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Northern Projections
**Nipissing District**
Human Capital Series

The Labour Market Group
Guiding partners to workforce solutions.

Dr. Bahktiar Moazzami

northernpolicy.ca

Canadore College, North 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.

## Labour Market Group

The Labour Market Group (LMG) is one of 26 workforce planning boards across Ontario funded by the Ministry of Training, Colleges and Universities (MTCU). Servicing Nipissing and Parry Sound Districts, we engage various community stakeholders in a consultative and inclusive local labour market planning process.

Our goals include:
• To develop a better understanding of labour market issues and their impacts;
• Generate awareness of existing workforce trends; and
• Increase local capacity for planning, collaboration and partnerships.

The Labour Market Group
Guiding partners to workforce solutions.

Stacie Fiddler – Executive Director
**www.thelabourmarketgroup.ca**
Nipissing & Parry Sound Districts

## 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

**Board:** The Board of Directors sets strategic direction for Northern Policy Institute. Directors serve on committees dealing with finance, fundraising and governance, and collectively the Board holds the CEO accountable for achieving our Strategic Plan goals. The Board's principal responsibility is to protect and promote the interests, reputation, and stature of Northern Policy Institute.

**President & CEO:** Recommends strategic direction, develops plans and processes, and secures and allocates resources to achieve it.

**Advisory Council:** A group of committed individuals interested in supporting, but not directing, the work of Northern Policy Institute. Leaders in their fields, they provide advice on potential researchers or points of contact in the wider community.

**Research Advisory Board:** A group of academic researchers who provide guidance and input on potential research directions, potential authors, and draft studies and commentaries. They are Northern Policy Institute's formal link to the academic community.

**Peer Reviewers:** Ensure specific papers are factual, relevant and publishable.

**Authors and Research Fellows:** Provide independent expertise on specific policy areas as and when needed.

**Standing engagement tools (general public, government stakeholders, community stakeholders):** Ensure Northern Policy Institute remains responsive to the community and reflects THEIR priorities and concerns in project selection.

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# Contents

# 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

Northeastern Ontario covers approximately 276,124 square kilometres and recorded a population of 548,449 in 2016. Increasing levels of out-migration of youth, declining fertility rates, and lower levels of immigration have resulted in an age distribution of the population in Northeastern 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 Northeastern Districts to remain economically viable.

The purpose of this report is to analyze demographic and labour market trends in Northeastern Ontario and the Census District of Nipissing. Both past and current trends are examined, as well as projections into the future. 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

The population of Northeastern Ontario has declined from 566,759 in 1986 to 548,449 in 2016, although Nipissing District's population grew from 79,004 to 83,150 over the same period. This growth has occurred despite negative net immigration between 2001 and 2016.

The human capital index in Northeastern Ontario is below that of Ontario and Canada. The total index is higher for Nipissing District compared with Northeastern 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. However, the human capital index of the Indigenous population in Nipissing district is higher than the indigenous population at the regional, provincial and national levels.

The demand/cost for healthcare services is expected to increase significantly between 2017 and 2041, by 36%. The reason is that the regional population is aging and demand for healthcare services rises by age.

Based on Ministry of Finance projections, Nipissing District's population is expected to grow marginally between 2017 and 2041. The population is also expected to age, with the proportion of seniors climbing from 20.5 per cent in 2017 to 30.4 per cent in 2041.

The projections show that the labour force in the region is expected to decline from 38,055 in 2015 to 36,467 in 2030, a decline of approximately 4.2 per cent. During the same period, the Indigenous labour force is expected to decline from 5,050 in 2015 to 4,893 in 2030, a decline of approximately 3.1 per cent. As a result, the share of Indigenous peoples in the total regional labour force is expected to stay relatively constant  between 2015 and 2030.

Total regional employment declined slightly between 2001 and 2016. Total employment in the goods-producing sector declined from 6,370 in 2001 to 5,625 in 2016, a decline of 11.7 per cent. The major cause of the decline in the goods-producing sector is the employment loss in the manufacturing and forestry sectors. Rising mining employment has offset some of the decline in these forestry industries. During the same time, employment in the service-producing sector stayed relatively constant. The only service-producing sectors that experienced significant employment growth are healthcare and social assistance, professional services, and waste management and remediation services related to the mining sector.

## Recommendations:

### Continue marketing the district of Nipissing as a desirable destination for secondary migration in Ontario

This update mirrors the findings of the 2017 district report, which showed net positive intraprovincial migration. More Ontarians are moving to the district than are leaving Nipissing for other parts of the province. Immigrants in Nipissing have a human capital index roughly equal to the index for immigrants in Ontario and Canada, and higher than Northeastern Ontario. Nipissing can continue building on its demonstrated strength in supporting immigrant and migrant success.

### Continue to build and strengthen Indigenous partnerships

The 2017 report found that Indigenous peoples in the district of Nipissing achieve better social and education outcomes than other areas of the province, a trend that has continued. The relatively high human capital of the Indigenous population offers a real opportunity for strong partnerships to promote regional growth and advance reconciliation.

### Recruit youth to care for the elderly

Projections show a demand for more than 13,000 new healthcare providers in Northeastern Ontario by 2030. The district's population cohort 65 years and over is projected to grow from 20 per cent in 2017 to 29 per cent in 2030. The 2017 report identified eldercare as a niche market opportunity to both deliver and receive these services. The district of Nipissing can harness these trends to build upon the already growing healthcare and social assistance sectors.

# Introduction

The objective of this report is to examine past and present trends and characteristics in the economy of Nipissing District (hereafter also referred to as Nipissing) and to forecast its future challenges and opportunities. We first examine population trends in Nipissing District and Northeastern Ontario. Then, we study the district's labour market, including 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 region.

The report begins by examining demographic change in Nipissing District during the past three decades. We find that the district's population increased from 79,004 in 1986 to 84,832 in 1996, stayed relatively constant between 1996 and 2011, but declined to 83,150 in 2016. 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 Nipissing District between 2015 and 2030. We find that the Indigenous population is a 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 62.5 per cent of Nipissing District's population live in urban areas. The rest (37.4 per cent) live in rural areas. The majority (55.9 per cent) of the Indigenous population live in rural areas. These are mainly on-reserve Indigenous peoples. Approximately 44.1 per cent of the Indigenous population live in urban areas. These are mostly off-reserve Indigenous peoples.

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 Nipissing District.

In the section that follows, the study defines and quantitatively measures the human capital composition of Nipissing'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 Nipissing District.

The study concludes by looking ahead and examining the future demand for healthcare and education service providers as well as demand 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 Northeastern 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 fact that the custom tables are 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 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 Northeastern Ontario: The Past Three Decades

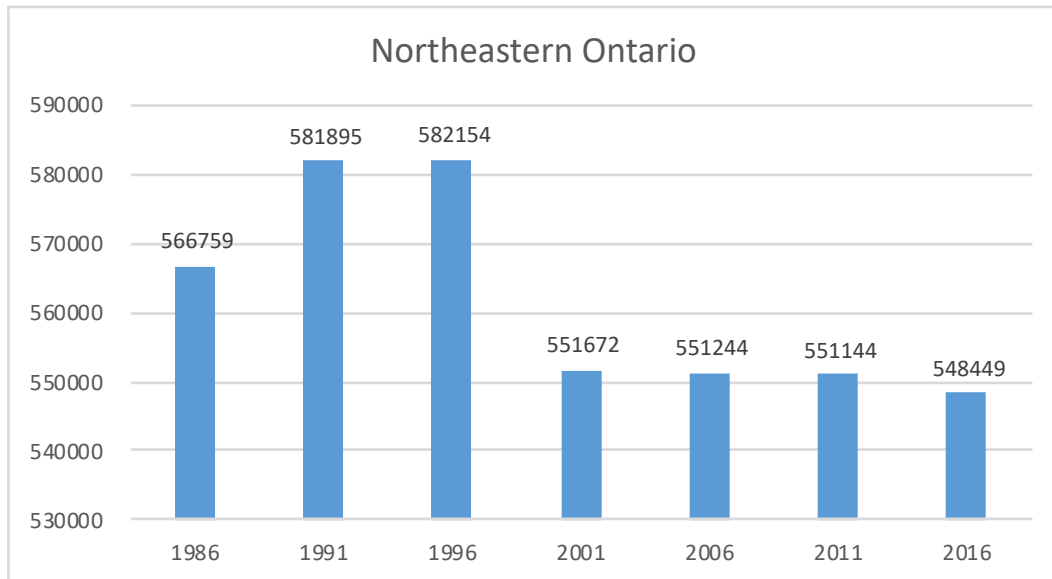## Demographic Trends in Northeastern Ontario

Northeastern Ontario covers approximately 276,124 square kilometres and recorded a population of 548,449 in 2016. It has a population density of approximately two persons per square kilometre which is well below that of Ontario ( 14.8). Greater Sudbury is the largest city in Northeastern Ontario. It recorded a population of approximately 161,531 in 2016. Other major communities in the region include Sault Ste. Marie, North Bay, Timmins, Elliot Lake and Temiskaming Shores.

According to Statistics Canada's Census of Population, Northeastern Ontario's population grew from 566,759 in 1986 to 582,154 in 1996 but declined to 551,672 in 2001 and to 548,449 in 2016 (Figure 1). The rise in population during the 1980s and 1990s and the subsequent decline during the 21st century are similar to trends observed in Northwestern Ontario.

Nipissing University, North Bay

**Figure 1: Population Trends in Northeastern Ontario**
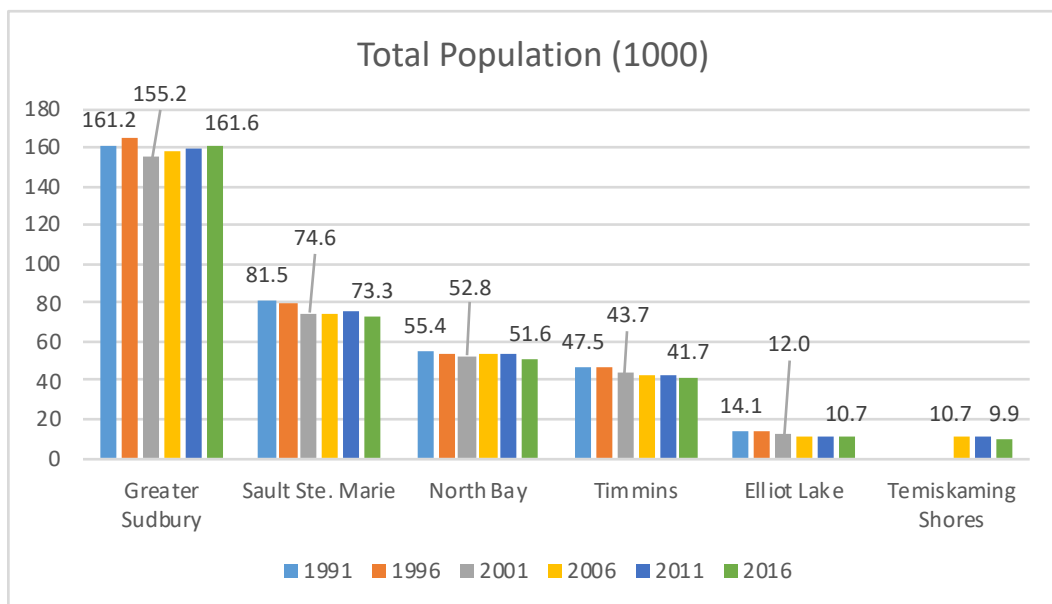
## Northeastern Ontario



Source: Statistics Canada, Census of Population, various issues

Declining population trends can also be observed in almost all major cities in Northeastern Ontario (Figure 2). Note that Temiskaming Shores is a city created by the amalgamation of the towns of New Liskeard and Haileybury and the township of Dymond in 2004. Therefore, there is no census data for that city prior to 2004.

**Figure 2: Population Trends in Major Northeastern Ontario Cities**

## Total Population (1000)



Source: Statistics Canada, Census of Population, various issues.

The declining population closely follows employment changes in the regional economy (Figure 3). Total employment in Northeastern Ontario fluctuated between 236,355 in 1986 and 250,330 in 2006 but declined to 247,905 in 2011 and to 242,415 in 2016.

**Figure 3: Employment & Population Growth/Decline in Northeastern Ontario**
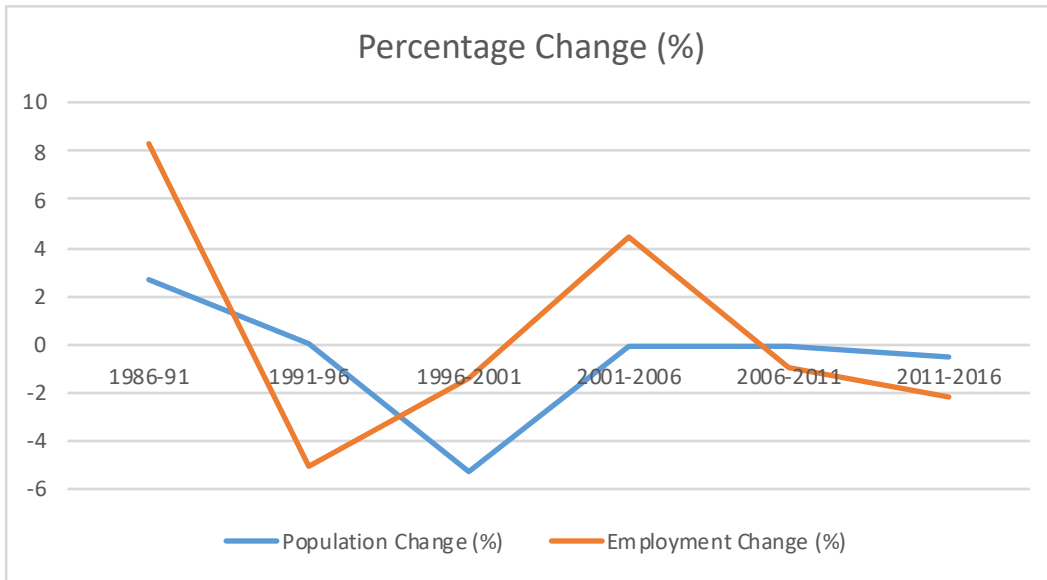


Source: Calculated based on Statistics Canada, various censuses, custom tabulation.

Northeastern Ontario's share of the provincial population declined from 6.23 per cent in 1986 to 5.77 per cent in 1991, 4.83 per cent in 2001, 4.29 per cent in 2011 and 4.07 per cent in 2016. The declining population share has happened for two reasons. First, as we will see below, the region has experienced significant out-migration of youth in search of employment opportunities in other parts of Canada. The second factor contributing to slow or negative population change relates to the fact that the total fertility rate in Northeastern Ontario (1.60) has been significantly below the generational replacement rate of 2.1. The total fertility rate is defined as the average number of children that a woman will have in 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 4). As Figure 4 shows, the fertility rate is higher among women age 28 and younger in Northeastern Ontario than provincial and national levels, but it is significantly lower among women age 28 and older than the provincial and national levels.

**Figure 4: Number of Children Born per Woman by Age in Northeastern Ontario, Ontario, and Canada in 2011[1]**
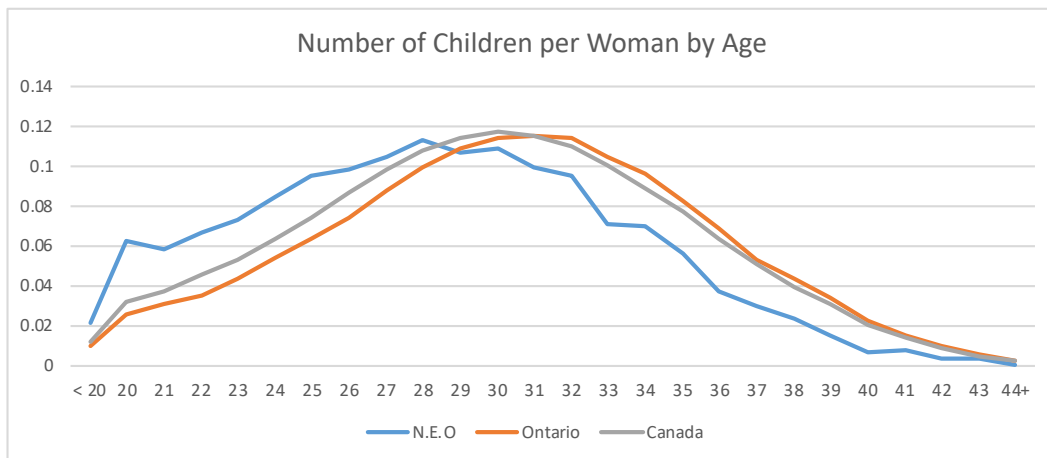


Source: Statistics Canada, 2011, custom tabulation.

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[1] Calculating the total fertility rate (which is number of children born to a woman during her lifetime) requires one to add across all the age groups in Figure 4.

There are other factors besides aging of the population and low fertility rate that explain declining regional population. First, Northeastern Ontario has been receiving disproportionately low rates of immigration. Net immigration is defined as the number of Immigrants to a region minus those who left. However, the number of Immigrants in Northeastern Ontario declined from 34,845 in 2001 to 30,565 in 2011 and to 29,390 in 2016 (due to deaths and out-migration of resident Immigrants being greater than the arrival of Immigrants).[2] In other words, 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 5 shows that Northeastern Ontario experienced significant interprovincial and intraprovincial out-migration between 2006 and 2016. Interprovincial migration refers to the movement of population from one province to another, and Intraprovincial migration refers to the movement of population from one census division to another within the province. The Ministry of Finance reports that since 2003, net interprovincial migration to Ontario has been negative, largely due to net outflows to Alberta. 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.[3] At the same time, it appears that recent efforts to increase international immigration to the Northeast region have resulted in positive net migration for 2017 and 2018

**Figure 5: Net Migrations Flows in Northeastern Ontario**
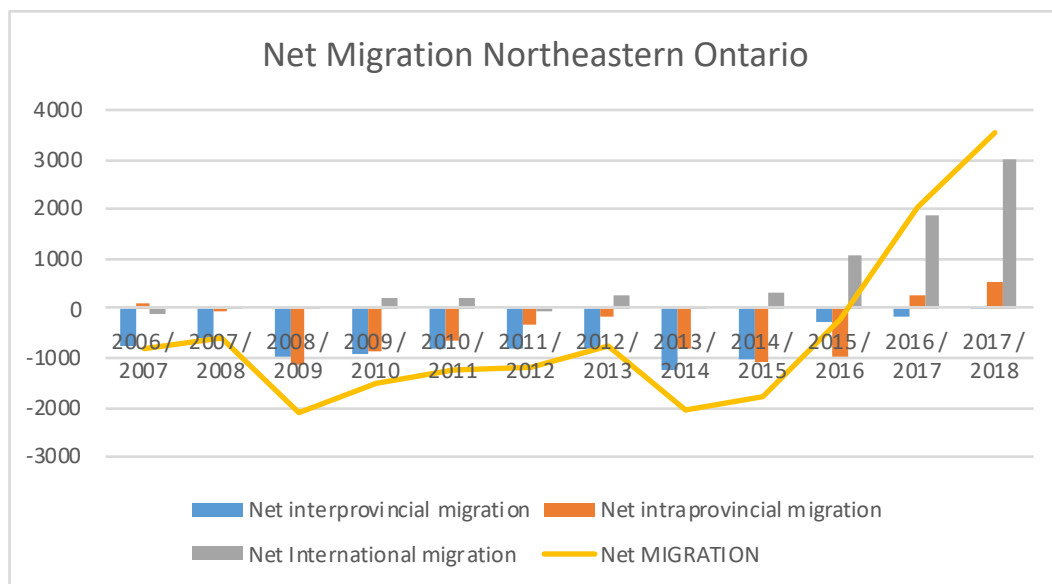


Source: Author's calculations based on Statistics Canada, table 17-10-0138-01.

The above demographic trends have resulted in an age distribution of the population in Northeastern Ontario that is different from that of Ontario. As Figure 6 shows, when compared with the provincial average, Northern Ontario has a relatively low percentage of people younger than 45 and a higher share of older people, including seniors.[4]

[2] According to the census data, net immigration to Ontario between 2001 and 2011 equaled 586,990.

[3] Ontario Ministry of Finance, Ontario Population Projections Update based on the 2011 Census 2017-2041 Ontario and Its 49 Census Divisions.

[4] In Figure 5, the horizontal axis shows different age groups and the vertical axis shows the percentage share of Northeastern Ontario's population in each age group relative to Ontario.

**Figure 6: Relative Age Distribution in 2011**
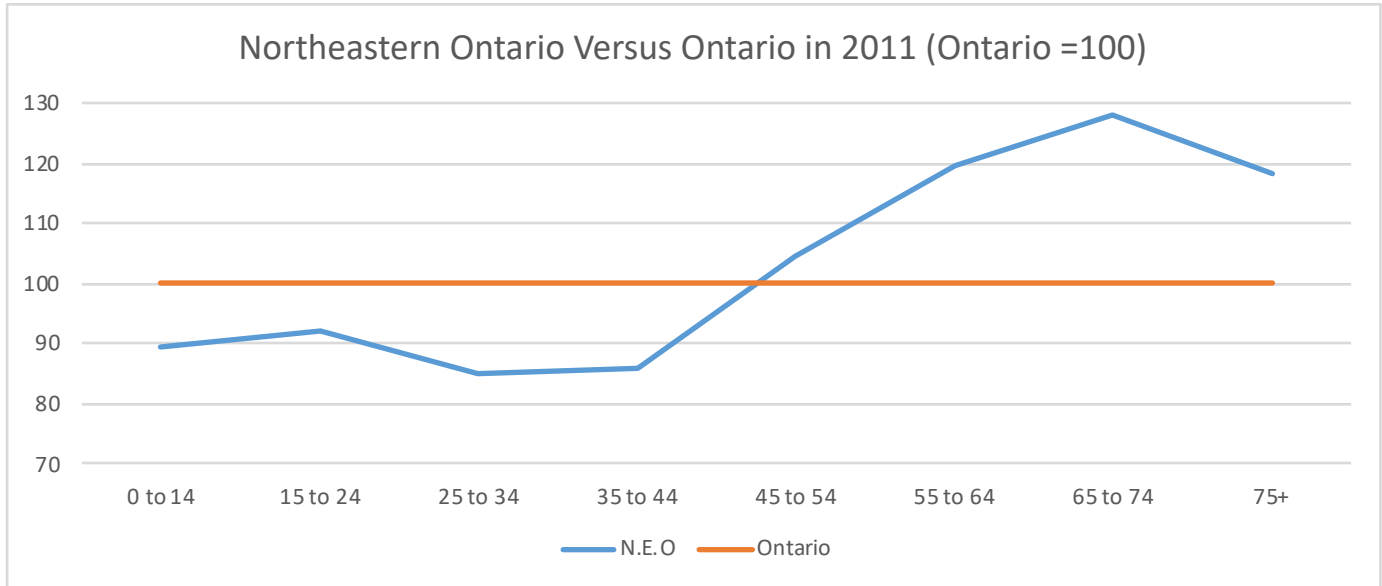


Source: Author's calculation based on Statistics Canada, 2011 NHS, custom tabulation.

## Population Trends in Nipissing District

The Nipissing District covers 17,104 square kilometres and recorded a population of 83,150 in 2016. It has a population density of 4.9 persons per square kilometer, which is well below that of Ontario (14.8). According to Statistics Canada's Census of Population, Nipissing's population increased between 1986 and 1991, stayed relatively constant between 1991 and 2011, but declined slightly between 2011 and 2016 (Figure 7).

**Figure 7: Population Trends in Nipissing District**
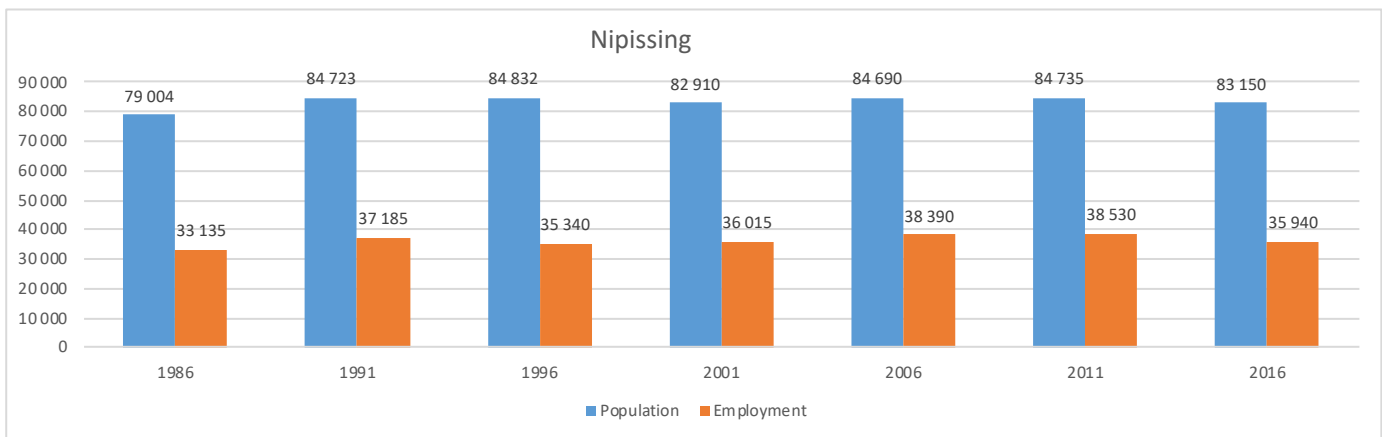


Source: Author's calculation based on Statistics Canada, Census of Population, various issues.

As mentioned above, population and employment trends are highly correlated. Changing population between 1986 and 2016 was influenced by changing employment during the same period. The correlation coefficient between the population trend and employment trend equals 0.82, which is very high.

As is the case for Northeastern Ontario, other factors contributed to the overall change in the regional population. First, Nipissing District has been receiving disproportionately low rates of immigration. The district experienced negative net immigration between 2001 and 2016 (Figure 8). Total immigration during the period equaled 1,028 compared with

a total of 1,754 emigration. This is one of the important factors influencing the declining population. The second factor relates to migration flows.

Figure 8 shows that Nipissing District has experienced interprovincial out-migration throughout the period under study. Interprovincial migration refers to the movement of population from one province to another. Intraprovincial migration refers to the movement of population from one census division to another within the province. Net interprovincial out-migration equaled 1,754 while net intraprovincial in-migration equaled 1,749 between 2001 and 2017.

The largest portion of individuals who out-migrate to other provinces are between the ages of 20 and 34. Figure 9 shows the age distribution of movers between 2001 and 2016. Overall, Nipissing District experienced a net inflow of people younger than age 19 (839) as well as those between the ages of 35 and 64 (972). During the same period, Nipissing experienced a net outflow of people ages 20 to 34 (2,124) and 65 and older (390). It appears that the majority of those who out-migrated from the district are between the ages of 20 and 34 and they most likely left in search of job opportunities outside the district.

**Figure 8: Net Migration Flows**



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

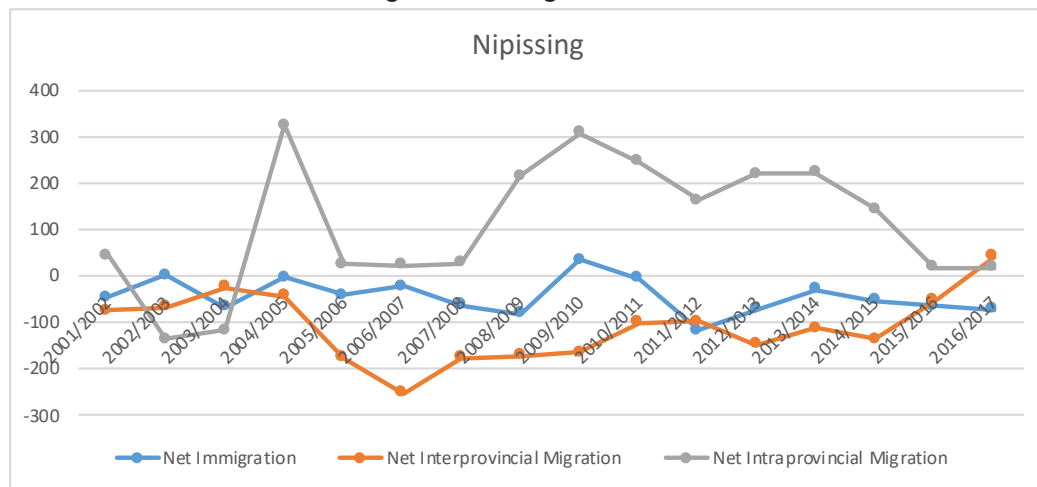**Figure 9: Net Migration by Age Group**
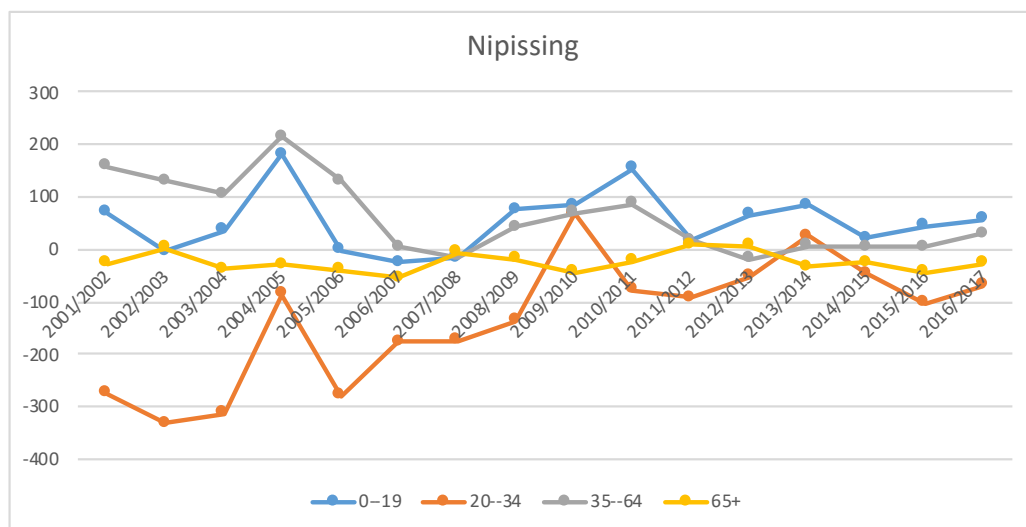


Source: Author's calculations based on Statistics Canada, CANSIM database, tables 051-0063.

## Aging of the Population in Nipissing 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 Nipissing'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 Nipissing District younger than age 20 has declined from 29.0 per cent in 1991 to 21.4 per cent in 2011 and to 20.9 per cent in 2016, while the share of seniors rose from 11.9 per cent in 1991 to 17.7 per cent

in 2011 and to 19.6 per cent in 2016 (Figure 10). During the same period, the share of individuals between the ages of 20 and 34 declined from 23.4 per cent to 17.4 per cent, while individuals ages 35 to 64 increased from 35.7 per cent to 42.2 per cent.

These demographic changes have 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 costs, the supply of labour, production capacity, and the ability of Nipissing District to stay economically viable.

**Figure 10: Aging of Nipissing District's Population**
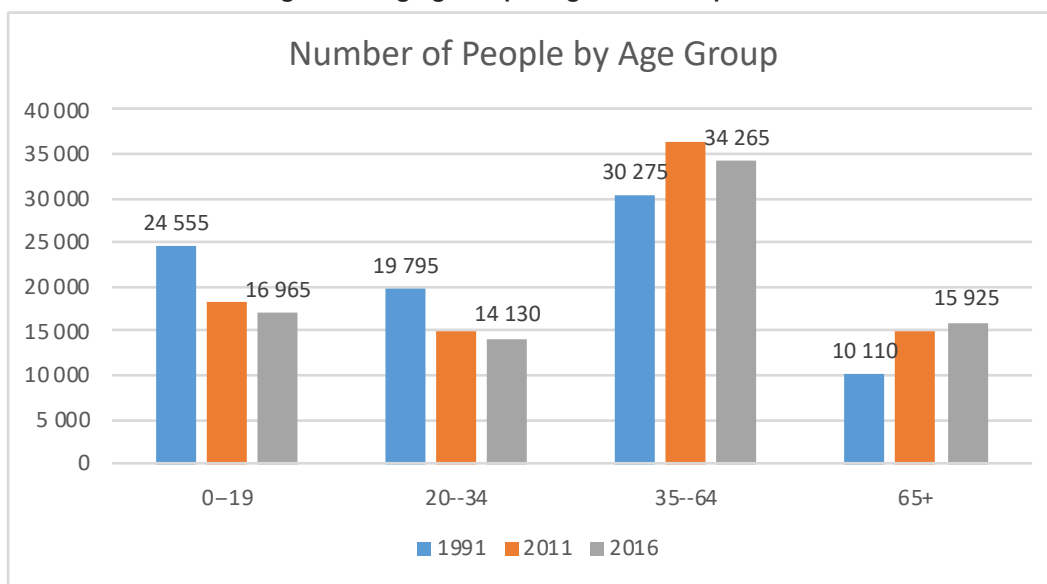


Source: Author's calculation based on Statistics Canada, Census of Population, various issues.

## Linguistic and Cultural Diversity of the Population in Northeastern Ontario

Another aspect of demographic change in Northeastern Ontario and Nipissing District relates to the cultural and linguistic diversity of the population (Figure 11). The total Francophone population in Northeastern Ontario declined from 130,085 in 2001 to 114,770 in 2011 but rose to 121,830 in 2016. The total Francophone population in Nipissing District declined slightly from 20,835 in 2001 to 19,945 in 2016.

The total Indigenous population in Northeastern Ontario increased from 41,005 in 2001 to 57,715 in 2011 and to 69,510 in 2016. In other words, the share of the Indigenous population in Northeastern Ontario rose from 7.5 per cent to 12.9 per cent. The total Indigenous population in Nipissing District increased from 6,125 in 2001 to 11,540 in 2016, a growth rate of approximately 88.4 per cent. The share of the Indigenous population in Nipissing District rose from 7.4 per cent to 14.2 per cent between 2001 and 2016.

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.[5] The passage of Bill C31 in 1986 has been a factor in this ethnic mobility.

In addition, 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

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

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.[6] 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."[7]

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 retires. They will represent a significant share of the region's workforce in the coming years.

The share of the Immigrant population in Northeastern Ontario declined from 6.5 per cent in 2001 to 5.5 per cent in 2016.  During the same period, the share of Immigrants in Nipissing rose from 4.3 per cent to 4.5 per cent. The majority of the Immigrant population in Northeastern Ontario live in Greater Sudbury and Algoma District.

**Figure 11: Linguistic & Cultural Diversity in Northeastern Ontario and Nipissing District, 2001-2016**
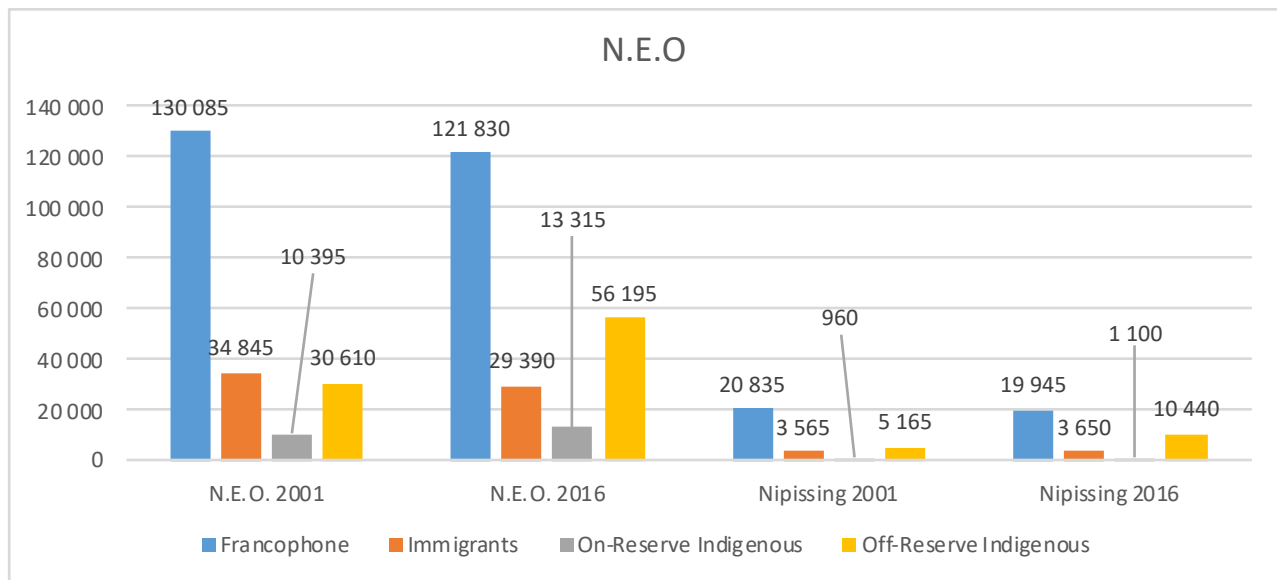


Source: Author's calculation based on Statistics Canada, Census of Population, Various issues.

## Population Trends in Urban & Rural Northeastern Ontario

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.[8] 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.

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[6] Ibid

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

[8] 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.

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.[9] This is measured by the percentage of people who commute to work in an urban centre.

Using the above definition, Figure 12 shows the distribution

of Northeastern Ontario and Nipissing District's population among rural and urban areas. Approximately 66.7 per cent of Northeastern Ontario's population live in urban areas. The rest (33.3 per cent) live in rural areas. The majority (54.8 per cent) of the Indigenous population live in urban areas. These are mainly off-reserve Indigenous peoples. Approximately 45.2 per cent of the Indigenous population live in rural areas, with approximately 48.9 per cent of them living in relatively remote areas with a weak or no link to urban centres. Approximately 61.8 per cent of the Francophone and 74.1 per cent of the Immigrant population live in urban centres.

**Figure 12: Population in Urban and Rural Areas in Northeastern Ontario**
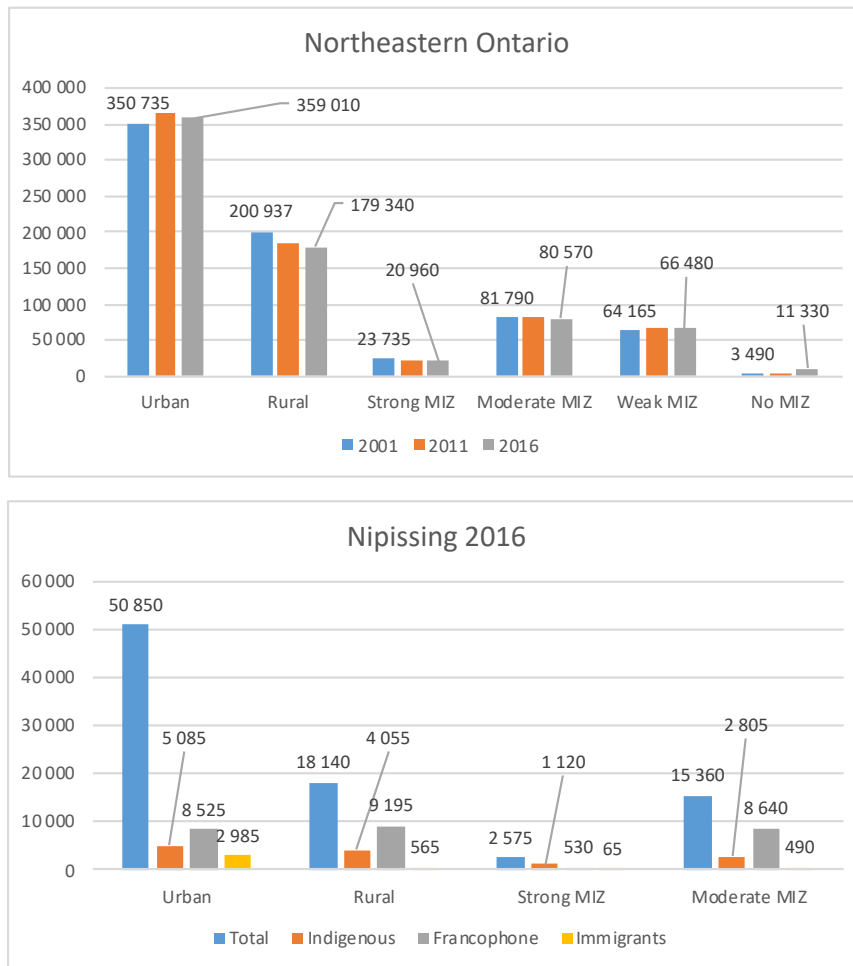


Source: Author's calculation based on Statistics Canada, special tabulation, various censuses.

Approximately 62.6 per cent of Nipissing District's population live in urban areas. The rest (37.4 per cent) live in rural areas. Figure 12 shows that approximately 44.1 per cent of the Indigenous population live in urban areas. The rest (55.9 per cent) live in rural areas. The majority of those living in

rural areas reside in centres designated as having strong or moderate link to urban centres. Approximately 42.7 per cent of the Francophone and 81.8 per cent of the Immigrant population live in urban centres.[10]

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[9] 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.

[10] 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, and between 0 and 5 per cent for weak MIZ).

# Demographic Change in Nipissing District and Northeastern Ontario: The Next Three Decades

This part of the study provides population projections for Nipissing 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.[11] 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 2011 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, Nipissing District's population is expected to increase from 87,651 in 2017 to 88,126 in 2041 (Table 1).[12] The continuing aging of the regional population is also evident (Figure 13), as the share of individuals younger than 64 years of age is expected to decline while the share of seniors is expected to rise from 20.5 per cent in 2017 to 30.4 per cent in 2041.

[11] 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, ON: Northern Policy Institute, 2015).

[12] Note that the Ministry's population estimate for 2017 is higher than the 2016 census estimate.

Temagami Railway Station, Temagami

**Table 1: Population Projections by Age Group, Cochrane District, 2017-2041**

| Year | 0--19 | 20--44 | 45--64 | 65+ | Total |
|---|---|---|---|---|---|
| 2017 | 17,168 | 26,678 | 25,825 | 17,980 | 87,651 |
| 2018 | 17,134 | 26,710 | 25,570 | 18,453 | 87,867 |
| 2019 | 17,061 | 26,774 | 25,230 | 18,958 | 88,023 |
| 2020 | 16,964 | 26,852 | 24,827 | 19,506 | 88,149 |
| 2021 | 16,879 | 26,866 | 24,435 | 20,048 | 88,228 |
| 2022 | 16,840 | 26,777 | 24,022 | 20,620 | 88,259 |
| 2023 | 16,848 | 26,662 | 23,543 | 21,234 | 88,287 |
| 2024 | 16,834 | 26,578 | 23,063 | 21,834 | 88,309 |
| 2025 | 16,828 | 26,481 | 22,540 | 22,477 | 88,326 |
| 2026 | 16,780 | 26,429 | 21,970 | 23,159 | 88,338 |
| 2027 | 16,745 | 26,274 | 21,572 | 23,752 | 88,343 |
| 2028 | 16,650 | 26,215 | 21,055 | 24,424 | 88,344 |
| 2029 | 16,557 | 26,149 | 20,625 | 25,006 | 88,337 |
| 2030 | 16,442 | 26,026 | 20,332 | 25,523 | 88,323 |
| 2031 | 16,370 | 25,836 | 20,225 | 25,876 | 88,307 |
| 2032 | 16,290 | 25,713 | 20,221 | 26,063 | 88,287 |
| 2033 | 16,264 | 25,536 | 20,261 | 26,206 | 88,267 |
| 2034 | 16,185 | 25,352 | 20,363 | 26,347 | 88,247 |
| 2035 | 16,098 | 25,112 | 20,495 | 26,520 | 88,225 |
| 2036 | 16,006 | 24,908 | 20,608 | 26,681 | 88,203 |
| 2037 | 15,901 | 24,728 | 20,776 | 26,775 | 88,180 |
| 2038 | 15,852 | 24,557 | 20,922 | 26,830 | 88,161 |
| 2039 | 15,804 | 24,405 | 21,098 | 26,838 | 88,145 |
| 2040 | 15,762 | 24,273 | 21,271 | 26,827 | 88,133 |
| 2041 | 15,727 | 24,166 | 21,419 | 26,814 | 88,126 |

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

**Figure 13: Population Projections by Age Group, Nipissing District, 2017-2041**

## Number of People by Age Group



Legend: 2017 | 2025 | 2030 | 2041

Labeled values:
- 0–19: 17 168, 15 727
- 20--44: 26 678, 24 166
- 45--64: 25 825, 21 419
- 65+: 17 980, 26 814

## Percentage Share by Age Group



Legend: 2017 | 2025 | 2030 | 2041

Labeled values:
- 0–19: 19.6, 17.8
- 20--44: 30.4, 27.4
- 45--64: 29.5, 24.3
- 65+: 20.5, 30.4
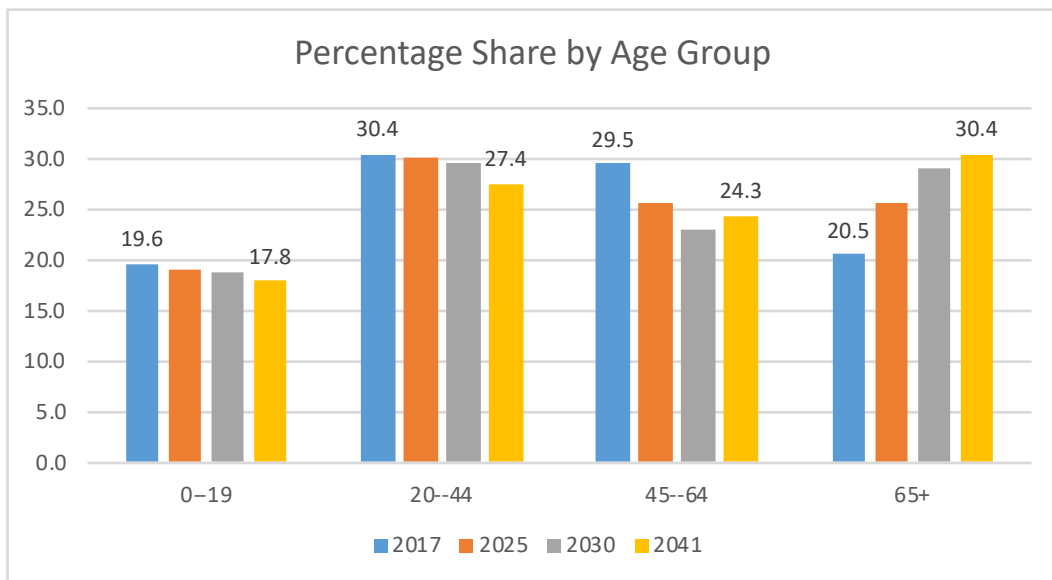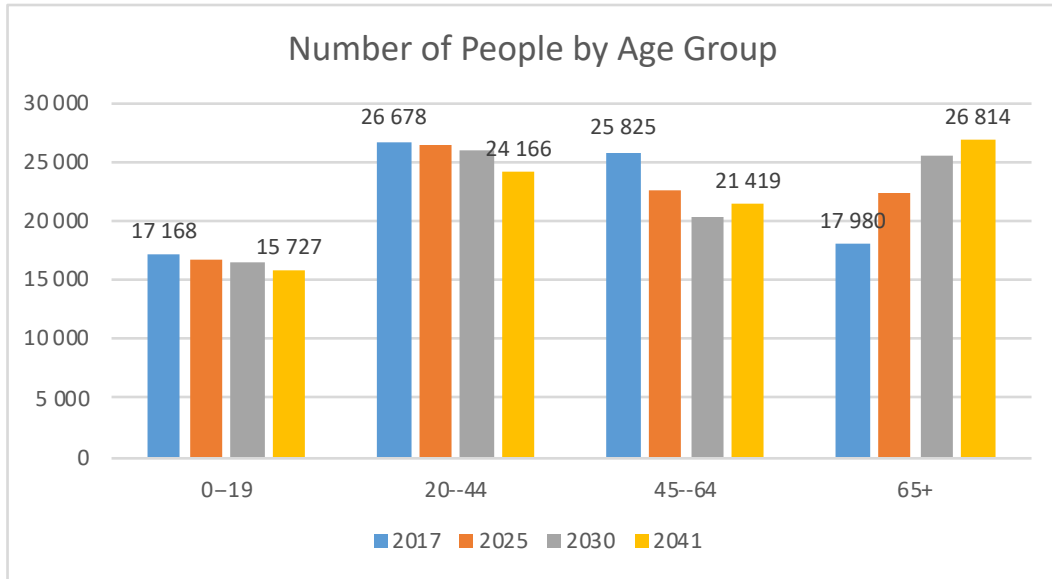
Source: Author's calculations based on the Ministry of Finance population projections.

# Indigenous Population Projection

In making projections for the Indigenous population in Nipissing District out to 2030, we assume zero net migration of Indigenous peoples during the forecast period, since the existing evidence suggests there is relatively low mobility among the Indigenous population in the region.[13] 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.[14]

Based on these assumptions, Table 2 and Figure 14 show that the Indigenous population in Nipissing District is expected to increase from 11,495 in 2015/2016 to 12,959

in 2030, a growth rate of approximately 12.7 per cent. The number of individuals younger than age 20 is expected to increase from 3,220 in 2015 to 3,876 in 2030. The number of individuals age 65 and older is expected to rise from 1,305 in 2015 to 2,322 in 2030.

The Indigenous population's share of the district's total population is expected to increase from approximately 13.1 per cent in 2015 to 14.7 per cent in 2030. The share of working-age Indigenous peoples (those ages 20 to 64) is expected to stay relatively constant at 7.8 per cent between 2015 and 2030.

**Table 2: Projected Indigenous Population, Nipissing District, 2015-2030**

| Age Group | 2015 | 2020 | 2025 | 2030 |
|---|---|---|---|---|
| 0 - 4 years | 745 | 985 | 1,068 | 1,053 |
| 5 - 9 years | 885 | 787 | 980 | 1,063 |
| 10 - 14 years | 760 | 874 | 786 | 978 |
| 15 - 19 years | 830 | 742 | 870 | 782 |
| 20 - 24 years | 905 | 913 | 736 | 862 |
| 25 - 29 years | 810 | 813 | 903 | 728 |
| 30 - 34 years | 675 | 784 | 806 | 895 |
| 35 - 39 years | 635 | 635 | 776 | 797 |
| 40 - 44 years | 795 | 698 | 628 | 767 |
| 45 - 49 years | 770 | 783 | 686 | 617 |
| 50 - 54 years | 930 | 750 | 764 | 669 |
| 55 - 59 years | 775 | 851 | 726 | 739 |
| 60 - 64 years | 675 | 779 | 806 | 687 |
| 65 - 69 years | 530 | 604 | 718 | 746 |
| 70 - 74 years | 340 | 414 | 533 | 632 |
| 75 - 79 years | 245 | 316 | 344 | 445 |
| 80 + years | 190 | 260 | 397 | 499 |
| **Total** | **11,495** | **11,988** | **12,527** | **12,959** |

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

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[13] Mobility is often related to the level of educational achievement. According to the 2016 census, Aboriginal Population Profile, interprovincial migration among the Indigenous population during a one-year period (2015-2016) 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.

[14] Fertility rates for the Indigenous population were not available at the time of this report and therefore the fertility rate for rural Northwestern Ontario was used as a proxy due to the higher proportion of Indigenous population in that region.

**Figure 14: Percentage Share of Indigenous Population by Age Group, Nipissing District**
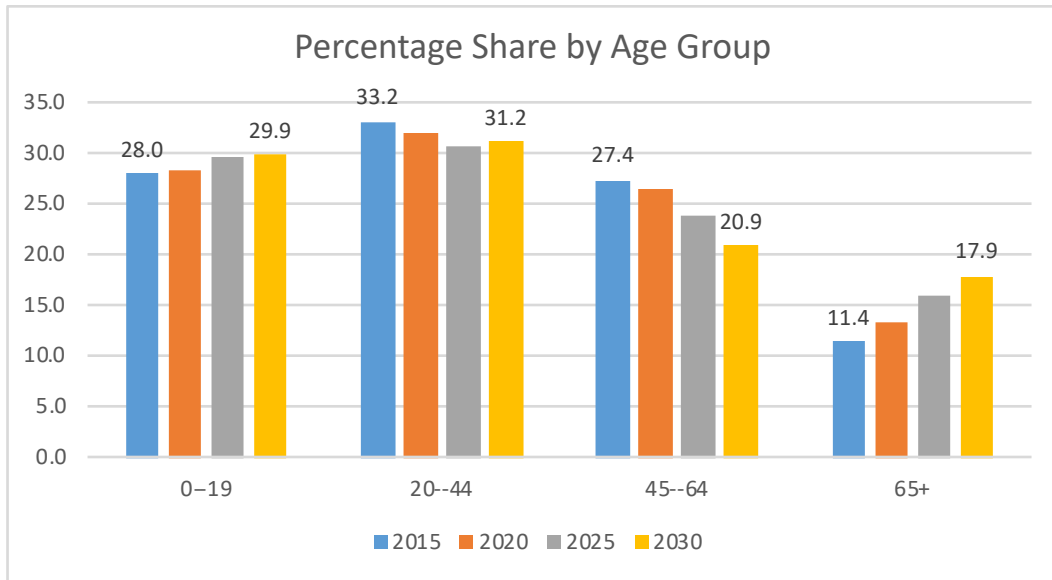
## Percentage Share by Age Group



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

# Northeastern Ontario'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. Population aging 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 report has shown that the Indigenous population represents a growing segment of the region'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 Northeastern Ontario's labour force.

Table 3 and Figure 15 show labour market trends among the population ages 15 to 64 in the Nipissing District. As the table shows, the total working-age population declined in Nipissing District between 2001 and 2016. Labour force participation declined among men but rose among women during the same period. The employment rate declined for men but rose for women. The unemployment rate followed the same trend for men and women between 2001 and 2016.

**Table 3: Labour Market Trends, Population 15 to 64 Years of Age, Northeastern Ontario & Nipissing District, 2001-2016**

| Labour Market Outcome | Men | Men | Women | Women |
|---|---|---|---|---|
| **Northeastern Ontario** | **2001** | **2016** | **2001** | **2016** |
| Total population 15 to 64 years of age | 179,755 | 173,055 | 185,265 | 176,265 |
| In the labour force | 137,045 | 130,865 | 123,265 | 124,360 |
| Employed | 122,290 | 116,340 | 112,320 | 114,965 |
| Unemployed | 14,760 | 14,520 | 10,945 | 9,400 |
| Not in the labour force | 42,705 | 42,200 | 61,995 | 51,905 |
| Participation rate | 76.20 | 75.62 | 66.53 | 70.55 |
| Employment rate | 68.00 | 67.23 | 60.63 | 65.22 |
| Unemployment rate | 10.80 | 11.10 | 8.88 | 7.56 |
| **Nipissing District** | **2001** | **2016** | **2001** | **2016** |
| Total population 15 to 64 years of age | 26,695 | 26,105 | 28,065 | 26,965 |
| In the labour force | 20,260 | 19,110 | 18,540 | 18,945 |
| Employed | 18,265 | 16,805 | 16,970 | 17,495 |
| Unemployed | 2,000 | 2,305 | 1,570 | 1,455 |
| Not in the labour force | 6,440 | 6,995 | 9,525 | 8,025 |
| Participation rate | 75.9 | 73.2 | 66.1 | 70.3 |
| Employment rate | 68.4 | 64.4 | 60.5 | 64.9 |
| Unemployment rate | 9.9 | 12.1 | 8.5 | 7.7 |
| **Francophone Population** | **2001** | **2016** | **2001** | **2016** |
| Total population 15 to 64 years of age | 6,915 | 6,025 | 7,340 | 6,445 |
| In the labour force | 5,055 | 4,245 | 4,590 | 4,520 |
| Employed | 4,495 | 3,745 | 4,260 | 4,225 |
| Unemployed | 565 | 495 | 330 | 295 |
| Not in the labour force | 1,860 | 1,785 | 2,750 | 1,925 |
| Participation rate | 73.1 | 70.5 | 62.5 | 70.1 |
| Employment rate | 65.0 | 62.2 | 58.0 | 65.6 |
| Unemployment rate | 11.2 | 11.7 | 7.2 | 6.5 |
| **Immigrant Population** | **2001** | **2016** | **2001** | **2016** |
| Total population 15 to 64 years of age | 1,070 | 1,010 | 1,315 | 1,070 |
| In the labour force | 815 | 770 | 845 | 785 |
| Employed | 795 | 695 | 805 | 700 |
| Unemployed | 15 | 75 | 40 | 80 |
| Not in the labour force | 265 | 240 | 470 | 285 |
| Participation rate | 76.2 | 76.2 | 64.3 | 73.4 |
| Employment rate | 74.3 | 68.8 | 61.2 | 65.4 |
| Unemployment rate | 2.5 | 9.7 | 4.7 | 10.2 |

| Labour Market Outcome | Men | Men | Women | Women |
|---|---|---|---|---|
| **Indigenous Population** | **2001** | **2016** | **2001** | **2016** |
| Total population 15 to 64 years of age | 2,055 | 3,810 | 2,100 | 3,980 |
| In the labour force | 1,420 | 2,545 | 1,280 | 2,505 |
| Employed | 1,160 | 2,105 | 1,115 | 2,165 |
| Unemployed | 265 | 445 | 165 | 335 |
| Not in the labour force | 635 | 1260 | 825 | 1475 |
| Participation rate | 69.1 | 66.8 | 60.7 | 62.9 |
| Employment rate | 56.4 | 55.2 | 52.0 | 54.4 |
| Unemployment rate | 18.3 | 17.5 | 12.9 | 13.4 |

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

**Figure 15: Labour Force Participation and Unemployment Rates in Population 15 to 64 Years of Age, Nipissing District, 2016**
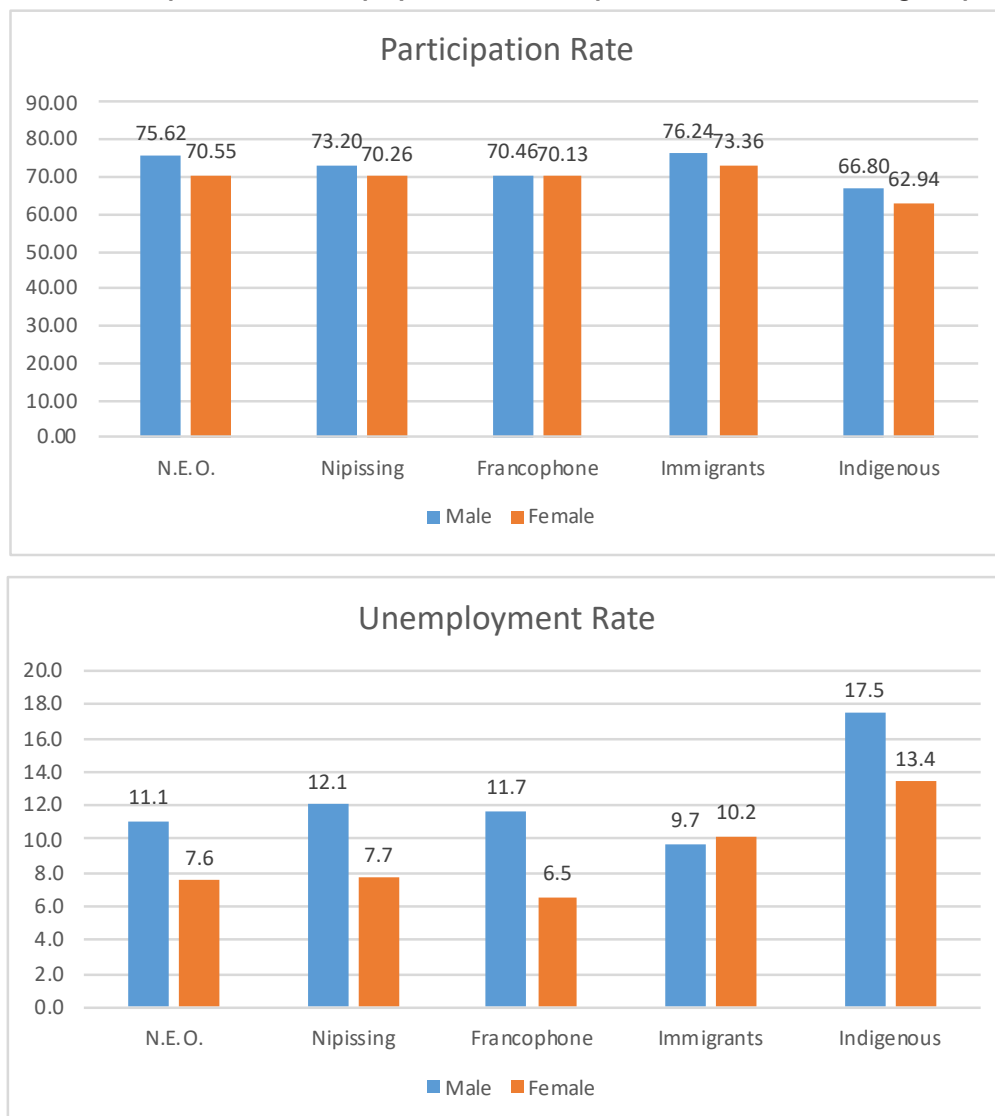


Source: Author's calculations based on Statistics Canada, 2016 census, custom tabulation.

Figure 15 shows that the labour force participation rate has been lower and the unemployment rate higher for the Indigenous labour force. 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.[15] 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.

The average employment income of those who worked in Nipissing District in 2015 equaled $40,190 compared with $42,310 for Immigrants, $34,920 for Indigenous peoples, and $40,715 for Francophones. The average employment income in Northeastern Ontario equaled $45,283 in 2015.

## Size and Composition of the Future Labour Force

To forecast the future labour force in Nipissing 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 4 provides labour supply projections for Nipissing District. The projections show that the labour force in the district is expected to decline from 38,055 in 2015 to 36,467 in 2030, a decline of approximately 4.2 per cent. During the same period, the Indigenous labour force is expected to decline from 5,050 in 2015 to 4,893 in 2030, a decline of approximately 3.1 per cent.[16] As a result, the share of Indigenous peoples in the total regional labour force is expected to stay relatively constant between 2015 and 2030. What are the implications of the declining labour force for the future economic performance of Nipissing District and Northeastern Ontario? 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 4: Projected Labour Supply, Total and Indigenous, Nipissing District**

| Year | Total Labour Force | Indigenous Labour Force | Indigenous Share (%) |
|------|---------------------|--------------------------|----------------------|
| 2015 | 38,055 | 5,050 | 13.3 |
| 2020 | 40,277 | 5,027 | 12.5 |
| 2025 | 38,451 | 4,995 | 13.0 |
| 2030 | 36,467 | 4,893 | 13.4 |

Source: Author's calculations based on his population projection model.

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[15] 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

[16] We have assumed that the labour force participation rate among the Indigenous population stays at its current level.

[17] Rising labour force between 2015 and 2020 relates to the fact that the Ministry of Finance population estimates are greater than the census estimates.

# Productivity and Human Capital Composition of the Workforce in Nipissing and Northeastern 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 Nipissing District 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 Northern Ontario. To obtain such an index, we first estimate a standard earnings model using the 2006 census microdata file.[18] 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 16.

**Figure 16: Return to Education in Canada (%)**
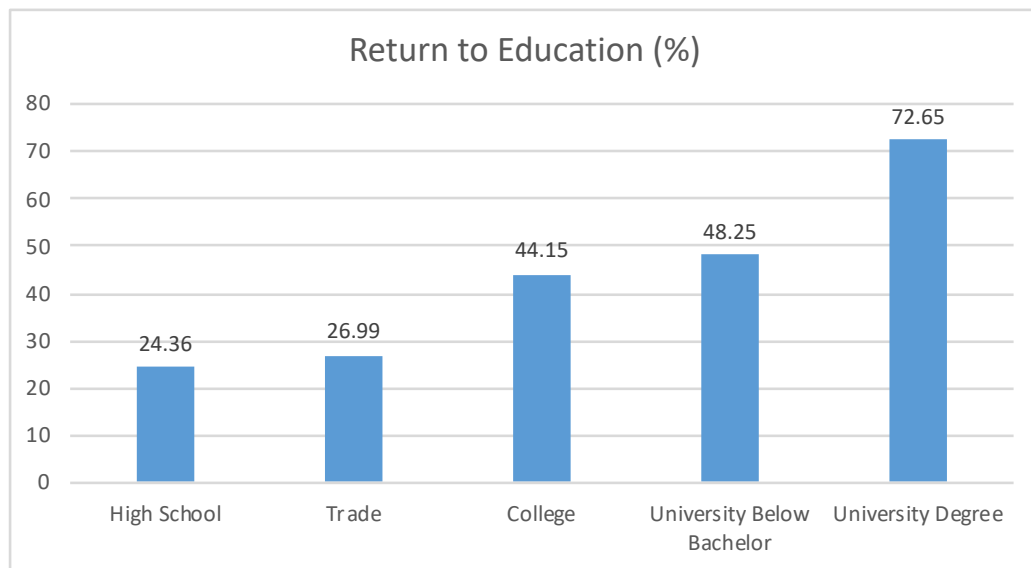


Source: Author's estimates using 2006 census microdata files

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. 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.

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

[18] The earnings model is as follows: lnWage = $\alpha$ + $\Sigma\beta_i S_i$ + $X_i\delta_i$ + $\varepsilon_i$, 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.

[19] HCI = exp{$\Sigma\beta i$ . 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).

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 17.

The human capital index in Northeastern Ontario is below that of Ontario and Canada. The total index is higher for Nipissing District compared with Northeastern 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 prime working-age Indigenous population in Ontario equals 137.5, which is the same as the index for Northeastern Ontario but is

lower than that of Nipissing District (138.0). The average index for Nipissing District's Indigenous population is approximately 7.1 points lower than that of the total regional population. We note that the human capital index for the Indigenous population in Northeastern Ontario (137.4) is greater than the index for Northwestern Ontario (126.1). A possible explanation for this could be due to better access to education due to transportation differences, such as more all-season highway grids, the operation of Ontario Northland Transportation Commission (ONTC) in Northeastern Ontario, as well as the number of regularly serviced airports.

**Figure 17: Human Capital Index for Prime Working-age Population (25-64)**
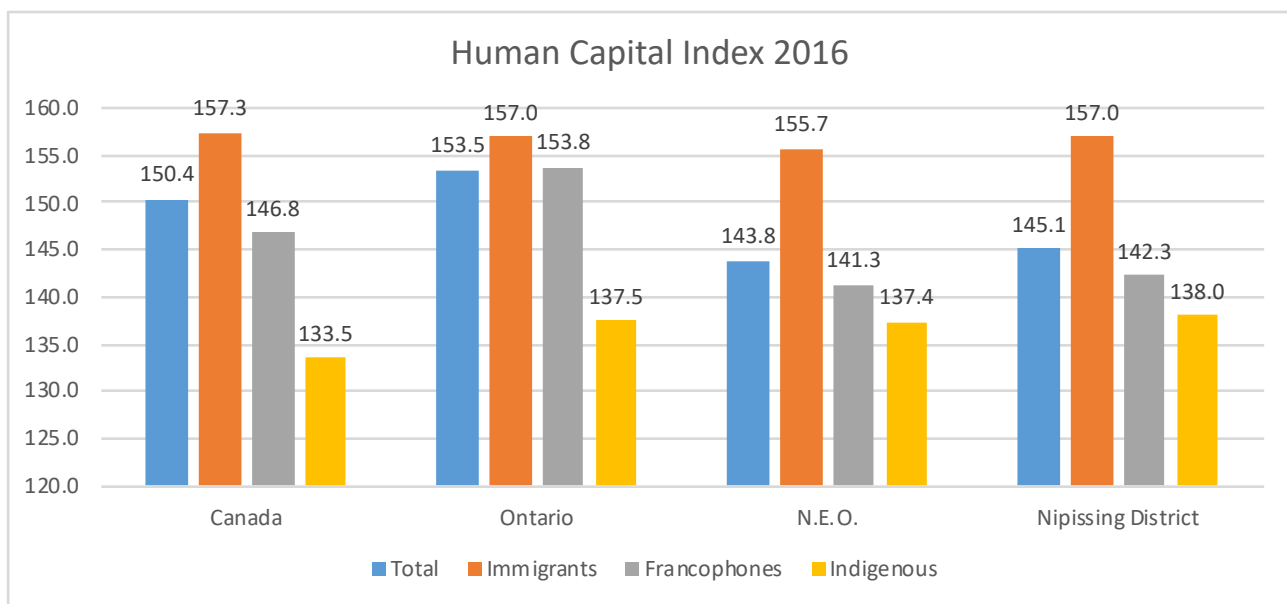


## A Perfect Storm: Declining Labour Supply and Labour Productivity in Northeastern Ontario

The declining supply of labour and low labour productivity in Northeastern 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, college diploma, or university degree. Currently, 72.5 per cent of the new jobs and an average of 70.2 per cent of

all jobs require some postsecondary credentials.[20] 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 18).

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[20] Miner Management Consultants, 'Ontario's Labour Market Future: People without Jobs, Jobs without People,' (Toronto: Miner Management Consultants, 2010).

**Figure 18: Percentage of Jobs in Ontario Requiring Postsecondary Education**
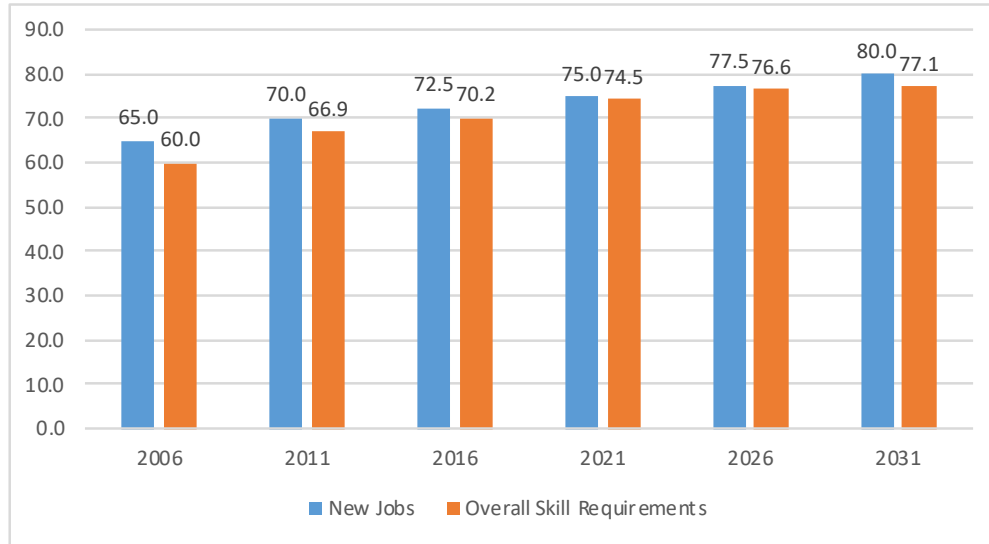


Source: Miner Management Consultants, 'Ontario's Labour Market Future: People Without Jobs, Jobs Without People,' February 2010.

What is the actual skill availability of the region's labour force at the present time? Using the 2016 census and focusing on the prime working-age population ages 25 to 64, Figure 19 shows the percentage of the regional labour force who have postsecondary credentials. The skill levels of the prime working-age population in Northeastern Ontario districts are lower than the skill levels in Ontario and Canada. The average skill level in Northeastern Ontario is also significantly below the current estimated skill requirements of approximately 70.2 per cent of all jobs (Figure 18). Focusing on the prime working-age Indigenous workforce, Figure 19 shows that their level of skills lags behind the current and future job requirements.

**Figure 19: Percentage of the Labour Force Ages 25 to 64 with Postsecondary Credentials**
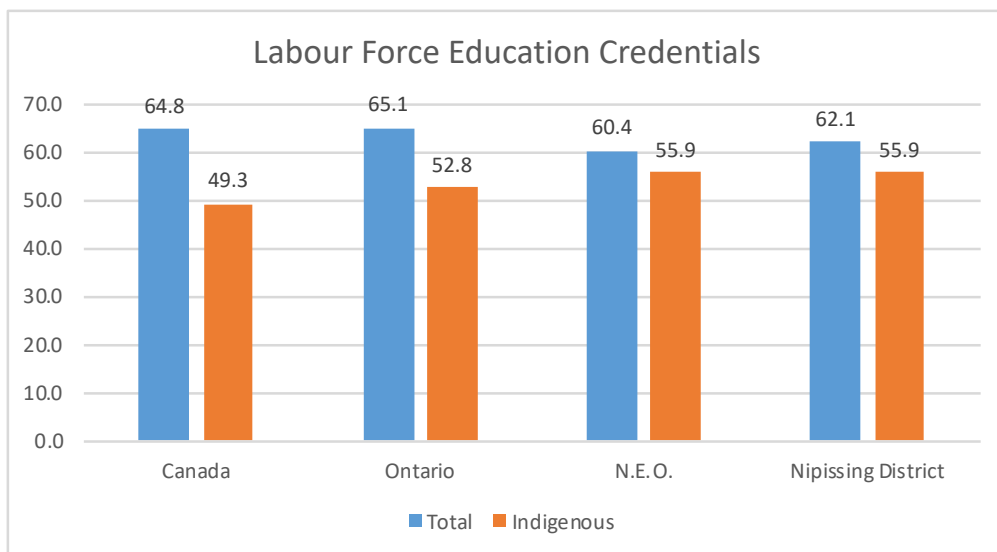


Source: Author's estimates based on Statistics Canada, 2016 census, special tabulation.

Given that the Indigenous labour force will account for a significant share of Northeastern 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 20 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 approximately 20.1 per cent in Nipissing District as the level of education increases to a high school diploma. The same trend 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
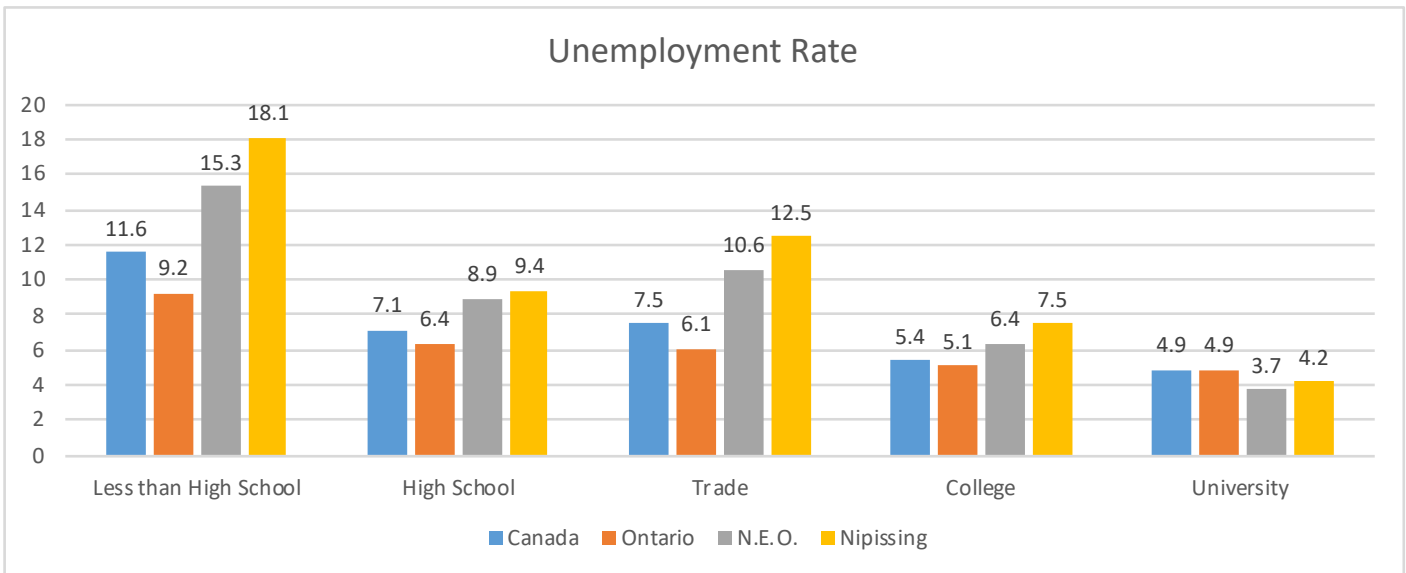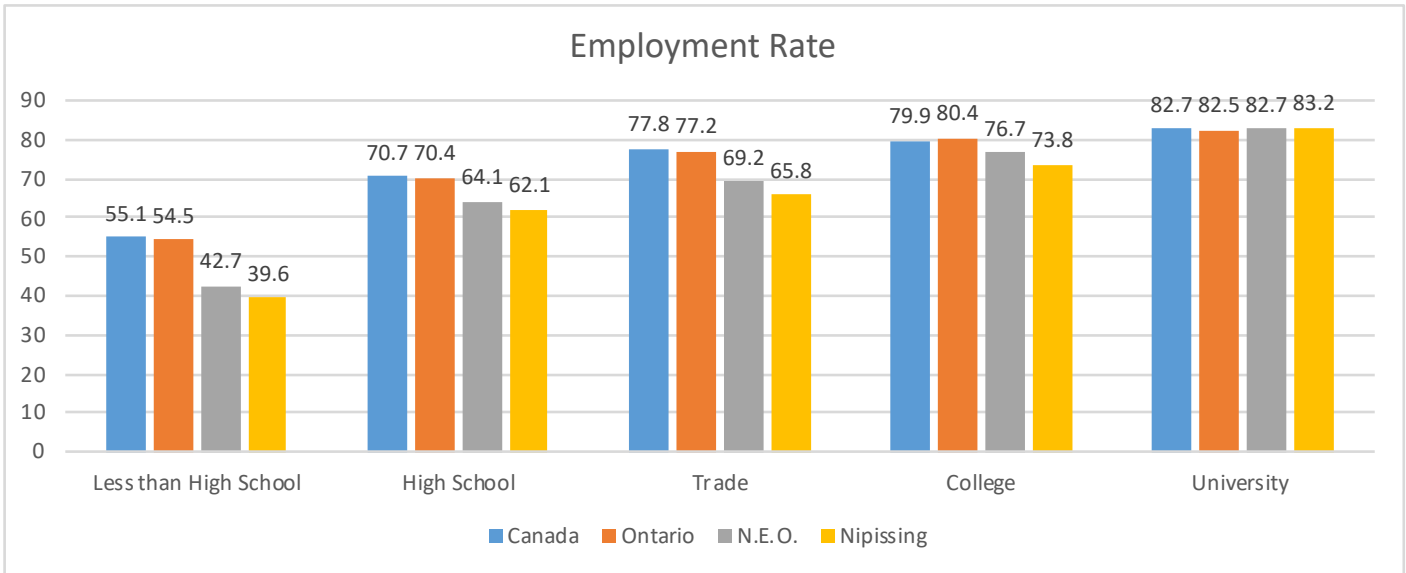
that result in higher completion rates at the secondary and postsecondary levels.

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 Northeastern Ontario and Nipissing District is below the estimated skill requirement needed for the 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, manufacturing, mining, and professional and scientific services were surveyed in Northern Ontario.[21] Of the 50 companies surveyed, 22 had operations in Northern Ontario and other jurisdictions (multilocational) 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.

**Figure 20: Labour Force Performance by Education (%)**



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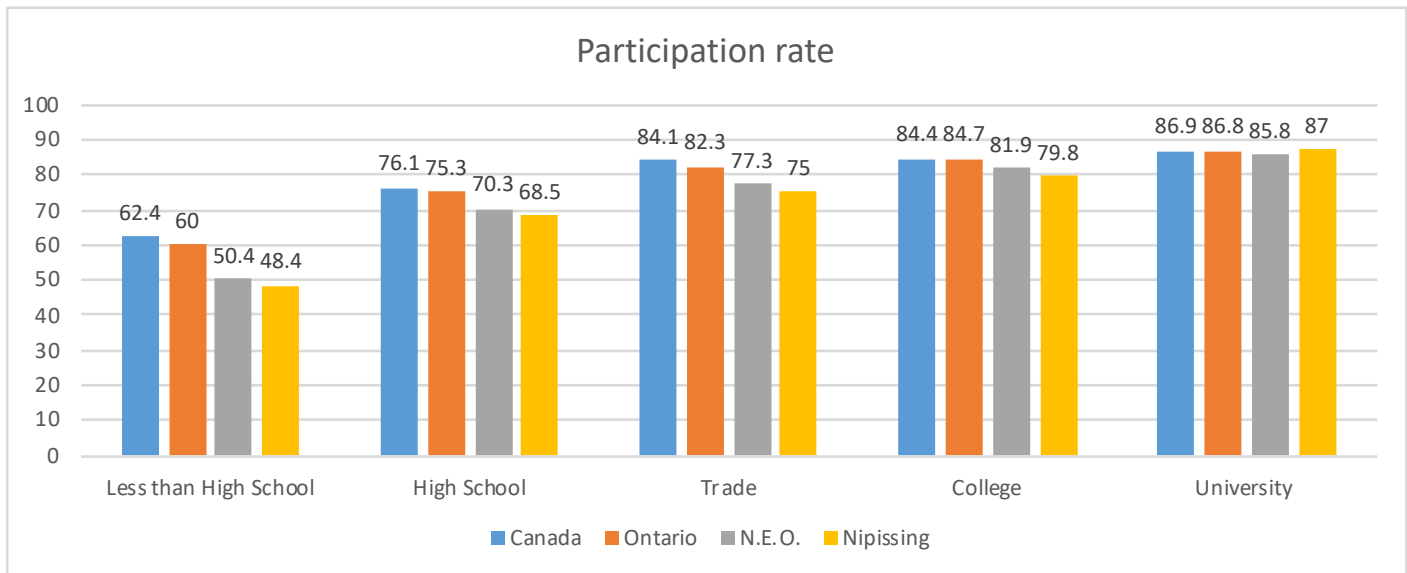
21 B. Moazzami, HDR Decision Economics Inc. and Oraclepoll Research Limited, "Multinational and Multi-locational Enterprise Initiative, Survey of Northern Ontario Companies," 2012.

## Employment Rate



| | Less than High School | High School | Trade | College | University |
|---|---|---|---|---|---|
| Canada | 55.1 | 70.7 | 77.8 | 79.9 | 82.7 |
| Ontario | 54.5 | 70.4 | 77.2 | 80.4 | 82.5 |
| N.E.O. | 42.7 | 64.1 | 69.2 | 76.7 | 82.7 |
| Nipissing | 39.6 | 62.1 | 65.8 | 73.8 | 83.2 |

## Unemployment Rate



| | Less than High School | High School | Trade | College | University |
|---|---|---|---|---|---|
| Canada | 11.6 | 7.1 | 7.5 | 5.4 | 4.9 |
| Ontario | 9.2 | 6.4 | 6.1 | 5.1 | 4.9 |
| N.E.O. | 15.3 | 8.9 | 10.6 | 6.4 | 3.7 |
| Nipissing | 18.1 | 9.4 | 12.5 | 7.5 | 4.2 |

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

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 multilocational 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.[22]

It appears that if the skill levels of the workforce in Nipissing District stay constant as skill requirements rise, the region 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.

[21] 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

The structure of Northeastern Ontario'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 5 shows the changing industrial composition of the employed workforce in Nipissing between 2001 and 2016.

Between 2001 and 2016, total regional employment declined from 35,230 to 34,300, a decline of approximately 2.6 per cent. Total employment in the goods-producing sector declined from 6,370 in 2001 to 5,625 in 2016, a decline of 11.7 per cent. The major cause of the decline in the goods-producing sector is the employment loss in the manufacturing and forestry sectors. Rising mining employment has offset some of the decline in these forestry industries. During the same time, employment in the service-producing sector stayed relatively constant. The only service-producing sectors that experienced significant employment growth are healthcare and social assistance, professional services, and waste management and remediation services related to the mining sector.

**Table 5: Changing the Industrial Composition of the Employed Workforce (15+) in Nipissing District**

| North American Industry Classification 2012 | 2001 | 2016 | Percentage Change (%) |
|---|---|---|---|
| **Goods-producing Sector** | **6,370** | **5,625** | **-11.7** |
| 11 Agriculture, forestry, fishing, and hunting | 630 | 390 | -38.1 |
| 21 Mining and oil and gas extraction | 290 | 890 | 206.9 |
| 22 Utilities | 390 | 335 | -14.1 |
| 23 Construction | 2,075 | 2,240 | 8.0 |
| 31-33 Manufacturing | 2,985 | 1,770 | -40.7 |
| **Service-producing Sector** | **28,875** | **28,685** | **-0.7** |
| 41 Wholesale trade | 925 | 730 | -21.1 |
| 44-45 Retail trade | 5,085 | 4,765 | -6.3 |
| 48-49 Transportation and warehousing | 2,365 | 1,710 | -27.7 |
| 51 Information and cultural industries | 635 | 390 | -38.6 |
| 52 Finance and insurance | 1,175 | 860 | -26.8 |
| 53 Real estate and rental and leasing | 510 | 435 | -14.7 |
| 54 Professional, scientific, and technical services | 1,270 | 1,515 | 19.3 |
| 55 Management of companies and enterprises | 55 | 20 | -63.6 |
| 56 Administrative and support, waste management, and remediation services | 1,240 | 1,435 | 15.7 |
| 61 Educational services | 3,020 | 3,305 | 9.4 |
| 62 Health care and social assistance | 4,630 | 5,775 | 24.7 |
| 71 Arts, entertainment, and recreation | 530 | 555 | 4.7 |
| 72 Accommodation and foodservices | 2,825 | 2,685 | -5.0 |
| 81 Other services (except public administration) | 1,515 | 1,390 | -8.3 |
| 91 Public administration | 3,095 | 3,115 | 0.6 |
| **Total Employed Workforce** | **35,230** | **34,300** | **-2.6** |

Source: Author's estimates based on Statistics Canada, 2001 and 2016 censuses, special tabulation.

A shift in the industrial structure of the workforce is accompanied by a change in the occupational distribution of the labour force (Table 6). The only occupations that have experienced significant employment growth between 2001 and 2016 are health and education services. Occupations unique to processing have experienced the greatest decline during the same period.

**Table 6: Occupational Distribution of Employed Workforce (15 to 64) in Cochrane District**

| 2001 National Occupational Classification | 2001 | 2016 | Percentage Change (%) |
|---|---|---|---|
| A Management occupations | 3,915 | 3,355 | -14.3 |
| B Business, finance, and administrative occupations | 5,730 | 4,970 | -13.3 |
| C Natural and applied sciences and related occupations | 1,745 | 1,800 | 3.2 |
| D Health occupations - Employed labour force | 2,390 | 3,200 | 33.9 |
| E Occupations in social science, education, government service, and religion | 3,080 | 5,050 | 64.0 |
| F Occupations in art, culture, recreation, and sport | 620 | 650 | 4.8 |
| G Sales and service occupations | 9,760 | 8,520 | -12.7 |
| H Trades, transport and equipment operators, and related occupations | 5,780 | 5,175 | -10.5 |
| I Occupations unique to primary industry | 840 | 715 | -14.9 |
| J Occupations unique to processing, manufacturing, and utilities | 1,365 | 855 | -37.4 |
| **Total** | **35,230** | **34,300** | **-2.6** |

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

The changing industrial and occupational structure of the employed labour force impacts employment income and gross regional product. Figure 21 shows that total regional employment income declined slightly between 2001 and 2016 as employment declined from 35,230 in 2001 to 34,300 in 2016. The total GDP in Nipissing District followed the same trend between 2001 and 2016.

**Figure 21: Labour Income and GDP Estimate for Nipissing District**
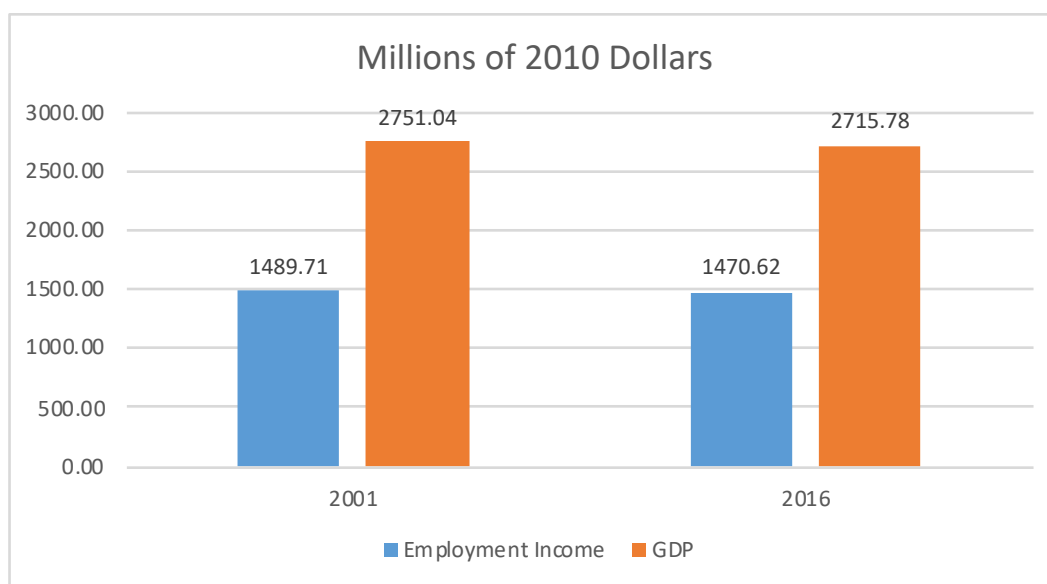


Source: Author's estimates based on Statistics Canada, 2001 and 2016 censuses, special tabulation.

# 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 type 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 Northeastern 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 tradespeople in various regions in Ontario and other regions of Canada. How has an aging population affected the supply and availability of tradespeople in Northeastern Ontario? Are we training enough tradespeople to satisfy our current needs as well as preparing for the upcoming mining and forestry renewal? Otherwise, importing this expertise will seriously reduce the economic benefits of any resource development in Northeastern 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 affect demand for healthcare services. This is referred to as the growth component of demand for healthcare services. The second component relates to the need to replace those service providers who will retire in the coming years. This is often referred to as the retirement-replacement component of demand for healthcare providers.

To estimate the growth component of total demand for healthcare services, we use the detailed Ministry of Finance's population projections for Northeastern Ontario between 2017 and 2041.

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.[23] The same trend is likely to apply to all northern communities.

To estimate the growth component of demand, we need to estimate indicators that track demand for healthcare workers in Northeastern 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.

The indicators developed in this part of the report address the need to quantitatively measure the impact of demographic changes on demand for healthcare workers in Northeastern 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.[24] This is shown in Figure 22. 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 Northeastern Ontario, we can estimate an index that tracks changes in demand for healthcare services between 2017 and 2041. These healthcare demand indicators measure expected growth in demand for healthcare services as the population ages, and therefore healthcare providers in the region.

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

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

**Figure 22: Per Capita Health Expenditures in Ontario by Age Category**

## Per Capita Health Expenditure in 2011 ($)
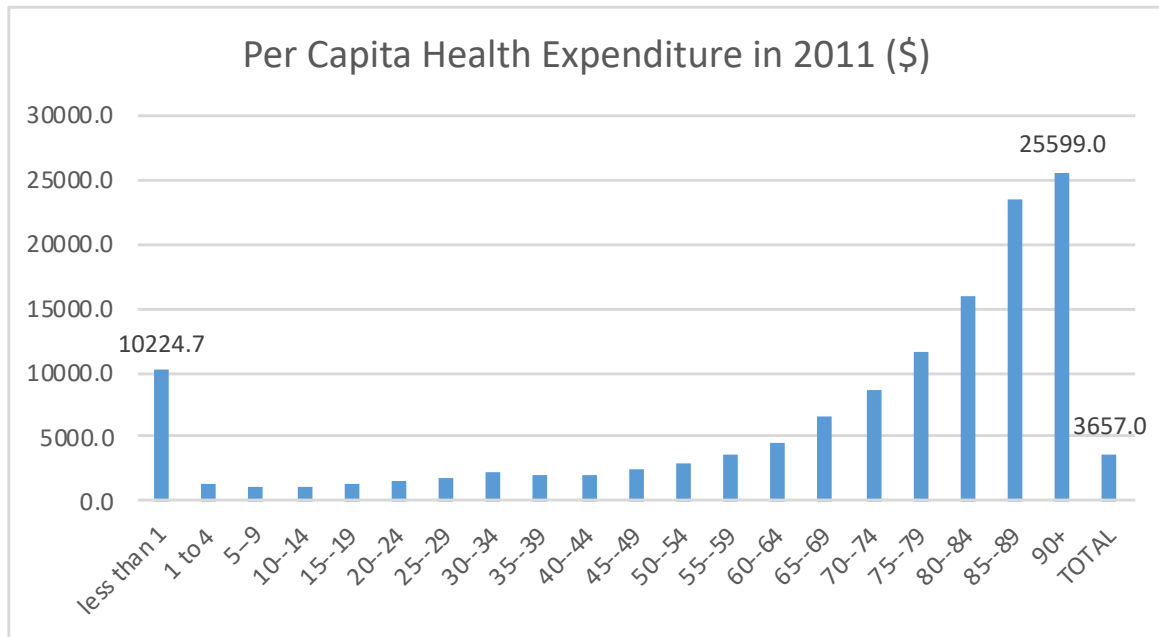


Source: Canadian Institute for Health Information, "National Health Expenditure Trends, 1975 to 2013.

Using the information provided in Figure 22 and the Ministry of Finance's population projections for Nipissing District, Figure 23 shows the estimated growth-demand indicator for healthcare services in Nipissing District between 2017 and 2041. We have used demand for healthcare services in 2017 as the benchmark against which we measure growth.

**Figure 23: Projected Growth of Health Care Demand in Cochrane District**
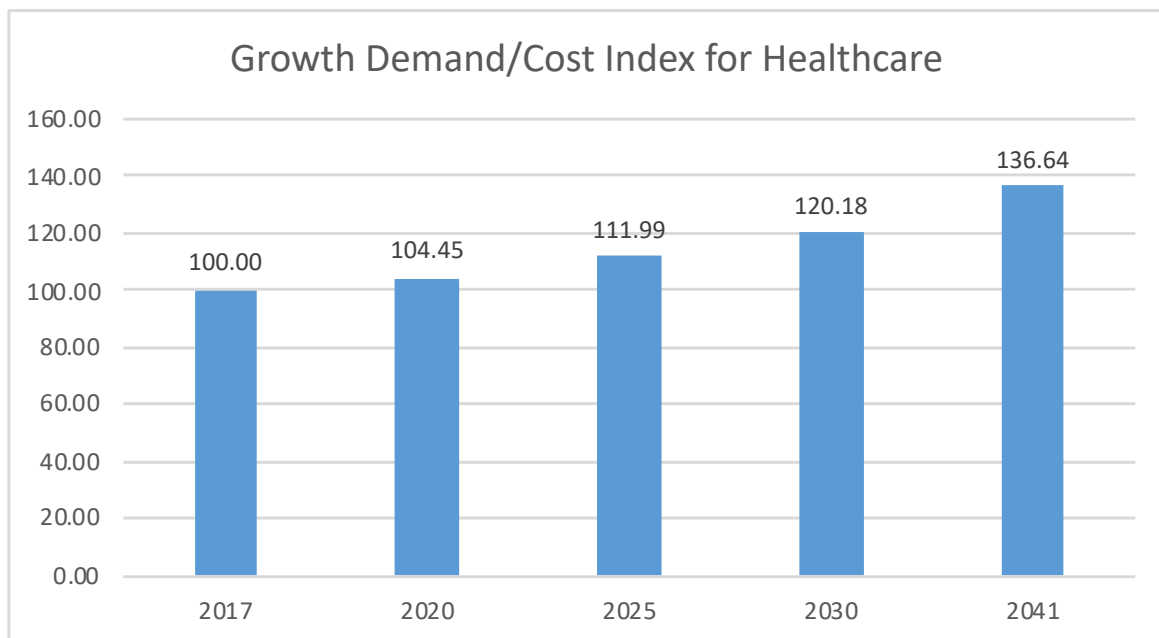
## Growth Demand/Cost Index for Healthcare



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

Figure 23 shows that demand/cost for healthcare services is expected to increase significantly between 2017 and 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 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 24 shows the age structure of healthcare providers in Northeastern Ontario in 2011. Overall, 16.0 per cent of the regional healthcare providers were older than 55. Approximately 34.3 per cent of the family physicians and 18.0 per cent of those in nursing occupations were older than 55 years of age. The youngest group appears to be those in the technical and assisting occupations in health, with approximately 13.0 per cent older than age 45. Overall, optometrists, specialists, and family physicians appear to be older than other health providers in Northeastern Ontario.

**Figure 24: Age Structure of Healthcare Providers in 2011 (%)**
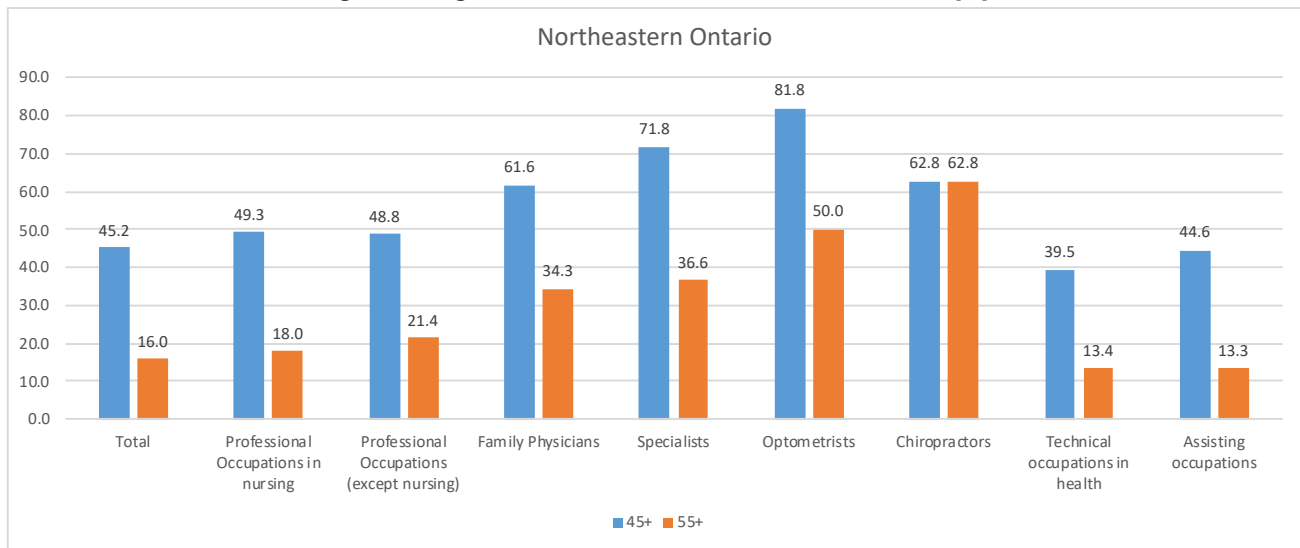


Source: Statistics Canada, 2011 NHS, custom tabulation.

Assuming an average retirement age of 65, Table 7 shows the retirement replacement and expansion demand for healthcare providers in Northeastern Ontario.

**Table 7: Total Demand for Healthcare Providers in Northeastern 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 in nursing | 560 | 1,050 | 1,610 | 1,447 | 2,865 | 4,312 |
| Professional occupations (except nursing) | 299 | 665 | 964 | 773 | 1,515 | 2,288 |
| Family physicians | 48 | 170 | 218 | 123 | 305 | 428 |
| Specialists | 34 | 130 | 164 | 88 | 255 | 343 |
| Optometrists | 11 | 55 | 66 | 27 | 90 | 117 |
| Chiropractors | 21 | 135 | 156 | 54 | 135 | 189 |
| Technical occupations | 516 | 715 | 1,231 | 1,334 | 2,115 | 3,449 |
| Assisting occupations | 469 | 650 | 1,119 | 1,213 | 2,170 | 3,383 |
| **Total Numbers** | **1,845** | **3,080** | **4,925** | **4,768** | **8,665** | **13,433** |
| **Percentage Demand (per cent)** | **37.46** | **62.54** | **100** | **35.49** | **64.51** | **100.00** |

Source: Author's estimate based on population projections and 2011 NHS.

Table 8 shows that approximately 62.5 per cent of the total demand for healthcare providers between 2011 and 2020 relates to replacing those who are expected to retire during that period. The rest (37.5 per cent) of the healthcare providers are needed to satisfy the growing demand for healthcare services due to the aging population in Northeastern Ontario. Total demand rises significantly when we extend the projection period to span 2011 to 2030.

## Population Aging and Demand Projections for Educators in Northeastern Ontario

Using Ontario's Ministry of Finance population projections, Figure 25 shows projections for different age groups in Northeastern Ontario and Nipissing District. It shows that the population ages five to 19 years is expected to decline in Northeastern Ontario and Nipissing District by 5.3 per cent and 7.4 per cent respectively between 2017 and 2041. This trend primarily affects primary and secondary schools.

Similarly, total population ages 20 to 24 years is expected to decline in Northeastern Ontario and Nipissing by 14.1 per cent and 10.8 per cent respectively between 2017 and 2041. Declining youth population influences demand for postsecondary education in Northeastern Ontario and Nipissing District.

**Figure 25: Northeastern Ontario's Population Projection by Age Category**
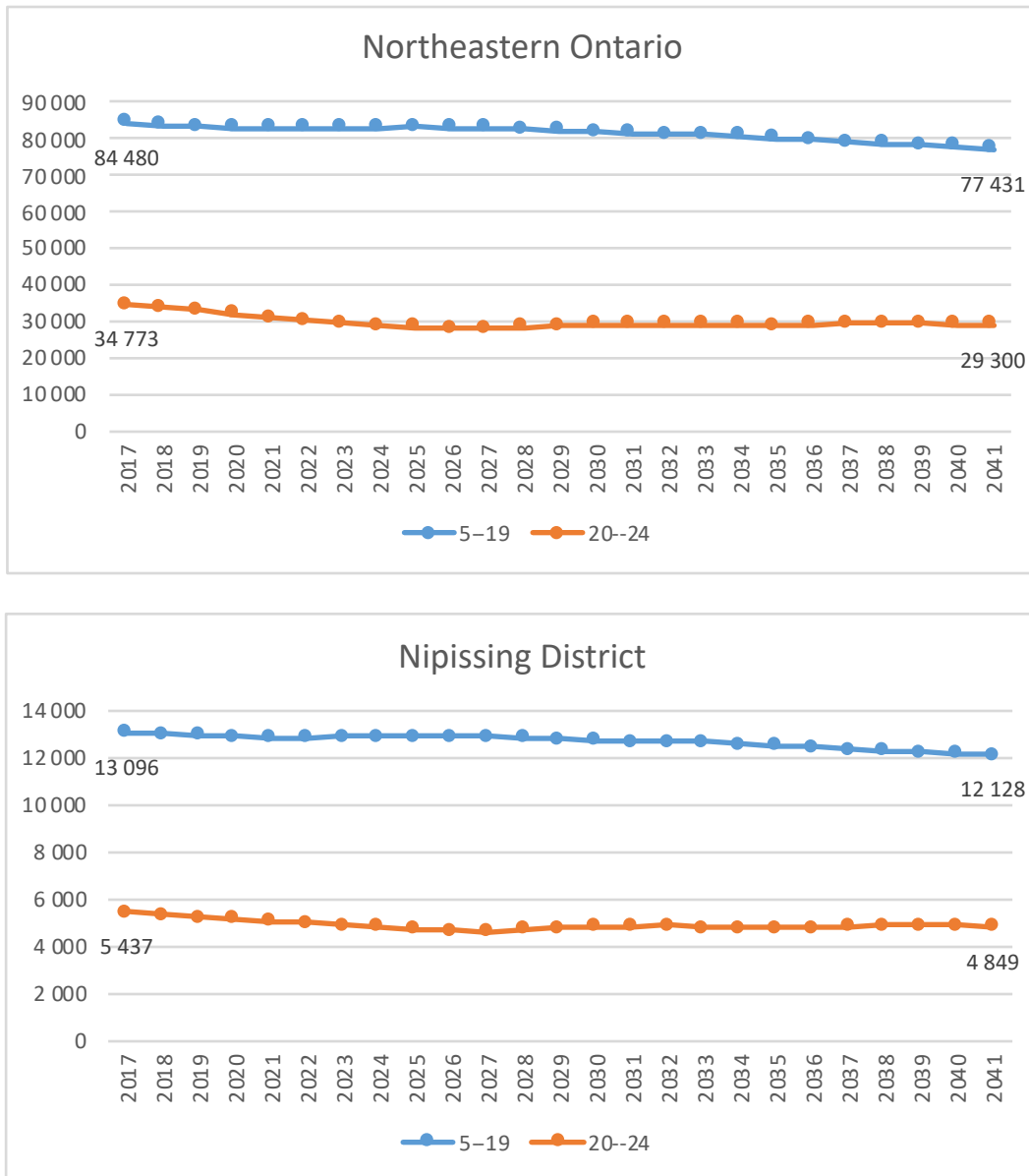


Source: Calculated based on the Ministry of Finance population projections.

To estimate demand for teachers and instructors in Northeastern Ontario, we need to make two assumptions. First, we assume an average retirement age of 65. We note that 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, Table 8 shows the retirement replacement and expansion/contraction demand for educators in Northeastern Ontario.[25]

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[25] We have ignored the fact that postsecondary institutions attract students from outside Northeastern Ontario.

**Table 8: Demand for Educators in Northeastern Ontario**

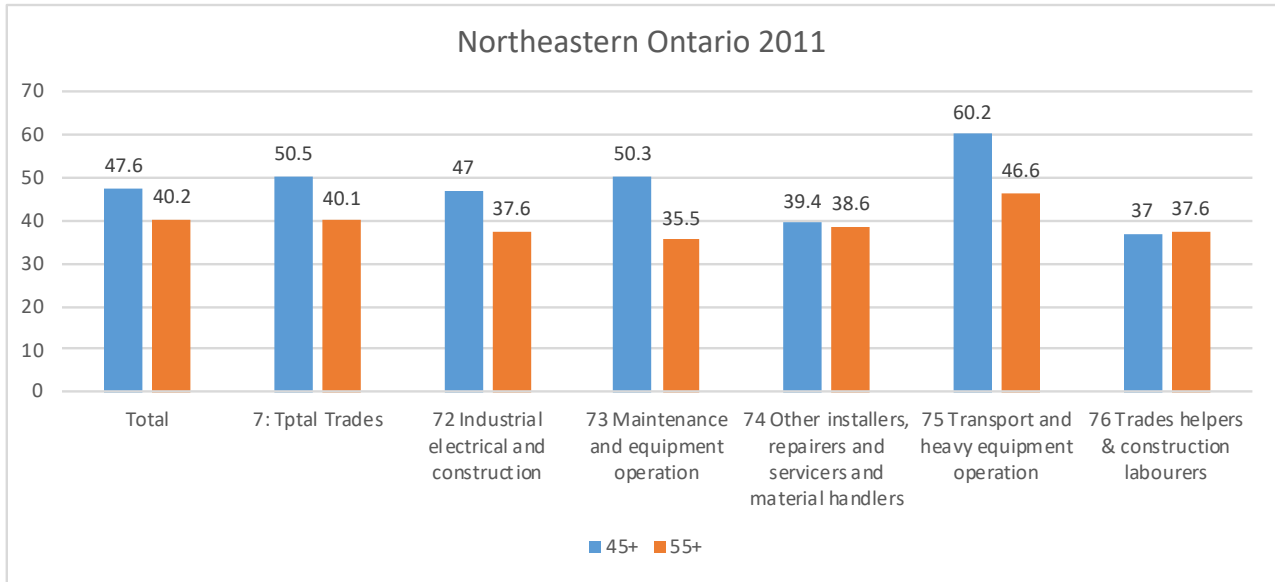| Occupations | 2011-2020 Replacement Demand | 2011-2020 Expansion Demand | 2011-2020 Total Demand | 2011-2030 Replacement Demand | 2011-2030 Expansion Demand | 2011-2030 Total Demand |
|---|---|---|---|---|---|---|
| 40 Professional occupations in education services | 1,575 | (1,155) | 420 | 4,800 | (1,373) | 3,427 |
| 401 University professors and postsecondary assistants | 195 | (172) | 23 | 505 | (259) | 246 |
| 4011 University professors and lecturers | 185 | (112) | 73 | 455 | (169) | 286 |
| 4012 Postsecondary teaching and research assistants | 15 | (59) | (44) | 25 | (90) | (65) |
| 402 College and other vocational instructors | 495 | (242) | 253 | 1,095 | (366) | 729 |
| 4021 College and other vocational instructors | 500 | (242) | 258 | 1,100 | (366) | 734 |
| 403 Secondary and elementary school teachers and educational counsellors | 870 | (741) | 129 | 3,180 | (749) | 2,431 |
| 4031 Secondary school teachers | 270 | (266) | 4 | 1,230 | (269) | 961 |
| 4032 Elementary school and kindergarten teachers | 505 | (442) | 63 | 1,755 | (447) | 1,308 |
| 4033 Educational counsellors | 45 | (32) | 13 | 155 | (33) | 122 |

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

## Demand for Trades Occupations in Northeastern 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 26 shows the age structure of trades workers in Northeastern Ontario in 2011. On average, 40.1 per cent of all workers engaged in trades occupations were age 55 and older. This is similar to the percentage of all workers in the region who were 55 and older. Approximately 50.5 per cent of them were age 45 and older. Transportation equipment operators and related workers have the highest percentage of people older than age 55 and maintenance and equipment operators have the lowest share of people older than age 55.

**Figure 26: Percentage Age Structure of Workers in Trades Occupations**



Source: Author's calculations based on Statistics Canada, 2011 NHS, custom tabulation.

Under the assumption of no future employment growth, Table 9 shows the retirement replacement demand for trades occupations in Northeastern Ontario.

**Table 9: Retirement Replacement Demand for Trades Occupations in Northeastern Ontario**

| NOC 2011 Classification | Replacement Demand 2011-2020 | Replacement Demand 2011-2030 |
|---|---|---|
| 72 Industrial, electrical, and construction | 2,460 | 9,010 |
| 73 Maintenance and equipment operation | 2,015 | 7,690 |
| 74 Other installers, repairers and servicers, and material handlers | 330 | 1,185 |
| 75 Transport and heavy equipment operation and related maintenance occupations | 3,420 | 10,765 |
| 76 Trades helpers & construction labourers, and related occupations | 460 | 1,685 |
| **All Trades** | **8,690** | **30,345** |

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

Table 11 shows that there is a need for 8,690 or 20.2 per cent of all trades workers to replace the retiring tradespeople between 2011 and 2020. Transport and heavy equipment operators (3,420) represent the largest number of potential retirees between 2011 and 2020, followed by industrial, electrical, and construction trades workers (2,460), and maintenance and equipment operators (2,015). Approximately 71.0 per cent of trades workers will potentially retire between 2011 and 2030 and need to be replaced by new entrants to the market.
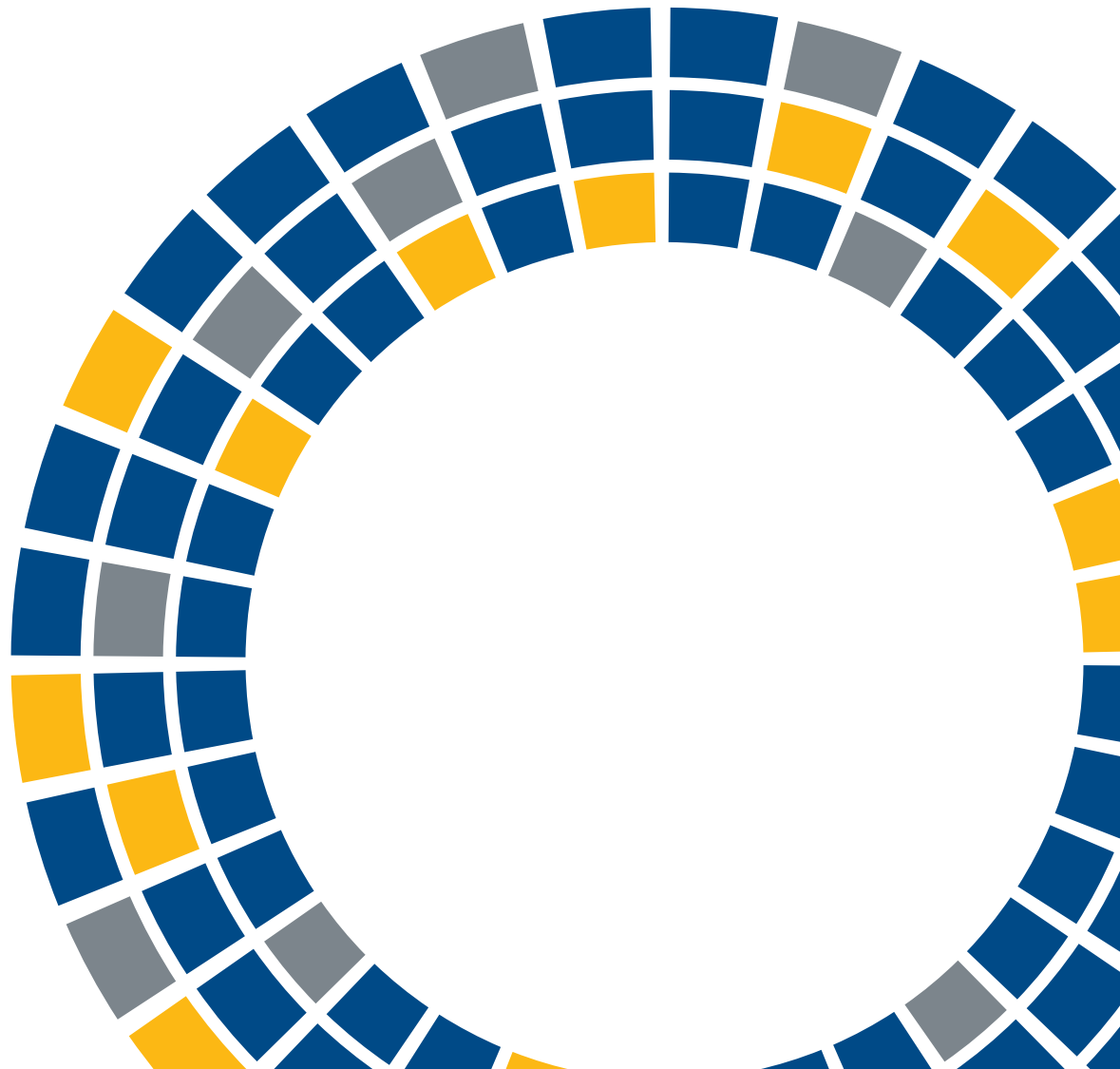
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# Glossary of Terms

**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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