3 per cent. The goods-producing sector's share of total regional employment has also declined from 31.8 per cent in 1986 to approximately 18.1 per cent in 2016.

**Table 6: Changing the Industrial Composition of the Employed Workforce (15+) in Thunder Bay District**

| | 1986 | 1991 | 1996 | 2001 | 2006 | 2011 | 2016 |
|---|---|---|---|---|---|---|---|
| **Goods-Producing Sector** | **23,055** | **21,255** | **19,735** | **17,020** | **14,260** | **11,775** | **11,590** |
| Agriculture, fishing, and hunting | 855 | 875 | 835 | 955 | 990 | 755 | 590 |
| Logging and forestry | 3,110 | 1,725 | 1,660 | 1,265 | 1,160 | 600 | 785 |
| Mining and quarrying | 1,475 | 2,360 | 2,040 | 1,715 | 1,400 | 1,860 | 1,565 |
| Utilities | 2,200 | 2,395 | 2,225 | 775 | 840 | 800 | 710 |
| Construction | 3,525 | 4,220 | 3,900 | 3,365 | 3,445 | 4,180 | 4,315 |
| Manufacturing | 11,890 | 9,680 | 9,075 | 8,945 | 6,425 | 3,580 | 3,625 |
| Wood industries | 1,575 | 950 | 1,555 | 2,185 | 1,815 | 300 | 365 |
| Paper and allied industries | 6,655 | 5,590 | 4,385 | 3,955 | 2,500 | 1,210 | 950 |
| **Service-Producing Sector** | **49,435** | **54,720** | **52,415** | **53,555** | **57,195** | **56,200** | **52,565** |
| Trade | 11,870 | 12,065 | 12,120 | 10,155 | 10,605 | 9,860 | 9,215 |
| Transportation and warehousing | 5,940 | 5,000 | 4,780 | 4,645 | 4,405 | 3,715 | 3,345 |
| Finance, insurance, real estate, and leasing | 2,415 | 2,860 | 2,450 | 2,830 | 2,760 | 2,845 | 1,475 |
| Professional, scientific, and technical services | 2,015 | 2,475 | 2,570 | 2,485 | 2,850 | 3,240 | 3,080 |
| Educational services | 5,530 | 6,030 | 5,755 | 5,510 | 6,460 | 6,170 | 5,955 |
| Health care and social services | 6,990 | 8,455 | 9,580 | 9,240 | 10,385 | 10,795 | 11,460 |
| Accommodation and foodservices | 5,240 | 5,545 | 5,515 | 5,450 | 5,690 | 4,875 | 4,950 |
| Other services | 3,840 | 3,960 | 4,635 | 8,205 | 8,840 | 7,720 | 7,580 |
| Public administration | 5,595 | 8,330 | 5,010 | 5,035 | 5,200 | 6,980 | 5,505 |
| **Total Employed Workforce** | **72,490** | **75,980** | **72,145** | **70,570** | **71,445** | **67,975** | **64,155** |

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 natural and applied science, health and social science, education, and public administration. Changing size and composition of the employed workforce impacts output and income in Thunder Bay District (Figure 18).

**Table 7: Occupational Distribution of Employed Workforce (15 to 64) in Thunder Bay District**

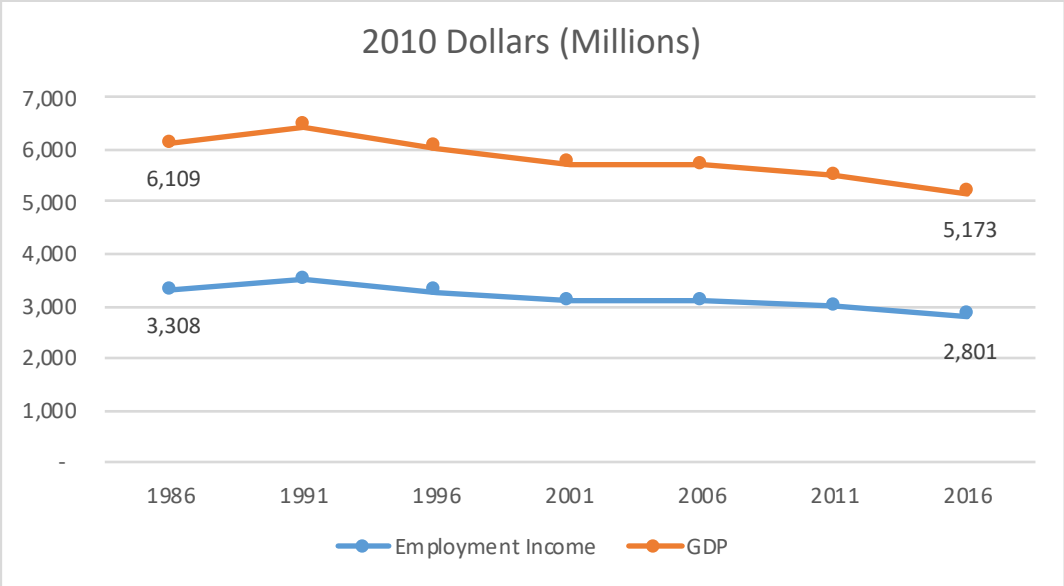
| National Occupational Classification 2006 | 2001 | 2016 | Percentage Change (%) |
|---|---|---|---|
| A Management occupations | 5,975 | 5,590 | (6.44) |
| B Business, finance, and administrative occupations | 10,315 | 8,945 | (13.28) |
| C Natural and applied sciences and related occupations | 3,260 | 3,910 | 19.94 |
| D Health occupations | 4,540 | 6,340 | 39.65 |
| E Occupations in social science, education, government service, and religion | 6,215 | 9,480 | 52.53 |
| F Occupations in art, culture, recreation, and sport | 1,325 | 1,320 | (0.38) |
| G Sales and service occupations | 18,585 | 15,060 | (18.97) |
| H Trades, transport and equipment operators, and related occupations | 12,720 | 10,030 | (21.15) |
| I Occupations unique to primary industry | 2,525 | 1,735 | (31.29) |
| J Occupations unique to processing, manufacturing, and utilities | 3,970 | 1,730 | (56.42) |
| **Total** | **69,430** | **64,140** | **(7.62)** |

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 15.3 per cent between 1986 and 2016. This is partly due to both declining employment and 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 Thunder Bay 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 aging healthcare providers and satisfy the growing demand for healthcare services?

Aging population also affects student enrolments, revenues, and therefore demand for various educational services in Northwestern Ontario. 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 tradesmen in various regions in Ontario and other regions of Canada. How has aging population affected the supply and availability of tradesmen in Northwestern Ontario? Are we training enough tradesmen to satisfy our current needs and prepare for the upcoming mining and forestry renewal? Otherwise, importing 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 the detailed Ministry of Finance's population projections for Northwestern Ontario spanning 2011 to 2041.

According to the 2012 report by North West Local Health Integration 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.[17]

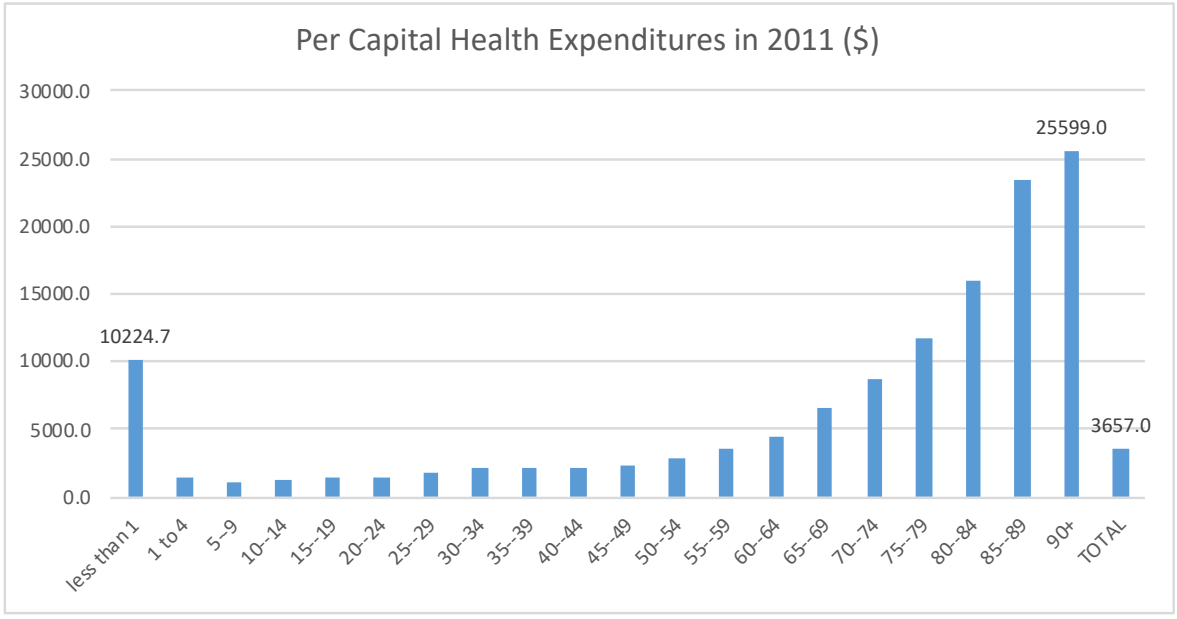
To estimate the growth component of demand, we need to estimate indicators that track demand for healthcare workers in Northwestern Ontario. The growth-

[17] Health Services Blueprint: "Building our Future," (PriceWaterhouseCoopers, February 2012). PriceWaterhouseCoopers.

demand component reflects the need for more workers to accommodate the rising demand for healthcare services due to changes in the size and age distribution of the population. We assume that the ratio of workers to patients/residents/clients remains the same over 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 among the ages 60 and older population. The aging of the population may not affect demand for healthcare workers serving a younger population cohort.

The indicators developed in this section of the study address the need to quantitatively measure the impact of demographic changes on demand for healthcare workers in Northwestern Ontario. A recent study by the Canadian Institute for Health Information provides estimates of per capita provincial health expenditures by age in Ontario for 2011.[18] This is shown in Figure 19. It reveals 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 Northwestern Ontario, we can estimate an index that tracks changes in demand for healthcare services from 2011 to 2041. These healthcare demand indicators measure expected growth in demand for healthcare services and therefore healthcare providers in the region.

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

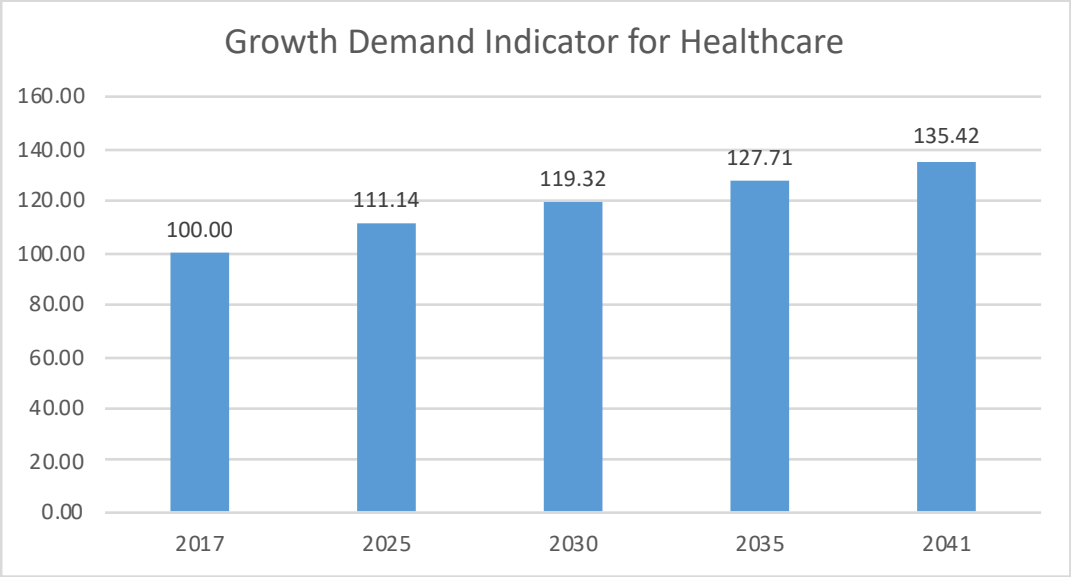



Source: Canadian Institute for Health Information, "National Health Expenditure Trends, 1975 to 2013," 2013

Using the information provided in Figure 19 and the Ministry of Finance's population projections for Thunder Bay District, Figure 20 shows the estimated growth-demand indicator for healthcare services in Thunder Bay from 2017 to 2041. We have used demand for healthcare services in 2017 as the benchmark against which we measure growth.

[18] Canadian Institute for Health Information, "National Health Expenditure Trends, 1975 to 2013," 2013.

**Figure 20: Projected Growth of Health care Demand in Thunder Bay District**

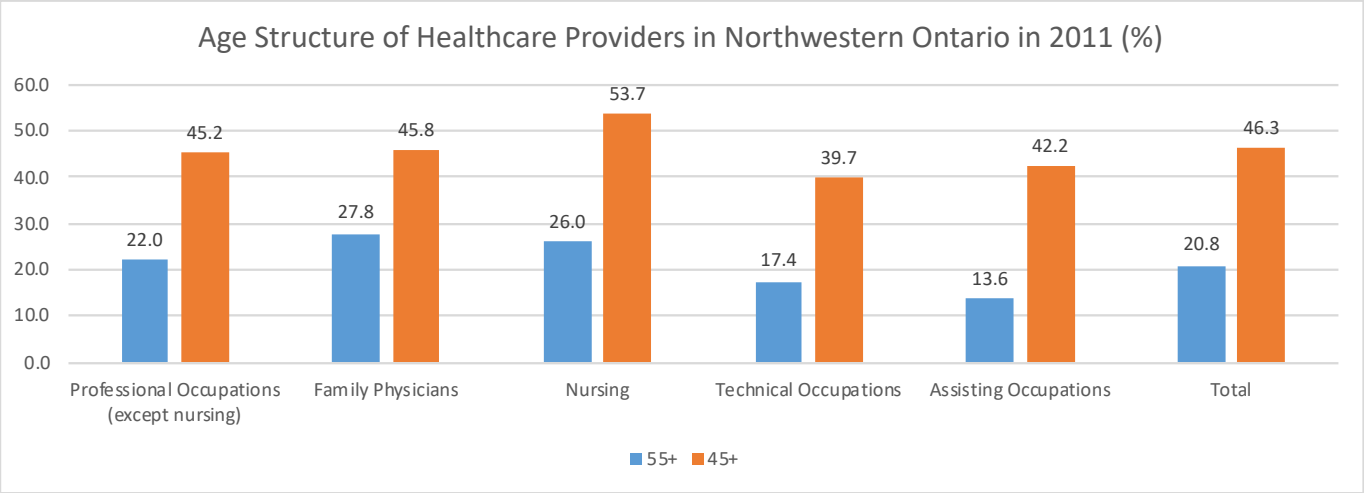



Source: Author's estimate based on Ministry of Finance population projections and census data

Despite the declining regional population, Figure 20 shows that demand for healthcare services is expected to increase significantly from 2017 to 2041. The reason is that the regional population is aging and demand for healthcare services rises by age. In fact, the existing data reveal that demand by seniors ages 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 55 years of age. The youngest group appears to be those in the assisting occupations, with approximately 13.6 per cent who are older than 55 years of age. Approximately 46.3 per cent of all healthcare providers were older than 45 years of age. Again, those in nursing and professional occupations had the largest share of persons older than 45 years of age.

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




Source: Author's calculations based on 2011 NHS, special tabulations

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**

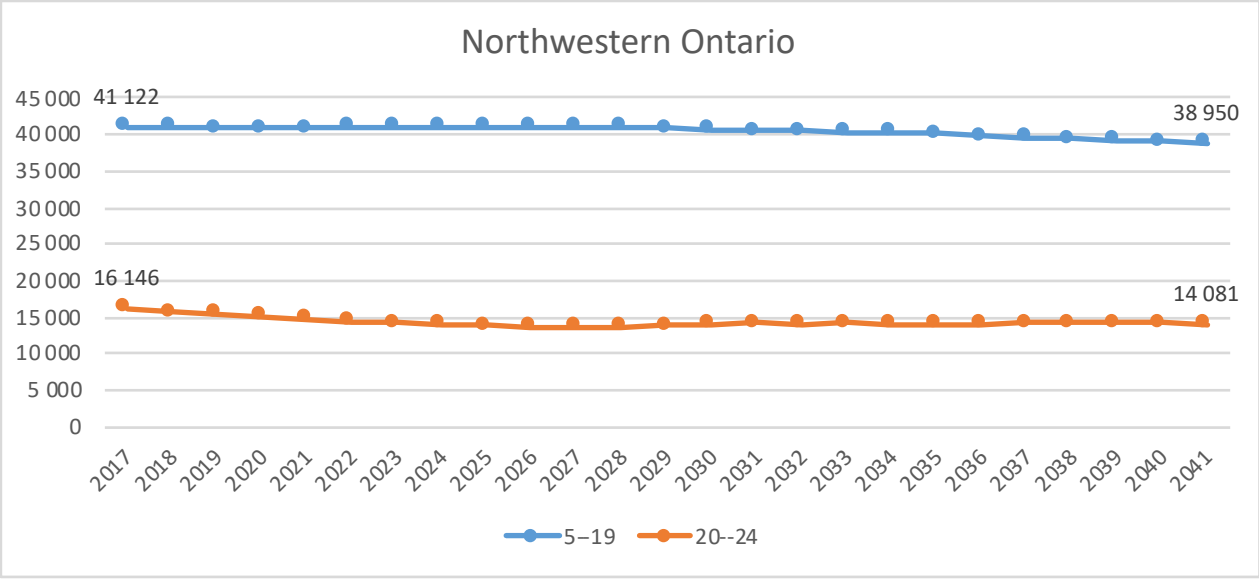
| | Expansion Demand 2011-2020 | Replacement Demand 2011-2020 | Total Demand 2011-2020 | Expansion Demand 2011-2030 | Replacement Demand 2011-2030 | Total Demand 2011-2030 |
|---|---|---|---|---|---|---|
| Professional occupations (except nursing) | 124 | 285 | 409 | 346 | 585 | 931 |
| Family physicians | 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** | **100.00** |

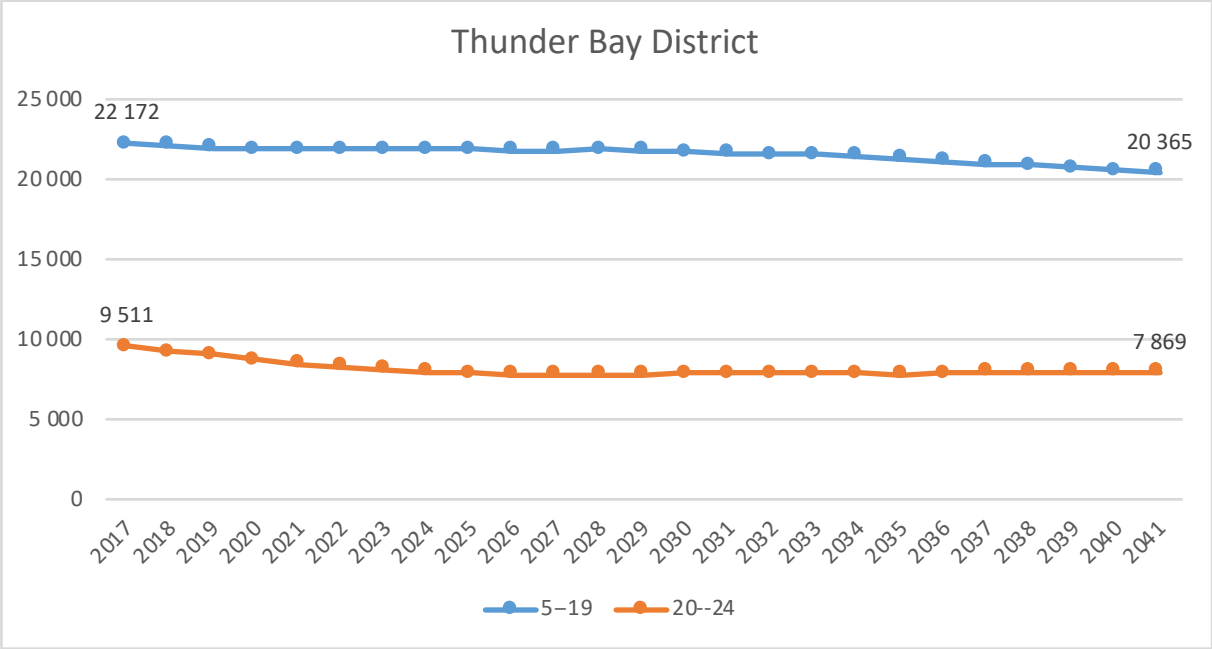
Source: Author's estimate based on Ministry of Finance population projections and census data

## Demand for Educational Services

Using Ontario's Ministry of Finance population projections, Figure 22 shows projections for different age groups in Northwestern Ontario and Thunder Bay District. It shows that the ages five to 19 category is expected to decline by 5.3 per cent between 2017 and 2041. This trend primarily affects primary and secondary schools. Similarly, the ages 20 to 24 category 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 Thunder Bay District is expected to grow from 6,080 in 2015 to 6,555 in 2030. Similarly, the number of Indigenous youth ages 20 to 24 in Thunder Bay is expected to increase from 2,010 in 2015 to 2,119 in 2030. Their share of this age group is expected to rise during this period.

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**

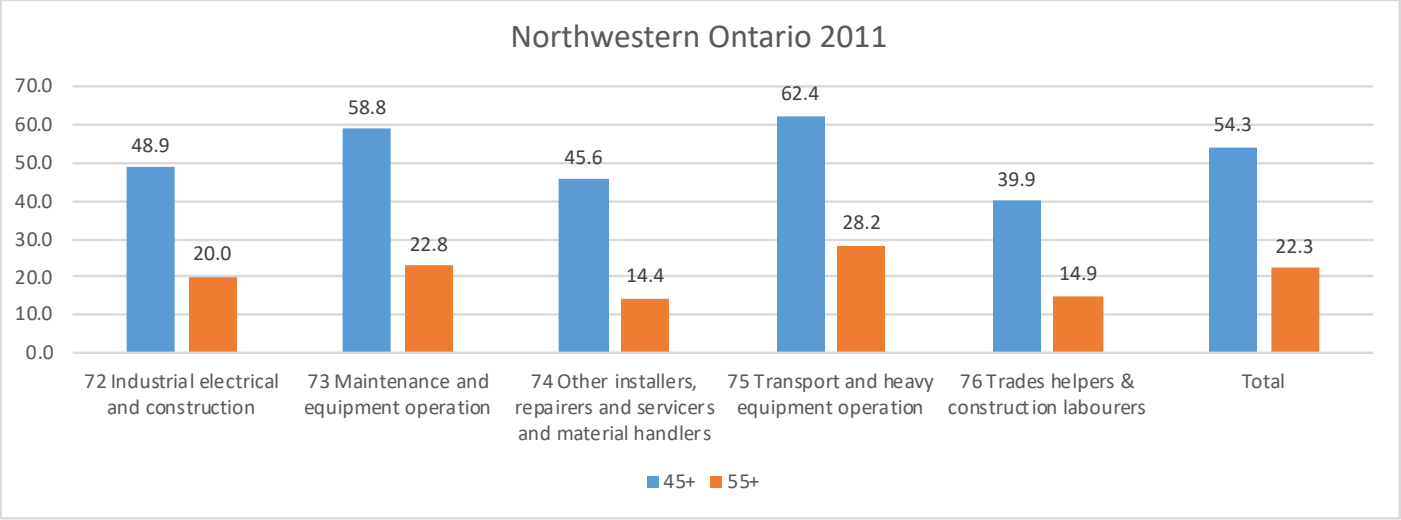
| Occupations | 2011-2020 Replacement Demand | 2011-2020 Expansion Demand | 2011-2020 Total Demand | 2011-2030 Replacement Demand | 2011-2030 Expansion Demand | 2011-2030 Total Demand |
|---|---|---|---|---|---|---|
| 401 University professors and postsecondary assistants | -78 | 145 | 68.81 | -132 | 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 22 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 age 45 and older. Transportation equipment operators and related workers had the highest percentage of people older than 55, and trades helpers and other installers, repairers, and material handlers had the lowest share of people older than 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 2021-2030 |
|---|---|---|
| 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 3,825 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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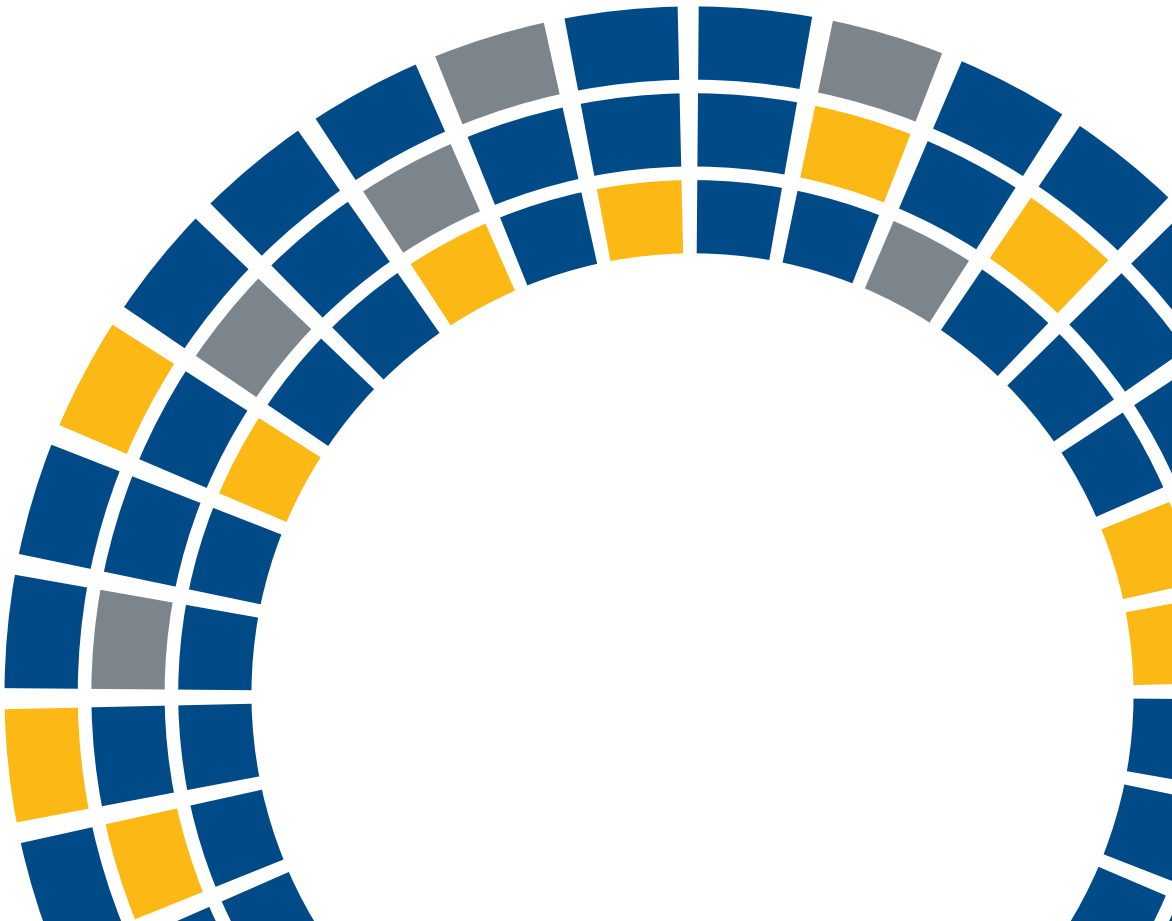

# Glossary of Terms

**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.

## About 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, Sudbury, and Sault Ste. Marie. 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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