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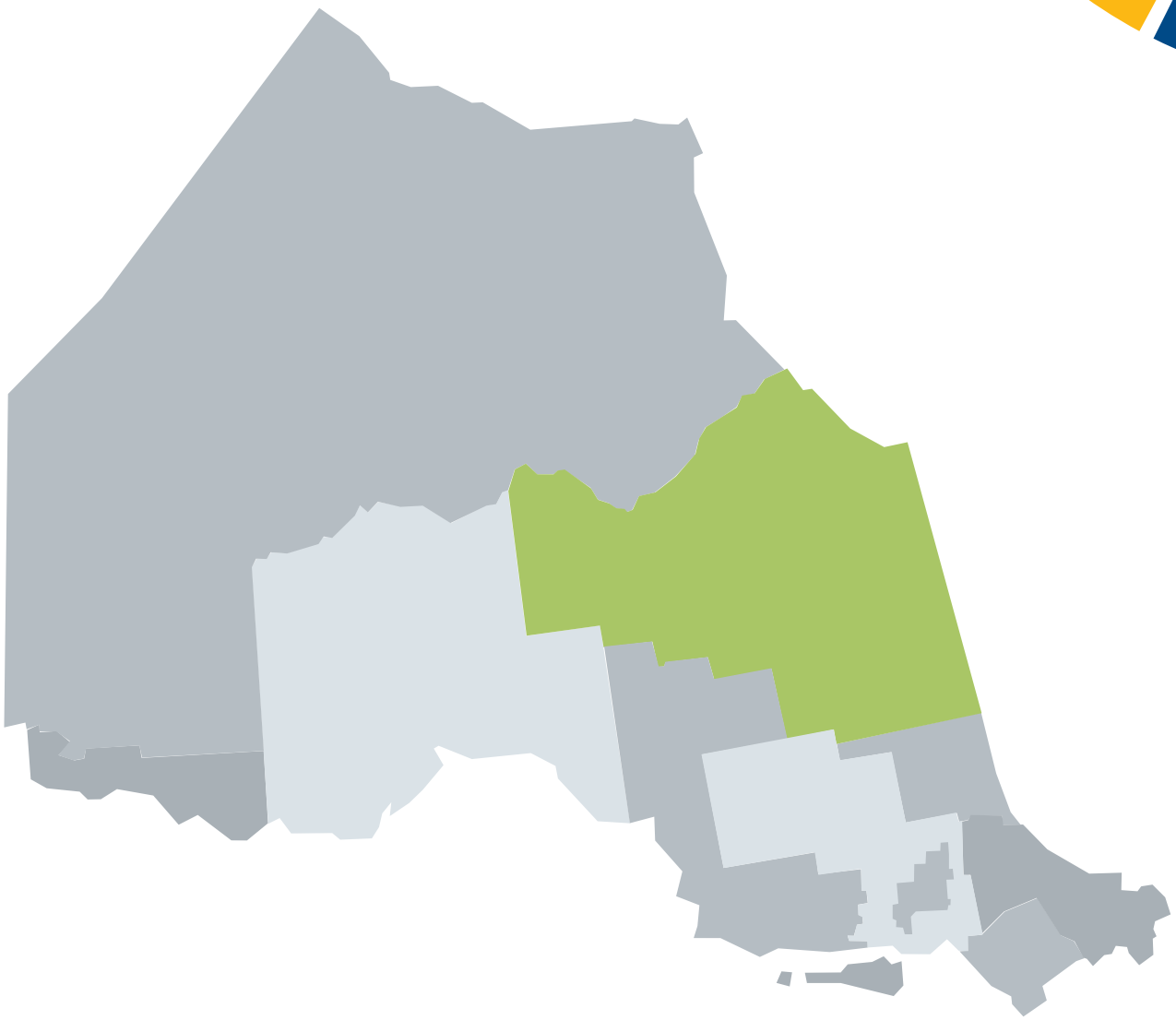

Northern Projections

Cochrane District

Human Capital Series

FAR NORTHEAST TRAINING BOARD (FNETB)
your Local Employment Planning Council

COMMISSION DE FORMATION DU NORD-EST (CFNE)
votre Conseil Local de Planification de l'Emploi

Dr. Bahktiar Moazzami

northernpolicy.ca

Polar Bear Express Train, Moosonee

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.

Far Northeast Training Board

The FNETB is one of 21 local boards in Ontario. It is a non-profit community-based organization that brings together business, labour, educators and trainers, and community representatives to work collaboratively to identify and develop local solutions to address local labour market needs. The Local Board initiative began in 1994. Our mission is to promote the effective planning of training and workforce development programs and services so that qualified workers are available to meet the needs of the local labour market.

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Julie Joncas – Executive Director
www.fnetb.com
Cochrane & Temiskaming 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

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

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About the Author

Dr. Bahktiar Moazzami

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

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

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

Executive Summary

Northeastern Ontario covers approximately 276,124 square kilometers 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 Cochrane District. 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

Cochrane's population was relatively steady from 1986 to 1996, but declined from 93,240 in 1996 to 81,122 in 2011 and to 79,682 in 2016, which translates into a 15.0 per cent overall decline between 1986 and 2016.

Further, the share of individuals in Cochrane District below the age of 20 has declined from 31.6 per cent in 1991 to 23.2 per cent in 2016, while the share of seniors rose from 9.5 per cent to 16.4 per cent during that time (Figure 10). During the same period, the share of individuals between the ages of 20 and 34 declined from 24.8 per cent to 17.7 percent, while individuals ages 35 to 64 increased from 34.1 per cent to 42.7 percent. Between 2001 and 2016, the most out migrants from Cochrane District were between ages 20 and 34 (5,338).

The total Indigenous population in Cochrane District increased from 6,840 in 2001 to 12,835 in 2016, a growth rate of approximately 87.6 per cent. As a percentage of total population in the district, the share of the Indigenous population rose from 8.1 per cent in 2001 to 16.3 per cent in 2016. Further, the Indigenous population's share of the district's total population is expected to increase from approximately 16 per cent in 2015 to 20 per cent in 2030.

The immigrant population in Cochrane District experienced both higher participation rates amongst men and women, as well as lower unemployment rates when compared to the overall district, as well as Northeastern Ontario. The unemployment rate for immigrant men and women in the district is 4%.

The average employment income of those who worked in Cochrane District in 2015 equaled $47,298 compared with $49,759 for Immigrants, $39,716 for Indigenous peoples, and $47,007 for Francophones. The average employment income in Northeastern Ontario equaled $45,283 in 2015.

Finally, for those with university degrees living in Cochrane District, unemployment rates are far lower than other regions, and when compared to the general population or those with other educational credentials. The unemployment rate for those with university credentials in Cochrane District is 2.7 per cent, which is significantly lower compared to the unemployment rate for those with university credentials in Canada (4.9 per cent) Ontario (4.9 per cent), Northeastern Ontario (3.7 per cent), and Greater Sudbury (3.6 per cent).

Recommendations:

1. Implement a well-rounded migration strategy

Cochrane district should confront its demographic challenges by implementing a well-rounded migration strategy. Similar to other regions in Northern Ontario, a declining and aging population is one on the most fundamental challenges moving forward. These trends are due in part to out-migration among younger cohorts, and low and declining levels of immigration. It is imperative that the region seeks to enhance its population levels by implementing strong immigration strategies, in combination with strategies to attract domestic in-migrants. Attraction efforts could focus on the fact that immigrants in Cochrane District have higher workforce participation rates, as well as the lowest unemployment rates among the general population and other target groups studied. Further, 2016 data indicates that those with university credentials in Cochrane experience far lower unemployment rates than those with university credentials in the district and the region. Out-migrating youth pursuing higher education could be an area of focus for re-attraction as there appears to be better employment outcomes for this group.

2. Enhance Indigenous labour market participation

Cochrane District should seek to enhance participation rates among the Indigenous labour force. While the total population and labour force is expected to decline in the region, the Indigenous population and labour force is expected to grow considerably. At the same time, however, the Indigenous population, especially on-reserve, has notably lower labour market participation rates. Since the Indigenous share of the population is expected to grow from 16 per cent in 2015 to 20 per cent in 2030, enhancing their participation levels will be a key determinant of productivity and economic growth in the region. This can be achieved by enhancing collaboration between municipalities, Indigenous communities and industry; increasing education levels and access in rural areas; and connecting the population with important local services and programs that are available.

3. Leverage industrial clusters to identify new opportunities

Cochrane district should leverage its competitive advantages to build new opportunities. The region has many opportunities and signs of growth linked to natural resources in the region. For example, there is a large amount of arable land as well as a number of operational gold mines that remain a key source of employment and economic growth in the region. In fact, from 2001 to 2016, the mining and oil and gas extraction industries grew by 46 percent. The region should continue to build on its natural resource clusters, but at the same time, recognize the importance of economic diversification for smoothing out the cyclical nature of these industries. Since 2001, there is evidence of growth in a number of industries including construction; professional, scientific, and technical services; administrative and support, waste management and remediation services; and arts, entertainment and recreation. While employment in these industries are likely tied in part to the primary industries, the region should seek to determine whether some of these growth areas could be developed into long-term and self-sufficient industries.

Introduction

The objective of this report is to examine past and present trends and characteristics in the economy of Cochrane District (hereafter also referred to as Cochrane) and to forecast its future challenges and opportunities. We first examine population trends in Cochrane 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 Cochrane District during the past three decades. We find that the district's population has declined by approximately 16.2 per cent between 1986 and 2016. We focus on three segments of the regional population, namely Indigenous, Francophone and Immigrants. The study then looks ahead and provides projections for total and Indigenous populations of Cochrane District between 2015 and 2030. We find that the Indigenous population is the only growing segment of the regional population. From these population projections, the study estimates past, present, and future trends in the size and composition of the regional labour force. The impact of migration flows on the regional population is also discussed.

The report also examines population trends in urban and rural areas. We find that approximately 52.5 per cent of Cochrane District's population live in urban areas and 47.5 per cent live in rural areas. The majority (63.3 per cent) of the Indigenous population live in rural areas. Approximately 36.7 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 and labour market indicators, the study forecasts the size and composition of the future labour force in Cochrane District.

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

The report subsequently looks at the consequences of shifting the composition of the employed labour force in the district between goods-producing, which is dominated by private businesses, and 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 Cochrane District.

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

Data Sources:

The data used in this report 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

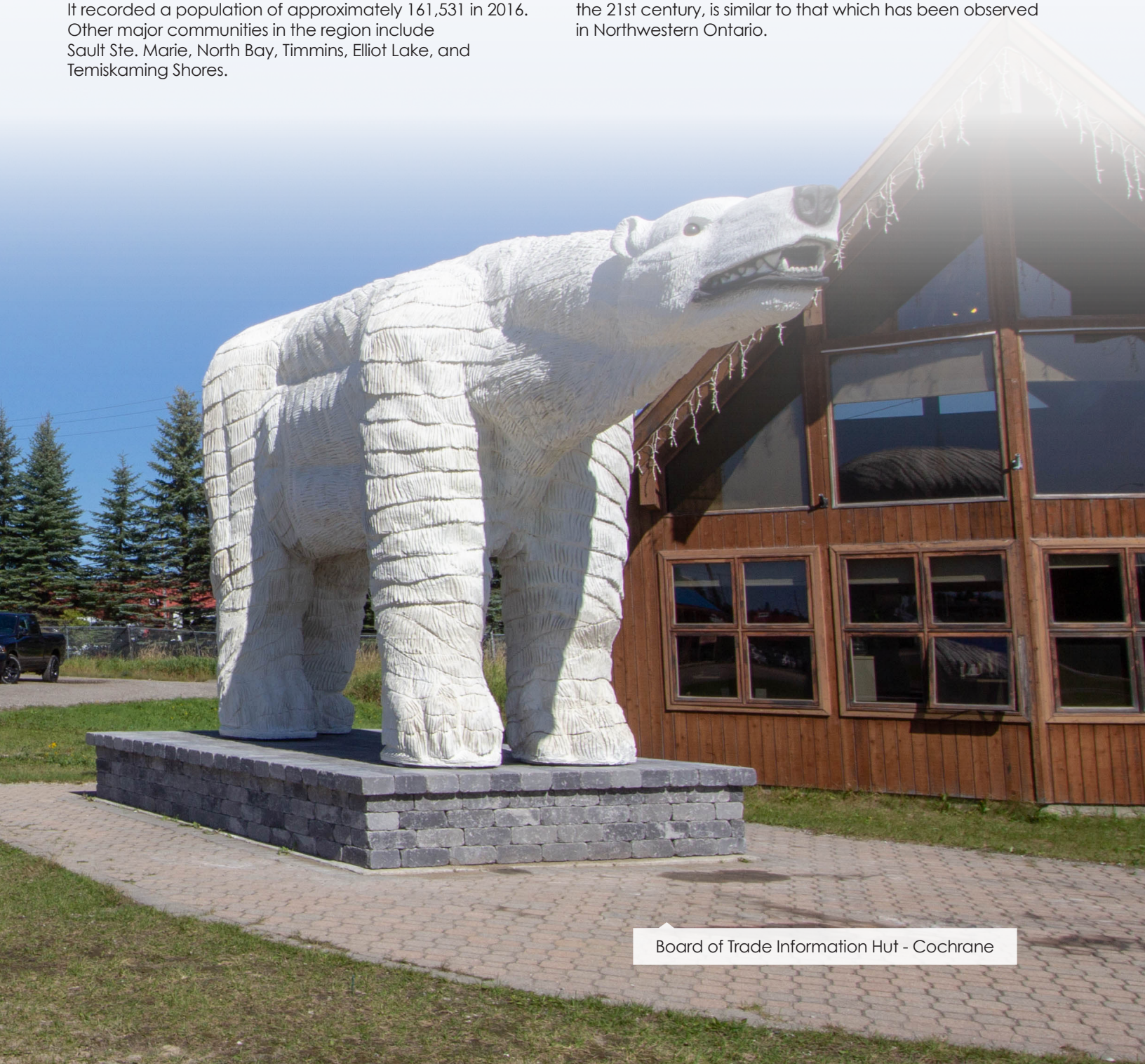
Northern Ontario is subdivided into the Northwest and Northeast Economic Regions. The three most western census divisions, commonly known as districts – namely Rainy River, Kenora, and Thunder Bay – constitute Northwestern Ontario, which is also referred to as the Northwest Economic Region. The region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

Demographic Change in Northeastern Ontario: The Past Three Decades

Demographic Trends in Northeastern Ontario

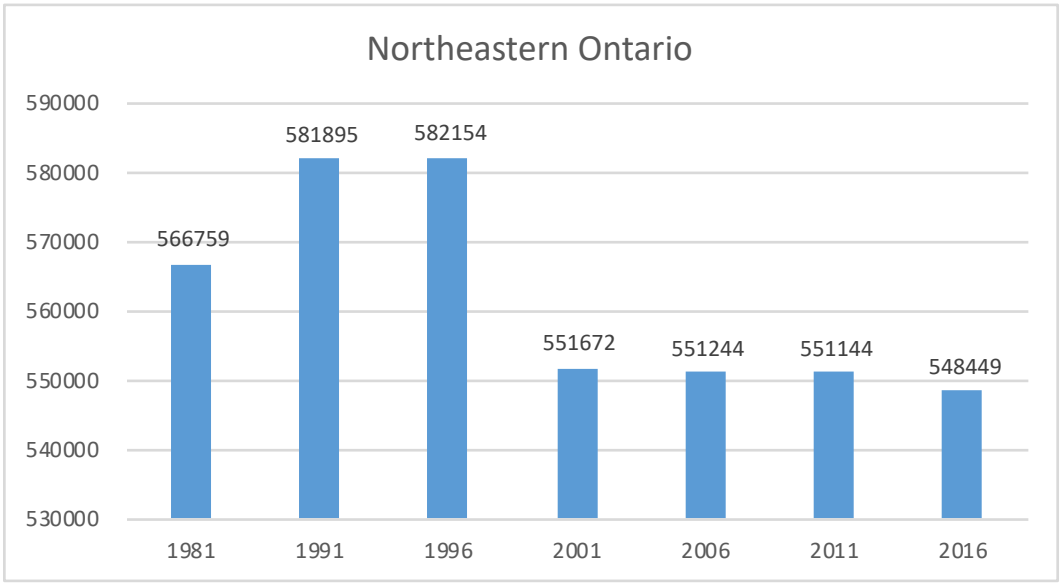
Northeastern Ontario covers approximately 276,124 square kilometres and recorded a population of 548,499 in 2016. It has a population density of approximately two persons per square kilometre, which is well below that of Ontario (14.8). Greater Sudbury is the largest city in Northeastern Ontario. It 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 trend of a rising population during the 1980s and 1990s, followed by a decline during the 21st century, is similar to that which has been observed in Northwestern Ontario.



Board of Trade Information Hut - Cochrane

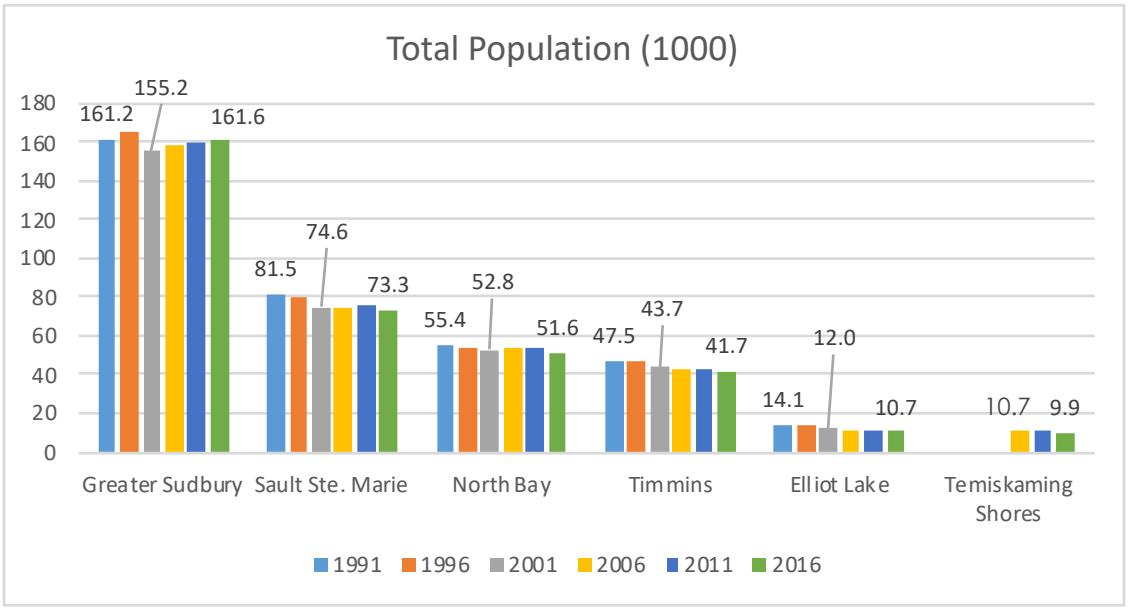
Figure 1: Population Trends in Northeastern Ontario



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 are no census data for that city prior to 2004.

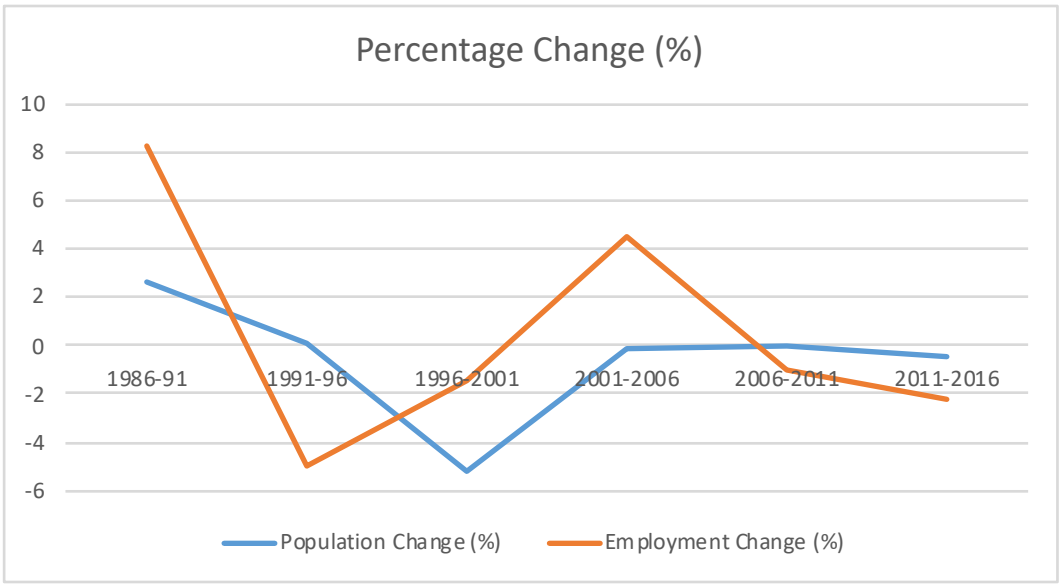
Figure 2: Population Trends in Major Northeastern Ontario Cities



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.

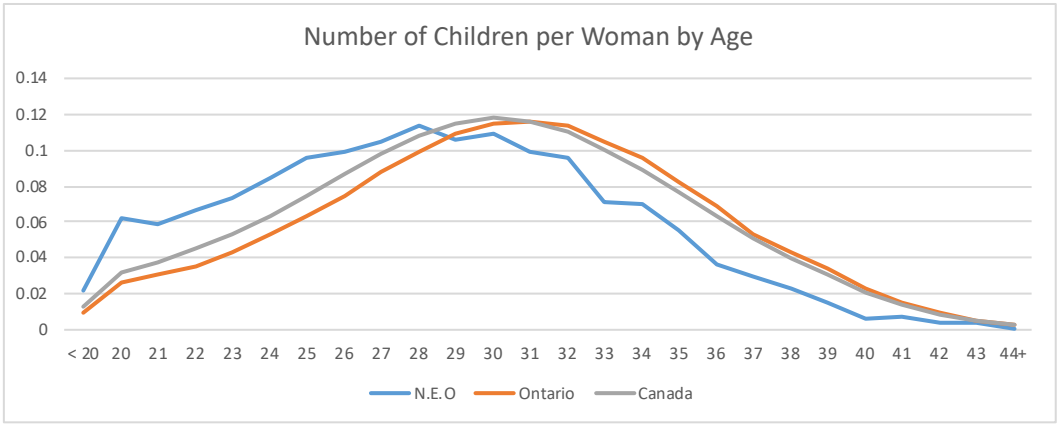
Figure 3: Employment & Population Growth/Decline in Northeastern Ontario



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 during her lifetime. In Canada, the total fertility rate equaled 1.61 in 2011, compared with 1.55 in Ontario and 1.77 in Northwestern Ontario (Figure 4). As Figure 4 shows, the fertility rate among Northeastern Ontario women age 28 years and younger is higher than the provincial and national levels but is significantly lower than the provincial and national levels for those older than 28.

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



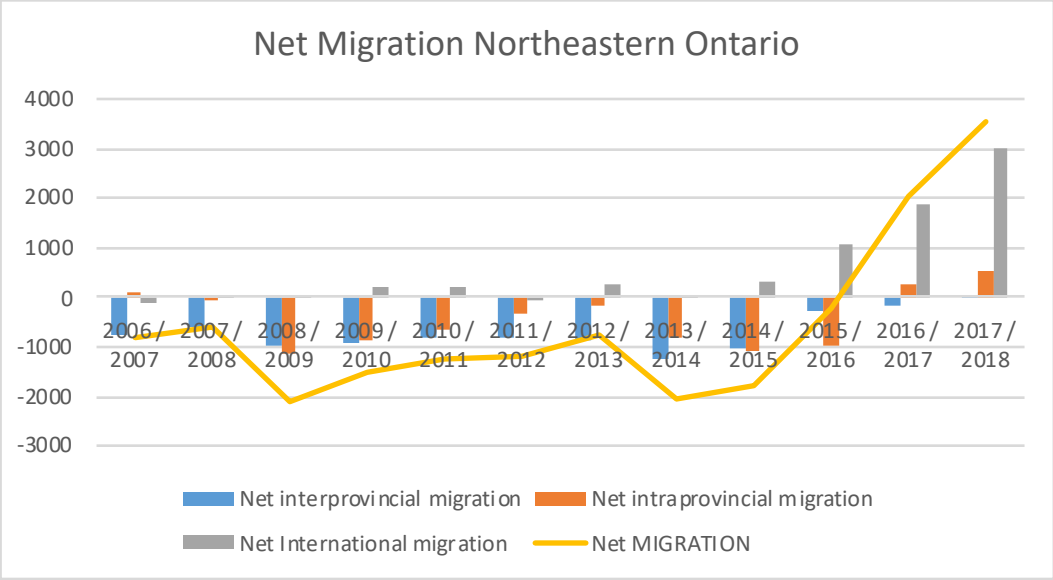
Source: Statistics Canada, 2011, custom tabulation.

[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 the declining regional population. First, Northeastern Ontario has been receiving disproportionately low rates of immigration. Net immigration is defined as the number of Immigrants who came 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 rate of new arrivals).[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 has 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.

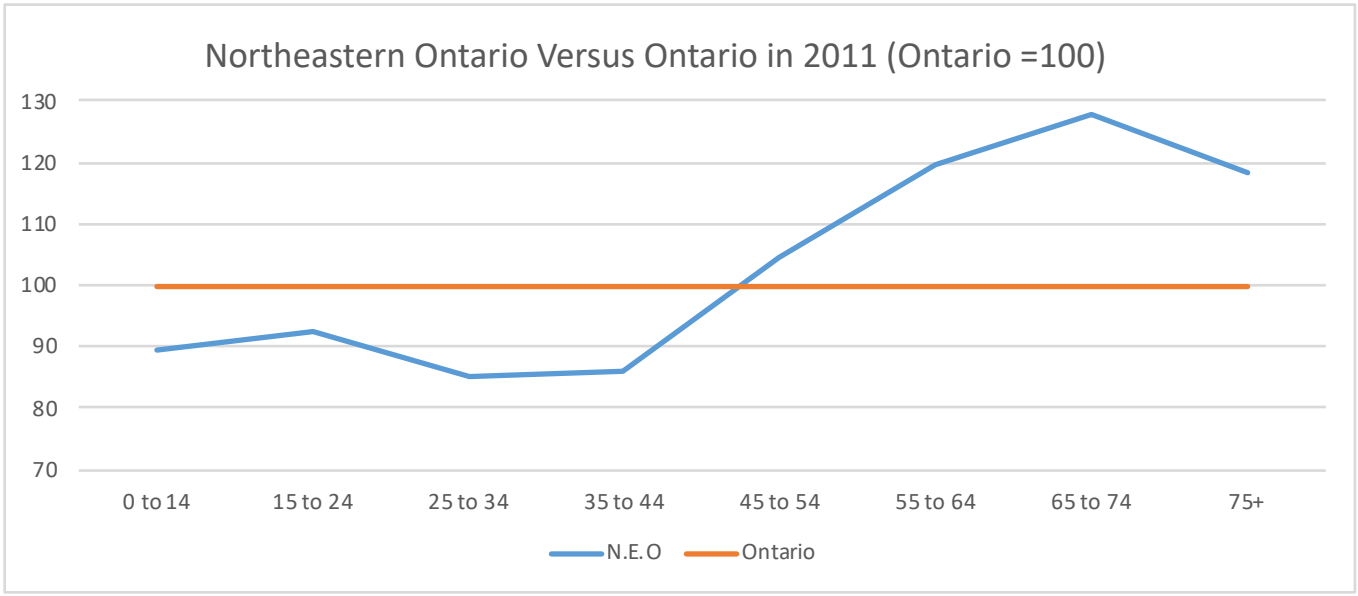
The above demographic trends noted in figures 1 through 5 have resulted in an age distribution of the population in Northeastern Ontario that is different from that of Ontario. As Figure 6 shows, compared with the provincial average, there is a relatively lower percentage of people age 45 and younger and a higher percentage of older people, including seniors, in Northeastern Ontario.[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

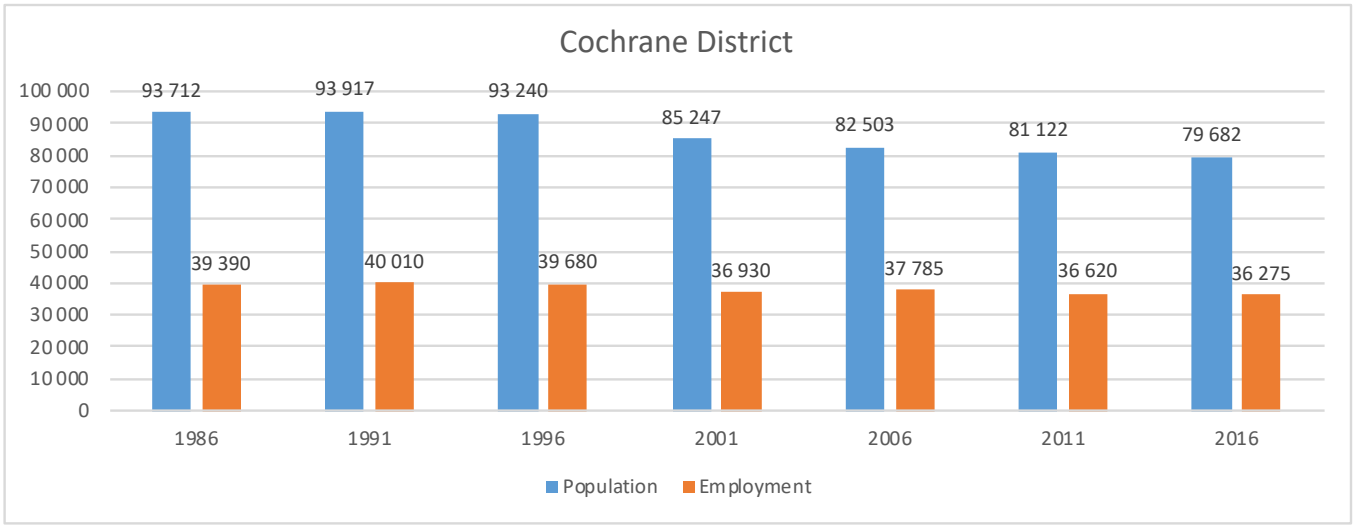


Source: Author's calculation based on Statistics Canada, 2011 NHS, custom tabulation.

Population Trends in Cochrane District

Cochrane District covers 141,270 square kilometres and recorded a population of 79,682 in 2016. It has a population density of 0.6 persons per square kilometre, which is well below that of Ontario (14.8). According to Statistics Canada's Census of Population, Cochrane's population was relatively steady from 1986 to 1996, but declined from 93,240 in 1996 to 81,122 in 2011 and to 79,682 in 2016, which translated into a 15.0 per cent decline between 1986 and 2016. (Figure 7).

Figure 7: Population Trends in Cochrane District



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

As mentioned above, population and employment trends are highly correlated. The population decline between 1986 and 2016 was influenced by the fact that total employment declined from 39,390 to 36,275 during that time. The correlation coefficient between the population trend and employment trend equals 0.95 which is very high.

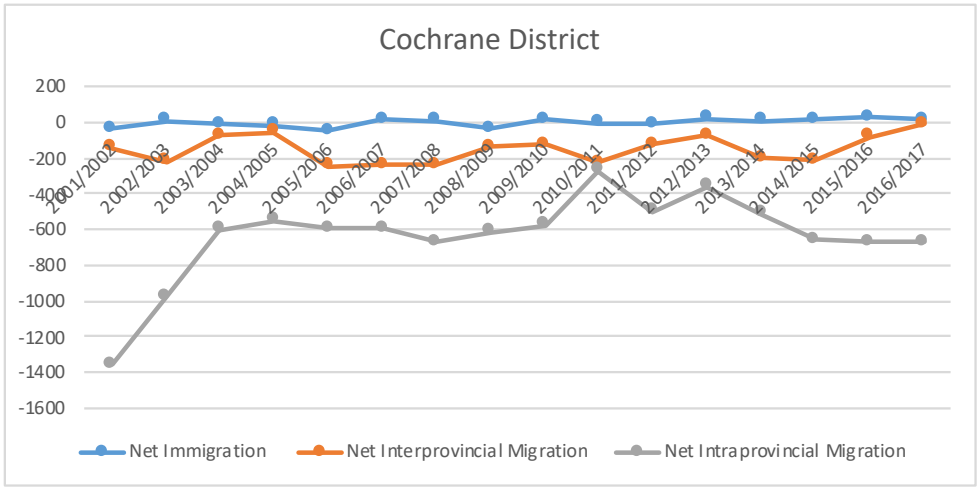
As is the case for Northeastern Ontario, other factors contributed to the overall change in the regional population. First, Cochrane District has been receiving disproportionately low rates of immigration. The district experienced negative

net immigration between 2001 and 2017 (Figure 8). Total immigration during the period equaled 600 compared with a total of 619 emigration. This is one of the important factors influencing the declining population. The second and perhaps more important factor relates to out-migration.

Figure 8 shows that Cochrane has experienced interprovincial and intraprovincial 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 2,405 while net intraprovincial out-migration equaled 10,173 between 2001 and 2017.

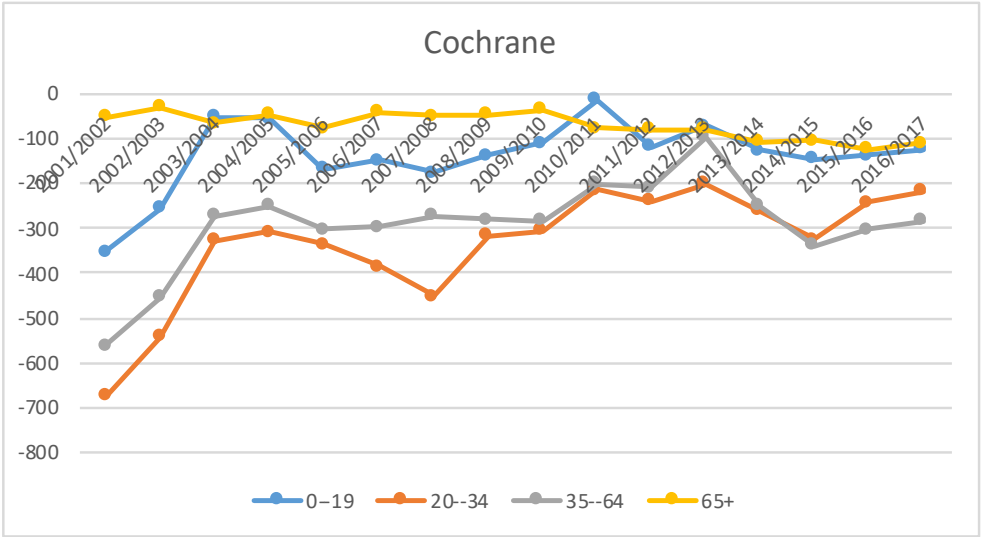
The majority of those who choose to move appear to move within the province. The largest portion of individuals who out-migrate to other provinces are between the ages of 20 and 34. Figure 9 shows the age distribution of movers between 2001 and 2016. Overall, Cochrane District experienced a net outflow of people younger than age 19 (2,182), between ages 20 and 34 (5,338), between ages 35 and 64 (4,653), and 65 and older (1,116) during the period under study. It appears that most out-migrants are between the ages of 20 and 64.

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.

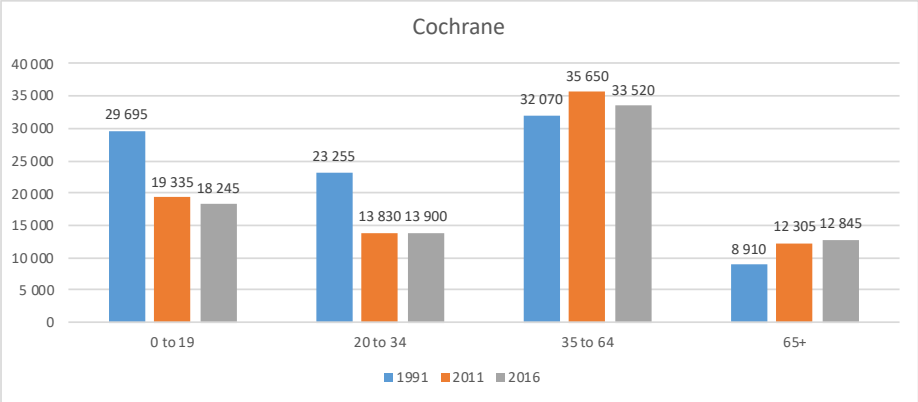
Aging of the Population in Cochrane District

In addition to out-migration and low levels of immigration in the district, rising life expectancy has resulted in the aging of Cochrane's population. At the same time, the large baby-boom generation is getting older and the generations that followed were much smaller, primarily due to a declining fertility rate.

As a result, the share of individuals in Cochrane District below the age of 20 has declined from 31.6 per cent in 1991 to 23.2 per cent in 2016, while the share of seniors rose from 9.5 per cent to 16.4 per cent during that time (Figure 10). During the same period, the share of individuals between the ages of 20 and 34 declined from 24.8 per cent to 17.7 percent, while individuals ages 35 to 64 increased from 34.1 per cent to 42.7 percent.

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, supply of labour, production capacity, and the ability of Cochrane District to stay economically viable.

Figure 10: Aging of Cochrane 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 and Cochrane

Another aspect of demographic change in Northeastern Ontario and Cochrane 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 Cochrane District declined from 39,650 in 2001 to 35,615 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 Cochrane District increased from 6,840 in 2001 to 12,835 in 2016, a growth rate of approximately 87.6 per cent. The share of the Indigenous population in Cochrane District rose from 8.1 per cent in 2001 to 16.3 per cent in 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.

Additionally, there has been a higher participation in the census in recent years. Statistics Canada reports that some Indigenous reserves and settlements did not participate in the census because enumeration was not permitted, or it was interrupted before completion. In 2006, there were 22 incompletely enumerated reserves, down from 30 in 2001 and 77 in 1996.[6]

Finally, one of the main factors explaining the rising share of the Indigenous population relates to fertility rate. The rate among Indigenous women has been significantly higher than the regional average. A report by the Ontario Ministry of Health states that: "Fertility is almost exclusively the source of population growth for Indigenous peoples in Ontario. Provincially, some in-migration of Aboriginal people takes place from other provinces but does not substantially impact population dynamics among

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

[6] Ibid

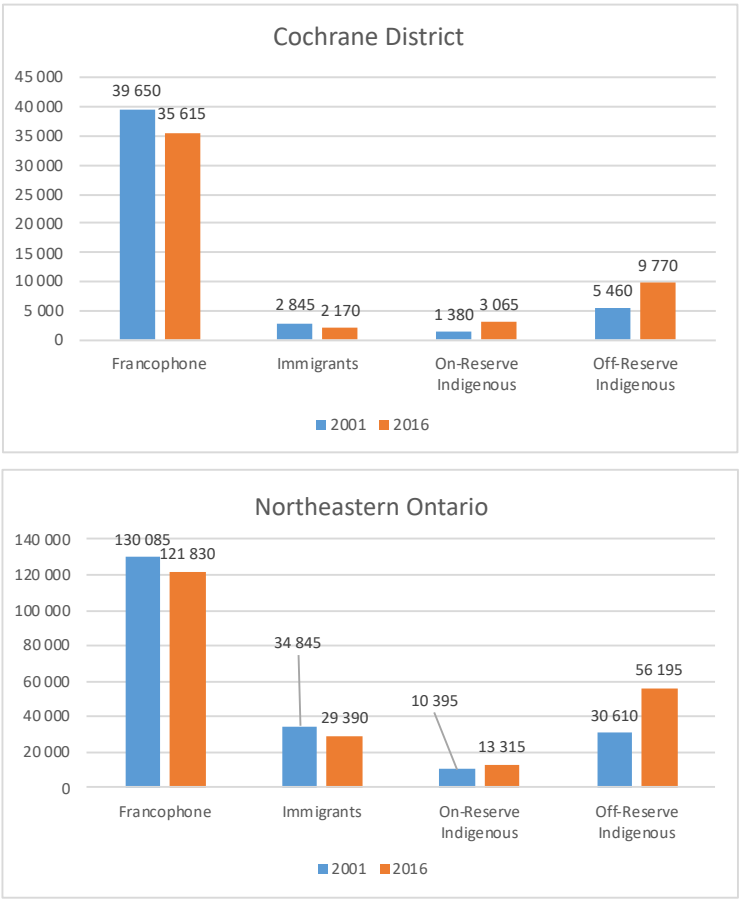
[7] Ontario Ministry of Health and Long-Term Care, Health Analytic Branch, "First Nations Peoples in Ontario: A Demographic Portrait," January 2009, 15.

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 declined from 6.5 per cent in 2001 to 5.5 per cent in 2016 in Northeastern Ontario, and from 3.4 per cent to 2.8 per cent during the same period in Cochrane District. Most of Northeastern Ontario's Immigrant population live in Greater Sudbury and Algoma District.

Figure 11: Linguistic & Cultural Diversity in Northeastern Ontario & Cochrane District in 2001-2016



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

Population Trends in Urban & Rural Northeastern Ontario & Cochrane District

There are many ways to define rural and urban areas. The term rural is intuitively understood as an area with low population concentration dispersed at a low density. On the other hand, the term urban is often understood as a place with high population concentration at a high density. This intuitive understanding is the basis for Statistics Canada's approach to defining an urban area as having a population of at least 1,000 and a density of 400 or more people per square kilometre.[8] Statistics Canada offers an alternative and perhaps a more appropriate definition of rural area as "rural and small towns" as opposed to "large urban centres." This definition is based on the commuting flows between different areas. It defines urban regions as including all census metropolitan areas (CMAs) and census agglomerations (CAs). Both CMAs and CAs include the total population of neighbouring census subdivisions (CSDs). Based on the above definition of an urban region, rural and small town (RST) areas are defined as non-CMA/CA areas. RSTs are further divided into four types of zones based on the degree

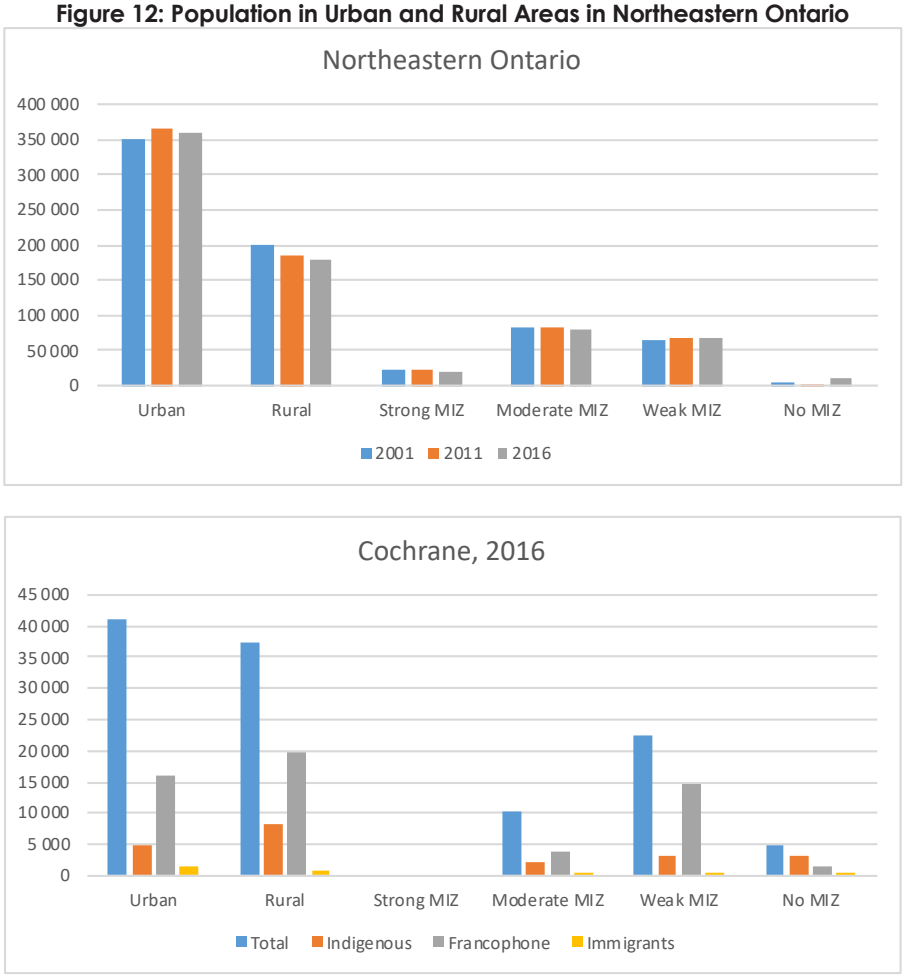
[7] Ontario Ministry of Health and Long-Term Care, Health Analytic Branch, "First Nations Peoples in Ontario: A Demographic Portrait," January 2009, 15.

[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.

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 Cochrane 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. This is mostly the off-reserve Indigenous peoples. Approximately 45.2 per cent of the Indigenous population live in rural areas, and 48.9 per cent of them live in relatively remote areas with a weak or no link to urban centres. These are mostly on-reserve Indigenous peoples living in remote Northeastern Ontario regions. Approximately 61.8 per cent of the Francophone and 74.1 per cent of the Immigrant populations 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 52.5 per cent of Cochrane District's population live in urban areas. The rest (47.5 per cent) live in rural areas. Figure 12 shows that the majority (63.3 per cent) of the Indigenous population live in rural areas. The rest (36.7 per cent) live in urban areas. These are mostly off-reserve Indigenous peoples. Of those who live in rural areas, 47.8 per cent live in relatively remote areas with a weak or no link to urban centres. Most of these rural residents are on-reserve Indigenous peoples. Approximately 44.6 per cent of the Francophone and 64.1 per cent of the Immigrant populations live in urban centres.[10]

[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 Cochrane District and Northeastern Ontario: The Next Three Decades

This part of the study provides population projections for both the total and Indigenous populations of Cochrane District. 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 over the most recent three years of comparable data and calculated the expected number of deaths. It then compared these estimates to the actual annual number of deaths in each census division 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 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, Cochrane District's population is expected to decline from 79,930 in 2017 to 72,098 in 2041 (Table 2).[12] The continuing aging of the regional population is also evident (Figure 13), with the share of individuals younger than age 64 expected to decline while the share of seniors is expected to rise from 17.6 per cent in 2017 to 28.7 per cent in 2041.

Gilles Gagnon Tourism Information Centre, Hearst

[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).

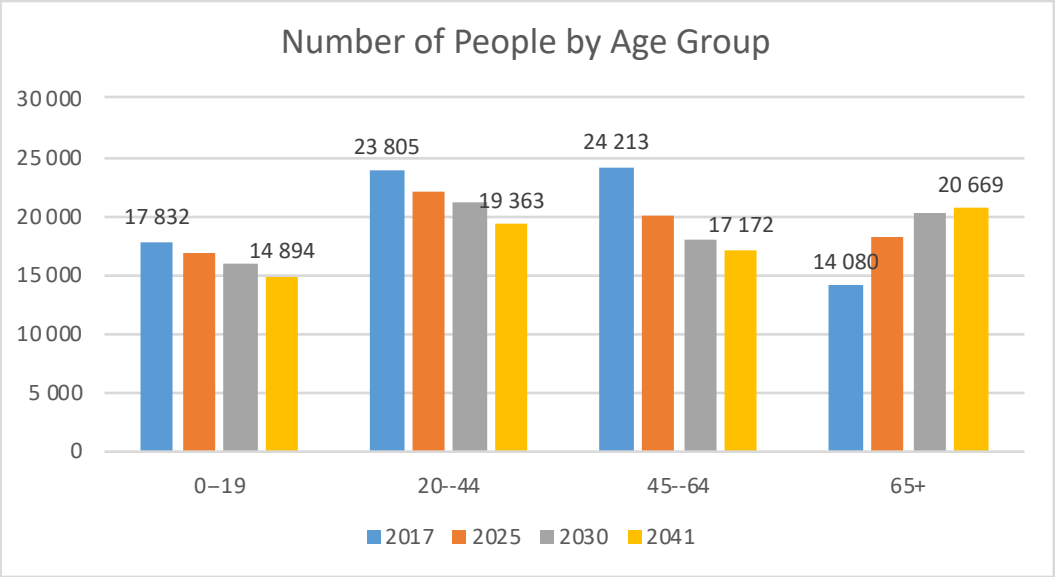
[12] Note that the Ministry's population estimate for 2017 is higher than the 2016 census estimate.

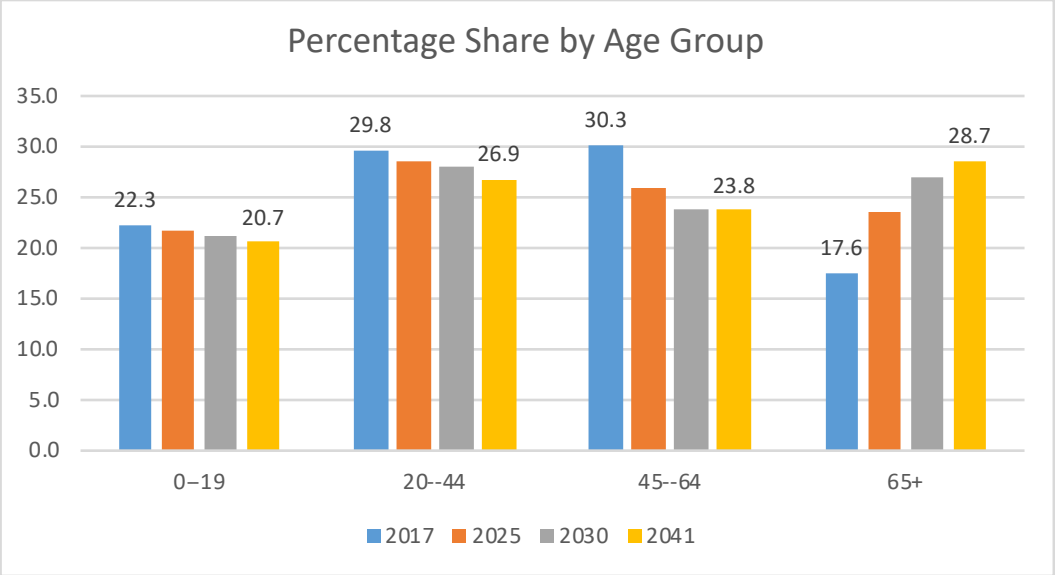
Table 1: Population Projections by Age Group, Cochrane District, 2017-2041

Year	0--19	20--44	45--64	65+	Total
2017	17,832	23,805	24,213	14,080	79,930
2018	17,675	23,605	23,860	14,473	79,613
2019	17,485	23,462	23,398	14,930	79,275
2020	17,322	23,274	22,908	15,435	78,939
2021	17,163	23,116	22,359	15,951	78,589
2022	17,085	22,833	21,774	16,532	78,224
2023	17,002	22,521	21,225	17,120	77,868
2024	16,887	22,315	20,675	17,640	77,517
2025	16,784	22,050	20,129	18,208	77,171
2026	16,627	21,842	19,678	18,681	76,828
2027	16,487	21,643	19,172	19,185	76,487
2028	16,323	21,502	18,699	19,623	76,147
2029	16,178	21,300	18,263	20,066	75,807
2030	16,015	21,163	17,917	20,374	75,469
2031	15,892	20,996	17,680	20,566	75,134
2032	15,748	20,855	17,529	20,671	74,803
2033	15,625	20,740	17,353	20,761	74,479
2034	15,510	20,626	17,199	20,826	74,161
2035	15,390	20,448	17,101	20,910	73,849
2036	15,260	20,284	17,035	20,962	73,541
2037	15,120	20,113	17,031	20,976	73,240
2038	15,054	19,893	17,067	20,931	72,945
2039	14,992	19,710	17,105	20,849	72,656
2040	14,938	19,521	17,136	20,778	72,373
2041	14,894	19,363	17,172	20,669	72,098

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

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





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

Indigenous Population Projection

In making projections for the Indigenous population in Cochrane 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 to be equal to that of rural Northwestern Ontario and the mortality rate is assumed to be equal to that of 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 Cochrane District is expected to increase from 12,855 in 2015 to 15,328 in 2030, a growth rate of approximately 19.2 per cent. The number of individuals younger than age 20 is expected to increase from 4,535 in 2015 to 5,151 in 2030. The number of individuals age 65 and older is expected to rise from 915 to 2,023.

The Indigenous population's share of the district's total population is expected to increase from approximately 16.4 per cent in 2015 to 20.3 per cent in 2030. The share of working-age Indigenous peoples (those ages 20 to 64) is expected to increase from 9.4 per cent in 2015 to 10.8 per cent in 2030.

Table 2: Projected Indigenous Population, Cochrane District, 2015-2030

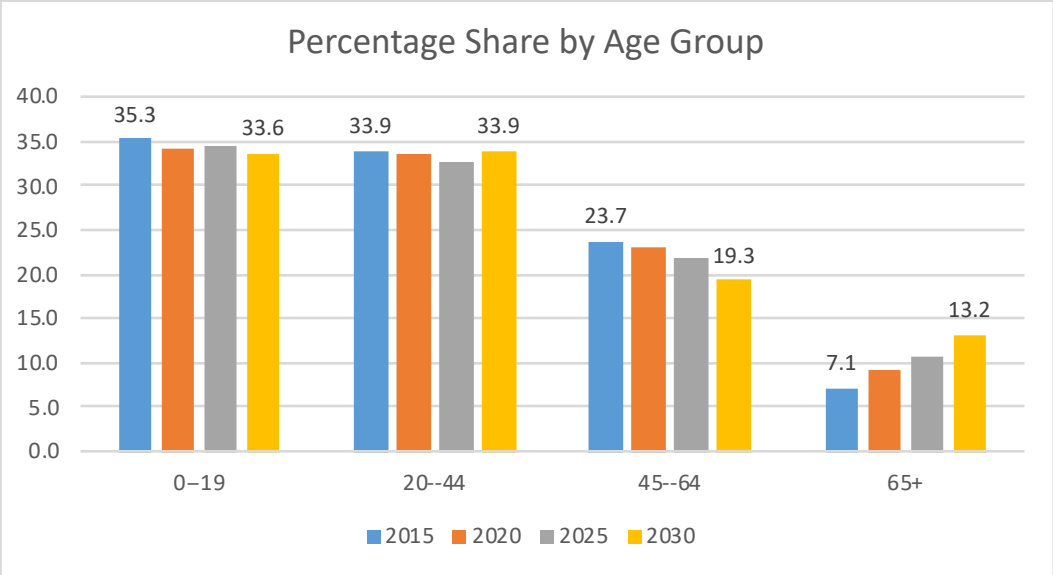
Age Group	2015	2020	2025	2030
0 - 4 years	1,200	1,253	1,338	1,397
5 - 9 years	1,230	1,186	1,246	1,331
10 - 14 years	985	1,233	1,184	1,244
15 - 19 years	1,120	971	1,228	1,179
20 - 24 years	1,030	1,142	962	1,218
25 - 29 years	1,005	987	1,130	952
30 - 34 years	770	968	977	1,120
35 - 39 years	755	729	957	967
40 - 44 years	800	748	721	946
45 - 49 years	840	818	735	708
50 - 54 years	920	824	798	717
55 - 59 years	690	885	797	772
60 - 64 years	595	616	838	755
65 - 69 years	355	520	568	773
70 - 74 years	260	301	460	500
75 - 79 years	175	231	251	384
80 + years	125	187	291	365
Total	**12,855**	**13,597**	**14,480**	**15,328**

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

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

[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: Indigenous Population Projection by Age Group, Cochrane District



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

Cochrane District and 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. An aging population and a declining share of working-age people can seriously restrain future economic development unless productivity growth accelerates or steps are taken to increase participation of older workers, youth, and other underrepresented groups in the labour force.

This 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 peoples 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 Cochrane District. As the table shows, the total working-age population declined in Cochrane District between 2001 and 2016. Labour force participation declined among men, but rose among women during the same period. The employment rate rose as the unemployment rate declined for men and women between 2001 and 2016.

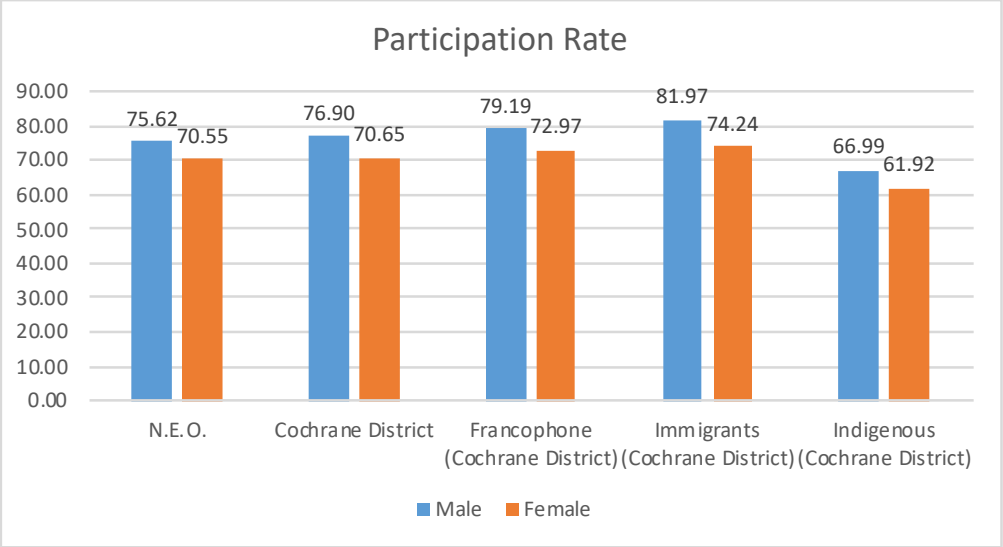
Table 3: Labour Market Trends, Population 15 to 64 Years of Age, Northeastern Ontario & Cochrane District, 2001-2016

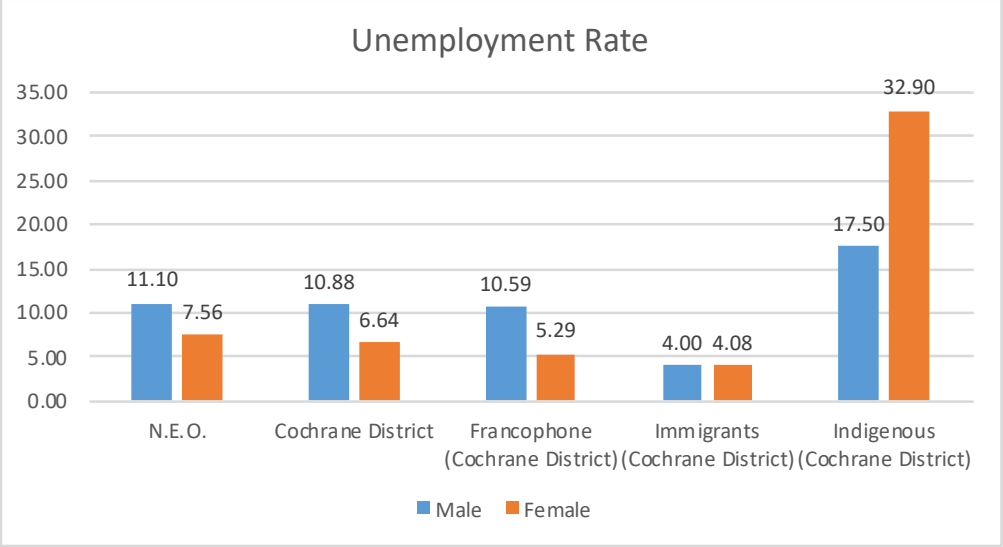
Labour Market Outcome	Men	Men	Women	Women
Northeastern Ontario	**2001**	**2016**	**2001**	**2016**
Total population 15 to 64 years of age	179,755	173,055	185,265	176,265
In the labour force	137,045	130,865	123,265	124,360
Employed	122,290	116,340	112,320	114,965
Unemployed	14,760	14,520	10,945	9,400
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
Cochrane District	**2001**	**2016**	**2001**	**2016**
Total population 15 to 64 years of age	28,790	26,125	28,255	25,995
In the labour force	22,555	20,090	18,475	18,365
Employed	19,550	17,900	16,765	17,145
Unemployed	3,005	2,185	1,705	1,220
Not in the labour force	6,145	6,040	9,775	7,630
Participation rate	78.34	76.90	65.39	70.65
Employment rate	67.91	68.52	59.33	65.95
Unemployment rate	13.32	10.88	9.23	6.64
Francophone Population	**2001**	**2016**	**2001**	**2016**
Total population 15 to 64 years of age	13,920	11,800	14,000	11,785
In the labour force	10,975	9,345	9,190	8,600
Employed	9,555	8,350	8,575	8,145
Unemployed	1,420	990	615	455
Not in the labour force	2,950	2,460	4,810	3,185
Participation rate	78.84	79.19	65.64	72.97
Employment rate	68.64	70.76	61.25	69.11
Unemployment rate	12.94	10.59	6.69	5.29
Immigrant Population	**2001**	**2016**	**2001**	**2016**
Total population 15 to 64 years of age	710	610	825	660
In the labour force	550	500	470	490
Employed	530	485	430	470
Unemployed	25	20	40	20
Not in the labour force	155	110	355	165
Participation rate	77.46	81.97	56.97	74.24
Employment rate	74.65	79.51	52.12	71.21
Unemployment rate	4.55	4.00	8.51	4.08

Labour Market Outcome	Men	Men	Women	Women
Indigenous Population	**2001**	**2016**	**2001**	**2016**
Total population 15 to 64 years of age	2,075	4,180	2,110	4,320
In the labour force	1,445	2,800	1,240	2,675
Employed	1,095	2,310	1,035	2,335
Unemployed	345	490	200	880
Not in the labour force	630	1,380	870	1,650
Participation rate	69.64	66.99	58.77	61.92
Employment rate	52.77	55.26	49.05	54.05
Unemployment rate	23.88	17.50	16.13	32.90

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, Cochrane 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 high unemployment rate among the Indigenous workforce. It is also partly related to the fact that the level of educational attainment of the Indigenous labour force is below the regional average. Records show that per-student education funding of on-reserve Indigenous primary and secondary schools has been significantly lower than the provincial average in Ontario.[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 Cochrane District in 2015 equaled $47,298 compared with $49,759 for Immigrants, $39,716 for Indigenous peoples, and $47,007 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 Cochrane 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 levels. 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 Cochrane District. The projections show that the labour force in the district is expected to decline from 38,455 in 2015 to 32,017 in 2030, a decline of approximately 16.7 per cent. During the same period, the Indigenous labour force is expected to increase from 5,475 to 6,008 – an increase of approximately 9.7 per cent.[16] As a result, the share of Indigenous peoples in the total regional labour force is expected to increase from 14.2 per cent in 2015 to 18.8 per cent in 2030. What are the implications of the declining labour force for the future economic performance of Cochrane District and Northeastern Ontario? What are the implications of the rising share of the Indigenous labour force? It is known that the level of educational achievement is lower among the Indigenous population. How would this affect the human capital composition of the regional labour force in the coming years? We will answer some of these questions in the next part of this report

Table 4: Projected Labour Supply, Total and Indigenous, Cochrane District

Year	Total Labour Force	Indigenous Labour Force	Indigenous Share (%)
2015	38,455	5,475	14.24
2020	37,277	5,592	15.00
2025	34,419	5,886	17.10
2030	32,017	6,008	18.76

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

[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

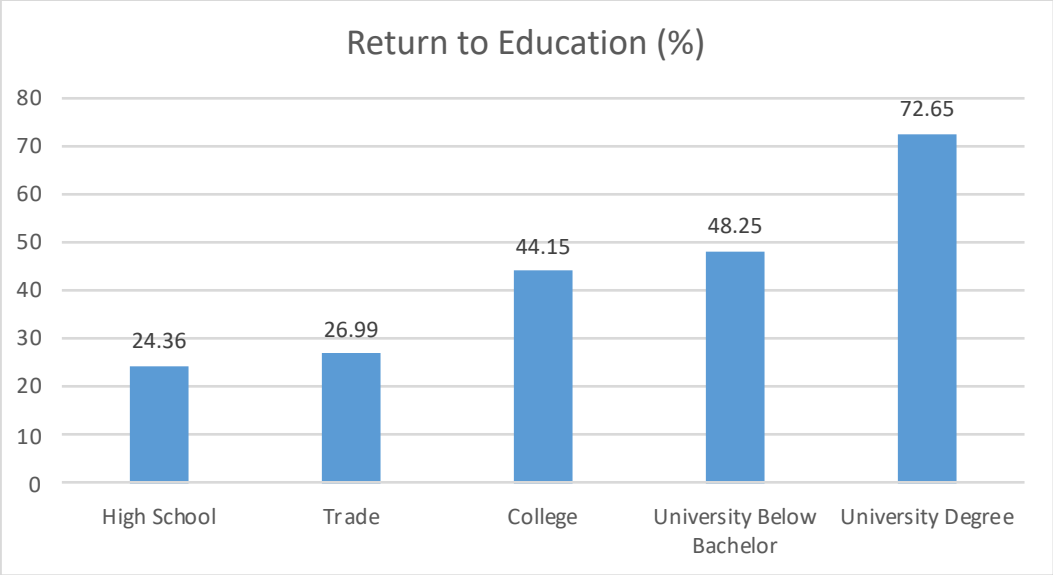
[16] We have assumed that the labour force participation rate among the Indigenous population stays at its current level.

Productivity and Human Capital Composition of the Workforce in Cochrane District 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 Cochrane 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.[17] 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.[18] 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

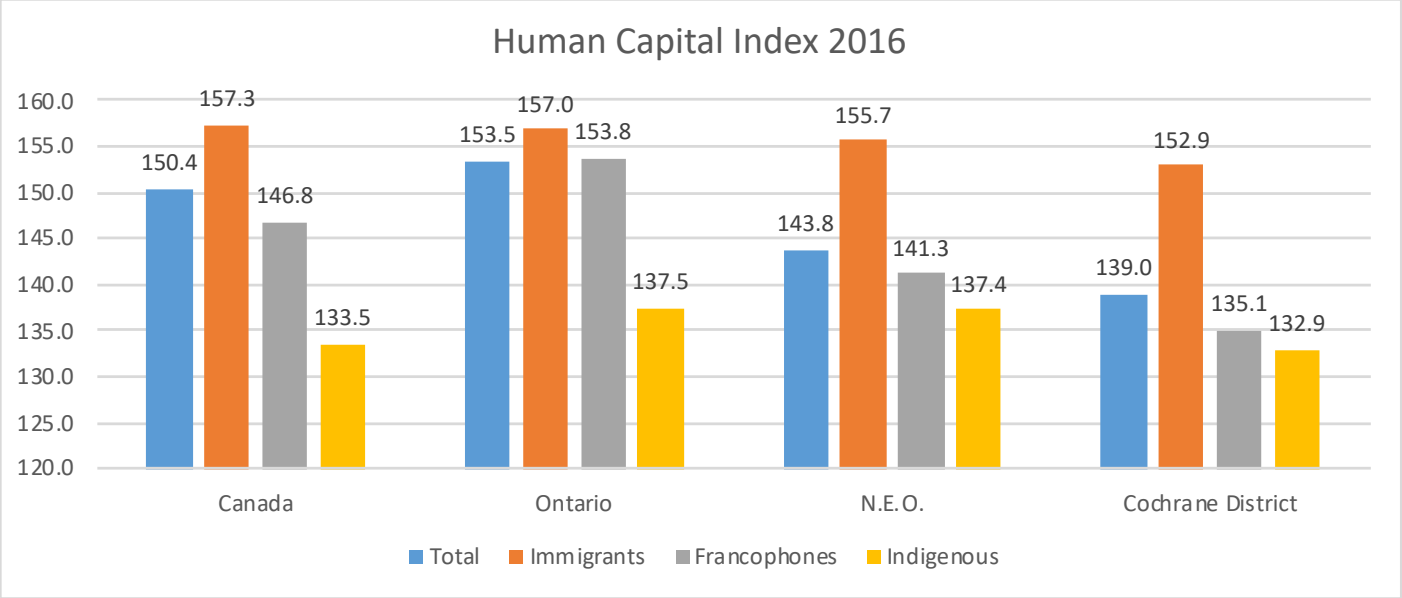
[17] The earnings model is as follows: $\ln Wage = \alpha + \Sigma\beta_i S_i + X_i\delta_i + \varepsilon_i$, where S_i is the highest level of schooling, X_i is other control variables (which include age categories, marital status, etc.), and ε_i is an error term.

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

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 both Ontario and Canada. The total index is lower for Cochrane District than 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 almost the same as the index for Northeastern Ontario but is higher than that of Cochrane District (132.9). The average index for Cochrane District's Indigenous population is approximately 4.5 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 that of 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)



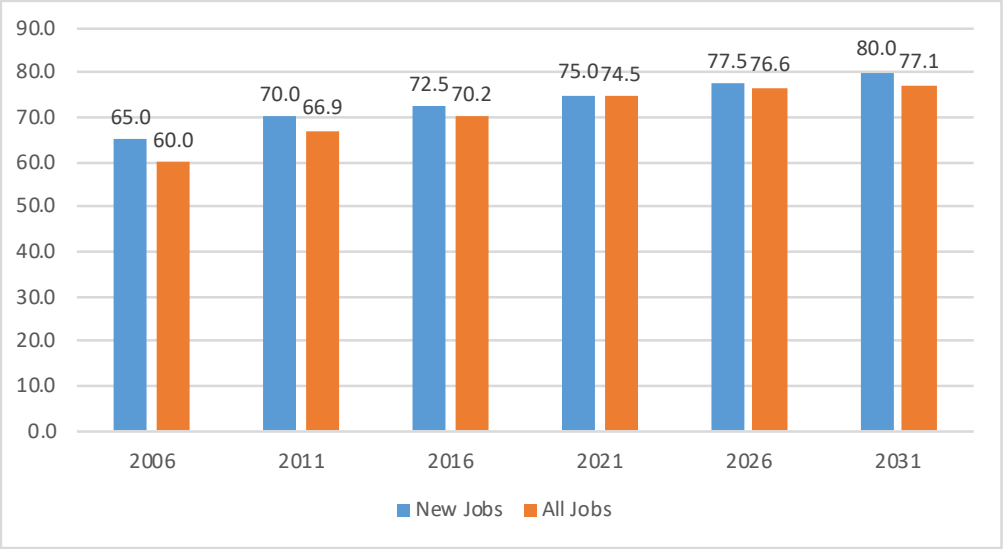
Source: Author's estimates using 2016 census

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

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, or a college 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 post-secondary credentials.[19] 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 provide estimates of the percentage of new jobs requiring post-secondary education in the coming years (Figure 18).

[19] 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

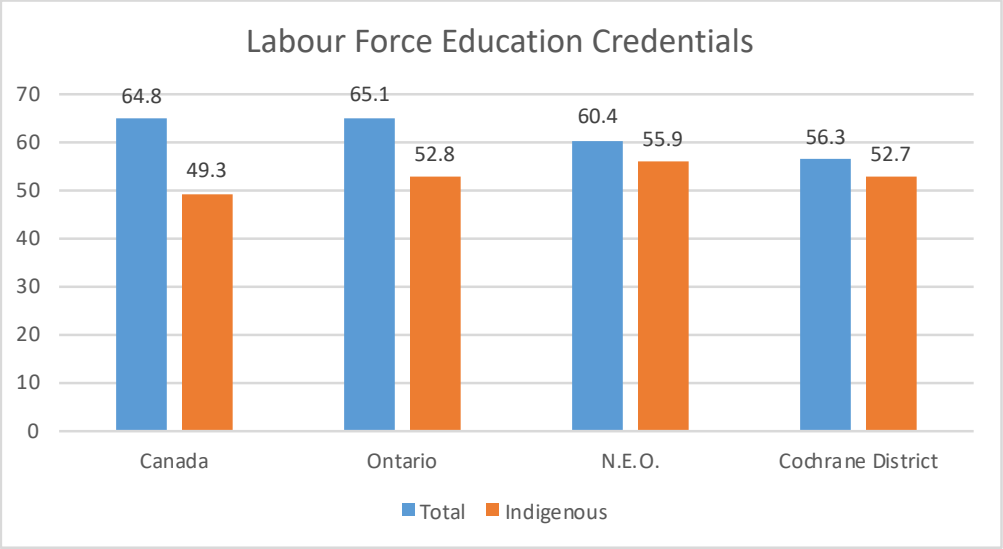


Source: Miner Management Consultants, 'Ontario's Labour Market Future: People Without Jobs, Jobs Without People,' February 2010.

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 regions are lower than those of both Ontario and Canada.

The average skill level in Northeastern Ontario is also significantly below the current percentage (70.2) of jobs requiring postsecondary education (Figure 18). Focusing on the prime working-age Indigenous workforce, Figure 19 shows that their level of skills lags behind current and future job requirements.

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

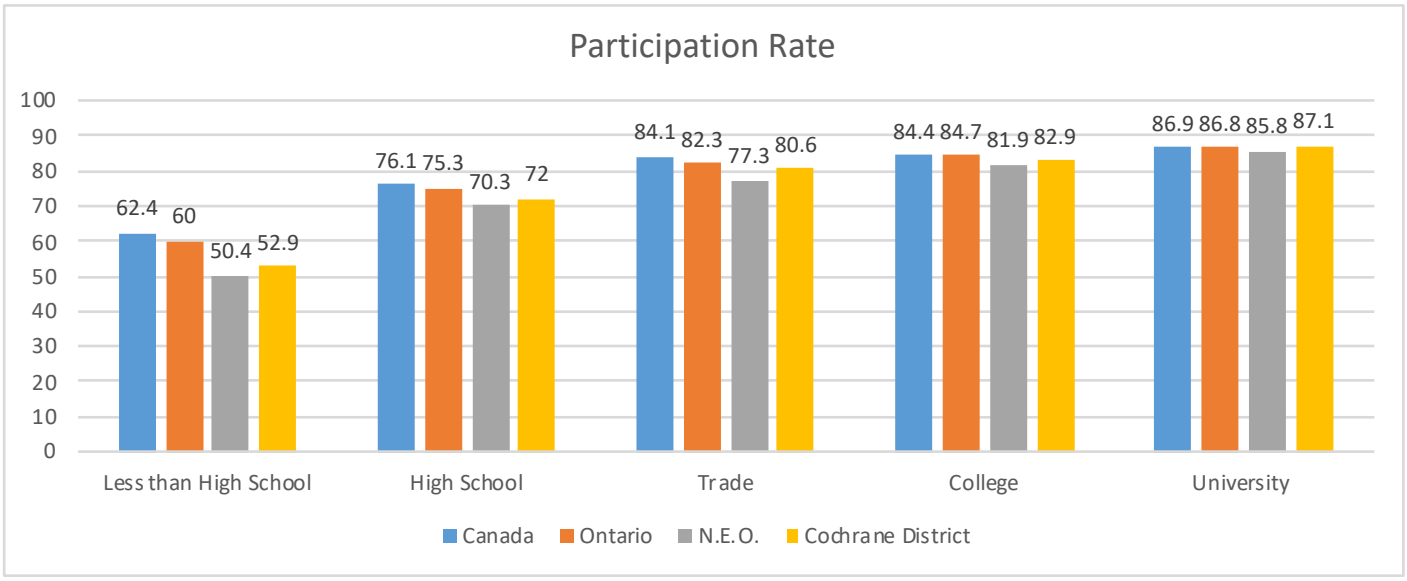


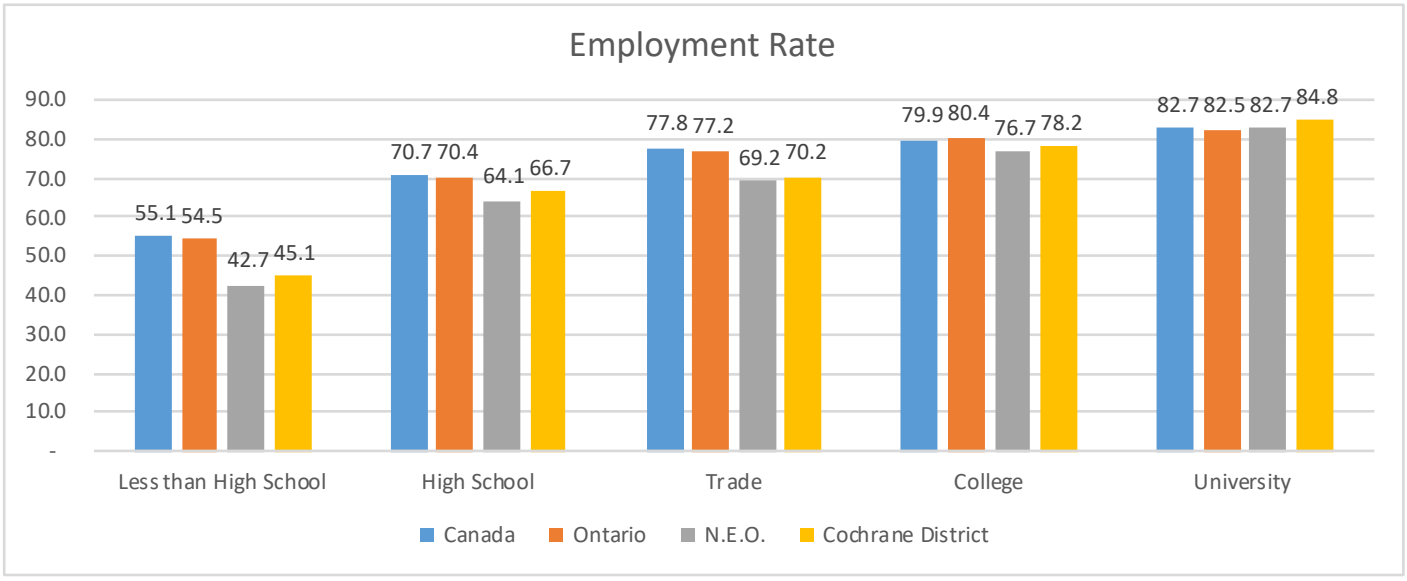
Source: Author's estimates based on Statistics Canada, 2016 census, special tabulation.

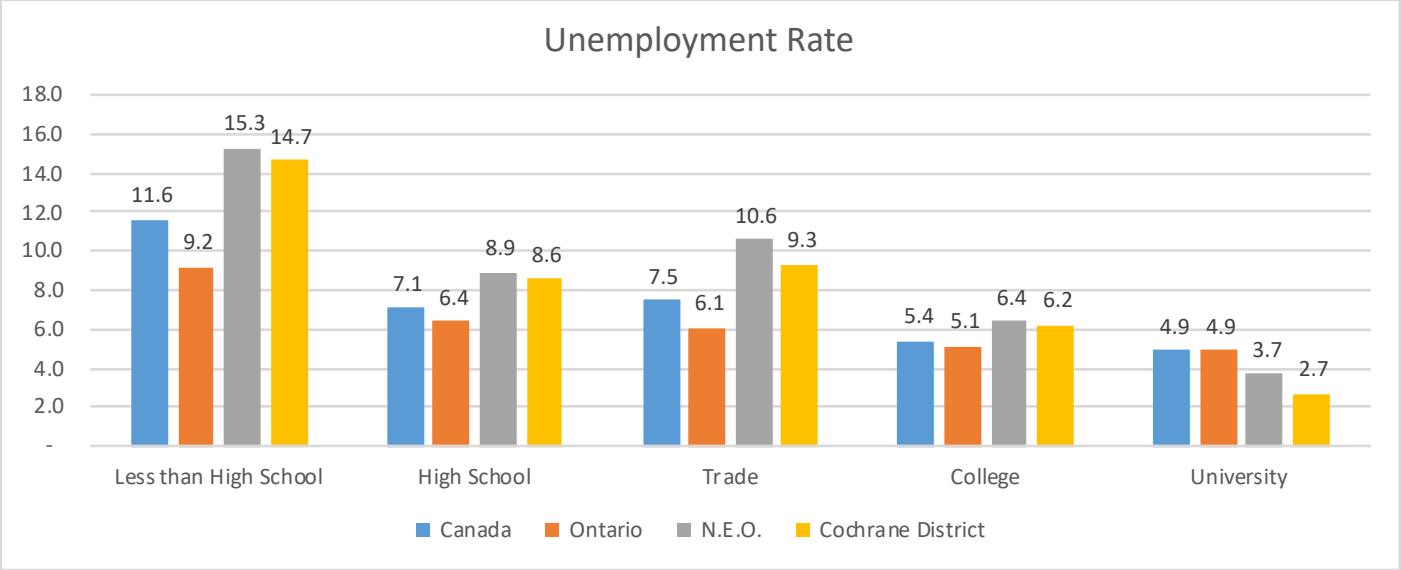
Given that the Indigenous labour force will account for a significant share of Northeastern Ontario's future workforce, it is vital to the social and economic viability of the region to adopt education policies that enable this growing segment of the regional labour force to meet the requirements of 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 19.1 per cent in Cochrane 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 district's workforce is to promote higher education either by increasing access for those living in remote regions or by adopting approaches that result in higher completion rates at the secondary and postsecondary levels.

Figure 20: Labour Force Performance by Education (%)







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

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 Cochrane District is below the estimated skill requirement for the emerging occupations, the region will face the challenges of workers whose qualifications do not match 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.[20] 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 in Northwestern Ontario, and 39 were in Northeastern Ontario.

When asked to rank barriers or factors negatively affecting their firm's growth and/or investment, companies surveyed typically identified the difficulty of finding qualified employees as their top concern. Approximately 29.0 per cent of multilocational and 24.0 per cent of multinational firms identified it as their main barrier. 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.[21]

It appears that if the skill levels of the workforce in Cochrane District stay constant as skill requirements rise, the result will be 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.

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

[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, 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 Cochrane District between 2001 and 2016.

Between 2001 and 2016, total regional employment declined from 36,315 to 35,045 – approximately 3.5 percent. Total employment in the goods-producing sector declined from 10,830 in 2001 to 9,485 in 2016– a decline of 12.4 percent. 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 those 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 health care, public administration, and arts, entertainment, and recreation.

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

North American Industry Classification 2012	2001	2016	Percentage Change (%)
Goods-producing Sector	**10,830**	**9,485**	**-12.4**
11 Agriculture, forestry, fishing, and hunting	1,240	775	-37.5
21 Mining and oil and gas extraction	2,670	3,900	46.1
22 Utilities	500	525	5.0
23 Construction	2,000	2,240	12.0
31-33 Manufacturing	4,420	2,045	-53.7
Service-producing Sector	**25,500**	**25,550**	**0.2**
41 Wholesale trade	920	755	-17.9
44-45 Retail trade	4,930	4,555	-7.6
48-49 Transportation and warehousing	2,015	1,710	-15.1
51 Information and cultural industries	660	430	-34.8
52 Finance and insurance	885	865	-2.3
53 Real estate and rental and leasing	380	310	-18.4
54 Professional, scientific, and technical services	1,050	1,135	8.1
55 Management of companies and enterprises	10	10	0.0
56 Administrative and support, waste management, and remediation services	960	985	2.6
61 Educational services	2,795	2,790	-0.2
62 Health care and social assistance	4,350	5,430	24.8
71 Arts, entertainment, and recreation	290	345	19.0
72 Accommodation and foodservices	2,610	2,310	-11.5
81 Other services (except public administration)	1,710	1,585	-7.3
91 Public administration	1,935	2,335	20.7
Total Employed Workforce	**36,315**	**35,045**	**-3.5**

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 experienced employment growth between 2001 and 2016 were health, management, and government services. Occupations unique to processing experienced the greatest decline during the same period.

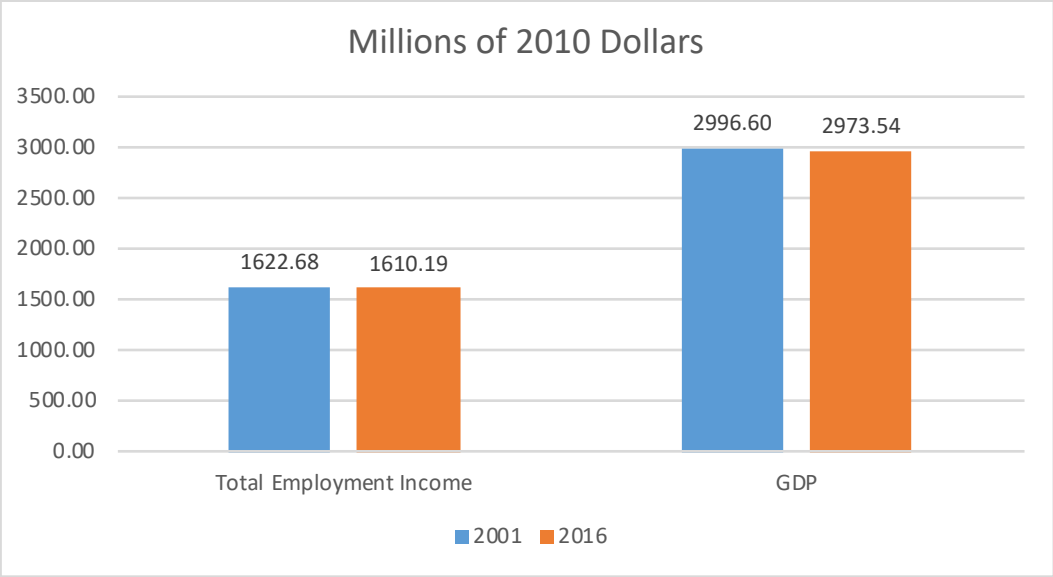
Table 6: Occupational Distribution of Employed Workforce (15 to 64) in Cochrane District

2001 National Occupational Classification	2001	2016	Percentage Change (%)
A Management occupations	2,785	3,015	8.3
B Business, finance, and administrative occupations	5,125	4,460	-13.0
C Natural and applied sciences and related occupations	1,675	1,695	1.2
D Health occupations - Employed labour force	2,050	2,810	37.1
E Occupations in social science, education, government service, and religion	3,065	4,600	50.1
F Occupations in art, culture, recreation, and sport	395	365	-7.6
G Sales and service occupations	9,485	8,035	-15.3
H Trades, transport and equipment operators, and related occupations	6,925	6,550	-5.4
I Occupations unique to primary industry	2,125	2,155	1.4
J Occupations unique to processing, manufacturing, and utilities	2,680	1,350	-49.6
Total	**36,315**	**35,045**	**-3.5**

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 36,315 in 2001 to 35,045 in 2016. The total GDP in Cochrane District followed the same trend between 2001 and 2016.

Figure 21: Labour Income and GDP Estimate for Cochrane 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 of 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 and prepare for the upcoming mining and forestry renewal? Otherwise, importing such 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, which affect demand for healthcare services, are referred to as the growth component. The second component, which relates to the need to replace retiring service providers, is often referred to as the retirement replacement component.

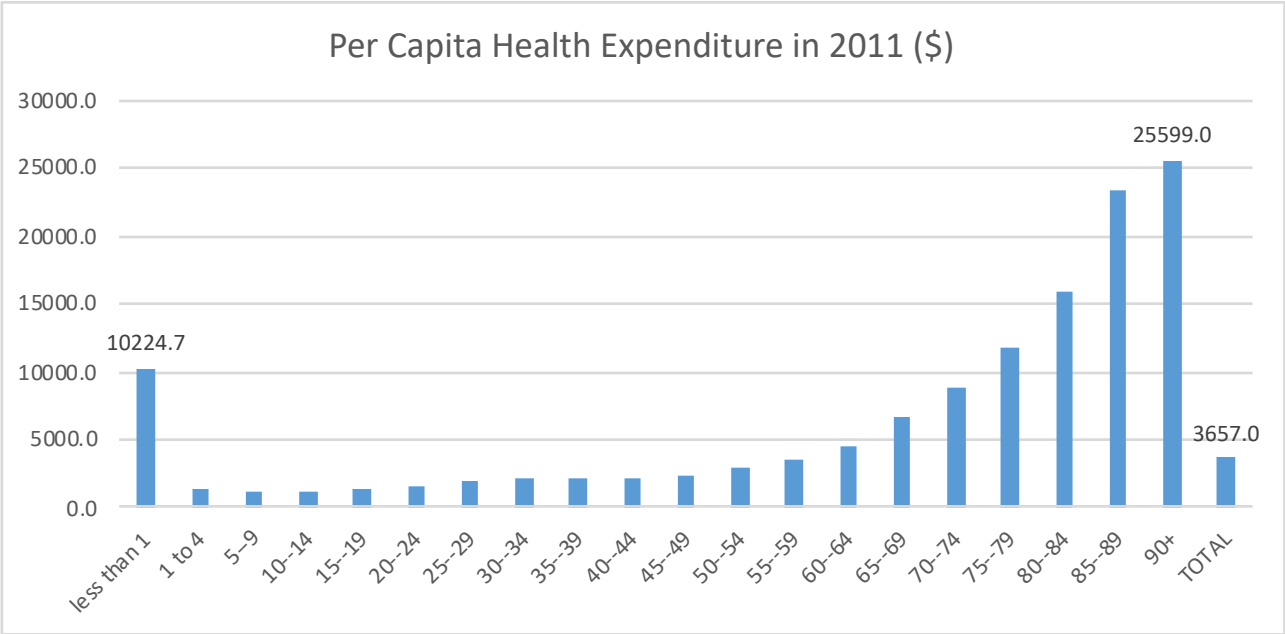
To estimate the growth component of total demand for healthcare services, we use the detailed Ministry of Finance's population projections for Northeastern Ontario between 2017 and 2041.

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 ages 60 years 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.[22] 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, and therefore healthcare providers in the region.

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

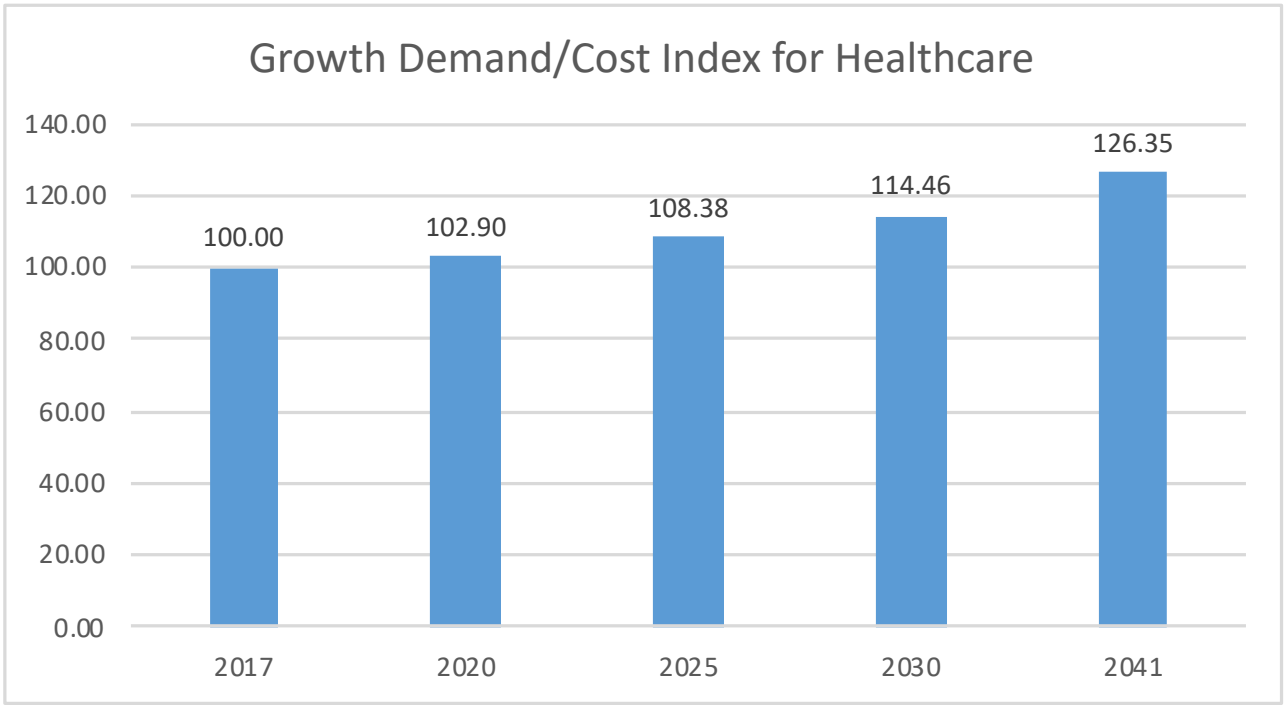
Figure 22: Per Capita Health Expenditures in Ontario by Age Category



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 Cochrane District, Figure 23 shows the estimated growth-demand indicator for healthcare services in Cochrane 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

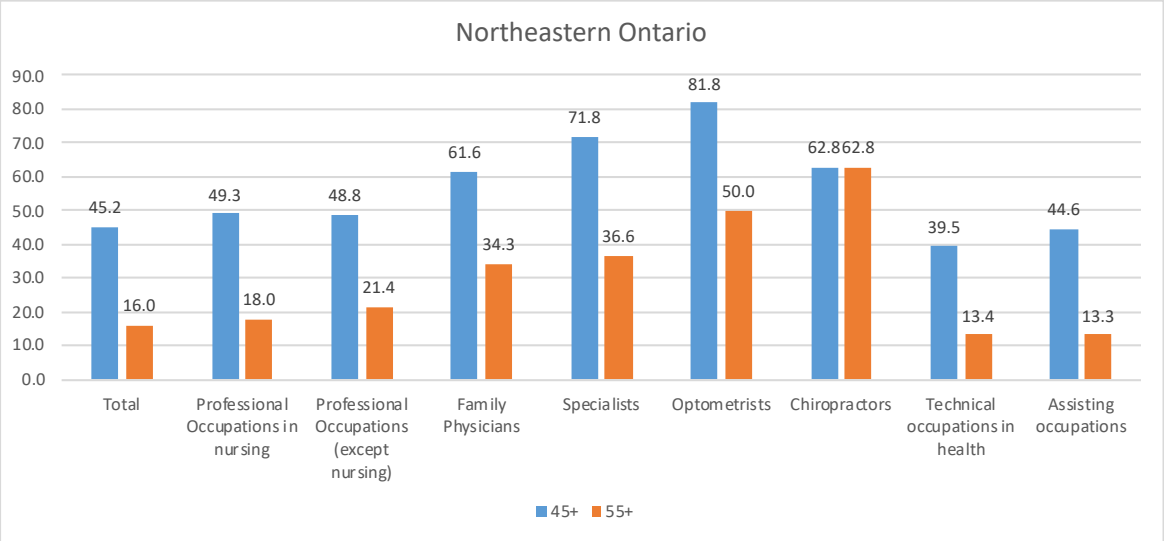


Source: Author's calculations based on the Ministry of Finance population projections.

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 who are 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**

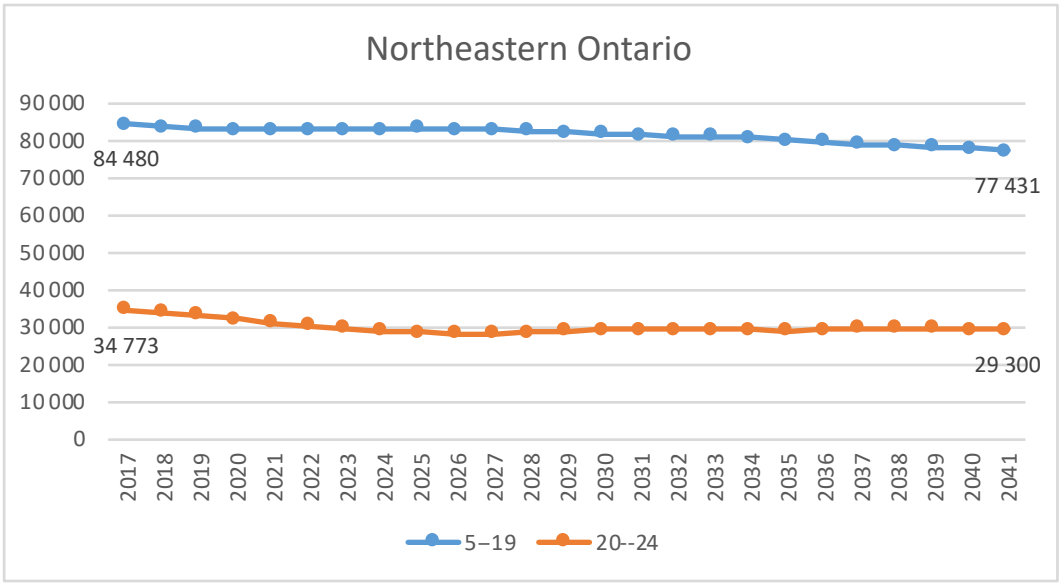
Source: Author's estimate based on population projections and 2011 NHS.

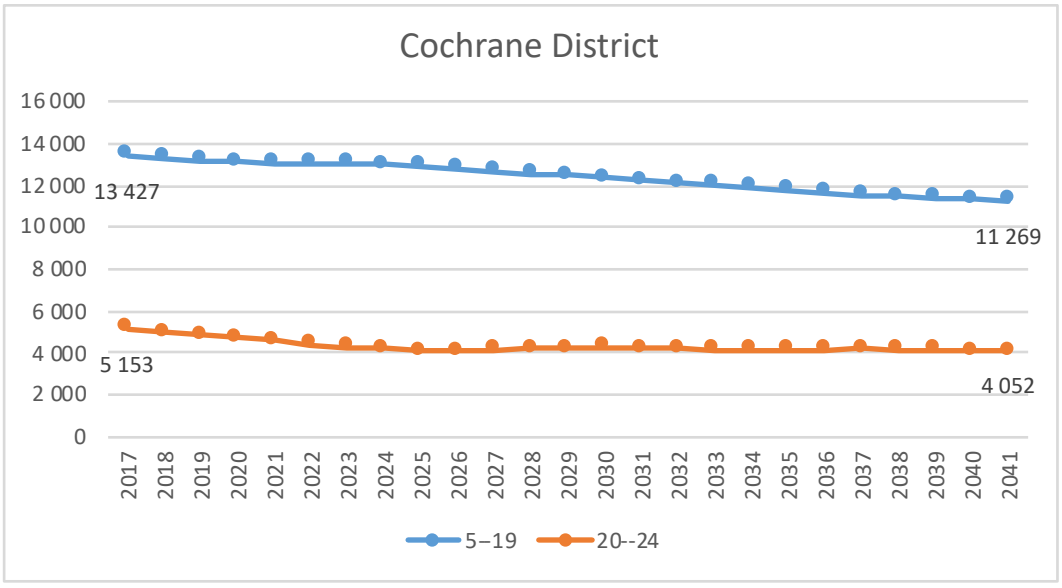
Table 7 shows that approximately 62.5 per cent of the total demand for healthcare providers between 2011 and 2020 relates to replacing those who are expected to retire during that time. The rest (37.5 per cent) of the healthcare providers are needed to satisfy the growing demand for healthcare services due to the aging population in Northeastern Ontario. Total demand rises significantly when we extend the projection period to the 2011 to 2030 range.

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 Cochrane District. It shows that the population ages five to 19 years is expected to decline by 5.3 per cent in Northeastern Ontario and 16.1 per cent in Cochrane District between 2017 and 2041. This trend primarily affects primary and secondary schools. Similarly, the total population ages 20 to 24 years is expected to decline by 14.1 per cent in Northeastern Ontario and 21.4 per cent in Cochrane District between 2017 and 2041. Declining youth population influences demand for postsecondary education in Northeastern Ontario and Cochrane 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, over 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.[23]

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

Table 8: Demand for Educators in Northeastern Ontario

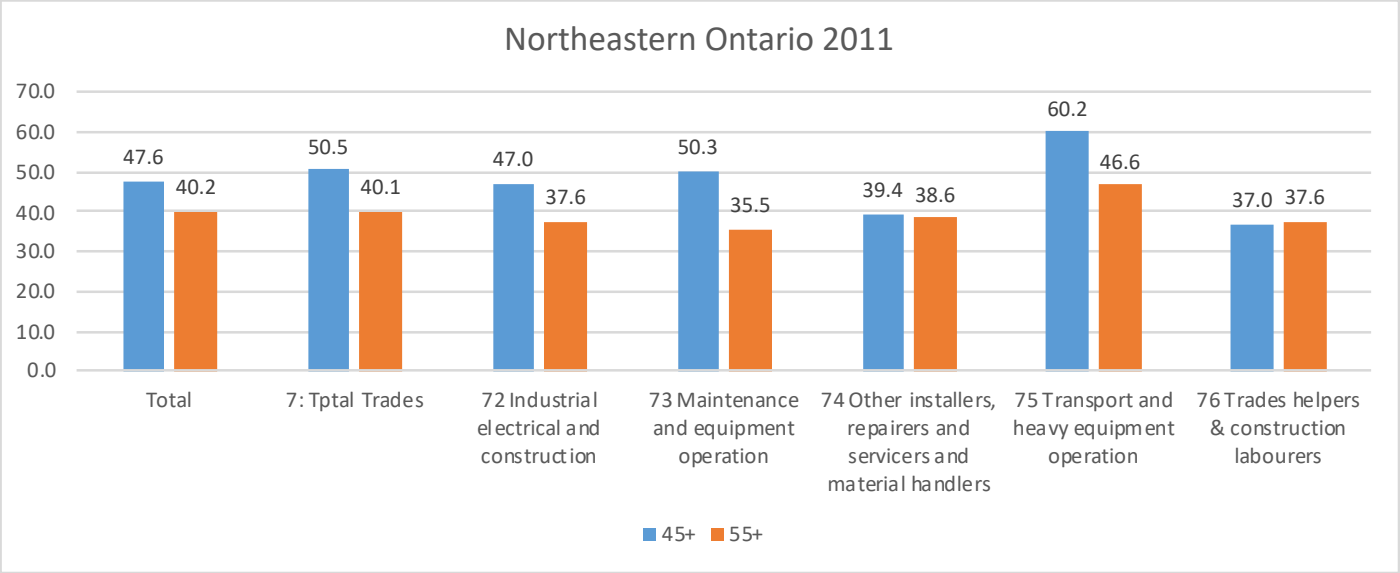
Occupations	2011-2020 Replacement Demand	2011-2020 Expansion Demand	2011-2020 Total Demand	2011-2030 Replacement Demand	2011-2030 Expansion Demand	2011-2030 Total Demand
40 Professional occupations in education services	1,575	(1,155)	420	4,800	(1,373)	3,427
401 University professors and postsecondary 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 the 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 ages 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. 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.

Assuming 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 9 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.

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Northern Policy Institute is Northern Ontario's independent think tank. We perform research, collect and disseminate evidence, and identify policy opportunities to support the growth of sustainable Northern Communities. Our operations are located in Thunder Bay, 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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