

Northwestern Ontario's Economy: Structural Change and Future Challenges

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Executive Summary

The objective of this report has been to critically evaluate past and present trends in Northwestern Ontario's economy and to forecast its future challenges and opportunities. The report primarily focuses on the supply side of the regional economy. We examine the regional labour market including its human capital composition; employment trends; shifting composition of the employed workforce from full-time to part-time; shifting industrial composition from goods-producing to service-producing sectors; declining share of the private sector; rising dependency on the public sector and declining regional income and gross regional product.

The report consists of seven parts.

Part I examines demographic change in Northwestern Ontario, its three districts and major communities during the past three decades. Northwestern Ontario's population grew from 236,215 in 1981 to 244,120 in 1996 but declined to 234,750 in 2001 and 224,060 in 2011. The same trend appears when we examine population levels in the three districts and major communities in Northwestern Ontario.

The declining population closely mirrors employment changes in the region. Total employment in Northwestern Ontario increased from 106,720 in 1981 to 109,075 in 1996, but declined to 107,737 in 2001 and 101,970 in 2011. The correlation coefficient between total regional population and employment during 1981-2011 equals 0.82 which is relatively high.

Declining population has resulted in Northwestern Ontario's share of the provincial population falling from 2.73 percent in 1981 to 2.38 percent in 1991, to 2.06 percent in 2001 and to 1.74 percent in 2011. The falling population share has happened despite the fact that the total fertility rate in Northwestern Ontario (1.77) has been significantly greater than the provincial (1.55) and the Canadian (1.61) rates.

Examination of the data reveals some alarming trends. The level of natural increase (births minus deaths) has been declining in Northwestern Ontario due to the outmigration of youth between the ages of 20 and 34 along with aging of the regional population. In fact, Thunder Bay district has been experiencing more deaths than births since 2005. In addition, the region experienced a net loss of about 4,115 immigrants during 2001-2011.

The study examines various dependency indicators and finds that the total dependency ratio i.e. the number of mouths to feed relative to working age persons, is above the provincial average. In other words, there are fewer working age people compared to the total population in Northwestern Ontario compared to Ontario.

Another aspect of demographic change in Northwestern Ontario relates to the cultural and linguistic diversity of the population. The total Francophone population in Northwestern Ontario declined from 8,330 in 2001 to 6,750 in 2011, a decline of about 19.0 percent. Their share of Northwestern Ontario's total population also declined from 3.6 percent in 2001 to 3.0 percent in 2011. The total Aboriginal population in Northwestern Ontario increased from 27,960 in 2001 to

41,270 in 2011. Their share of the total regional population increased from 11.9 percent in 2001 to 18.4 percent in 2011. The on-reserve population increased by 69.6 percent while the off-reserve population rose by 34.8 percent during the same period. Finally, the immigrant population declined from 19,870 in 2001 to 15,700 in 2011 in Northwestern Ontario. The share of immigrants in the total regional population declined from 8.5 percent in 2001 to 7.0 percent in 2011. The majority or 77.9 percent of the immigrant population live in Thunder Bay district.

Part II of the study looks into the future and provides population projections for Northwestern Ontario and its three districts during the next three decades. Based on Ontario's Ministry of Finance projections, Northwestern Ontario's total population is expected to decline from 239,772 in 2013 to 235,603 in 2041. On the other hand, the Aboriginal population is expected to rise from 42,746 in 2013 to 59,388 in 2041. The share of the Aboriginal population is expected to rise from about 18.0 percent in 2013 to 25.0 percent in 2041. Their share of the prime working age population (20 to 44 years) is expected to rise from 19.7 percent in 2013 to 31.3 percent in 2041. In other words, about a third of individuals in the prime working age group will be of Aboriginal origin in the coming years.

Part III examines past, present and future trends in the number and quality of the regional workforce. We find that the size of the regional labour force is expected to decline from 118,066 in 2013 to 96,618 in 2041. This represents a decline of about 18.2 percent during the projection period. During the same period, the Aboriginal labour force increases from 19,513 in 2013 to 26,132 in 2041, a rise of about 33.9 percent. As a result, the share of Aboriginals in the total regional labour force is expected to increase from 16.5 percent in 2013 to 27.1 percent in 2041. In fact, the share of the Aboriginal labour force in rural Northwestern Ontario (i.e. non CMA/CA) is expected to increase to about 52.9 percent by 2041. The study contends that there exists a significant gap between the level of educational achievement of Aboriginal individuals and the general population. This education gap results in a severe labour market outcome disparity which influences productivity and the future productive capacity of Northwestern Ontario's labour force.

Part IV deals with the quantitative measurement of productivity and the human capital composition of Northwestern Ontario's workforce in the coming years. Defining human capital as the stock of knowledge, skills and abilities embodied in individuals that directly affects their level of productivity, we find that the human capital composition index of the working age population in Northwestern Ontario is below the levels in Ontario and Canada. The report also finds that the human capital composition index for the Aboriginal population is about 19.0 percent lower than the index for the non-Aboriginal population. Given that a growing share of the future regional labour force will be of Aboriginal origin, a continuation of the current situation will lead to declining future labour productivity. Thus, the region will not only experience a declining size of the labour force but will also face declining productivity, a perfect storm.

The declining supply of labour and labour productivity in Northwestern Ontario are only half of the bad news. Recent technological change and the emergence of the knowledge economy have

increased the skill requirements of the workforce. The study shows that the skill levels of the prime working-age population aged 20 to 44 years in Northwestern Ontario regions are significantly lower than the skill levels in Ontario and Canada. Moreover, the present and future available skill levels are below the skill requirements that future jobs will demand. The report suggests that if the skill levels of the workforce in Northwestern Ontario stays at its current level or declines in the future while skill requirements continue to rise, the region will end up with a dichotomy of 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.

Part V of the study discusses the consequences of shifting the composition of the employed labour force. The structure of Northwestern 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 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, a large portion of which is publicly funded.

The consequences of the shifting composition of the workforce are as follows:

1. It has been accompanied by a net employment loss of about 10.0 percent since the mid-1990s.
2. The share of the private sector in employment and wealth generation in Northwestern Ontario has declined while the region has become more dependent on publicly funded programs such as health care, education and government.
3. The share of full-time and full-year jobs has declined from 57.7 percent in 2006 to 51.2 percent in 2011. The average earnings of full-time and full-year jobs equaled \$56,139 in 2011. During the same period, the share of part-time or part-year jobs rose from 42.3 percent in 2006 to 48.8 percent in 2011. The average earnings of the part-time and/or part-year jobs equaled \$24,889 in 2011. The same picture appears when we examine the composition of the employed workforce by sex.
4. The regional GDP in 2011 dollars has declined from its high of about 9.5 billion dollars in 1991 to its recent historical low of 8.3 billion in 2011, a decline of about 12.35 percent.
5. Recent structural change has shifted the regional economic focus from predominantly producing for export markets to mostly production for domestic consumption.

Part VI of the study looks into the future and investigates the impact of an aging regional population on demand for government program expenditures such as health care and education. It asks what healthcare related services will be necessary to meet the requirements of a rapidly aging regional population? How many doctors, nurses and other types of healthcare providers

do we need to train and or attract to replace the aging healthcare providers while satisfying the growing demand for healthcare services?

Similarly, an aging population affects student enrolments, revenues and consequently demand for various educational services in Northwestern Ontario. What would be the impact of demographic change on demand for teachers and educators and therefore employment and income in that sector of the regional economy?

Also, various regional and national surveys indicate a shortage of skilled tradesmen in Ontario and other regions of Canada. How has aging population affected the supply and availability of tradesmen in Northwestern Ontario? Are we training enough tradesmen to satisfy our current needs as well as preparing for the upcoming mining and forestry renewal? Otherwise, importing that expertise will seriously reduce the economic benefits of any resource-development in Northwestern Ontario.

Finally, in recent years, workers in communities with a high unemployment rate prefer to commute long distances in search of employment rather than changing their place of residence. How significant is this mobile workforce phenomenon in Northwestern Ontario? Is it increasingly becoming the new normal? How would it affect Northwestern Ontario's economy, especially its resource-based industries? These are questions that Part VI of the report tries to answer.

Part VII presents a summary conclusion and discusses some policy implications of the report.

Introduction

The objective of the present report is to examine past and present trends in Northwestern Ontario's economy and to forecast its future challenges and opportunities. The report primarily focuses on the supply side of the regional economy. We examine the regional labour market including its human capital composition; employment trends; shifting composition of the employed workforce from full-time to part-time; shifting industrial composition from goods-producing to service-producing sectors; declining share of the private sector; rising dependency on the public sector and declining regional income and gross regional product.

The report consists of seven parts.

Part I examines demographic change in Northwestern Ontario, its three districts and major communities during the past three decades. Part I also provides information on the cultural and linguistic diversity of the regional population. This part also defines and estimates various dependency indicators.

Part II of the study looks into the future and provides projections for total and Aboriginal populations for Northwestern Ontario and its three districts during the next three decades.

Part III uses the population projections discussed in Part II and estimates past, present and future trends in the size and composition of the regional labour force.

Part IV defines and quantitatively measures the human capital composition of Northwestern Ontario's workforce in the coming years. Part IV also discusses the implications of the growing application of technology in the production process and accordingly the future skill requirements of the workforce.

Part V of the study discusses the consequences of shifting the composition of the employed labour force from goods-producing, dominated by private businesses, to service-producing, predominantly financed by the public sector. It also examines the shift from full-time and relatively high paying jobs to part-time and relatively low paying jobs and the implication thereof for total regional income and GDP.

Part VI of the study looks into the future and investigates the impact of an aging regional population on demand for government program expenditures such as health care and education. This part also investigates the impact of the aging population on the supply of skilled tradesmen. Part VI also examines the relative importance of the mobile workforce phenomenon in Northwestern Ontario.

Part VII presents a summary conclusion and discusses some policy implications of the report.

Sources of Data Used in this Study

In most parts, the data used are based on detailed information regarding individual census subdivisions (CSDs) in Northwestern Ontario obtained through special tabulations from Statistics Canada. Except for the population data, the 2011 data is based on the 2011 National Household Survey (NHS). Total Population forecasts are based on data made available by the Ontario Ministry of Finance.

Population Groups Studied in this Report

The report provides information on the following four population groups:

1. Total population;
2. Francophone population defined as individuals whose mother tongue is French;
3. Aboriginal population defined by Statistics Canada as persons who reported identifying with at least one Aboriginal group, that is, North American Indian, Metis or Inuit, and/or those who reported being a Treaty Indian or a registered Indian, as defined by the Indian Act of Canada, and/or those who reported they were members of an Indian band or First Nation;
4. Immigrant population defined as persons who are, or have ever been, landed immigrants in Canada.

Geographical Specification of Northwestern Ontario

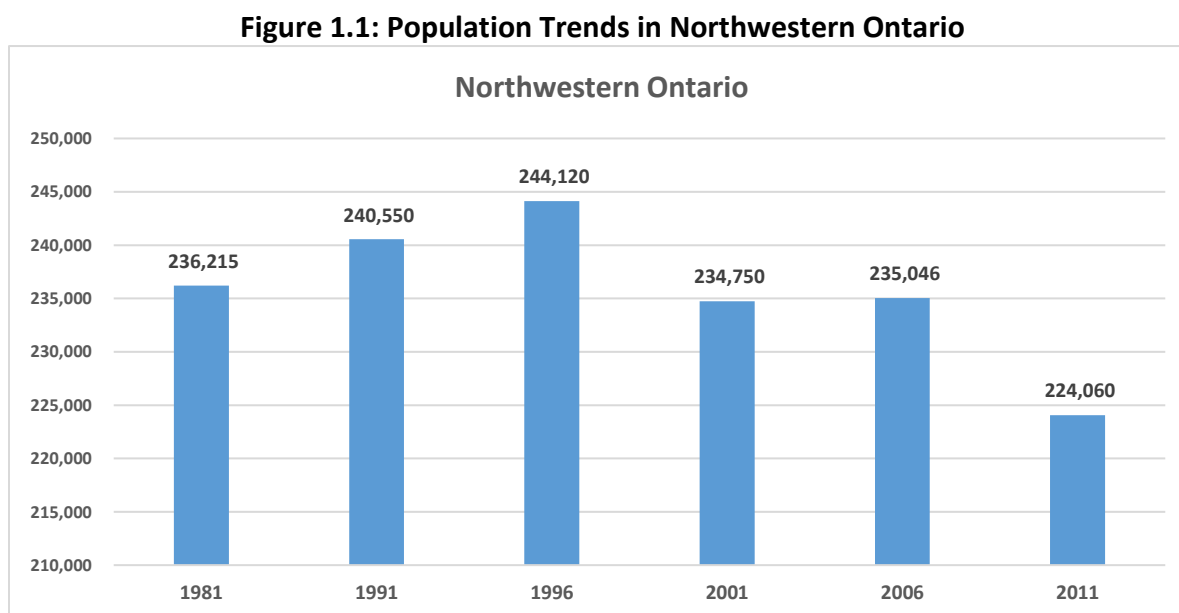
Northern Ontario is subdivided into Northwestern and Northeastern Ontario. The three most western Census districts, namely Rainy River, Kenora and Thunder Bay, constitute Northwestern Ontario.

Part I: Demographic Change in Northwestern Ontario: The Past Three Decades

Northwestern Ontario covers more than 526,371 square kilometers, almost 49.0 percent of the province's total area while accounting for only 1.74 percent of Ontario's total population. With a population density of 0.4 persons per square kilometer, Northwestern Ontario is the province's most sparsely populated region.¹

Northwestern Ontario consists of the districts of Thunder Bay, Kenora and Rainy River. Major communities in the region include Thunder Bay, Kenora, Dryden, Fort Frances, Sioux Lookout, Greenstone, Red Lake, Marathon, and Atikokan as well as several dozen First Nations. About 54.3 percent of the region's entire population lives in the Thunder Bay Census Metropolitan Area (CMA). Aside from the city of Thunder Bay, Kenora is the only other municipality in the entire region with a population greater than 10,000 people.

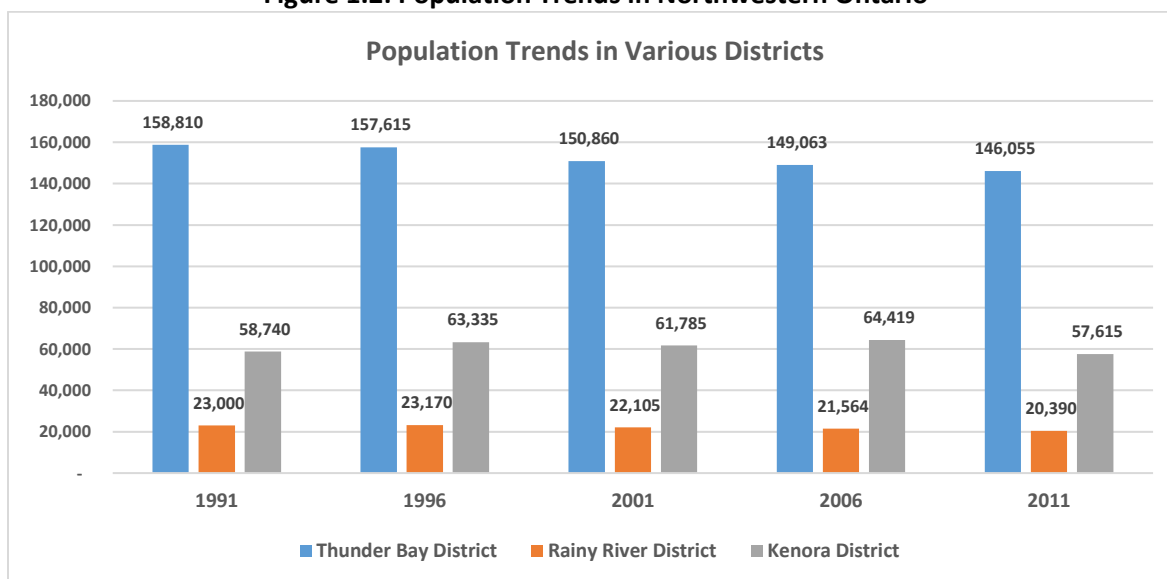
According to Statistics Canada's census of population, Northwestern Ontario's population grew from 236,215 in 1981 to 244,120 in 1996 but declined to 234,750 in 2001 and 224,060 in 2011 (Figure 1.1).



The same trend appears when we examine population levels in the three districts in Northwestern Ontario (Figure 1.2).

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

Figure 1.2: Population Trends in Northwestern Ontario



Declining population trends can also be observed in all major townships, towns and cities in Northwestern Ontario (Table 1.1). Dryden is the only municipality with positive population growth during 1996-2011. However, it has experienced significant population decline following the closure of its main paper mill in 2008.

Table 1.1: Population Trends in Major Northwestern Ontario Regions

	1996	2001	2006	2011	Percentage Change 1996-2011
Thunder Bay City	113,662	109,016	109,140	108,359	-4.67
Kenora City	10,063 ²	15,838	15,177	15,348	-3.09
Fort Frances Town	8,790	8,315	8,103	7,952	-9.53
Dryden City	6,711	8,198	8,195	7,617	13.50
Sioux Lookout Town	5,165	5,336	5,183	5,038	-2.46
Greenstone MU	6,530	5,662	4,906	4,725	-27.64
Red Lake Town	4,778	4,233	4,526	4,670	-2.26
Marathon Town	4,791	4,416	3,863	3,350	-30.08
Atikokan Town	4,043	3,632	3,230	2,787	-31.07
Manitouwadge TP	3,395	2,949	2,300	2,105	-38.00
Nipigon TP	2,210	1,964	1,752	1,630	-26.24
Terrace Bay TP	2,324	1,950	1,625	1,470	-36.75
Schreiber TP	1,788	1,448	901	1,125	-37.08

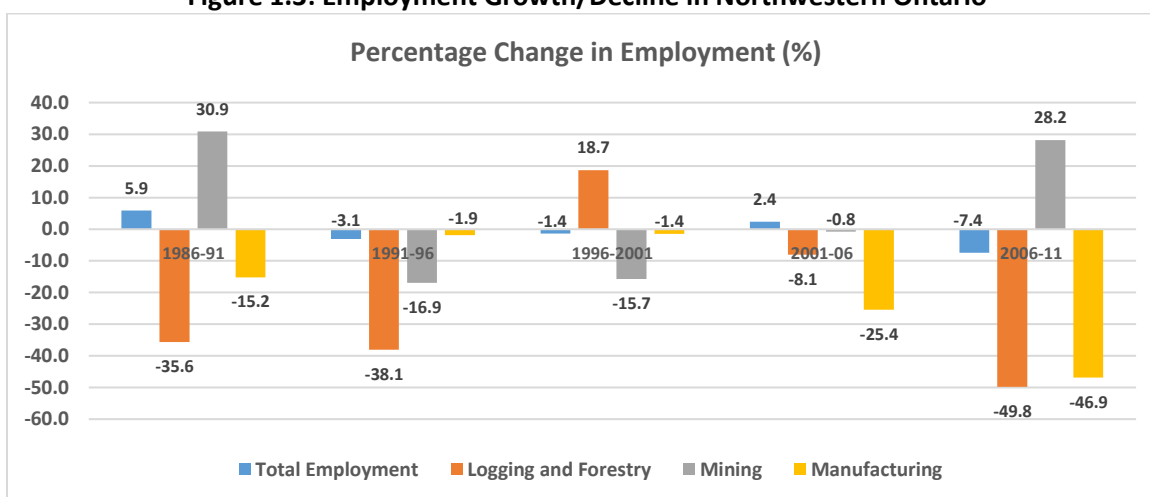
² The town of Kenora was amalgamated with the towns of Keewatin and Jaffray Melick in 2000 to form the present-day city of Kenora. Therefore, the percentage population change for the city of Kenora is calculated during 2001-2011.

Red Rock TP	1,258	1,233	1,063	940	-25.28
Dorion TP	472	442	379	340	-27.97

The declining population closely mirrors employment changes in the region (Figure 1.3). Total employment in Northwestern Ontario increased from 106,720 in 1981 to 112,535 in 1991 but declined to 109,075 in 1996, and to 107,737 in 2001, then increased to 110,110 in 2006 but fell again to 101,970 in 2011. The correlation coefficient between total regional population and employment during 1981-2011 equals 0.82 which is relatively high.³

Logging and forestry sectors experienced significant employment decline during 1991-1996 (38.1%) and 2006-2011 (49.8%). Employment in the region's manufacturing sector that is dominated by the forest-based industries also experienced significant decline during 1986-1991 (15.2%), 2001-2006 (25.4%) and 2006-11 (46.9%). The population in communities dependent on forestry and logging along with the related manufacturing industries followed movements in their employment trends during the 1986-2011 period.

Figure 1.3: Employment Growth/Decline in Northwestern Ontario



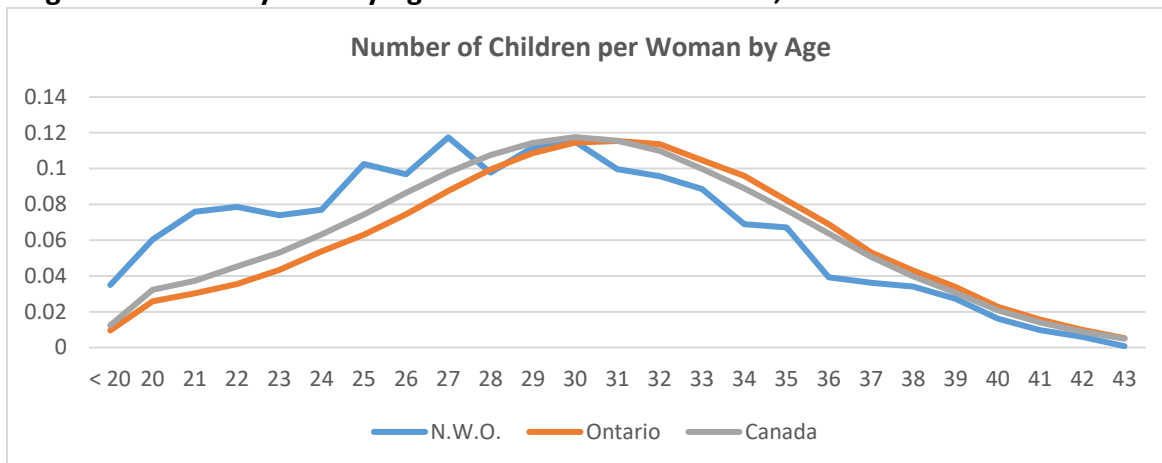
Employment in the mining industry rose during 1986-1991 (30.9%), declined during 1991-2006 (30.6%) and increased again during 2006-2011 (28.2%). In addition to changes in the regional population, migration flows also follow employment trends in the resource-based industries in Northwestern Ontario.

Northwestern Ontario's share of the provincial population declined from 2.73 percent in 1981 to 2.38 percent in 1991, 2.06 percent in 2001 and to 1.74 percent in 2011. The declining population share has happened despite the fact that the total fertility rate in Northwestern Ontario has been significantly greater than the provincial and the Canadian rates. The total fertility rate is defined

³ The upper limit of the simple correlation coefficient, which corresponds to perfect correlation, equals one.

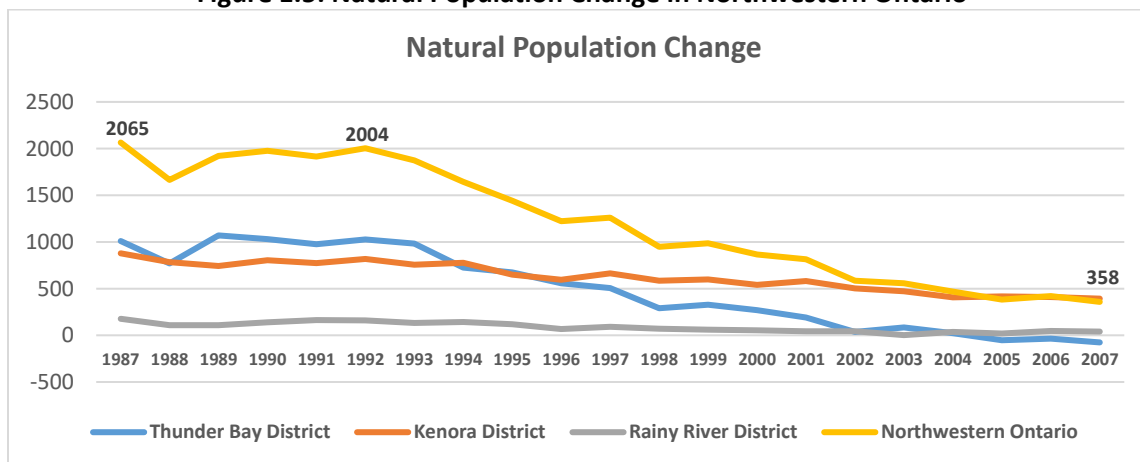
as the average number of children that a woman will have over the course of her life. In Canada, the total fertility rate equaled 1.61 in 2011 compared to 1.55 in Ontario and 1.77 in Northwestern Ontario (Figure 1.4).

Figure 1.4: Fertility Rate by Age in Northwestern Ontario, Ontario and Canada in 2011



The higher fertility rate in Northwestern Ontario compared to Ontario suggests that the declining size and share of the region's population are not due to natural population change. In fact, as Figure 1.5 shows the number of births exceeded the number of deaths in Northwestern Ontario during 1987-2007. However, the level of natural increase has been declining in Northwestern Ontario. In fact, Thunder Bay district experienced more deaths than births after 2005 further adding to the population decline in that region. The declining natural population increase is due to a gradual increase in the number of deaths compared to births due to three factors. First is the aging of the population which results in a greater share of population in higher age categories and a fewer number of women in childbearing ages. The second factor relates to the continuation of the low fertility rates significantly below the generational replacement rate of 2.1. The third factor is the outmigration of women in childbearing ages from Northwestern Ontario.

Figure 1.5: Natural Population Change in Northwestern Ontario



There are other factors besides aging of the population that explain declining regional population. First, Northwestern Ontario has been receiving disproportionately low rates of immigration. According to Census data, about 1.4 million immigrants came to Canada during 2001-2011. Net immigration is defined as the number of immigrants who came minus those who left. Net immigration to Ontario during 2001-2011 equaled 586,990. However, Northwestern Ontario lost about 4,115 immigrants during the above period.⁴ In other words, the region experienced negative net immigration during 2001-2011. This is one of the important factors influencing the declining population. The second and perhaps a more important factor relates to out-migration.

Figure 1.6 shows that Northwestern Ontario has experienced significant interprovincial as well as intraprovincial out-migration especially during the mid-2000s due to the collapse of the forestry industry along with the related manufacturing industries. Interprovincial migration refers to the movement of population from one province to another. The Ministry of Finance reports that since 2003, net interprovincial migration to Ontario has been negative, largely due to net outflows to Alberta. Over 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. Excluding the extra inflows during that period, long-term net interprovincial migration to Ontario is modestly negative.⁵ Intraprovincial migration refers to the movement of population from one census division to another within the province.

Figure 1.6 shows that the majority of those who choose to move appear to move out of the province. In fact, the Thunder Bay district has experienced an in-migration from other census divisions within Ontario, more than likely from other census divisions in Northwestern Ontario, during the post 2006 era. Examination of the data reveals that the intraprovincial in-migrants to Thunder Bay district are 35 years of age and older who are also bringing their children with them. Overall, net out-migration has decreased over time. What are the reasons for the declining out-migration from Northwestern Ontario? Can it be related to the age profile of the movers? Can it be related to the aging of the population resulting in a smaller share of the population in their prime moving age? Figure 1.7 shows the age distribution of the migrants.

⁴ According to the Census data, the number of immigrants in Northwestern Ontario declined from 19,935 in 2001 to 15,820 in 2011.

⁵ Ontario Ministry of Finance, Ontario Population Projections based on the 2011 Census 2013-2041 Ontario and Its 49 Census Divisions.

Figure 1.6: Net Migration Flows in Northwestern Ontario

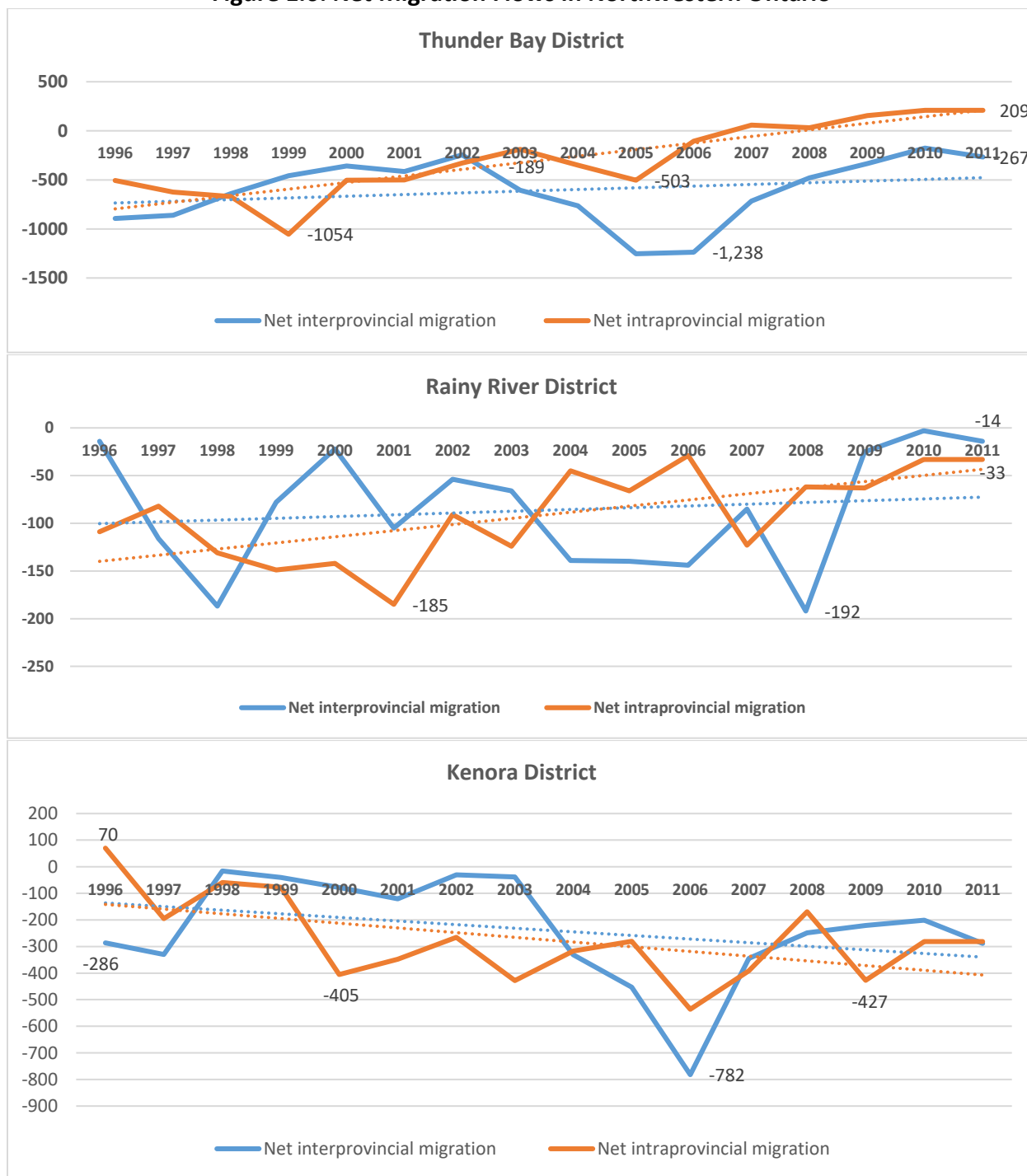
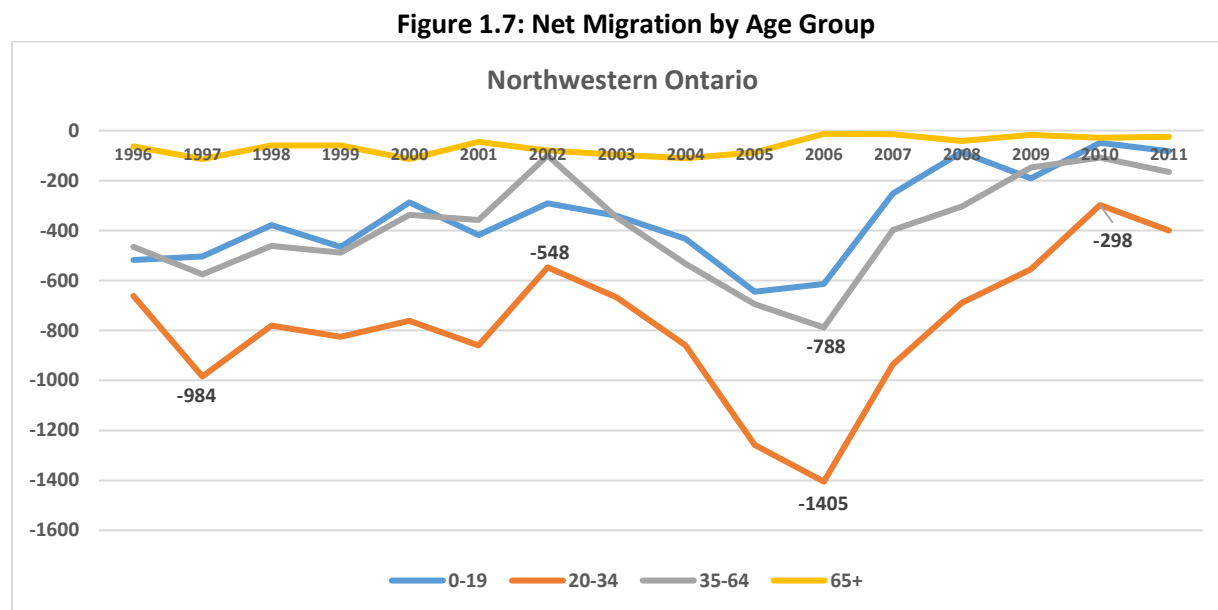


Figure 1.7 shows that the majority of movers are between the ages of 20 and 34 followed by those between the ages of 35 and 64 years. Figure 1.7 also shows that adults moving to other regions take their children with them resulting in net out-migration of youth aged 19 and under.

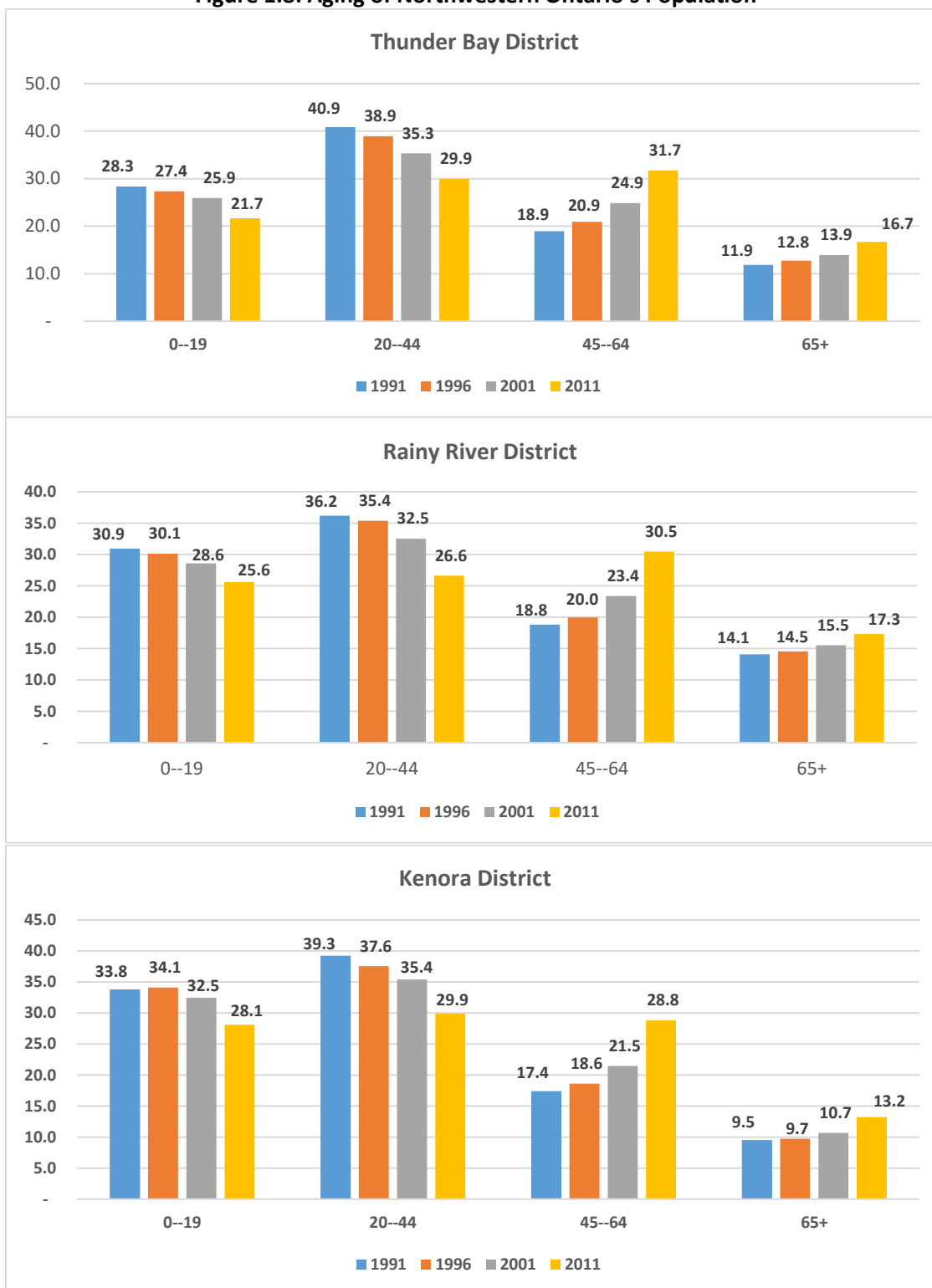
There has always been some out-migration of seniors but the level and trend has been quite stable.



Rising life expectancy and out-migration of youth have resulted in the aging of Northwestern Ontario's population. The baby boomers were followed by much smaller generations in number primarily due to a declining fertility rate. During the same period, average life expectancy at birth in Canada increased from 71.13 years in 1960 to 81.24 years in 2012. As a result the share of individuals in Northwestern Ontario below the age of 20 has declined from 29.9 percent in 1991 to 23.7 percent in 2011 while the share of seniors rose from 11.5 percent in 1991 to 15.8 percent in 2011 (Figure 1.8). During the same period, the share of individuals in their prime working age of 20 to 44 has declined from 40.0 percent in 1991 to 29.6 percent in 2011.

Demographic changes have significant impact on social and economic conditions in the region. Individuals grow older as they move through the life cycle. The baby boomers, born in the two decades following World War II, are aging and the first group of them are retiring now. The generation that came after the boomers is much smaller. As a result, the overall regional population is aging and this process has been exacerbated by the out-migration of youth. The aging process will continue into the foreseeable future and will have significant implications for the supply of labour, production capacity and the ability of the region to stay economically viable.

Figure 1.8: Aging of Northwestern Ontario's Population



One important aspect of this aging population relates to the relationship between economically active and economically dependent age groups, i.e. between the working population on the one hand and the young and elderly on the other. This ratio is a crude measure of the burden or cost associated with demographic change in terms of raising and educating children as well as taking care of the elderly at any given time.

We examine three dependency ratios, namely old age dependency, youth dependency and total dependency ratios. We define old age dependency as the number of persons aged 65 years and over relative to the working age population (20 to 64). Similarly, youth dependency is defined as the ratio of the number of persons aged 20 years and under to the working age persons. The total dependency ratio is defined as the ratio of the total population, which is essentially the number of mouths to feed, to the working age population, i.e., population 20 to 64 years of age. This ratio is a crude measure of the burden or cost associated with demographic change in terms of raising and educating children as well as taking care of the elderly at any given time.

Figure 1.9 shows the dependency ratios during 1991-2011. Assuming jobs are available for the working age population, a rise in the dependency ratio suggests that there are more dependent persons per each member of the working-age population. A declining dependency rate implies that there are more working persons per dependent and the region can reap the benefits of increased production capacity therefore lowering the costs associated with the declining proportion of dependents.

Figure 1.9: Working Age Population Relative to Other Groups in Northwestern Ontario

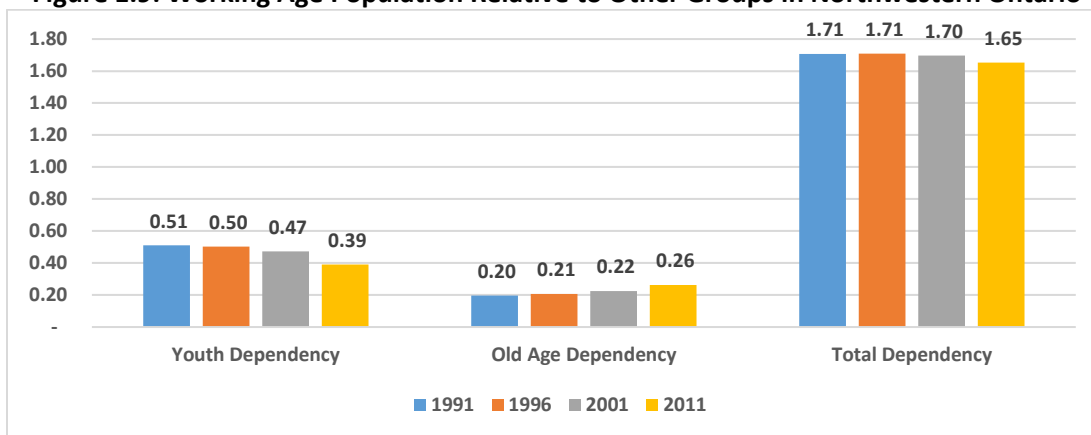


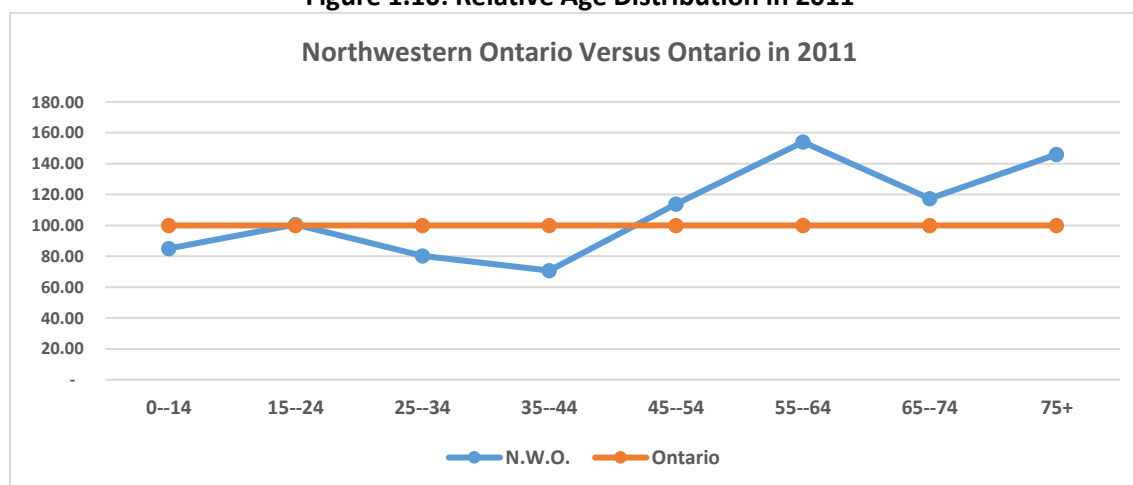
Figure 1.9 shows that there were 0.51 person under the age of 19 per each working age person 19 in Northwestern Ontario in 1991. This ratio declined to 0.39 in 2011 due to the fact that the number of youth declined much faster than the number of working age persons during 1991-2011. The number of seniors relative to working age persons rose from 0.20 in 1991 to 0.26 in 2011 due to an increasing number of seniors relative to the working age population. In other words, there were 5.09 working persons in 1991 per each senior. This ratio declined to 3.82 working persons per senior in 2011. This ratio is significantly above the provincial value of 0.20

in 2011. This ratio is expected to continue to rise as working age persons retire and change their status from working to retired in the coming years.

Overall, the number of mouth to feed relative to working age persons declined from 1.71 in 1991 to 1.65 in 2011 suggesting an increased capacity of the region to support its non-working population during 1991-2011. The ratio was still above the provincial average of 1.60 in 2011. In other words, there are still fewer working age people compared to the total population in Northwestern Ontario compared to Ontario. Decreasing the gap between the dependency ratios in Northwestern Ontario and the provincial levels can be a goal the region may strive to achieve in the long-term.

The above dependency trends suggest that the age distribution of the population in Northwestern Ontario is different from that in Ontario. As Figure 1.10 shows, compared to the provincial average, there are a relatively lower percentage of people under 45 years of age and a higher share of older people including seniors in Northwestern Ontario.

Figure 1.10: Relative Age Distribution in 2011

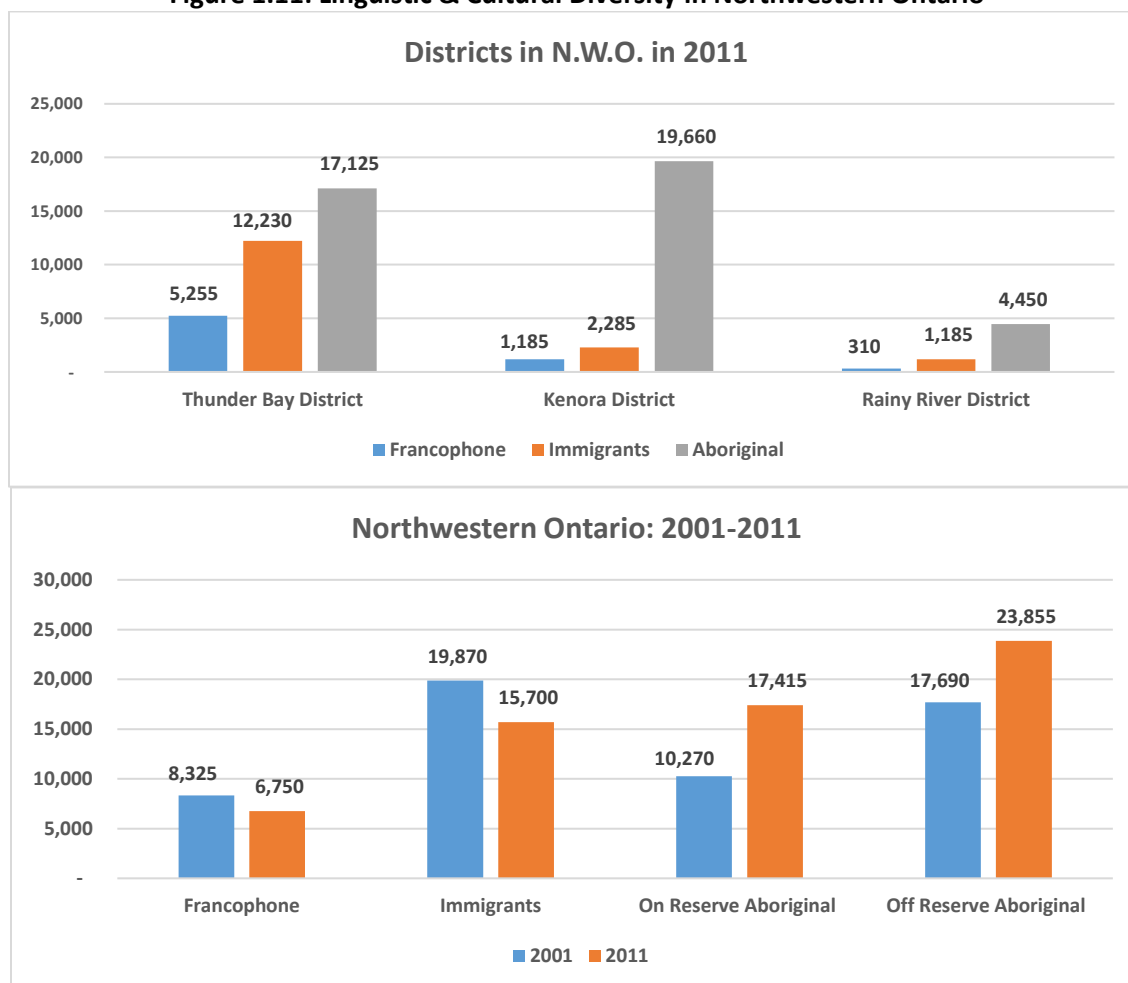


Linguistic and Cultural Diversity of the Population in Northwestern Ontario

Another aspect of demographic change in Northwestern Ontario relates to the cultural and linguistic diversity of the population (Figure 1.11). The total Francophone population in Northwestern Ontario declined from 8,330 in 2001 to 6,750 in 2011, a decline of about 19.0 percent. Their share of Northwestern Ontario's total population also declined from 3.6 percent in 2001 to 3.0 percent in 2011. The Francophone population in Northwestern Ontario is concentrated in Atikokan (3%), Greenstone (32%), Ignace (10%), Manitouwadge (16%), Marathon

(13%) and Thunder Bay (3%). About 77.8 percent of the Francophone population live in Thunder Bay District, 17.6 percent live in Kenora district and 4.6 percent reside in Rainy River district.

Figure 1.11: Linguistic & Cultural Diversity in Northwestern Ontario



We note that there is a discrepancy between the total Francophone population based on the 2011 National Household Survey (NHS) and 2011 Census. The 2011 NHS reports the Francophone population as 5,960 in Northwestern Ontario which is lower than the number reported by the 2011 Census.

The total Aboriginal population in Northwestern Ontario increased from 27,960 in 2001 to 41,270 in 2011. Their share of the total regional population increased from 11.9 percent in 2001 to 18.4 percent in 2011. The majority or 47.7 percent of the Aboriginal population live in Kenora district. They represent about 34.1 percent of the total population in Kenora district. About 41.5 percent live in Thunder Bay district. They represent about 11.7 percent of the total population in Thunder Bay district. About 10.8 percent of Northwestern Ontario's Aboriginals reside in Rainy River district. They account for about 21.8 percent of the total district's population. The on- and off-

reserve distribution of the Aboriginal population also changed during 2001-2011 (Figure 1.11). The on-reserve population increased by 69.6 percent in Northwestern Ontario. The off-reserve population increased by 34.8 percent during the same period.

The high Aboriginal 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 Aboriginal population in Canada. Another phenomenon that has also affected the size, growth and composition of the Aboriginal population in recent years is referred to as a “change in reporting” or “ethnic mobility.” Ethnic mobility refers to people changing, from one census to the next, the reporting of their Aboriginal affiliations from a non-Aboriginal identity to an Aboriginal identity.⁶ 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 census due to the fact that 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 1996.⁷ Other factors explaining higher Aboriginal population growth include better and more accessible health care leading to a lower mortality rate and decline in infant mortality.

Finally, one of the main factors explaining the rising share of the Aboriginal population relates to their fertility rate. The fertility rate among Aboriginal 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.”⁸

In general, the Aboriginal population is much younger than the non-Aboriginal population. Therefore they will be entering the labour market in large numbers while the non-Aboriginal population is retiring. They will represent a significant share of the region’s workforce in the coming years. As we will discuss later in the report, there is a need to ensure that they have the

⁶ Signer A. and Rosalinda Costa, “Aboriginal Conditions in Census Metropolitan Areas, 1981-2001”, Statistics Canada, 2005.

⁷ Ibid.

⁸ Ministry of Health and Long-Term Care, Health Analytic Branch, “First Nations Peoples in Ontario: A Demographic Portrait”, January 2009, page 15.

necessary human capital in order for Northwestern Ontario to remain economically competitive with other regions.

Figure 1.11 also shows that the immigrant population declined from 19,870 in 2001 to 15,700 in 2011 in Northwestern Ontario. The share of immigrants in the total regional population declined from 8.5 percent in 2001 to 7.0 percent in 2011. The majority or 77.9 percent of the immigrant population live in Thunder Bay district.

Population Trends in Urban & Rural Northwestern Ontario

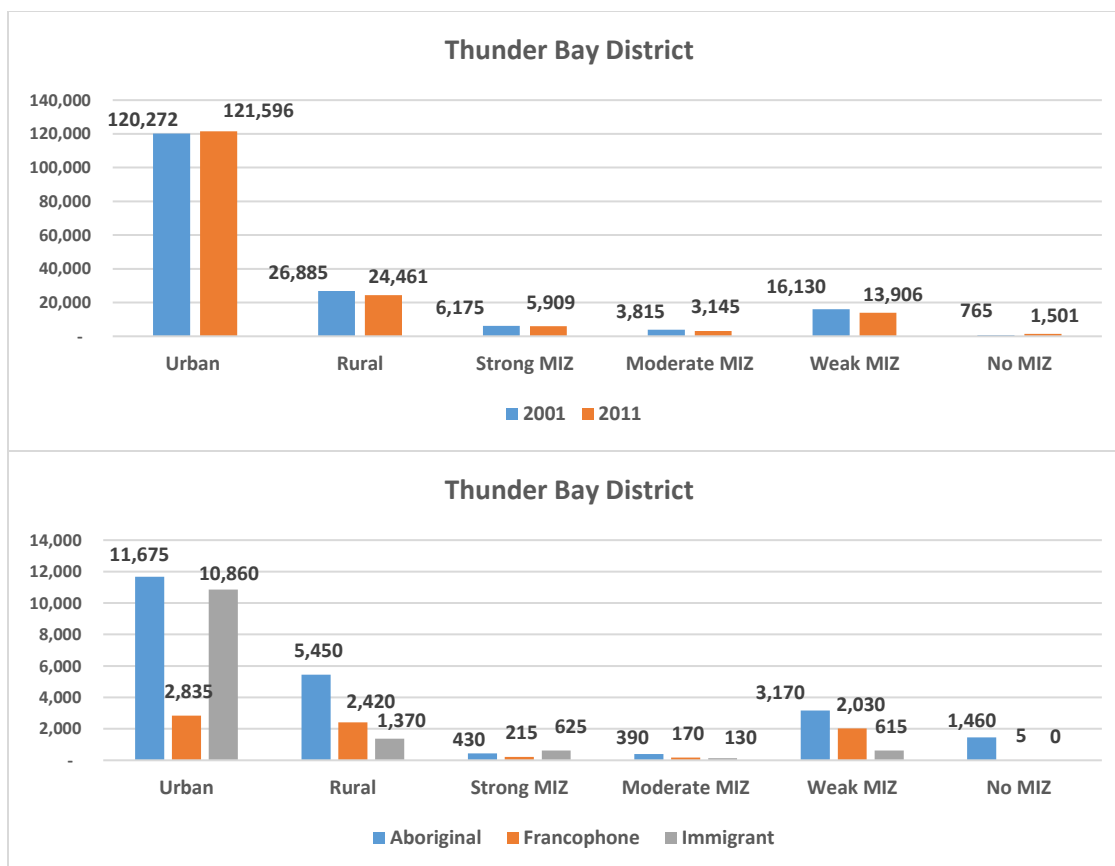
There are many ways to define rural and urban areas. The term rural is intuitively understood as an area with low population concentration dispersed at a low density. On the other hand, the term urban is often understood as a place with high population concentration at a high density. This intuitive 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 kilometer.⁹ An alternative and perhaps a more appropriate definition of rural area proposed by Statistics Canada is "rural and small towns" as against "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 neighboring 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 five types of zones based on the degree of influence that large urban centres have on them.¹⁰ This is measured by the percentage of people who commute to work in an urban centre.

Using the above definition, Figure 1.12 shows the distribution of Thunder Bay district's population among rural and urban areas.

Figure 1.12: Population in Urban and Rural Areas in Thunder Bay District

⁹ 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.

¹⁰ For a definition of various zones see Roland Beshiri and Jiaosheng He, "Rural and Small Town Canada Analysis Bulletin", Vol. 8, No. 2, June 2009, Catalogue No. 21-006-X.



About 83.3 percent of Thunder Bay district's population live in urban areas. The rest or 16.7 percent live in rural areas. The urban population has increased while the rural Thunder Bay population has declined during 2001-2011. This reflects movements of population from rural to urban regions as well as rural to other Canadian destinations. From those who live in rural areas, 24.2 percent live in areas with a close link to urban centres. About 12.9 percent live in rural areas with a moderate link while 56.8 percent live in areas with a weak link to urban centres and 6.1 percent live in remote regions. The majority or 68.2 percent of the Aboriginal population live in urban areas. These are mostly the off-reserve population in the region. About 31.8 percent of the Aboriginal population live in rural areas. From those, 58.2 percent live in relatively remote areas with a weak link to urban centres. Another 26.8 percent live in very remote regions with no link to population centres. These are mostly on-reserve Aboriginal people living in remote Northwestern Ontario regions.

About 53.9 percent of the Francophone population live in urban centres. The rest or 46.1 percent live in rural areas. The majority or 83.9 percent of those who live in rural areas live in relatively remote areas with a weak link to urban centres. Almost 89.0 percent of the immigrant population live in urban centres.

Figure 1.13 shows the geographical distribution of population in Kenora district. Unlike the population distribution in Thunder Bay district, the majority or 73.4 percent of the Kenora population live in rural areas.

From those who live in rural areas, 22.1 percent live in areas with a moderate link to urban centres. The rest live in relatively remote (53.2%) or remote (22.4%) regions. The majority or 86.3 percent of the Aboriginal people live in rural Kenora. From them, 37.9 percent live in relatively remote regions with a weak link to population centres and 35.4 percent live in very remote regions with no link to urban centres. The majority of the Francophone (73.4%) and immigrant (65.4%) population also live in rural areas with moderate to weak link to urban centres.

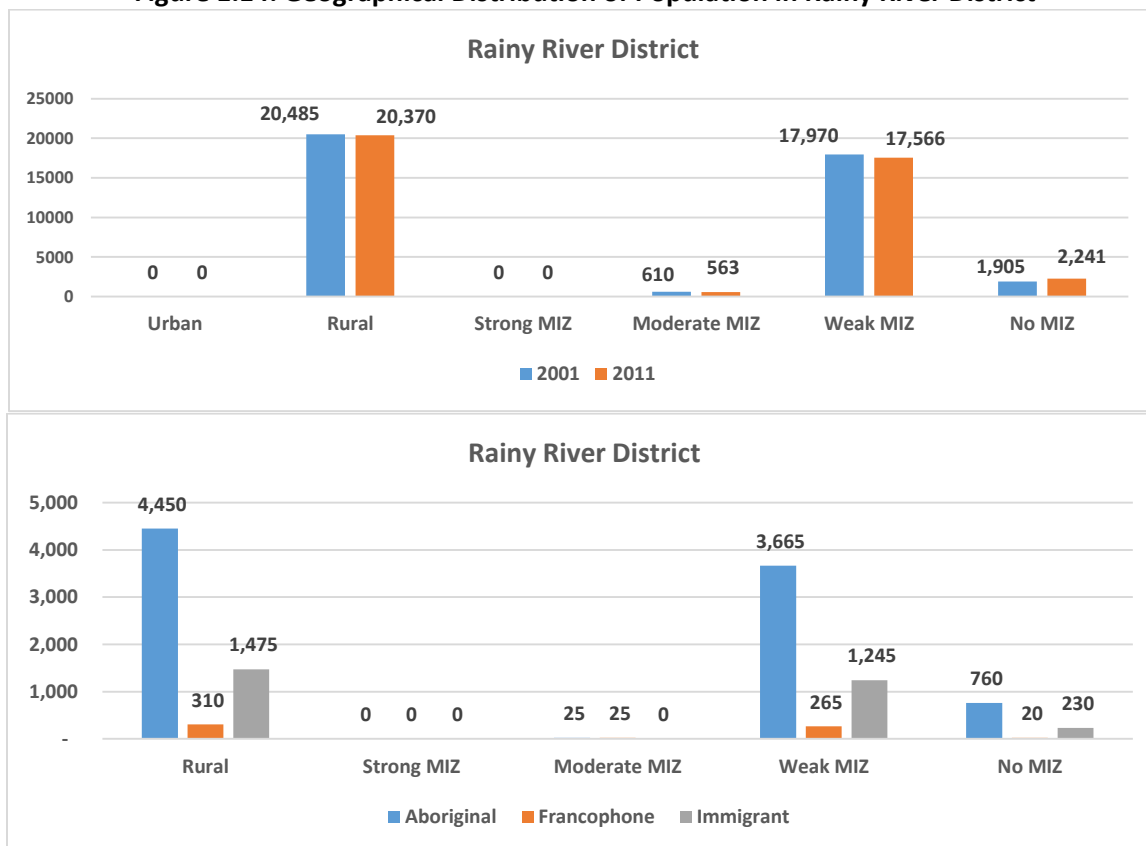
Figure 1.13: Population in Urban and Rural Areas in Kenora District



Figure 1.14 shows the geographical distribution of population in the Rainy River district. There are no population centres of 10,000 and more in the Rainy River district. All of the population in Rainy River district live in areas defined as rural. Moreover 86.2 percent of the population live in relatively remote areas with a weak link to any urban or population centre.

The majority or 82.4 percent of the Aboriginal population live in relatively remote regions. Another 17.1 percent live in remote regions of the district. The same holds true for the Francophone and immigrant population in Rainy River.

Figure 1.14: Geographical Distribution of Population in Rainy River District



Aging of Northwestern Ontario's Population

Table 1.2 shows the age distribution of Northwestern Ontario's population during 2001-2011. It shows that the share of the population aged 14 and younger has declined from 20.8 percent in 2001 to 16.9 percent in 2011. The average and median age of the population has also increased from 36.5 and 37.2 years in 2001 to 40.2 and 42.4 years in 2011 respectively. The median age is the age that divides a population into two numerically equal groups. One half of the population are younger than the median age and the other half are older.

A part of the increased average and median ages is due to the natural process of aging but it also reflects the relatively low fertility rate as well as out-migration of youth from the region. Table 1.2 shows that the immigrant population are significantly older than the regional population while the Aboriginal population are much younger than the other groups. Viewed from another perspective, the Aboriginal population makes up about 33.0 percent of the total regional

population aged 14 and under. Similarly, they account for 26.0 percent of the population between the ages of 15 and 24 in Northwestern Ontario. In other words, the Aboriginal population accounts for about 30.0 percent of the regional population aged 24 years and younger. This implies that the Aboriginal population will make up an increasing share of the working age population of Northwestern Ontario in the coming years. This is especially true given the relatively high out-migration rate of young people, most of whom are non-Aboriginal.

Table 1.2: Percentage Age Distribution of Various Population Groups in Northwestern Ontario

Age Group	N.W.O.		Francophone		Immigrant		On-Reserve		Off-Reserve	
	2001	2011	2001	2011	2001	2011	2001	2011	2001	2011
0 - 14 years	20.76	16.91	8.58	5.96	1.96	3.07	35.94	32.64	31.98	27.24
15 - 24 years	13.50	13.32	9.66	7.63	2.98	3.19	18.04	18.68	16.06	18.06
25 - 34 years	12.37	10.99	11.40	8.98	6.57	4.80	15.45	13.71	15.24	12.74
35 - 44 years	16.77	12.31	21.01	15.44	13.39	9.36	13.37	12.59	16.82	12.13
45 - 54 years	14.73	16.61	18.91	21.31	21.42	14.85	7.47	11.35	10.21	14.54
55 - 64 years	9.19	14.65	13.03	18.37	17.93	22.28	5.02	6.29	5.97	8.86
65 - 74 years	7.20	8.45	11.76	12.16	18.64	20.16	3.18	3.51	2.91	4.25
75 years and over	5.48	6.77	5.64	10.07	17.08	22.28	1.60	1.24	0.82	2.16
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Average Age	36.50	40.20	44.10	48.90	56.20	59.10	25.80	27.40	27.70	31.10
Median Age	37.20	42.40	44.70	51.30	56.60	62.50	22.40	24.10	26.50	29.10

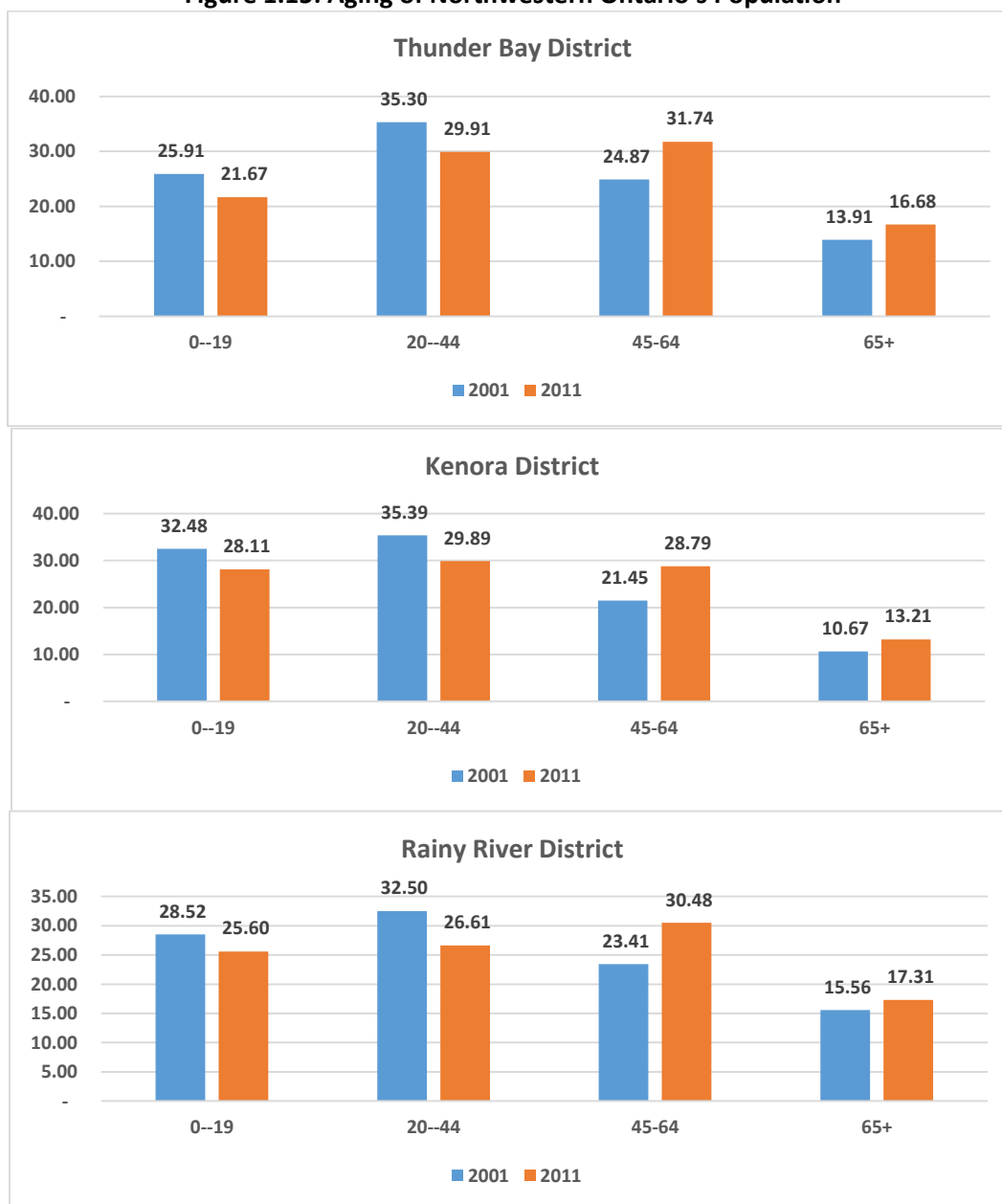
Table 1.3 and Figure 1.15 show the percentage age distribution of population in various Northwestern Ontario districts during 2001-2011.

Table 1.3: Percentage Age Distribution of Northwestern Ontario's Population

Age Group	Thunder Bay District		Kenora District		Rainy River District	
	2001	2011	2001	2011	2001	2011
0--4	5.36	4.79	7.44	6.98	6.02	5.62
5--9	6.55	4.91	8.27	6.47	7.35	6.06
10--14	6.86	5.47	8.66	6.99	7.85	6.69
15--19	7.15	6.51	8.11	7.66	7.31	7.23
20--24	6.05	6.44	6.29	6.43	5.34	5.35
25--29	5.72	5.72	6.16	5.67	5.34	4.71
30--34	6.54	5.39	6.65	5.70	5.99	4.88
35--39	8.05	5.80	7.99	5.79	7.55	5.59
40--44	8.95	6.56	8.30	6.30	8.28	6.08
45--49	8.20	7.92	6.99	7.67	7.44	7.53
50--54	7.22	8.82	6.08	8.08	6.60	8.61
55--59	5.16	7.99	4.49	6.86	4.98	7.50
60--64	4.30	7.01	3.89	6.18	4.39	6.84

65--69	3.86	4.86	3.41	4.09	4.12	4.76
70+	10.06	11.82	7.26	9.12	11.45	12.56
Total (%)	100.00	100.00	100.00	100.00	100.00	100.00
Total Number	150,855	146,055	61,805	57,615	22,105	20,390

Figure 1.15: Aging of Northwestern Ontario's Population



The share of individuals under the age of 19 and those in their prime working age (20-44) in Thunder Bay District declined from 25.9 and 35.3 percent in 2001 to 21.7 and 29.9 percent in 2011 respectively. During the same period, the share of seniors aged 65 and over increased from

13.9 percent to 16.7 percent. The same aging process has happened in Kenora and Rainy River districts.

Overall, the share of individuals below the age of 19 in Northwestern Ontario declined from 27.9 percent in 2001 to 23.7 percent in 2011. The share of those in their prime working age of 20 to 44 declined from 35.1 percent in 2001 to 29.6 percent in 2011. On the other hand, the share of seniors aged 65 years and over rose from 13.2 percent in 2001 to 15.8 percent in 2011.

Slower growth and aging of the population affect the labour force and hence Northwestern Ontario's ability to generate output and income. In fact, aging population affects virtually all other aspects of the regional economy too. It affects patterns of saving and household consumption and investment. It influences sales, production, and investment levels and its impact falls unevenly on different industries and sectors of the economy. Aging population also affects the tax bases from which the provincial and municipal governments draw revenue and influences demand for government program expenditures such as health care. 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? How much of each type of services and facilities do we require? These are important questions that we need to address in the coming years.

Part II: Demographic Change in Northwestern Ontario: The Next Three Decades

This part of the study provides population projections for Northwestern Ontario and its three districts. Population projections are provided for the total population as well as the Aboriginal population in Northwestern Ontario. Estimates for the total regional population are based on the Ontario Ministry of Finance projections. Estimates for the Aboriginal population are based on Northern Ontario's Demographic Model (NODM) developed by the author.

The projections provided in this part of the study will be the basis for labour force projections in the next part of the report. Before discussing the population projections, a few words regarding the Ontario Ministry of Finance projections are in order. First, the projections are based on the 2011 Census adjusted for net undercoverage. The Ministry of Finance's 2011 population estimates are about 15,000 greater than those reported by the 2011 census. The Ministry's estimates have adjusted for the undercoverage, especially of the Aboriginal population in Northwestern Ontario. Examination of the data reveals that there has been significant undercoverage of the Aboriginal population in Kenora district. About 12,387 of the omitted persons are from Kenora district and are likely from the Aboriginal communities that did not participate in the 2011 census.

Secondly, the Ministry's estimated parameters for fertility at the census division level are modelled to maintain the regional differences. The census division-to-province ratio for mean age at fertility in the most recent period is assumed to remain constant. Thirdly, the Ministry's mortality estimates at the census division level are developed using a ratio methodology. They apply Ontario-level mortality structure to each census division's age structure over the most recent three years of comparable data and calculate the expected number of deaths. Then, these estimates are compared to the actual annual number of deaths for each census division over this period to create ratios of actual-to-expected number of deaths. These ratios were then multiplied by provincial age-specific death rates to create death rates for each census division. These were then applied to the corresponding census division population to derive the number of deaths for each census division.¹¹

2.1. Population Projections for Northwestern Ontario

Based on Ontario's Ministry of Finance projections, Northwestern Ontario's total population is expected to decline from 239,772 in 2013 to 235,603 in 2041 (Table 2.1). As we noted above, the Ministry of Finance's estimate of Northwestern Ontario's population is about 15,000 higher than that reported in the 2011 census. The difference, according to the Ministry of Finance, is due to the undercoverage of the population in the region.

¹¹ See Ontario Population Projections, 2013-2041, Ontario Ministry of Finance, 2014.

Table 2.1: Population Projection for Northwestern Ontario

Year	0--19	20--44	45--64	65+	Total
2013	56,888	73,536	70,893	38,455	239,772
2014	56,113	73,216	70,494	39,690	239,513
2015	55,391	72,857	70,030	41,036	239,314
2016	54,780	72,344	69,655	42,407	239,186
2017	54,327	72,040	69,008	43,787	239,162
2018	54,128	71,635	68,136	45,352	239,251
2019	53,834	71,450	67,116	46,941	239,341
2020	53,666	71,058	66,086	48,617	239,427
2021	53,574	70,686	65,119	50,128	239,507
2022	53,538	70,404	63,733	51,906	239,581
2023	53,545	70,078	62,281	53,740	239,644
2024	53,512	69,728	60,948	55,502	239,690
2025	53,510	69,225	59,715	57,260	239,710
2026	53,467	68,835	58,387	59,014	239,703
2027	53,344	68,558	57,212	60,551	239,665
2028	53,238	68,244	56,007	62,103	239,592
2029	53,040	67,973	55,043	63,428	239,484
2030	52,761	67,706	54,290	64,583	239,340
2031	52,426	67,486	53,785	65,461	239,158
2032	52,227	67,090	53,491	66,132	238,940
2033	51,977	66,784	53,339	66,588	238,688
2034	51,750	66,347	53,285	67,020	238,402
2035	51,502	65,817	53,298	67,464	238,081
2036	51,240	65,371	53,150	67,969	237,730
2037	50,975	64,883	53,303	68,186	237,347
2038	50,696	64,473	53,448	68,325	236,942
2039	50,412	64,077	53,676	68,351	236,516
2040	50,136	63,699	53,818	68,416	236,069
2041	49,871	63,374	53,984	68,374	235,603

The aging of Northwestern Ontario's population is also evident from the Ministry's projections (Figure 2.1). The number of individuals under the age of 20 is expected to decline from 56,888 in 2013 to 49,871 in 2041. Their share declines from 23.7 percent in 2013 to 21.2 percent in 2041. The number of working age people (20 to 64) is expected to decline from 144,429 in 2013 to 117,358 in 2041, a decline of about 19.0 percent.¹² Their share of the total population declines from 60.24 percent in 2013 to 49.81 percent in 2041. As we will see in the next part of the study, this dramatic decline in the number of the working age population has important implications for

¹² We have focused on individuals aged 20 to 64 as the core working-age population since there has been a declining trend in the labour force participation rate of Ontario's youth in recent years primarily due to a significant rise in enrolment rates in postsecondary education institutions.

the future availability of a qualified labour force in the region. Figure 2.1 also shows that the number of seniors aged 65 and older is expected to increase from 38,455 in 2013 to 68,374 in 2041, an increase of about 80.0 percent. The share of seniors is expected to rise from 16.0 percent in 2013 to 29.0 percent in 2041. The aging of Northwestern Ontario's population will have an important impact on demand for publicly funded services such as health care in the region. We will examine demand for healthcare services later in this report.

Figure 2.1: Population Projections and Aging of Northwestern Ontario's Population

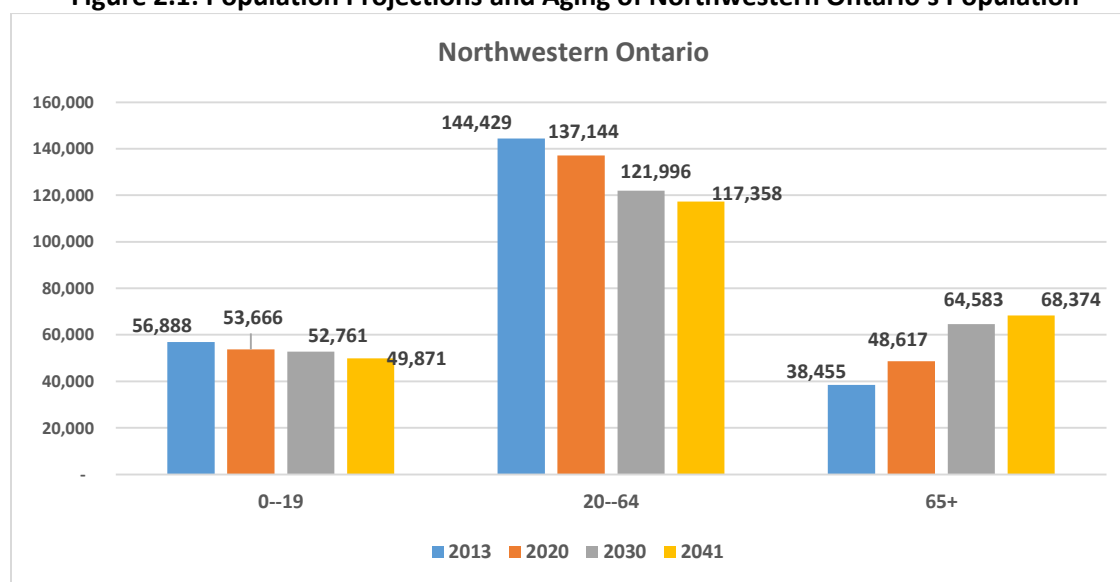


Table 2.2 and Figure 2.2 show the population projections for Thunder Bay District. The Ministry's population estimates for Thunder Bay district in 2013 are only slightly different from the one reported by the 2011 census (146,055). It appears that there has not been serious undercoverage of the population in this district. The district's total population is expected to decline slightly from 149,604 in 2013 to 145,822 in 2041, a decline of about 2.5 percent over a 28 year period.

Table 2.2: Population Projections for Thunder Bay District

Year	0--19	20--44	45--64	65+	Total
2013	31,044	46,193	46,374	25,993	149,604
2014	30,586	46,010	46,078	26,823	149,497
2015	30,144	45,787	45,728	27,748	149,407
2016	29,803	45,367	45,471	28,699	149,340
2017	29,566	45,106	44,971	29,684	149,327
2018	29,506	44,811	44,258	30,797	149,372
2019	29,336	44,687	43,475	31,917	149,415
2020	29,271	44,400	42,719	33,064	149,454
2021	29,262	44,101	42,023	34,102	149,488
2022	29,261	43,915	41,028	35,311	149,515
2023	29,307	43,668	40,043	36,517	149,535

2024	29,311	43,436	39,109	37,687	149,543
2025	29,328	43,046	38,280	38,881	149,535
2026	29,299	42,755	37,426	40,026	149,506
2027	29,254	42,472	36,715	41,013	149,454
2028	29,213	42,185	35,938	42,041	149,377
2029	29,095	41,912	35,369	42,896	149,272
2030	28,921	41,635	34,947	43,635	149,138
2031	28,758	41,355	34,648	44,212	148,973
2032	28,611	41,022	34,493	44,652	148,778
2033	28,434	40,746	34,452	44,922	148,554
2034	28,252	40,386	34,478	45,186	148,302
2035	28,056	39,974	34,526	45,462	148,018
2036	27,847	39,640	34,406	45,813	147,706
2037	27,635	39,272	34,501	45,960	147,368
2038	27,416	38,968	34,624	46,000	147,008
2039	27,196	38,678	34,778	45,976	146,628
2040	26,981	38,392	34,879	45,981	146,233
2041	26,772	38,157	34,969	45,924	145,822

As was the case with Northwestern Ontario's future population composition, Thunder Bay district's population will also be aging. The number of persons under the age of 20 is expected to decline from 31,044 in 2013 to 26,772 in 2041. The working age group between the ages of 20 and 64 is expected to decline from 92,567 in 2013 to 73,126 in 2041, a decline of about 21.0 percent. The number of seniors aged 65 and over is expected to climb from 25,993 in 2013 to 45,924 in 2041, a rise of about 77.0 percent. The share of seniors is also expected to rise from 17.4 percent in 2013 to 31.5 percent in 2041.

Figure 2.2: Population Projections and Aging of the Population in Thunder Bay District

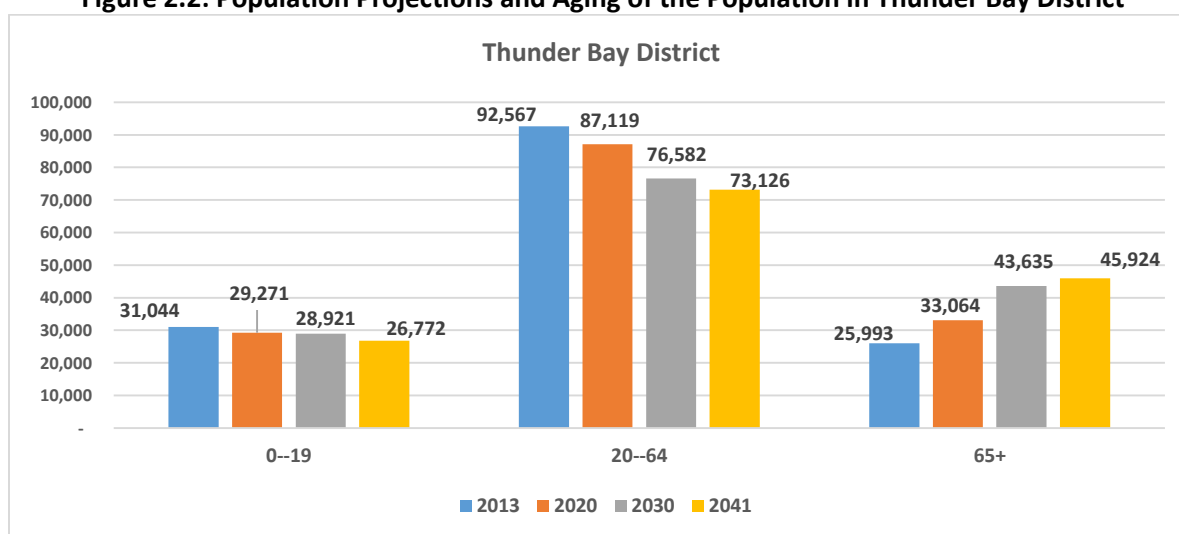


Table 2.3 and Figure 2.3 show population projections for Kenora district. Comparison of the 2013 population estimate and the 2011 census information reveals that the Ministry's population estimate is significantly greater than the census data (57,615 in 2011). This is because of a serious undercoverage of the Aboriginal population in Kenora district. Table 2.3 shows that the total population of Kenora district is expected to increase during the forecast period. This is primarily due to the significant share of the Aboriginal population in the district of Kenora.

Table 2.3: Population Projections for Kenora District

Year	0--19	20--44	45--64	65+	Total
2013	20,897	21,911	18,368	8,826	70,002
2014	20,681	21,850	18,330	9,136	69,997
2015	20,517	21,764	18,296	9,447	70,024
2016	20,328	21,758	18,253	9,746	70,085
2017	20,206	21,742	18,195	10,038	70,181
2018	20,137	21,700	18,090	10,389	70,316
2019	20,062	21,704	17,954	10,732	70,452
2020	20,021	21,657	17,780	11,129	70,587
2021	19,975	21,635	17,622	11,487	70,719
2022	19,952	21,621	17,363	11,912	70,848
2023	19,933	21,582	17,072	12,384	70,971
2024	19,937	21,482	16,833	12,836	71,088
2025	19,953	21,391	16,577	13,275	71,196
2026	19,974	21,307	16,271	13,747	71,299
2027	19,905	21,345	15,966	14,180	71,396
2028	19,862	21,350	15,655	14,619	71,486
2029	19,797	21,411	15,357	15,006	71,571
2030	19,722	21,455	15,146	15,328	71,651
2031	19,591	21,540	15,007	15,590	71,728
2032	19,573	21,502	14,934	15,793	71,802
2033	19,546	21,484	14,885	15,959	71,874
2034	19,525	21,445	14,858	16,116	71,944
2035	19,499	21,368	14,876	16,271	72,014
2036	19,472	21,302	14,906	16,404	72,084
2037	19,447	21,240	14,974	16,491	72,152
2038	19,418	21,184	15,036	16,583	72,221
2039	19,387	21,128	15,135	16,639	72,289
2040	19,359	21,088	15,200	16,708	72,355
2041	19,338	21,036	15,289	16,756	72,419

Despite the projected population increase, Kenora's population under the age of 20 is expected to decline slightly. Its working age population is also expected to decline from 40,279 in 2013 to 36,325 in 2041. Their share of the total population is expected to decline from 57.5 percent in

2013 to 50.2 percent in 2041. On the other side of the spectrum, the number of seniors is expected to nearly double during the forecast period.

Figure 2.3: Population Projections and Aging of the Population in Kenora District

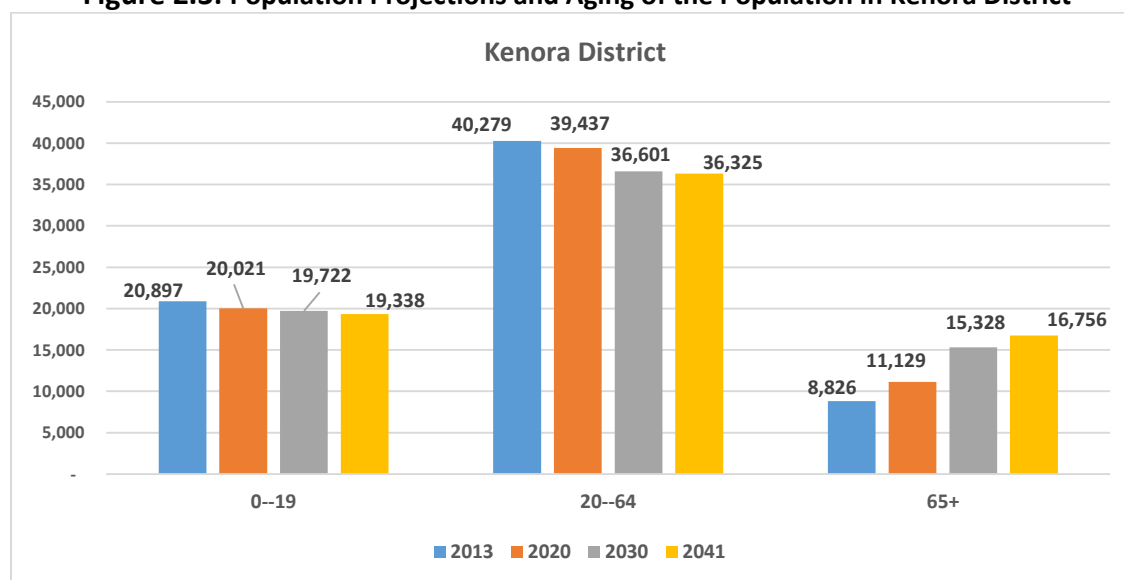


Table 2.4 and Figure 2.4 show population projections for Rainy River district. The Ministry's 2013 population estimate is very close to the 2011 census estimate of 20,390 suggesting the absence of any undercoverage in Rainy River district. The projections suggest that the Rainy River population is expected to decline from 20,166 in 2013 to 17,362 in 2041, a decline of about 13.9 percent.

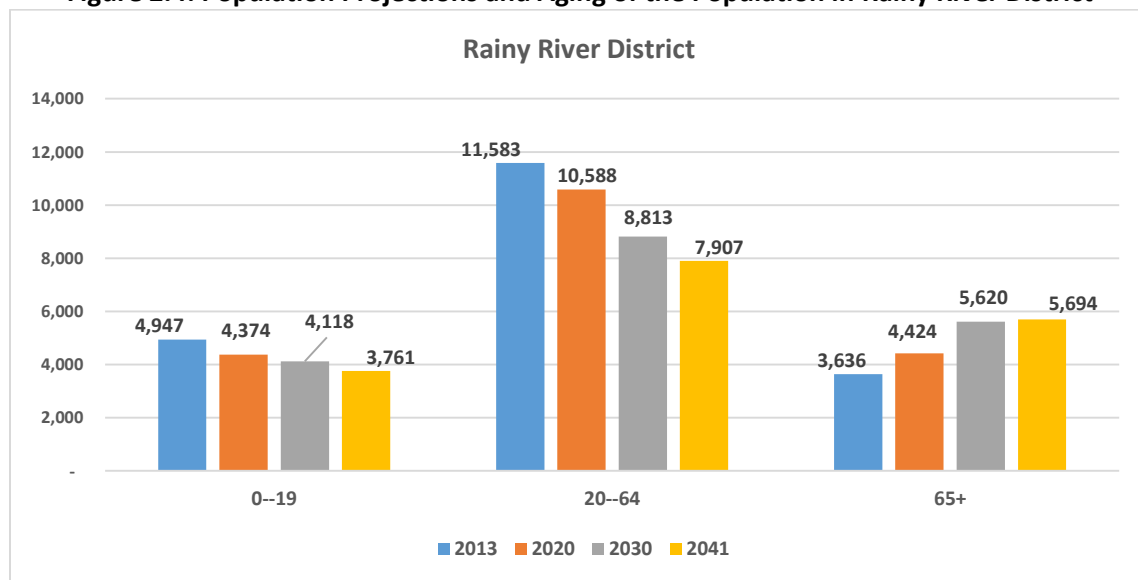
Table 2.4: Population Projections for Rainy River District

Year	0--19	20--44	45--64	65+	Total
2013	4,947	5,432	6,151	3,636	20,166
2014	4,846	5,356	6,086	3,731	20,019
2015	4,730	5,306	6,006	3,841	19,883
2016	4,649	5,219	5,931	3,962	19,761
2017	4,555	5,192	5,842	4,065	19,654
2018	4,485	5,124	5,788	4,166	19,563
2019	4,436	5,059	5,687	4,292	19,474
2020	4,374	5,001	5,587	4,424	19,386
2021	4,337	4,950	5,474	4,539	19,300
2022	4,325	4,868	5,342	4,683	19,218
2023	4,305	4,828	5,166	4,839	19,138
2024	4,264	4,810	5,006	4,979	19,059
2025	4,229	4,788	4,858	5,104	18,979
2026	4,194	4,773	4,690	5,241	18,898
2027	4,185	4,741	4,531	5,358	18,815

2028	4,163	4,709	4,414	5,443	18,729
2029	4,148	4,650	4,317	5,526	18,641
2030	4,118	4,616	4,197	5,620	18,551
2031	4,077	4,591	4,130	5,659	18,457
2032	4,043	4,566	4,064	5,687	18,360
2033	3,997	4,554	4,002	5,707	18,260
2034	3,973	4,516	3,949	5,718	18,156
2035	3,947	4,475	3,896	5,731	18,049
2036	3,921	4,429	3,838	5,752	17,940
2037	3,893	4,371	3,828	5,735	17,827
2038	3,862	4,321	3,788	5,742	17,713
2039	3,829	4,271	3,763	5,736	17,599
2040	3,796	4,219	3,739	5,727	17,481
2041	3,761	4,181	3,726	5,694	17,362

As is the case with the other districts, the Rainy River population is aging. The number of persons under the age of 20 is expected to decline from 4,947 in 2013 to 3,761 in 2041, a decline of about 24.0 percent. The number of working age population is expected to decline from 11,583 in 2013 to 7,907 in 2041, a decline of about 31.7 percent. During the same forecast period, the number of seniors is expected to rise from 3,636 in 2013 to 5,694 in 2041, an increase of about 57.0 percent.

Figure 2.4: Population Projections and Aging of the Population in Rainy River District



2.2: Aboriginal Population Projection for Northwestern Ontario

This part of the report employs Northern Ontario's demographic model, which is based on the Cohort Component method, to make projections of the Aboriginal population in Northwestern Ontario.¹³ The base year data for the Aboriginal population projection is from the 2011 National Household Survey (NHS). In projecting the future Aboriginal population, we have not adjusted for the undercoverage of the Aboriginal people in the region. As mentioned above, there were about 12,387 omitted persons in Kenora district alone. So our projections should be considered conservative. We have also assumed zero net migration of the Aboriginal people during the forecast period. The existing evidence suggests relatively low mobility among the Aboriginal population in the region. The fertility rate for the Aboriginal population is assumed to equal that in rural Northwestern Ontario. The mortality rate is assumed to equal the rates for the general population of Canada based on the 2011 census.

Based on the above information, Table 2.5 shows population projections for the Aboriginal people in Northwestern Ontario during the next three decades.

Table 2.5: Aboriginal Population Projections for Northwestern Ontario

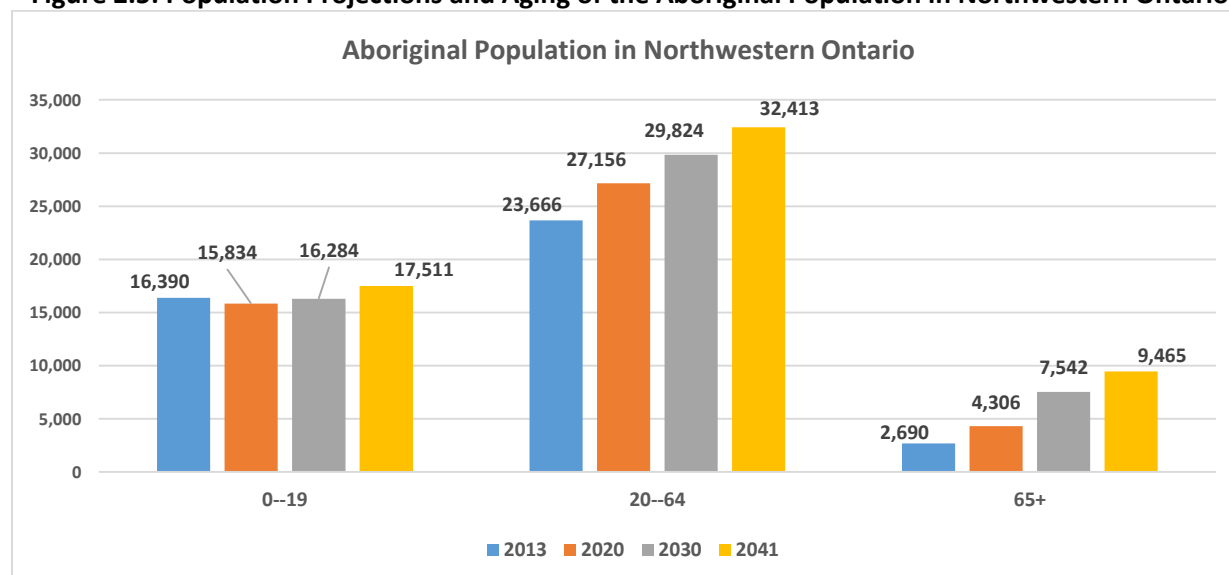
Year	0--19	20--44	45--64	65+	Total
2013	16,390	14,498	9,167	2,690	42,746
2014	16,226	14,855	9,389	2,899	43,370
2015	16,095	15,212	9,528	3,174	44,009
2016	15,957	15,550	9,751	3,400	44,657
2017	15,892	15,907	9,865	3,646	45,310
2018	15,882	16,239	10,032	3,820	45,973
2019	15,890	16,527	10,171	4,047	46,634
2020	15,834	16,884	10,271	4,306	47,296
2021	15,911	17,083	10,344	4,617	47,956
2022	15,810	17,505	10,272	5,028	48,616
2023	15,896	17,748	10,235	5,398	49,277
2024	16,015	17,951	10,206	5,761	49,934
2025	16,127	18,125	10,197	6,133	50,582
2026	16,276	18,284	10,206	6,449	51,215
2027	16,225	18,533	10,358	6,724	51,839
2028	16,285	18,826	10,300	7,042	52,453
2029	16,319	19,114	10,366	7,258	53,057
2030	16,284	19,516	10,308	7,542	53,650
2031	16,367	19,770	10,223	7,870	54,229
2032	16,541	19,968	10,219	8,068	54,797
2033	16,704	20,155	10,206	8,289	55,355
2034	16,855	20,114	10,435	8,492	55,896
2035	16,987	20,115	10,655	8,671	56,428

¹³ For a complete discussion of this model see my report entitled "It's what you know (and where you can go), Human capital and agglomeration effects on demographic trends in Northern Ontario" prepared for the Northern Ontario Policy Institute, 2015.

2036	17,101	20,158	10,808	8,879	56,947
2037	17,205	20,137	11,115	9,000	57,457
2038	17,292	20,042	11,521	9,101	57,956
2039	17,373	19,961	11,889	9,221	58,444
2040	17,444	19,901	12,241	9,334	58,921
2041	17,511	19,825	12,588	9,465	59,388

Table 2.5 and Figure 2.5 show that Northwestern Ontario's Aboriginal population is expected to rise from 42,746 in 2013 to 59,388 in 2041, a growth rate of about 39.0 percent. In fact, the number of persons in all age categories is expected to rise during the forecast period. The number of working age individuals will increase from 23,666 in 2013 to 32,413 in 2041, a growth rate of about 37.0 percent. The number of seniors aged 65 and older is expected to increase from 2,690 in 2013 to 9,465 in 2041, a growth rate of about 252.0 percent.

Figure 2.5: Population Projections and Aging of the Aboriginal Population in Northwestern Ontario



The Aboriginal population is not only expected to increase in size, but their share of Northwestern Ontario's population is also expected to increase. As Figure 2.6 shows, the share of the Aboriginal population is expected to rise from 17.8 percent in 2013 to 25.2 percent in 2041.

Figure 2.6: Rising Share of the Aboriginal Population in Northwestern Ontario (%)

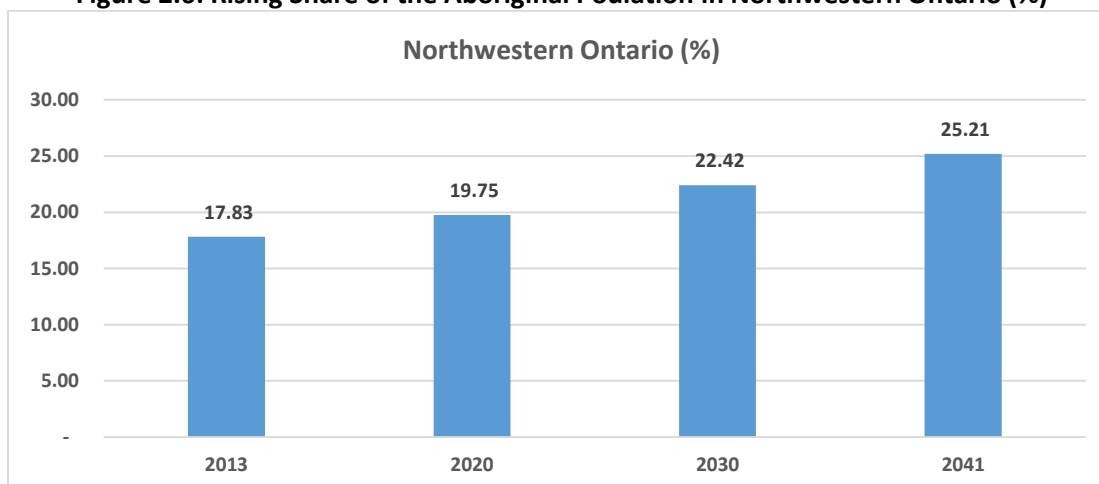
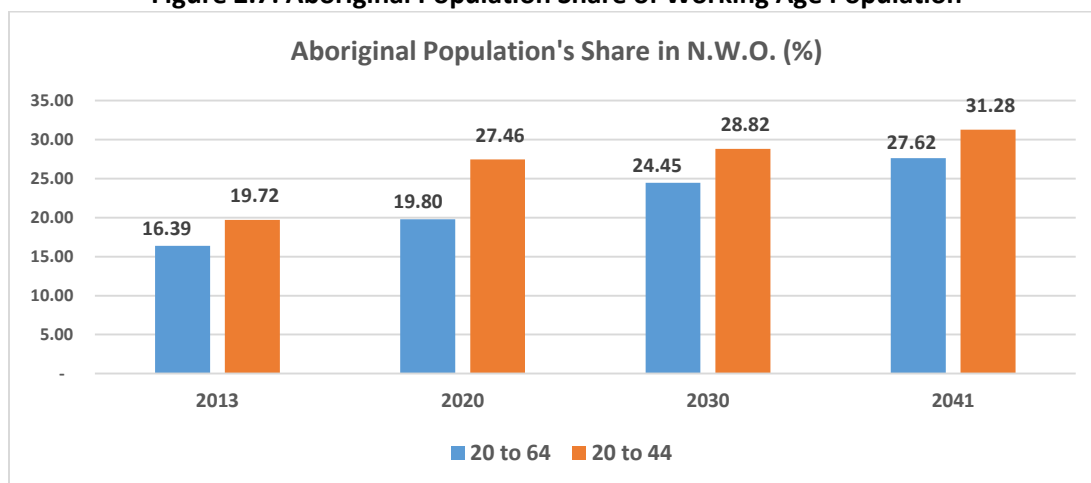


Figure 2.7 shows that the Aboriginal population will comprise a significant share of the working age population in Northwestern Ontario in the coming years. Their share of the prime working age population is expected to rise from 19.7 percent in 2013 to 31.3 percent in 2041. In other words, about a third of individuals in the prime working age group will be of Aboriginal origin in the coming years. Similarly, the Aboriginal population will account for about 27.6 percent of the working age population by 2041.

Figure 2.7: Aboriginal Population Share of Working Age Population



2.3: Aboriginal Population Projection for Thunder Bay District

Table 2.6 and Figures 2.8 and 2.9 show the population projections for the Aboriginal people in Thunder Bay district. They show that the Aboriginal population in Thunder Bay district is expected to increase from 18,425 in 2013 to 26,101 in 2041, a growth rate of about 42.0 percent. The number of individuals under the age of 20 is expected to increase from 7,064 in 2013 to 7,907 in 2041. The Aboriginal population's share of the population under the age of 20 is expected to increase from 22.8 percent in 2013 to 29.5 percent in 2041. Similarly, the number of working age individuals between the ages of 20 and 64 is expected to rise from 10,196 in 2013 to 14,101 in 2041. The Aboriginal population's share of the working age group is expected to increase from 11.0 percent in 2013 to 19.3 percent in 2041. Finally, the number of Aboriginal seniors is expected to rise from 1,165 in 2013 to 4,093 in 2041. Their share of total seniors in Thunder Bay district is expected to rise from 4.5 percent in 2013 to 8.9 percent in 2041.

Table 2.6: Aboriginal Population Projection for Thunder Bay District

Year	0--19	20--44	45--64	65+	Total
2013	7,064	6,246	3,950	1,165	18,425
2014	7,013	6,395	4,049	1,254	18,709
2015	6,975	6,547	4,107	1,372	19,001
2016	6,933	6,690	4,202	1,471	19,296
2017	6,925	6,842	4,250	1,576	19,594
2018	6,938	6,984	4,323	1,652	19,897
2019	6,958	7,107	4,383	1,750	20,199
2020	6,950	7,261	4,427	1,863	20,502
2021	7,000	7,349	4,457	1,998	20,803
2022	6,976	7,528	4,426	2,175	21,106
2023	7,034	7,626	4,415	2,334	21,409
2024	7,107	7,711	4,400	2,493	21,710
2025	7,175	7,783	4,397	2,653	22,008
2026	7,259	7,851	4,400	2,789	22,299
2027	7,257	7,953	4,470	2,906	22,586
2028	7,302	8,079	4,444	3,045	22,870
2029	7,333	8,205	4,472	3,138	23,148
2030	7,339	8,375	4,447	3,261	23,422
2031	7,390	8,488	4,410	3,402	23,690
2032	7,469	8,589	4,409	3,487	23,954
2033	7,543	8,685	4,401	3,584	24,213
2034	7,611	8,683	4,497	3,673	24,465
2035	7,670	8,700	4,594	3,749	24,713
2036	7,722	8,734	4,660	3,839	24,955
2037	7,769	8,741	4,793	3,890	25,193
2038	7,808	8,717	4,967	3,935	25,427
2039	7,845	8,703	5,120	3,988	25,656

2040	7,877	8,698	5,268	4,038	25,881
2041	7,907	8,684	5,417	4,093	26,101

Figure 2.8: Aboriginal Population by Age Category in Thunder Bay District

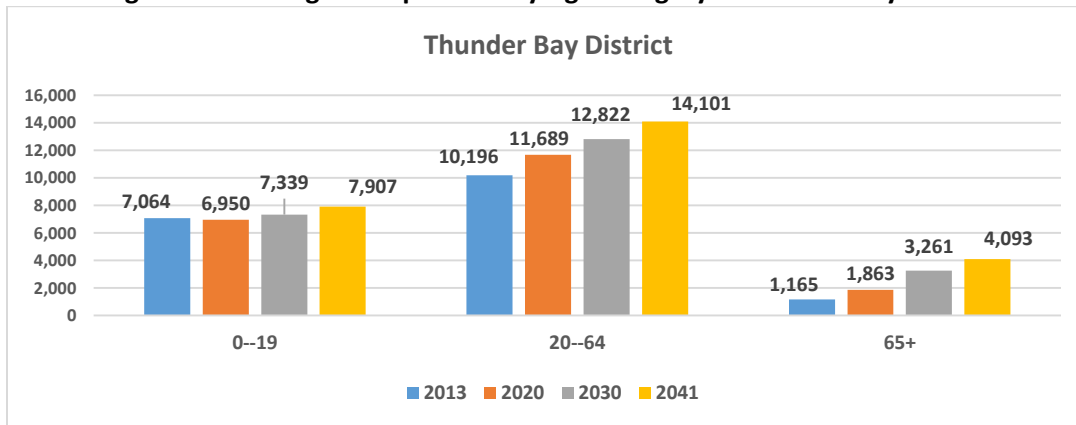
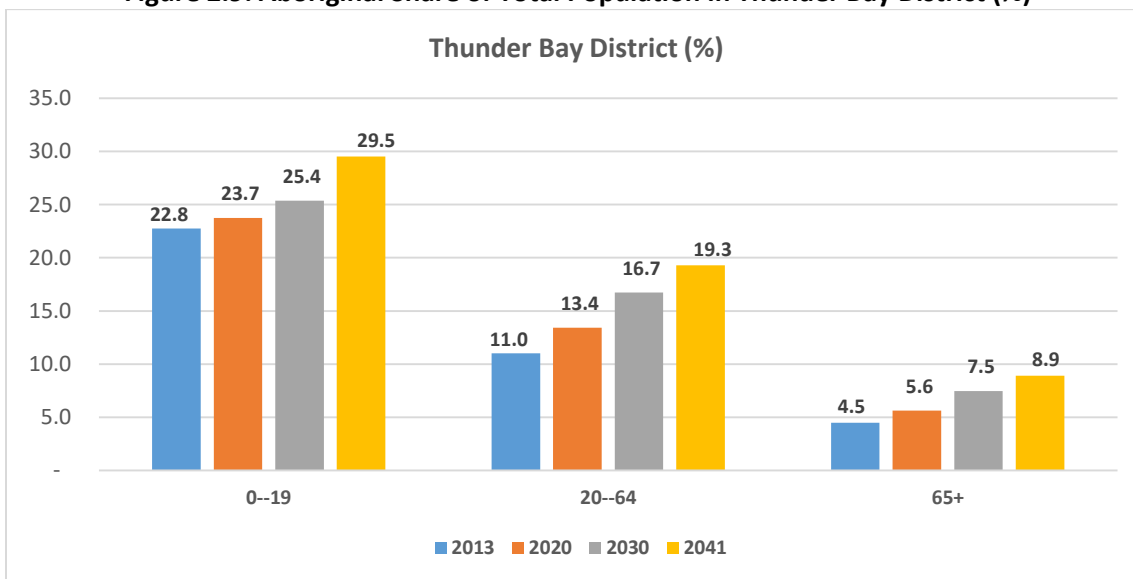


Figure 2.9: Aboriginal Share of Total Population in Thunder Bay District (%)



2.4: Aboriginal Population Projection for Kenora District

Table 2.7 shows population projections for Kenora district. We have used population data from the 2011 NHS and have not adjusted it for the undercoverage of the Aboriginal population in Kenora district. Therefore, our population projections are conservative.

Table 2.7: Aboriginal Population Projection for Kenora District

Year	0--19	20--44	45--64	65+	Total
2013	8,043	7,116	4,500	1,315	20,974
2014	7,947	7,296	4,606	1,420	21,269
2015	7,867	7,473	4,675	1,554	21,569
2016	7,785	7,640	4,785	1,664	21,874
2017	7,737	7,817	4,842	1,785	22,181
2018	7,718	7,981	4,923	1,870	22,493
2019	7,709	8,123	4,991	1,981	22,803
2020	7,668	8,298	5,040	2,108	23,114
2021	7,693	8,394	5,078	2,259	23,424
2022	7,627	8,604	5,041	2,461	23,733
2023	7,653	8,728	5,019	2,643	24,043
2024	7,694	8,830	5,007	2,819	24,351
2025	7,732	8,918	5,002	3,002	24,654
2026	7,789	8,996	5,007	3,157	24,949
2027	7,748	9,122	5,078	3,293	25,241
2028	7,763	9,266	5,050	3,448	25,527
2029	7,765	9,406	5,083	3,554	25,809
2030	7,731	9,606	5,055	3,692	26,085
2031	7,760	9,728	5,013	3,853	26,354
2032	7,842	9,813	5,011	3,952	26,618
2033	7,920	9,891	5,007	4,058	26,876
2034	7,991	9,859	5,121	4,157	27,127
2035	8,054	9,846	5,228	4,245	27,373
2036	8,108	9,855	5,303	4,347	27,613
2037	8,157	9,831	5,452	4,407	27,848
2038	8,198	9,771	5,653	4,456	28,078
2039	8,237	9,714	5,837	4,514	28,302
2040	8,271	9,668	6,013	4,569	28,521
2041	8,302	9,616	6,184	4,633	28,735

Table 2.7 shows that the Aboriginal population in Kenora district is expected to increase from 20,974 in 2013 to 28,735 in 2041, a growth rate of about 37.0 percent. As we saw above, based on the Ministry of Finance projections, Kenora's total population is expected to increase by 3.5 percent during the above period. In other words, the Aboriginal population is expected to grow much faster than the total population in the district. Therefore, their share of the total population will increase over time.

Figures 2.10 and 2.11 show the number and share of the Aboriginal population in Kenora district over the projection period. The number of Aboriginal persons under the age of 20 is expected to remain relatively constant during 2013-2041. Their share of the total population, however, is expected to rise from 38.5 percent in 2013 to 42.9 percent in 2041. The number of working age Aboriginal persons is expected to rise from 11,616 in 2013 to 15,800 in 2041. Their share of the

total working age population is expected to increase from 28.8 percent in 2013 to 43.5 percent in 2041.

The number of Aboriginal seniors age 65 years and over is expected to rise from 1,315 in 2013 to 4,633 in 2041, a growth of about 252.0 percent. The Aboriginal seniors' share of the total population of seniors in Kenora district is expected to increase from 14.9 percent in 2013 to 27.7 percent in 2041.

Figure 2.10: Aboriginal Population by Age Category in Kenora District

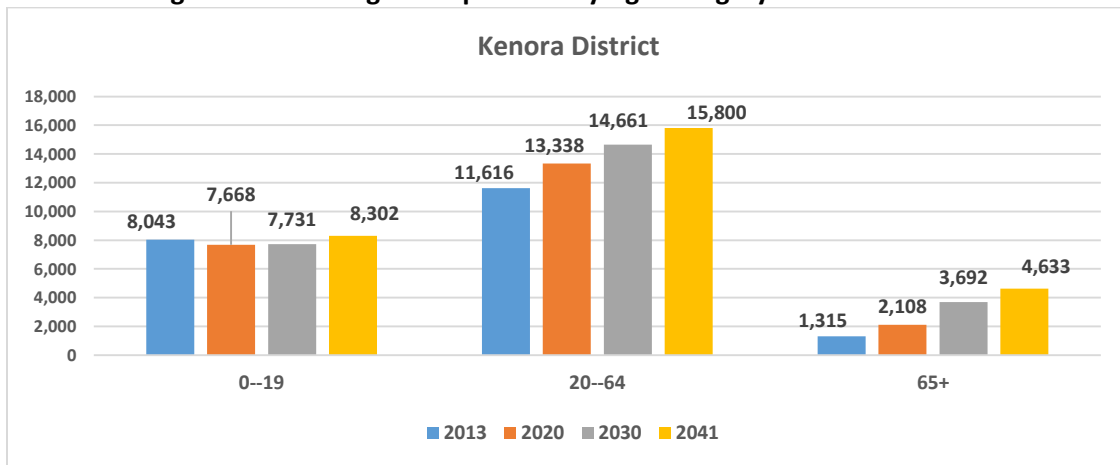
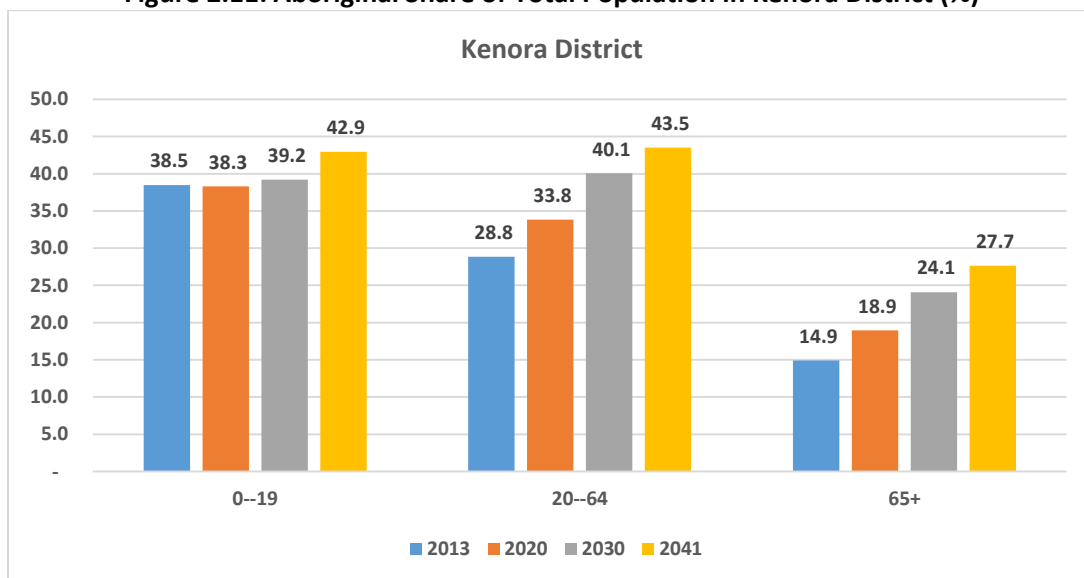


Figure 2.11: Aboriginal Share of Total Population in Kenora District (%)



2.5: Aboriginal Population Projection for Rainy River District

Table 2.8 shows that the Aboriginal population in Rainy River district is expected to rise from 4,895 in 2013 to 6,771 in 2041, a growth of about 38.3 percent. According to the Ministry of Finance projections, the total population of Rainy River district is expected to decline by 13.9 percent. This implies that the share of the Aboriginal population in the district is expected to rise significantly during the forecast period.

Table 2.8: Aboriginal Population Projection for Rainy River District

Year	0--19	20--44	45--64	65+	Total
2013	1,877	1,661	1,050	308	4,895
2014	1,857	1,702	1,075	332	4,966
2015	1,841	1,743	1,091	363	5,038
2016	1,824	1,781	1,117	389	5,111
2017	1,816	1,823	1,130	417	5,185
2018	1,813	1,861	1,149	437	5,260
2019	1,813	1,894	1,165	463	5,335
2020	1,806	1,935	1,176	493	5,410
2021	1,814	1,957	1,185	528	5,484
2022	1,801	2,006	1,176	575	5,559
2023	1,810	2,034	1,172	618	5,633
2024	1,822	2,057	1,169	659	5,707
2025	1,834	2,077	1,168	702	5,781
2026	1,849	2,096	1,169	738	5,852
2027	1,842	2,125	1,186	770	5,922
2028	1,848	2,158	1,179	806	5,992
2029	1,851	2,191	1,187	831	6,060
2030	1,846	2,237	1,180	863	6,126
2031	1,854	2,266	1,171	901	6,192
2032	1,874	2,288	1,170	923	6,256
2033	1,893	2,308	1,169	949	6,318
2034	1,910	2,303	1,195	972	6,379
2035	1,925	2,302	1,220	992	6,439
2036	1,938	2,306	1,238	1,016	6,497
2037	1,949	2,302	1,273	1,030	6,555
2038	1,959	2,291	1,319	1,042	6,611
2039	1,968	2,280	1,362	1,055	6,665
2040	1,976	2,272	1,402	1,068	6,719
2041	1,984	2,262	1,442	1,083	6,771

Figures 2.12 and 2.13 show the number of Aboriginal individuals under the age of 20 is expected to rise from 1,877 in 2013 to 1,984 in 2041. Their share of the total population under 20 is expected to rise from 37.9 percent in 2013 to 52.8 percent in 2041. The number of working age Aboriginal people is expected to increase from 2,710 in 2013 to 3,704 in 2041, an increase of

about 37.0 percent. Their share of the working age population in the district is expected to rise from 49.9 percent in 2013 to 88.6 percent in 2041. The number of Aboriginal seniors is also expected to rise from 308 in 2013 to 1,083 in 2041. Their share of the senior population in the district is expected to climb from 5.0 percent in 2013 to 29.1 percent in 2041.

Figure 2.12: Aboriginal Population by Age Category in Rainy River District

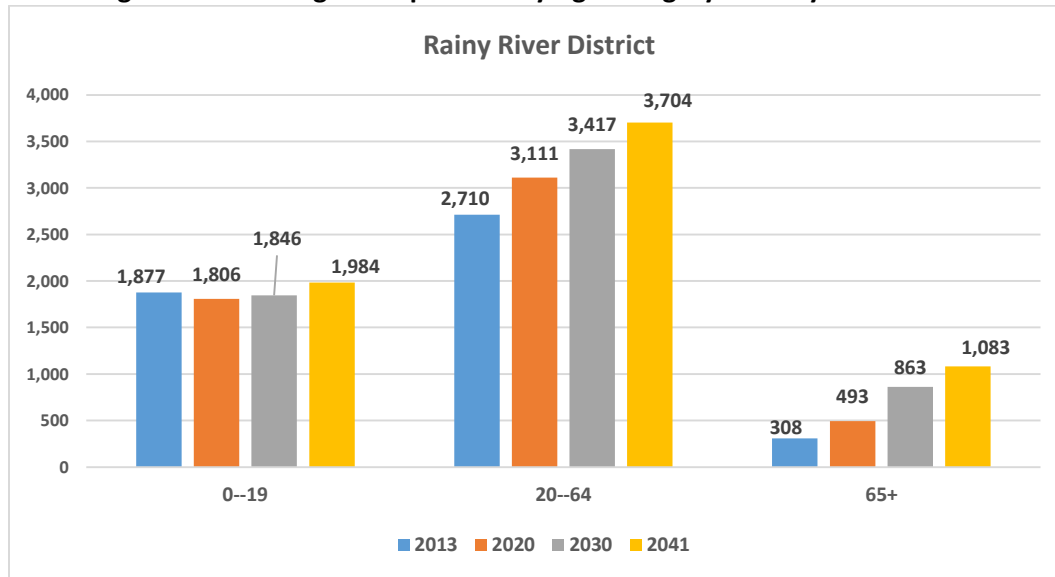
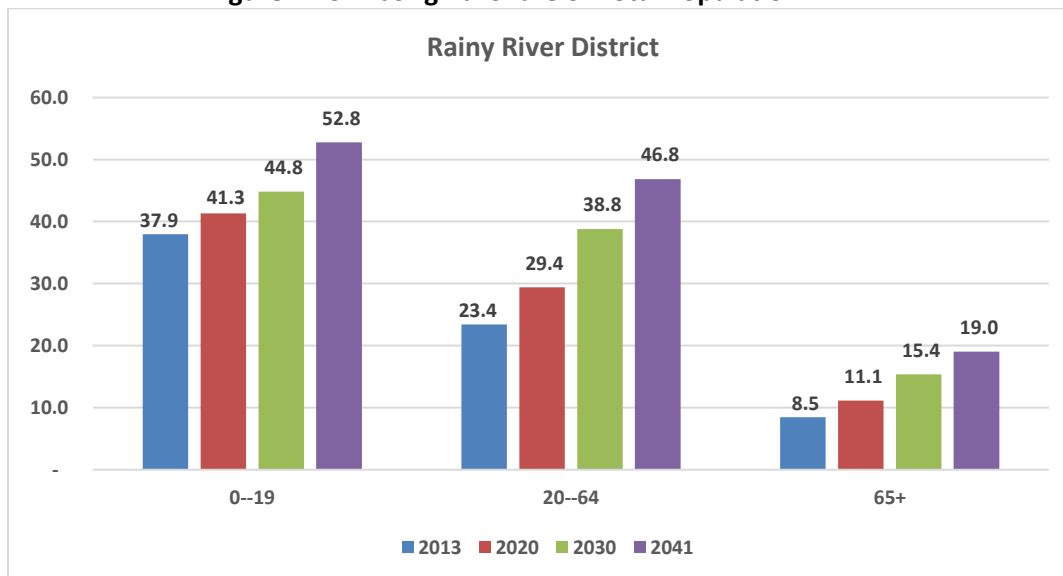


Figure 2.13: Aboriginal Share of Total Population



Part III: Northwestern 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.

Part II of the study showed that the Aboriginal population represents a growing segment of Northwestern Ontario's population. As we will see later in the report, they will also encompass a growing segment of the workforce in Northwestern Ontario. However, there exists a significant gap between the level of educational achievement of Aboriginal individuals and the general population. This education gap results in a severe labour market outcome disparity which influences productivity and the future productive capacity of Northwestern Ontario's labour force.

This part of the study examines past, present and future labour market trends in Northwestern Ontario. The data used in this part come from the 2001 census and 2011 National Household Survey (NHS).

3.1. Labour Market Trends in Northwestern Ontario

Table 3.1 shows various labour market indicators for Northwestern Ontario during 2001-2011. The total core working-age population (ages 15 to 64) in Northwestern Ontario declined from 154,295 in 2001 to 148,195 in 2011, a decline of about 4.0 percent. As a result, the number of individuals in the labour force fell from 116,915 in 2001 to 108,780 in 2011, a decline of about 7.0 percent. The labour force participation and employment rates among men dropped from 80.6 and 71.5 percent in 2001 to 74.7 and 65.3 percent in 2011. These rates are significantly below the Ontario average participation and employment rates of about 79.6 and 72.9 percent in 2001 to 2011 respectively. On the other hand, the labour force participation and employment rates among women increased from 70.9 and 65.3 percent in 2001 to 72.1 and 66.4 percent in 2011 respectively. These rates are very close to the provincial average of about 72.6 and 66.5 percent respectively.

The Ontario Ministry of Finance reports that, "The most significant trend driving the aggregate labour force participation rate in Ontario has been the increase in the number of women in the workforce. Labour force participation rates for adult women have risen dramatically, from 57.0 percent in 1976 to 82.0 percent in 2013."¹⁴

¹⁴ Ontario Ministry of Finance, "Ontario's Long-Term Report on the Economy", 2014.

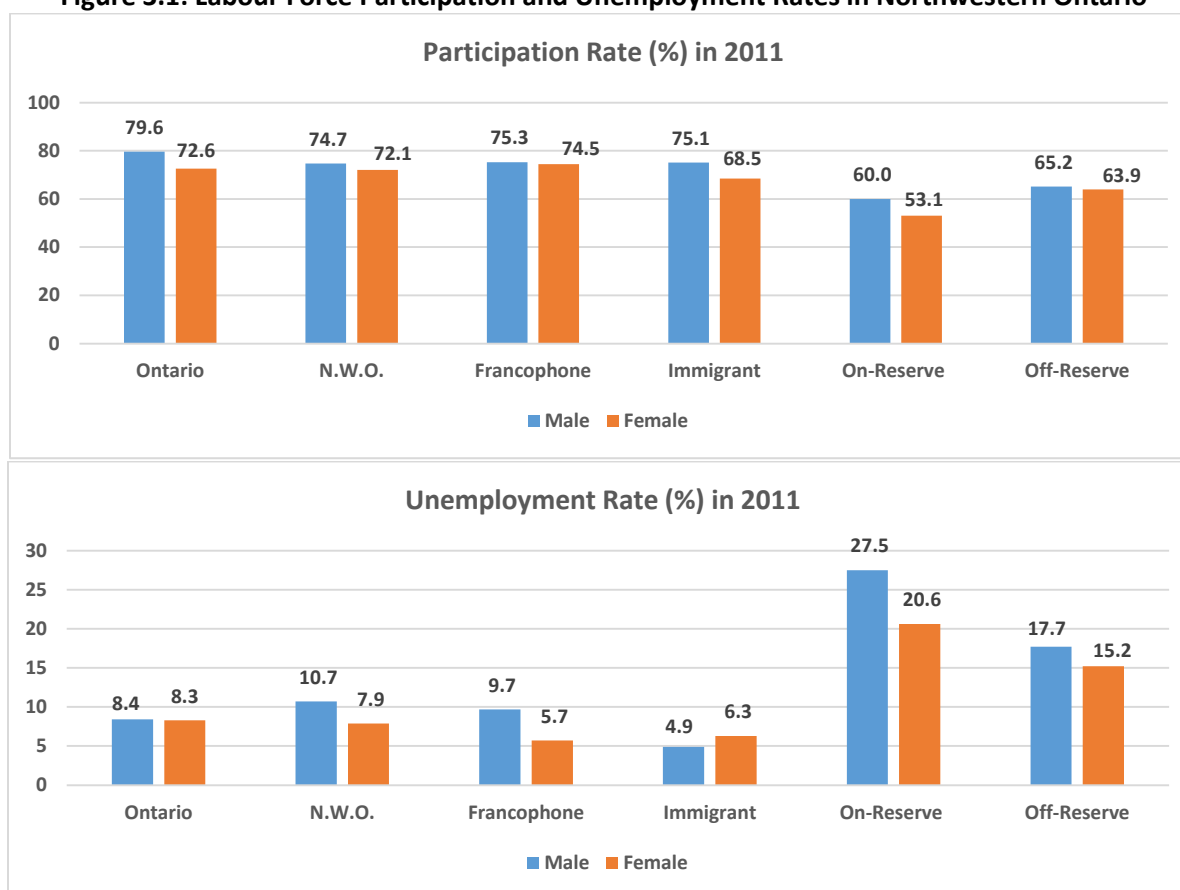
Table 3.1: Labour Market Trends in Northwestern Ontario

Labour Market Outcome	Men	Men	Women	Women
Northwestern Ontario	2001	2011	2001	2011
Total population 15 to 64 years of age	77,600	74,200	76,695	73,995
In the labour force	62,540	55,425	54,375	53,355
Employed	55,475	49,485	50,050	49,135
Unemployed	7,070	5,940	4,325	4,220
Not in the labour Force	15,060	18,780	22,320	20,640
Participation Rate	80.60	74.70	70.90	72.10
Employment Rate	71.50	66.70	65.30	66.40
Unemployment Rate	11.30	10.70	8.00	7.90
Francophone Population	2001	2011	2001	2011
Total population 15 to 64 years of age	3,230	2,045	2,935	2,235
In the labour force	2,690	1,540	2,120	1,665
Employed	2,400	1,385	1,985	1,570
Unemployed	290	150	140	95
Not in the labour Force	540	510	815	575
Participation Rate	83.40	75.30	72.40	74.50
Employment Rate	74.10	68.00	67.60	70.00
Unemployment Rate	10.80	9.70	6.40	5.70
Immigrant Population	2001	2011	2001	2011
Total population 15 to 64 years of age	6,235	4,110	6,185	4,510
In the labour force	5,010	3,085	4,090	3,080
Employed	4,685	2,940	3,920	2,885
Unemployed	325	145	180	195
Not in the labour Force	1,225	1,030	2,095	1,425
Participation Rate	80.40	75.10	66.20	68.50
Employment Rate	75.10	71.30	63.40	64.00
Unemployment Rate	6.50	4.90	4.30	6.30
Aboriginal Population	2001	2011	2001	2011
Total population 15 to 64 years of age	10,805	13,075	11,675	13,655
In the labour force	7,680	8,235	6,770	8,150
Employed	5,785	6,450	5,570	6,760
Unemployed	1,900	1,780	1,195	1,385
Not in the labour Force	3,125	4,840	4,905	5,505
Participation Rate	71.00	63.00	58.00	59.70
Employment Rate	53.50	49.30	47.80	49.50
Unemployment Rate	24.70	21.70	17.70	17.10

The unemployment rate among men declined from 11.3 percent in 2001 to 10.7 percent in 2011. However, the rate was still higher than the provincial average of about 8.4 percent in 2011. On the other hand, the unemployment rate among Northwestern Ontario women edged down from

8.0 percent in 2001 to 7.9 percent in 2011. This rate is below the provincial unemployment rate of about 8.3 percent in 2011 (Figure 3.1).

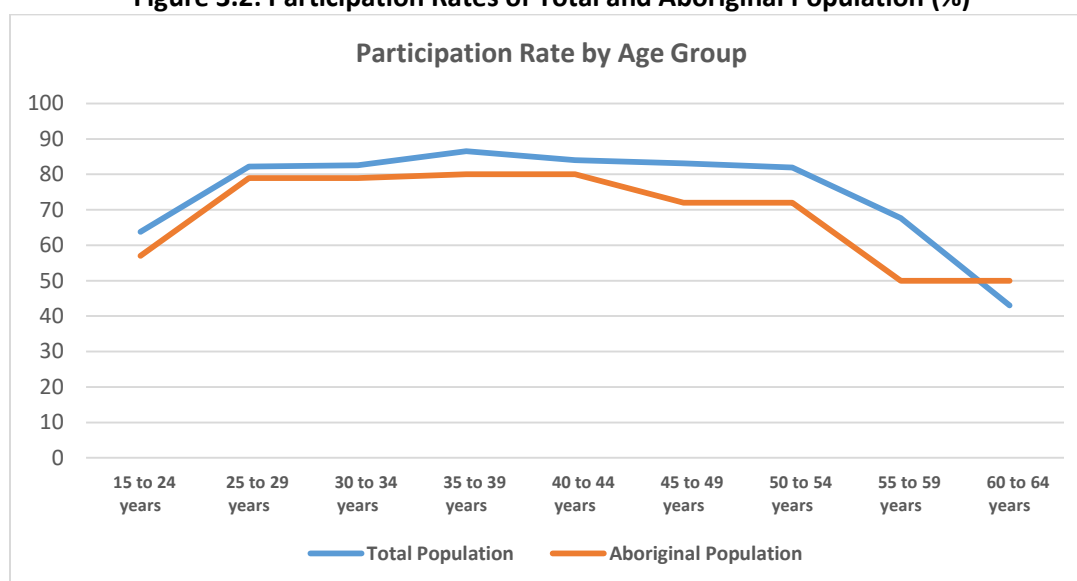
Figure 3.1: Labour Force Participation and Unemployment Rates in Northwestern Ontario



The labour force participation and employment rates among Francophones are slightly higher and their unemployment rate is slightly lower than the regional average. The labour force participation and employment rates of immigrant men are slightly higher while those of immigrant women are slightly lower than the regional average. The unemployment rates of immigrant men and women are lower than the regional average. The labour force participation and employment rates of Aboriginal men declined from 71.0 and 53.5 percent in 2001 to 63.0 and 49.3 percent in 2011 respectively. On the other hand, the participation and employment rates among Aboriginal women increased from 58.0 and 47.8 percent in 2001 to 59.7 and 49.5 percent in 2011 respectively. The unemployment rate among Aboriginal men declined from 24.7 percent in 2001 to 21.7 percent in 2011. This decline can be partly attributed to the fact that some of the previously unemployed persons stopped participating in the labour force. The unemployment rate among Aboriginal women also declined slightly from 17.7 percent in 2001 to 17.1 percent in 2011.

In general, Aboriginals tend to underperform in the labour market relative to non-Aboriginal peoples. The labour force participation rate among Aboriginals is below the regional averages (Figure 3.2). They are seriously underrepresented in the labour force. Their unemployment rates are also significantly higher than the regional averages. In fact, the lower labour force participation rate is partly attributable to the presence of the high unemployment rate among the Aboriginal workforce. It is also partly related to the fact that the level of educational attainment of the Aboriginal labour force is below the regional average. We will estimate the human capital composition index for the Aboriginal labour force later in this report.

Figure 3.2: Participation Rates of Total and Aboriginal Population (%)



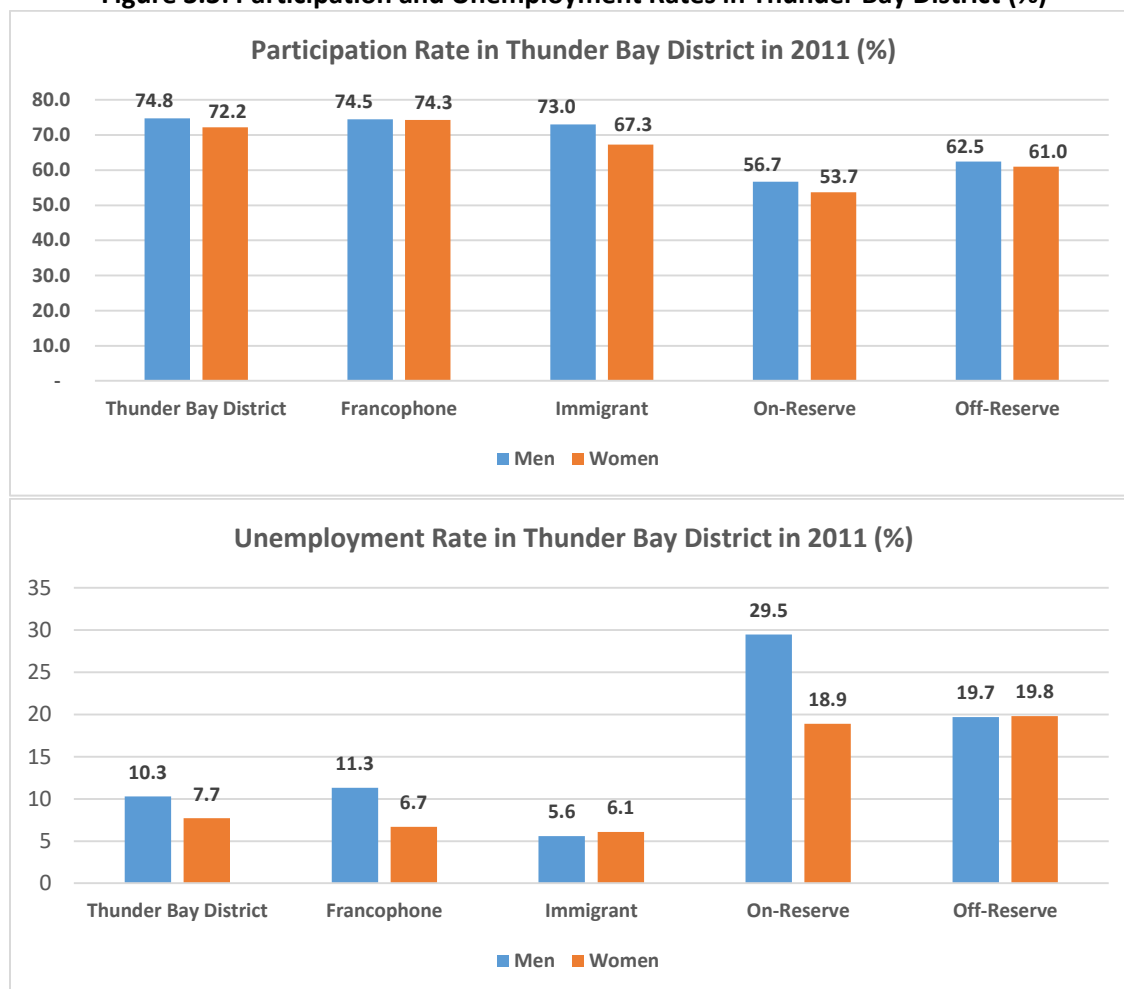
3.2. Labour Market Trends in Thunder Bay District

Table 3.2 and Figure 3.3 show labour market trends among the population aged 15 to 64 in Thunder Bay district. The total population and labour force declined slightly during 2001-2011. The participation and employment rates declined among men but rose among women during the same period. On the other hand, the unemployment rate declined slightly for men while it increased marginally for women.

The participation and employment rates among Francophone men declined but rose among Francophone women. A similar trend is observed for the immigrant population. The participation and unemployment rates among immigrants were lower than the regional averages. The participation and employment rates among Aboriginals are significantly lower than the regional averages. There is also a significant difference between the on-reserve and off-reserve labour force. The unemployment rate among the on-reserve Aboriginal labour force averages about 29.5 percent and reaches as high as 66.7 percent in some reserves (e.g., Osaburgh 63A). The unemployment rate among the off-reserve Aboriginal workforce averages about 19.7 percent compared to the regional average of about 9.0 percent.

Table 3.2: Labour Market Trends in Thunder Bay District

Labour Market Outcome	2001	2011	2001	2011
Thunder Bay District	Men	Men	Women	Women
Total population 15 to 64 years of age	50,445	49,205	50,160	49,255
In the labour force	40,755	36,800	35,730	35,560
Employed	36,290	33,025	33,130	32,820
Unemployed	4,460	3,775	2,600	2,745
Not in the labour Force	9,695	12,405	14,430	13,695
Participation Rate	80.80	74.80	71.20	72.20
Employment Rate	71.90	67.10	66.00	66.60
Unemployment Rate	10.90	10.30	7.30	7.70
Francophone Population	2001	2011	2001	2011
Total population 15 to 64 years of age	2,525	1,665	2,395	1,810
In the labour force	2,095	1,240	1,740	1,345
Employed	1,870	1,100	1,615	1,255
Unemployed	225	135	125	90
Not in the labour Force	430	430	650	465
Participation Rate	83.00	74.50	72.70	74.30
Employment Rate	73.90	66.10	67.40	69.30
Unemployment Rate	11.00	11.30	7.20	6.70
Immigrant Population	2001	2011	2001	2011
Total population 15 to 64 years of age	4,750	3,205	4,585	3,265
In the labour force	3,755	2,340	2,940	2,200
Employed	3,480	2,205	2,795	2,065
Unemployed	275	135	140	135
Not in the labour Force	995	875	1,645	1,070
Participation Rate	79.00	73.00	64.10	67.30
Employment Rate	73.30	68.80	61.00	63.10
Unemployment Rate	7.30	5.60	4.80	6.10
Aboriginal Population	2001	2011	2001	2011
Total population 15 to 64 years of age	3,840	5,350	4,520	6,025
In the labour force	2,795	3,285	2,555	3,595
Employed	2,070	2,575	2,120	2,890
Unemployed	720	710	430	700
Not in the labour Force	1,050	2,060	1,965	2,435
Participation Rate	72.80	61.40	56.50	59.70
Employment Rate	54.00	48.10	46.90	48.00
Unemployment Rate	25.80	21.60	17.00	19.60

Figure 3.3: Participation and Unemployment Rates in Thunder Bay District (%)

3.3. Labour Market Trends in Kenora District

Table 3.3 and Figure 3.4 show labour market trends among the population aged 15 to 64 in Kenora district. The labour force participation and employment rates declined for men but increased for women during 2001-2011. Those rates are very similar to the ones for Northwestern Ontario. The unemployment rate declined marginally for both men and women during the same period. However, the unemployment rates were higher for both men and women than the rates for Northwestern Ontario.

The sample size for the Francophone population is too small to make a general inference about their labour market performance. The data shows that their participation rate has been similar to the regional norm. Same is true for the immigrant population.

Table 3.3: Labour Market Trends in Kenora District

	Men	Men	Women	Women
Kenora District	2001	2011	2001	2011
Total population 15 to 64 years of age	20,185	18,515	19,610	18,230
In the labour force	16,100	13,960	13,680	13,165
Employed	14,065	12,265	12,400	12,045
Unemployed	2,030	1,695	1,285	1,120
Not in the labour Force	4,085	4,560	5,925	5,065
Participation Rate	79.80	75.40	69.80	72.20
Employment Rate	69.70	66.20	63.20	66.10
Unemployment Rate	12.60	12.10	9.40	8.50
Francophone Population	2001	2011	2001	2011
Total population 15 to 64 years of age	595	330	405	360
In the labour force	510	265	310	265
Employed	450	255	300	260
Unemployed	55	15	10	0
Not in the labour Force	90	65	95	95
Participation Rate	85.70	79.1	75.60	73.6
Employment Rate	76.50	76.1	74.40	72.2
Unemployment Rate	10.80	3.8	3.20	3.8
Immigrant Population	2001	2011	2001	2011
Total population 15 to 64 years of age	1,025	645	1,105	765
In the labour force	870	535	810	565
Employed	840	530	785	520
Unemployed	30	0	30	45
Not in the labour Force	155	110	295	195
Participation Rate	84.90	82.8	73.80	73.9
Employment Rate	81.50	82.8	71.00	68
Unemployment Rate	4.00	1.9	3.70	8.8
Aboriginals Population	2001	2011	2001	2011
Total population 15 to 64 years of age	5,850	6,315	5,995	6,155
In the labour force	4,040	4,065	3,410	3,695
Employed	3,035	3,145	2,765	3,110
Unemployed	1,010	915	635	590
Not in the labour Force	1,805	2,250	2,590	2,455
Participation Rate	69.10	64.40	56.80	60.10
Employment Rate	51.80	49.80	46.10	50.50
Unemployment Rate	25.00	22.60	18.80	15.80

The participation and employment rates declined for Aboriginal men but rose for Aboriginal women during 2001-2011. The unemployment rate declined for both Aboriginal men and women during the above period.

In general, the participation rate among Aboriginals is much lower than the regional average. This is especially true for on-reserve individuals. The unemployment rate averages about 27.6 percent for on-reserve men and 22.4 percent for on-reserve women compared to 16.6 and 9.7 percent for off-reserve men and women respectively.

Figure 3.4: Participation and Unemployment Rates in Kenora District



3.4. Labour Market Trends in Rainy River District

Table 3.4 and Figure 3.5 show the labour market trends among the population aged 15 to 64 in Rainy River district. We have not reported information for Francophones and immigrants due to the relatively small sample sizes.

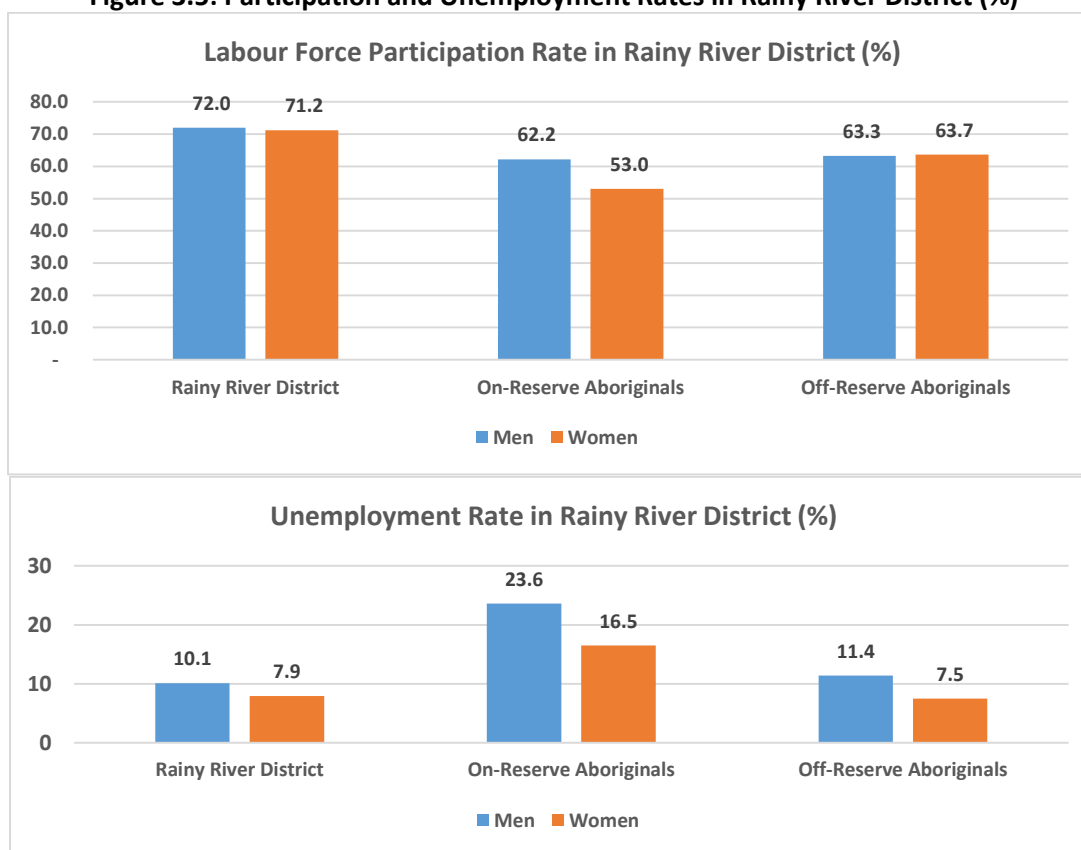
The labour force participation and employment rates declined for men but stayed relatively unchanged for women during 2001-2011. The participation rates are slightly lower than the regional averages. The unemployment rate also stayed relatively unchanged for men but

dropped slightly for women during the above period. The unemployment rates are similar to the regional ones.

Table 3.4: Labour Market Trends in Rainy River District

Labour Market Outcome	Men	Men	Women	Women
Rainy River District	2001	2011	2001	2011
Total population 15 to 64 years of age	6,965	6,475	6,925	6,510
In the labour force	5,695	4,665	4,960	4,635
Employed	5,115	4,195	4,515	4,265
Unemployed	580	470	445	360
Not in the Labour Force	1,275	1,815	1,965	1,880
Participation Rate	81.70	72.00	71.60	71.20
Employment Rate	73.40	64.80	65.30	65.60
Unemployment Rate	10.20	10.10	9.00	7.90
Aboriginals	2001	2011	2001	2011
Total population 15 to 64 years of age	1,120	1,410	1,165	1,470
In the labour force	850	880	805	855
Employed	685	730	685	760
Unemployed	165	150	125	100
Not in the labour Force	275	530	350	615
Participation Rate	75.90	62.40	69.40	58.00
Employment Rate	61.20	51.80	59.10	51.50
Unemployment Rate	19.40	17.00	14.90	11.70

The labour force participation and employment rates for Aboriginal men and women declined during 2001-2011. The unemployment rate also declined during the same period. There exists a significant difference between on-reserve and off-reserve Aboriginal labour market indicators. The participation rate is generally lower and the unemployment rate higher among the on-reserve population.

Figure 3.5: Participation and Unemployment Rates in Rainy River District (%)

3.5. Labour Market Trends in Major Northwestern Ontario Regions

Table 3.5 shows the labour force participation and unemployment rates for various regions in Northwestern Ontario during 2001-2011. On average, the labour force participation rate declined from about 76.4 percent to 73.6 percent during the above period. The average unemployment rate also declined marginally from 8.6 percent in 2001 to 8.4 percent in 2011.

The labour force participation and unemployment rates were 73.4 and 9.3 percent in Northwestern Ontario in 2011. Table 3.5 shows that the participation rate was below the regional average in Atikokan, Manitouwadge, Nipigon, Terrace Bay and Dorion. The rest of the region experienced an above average participation rate in 2011. The unemployment rate was above the regional average in Greenstone, Red Rock and Dorion.

Table 3.5: Labour Market Trends in Major Regions of Northwestern Ontario¹⁵

Regions in N.W.O.	Participation Rate		Unemployment Rate	
	2001	2011	2001	2011
Thunder Bay City	76.2	74.1	8.8	8.1
Kenora City	80.2	79.6	8.5	7.6
Fort Frances Town	78.1	73.5	7.2	7.2
Dryden City	79.4	77.4	7.0	7.7
Sioux Lookout Town	78.6	80.3	3.5	5.3
Greenstone MU*	77.4	79.4	12.0	11.4
Red Lake Town	82.8	82.0	7.1	4.9
Marathon Town	78.2	79.8	5.8	6.9
Atikokan Town	75.5	69.1	12.0	8.0
Manitouwadge TP*	73.5	54.6	13.9	7.1
Nipigon TP*	76.2	68.5	6.0	6.7
Terrace Bay TP*	78.1	68.9	4.8	5.9
Schreiber TP*	76.2	82.9	4.2	7.3
Red Rock TP*	67.3	74.5	5.5	16.5
Dorion TP*	68.2	66.7	22.2	9.4

3.6: Size and Composition of the Future Labour Force

To forecast the future labour force in Northwestern Ontario and its districts, 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 2011 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.

Tables 3.6 to 3.9 and Figure 3.6 provide labour supply projections for Northwestern Ontario and its three districts. The projections show that the labour force in Northwestern Ontario is expected to decline from 118,066 in 2013 to 96,618 in 2041, a decline of about 18.2 percent during the projection period. During the same period, the Aboriginal labour force increases from 19,513 in 2013 to 26,132 in 2041, a rise of about 33.9 percent. As a result, the share of Aboriginals in the total regional labour force is expected to increase from 16.5 percent in 2013 to 27.1 percent in 2041. In fact, the share of the Aboriginal labour force in rural Northwestern Ontario (i.e. non CMA/CA) is expected to increase to about 52.9 percent by 2041. What are the implications of the declining labour force for the future economic performance of Northwestern Ontario? What are the implications of the rising share of the Aboriginal labour force? It is known that the Aboriginal population have a lower level of educational achievement. How would this affect the human

¹⁵ Caution should be exercised when interpreting 2011 numbers for the starred regions due to small sample sizes resulting from the voluntary nature of the 2011 National Household Survey.

capital composition of the regional labour force in the coming years? These questions will be addressed later in this report.

As is the case for Northwestern Ontario, the labour force in all three districts is expected to decline during the projection period. The declining trend is most pronounced in Rainy River district (31 %) followed by Thunder Bay district (20.3%) and Kenora district (9.7%). The declining workforce is partly due to the aging process and partly due to the out-migration of youth.

The share of the Aboriginal labour force will be growing in all three districts. By 2041, the Aboriginal workforce will account for about 44.0 percent of the Rainy River labour force, 40.3 percent of Kenora’s workforce and 18.4 percent of the labour force in Thunder Bay district.

A declining regional labour force also implies that there will be more people to feed relative to each person in the labour force. For example, the number of people (mouths to feed) for each person in the workforce will increase from 2.0 in 2013 to 2.4 in 2041 in Northwestern Ontario.

Figure 3.6: Future Supply of Labour in Northwestern Ontario

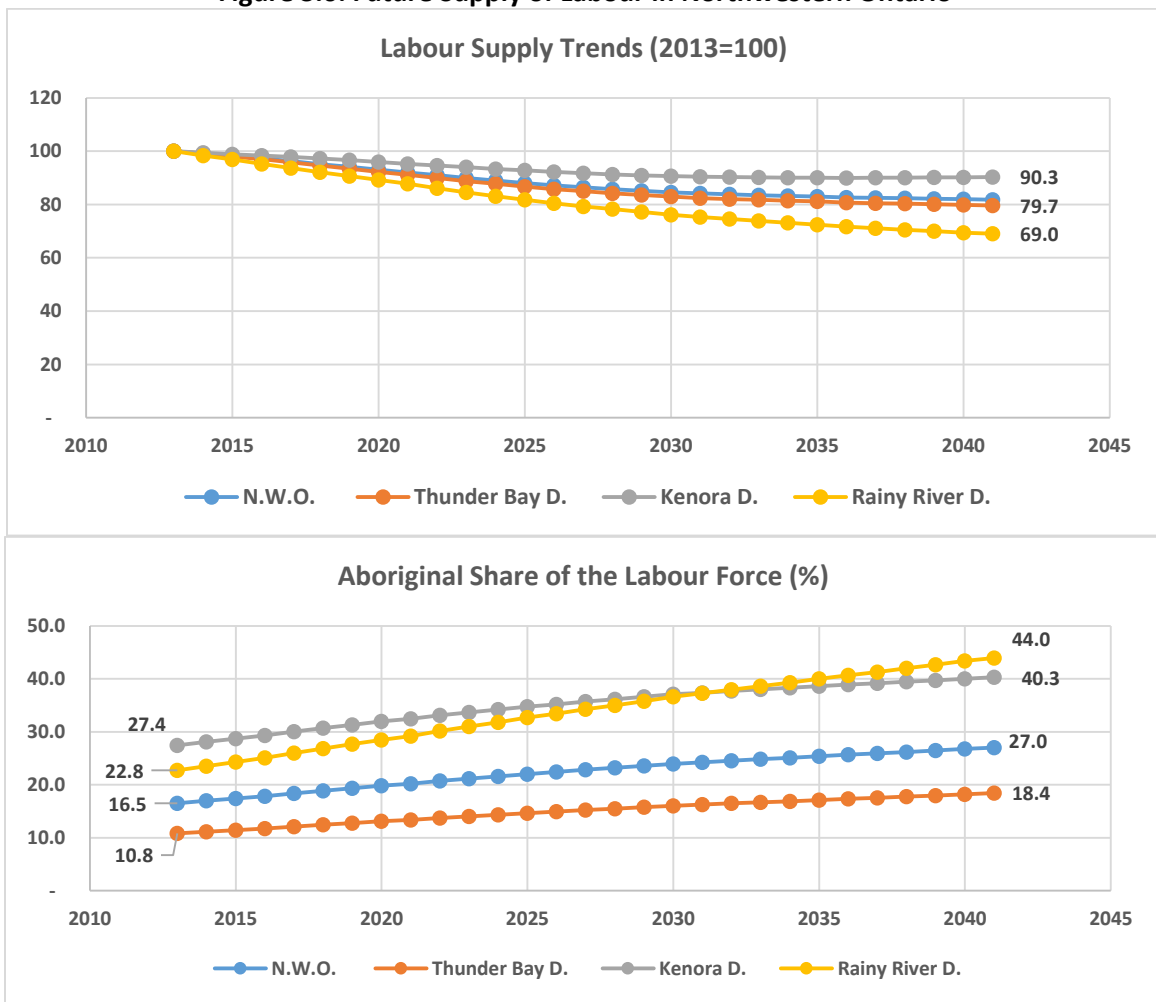


Table 3.6: Future Labour Supply in Northwestern Ontario, 2013-2041

Year	Total Labour Force in N.W.O.	Aboriginal Labour Force	Aboriginal Share (%)
2013	118,066	19,513	16.53
2014	117,057	19,863	16.97
2015	115,941	20,200	17.42
2016	114,821	20,511	17.86
2017	113,659	20,896	18.38
2018	112,368	21,218	18.88
2019	111,155	21,513	19.35
2020	109,865	21,790	19.83
2021	108,663	21,972	20.22
2022	107,446	22,267	20.72
2023	106,188	22,468	21.16
2024	105,063	22,674	21.58
2025	103,985	22,909	22.03
2026	102,983	23,079	22.41
2027	102,098	23,309	22.83
2028	101,264	23,485	23.19
2029	100,545	23,708	23.58
2030	99,887	23,923	23.95
2031	99,352	24,070	24.23
2032	98,929	24,284	24.55
2033	98,613	24,480	24.82
2034	98,313	24,664	25.09
2035	97,962	24,865	25.38
2036	97,608	25,048	25.66
2037	97,398	25,241	25.92
2038	97,219	25,474	26.20
2039	97,046	25,690	26.47
2040	96,808	25,920	26.77
2041	96,618	26,132	27.05

Table 3.7: Future Labour Supply in Thunder Bay District, 2013-2041

Year	Total Labour Force in Thunder Bay District	Aboriginal Labour Force	Aboriginal Share (%)
2013	74,887	8,108	10.83
2014	74,207	8,253	11.12
2015	73,434	8,393	11.43
2016	72,629	8,521	11.73
2017	71,795	8,680	12.09
2018	70,854	8,813	12.44
2019	69,991	8,933	12.76
2020	69,077	9,047	13.10
2021	68,235	9,122	13.37
2022	67,375	9,243	13.72
2023	66,499	9,326	14.02
2024	65,724	9,410	14.32
2025	64,967	9,506	14.63
2026	64,247	9,578	14.91
2027	63,641	9,680	15.21
2028	63,064	9,759	15.47
2029	62,579	9,857	15.75
2030	62,134	9,952	16.02
2031	61,729	10,021	16.23
2032	61,427	10,120	16.48
2033	61,215	10,211	16.68
2034	61,010	10,298	16.88
2035	60,757	10,393	17.11
2036	60,481	10,481	17.33
2037	60,302	10,574	17.53
2038	60,164	10,683	17.76
2039	60,023	10,785	17.97
2040	59,822	10,894	18.21
2041	59,651	10,996	18.43

Table 3.8: Future Labour Supply in Kenora District, 2013-2041

Year	Total Labour Force in Kenora District	Aboriginal Labour Force	Aboriginal Share (%)
2013	33,699	9,248	27.44
2014	33,522	9,414	28.08
2015	33,320	9,574	28.73
2016	33,161	9,722	29.32
2017	32,985	9,905	30.03
2018	32,777	10,060	30.69
2019	32,567	10,201	31.32
2020	32,331	10,333	31.96
2021	32,105	10,420	32.46
2022	31,908	10,562	33.10
2023	31,672	10,658	33.65
2024	31,459	10,757	34.19
2025	31,268	10,868	34.76
2026	31,104	10,948	35.20
2027	30,941	11,052	35.72
2028	30,778	11,131	36.16
2029	30,647	11,230	36.65
2030	30,539	11,328	37.09
2031	30,487	11,390	37.36
2032	30,436	11,482	37.72
2033	30,399	11,566	38.05
2034	30,372	11,643	38.34
2035	30,344	11,728	38.65
2036	30,334	11,804	38.91
2037	30,354	11,884	39.15
2038	30,368	11,983	39.46
2039	30,390	12,073	39.73
2040	30,403	12,170	40.03
2041	30,422	12,258	40.29

Table 3.9: Future Labour Supply in Rainy River District, 2013-2041

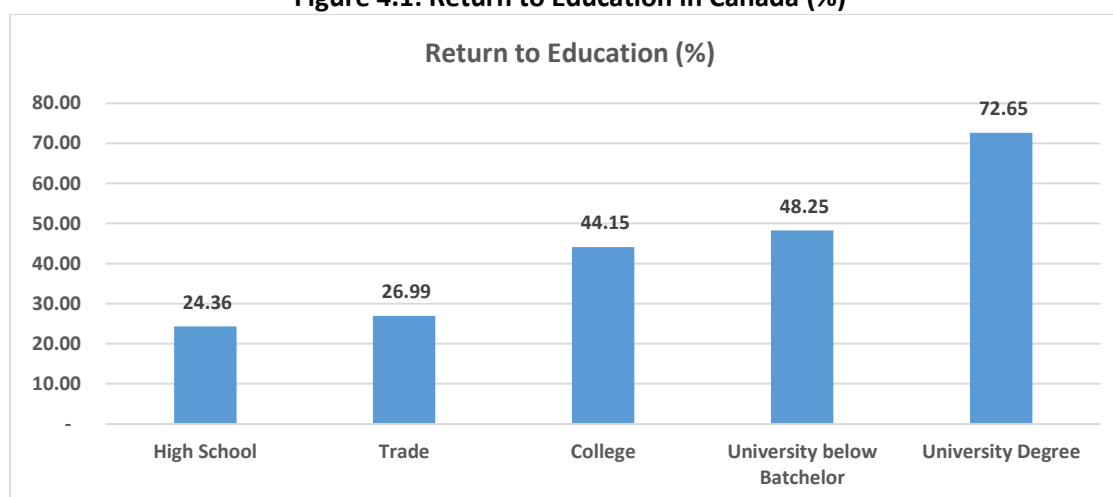
Rainy River	Total Labour Force in Rainy River	Aboriginal Labour Force	Aboriginal Share (%)
2013	9,480	2,157	22.75
2014	9,327	2,196	23.54
2015	9,187	2,233	24.31
2016	9,032	2,268	25.11
2017	8,878	2,310	26.02
2018	8,737	2,346	26.85
2019	8,597	2,379	27.67
2020	8,457	2,409	28.49
2021	8,323	2,430	29.19
2022	8,164	2,462	30.16
2023	8,017	2,485	30.99
2024	7,879	2,508	31.83
2025	7,750	2,534	32.69
2026	7,632	2,552	33.44
2027	7,516	2,577	34.29
2028	7,422	2,596	34.98
2029	7,320	2,621	35.80
2030	7,214	2,644	36.65
2031	7,135	2,660	37.28
2032	7,066	2,682	37.96
2033	6,998	2,703	38.63
2034	6,931	2,723	39.28
2035	6,861	2,744	40.00
2036	6,794	2,763	40.67
2037	6,743	2,784	41.29
2038	6,687	2,809	42.00
2039	6,634	2,831	42.68
2040	6,583	2,856	43.38
2041	6,545	2,878	43.98

Part IV: Productivity and Human Capital Composition of Northwestern Ontario's Workforce

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

In order to estimate the human capital composition of the regional workforce, one needs to specify and measure a proxy for human capital which also reflects and incorporates a measure of productivity of the workforce in each of the districts in Northwestern Ontario. To obtain such an index, we first estimate a standard earnings model using the 2006 census micro-data file.¹⁶ 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 \$1000 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 4.1.

Figure 4.1: Return to Education in Canada (%)



The estimated return to schooling coefficients show the increased earnings, compared to the reference group, by obtaining 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 percent above the earnings of those without a high school diploma. Similarly, obtaining a trade or college diploma increases earnings by 27.0 and 44.1 percent respectively. A university degree increases earnings by an average of about 72.6 percent. The return to schooling estimates reflect higher productivity resulting from an increased

¹⁶ The earnings model is of the form: $\ln Wage = \alpha + \sum \beta_i S_i + \sum X_i \delta_i + \epsilon_i$, where S_i s are the highest level of schooling, X_i s are other control variables which include age categories, marital status, etc. and ϵ_i is an error term.

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 each of the districts in Northwestern Ontario.¹⁷ The estimated human capital indexes for Aboriginals, immigrants, Francophones and the total working-age population in the three districts are shown in Figure 4.2.¹⁸ The estimated index ranges from 100 if none of the area's residents have completed high school to about 200 if all residents have obtained a university degree.¹⁹

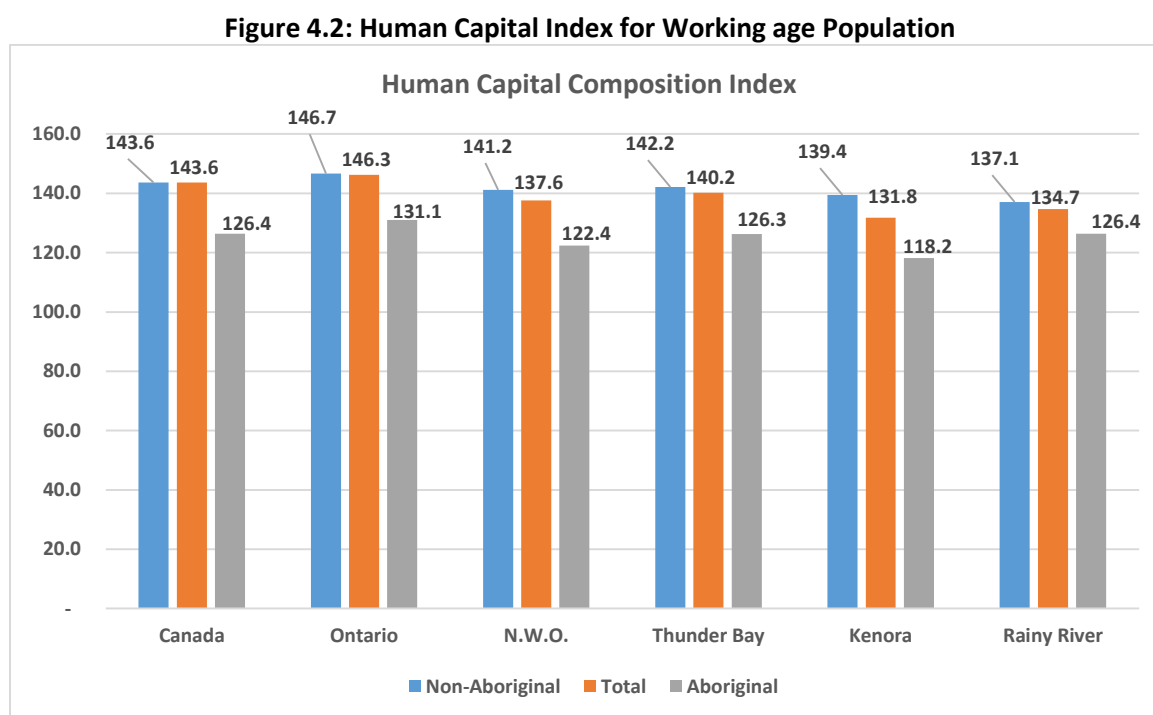


Figure 4.2 shows that the human capital composition of the working age population in Northwestern Ontario is below that in Ontario and Canada. The index for total population is higher for Thunder Bay district followed by Rainy River and Kenora districts. The human capital

¹⁷ $HCI = \exp\{\sum \beta_i \cdot S_i \text{ shares}\}$ where HCI stands for Human Capital Index, exp stands for exponential and S_i shares are share of the population 15 to 64 with S_i level of education in a given CSD. The formulation of the human capital measure is based on Hall, R.E. and C.I. Jones (1999), "Why do some countries produce so much more output per worker than others?", the Quarterly Journal of Economics 114 (1), 83-116. Also see Francesco Caselli, "Accounting for Cross-Country Income Differences", First Draft, November 2003.

¹⁸ Note that the human capital indexes reported here are numerically different from the ones reported in my previous report since I have used return to education or productivity measure in Canada as a benchmark in calculating the above indexes where Ontario was the benchmark in my previous report. Using Canada as a benchmark has an advantage of making the indexes comparable to other provinces as well.

¹⁹ The Human Capital index for immigrants and Francophones equal 144.85 and 136.29 respectively.

composition of the Aboriginal population is generally lower than that for the general population reflecting their lower level of educational achievement. The index for the working age Aboriginal population in Ontario equals 131.1 which is higher than the indexes for Northwestern Ontario's Aboriginal population. Within Northwestern Ontario, the human capital composition index of the working-age Aboriginal population is higher in Rainy River district (126.4) followed by Thunder Bay district (126.3) and Kenora district (118.2). The average index for Northwestern Ontario's Aboriginal population is about 18.8 points lower than for the non-Aboriginal population.

4.1: A Perfect Storm: Declining Labour Supply and Labour Productivity in Northwestern Ontario

Part III of the study identified two important demographic trends. First, the working-age population is declining. As a result, the supply of labour is expected to decline during the coming years. Second, a growing Aboriginal labour force can potentially offset that trend. However, at the present time, the human capital composition of the Aboriginal workforce is lower than the regional level. Therefore, continuation of the current situation will lead to declining future regional labour productivity.

To estimate the human capital composition of the future regional workforce, we combine the labour force projections with the human capital indexes for various segments of the workforce. Results are shown in Figure 4.3.

Figure 4.3: Declining Human Capital Composition of the Workforce in N.W.O.

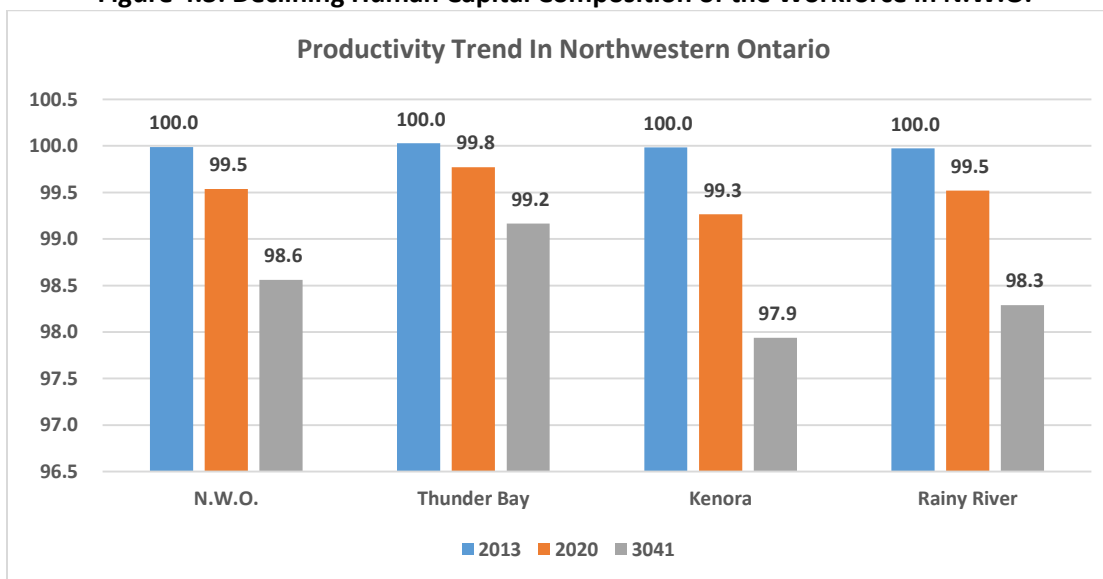


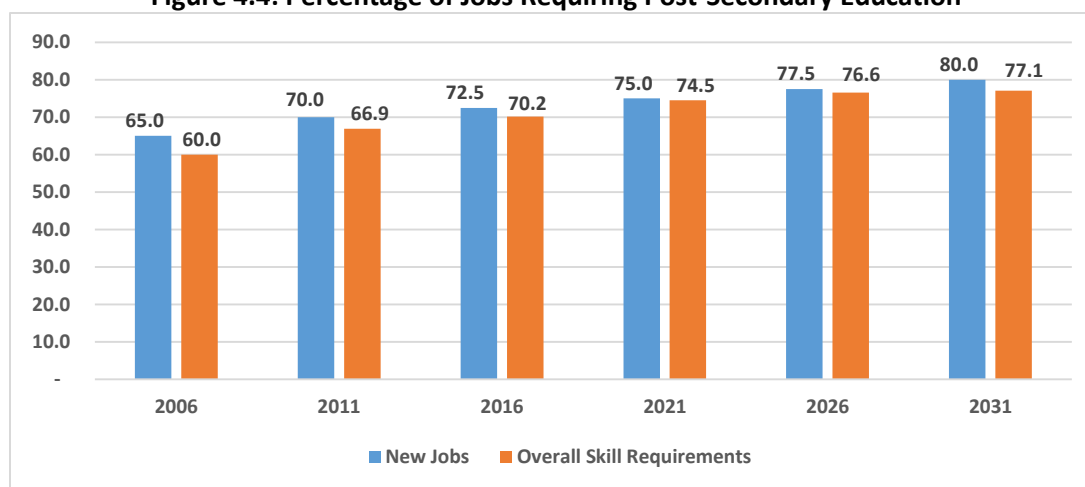
Figure 4.3 shows that if the current level of educational achievement continues, the human capital composition of the workforce will decline in the coming years. This index is positively correlated with labour productivity, labour income and output in the region. We will measure

the effect of the changing composition of the workforce on regional income and output later in the report.

4.2. People without Jobs and Jobs without People

The declining supply of labour and labour productivity in Northwestern Ontario are only half of the bad news. Recent technological change and the emergence of the knowledge economy have changed the requirements of the labour market. Various studies suggest that by 2031, about 80.0 percent of the workforce need to have post-secondary credentials such as an apprenticeship, college or university degree. Currently, 70 percent of the new jobs and an average of 66.9 percent of all jobs require some post-secondary credential.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 provide estimates of the percentage of new jobs requiring post-secondary education in the coming years (Figure 4.4).

Figure 4.4: Percentage of Jobs Requiring Post-Secondary Education

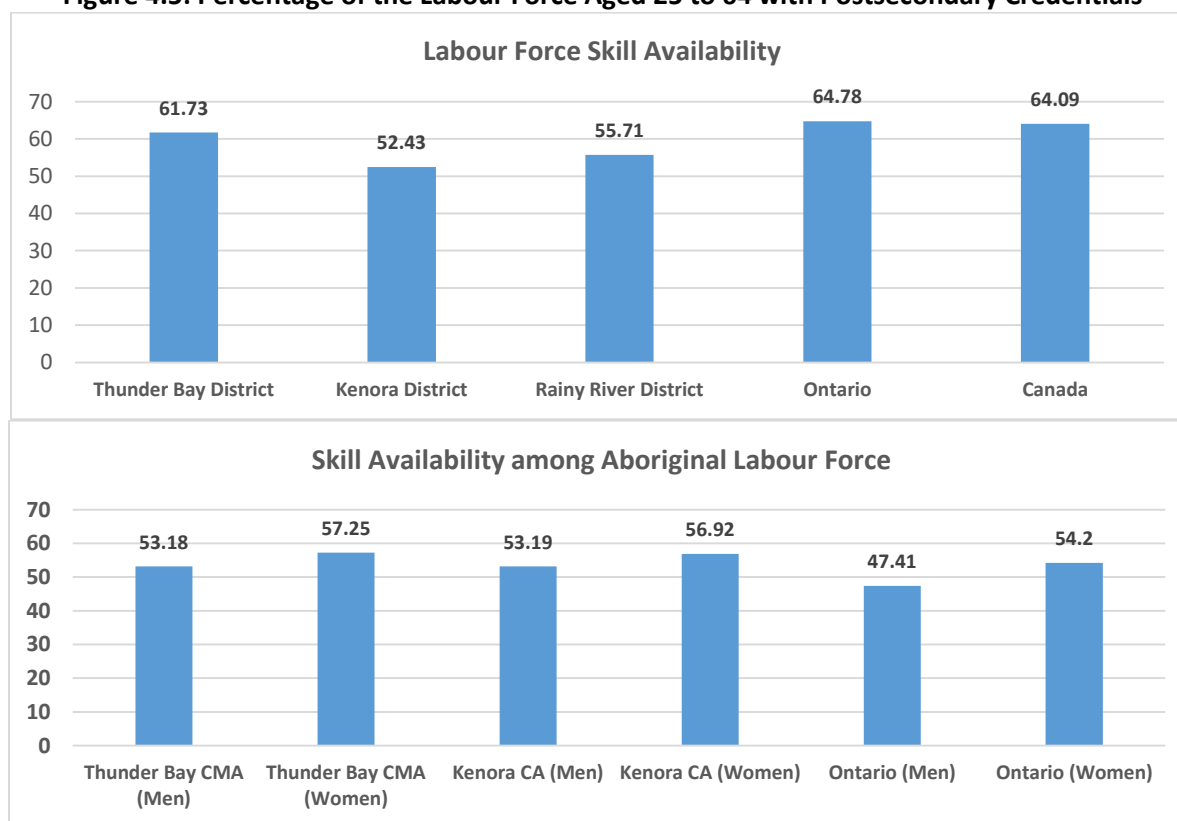


What is the actual skill availability of Northwestern Ontario's labour force at the present time? Using the 2011 National Household Survey and focusing on the prime working-age population aged 25 to 64, Figure 4.5 shows the percentage of the regional labour force who have postsecondary credentials. The skill levels of the prime working-age population in Northwestern Ontario regions are significantly lower than the skill levels in Ontario and Canada. The average skill level in Northwestern Ontario is also significantly below the current estimated skill requirements of about 66.9 percent (Figure 4.4).

²⁰ Miner Management Consultants, 'Ontario's Labour Market Future- People without Jobs, Jobs without People', February 2010.

Data on prime working-age Aboriginal people are only available for Census Metropolitan Areas (CMAs) and Census Agglomerations (CAs). Focusing on the prime working-age Aboriginal population, Figure 4.5 shows that their current level of skills are lagging behind the current and future job requirements. In general, skill levels are slightly higher among Aboriginal women than men. It is important to note that the skill levels of the Aboriginal people shown in Figure 4.5 are for those living in urban areas. Only 34.8 percent of Aboriginals live in urban centres in Northwestern Ontario. The rest or about 65.2 percent live in rural areas. About 87.3 percent of rural Aboriginals live in relatively remote regions. Their level of educational achievement is significantly below those in urban centres.

Figure 4.5: Percentage of the Labour Force Aged 25 to 64 with Postsecondary Credentials

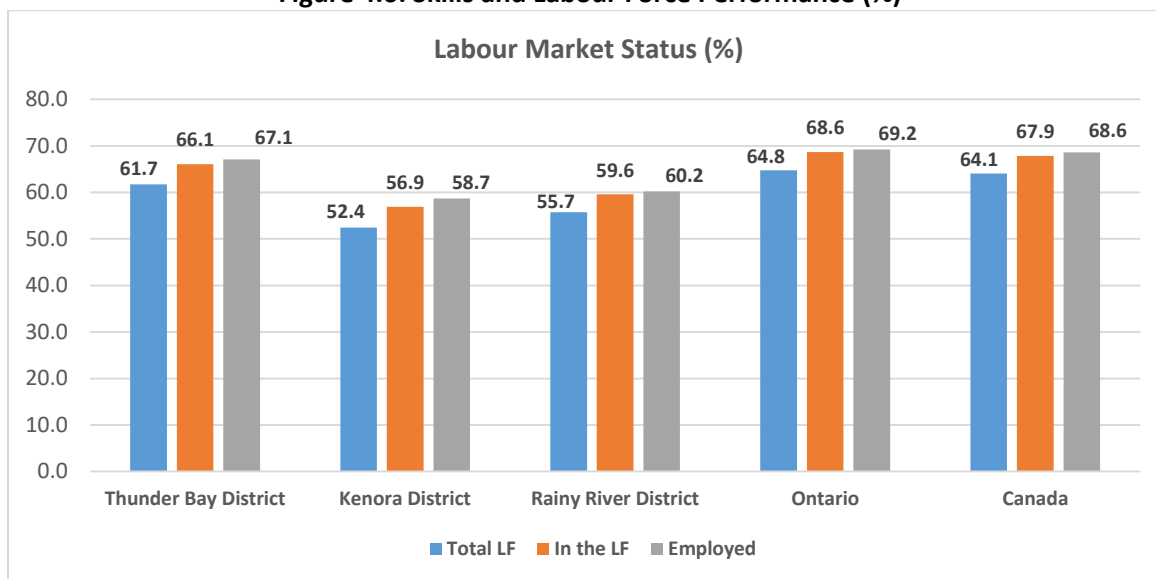


Given that the Aboriginal labour force will account for a significant share of Northwestern Ontario's future workforce, it is vital to the social and economic viability of the region to adopt education policies that enable this growing segment of the regional labour force to meet the requirements of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

Does the level of skills affect labour market performance, i.e., likelihood of employment, participation and unemployment rates? Figure 4.6 shows that a higher skill level increases the likelihood of participation in the workforce. About 66.1 percent of individuals who participate in the workforce have postsecondary education compared to the average of 61.7 percent for those

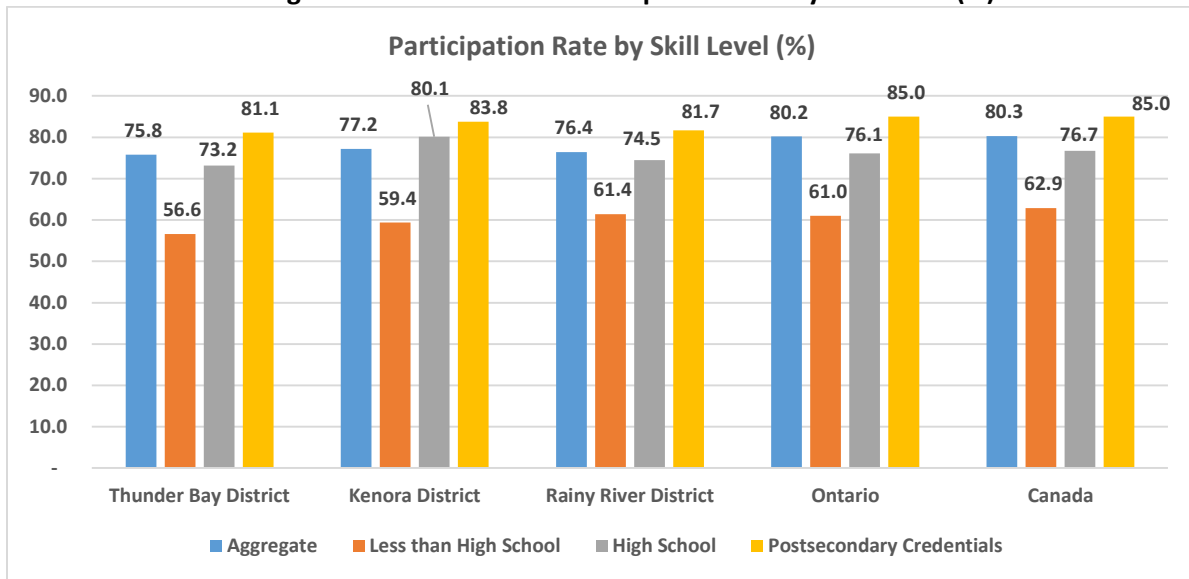
aged 25 to 64 years in Thunder Bay district. The same holds for other districts and jurisdictions. More importantly, about 67.1 percent of the employed labour force in Thunder Bay district has postsecondary education. Figure 4.6 also shows that the level of skills of the employed workforce in Ontario and Canada is slightly higher than the skill requirement level estimated for 2011 in Figure 4.4. The skill levels of the labour force in Kenora and Rainy River lags significantly behind the level required for the workforce in 2011. This would influence the type of industry and occupations their workforce will be engaged in.

Figure 4.6: Skills and Labour Force Performance (%)



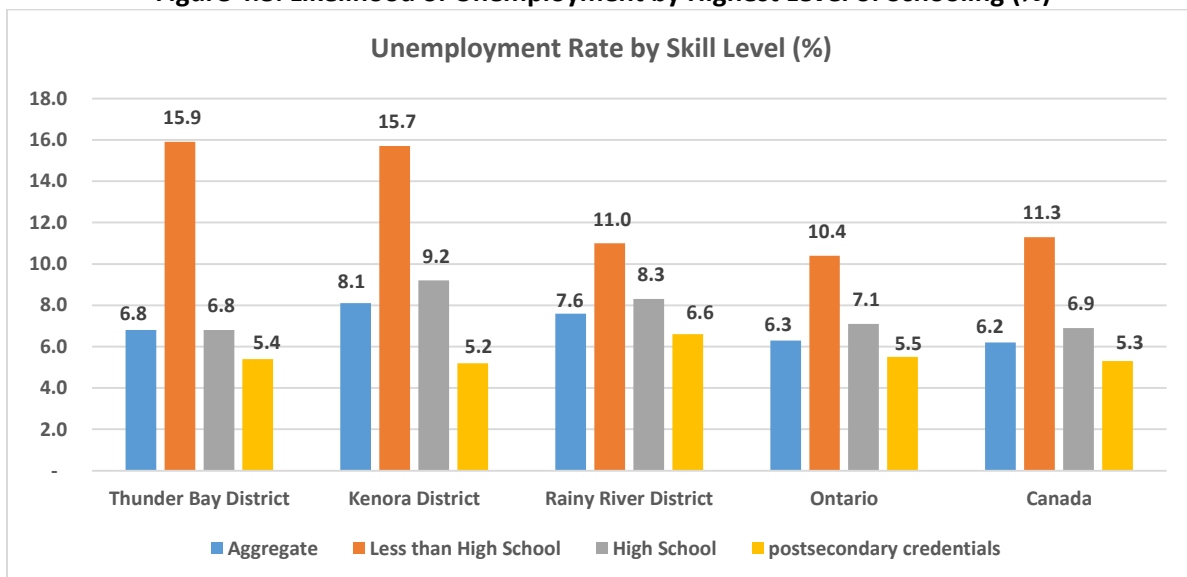
As mentioned above, the level of education affects the likelihood of participation in the workforce. Figure 4.7 shows the likelihood of participation by highest level of educational attainment among the prime working-age population aged 25 to 64. Persons without a high school diploma have the lowest labour force participation rate. About 26.7 percent of Aboriginals aged 25 to 64 in Thunder Bay CMA and Kenora CA have no certificate or diploma. This percentage is much higher in rural Northwestern Ontario. The participation rate increases by 16.6 percent in Thunder Bay district as the level of education increases to a high school diploma. It rises further by 7.9 percent when individuals obtain a postsecondary certificate or diploma. The same holds true for other jurisdictions. In other words, one potential solution to the declining number and productivity of the region's workforce is to promote higher education either by increasing access for those living in remote regions or by adopting approaches that result in higher completion rates at the secondary and postsecondary levels.

Figure 4.7: Labour Force Participation Rate by Education (%)



One of the benefits of investing in education is lower likelihood of unemployment. Figure 4.8 shows that prime working-age individuals without a certificate or diploma face the highest probability of being unemployed. As the level of schooling increases, the likelihood of unemployment declines. Those with postsecondary credentials face the lowest unemployment rate in Northwestern Ontario, Ontario and Canada.

Figure 4.8: Likelihood of Unemployment by Highest Level of Schooling (%)



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 Northwestern Ontario is below the estimated skill requirement needed for the emerging occupations, the region will face 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 From the 50 companies surveyed, 22 had operations in Northern Ontario and other jurisdictions (multi-locational) and 28 were multinationals operating in Northern Ontario. From the 50 firms, 15 had their headquarters in Northern Ontario, 11 were located in Northwestern Ontario and 39 were located in Northeastern Ontario.

When asked to rank barriers or factors negatively affecting their firm's growth and/or investment, the top ranked barrier turned out to be difficulty finding qualified employees. About 29.0 percent of multi-locational and 24.0 percent of multinational firms identified finding qualified employees as the most difficult barrier they faced. Finding qualified employees ranked well ahead of transportation costs (11%), government regulations (9%), poor infrastructure (7%), energy costs (7%) and shipping cost (5%). 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 of 2014. More than 70.0 percent of the companies identified scarcity of skilled workers as the primary barrier to filling the available positions.²²

It appears that if the skill levels of the workforce in Northwestern Ontario stays at its current level or declines in the future while skill requirements of the workforce rises, 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 B. Moazzami, HDR Decision Economics Inc. and Oraclepoll Research Limited, "Multinational and Multi-locational Enterprise Initiative, Survey of Northern Ontario Companies", 2012.

²² The Canadian Council of Chief Executives, "Taking Action for Canada: Jobs and Skills for the 21st Century", March 2014.

Part V: The Consequences of Shifting the Composition of the Employed Labour Force

The structure of Northwestern Ontario's workforce is changing due to a population that is simultaneously declining and ageing. At the same time, the industrial and occupational composition of the workforce is shifting due to changing market conditions. 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, a large portion of which is publicly funded. Using data from various Censuses of Canada as well as the 2011 NHS, Table 5.1 and Figure 5.1 show the changing industrial composition of the employed workforce in Northwestern Ontario.

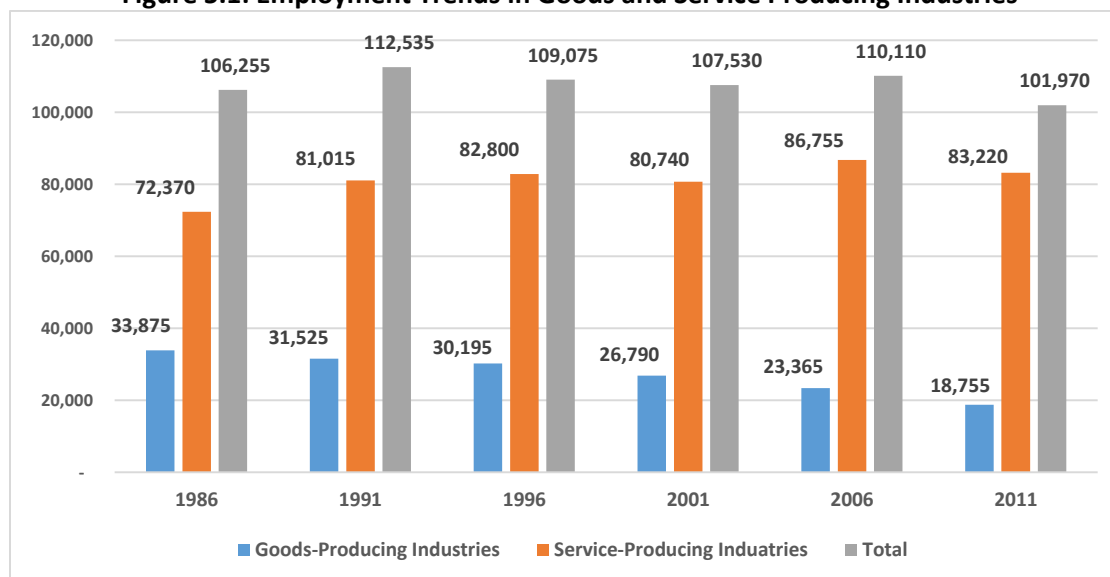
Table 5.1: Changing the Industrial Composition of the Employed Workforce 15+

	1986	1991	1996	2001	2006	2011
Goods-Producing Sector	33,875	31,525	30,195	26,790	23,365	18,755
Agriculture, fishing & hunting	1,470	1,595	1,510	1,650	1,685	1,325
Logging & forestry	5,240	3,375	2,775	2,480	2,280	1,145
Mining & quarrying	2,750	3,600	2,990	2,520	2,500	3,205
Utilities	3,200	3,245	3,350	1,200	1,330	1,250
Construction	4,965	5,925	6,045	5,610	5,630	6,550
Manufacturing	16,250	13,785	13,525	13,330	9,940	5,280
Wood industries	2,550	1,515	2,495	3,555	3,240	635
Paper & Allied industries	9,370	8,335	7,325	6,365	4,065	2,190
Service-Producing Sector	72,370	81,015	82,800	80,740	86,755	83,220
Trade	16,870	17,410	21,540	15,445	15,970	14,280
Transportation & warehousing	8,390	7,180	6,850	6,740	6,555	5,425
Finance , insurance, real estate and leasing	3,340	3,750	3,460	3,960	4,040	3,840
Professional, scientific and technical services	2,625	3,100	3,400	3,240	3,630	3,895
Educational services	7,610	8,640	8,675	8,200	9,665	9,010
Health care and social services	9,785	12,320	14,625	14,000	16,165	16,850
Accommodation and food services	9,025	9,360	9,045	9,045	9,045	7,365
Other services	5,325	5,540	6,750	11,365	12,225	10,855
Public administration	9,400	13,715	8,455	8,745	9,460	11,700
Total Employment	106,255	112,535	109,075	107,530	110,110	101,970

The shift away from the goods-producing sector has seen a net employment loss of about 10.0 percent since the mid-1990s. Total employment in the logging and forestry sector declined from 5,240 in 1986 to 1,145 in 2011, a decline of about 78.1 percent. Similarly, manufacturing employment that has been dominated by wood and paper and allied industries saw an employment decline of about 67.5 percent during 1986-2011. On the other hand, mining employment has increased by 16.5 percent since 1986. Mining and construction sectors are the only goods-producing sectors that experienced growth during the past three decades. As a result,

employment in the goods-producing sector of the regional economy declined from 33,875 in 1986 to 18,755 in 2011, a decline of about 44.6 percent. It is imperative to acknowledge that the goods-producing sector is a major component of the region's economic base and its decline has serious impact on the region's long-term economic growth potential. The correlation coefficient between employment in goods-producing industries and total regional employment equals 0.53.

Figure 5.1: Employment Trends in Goods and Service Producing Industries



The growth of the service sector over the past three decades was particularly pronounced in other services (103.8%), health care and social services (72.2%), professional, scientific and technical services (48.4%), public administration (24.5%) and educational services (18.4%). In fact, the growth of education, health care and public administration, which are referred to as quasi-base sectors since they are financed from outside the region, has to a large extent mitigated the decline in the traditional base sectors of the economy. The correlation coefficient between employment in service-producing industries and total regional employment equals 0.18.

Changing industrial composition of the workforce has also been accompanied by a shift in the occupational structure of the employed workforce (Table 5.2). It appears that the only occupations that have experienced significant growth in recent years have been in natural and applied sciences, health, social science, education and government service occupations.

Table 5.2: Employed Labour Force 15 to 64 Years by Occupation

	1996	2001	2011	% Change 1996-2011
A Management occupations	9,220	9,780	8,015	-13.07
B Business, finance and administrative occupations	17,310	15,060	14,835	-14.30
C Natural and applied sciences and related occupations	4,260	4,815	5,480	28.64
D Health occupations	6,215	6,400	7,730	24.38
E Occupations in social science, education, government service and religion	8,915	9,645	12,140	36.17
F Occupations in art, culture, recreation and sport	1,990	1,820	1,690	-15.08
G Sales and service occupations	29,725	27,980	25,515	-14.16
H Trades, transport and equipment operators and related occupations	19,335	19,220	17,115	-11.48
I Occupations unique to primary industry	4,830	4,430	3,675	-23.91
J Occupations unique to processing, manufacturing and utilities	7,175	6,375	2,435	-66.06
Total	108,975	105,525	98,630	-9.49

Has the region become more or less specialized in certain industries? A report by Statistics Canada examined Northern Ontario's economic diversification, specialization and growth.²³ The study uses a Herfindahl Index (HI) to measure economic diversification. The index shows the degree to which a community's workforce is spread across various industries. The report finds that, on average, Northern Ontario regions and communities underwent economic specialization during 1981-2001. The authors argue that (p. 5): "In general, communities in Northern Ontario that had a diversified economy in 1981 were more likely to have a growing workforce. However, interestingly, the tendency was for the labour force to grow through economic specialization". Figure 5.2 shows the estimated Herfindahl Index for Northwestern Ontario during 1986-2011.²⁴ The lowest index which corresponds to the most diversified economy equals 5.0 percent suggesting an equal number of employees per each sector.²⁵

²³ Ray D. Bollman, Roland Beshiri and Verna Mitra, "Northern Ontario's Communities: Economic Diversification, Specialization and Growth", Catalogue No. 21-601-MIE-No. 082, October 2006.

²⁴ Herfindahl index (HI) = (employment share of industry 1)² + (employment share of industry 2)² + ... + (employment share of industry n)ⁿ. The least possible sum, or the most diversified HI, equals $n \times (1/n)^2 = 1/n$ where n is the number of industrial sectors. The largest possible sum is 1 or 100% when one industrial sector accounts for all the region's employment.

²⁵ In the present case, we have 20 industrial sectors each having 1/20 or 5.0 percent of the workforce. Therefore, the HI index would equal: $20 \times (1/20)^2 = 0.05$ or 5%.

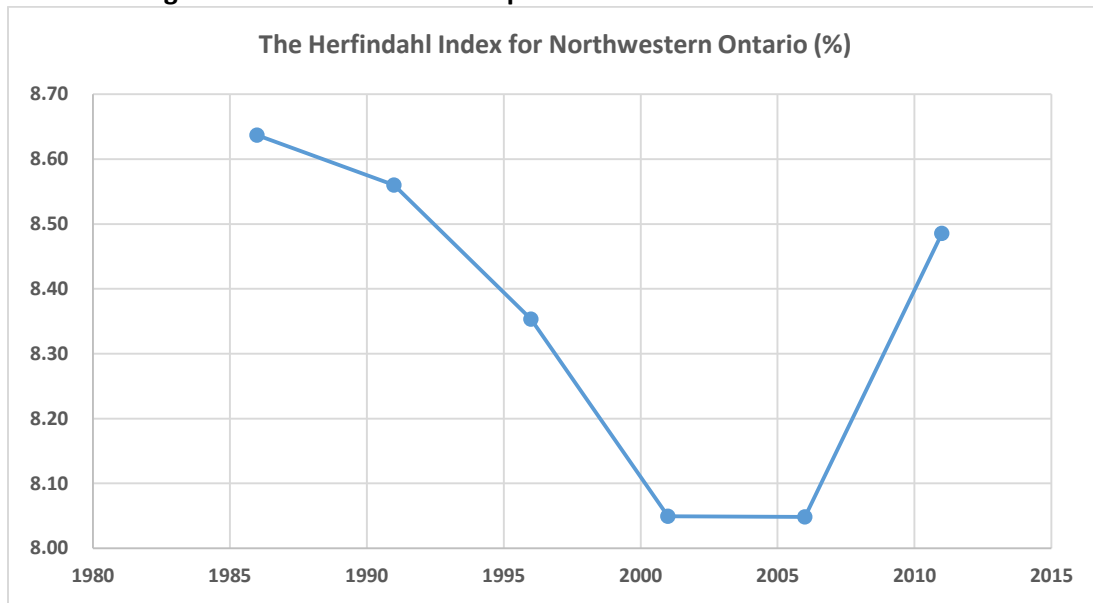
Figure 5.2: Diversification or Specialization in Northwestern Ontario

Figure 5.2 shows that HI was highest in 1986 when the economy was specialized in forest-based manufacturing industries. However, the share of manufacturing declined over time. As a result, the index declines during 1986-2001, stays constant during 2001-2006 and then rises during 2006-2011. Education and healthcare sectors are the main contributing factors to the rising index. In other words, Northwestern Ontario has become more concentrated in and dependent on those two sectors for employment and income generation. In other words, the share of private sector in employment and wealth generation in Northwestern Ontario has declined while the region has become more dependent on publicly funded programs.

Why has the share of the private sector declined so dramatically in Northwestern Ontario? Why has the region not been able to attract private investment? Are the cost of doing business in Northwestern Ontario greater than other regions in Ontario and Canada? Are the cost conditions improving or deteriorating? The abundance of natural resources in Northwestern Ontario has provided ample opportunity for resource-based industries to become regionally, nationally and internationally competitive. Similar natural endowment has given rise to many internationally competitive industries in other countries.²⁶ A small local market is compensated for by proximity to the huge U.S. market. The presence of strong and diversified demand in the U.S. has been a constant source of stimuli for Canadian producers. Also, the absence of strong rivalries in Northwestern Ontario is largely compensated for by proximity and competition from U.S.-based rivals. Thus, why is it that Northwestern Ontario has not been able to grow beyond what Porter

²⁶ See Moazzami (2004, 2005, 2006)

(1990) called its natural factor-driven stage of development while its neighbors to the south and east have been able to do so?²⁷

What are the implications of changing industrial and occupational structure of the employed workforce? Do the employment numbers accurately reflect the extent of the impact of the changing industrial and occupational composition of the work force on Northwestern Ontario's economy? Using 2006 Census and 2011 National Household survey, Table 5.3 shows changing composition of the employed workforce by highest level of schooling and average employment earnings during 2006-2011.

Table 5.3: Changing Composition of the Employed Workforce in Northwestern Ontario*

Highest Degree or Certificate	Northwestern Ontario	2006	2011	Average Earnings 2011
All	Total 15-64	107,535	99,070	\$44,193.00
	% Worked FT & FY	57.72	51.24	\$56,139.00
	% Worked PT or PY	42.28	48.76	\$24,889.00
No certificate	Total 15-64	19,430	13,380	\$26,717.00
	% Worked FT & FY	45.49	36.63	\$38,861.00
	% Worked PT or PY	54.51	63.37	\$13,881.00
High School	Total 15-64	30,115	26,490	\$34,033.00
	% Worked FT & FY	53.44	46.5	\$47,038.00
	% Worked PT or PY	46.56	53.5	\$18,267.00
Trade	Total 15-64	12,010	11,415	\$51,438.00
	% Worked FT & FY	64.1	54.99	\$58,509.00
	% Worked PT or PY	35.9	45.01	\$37,048.00
College	Total 15-64	25,495	26,795	\$44,764.00
	% Worked FT & FY	62.29	57.61	\$54,411.00
	% Worked PT or PY	37.71	42.39	\$26,894.00
University	Total 15-64	20,485	18,285	\$64,372.00
	% Worked FT & FY	63.81	58.42	\$76,056.00
	% Worked PT or PY	36.19	41.58	\$39,829.00

*FT: Full-time; FY: Full-year; PT: Part-time; PY: Part-year.

Table 5.3 shows that the composition of the employed workforce has changed during 2006-2011. The share of full-time and full-year jobs has declined from 57.7 percent in 2006 to 51.2 percent in 2011. The average earnings of full-time and full-year (FT & FY) jobs equaled \$56,139 in 2011. During the same period, the share of part-time or part-year (PT or PY) jobs rose from 42.3 percent in 2006 to 48.8 percent in 2011. The average earnings of the part-time or part-year jobs equaled

²⁷ For a comparison of industrial clusters in Northwestern Ontario and other regions see Moazzami (2004, 2005, 2006).

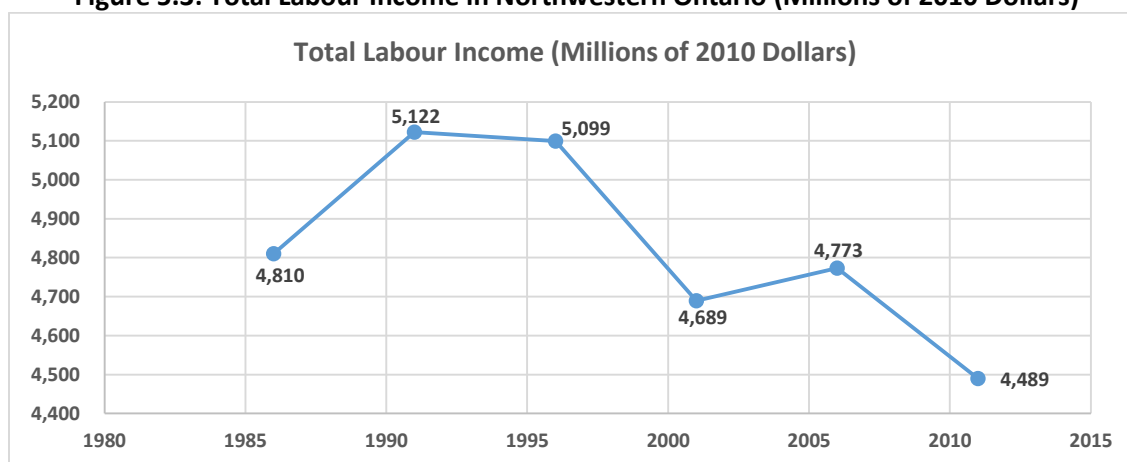
\$24,889 in 2011. The same picture appears when we examine the composition of the employed workforce by sex.

Workers without a high school diploma have the highest incidence of part-time or part-year work and their average earnings are lowest among all employed people in the region. Individuals with a university degree have the highest incidence of full-time employment and have the highest earnings among all workers.

The college graduates are the only group of workers whose employment numbers have increased during 2006-2011. The number of full-time and part-time employed college graduates have also risen during the above period. However, the rise in the number of part-timer workers has been greater than the increase in full-time workers resulting in a declining share of full-time workers.

Changing size and composition of the employed workforce impacts total labour income and output in Northwestern Ontario. Using detailed employment by occupation and industry data along with average employment earnings by industry and occupation, we have estimated trends in total labour income in Northwestern Ontario. This is shown in Figure 5.3. Labour income is influenced by size, productivity as well as the occupational composition of the employed workforce. It was high when employment was high in the resource-based sectors of the economy and declined as those high paying jobs disappeared.

Figure 5.3: Total Labour Income in Northwestern Ontario (Millions of 2010 Dollars)



Wages and salaries are a significant share of the regional Gross Domestic Product. In Ontario, wages, salaries and supplementary labour income accounted for an average of about 54.15 percent of the provincial GDP during 2000-2010. Assuming that this share also applies to Northwestern Ontario, a rough estimate of the regional domestic product can be estimated for 1986-2011.²⁸ This is shown in Figure 5.4.

²⁸ In fact, this indirect approach to estimating regional GDP is more precise than using employment ratios (such as those reported by the Conference Board of Canada) because this approach is based on the labour income estimates that are very precise. The only assumption and potential source of error is the assumption regarding the ratio of

Figure 5.4: Regional Domestic Product in Northwestern Ontario (Millions of 2010 Dollars)

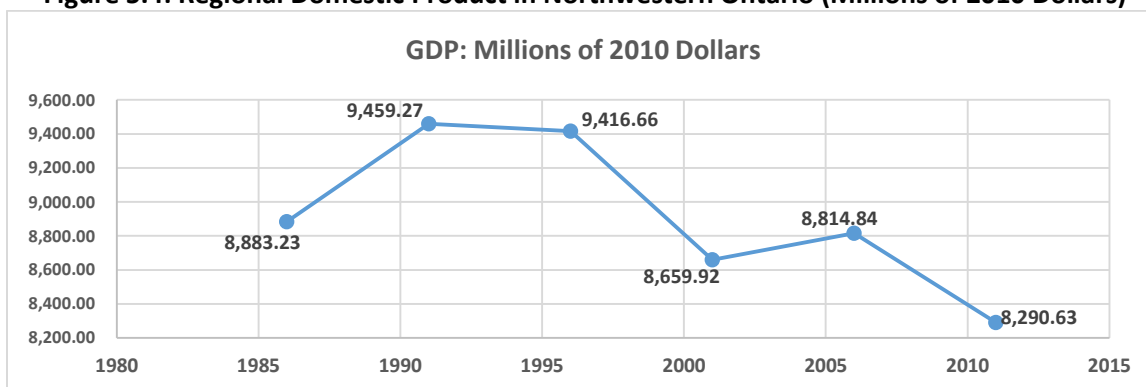
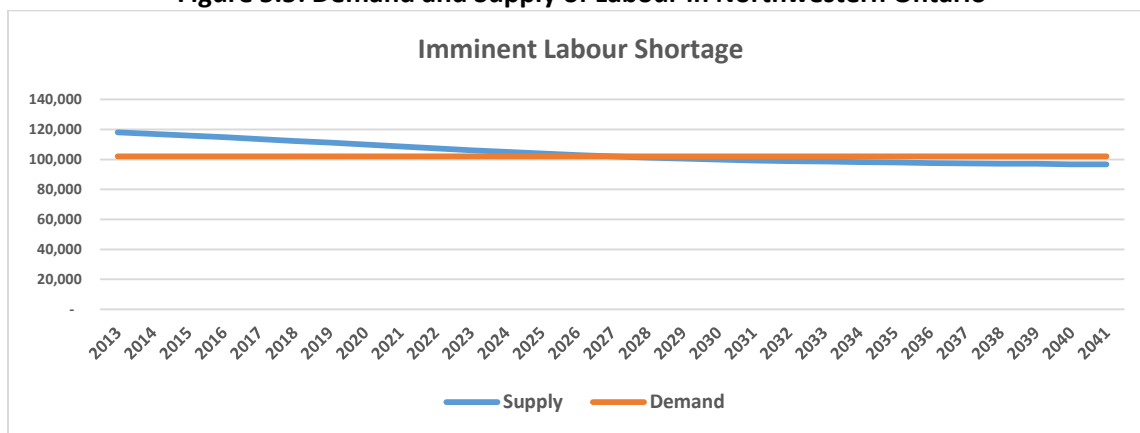


Figure 5.4 shows that the regional GDP has declined from its high of 9.5 billion dollars in 1991 to its recent historical low of 8.3 billion in 2011, a decline of about 12.35 percent. Regional GDP is highly correlated with employment as well as labour productivity in various industries. The higher the labour productivity, the greater the output and income. As we discussed above, the human capital composition of the regional workforce is expected to decline. As a result, labour productivity, output and income is expected to decline as well.

What are the implications of declining size and productivity of the regional workforce? Assuming that total employment or demand for labour stays at its 2011 level and using the labour supply estimates provided above, Figure 5.5 shows that the region will face a labour shortage by the mid-2020s. That is assuming that the qualifications and human capital composition of the workforce matches the requirement of future employment. Without improvement in the human capital composition of the future labour force, the perceived shortage will be much greater than the one portrayed in Figure 5.5.

Figure 5.5: Demand and Supply of Labour in Northwestern Ontario



labour income to regional GDP. This assumption affects the magnitude of the estimated GDP not its trend. Otherwise, trends in employment income mirror GDP trends with a very high degree of certainty.

Table 5.4 shows employment trends in the goods- and service-producing sectors of Thunder Bay district's economy. Total regional employment has declined from 72,490 in 1986 to 67,975 in 2011, a decline of about 6.2 percent. As is the case with the overall regional economy, employment in the goods-producing sector has declined from 23,055 in 1986 to 11,775 in 2011, a decline of about 50.0 percent. During the same time, the service-producing sector has grown by about 14.0 percent. The share of the goods-producing sector in total regional employment has also declined from 31.8 percent in 1986 to about 17.3 percent in 2011.

A shift in the industrial structure of the workforce is accompanied by a change in the occupational distribution of the labour force (Table 5.5). Employment in most occupational groups declined except for business, finance and administration, natural and applied science, health and social science, education and public administration. Changing size and composition of the employed workforce impacts output and income in Thunder Bay district (Figure 5.6).

Table 5.4: Changing the Industrial Composition of the Employed Workforce (15+) in Thunder Bay District

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

Table 5.5: Occupational Distribution of Employed Workforce (15 to 64) in Thunder Bay District

National Occupational Classification 2006	2001	2011	Percentage Change (2001-2011)
A Management occupations	5,975	5,210	-12.80
B Business, finance and administrative occupations	10,315	10,485	1.65
C Natural and applied sciences and related occupations	3,260	3,965	21.63
D Health occupations	4,540	5,480	20.70
E Occupations in social science, education, government service and religion	6,215	7,645	23.01
F Occupations in art, culture, recreation and sport	1,325	1,235	-6.79
G Sales and service occupations	18,585	16,860	-9.28
H Trades, transport and equipment operators and related occupations	12,720	11,420	-10.22
I Occupations unique to primary industry	2,525	2,010	-20.40
J Occupations unique to processing, manufacturing and utilities	3,970	1,540	-61.21
Total	69,430	65,850	-5.16

Figure 5.6 shows that total employment income and GDP declined by about 9.8 percent during 1986-2011. This is partly due to declining employment and partly due to the changing occupational structure of the employed workforce. Goods-producing sectors of the economy were among the high wage and high value-added industries in the region. Their decline has not only affected the level of output but also resulted in lower average earnings in the region.

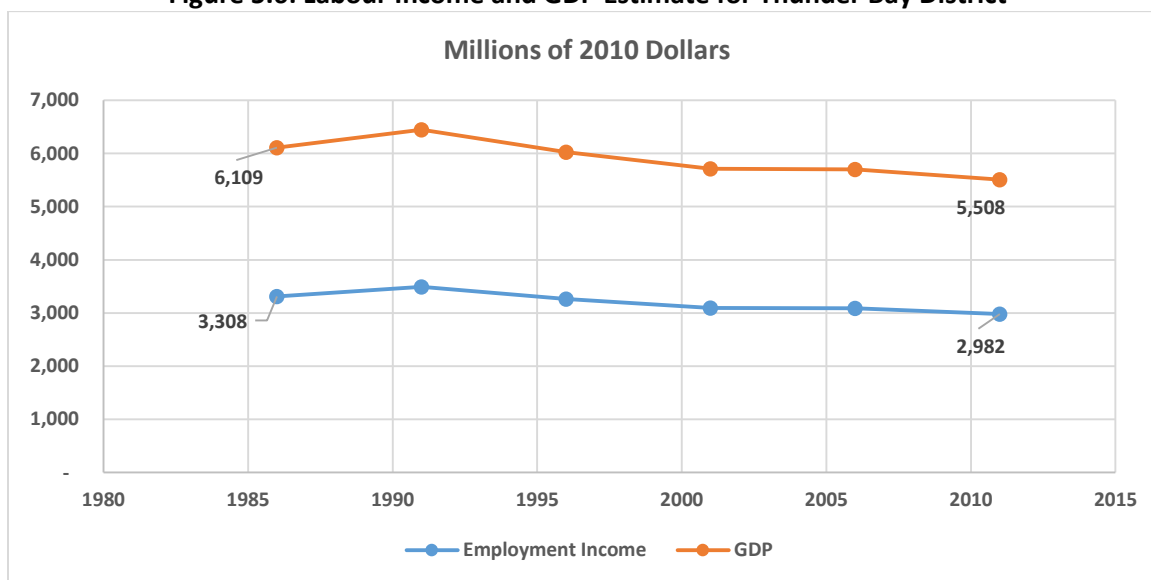
Figure 5.6: Labour Income and GDP Estimate for Thunder Bay District

Table 5.6 shows employment trends in the goods- and service-producing sectors of Rainy River district's economy. Total employment in Rainy River declined from 9,915 in 1986 to 8,935 in 2011,

a decline of about 10.0 percent. Service sector employment rose by 1.1 percent during the above period. In other words, employment losses in the goods-producing sector were not matched by rising employment in the service sector. The majority of job losses in the goods-producing sector occurred in logging and forestry and forest based manufacturing industries. Within the service-producing sector, trade, transportation and accommodation industries lost employment while health care, other services and public administration and education services gained employment.

Table 5.6: Changing the Industrial Composition of the Employed Workforce (15+) in Rainy River District

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

The changing industrial composition of the workforce is accompanied by a shift in the occupational distribution of the labour force (Table 5.7). Most or 66.3 percent of the employment losses have occurred in occupations unique to processing, manufacturing and utilities followed by losses in trades, transport and equipment operating occupations; business, finance and administrative occupations; management and sales and service occupations. Employment gainers include social science, education, public administration and health occupations.

Table 5.7: Occupational Distribution of Employed Workforce (15 to 64) in Rainy River District

National Occupational Classification 2006	2001	2011
A Management occupations	870	750
B Business, finance and administrative occupations	1,255	1,040
C Natural and applied sciences and related occupations	310	330
D Health occupations	570	750
E Occupations in social science, education, government service and religion	795	1,005
F Occupations in art, culture, recreation and sport	145	155
G Sales and service occupations	2,230	2,060
H Trades, transport and equipment operators and related occupations	1,860	1,415
I Occupations unique to primary industry	555	605
J Occupations unique to processing, manufacturing and utilities	1,040	350
Total Employment	9,630	8,460

Figure 5.7 shows trends in employment income and GDP in Rainy River district. Declining employment has resulted in declining income and output by about 6.2 percent.

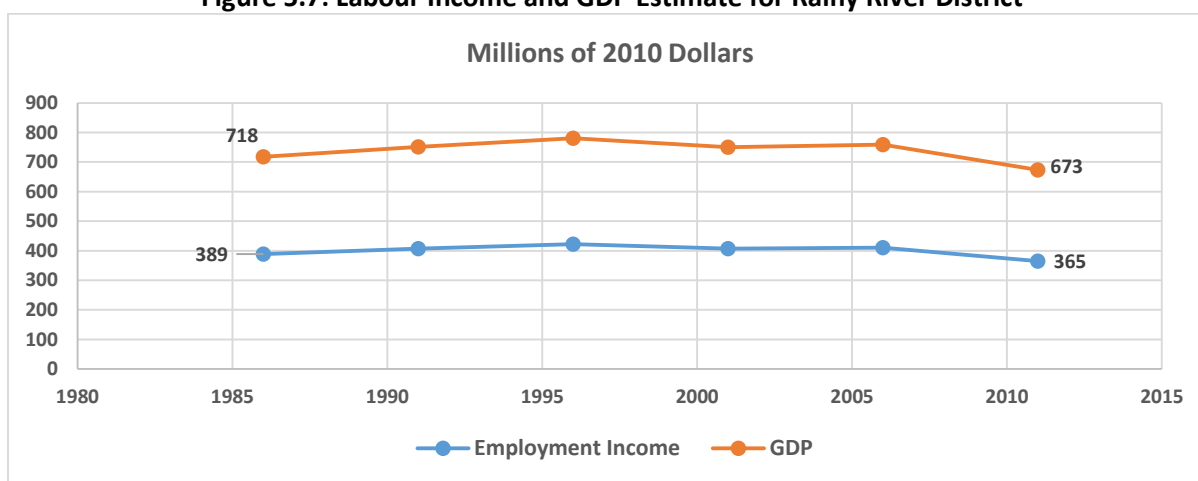
Figure 5.7: Labour Income and GDP Estimate for Rainy River District

Table 5.8 shows the changing employment structure in Kenora district. Total employment rose from 23,850 in 1986 to 28,595 in 2006 and then declined to 25,055 in 2011. Unlike the other districts, Kenora experienced employment growth of about 5.0 percent during 1986-2011. Similar to other districts, it experienced a significant decline in its goods-producing sector. Logging and forestry employment declined by about 82.0 percent, mining experienced a decline of about 7.7 percent and resource-based manufacturing industries lost 60.0 to 77.0 percent of their employment. On the other hand, the service sector's employment rose by about 24.5 percent during 1986-2011. The biggest gainers were health care (136.7%), education (53.5%), public administration (28.6%) and other services (118.7%). Other services include amusement and

recreational services, personal and household services, machinery and equipment rental, repair, services to buildings and dwellings and travel service industries. Employment losses occurred in trade (5.4%), transport (26.2%) and accommodation and food services industries (31.1%).

Table 5.8: Changing the Industrial Composition of the Employed Workforce (15+) in Kenora District

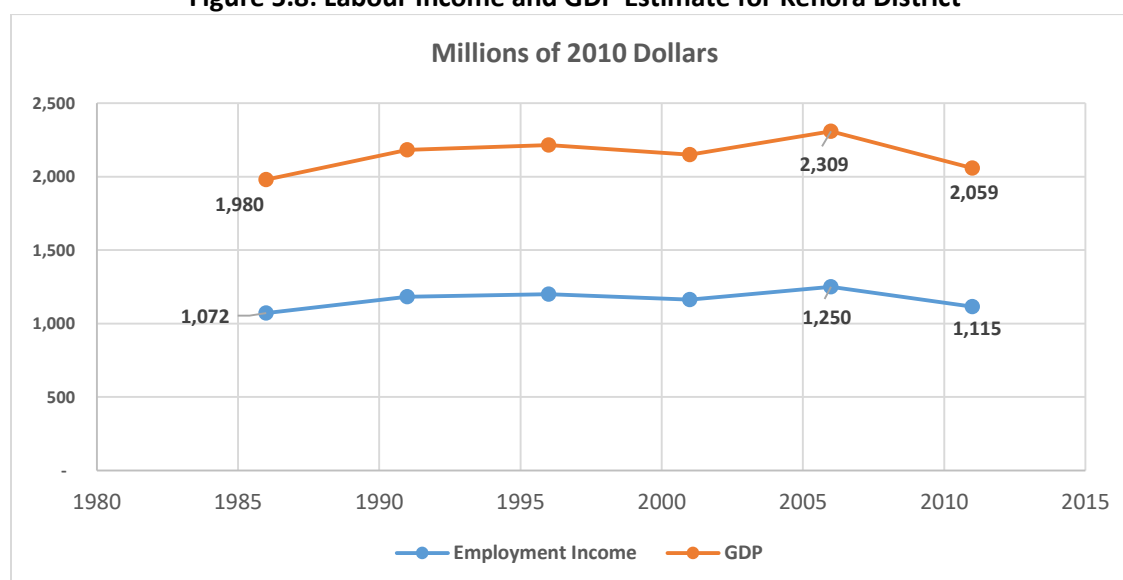
	1986	1991	1996	2001	2006	2011
Goods-Producing Sector	7,570	7,165	7,330	6,575	6,185	4,795
Agriculture, fishing & hunting	295	260	310	365	350	210
Logging & forestry	1,450	1,105	820	955	815	260
Mining & quarrying	1,240	1,160	895	745	1,025	1,145
Utilities	670	570	845	270	375	290
Construction	1,000	1,260	1,470	1,515	1,480	1,920
Manufacturing	2,915	2,810	2,990	2,725	2,140	970
Wood industries	625	385	480	650	945	245
Paper & Allied industries	1,805	1,875	2,080	1,630	840	420
Service-Producing Sector	16,280	19,205	19,390	20,520	22,410	20,260
Trade	3,455	3,890	3,960	3,800	4,160	3,270
Transportation & warehousing	1,855	1,725	1,595	1,630	1,690	1,370
Finance , insurance, real estate and leasing	650	550	750	805	900	705
Professional, scientific and technical services	465	460	600	565	625	495
Educational services	1,375	1,815	2,075	1,985	2,375	2,110
Health care and social services	1,905	2,665	3,575	3,545	4,345	4,510
Accommodation and food services	2,670	2,835	2,615	2,870	2,440	1,840
Other services	1,040	1,085	1,490	2,310	2,505	2,275
Public administration	2,865	4,180	2,730	3,010	3,370	3,685
Total Employment	23,850	26,380	26,720	27,090	28,590	25,055

Table 5.9 shows the occupational distribution of the employed workforce aged 15 to 64. It shows that total employment declined by about 8.1 percent during 2001-2011. All occupational groups except for health and social science, education and government services experienced decline during 2001-2011.

Table 5.9: Occupational Distribution of Employed Workforce (15 to 64) in Kenora District

National Occupational Classification 2006	2001	2011
A Management occupations	2,935	2,050
B Business, finance and administrative occupations	3,490	3,310
C Natural and applied sciences and related occupations	1,245	1,190
D Health occupations	1,290	1,495
E Occupations in social science, education, government service and religion	2,630	3,490
F Occupations in art, culture, recreation and sport	355	300
G Sales and service occupations	7,165	6,590
H Trades, transport and equipment operators and related occupations	4,650	4,285
I Occupations unique to primary industry	1,345	1,055
J Occupations unique to processing, manufacturing and utilities	1,360	550
Total	26,465	24,315

Figure 5.8 shows that employment income and GDP in Kenora rose along with rising employment during 1986-2006 but declined during 2006-2011. Declining employment income and GDP are mainly due to a loss of about 1,675 jobs in logging and forestry and forest-based manufacturing industries during 2006-2011.

Figure 5.8: Labour Income and GDP Estimate for Kenora District

Overall, major changes have occurred in the structure of Northwestern Ontario's economy, its population and workforce. Ageing and declining population along with a rising Aboriginal workforce have resulted in a declining supply of labour which has a lower level of human capital than necessary for the jobs of the future. In the past, Northwestern Ontario's economic prosperity has been based on a staples economy relying on the export of natural resources. In other words, regional economic development was dependent on internal economic factors namely growth of the goods-producing sectors of the economy. These sectors formed a major component of the region's economic base and had very high value-added and multiplier effect. Recent growth of education, healthcare and public sectors have to a large extent mitigated the declining economic base and have stabilized the regional economy.

Are Current Employment Levels Sustainable?

As we saw above, Northwestern Ontario's economy has undergone a significant structural change in recent decades. There has been a shift from goods-producing sectors to service-producing industries. How has this change affected the base and non-base employment in the region? The base employment is usually perceived as the main driver of employment and prosperity in the region. Those are industries usually dominated by private businesses. In this section, we estimate employment trends in Northwestern Ontario's base and non-base sectors and examine the relationship between base employment, total employment and income in the regional economy.

In general, the regional economy can be classified into three sectors. First are the industries that produce most of their products and services for export to other regions as well as international markets. These industries that have historically been linked to regional forestry and mineral resources are referred to as the economic base sectors. Businesses providing services to the base-industries are also considered as a part of the economic base. The base industries also link Northwestern Ontario to international markets, which make activity and employment levels extremely sensitive to international economic and business conditions.

The second sector includes industries that act like base industries in a sense that they are supported by funds from outside the region. These industries are referred to as quasi-base sectors. They include federal and provincial public administration, health care, tourism and education.

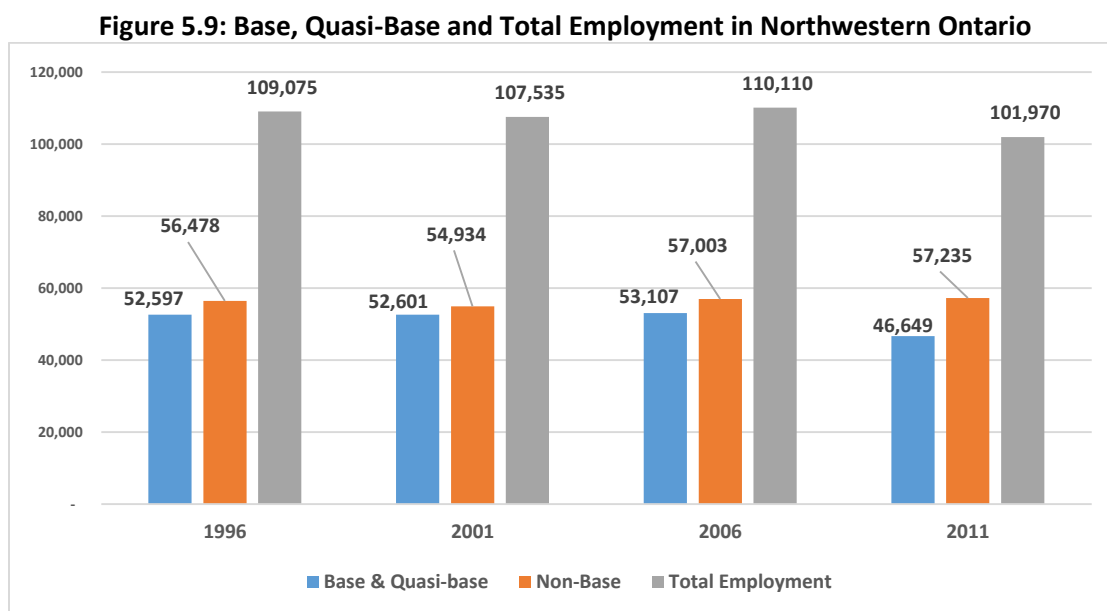
The final sector, which is referred to as the service or non-base sector, produces goods and services to satisfy the needs of regional residents. The level of economic activities in the service sector depends on the income generated in the base and quasi-base sectors. Growth in base and quasi-base sectors result in a growth in the local or service sector.

Therefore, knowledge of the factors that affect economic activity and employment in Northwestern Ontario's base, quasi-base and service sectors allows us to forecast regional employment and economic trends.

Northwestern Ontario's Base and Non-Base Sectors

Various methods are used to identify base and non-base industries.²⁹ Location Quotient (LQ) index is one of those methods that is commonly used in the literature. Using the LQ index, Figure 5.9 shows employment trends in base and non-base sectors of the regional economy. It shows a close correlation between the base-employment and total employment in Northwestern Ontario. In fact, the correlation coefficient between base and total employment equals 97.2 percent which is almost perfect.

The ratio of total employment to base and quasi-base employment was about 2.07 during 1996-2006. We assume that this ratio represent a sustainable level of employment conditional on the level of base and quasi-base employment. The ratio has increased to 2.19 in 2011 which is greater than the sustainable level suggesting that the region will see lower levels of employment in the post 2011 era. The employment level consistent with the base and quasi-base employment is 96,970 which is about 5,693 fewer than the 2011 level.



One may argue that the regional employment has already adjusted to the new base and quasi-base levels of employment because the full-time and full-year jobs have been replaced by part-time and part-year jobs. This may be true and thus suggest that the total regional employment has stabilized and reached its sustainable level for as long as the base and quasi-base employment stay at their current levels.

Recent structural change has basically shifted the regional economic focus from predominantly producing for export markets to mostly production for domestic consumption. The share of the

²⁹ For a detailed discussion of those methods see Moazzami, B., "Northern Ontario's Economy: Challenges and Opportunities", May 2009, prepared for Ministry of Northern development and Mines as a part of the Growth Plan for Northern Ontario.

private sector and private investment in the regional economy has declined and the public sector's share has increased significantly.

Part VI: Looking into the Future

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 Northwestern Ontario. What would be the impact of demographic change on demand for teachers and educators and therefore employment and income in that sector of the regional economy?

Various regional and national surveys indicate shortage of skilled tradesmen in various regions in Ontario and other regions of Canada. How has aging population affected the supply and availability of tradesmen in Northwestern Ontario? Are we training enough tradesmen to satisfy our current needs as well as preparing for the upcoming mining and forestry renewal? Otherwise, importing those expertise will seriously reduce the economic benefits of any resource-development in Northwestern Ontario.

In recent years, workers in communities with a high unemployment rate choose to commute long distances in search of employment rather than changing their place of residence. How significant is this mobile workforce phenomenon in Northwestern Ontario? Is it increasingly becoming the new normal? How would it affect Northwestern Ontario's economy, especially its resource-based industries? These are questions that we will try to look into in this part of the study. Before investigating the above queries, it is useful to provide a general overview of the regional labour market. This is done in the next part of the study.

Overview of Demand and Supply of Labour in Northwestern Ontario

Fluctuating employment levels reflect changes in demand for the skills of workers in a given occupation.³⁰ Occupational supply refers to the number of workers with specific occupational skills who are either employed or unemployed. During times of weak economic growth, demand for labour declines causing excess supply of workers who cannot find employment. During times of economic expansion, demand for workers increases resulting in rising employment and declining unemployment. Therefore, examination of the unemployment rate in a given occupation signals whether demand for that occupation is growing or declining.

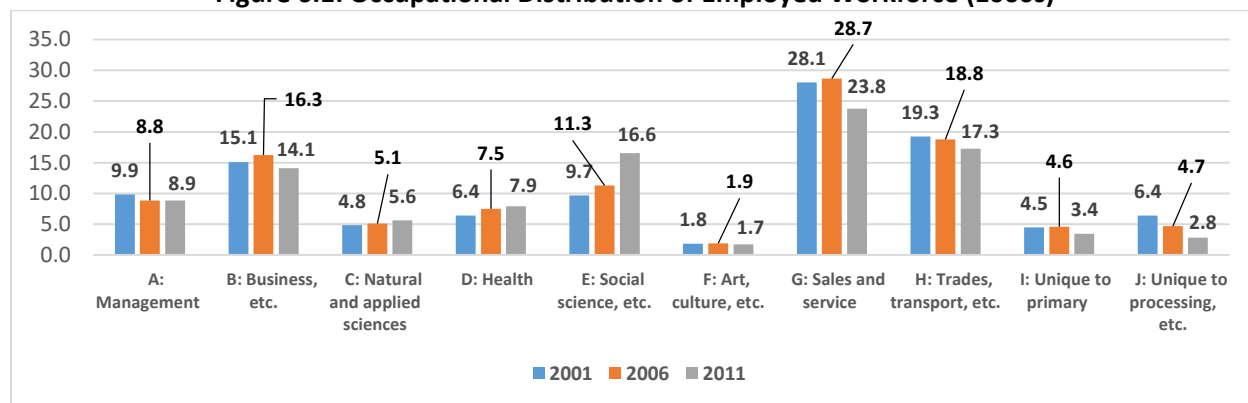
The supply side of the labour market includes first-time new entrants into the workforce after having completed their education. After accounting for new entrants, in-migration acts as the

³⁰ We define demand as a stock variable referring to the number of people working at a given point of time. On the other hand, changes in demand is considered a flow variable referring to the number of new workers required during an economic expansion or the number of workers becoming unemployed or exiting the workforce during an economic contraction.

residual supply of workers to meet demand requirements. In other words, when economic climate improves and the available new entrants are not sufficient to meet demand, in-migration balances the difference between local demand and supply. Similarly, when economic conditions weaken, out-migration balances the difference between supply and demand for labour in the region.

Figure 6.1 shows employment trends in various occupational groups in Northwestern Ontario during 2001-2011. The occupational groupings are based on the 2006 National Occupational Classification system (NOC). Figure 6.1 shows that employment in all occupational groups has declined except for healthcare occupations and occupations in social science, education, government service and religion. As mentioned above, an aging population increases demand for healthcare services and is the primary driver of increased health-related employment in the region. Total employment in health-related occupations rose from 6,215 in 1996 to 6,400 in 2001 and 7,920 in 2011. Would this rising health-related employment trend continue into the future? On the other hand, aging of the population can negatively impact demand for educational services. Total employment in professional occupations in educational services increased from 4,405 in 2001 to 5,185 in 2006 but declined to 4,850 in 2011. Would this declining trend continue into the future? Are rural and urban regions equally affected? We will address these questions in the next part of the study.

Figure 6.1: Occupational Distribution of Employed Workforce (1000s)

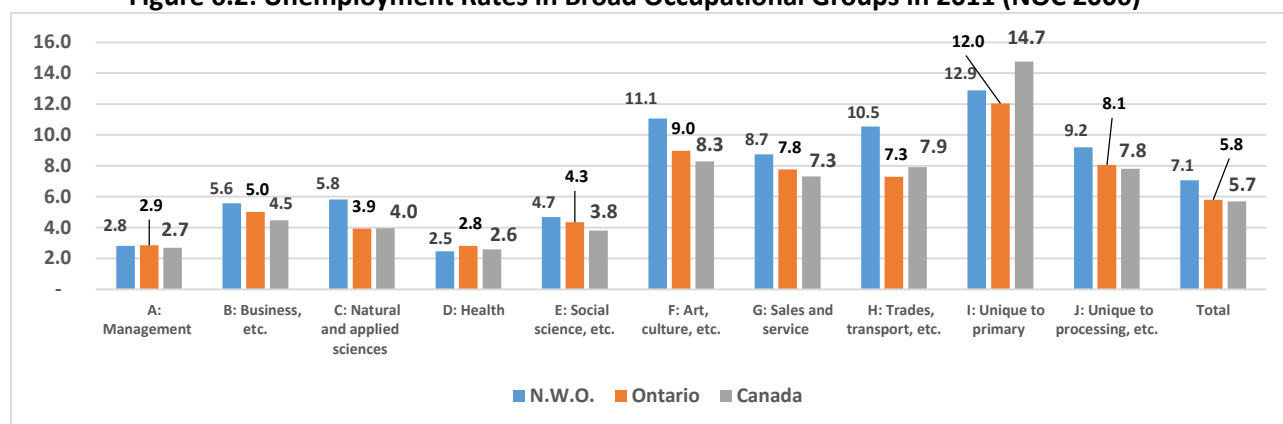


To identify occupations characterized by a tight labour market, we compare unemployment rates in various occupations in Northwestern Ontario with the provincial and national rates (Figure 6.2). The healthcare occupations are the only occupational group for which the unemployment rate in Northwestern Ontario is lower than the national and provincial levels. In other words, healthcare occupations appear to be among those with a relatively tight labour market in Northwestern Ontario. The unemployment rate in that group equals 2.5 percent which is significantly below the regional unemployment rate of 7.1 percent. The unemployment rate for occupations unique to primary industries equals 12.9 percent which is significantly above the general unemployment rate of 7.1 percent. This reflects the weak economic environment for

primary industries in the region. Similarly, the unemployment rate in trades, transport and equipment operators and related occupations in Northwestern Ontario equals 10.5 percent which is higher than the provincial and national levels. In general, weak economic conditions in Northwestern Ontario have resulted in a loss of many skilled workers in primary and trades and related occupations. We will examine trends in trade occupations more closely because of the important role they potentially will play in the region's future economic growth.

It has to be noted that the effective unemployment rate in Northwestern Ontario may be greater than the 7.1 percent shown in Figure 6.2. The reason is that many unemployed individuals out-migrate or stop participating in the labour force resulting in a lower regional unemployment rate.

Figure 6.2: Unemployment Rates in Broad Occupational Groups in 2011 (NOC 2006)



Having examined the general state of the labour market in Northwestern Ontario, we now turn to the examination of the questions raised at the beginning of this part of the study.

6.2: Population Aging and Demand for Health Care Occupations: Future Trends

Using various census information, Table 6.1 and Figure 6.3 show distribution of employment by occupation in Northwestern Ontario's healthcare sector during 1996-2011. Total employment in the healthcare sector has increased from 6,215 in 1996 to 7,920 in 2011, a growth rate of about 27.4 percent during 1996-2011 or 1.8 percent per year. Employment has increased in all major categories. Technical and related occupations have experienced the highest growth (46.1%) followed by assisting occupations in support of health services (34.4%), professional occupations in health (25.7%) and nursing occupations (13.7%).

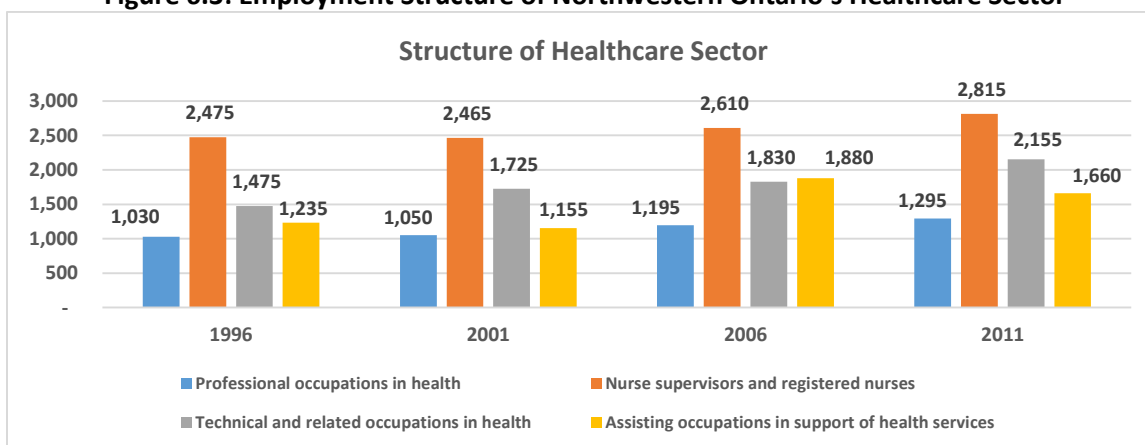
In 2011, nurse supervisors and registered nurses accounted for about 35.5 percent of total employment followed by technical and related occupations (27.2%), assisting occupations (20.9%) and professional occupations (16.3%).

Table 6.1: Employment Trend in Northwestern Ontario's Health Care Sector

NOC 2006: Health Sector	1996	2001	2006	2011
D0 Professional occupations in health	1,030	1,050	1,195	1,295
D01 Physicians, dentists and veterinarians	480	490	480	630
D011 Specialist physicians	95	65	175	205
D012 General practitioners and family physicians	275	295	140	360
D013 Dentists	70	110	135	55
D014 Veterinarians	40	30	25	15
D02 Optometrists, chiropractors and other health diagnosing and treating professionals	50	55	70	135
D021 Optometrists	20	30	15	20
D022 Chiropractors	30	30	55	30
D03 Pharmacists, dietitians and nutritionists	240	235	260	205
D031 Pharmacists	180	155	190	140
D032 Dietitians and nutritionists	60	80	65	65
D04 Therapy and assessment professionals	260	270	380	325
D041 Audiologists and speech-language pathologists	25	80	95	30
D042 Physiotherapists	130	105	210	150
D043 Occupational therapists	105	60	70	75
D044 Other professional occupations in therapy and assessment	-	15	10	70
D1 Nurse supervisors and registered nurses	2,475	2,465	2,610	2,815
D111 Head nurses and supervisors	125	50	110	100
D112 Registered nurses	2,350	2,420	2,500	2,715
D2 Technical and related occupations in health	1,475	1,725	1,830	2,155
D21 Medical technologists and technicians (except dental health)	535	625	700	905
D211 Medical laboratory technologists and pathologists' assistants	195	160	170	140
D212 Medical laboratory technicians	95	155	120	135
D213 Veterinary and animal health technologists and technicians	15	50	70	95
D214 Respiratory therapists, clinical perfusionists and cardio-pulmonary technologists	35	15	45	35
D215 Medical radiation technologists	135	140	180	160
D216 Medical sonographers	25	50	45	-
D217-18 Cardiology technologists	25	30	10	25
D219 Other medical technologists and technicians (except dental health)	10	15	45	305
D22 Technical occupations in dental health care	165	190	140	190
D221 Denturists	-	10	10	10
D222 Dental hygienists and dental therapists	130	160	120	155
D223 Dental technologists, technicians and laboratory bench workers	35	25	10	20
D23 Other technical occupations in health care (except dental)	775	915	995	1,065

D231 Opticians	10	10	30	15
D232 Midwives and practitioners of natural healing	30	50	10	
D233 Licensed practical nurses	525	525	495	450
D234 Ambulance attendants and other paramedical occupations	175	240	330	420
D235 Other technical occupations in therapy and assessment	35	90	120	50
D3 Assisting occupations in support of health services	1,235	1,155	1,880	1,660
D311 Dental assistants	170	145	160	190
D312 Nurse aides, orderlies and patient service associates	890	675	1,265	1,280
D313 Other assisting occupations in support of health services	175	335	455	190
Total Employed	6,215	6,405	7,515	7,920

Figure 6.3: Employment Structure of Northwestern Ontario's Healthcare Sector



Total demand for healthcare services is comprised of two components. First, there is a need to replace those workers who retire over the projection period. This constitutes the retirement-replacement, or retirement load component of the future demand for healthcare workers. The second component considers healthcare professionals who will have to be hired during 2011-2041 to address the growing demand for healthcare services caused by demographic changes, i.e. population change and aging of the population. This constitutes the growth component of total demand for healthcare providers. Since both determinants of demand for healthcare services are known, we can accurately estimate demand for healthcare services and therefore healthcare providers in Northwestern Ontario.

Growth Component of Demand for Healthcare Providers

It is well-known that demographic factors such as expected population growth or decline due to birth and death, age and migration, affect demand for healthcare services. Therefore, to estimate

the growth component of total demand for healthcare services, we use the detailed Ministry of Finance's population projections for Northwestern Ontario during 2011-2041.

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.³¹

To estimate the growth component of demand, we need to estimate indicators that track demand for healthcare workers in Northwestern Ontario. The growth-demand component reflects the need for more workers to accommodate the rising demand for healthcare services caused by changes in the size and age distribution of the population. We assume that the ratio of workers to patients/residents/clients remains the same over the forecast period. It is important to note that the aging profile of the population affects demand for different occupations differently. For example, the demand for workers employed in long-term care services is expected to rise rapidly as a result of relatively faster growth of the population aged 60 years and over. 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 study aim at the need to quantitatively measure the impact of demographic changes on demand for healthcare workers in Northwestern Ontario. A recent study by the Canadian Institute for Health Information provides estimates of per capita provincial health expenditures by age in Ontario for 2011.³² This is shown in Figure 6.4.

Figure 6.4 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 Northwestern Ontario, we can estimate an index that tracks changes in demand for healthcare services during 2011-2041. These healthcare demand indicators measure expected growth in demand for healthcare services and therefore healthcare providers in the region.

Using the information provided in Figure 6.4 and the Ministry of Finance's population projections for Northwestern Ontario, Figure 6.5 shows the estimated growth-demand indicator for healthcare services in Northwestern Ontario during 2013-41. We have used demand for healthcare services in 2013 as the benchmark against which we measure growth.

³¹ *Health Services Blueprint: "Building our Future", February 2012, PriceWaterhouseCoopers.*

³² *Canadian Institute for Health Information, "National Health Expenditure Trends, 1975 to 2013", 2013.*

Figure 6.4: Per Capita Health Expenditures (\$) in Ontario in 2011 by Age Category

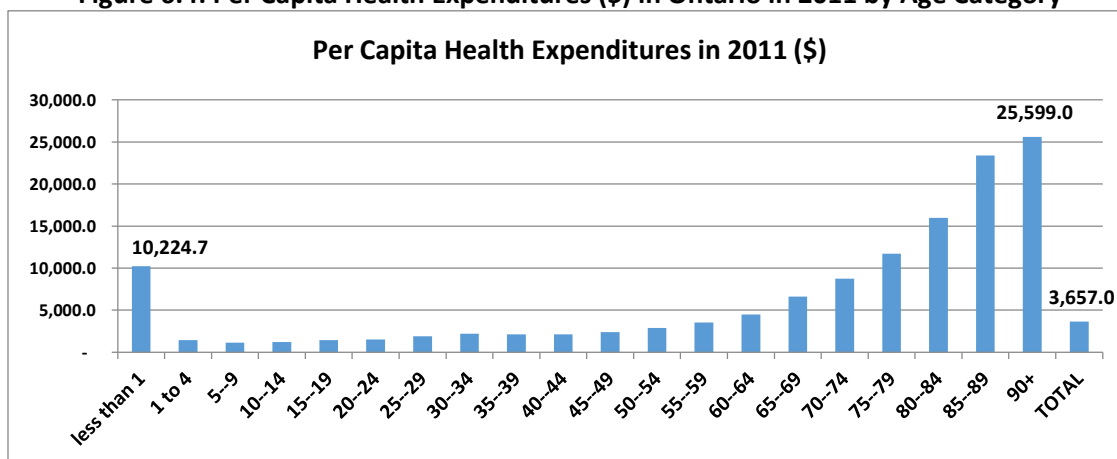


Figure 6.5: Healthcare Demand Indicator in Northwestern Ontario

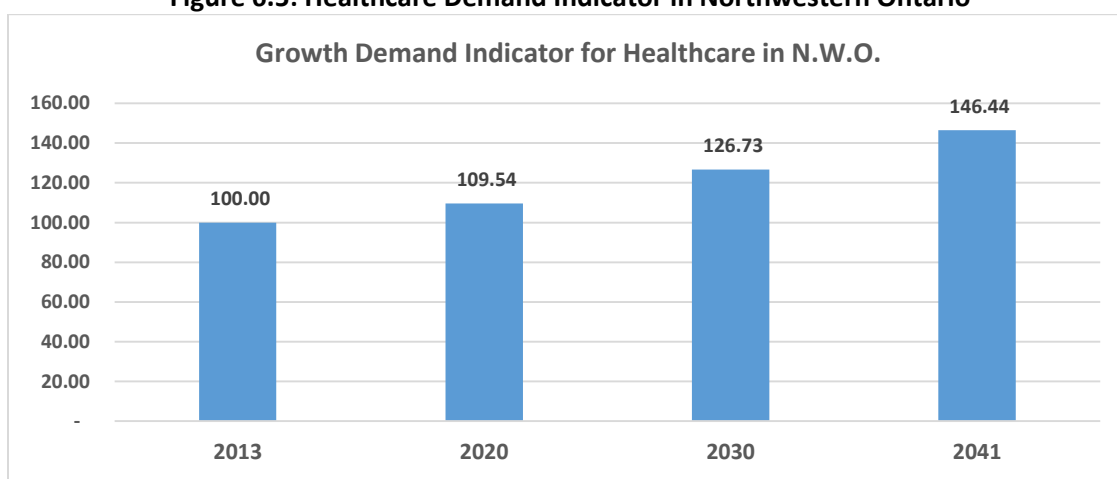


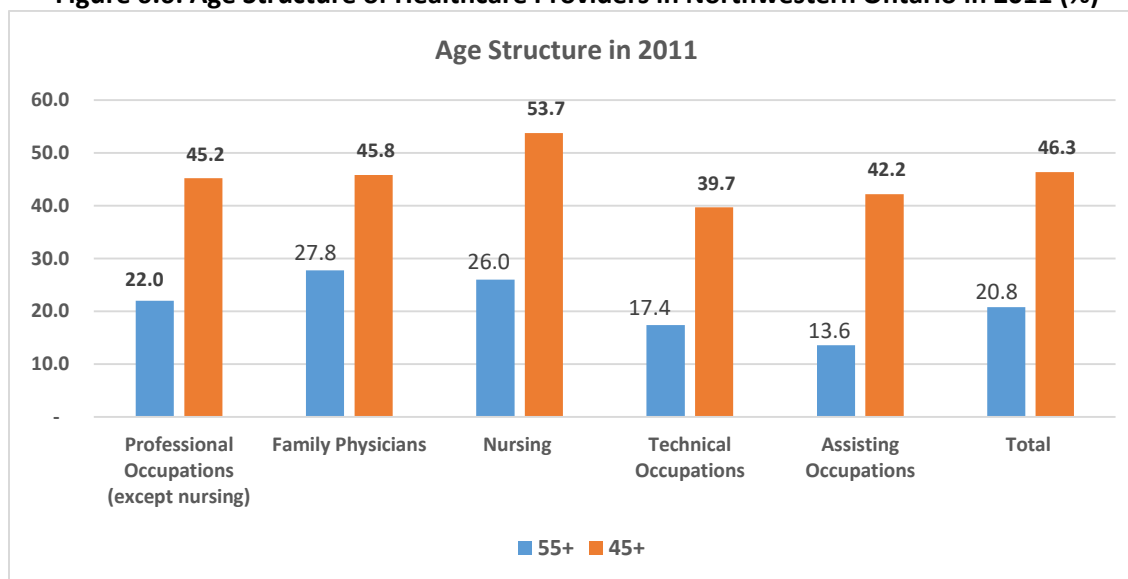
Figure 6.5 shows that demand for healthcare workers is expected to rise by 9.5 percent from 2013 to 2020. Demand is expected to rise by 26.7 percent during 2013-30 and 46.44 percent during 2013-41. As we saw in Part II of the study, Northwestern Ontario's population is expected to decline from 239,772 in 2013 to 235,603 in 2041. Despite the declining population, Figure 6.5 shows that demand for healthcare services is expected to increase significantly during 2013-41. 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 aged 65 and over is about 3 times greater than the overall average demand.

Retirement Replacement Component of Demand for Healthcare Providers

Figure 6.6 shows the age structure of healthcare providers in Northwestern Ontario. Overall, 20.8 percent of healthcare providers in Northwestern Ontario are older than 55. About 27.8 percent

of the family physicians and 26.0 percent of those in nursing occupations are over 55 years of age. The youngest group appears to be those in the assisting occupations. Only about 13.6 percent of them are over the age of 55 years. About 46.3 percent of all healthcare providers are above the age of 45. Again, those in nursing and professional occupations have the biggest share of persons above 45 years of age.

Figure 6.6: Age Structure of Healthcare Providers in Northwestern Ontario in 2011 (%)



Assuming an average retirement age of 65, Table 6.2 shows the retirement-replacement and expansion demand for healthcare providers in Northwestern Ontario.

Table 6.2: Total Demand for Healthcare Providers in Northwestern Ontario

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

Table 6.2 shows that about 68.5 percent of the total demand for healthcare providers during 2011-2020 relates to replacing those who are expected to retire during the above period. The

rest or 31.5 percent of the healthcare providers are needed to satisfy the growing demand for healthcare services due to the aging population in Northwestern Ontario. Total demand rises significantly when we extend the projection period to 2011-2030.

6.3. Population Aging and Demand Projections for Educators in Northwestern Ontario

Using various census information, Table 6.3 and Figure 6.7 show distribution of employment by occupation in Northwestern Ontario's education service sector during 2001-2011. Total employment in the education sector rose from 4,405 in 2001 to 5,185 in 2006, but declined to 4,850 in 2011. Table 6.3 shows that secondary and elementary schools account for almost 80.0 percent of total employment in education services sector. Employment at postsecondary institutions has increased from 2001 to 2011. The number of secondary school teachers has declined while the number of elementary school and kindergarten teaches has risen during 2001-2011.

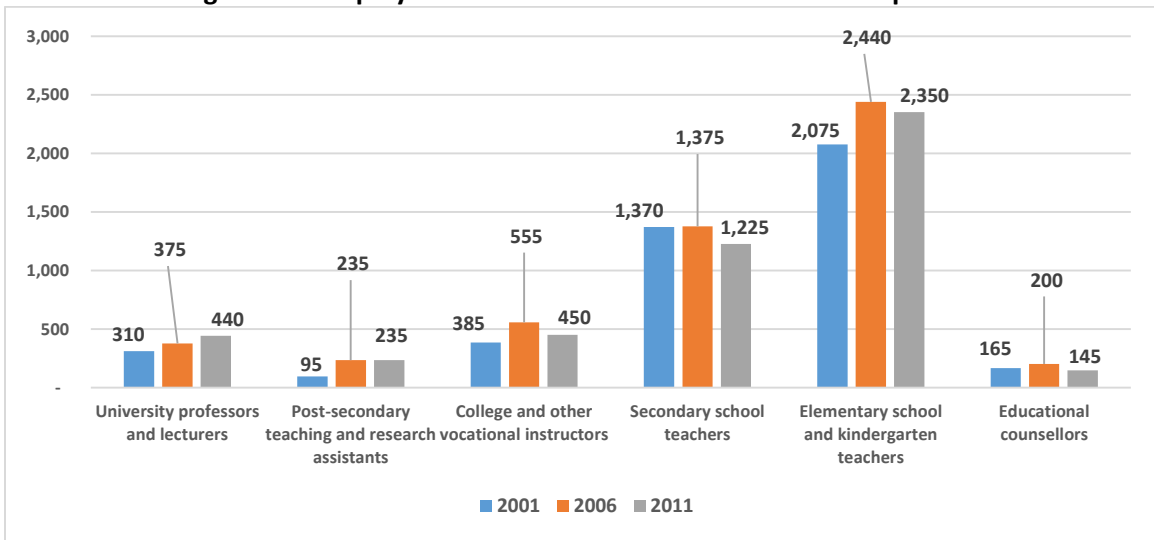
Table 6.3: Employment in Education Service Occupations

Occupation in Education Services	2001	2006	2011
401 University professors and post-secondary assistants	410	610	675
4011 University professors and lecturers	310	375	440
4012 Post-secondary teaching and research assistants	95	235	235
402 College and other vocational instructors	390	555	455
403 Secondary and elementary school teachers and educational counsellors	3,610	4,020	3,720
4031 Secondary school teachers	1,370	1,375	1,225
4032 Elementary school and kindergarten teachers	2,075	2,440	2,350
4033 Educational counsellors	165	200	145
Total Professional occupations in education services	4,405	5,185	4,850

Two factors influence demand for teachers and instructors. First, aging population and declining enrolments reduce demand for educational services. Declining demand reduces financial resources available to the institutions and therefore affects the number of teachers and educators needed to supply those services.

The second factor affecting demand for new teachers relates to a need to replace those who retire over the projection period. This constitutes the retirement-replacement, or retirement load component of the future demand for teachers and instructors.

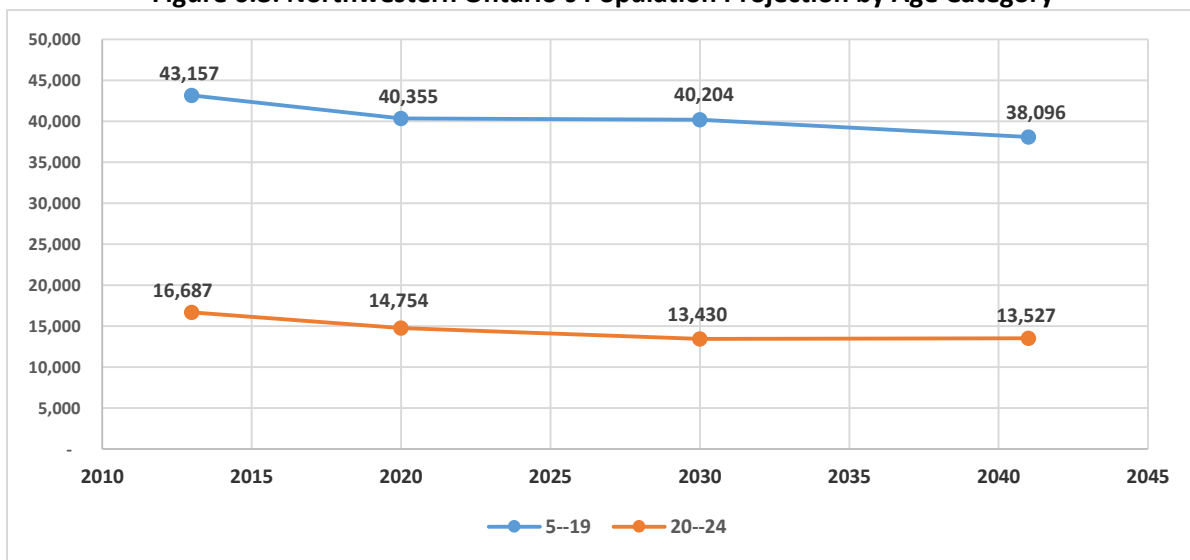
Figure 6.7: Employment Trends in Education Services Occupations



Aging of the Population and Demand for Teachers and Instructors

Using Ontario’s Ministry of Finance population projections, Figure 6.8 shows projections for different age groups in Northwestern Ontario. It shows that the population aged 5 to 19 years is expected to decline by 11.7 percent during 2013-2041. This trend largely affects primary and secondary schools. Similarly, total population aged 20 to 24 years is expected to decline by 18.9 percent during 2013-41. Declining youth population influences demand for postsecondary education in Northwestern Ontario.

Figure 6.8: Northwestern Ontario’s Population Projection by Age Category



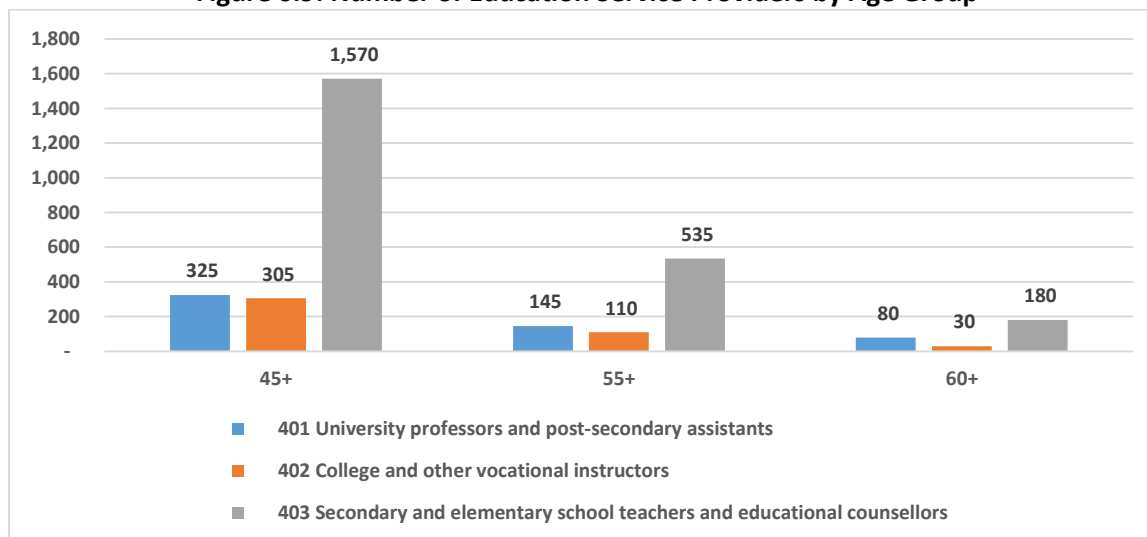
As mentioned before, Aboriginals are the only growing segment of the regional population. The number of Aboriginal children between the ages of 5 to 19 is expected to grow from 12,407 in 2013 to 13,058 in 2041. The share of Aboriginals in this age group rises for 28.7 percent of all children between 5 and 19 years of age to 34.3 percent in 2041. Similarly, the number of Aboriginal youth aged 20 to 24 is expected to increase from 3,922 in 2013 to 4,023 in 2041. Their share of this age group is expected to rise from 23.5 percent in 2013 to 29.7 percent in 2041.

As discussed above, 31.8 percent of the Aboriginal population live in rural Northwestern Ontario with limited access to urban centres. Therefore, providing educational services to this growing segment of the regional population might necessitate reallocation of resources from urban to rural areas. How to provide adequate educational services to the Aboriginal youth, a significant share of whom are in rural regions, is a challenge educational authorities will be facing in the coming years.

Retirement Replacement Component of Demand for Teachers and Instructors

Figure 6.9 shows the age structure of education service providers in Northwestern Ontario. Overall, 21.5 percent of the university professors in Northwestern Ontario are older than 55. About 24.2 percent of the college and other vocational instructors and 14.4 percent of secondary and elementary school teachers are over the age of 55.

Figure 6.9: Number of Education Service Providers by Age Group



To estimate the number of employed teachers and instructors in Northwestern Ontario in the future, we need to make two assumptions. First, we assume an average retirement age of 65. We note that even though the normal retirement age is 65, one cannot be forced to retire at that age. Mandatory retirement of federally regulated employees was changed in 2012. Therefore, our retirement assumption might be conservative and thus our estimated demand for educators

be optimistic. Secondly, 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 6.4 shows the retirement-replacement and expansion/contraction demand for educators in Northwestern Ontario.³³

Table 6.4: Demand for educators in Northwestern Ontario

	2011-2020			2011-2030		
	Expansion Demand	Replacement Demand	Total Demand	Expansion Demand	Replacement Demand	Total Demand
401 University professors and post-secondary assistants	-78	145	66.81	-132	325	193
402 College and other vocational instructors	-53	110	57.29	-89	305	216
403 Secondary and elementary school teachers and educational counsellors	-242	535	293.48	-255	1,570	1,315

Table 6.4 shows that total employment in the education services sector will be only related to the retirement replacement demand. More importantly, given the declining population in Northwestern Ontario, total employment in the education sector is expected to decline in the future.

Aging Population and Supply of Tradesmen in Northwestern Ontario

We assume that demand for trades occupations stays at its current level. This implies that the future demand is solely related to retirement replacement needs of different employers. Table 6.5 and Figure 6.10 show employment trends in trades occupations in Northwestern Ontario during 1996-2011.

Table 6.5: Employment Trends in Trades Occupations in Northwestern Ontario

Trades Occupations	1996	2001	2006	2011
H1 Construction trades	2,375	2,600	2,565	2,680
H11 Plumbers, pipefitters and gas fitters	625	630	495	460
H111 Plumbers	205	245	190	185
H112 Steamfitters, pipefitters and sprinkler system installers	335	325	285	205
H113 Gas fitters	85	50	15	70
H12 Carpenters and cabinetmakers	1,060	1,355	1,435	1,525
H121 Carpenters	995	1,285	1,370	1,445
H122 Cabinetmakers	65	75	60	85
H13 Masonry and plastering trades	235	145	185	195
H131 Bricklayers	60	70	45	100

³³ We have ignored the fact that postsecondary institutions attract students from outside Northwestern Ontario. However, aging population and growing satellite campuses outside this region might reduce the number of students coming to Northwestern Ontario in the future and thus reducing the positive regional economic impact of our educational institutions.

H132 Concrete finishers	55	45	60	50
H134 Plasterers, drywall installers and finishers and lathers	120	15	65	50
H14 Other construction trades	455	465	450	500
H141 Roofers and shinglers	130	55	95	95
H142 Glaziers	40	55	55	70
H143 Insulators	60	45	60	85
H144 Painters and decorators	130	220	160	140
H145 Floor covering installers	95	90	85	105
H21 Electrical trades and telecommunications occupations	1,430	1,470	1,220	1,465
H211 Electricians (except industrial and power system)	335	420	395	555
H212 Industrial electricians	610	560	390	265
H213 Power system electricians	35	55	30	85
H214 Electrical power line and cable workers	150	130	135	150
H215 Telecommunications line and cable workers	115	75	75	190
H216 Telecommunications installation and repair workers	165	215	170	220
H3 Machinists, metal forming, shaping and erecting occupations		1,330	1,245	900
H31 Machinists and related occupations	255	235	240	80
H311 Machinists and machining and tooling inspectors	220	230	180	80
H32 Metal forming, shaping and erecting trades		1,100	1,005	810
H321 Sheet metal workers	170	180	125	175
H322 Boilermakers	20	75	50	90
H323 Structural metal and platework fabricators and fitters	45	55	60	20
H324 Ironworkers	80	120	90	60
H326 Welders and related machine operators	-	690	675	465
H4 Mechanics	4,095	3,680	3,600	3,280
H41 Machinery and transportation equipment mechanics (except motor vehicle)	2,355	2,215	2,020	1,880
H411 Construction millwrights and industrial mechanics (except textile)	1,140	1,140	1,075	645
H412 Heavy-duty equipment mechanics	680	640	495	705
H413 Refrigeration and air conditioning mechanics	95	60	115	220
H414 Railway carmen/women	150	150	80	55
H415 Aircraft mechanics and aircraft inspectors	165	160	220	180
H416 Machine fitters	110	65	30	65
H42 Automotive service technicians	1,440	1,215	1,365	1,240
H43 Other mechanics	300	255	210	160

H6 Heavy equipment and crane operators, including drillers	1,245	1,325	1,360	1,230
H61 Heavy equipment operators	1,160	1,200	1,250	1,100
H611 Heavy equipment operators (except crane)	1,010	1,045	1,115	925
H612 Public works maintenance equipment operators	150	150	135	170
H62 Crane operators, drillers and blasters	85	130	115	130
H621 Crane operators	65	95	65	65
H622 Drillers and blasters - Surface mining, quarrying and construction	10	20	40	65
H7 Transportation equipment operators and related workers, excluding labourers	4,830	4,705	4,605	4,610
H71 Motor vehicle and transit drivers	3,760	3,740	3,915	3,155
H711 Truck drivers	2,150	2,400	2,450	1,740
H8 Trades helpers, construction and transportation labourers and related occupations	2,430	2,145	2,465	1,540
Total Trades	20,035	19,270	18,790	17,260

Total employment in trades occupations declined from 20,035 in 1996 to 19,270 in 2006, 18,790 in 2006 and 17,260 in 2011. This represents a decline of about 13.9 percent during 1996-2011. Trades helpers experienced the greatest decline (36.6%) followed by machinists (32.3%) and mechanics (19.9%). Demand for construction workers rose by 12.8 percent.

Figure 6.10: Employment by Broad Trades Occupations in Northwestern Ontario

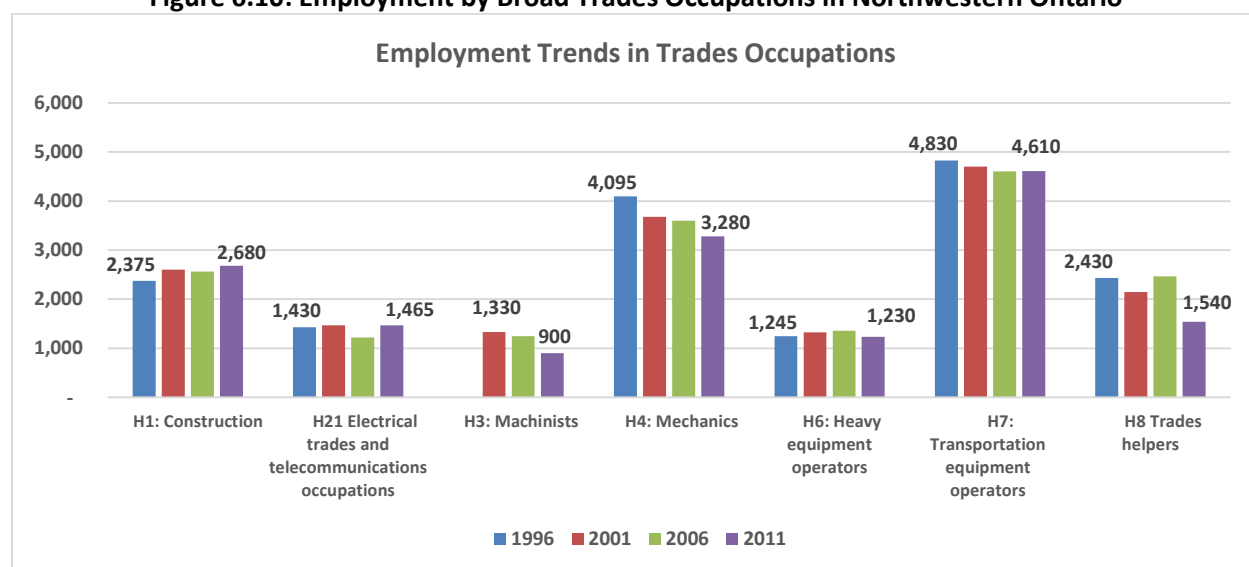
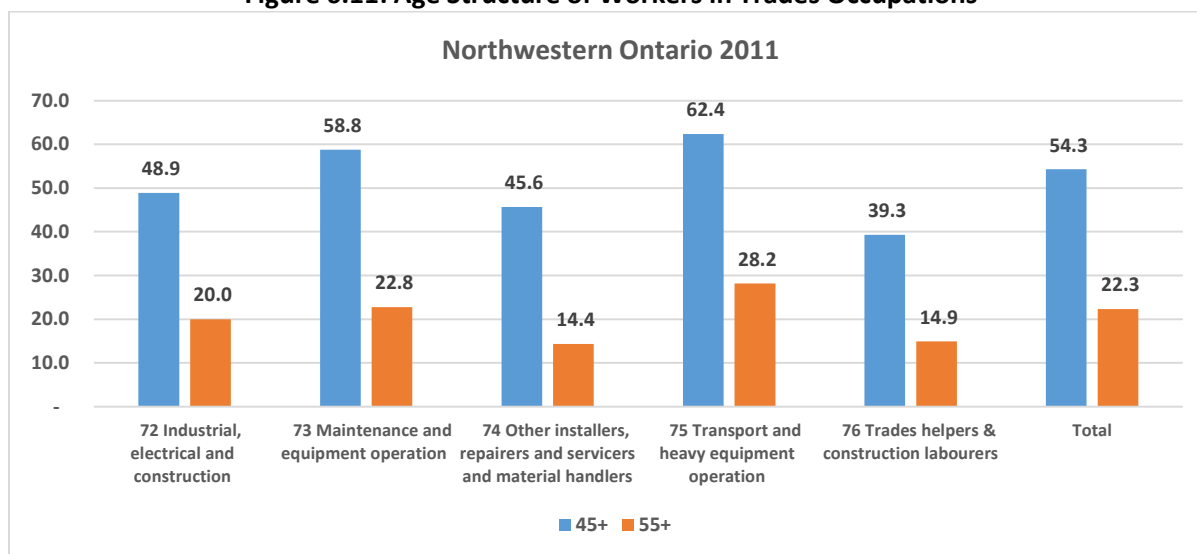


Figure 6.11 shows the age structure of trades workers in Northwestern Ontario in 2011. On average, 22.3 percent of all workers engaged in trades occupations are aged 55 and over. About 54.3 percent of them are 45 and over. Transportation equipment operators and related workers

have the highest percentage of people over the age of 55 and trades helpers and other installers, repairers and material handlers have the lowest share of people over the age of 55.

Figure 6.11: Age Structure of Workers in Trades Occupations



Trades occupations with the highest percentage of workers over the age of 60 are:

1. Heavy equipment operators (23.6%)
2. Transport and heavy equipment operation and related maintenance workers (17.6%)
3. Electricians (except industrial and power system) (16.2%)
4. Heavy-duty equipment mechanics (12.1%)
5. Plumbers, pipefitters and gas fitters (10.9%)
6. Machinery and transportation equipment mechanics (10.9%)

Under the assumption of no future employment growth, Table 6.6 shows the retirement replacement demand for trades occupations in Northwestern Ontario.

Table 6.6: Retirement Replacement Demand for Trades Occupations

NOC 2011 Classification	Replacement Demand	
	2011-2020	2011-2030
72 Industrial, electrical and construction	1,100	2,690
73 Maintenance and equipment operation	1,055	2,725
74 Other installers, repairers and servicers and material handlers	140	445
75 Transport and heavy equipment operation	1,300	2,875
76 Trades helpers & construction labourers	230	605
Total	3,855	9,370

Table 6.6 shows that there is a need for 3,855 trades workers to replace the retiring trades people during 2011-2020. Transport and heavy equipment operators (1,300) represent the largest number of potential retirees during 2011-2020 followed by industrial, electrical and construction trades workers (1,100) and maintenance and equipment operators (1,055). The number of trades workers required to replace those who will potentially retire increases significantly when we extend the projection period to 2030.

6.4: Mobile Workers: Exception or the New Normal?

Commuting for employment has been an important aspect of rural life in Canada and elsewhere. In fact, the fly-in and fly-out model of work organization is now the standard model for new mining and other resource development in remote areas. Labour shortages in remote communities have also been a factor encouraging long distance commuting to work. The model involves a system in which workers spend a certain number of weeks working on site after which they commute to their home communities for a specified rest period.³⁴

Long distance commuting provides an alternative to relocating permanently for people living in communities where job opportunities in traditional industries have declined. In fact, the percentage of Canadian workers with no fixed place of work increased from 7.6 percent in 1996 to 10.3 percent in 2006. In Ontario, the percentage of workers with no fixed workplace increased from 6.9 percent to 9.7 percent during 1996-2006. Commuting long distances is becoming more common in Northern Ontario where employment opportunities in many single industry towns have declined and all of the untapped resources are located in remote communities. With few prospects at home, workers are forced to leave their families in search of employment elsewhere.

Based on the 2011 National Household Survey, Table 6.7 shows the flow of workers from various regions (first column) to work in Northwestern Ontario communities (top row). For example, 85 workers whose main place of residence is Toronto commute to work in the City of Thunder Bay, 40 to Greenstone and 25 to Kenora.

The last row of Table 6.7 shows the number of workers in various Northwestern Ontario's census subdivisions (top row) whose place of residence is outside their place of work (first column). For example, 5,890 or 12.5 percent of people who work in the city of Thunder Bay commute to work from census subdivisions outside the city of Thunder Bay. Similarly, about 285 or 12.2 percent of workers who work in Red Lake live elsewhere in Northern Ontario.

Table 6.8 shows the number of workers who live in various Northwestern Ontario census subdivisions (top row) but work outside their place of residence (First column). For example, 1,580 of the residents of Thunder Bay work in other census subdivisions, mostly in the surrounding areas. About 40 of them work in Toronto, 25 in Winnipeg, 20 in Calgary and 45

³⁴ For advantages and disadvantages of this model see Storey, K. (2010) Fly-in/Fly-out: Implications for Community Sustainability. *Sustainability* 2(5): 1161-1181.

commute to work in Alberta. Similarly, 205 of the residents of Dryden commute to work outside their place of residence.

Table 6.7: Commuting to Work in Northwestern Ontario in 2011

Place of Residence	Place of Work in Northwestern Ontario								
	Thunder Bay	Dryden	Fort Frances	Greenstone	Kenora	Nipigon	Red Lake	Sioux Lookout, MU	Terrace Bay
Toronto, C	85			40	25				
Brampton, CY	50								
Wawa, MU	25								
White River, TP	30								
Neebing, MU	735								
Fort William 52, IRI	105								
Thunder Bay, CY	41,275	40		20		30	50	35	
Thunder Bay unorganized	1,210					50			
Oliver Paipoonge, MU	1,785								
Gillies, TP	115								
O'Connor, TP	275								
Conmee, TP	245								
Shuniah, TP	1,015								
Dorion, TP	25								
Red Rock, TP	30					90			
Greenstone, MU	55			1,515		35			55
Atikokan, TP	30								
Kenora, CY	25				5,580				
Kenora unorganized		1,340			435		35	25	
Dryden, CY	30	2,645					30	80	
Winnipeg, CY	20				30				
Ignace		55						25	
Sioux Lookout		45						2,165	
Albertan TP			220						
Fort Frances			3,020						
La Vallee, TP			370						
Couchiching 16A, IRI			55						
Wood Buffalo, SM									
Lake Helen 53A, IRI						25			
Greater Sudbury							45		
Ear Falls, TP							125		
Red Lake							2,200		
Ottawa								25	
Lac Seul 28, IRI								110	
Schreiber									290
Terrace Bay									550
Total workers living outside their place of work	5,890	1,480	645	60	55	230	285	300	345

Table 6.8: Commuting to Work outside the Place of Residence

Place of work	Place of Residence					
	Thunder Bay	Kenora	Dryden	Greenstone	Red Rock	Terrace Bay
Toronto, C	40					-
Neebing, MU	45					-
Fort William 52, IRI	475					-
Thunder Bay, CY	41,275	25	30	55	30	-
Oliver Paipoonge, MU	385					-
Shuniah, TP	65					-
Dorion, TP	20					-
Nipigon, TP	30			35	90	-
Greenstone, MU	20			1,515		-
Thunder Bay, Unorganized, NO	285					-
Fort Frances, T	40					-
Sioux Lookout, MU	35		80			-
Red Lake, MU	50		30			-
Winnipeg, CY	25	35				-
Calgary, CY	20					-
Wood Buffalo, SM	45					-
Red Rock					95	-
Kenora		5,580				-
Wood Buffalo, SM		60				-
Ignace			40			-
Dryden			2,645			-
Wabigoon Lake 27, IRI			25			-
Terrace Bay, TP				55		550
Schreiber, TP						55
Total working outside place of residence	1,580	120	205	145	120	55

In general, long distance commuters fill the gap between demand and supply of qualified workers in remote rural communities. Government regulations have also encouraged mobility by requiring frequent users of employment insurance to take a job that pays 70 percent of their past wages and in some cases to accept work that has a one-hour commute or face reduced benefits. At the same time, commuting has also become more feasible and economical.

In other words, long distance commuting is becoming a new normal especially in declining resource-based communities in Northern Ontario as well as other regions of Canada. What are the impacts of this new trend for Northern Ontario's resource-based communities? The first implication of the increasingly mobile workforce is that it makes resource development in remote communities feasible by filling the gap between the required and available workforce. A negative aspect of this process is that it reduces the need for training local residents. Most of the existing

mineral resources in Northwestern Ontario are located in remote regions, north of the 50th parallel. The majority of the residents in those remote regions are Aboriginal. The fly-in and fly-out model reduces the need to train the Aboriginal workforce and therefore reduces the beneficial impact of resource development in those communities. Additionally, by accessing their workforces and buying supplies and services from the larger metropolitan centres, the impact of resource development on local communities is seriously diminished. As a result, the economic impact and the multiplier effect of many resource developments on local communities are often greatly exaggerated.

To increase the benefit of resource development in Northwestern Ontario, measures must be taken to enhance the level of educational achievement and human capital of the residents of remote rural communities. As discussed above, the level of educational achievement of Aboriginals is significantly lower than the regional and provincial levels. Given that they will comprise an increasing share of the regional labour force, long-term regional economic development depends on improving their overall skills level.

Part VII: Concluding Remarks

Northwestern Ontario's economy has undergone a significant transformation during the past three decades. Its traditional resource-based industries have declined while the economy's dependence on government funded programs has risen significantly. The resource-based sectors have always been subject to cyclical fluctuations, boom and bust cycles. Forestry cycles have been about twice longer than the mining cycles since regeneration of forests takes much longer. It is expected that the renewal of the forestry industry will happen around 2025. The potential obstacles will be the lack of necessary infrastructure and the availability and cost of energy. Also, the mining sector appears to be on a growing path with about five mines expected to start in approximately five years requiring estimated new employment of about 2000 people.³⁵

Would the above potential resource development opportunities be the region's white knight rescuing us from the declining population and income? While the above trends are welcome news, they are not enough to significantly change our declining fortunes. More work is needed.

The present report reveals alarming trends that will negatively impact the region's competitive position and our standard of living if left unchecked.

Aging Population and Declining Workforce

The region is facing an aging and declining population, declining labour force along with deteriorating human capital composition of the workforce, mainly in rural areas. More investment in rural education is needed to reverse the declining human capital composition of the future labour force. Emphasis should not only be put on the increased investment but also on improving the quality of education delivered in urban as well as rural areas.

Various studies referred to in this report suggest that about 66.9 percent of the current jobs require post-secondary education and this skill requirement will rise to about 77.1 percent by 2030. However, on average, the skill level in Northwestern Ontario and its sub-regions is significantly below the current and future estimated skill requirements. The report shows that the skill level of the Aboriginal labour force lags behind the regional average. Given that the Aboriginal population will comprise a larger share of the future workforce, more investment is needed in upgrading the skill levels of the Aboriginal population.

Declining Small and Medium Sized Business Establishments

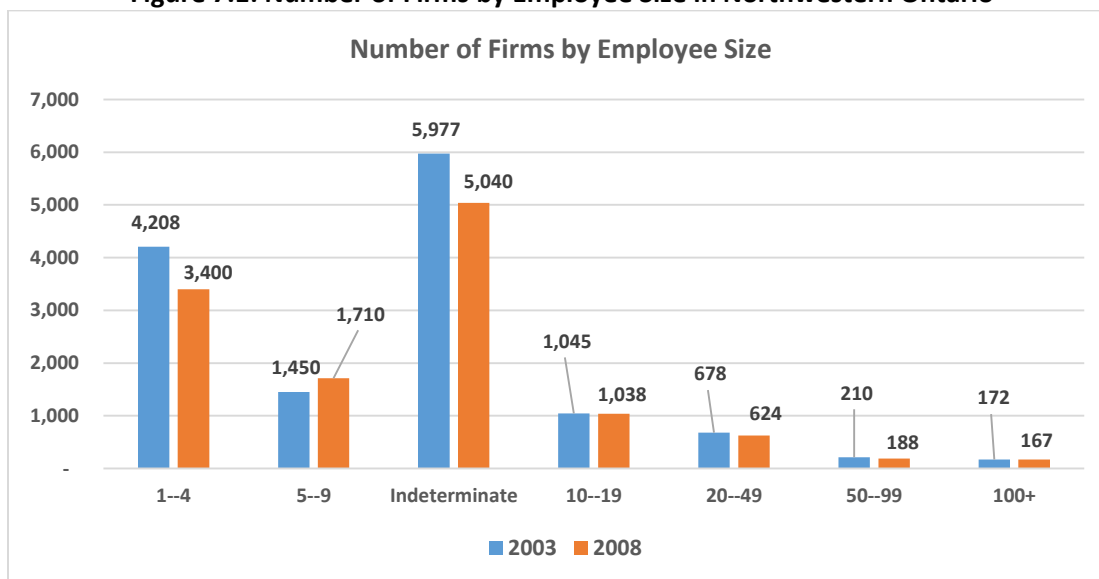
The share of private businesses in Northern Ontario has declined in recent decades. The number of business establishments in Northern Ontario declined from 45,207 in 2003 to 41,862 in 2010.³⁶

³⁵ Rainy River Gold mine (300 to 400 workers), Hammand Riff in Atikokan (300 workers), Hard Rock in Geraldton (250 workers), Red Lake (150 workers) and usually the same number of service employment is generated. In addition, the Noront Resources' Eagle's Nest project is expected to start in five years and can be considered the first phase of the Ring of Fire development.

³⁶ Included in the Business Register are all Canadian businesses which meet at least one of the three following criteria:

The number of businesses in Northwestern Ontario declined from 13,740 in 2003 to 12,167 in 2008, a decline of about 11.5 percent. Most of the business establishments in Northwestern Ontario are small (Figure 7.1). The number of firms with 1 to 4 employees declined by 19.2 percent while those with 5 to 9 employees experienced growth of about 15.9 percent. The number of firms with an indeterminate number of employees declined by 15.6 percent. The broad sectoral breakdown of Northwestern Ontario business establishments is similar to those in Ontario and Canada with 80.3 percent of Northwestern Ontario firms being in service producing sectors and 19.7 percent in goods producing industries.

Figure 7.1: Number of Firms by Employee Size in Northwestern Ontario



A report on entrepreneurship and small and medium-sized enterprises (SMEs) in Northern Ontario states that SMEs play an important role in fostering economic development.³⁷ The report finds that: “In terms of job creation, small businesses created about 100,000 new jobs nationally in 2007, a year in which SMEs accounted for 60 percent of all net new jobs....Small firms also

1. Have an employee workforce for which they submit payroll remittances to CRA; or
2. Have a minimum of \$30,000 in annual sales revenue; or
3. Are incorporated under a federal or provincial act and have filed a federal corporate income tax form within the past three years.

³⁷ Allan Riding, “Entrepreneurship and SME Growth in Northern Ontario”, a report submitted to the Northern Ontario Growth Plan Unit, Ministry of Northern Development and Mines, June 5, 2009. The report defines Micro firms as those with less than 9 employees; small firms as those with 1 to 99 employees; medium-sized firms as those with 100 to 499 employees and large firms as those with more than 500 employees. Based on the above definitions, about 98.6 percent of firms in Northwestern Ontario are classified as small-sized. Also, the Riding report finds that 83.4 percent of all firms in Northwestern Ontario are classified as Micro-firms. He reports that about 83.4 percent of all firms in Northwestern Ontario are classified as Micro-firms. The sectoral distribution of Micro-firms in Northwestern Ontario is similar to that in Ontario. About 61 percent of all Micro-firms are in services, 18 percent are in primary, 3 percent in manufacturing and 18 percent are in retail and wholesale industries.

contributed 26 percent of Canadian GDP (24 percent in Ontario) and SMEs contribution to GDP has been increasing.”³⁸ Given the importance of small-sized enterprises in job creation, their decline has negative implications for the future job creating capacity of the region.

What are the reasons for the declining number of firms in Northwestern Ontario? Various studies have shown that business cost and business environment rank highest among all factors determining the success or failure of an enterprise. For example, the Economic Developers Council of Ontario along with Austin Consulting of Cleveland Ohio prepared a list of investment factors considered in the attraction/retention decisions of companies. They examined 23 industrial sectors. Business cost and business environment rank highest among all factors considered in determining site selection.³⁹ In fact, the Competition Policy Review Panel established by the Ministry of Industry and Finance also reached a similar conclusion in their 2008 report suggesting that the attractiveness of the business environment to skilled immigrants and foreign investment will be a critical factor for developed countries like Canada. It appears that the cost conditions including energy cost as well as taxes in Northwestern Ontario has been deteriorating. A recent study examines property taxes for residential, commercial and industrial property classes in the city of Thunder Bay.⁴⁰ They find that property taxes have been rising due to the combined effect of increasing assessed property values and increasing tax rates. They conclude that (page 47): “The increasing trend is concerning for residents and businesses alike considering that Thunder Bay already has some of the highest property tax rates in the province and business sentiment is already negative towards the current property tax levels. Certainly, the forecasted increase in tax rates will not be well received by residents and businesses in the City.”

Declining Size and Composition of Employment and its effect on Income and GDP

Total employment in Northwestern Ontario increased from 106,720 in 1981 to 112,535 in 1991 but declined to 101,970 in 2011. Declining employment has also been accompanied by a change in the composition of the employed workforce. For example, the share of full-time and full-year jobs has declined from 57.7 percent in 2006 to 51.2 percent in 2011. The average earnings of full-time and full-year jobs equaled \$56,139 in 2011. During the same period, the share of part-time or part-year jobs rose from 42.3 percent in 2006 to 48.8 percent in 2011. The average earnings of the part-time or part-year jobs equaled \$24,889 in 2011. Workers with a lower level of educational achievement have the highest incidence of part-time or part-year work and have relatively lower average earnings.

³⁸ Ibid, page 1.

³⁹ See B. Moazzami, “Northern Ontario’s Economy: Challenges and Opportunities”, prepared for Ministry of Northern Development and Mines as a part of Growth Plan for Northern Ontario, May 2009. Also see B. Moazzami, HDR Decision Economics and Oraclepoll Research Limited, “Multinational and Multi-locational Enterprise Initiative: Survey of Northern Ontario Companies”, prepared for FedNor, 2012.

⁴⁰ Camillo Lento and Bahram Dadgostar, “An Analysis and Forecast of the City of Thunder Bay’s Municipal Finances”, prepared for the Thunder Bay Chamber of Commerce, 2014.

Changing size and composition of the employed workforce have impacted total labour income and output in Northwestern Ontario. As a result, the regional GDP has declined from its high of 9.5 billion dollars in 1991 to its recent historical low of 8.3 billion in 2011, a decline of about 12.35 percent. Lower regional income and rising municipal taxes result in lower disposable income and thus lower household expenditures which in turn affects regional income. In addition, there are other factors that negatively affect regional income such as out-shopping and on-line shopping.⁴¹ Perhaps one of the main sources of leakage from the local economy is the Thunder Bay Casino which has been funneling spending power out of the local economy.

Underdeveloped Industrial Clusters

Underdeveloped and shallow industrial clusters have been a constant feature of industrial development in Northwestern Ontario. I compared various industry clusters in Northwestern Ontario to those in our neighboring regions and found that Northeastern Minnesota's forest product industry cluster and Sudbury's mining cluster are well developed while Northwestern Ontario's forest and mining industries are still at their early commodity stage of production.⁴² As a result, the potential for job and wealth creation is far from being realized.

The region needs to develop a comprehensive strategy to enhance industrial clusters. Such a strategy must involve all the major stakeholders in the region's economy. In addition, using existing economic development programs for stimulating entrepreneurship would strengthen activities aimed at cluster enhancing. The region has not been successful in attracting external investment due to a variety of reasons such as high taxes and lack of ability to provide incentives. It is time to refocus resources to support home-grown small businesses that are linked to the existing regional economic base.

In this study we analyzed demographic and economic trends affecting Northwestern Ontario. Many of these trends are threatening and pose challenges for the region. In spite of the challenges, the region enjoys significant natural resources, solid educational institutions, and good access to a large North American market. The region's long-term prosperity lies primarily in our ability to expand and broaden our existing economic base and adopt policies that make the region cost competitive.

⁴¹ Price differential due to different cost structure is the main motive behind out-shopping and on-line shopping.

⁴² B. Moazzami, "Thunder Bay Economic Development: A Roadmap to Success", prepared for the City of Thunder Bay Tourism and Economic Development, 2005.