STRENGTHENING RURAL CANADA
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STRENGTHENING RURAL CANADA:

Fewer & Older: The Coming Population and Demographic Challenges in Rural Newfoundland & Labrador

A paper prepared for the Strengthening Rural Canada initiative by:
Dr. Bakhtiar Moazzami on behalf of Essential Skills Ontario and Literacy Newfoundland and Labrador

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Dr. Bakhtiar Moazzami
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EXECUTIVE SUMMARY

The main objective of the present report is to analyze past, present and future demographic changes in the province of Newfoundland and Labrador. The province is the most remote and isolated province in Canada with a population density of 1.4 persons per square kilometer. It has the lowest population density among all provinces. There are over 560 communities in Newfoundland and Labrador dispersed over 400 square kilometers with about 73.0 percent of the communities having less than 500 inhabitants. According to the 2011 National Household Survey, about 41 percent of the province's population lives in rural areas.

The study focuses mainly on rural-urban demographics and examines how demographic changes have impacted four population groups, namely total provincial population, Francophone, Aboriginal and immigrant population.

The study is organized into four parts.

Part I examines demographic change in the province of Newfoundland and Labrador. The report aims at analyzing past, present and future demographic trends. As mentioned above, the focus is on four population groups, namely total, Francophone, Aboriginal and immigrant population. We also examine population trends in rural and urban regions in the province and pay special attention to the degree of rurality.

Part II examines demographic and socio-economic trends in rural and urban areas. This part also studies rural-urban earnings differential and investigates factors explaining the existing earnings gap between rural and urban regions. The report constructs a human capital index for rural and urban areas of the province and finds that a significant part of the earnings gap between rural and urban regions is explained by differences in the human capital composition of their employed workforce.

Part III makes projections of future rural and urban population trends in Newfoundland and Labrador. Using a demographic forecasting model, the report not only estimates future rural and urban population trends but also provides an age profile of those who have out-migrated from rural and urban areas.

Part IV provides a summary and statement of conclusion.

Part I: Population Trends in Newfoundland and Labrador

The population of Newfoundland and Labrador grew from 361,416 in 1951 to 525,037 in 2011, a growth rate of about 0.75 percent per year. However, its growth rate has declined from the high of 2.7 percent per year during the 1950s to 0.1 percent per year during 2001-2011 (Figure 1). It reached a historical low of -1.0 percent per year during the 1990s due to the depressed provincial economy during that period.

The province's share of the Canadian population declined from 2.58 percent in 1951 to 2.42 percent in 1971, 2.36 percent in 1981, 1.74 percent in 2001 and 1.53 percent in 2011. The above trend is partly explained by the unfavourable economic conditions as well as a changing fertility rate in Newfoundland and Labrador.

The total fertility rates, defined as the average number of children that a woman will have over the course of her life, continued to decline in Newfoundland and Labrador during the 1990s due to a widespread economic decline in many parts of the province. It reached 1.3 children per child bearing age woman in 2001, the lowest in the country and well below the generational replacement rate of 2.1 (Figure 2).

The implication of a low fertility rate is that the natural increase (births minus deaths) has become a less important factor in provincial population growth. Conversely, immigration has become an increasingly significant factor. According to Census data, about 1.4 million immigrants came to Canada during 2001-2011.[1] However, the immigrant population in Newfoundland and Labrador increased by only 1,150 during that period. In other words, while declining fertility rates and net losses through out-migration to other provinces explain a part of the declining provincial population, a more significant explanation is the disproportionately small number of immigrants to Canada who have taken up residency in the province.

The low fertility rate, out-migration, low immigration rate and rising life expectancy have resulted in the aging of the provincial population. The share of individuals below the age of 20 has declined from 47.1 percent in 1951 to 20.5 percent in 2011 while the share of seniors rose from 6.4 percent in 1951 to 15.7 percent in 2011 (Figure 3).

Another aspect of demographic change in Newfoundland and Labrador relates to the cultural and linguistic diversity of the population (Figure 4). The share of the Francophone population increased from 0.42 percent in 2001 to 0.58 percent in 2011. Similarly, immigrants comprised 1.5 percent of the provincial population in 2001. Their share increased to 1.7 percent in 2011. The share of the Aboriginal population living on- and off-reserve increased from 0.3 and 3.5 percent in 2001 to 0.7 and 6.9 percent in 2011 respectively. The Aboriginal population is younger and has a higher fertility rate than the rest of the population. In addition, a higher percentage of them live in rural areas compared to other visible minorities.

[1] This figure is net of those who left Canada.

Part II: Demographic and Socio-Economic Trends in Rural and Urban Newfoundland & Labrador

Part II of the study focuses on rural-urban demographics and examines how demographic changes have impacted four population groups, namely total provincial population, Francophone, Aboriginal and immigrant population.

The total provincial population declined by 2.2 percent during 2001-2006 but grew by 2.8 percent during 2006-2011. As a result, the provincial population experienced a growth rate of about 0.6 percent during 2001-2011 (Figure 5). The urban population grew by 12.2 percent while the rural population declined by 8.4 percent during the same period.

During 2001-2011, the rural population declined both in absolute and relative terms. The share of the population living in rural and small towns declined from 56.4 percent in 2001 to 51.4 percent in 2011. Classifying rural areas according to their degree of rurality (Figure 6), one finds that the rural population has declined irrespective of the distance from metropolitan centres. However, the remote rural areas designated as zero metropolitan influenced zones have experienced the largest decline of about 53.0 percent followed by 9.2 percent decline in areas with a moderate link to metropolitan centres. Rural areas designated as strong and weak metropolitan influenced zones also experienced slight population decline.

The study also examines various socio-economic characteristics of rural and urban areas in Newfoundland and Labrador and pays special attention to the degree of rurality. It shows that improved economic conditions resulted in a rising labour force participation rate in the province's urban and rural areas. The participation rate is highest in urban areas. Similarly, the unemployment rate declined in all urban and rural regions of Newfoundland and Labrador due to improved economic conditions during 2001-2011. The unemployment rate is lowest in urban areas and increases as the degree of rurality rises. The unemployment rate in remote rural regions in 2011 is about 17.0 percent higher than the rate prevailing in urban centres.

In terms of dependency on government transfer payments, the study finds that an average of 12.8 percent of individuals in urban areas receive transfer payments. The dependency rate increases from 19.8 percent in rural areas with a strong link to urban centres to 25.7 percent in remote rural regions. In other words, the dependency rate in remote areas of the province is about 2.0 times greater than that in urban regions.

The average earnings in remote areas is about 72.0 percent of earnings in urban regions (Figure 7). The earnings of those who worked full-time and full-year equaled $52,170 in urban centres compared to $48,675 in rural areas with a strong link to urban centres, $44,743 in those with a moderate link, $47.650 in relatively remote regions and $48,976 in remote rural areas. What factors explain the earnings differences between rural and urban regions? Is it the distance, population size or economies of agglomeration (concentration of economic activities in an area) or the stock of human capital that explains the earnings differential between rural and urban regions?

It appears that distance from population centres does not affect earnings significantly. To examine factors explaining this phenomenon, the study calculates the percentage of the employed labour force engaged in resource-based industries in urban as well as rural areas. Results are shown in Figure 8 indicating a relatively high percentage of the employed workforce is engaged in resource-based occupations and industries in rural areas with moderate to no link with urban centres. It appears that the occupational and industrial concentration of the workforce in rural Newfoundland and Labrador can partly explain the earnings distribution in rural and urban regions.

Focusing on various population groups, the study finds that the total Francophone population in Newfoundland and Labrador increased by 15.0 percent during 2001-2011. Overall, the average age of the Francophone population increased from 43.6 in 2001 to 48.7 in 2011. The Francophone population is older than the total provincial population. The average age of the provincial population is 41.2 years compared to 48.7 years for the Francophone population.

The majority or 42.6 percent of the Francophone population live in urban areas. About 23.9 percent live in rural areas with a moderate link with urban centres. Another 27.3 percent live in rural areas with a weak link to urban centres. About 3.5 percent live in strong metropolitan influenced zones. Only about 2.7 percent live in remote rural communities. Figure 2.14 also shows that the Francophone population are under-represented in urban areas but over-represented in rural areas with a moderate or weak link to urban centres.

Focusing on the Aboriginal population, the study finds that the Aboriginal population has increased from 18,770 in 2001 to 35,805 in 2011, a growth rate of about 90.8 percent. The study discusses various factors explaining the significant growth of the Aboriginal population in the province. Almost all the on-reserve Aboriginal people live in rural areas designated as weak or no metropolitan influenced zones (Figure 9). Similarly, 32.2 percent of the off-reserve Aboriginal people live in rural areas with a weak link to urban centres and 19.6 percent reside in remote rural regions. About 28.6 percent of off-reserve Aboriginal people live in urban centres and the rest live in rural areas with a strong or moderate link to urban centres.

Turning attention to the immigrant population, the study finds that the immigrant population has increased by 1,150 during 2001-2011. This is equivalent to an average annual net immigration of 115 persons during the above period. This is significantly lower than the average annual immigration levels of about 464 the province experienced during 1994-2004. This is consistent with Statistics Canada's estimate of the immigrant retention rate of about 36.0 percent for Newfoundland and Labrador. Comparison of the average age of the immigrants who arrived in Newfoundland and Labrador during 1991-2001 with the present age distribution, the study concludes that the majority of the immigrants who out-migrate from the province are among the younger age categories.

The majority or 78.6 percent of the immigrant population live in urban centres. About 18.6 percent of the immigrant population live in rural areas with moderate to weak link to urban centres. These are areas with significant primary, processing and mining operations.

Part II of the study also examines factors explaining the earnings differences between rural and urban regions. There are at least two competing explanations for the observed earnings gap. One relates the earnings gap to the differences in human capital composition in rural and urban regions. The other relates the earnings gap to the presence of agglomeration economies resulting from the concentration of workers and proximity of firms in larger urban areas. The study finds that a significantly larger share of the earnings gap is explained by the differences between the stock of human capital in rural and urban areas (Figure 10).

Part III: Population Projection for Rural and Urban Newfoundland & Labrador

Part III of the report makes projections of the rural and urban population from the base year of 2011 to 2025. The study shows that the fertility rates in rural areas have been higher than those in urban regions for women aged 15 to 28 and lower for those older than 28 years of age (Figure 11). Overall, the total fertility rate in the province equaled 1.40 in 2011 which is significantly below the national average of 1.61 and the generational replacement rate of 2.1. The total fertility rate in urban centres equals 1.35 compared to 1.51 in rural areas.

Assuming that the 2001-2011 demographic trends will continue into the future, the province's urban population is expected to rise from 255,262 in 2011 to 267,212 in 2018 and 277,588 in 2025. However, due to the low fertility rate and aging of the population, the growth rate declines as we go forward into the future (Figure 12).

The above relatively stable population structure is primarily due to a significant net in-migration that urban areas have been experiencing (Figure 13). The report shows that the urban areas experienced significant net inflow of people in almost all age categories during 2001-2011. The newcomers came from other provinces, rural areas and other countries. Overall, the province experienced a net inflow of about 19,672 people during 2001-2011.

The province's rural population declined from 294,495 in 2001 to 269,719 in 2011, a decline of about 8.4 percent during 2001-2011. This is in contrast to the total urban population that grew about 12.2 percent and the provincial population that grew about 0.6 percent during the same period. The study shows that the 2001-2011 trend is expected to continue into the future (Figure 14).

Out-migration of youth along with low fertility rates and aging population results in acceleration of population decline in the future. The rate of decline increases from 0.84 percent during 2001-2011 to 1.32 percent during 2011-18, 1.57 percent during 2018-23 and 1.80 percent during 2023-25.

How much of the rural population decline is caused by out-migration? The study estimates the migration flows during 2001-2011 (Figure 15). It appears that out-migration of youth between the ages of 20 and 34 has played a significant role in the declining rural population in Newfoundland and Labrador.

Part IV: Summary and Concluding Remarks

The study finds that the urban population in Newfoundland and Labrador has been rising at a declining rate. Recent resource-related developments have created favorable economic conditions attracting youth from rural areas as well as other provinces. On the other hand, the rural population has been declining due to out-migration of youth and a low fertility rate. Although out-migration has been a reality in rural areas for some time, it intensified after the collapse of the cod fishery in the 1990s. Out-migration of youth reduces the ability of rural areas to stay vibrant and economically viable. It also decreases the capacity of the local population to support local businesses. In fact, the study shows that the stock of human capital declines as one moves towards more rural areas (Figure 10). According to a recent survey, local businesses identified the lack of human resources as their greatest challenge. About 40.0 percent of local businesses surveyed ranked recruitment of human resources as their most important labour market challenge.[2] Other studies have also shown that multinational and multi-locational firms in Canada have difficulty finding qualified workers in rural areas.[3]

Lack of qualified workers creates a significant obstacle for any economic development initiative in rural as well as urban regions. Rural and urban areas are experiencing a high unemployment rate along with growing demand for qualified labour. This suggests a potential skills mismatch between labour supply and demand. In fact, minimum formal skills requirements in the fishing industry has resulted in relatively low stock of human capital in rural areas. According to the 2011 National Household Survey, about 23.2 percent of individuals between the ages of 15 and 64 in Newfoundland and Labrador do not have a high school diploma compared to the national average of about 17.0 percent.

Attempts by both levels of government to stabilize the rural population appear to have failed. The study shows that out-migration from rural areas has been across most age groups. This will continue as long as no sustainable economic opportunity exists in those areas. The present mismatch between demand and supply of skills in rural as well as urban areas suggests that investment in human capital may provide one potentially viable long-term solution to the present labour market challenges rural and urban areas are facing in Newfoundland and Labrador.

[2] Vodden, K., Lysenko, E. and Freshwater, D. (2011), *Urban-Rural Interaction in Newfoundland and Labrador: Summary of pilot region questionnaire results*.

[3] For example see B. Moazzami, *Multi-national and Multi-locational Enterprise Initiative: Survey of Northern Ontario Companies and Analysis of the Results,* prepared for Federal Economic Development Initiative for Northern Ontario (FedNor), March 2012.

INTRODUCTION

The main objective of the present report is to analyze past, present and future demographic trends in Newfoundland and Labrador (N.L.). The province is the most remote and isolated province in Canada with a population density of 1.4 persons per square kilometer. It has the lowest population density among all provinces. There are over 560 communities in Newfoundland and Labrador dispersed over 400 square kilometers with about 73.0 percent of communities with less than 500 inhabitants. According to the 2011 National Household Survey, about 41 percent of the province's population lives in rural areas.

Demographic changes have a significant impact on social and economic conditions in the province. Naturally, 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 younger generation that came after the boomers is much smaller in number. As a result, the overall provincial population is aging slowly and this process will continue into the foreseeable future.

An aging population impacts the labour force and hence a region's ability to generate output and income. It also affects other aspects of the economy such as a household's consumption expenditure patterns, saving rates and investments. An aging population also affects the tax base and therefore provincial revenue. It also influences demand for public services such as health care, education and pensions which are the main budgetary components sensitive to an aging 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.

The study focuses mainly on rural-urban demographics and examines how demographic changes have impacted four population groups, namely the total provincial population, Francophone, Aboriginal and immigrant population. The study also examines various socio-economic characteristics of rural and urban Newfoundlanders and Labradoreans and pays special attention to the degree of rurality. The role of education and human capital in explaining rural-urban earnings differential is also investigated.

The study is organized into four parts. **Part I** analyzes demographic change in the province of Newfoundland and Labrador. In general, the provincial population is aging rapidly. Rising average life expectancy combined with a low fertility rate and out-migration of youth have resulted in the aging of the provincial population. The baby boomers were followed by much smaller generations in number primarily due to a declining fertility rate. As a result, the share of seniors increased from 6.4 percent in 1951 to 10.6 percent in 1996 and 15.4 percent in 2011. Aging of the population is also reflected in the rising median age of the population from 21.6 years in 1951 to 30.8 years in 1991 and 44.0 years in 2011.

Part II of the report examines demographic and socio-economic trends in rural and urban areas with a special focus on the degree of rurality. It is found that the urban population has been rising

while the rural population has been declining due to an out-migration of youth caused by declining economic opportunities, especially after the imposition of the moratorium on cod fishing in 1992. Traditionally, fishing was the main economic base of most rural areas in Newfoundland and Labrador. Lack of economic growth combined with out-migration of youth influences the ability of rural areas to stay vibrant and economically viable. Part II of the study also discusses various socio-economic characteristics of the rural and urban population in 2011 and pays special attention to the degree of rurality. This part also examines factors explaining the earnings gap between rural and urban regions.

Part III looks into the future and makes projections of rural and urban population trends during 2011-2025. It is shown that if current trends continue, the urban population will continue to grow, albeit at a declining rate, while rural areas continue to decline in the coming years. In addition, both the urban and rural population are aging rapidly which affects demand for various publicly funded programs such as health care.

Part IV presents a summary and statement of conclusions.

Sources of Data Used in this Study

In most parts, the data used are based on special tabulations obtained from Statistics Canada pertaining to various Censuses of Canada. Except for the population data, the 2011 data is based on the 2011 National Household Survey (NHS). In fact, the 2011 Census of Population and the 2011 NHS both provide information on the Canadian population for various geographic regions and for numerous common topics. However, the NHS estimates are derived from a sample survey and therefore are subject to sampling error amplified by a relatively high non-response error due to the survey's voluntary nature. For the sake of consistency, we have tried to use Census data wherever possible. We have also used data from the Economics and Statistics Branch of the Newfoundland and Labrador Statistics Agency.

Population Groups Studied in this Report

The focus of the report is on the following four population groups:

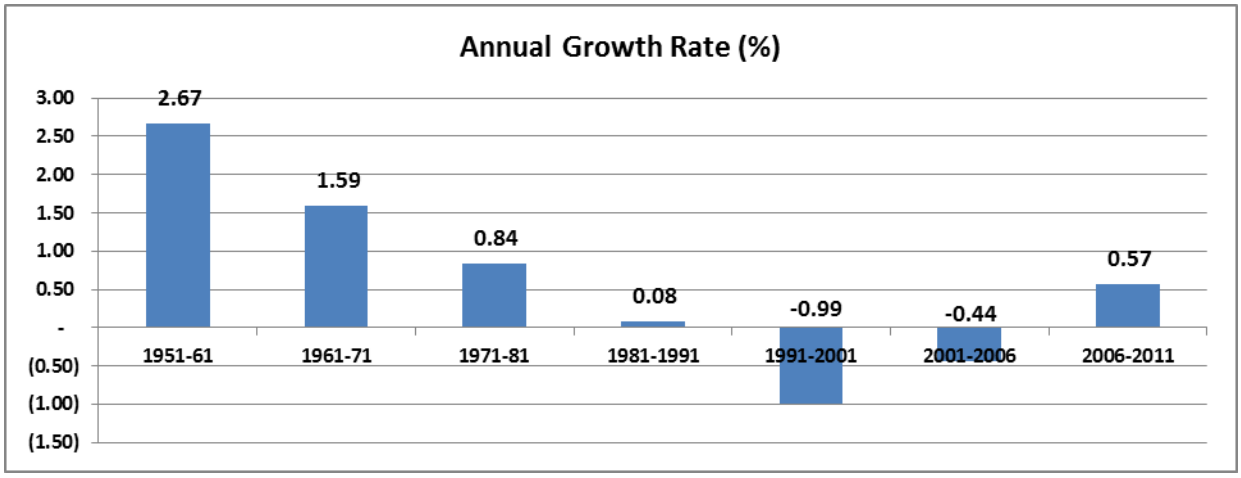
1. Total population;
2. Francophone population defined as individuals whose mother tongue is French;
3. Aboriginal population defined by Statistics Canada as persons who reported identifying with at least one Aboriginal group, that is, North American Indian, Metis or Inuit, and/or those who reported 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.

PART I: POPULATION TRENDS IN NEWFOUNDLAND AND LABRADOR

The population of Newfoundland and Labrador grew from 361,416 in 1951 to 525,037 in 2011, a growth rate of about 0.75 percent per year. About 92.0 percent of the population lives on the island of Newfoundland. About 40.0 percent of the provincial population live in the St. John's Census Metropolitan Area (CMA) which is the provincial capital and the largest city.

The population growth has not been uniform during the 1951-2011 period. As Figure 1.1 shows, the provincial population grew at a declining rate during 1951-1991. This was partly due to a declining provincial economy during that period. The province experienced a population decline during 1991-2006 following the collapse of the cod fishery during the early 1990s.[4] Following a major energy and resource discovery, the provincial population stabilized and experienced moderate growth during 2006-2011.

Figure 1.1: Annual Percentage Growth Rate of Population in Newfoundland & Labrador



The province's share of the Canadian population declined from 2.58 percent in 1951 to 2.42 percent in 1971, 2.36 percent in 1981, 1.74 percent in 2001 and 1.53 percent in 2011. The above trend is partly explained by the unfavorable economic conditions as well as changing fertility rate in Newfoundland and Labrador.

The high fertility rates during the 20-year period that followed World War II ended midway through the 1960s. Fertility rates leveled off in Canada around the late 1970s to early 1980s. However, Newfoundland and Labrador did not experience a similar trend. As Figure 1.2 shows, the total fertility rates, defined as the average number of children that a woman will have over the course of her life, continued to decline in Newfoundland and Labrador during the 1990s due to a widespread economic decline in many parts of the province. It reached 1.3 children per child

[4] Even though the role of the fishery has declined, it has remained the main economic activity in many rural coastal areas. By the late 1990s, the fishing and fish processing industries had reoriented themselves to shellfish.

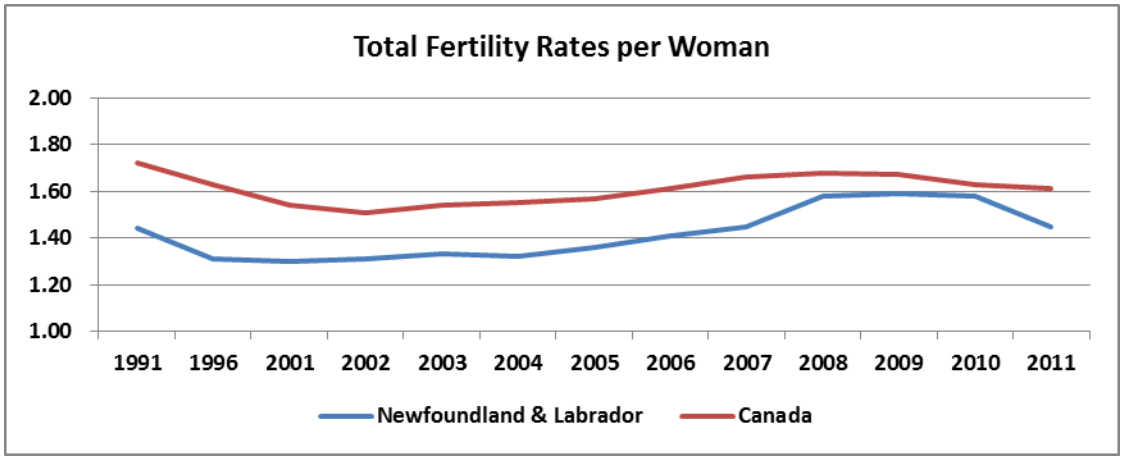
bearing age woman in 2001, the lowest in the country and well below the generational replacement rate of 2.1.

As we will see later in this report, natural population change (births minus deaths) is one of the main components of population change. Low fertility rates combined with aging population impacts the natural population change. In 2006, the province of Newfoundland and Labrador was the only Canadian province to record a negative natural population change.[5]

As Figure 1.2 shows, the total fertility rate rose during the second half of the 2000s reaching a recent high of 1.59 in 2009, but continued to decline thereafter. It stands at 1.45 children per woman in 2011. This is lower than the total fertility rate in Canada in 2011 (1.61).

The gap between the total fertility rate in Canada and N.L. has started to decline in recent years due to significant economic growth in the province. Real GDP in the province grew by 5.9 percent in 2013 resulting from gains in investment, consumption and exports.[6] The provincial real GDP growth was the highest among Canadian provinces in 2013. The GDP growth is expected to continue in the coming years due to significant investment along with higher consumer expenditures.

Figure 1.2: Fertility Rates in Canada and Newfoundland & Labrador



In general, the implication of a low fertility rate is that the natural increase (births minus deaths) has become a less important factor in provincial population growth. Conversely, immigration has become an increasingly significant factor.

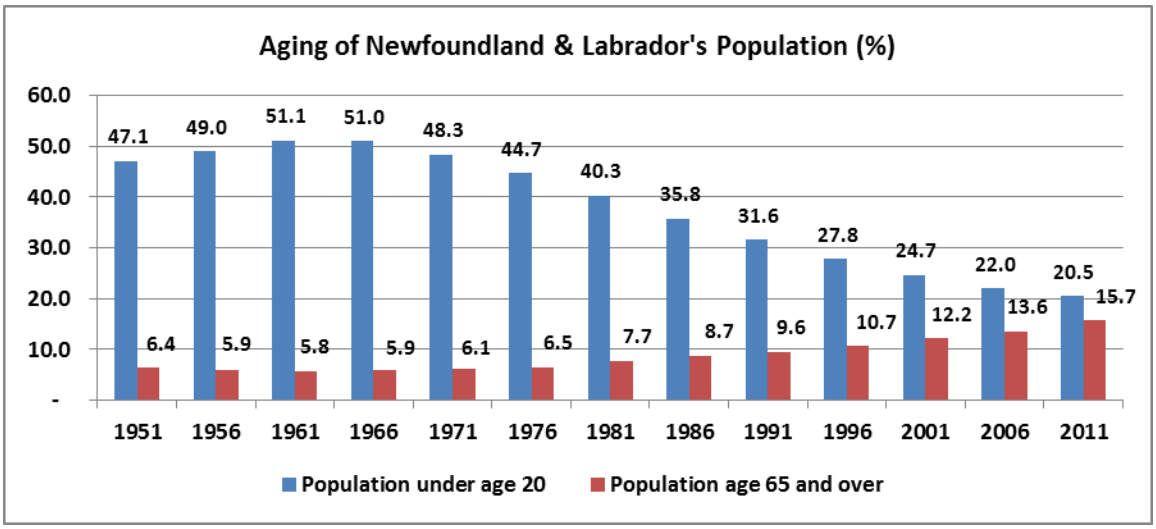
The federal government sets the target levels of immigration to Canada. For example, the target level is set at 240,000 to 265,000 during 2013-2015. The target range has increased over the past 20 years and is presently about 0.75 percent of population each year.[7] According to Census

[5] Economics and Statistics Branch, Department of Finance, Government of Newfoundland and Labrador, *Demographic Change: Issues & Implications,* October 2006.
[6] Department of Finance, Government of Newfoundland & Labrador, *Provincial Economic Review*, 2014.
[7] Ministry of Finance, *Ontario Population Projections Update 2012-2036*, Spring 2013.

data, about 1.4 million immigrants came to Canada during 2001-2011.[8] However, the immigrant population in Newfoundland and Labrador increased by only 1,150 during that period. In other words, while declining fertility rates and net losses through migration to other provinces explain a part of the declining provincial population, a more significant explanation is the disproportionately small number of immigrants to Canada who have taken up residency in the province.

The low fertility rate, out-migration, low immigration and rising life expectancy have resulted in the aging of the provincial 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 increased from 71.13 years in 1960 to 81.24 years in 2012. As a result, the share of individuals below the age of 20 has declined from 47.1 percent in 1951 to 20.5 percent in 2011 while the share of seniors rose from 6.4 percent in 1951 to 15.7 percent in 2011 (Figure 1.3).

Figure 1.3: Changing Composition of Newfoundland & Labrador's Population

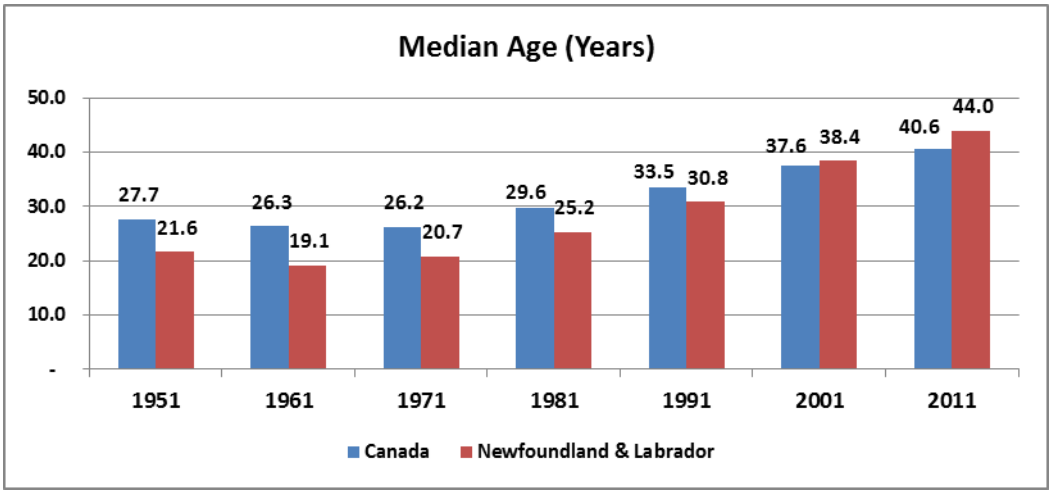


Aging of the population is also reflected in a rising median age of the population from 21.6 years in 1951 to 44.0 years in 2011 (Figure 1.4). Slower growth and aging of the population affect the labour force and hence the province's ability to generate output and income. In fact, an aging population affects virtually all other aspects of the economy too. It affects patterns of saving and household consumption. It influences sales, production, and investment levels. Furthermore, its impact falls unevenly on different industries and sectors of the economy. An aging population also affects the tax bases from which the provincial government draws revenue and influences demand for government program expenditures such as health care. What healthcare related services will be essential to meet the requirements of a rapidly aging provincial population? How many doctors, nurses and other types of healthcare providers do we need to train to replace the aging healthcare providers while satisfying the growing demand for

[8] This figure is net of those who left Canada.

healthcare services? How much of specific types of services and facilities do we require? These are important questions that policy makers need to address in the coming years.

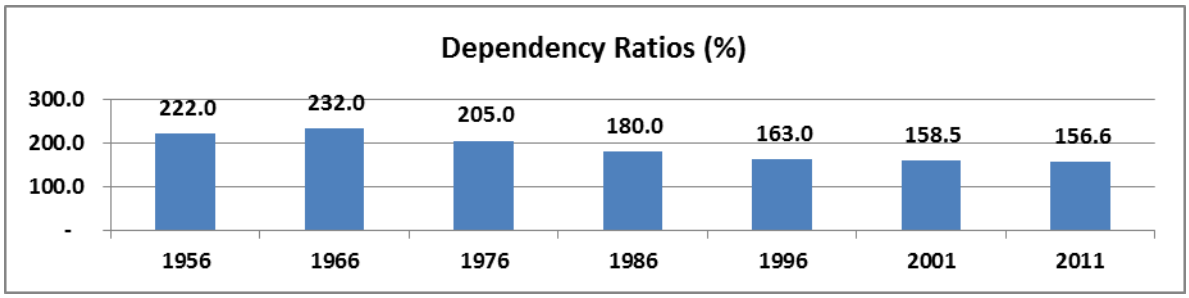
Figure 1.4: Aging of the Population in Newfoundland & Labrador



The relationship between the working and non-working components of the population is usually captured by a dependency ratio. This 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 1.5 shows that the dependency ratio in Newfoundland & Labrador increased during 1956 to 1966 reflecting the high fertility levels in that period. The ratio declined from a high of 232.0 percent in 1966 to 156.7 percent in 2011. The ratio was high during the 1950s and 1960s reflecting the high fertility levels and large numbers of children born in those periods. The ratio then declined as fertility rates dropped sharply and as the baby boomers entered the workforce and changed their status from dependents to providers. The decline in the ratio has continued for four decades. However, as the baby boomers move into old age, the ratio is expected to rise again.

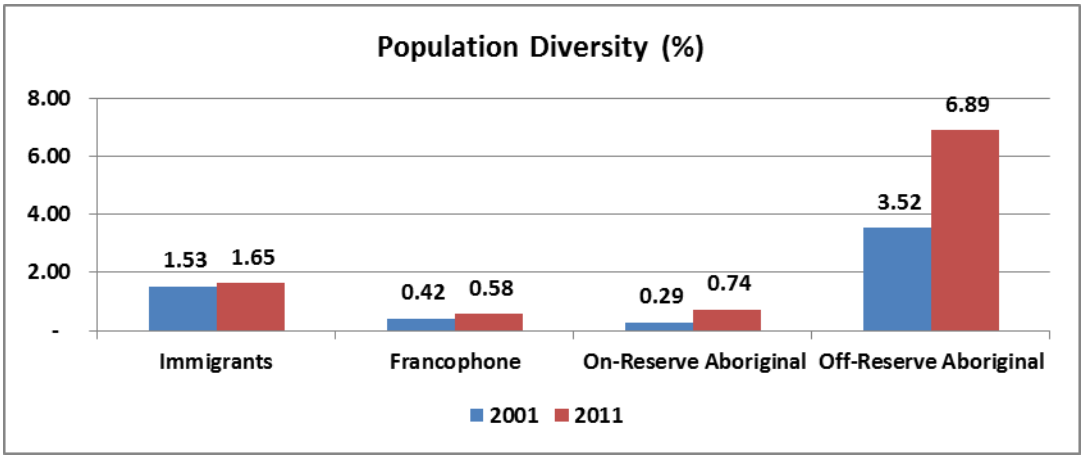
Figure 1.5: Ratio of Total to Working-Age Population in Newfoundland & Labrador



The composition of the dependent population has changed significantly. During the 1950s and 1960s, it was largely younger people who dominated the dependent population. As shown in Figure 1.3, more than 50.0 percent of the population were children below the age of 20 and less than 6.0 percent were seniors in the 1960s. In 2011, 20.5 percent of the population were children below the age of 20 while 15.7 percent were seniors. This trend will continue. The dependent population will be comprised largely of older rather than younger people.

Another aspect of demographic change in Newfoundland and Labrador relates to the cultural and linguistic diversity of the population (Figure 1.6). The share of the Francophone population increased from 0.4 percent in 2001 to about 0.6 percent in 2011. In spite of the rise in the number and share of the Francophone population during 2001-2011, N.L. is Canada's most linguistically homogeneous province with more than 97.6 percent of the residents reporting English as their mother tongue in the 2011 census. The share of the Aboriginal population increased from 3.8 percent to 7.6 percent during 2001-2011. Similarly, immigrants comprised 1.5 percent of the provincial population in 2001. Their share increased to 1.7 percent in 2011.

Figure 1.6: Cultural & Linguistic Diversity in NL



The share of the Aboriginal population living on- and off-reserve increased from 0.3 and 3.5 percent in 2001 to 0.7 and 6.9 percent in 2011 respectively. The Aboriginal population is younger and has a higher fertility rate than the rest of the population. In addition, as we will see later, a higher percentage of them live in rural areas compared to other visible minorities.

PART II: DEMOGRAPHIC AND SOCIO-ECONOMIC TRENDS IN RURAL AND URBAN NEWFOUNDLAND AND LABRADOR

Demographic changes have not been uniform across rural and urban regions in Newfoundland and Labrador. The province's urban population has experienced growth while its rural population has declined during 2001-2011. The objective of this part of the report is to examine population trends in rural and urban regions during 2001-2011. Various socio-economic characteristics of the rural and urban population are analyzed. The earnings gap between rural and urban population has been widening. We examine whether this gap is associated with agglomeration economies (geographic concentration of economic activity) or reflects differences in their human capital composition.

In analyzing demographic changes in Newfoundland and Labrador, we pay special attention to the four population groups, namely total, Francophone, Aboriginal and immigrant population.

How have the recent demographic changes affected these four population groups? Has the impact been the same for the rural as for the urban population? How many people live in rural and urban areas in the province? What are the main socio-economic characteristics of these population groups? Is the population growing or declining in these regions? These are questions we seek to explore in this part of the study.

Before examining demographic changes in rural and urban areas, we need to define the term 'rural'. There has been an age-old debate regarding whether rural is a geographical concept or a social representation, or a culture and a way of life. This report focusses on the geographical classifications of rural regions. There are at least six different definitions of rural areas each emphasizing different criteria such as population size, population density and labour market context. Different definitions result in different estimates of the rural and urban population. Statistics Canada suggests that "the appropriate definition should be determined by the question being addressed; however, if we were to recommend one definition as a starting-point or benchmark for understanding Canada's rural population, it would be the "rural and small town" definition. This is the population living in towns and municipalities outside the commuting zone of larger urban centres (i.e. outside the commuting zone of centres with a population of 10,000 or more)."[9]

Based on the above information, we define rural and small town (RST) to refer to the population living outside Census Metropolitan Areas (CMAs) and Census Agglomerations (CAs). A CMA has an urban core population of at least 100,000 and includes all neighbouring Census Sub-Divisions (CSDs) where:

[9] Pleassis, V.D., R. Badhiri, R.D. Bollman and H. Clemenson, *Definitions of "Rural"*, Statistics Canada, Agriculture Division, December 2002, Catalogue NO. 21-601-MIE – No. 061.

1. 50% or more of the employed labour force living in the CSD commutes to work in the urban core, or
2. 25% or more of the employed labour force working in the CSD commutes to work from the urban core.

A CA has an urban core population between 10,000 and 99,999 people. The same commuting flow thresholds also apply in the description of CAs.

Therefore, rural and small town refers to the non-CMA/CA population. Using recently developed metropolitan influenced zones (MIZ) indicators by Statistics Canada, one can disaggregate the effect of metropolitan accessibility on RSTs. This classification disaggregates rural areas into four types of zones based on the degree of metropolitan influence as indicated by the degree of commuting to any CMA or CA. These are defined as follows:

1. *Strong MIZ* includes CSDs with a commuting flow of 30 percent or more. In other words, at least 30 percent of the total employed labour force living in the CSD works in any CMA/CA urban core;
2. *Moderate MIZ* includes CSDs with a commuting flow of between 5 and 30 percent. This means that at least 5 percent, but less than 30 percent of the total employed labour force living in the municipality works in any CMA/CA urban core;
3. *Weak MIZ* includes CSDs with a commuting flow of more than 0 percent, but less than 5 percent suggesting that more than 0 percent, but less than 5 percent of the total employed labour force living in the municipality works in any CMA/CA urban core;
4. *No MIZ* includes CSDs with either fewer than 40 people in the resident labour force or where no people commute to the urban core of any CMA or CA.

Demographic Trends in Urban and Rural Areas

The data used in this part of the study are based on detailed socio-economic information on all census sub-divisions in Newfoundland and Labrador obtained from 2001 and 2011 census custom tabulations. The data set includes information on average socio-economic characteristics such as average employment earnings, average full-time earnings, population by highest level of educational attainment, employment by industry and occupation, population by ethnicity, employed labour force and the participation and unemployment rates for each CSD. It also shows the statistical area classification for each CSD which allows us to designate a CSD as urban or rural along with its degree of rurality.

Based on the above classification, one can classify all 376 CSDs in Newfoundland and Labrador into 13 CSDs that fall within the St. John's CMA and 15 CSDs that fall within the three CAs, namely Corner Brook, Grand Falls-Windsor and Bay Roberts. The CSDs that fall within CMAs or CAs are considered as urban areas. The other CSDs are classified as rural areas with different degrees of rurality including 30 with strong link to urban centres, 134 with moderate link, 75 with weak link and 109 with no link to urban centres.

The province of Newfoundland and Labrador is unique in the sense that it is the most remote and isolated province in Canada with about 73.0 percent of communities having less than 500 inhabitants. The question that arises is how sensitive the rural-urban demographics are to the definition of rural selected?

To examine the sensitivity of rural-urban demographics to the definition selected, we first use the definition of rural population as persons living in centres with less than 1000 population and outside areas with 400 persons per square kilometer. This is the definition often used by Statistics Canada.[10] Figure 2.1 shows rural-urban population trends based on the above definition.

Figure 2.1: Population Trends in Rural-Urban Newfoundland & Labrador

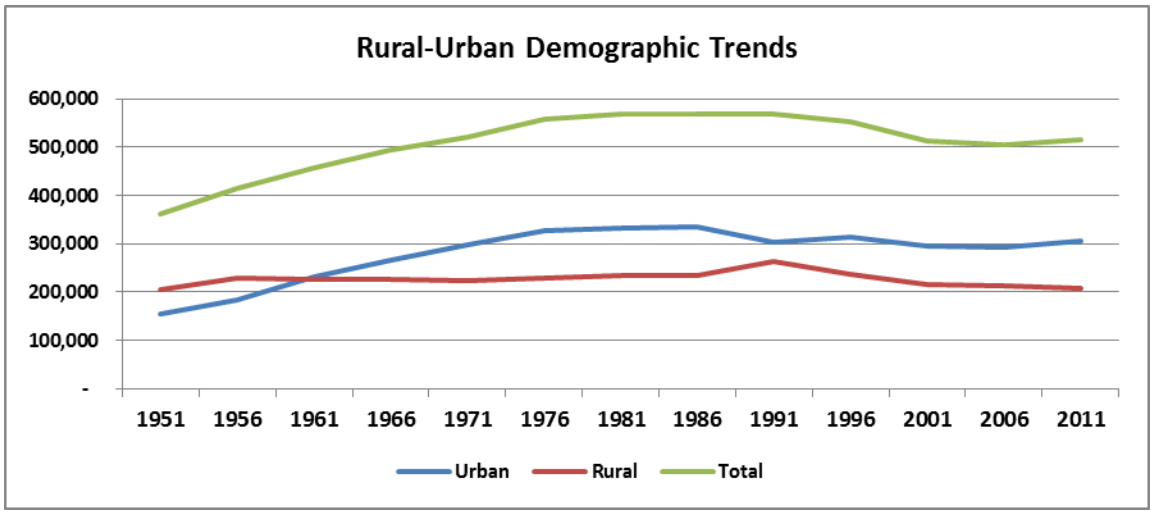


Figure 2.1 shows that the rural population rose from 206,621 in 1951 to 264,023 in 1991, but declined to 216,734 in 2001 and 208,970 in 2011.[11] The declining rural population after 1991 coincides with the collapse of the cod fishery which primarily affected small villages. In relative terms, the share of rural population in Newfoundland and Labrador has been declining since 1951. It declined from 57.2 percent in 1951 to 46.4 percent in 1991, 42.2 percent in 2001 and 40.6 percent in 2011.

Using the Statistical Area Classification, Figure 2.2 shows the geographical classification of individuals in CSDs with less than 1000 population during 2001-2011 to urban and rural areas.

[10] The problem with this definition is that it can result in some remote areas, such as Attawapiskat Indian Reserve in the James Bay area, being designated as an urban or population centre while designating some small but urban CSDs as rural areas.
[11] Statistics Canada, Population, urban and rural by province and territory, Newfoundland and Labrador, February 4, 2011.

Figure 2.2: Geographical Distribution of Rural Population in Newfoundland & Labrador

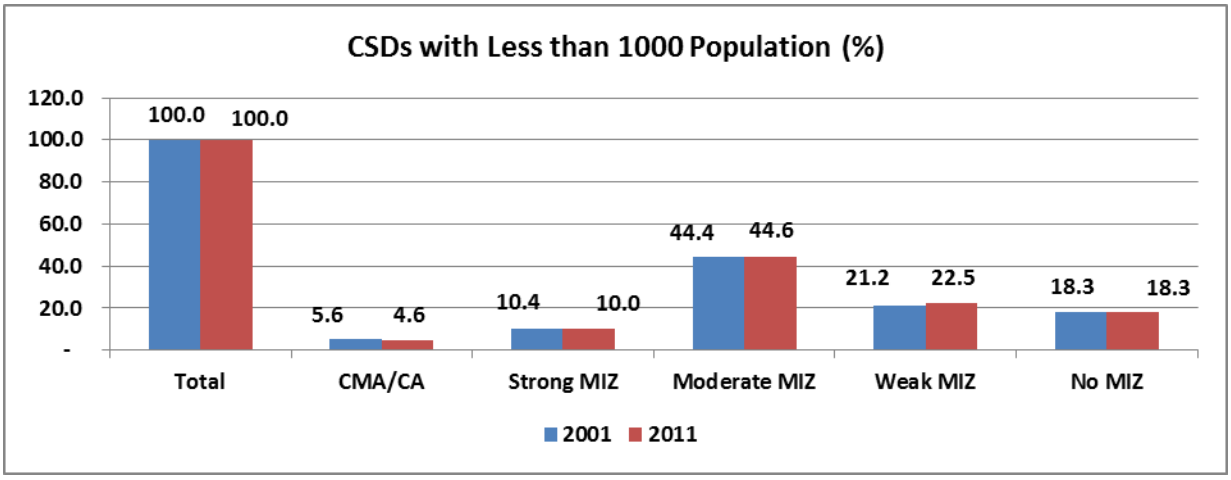
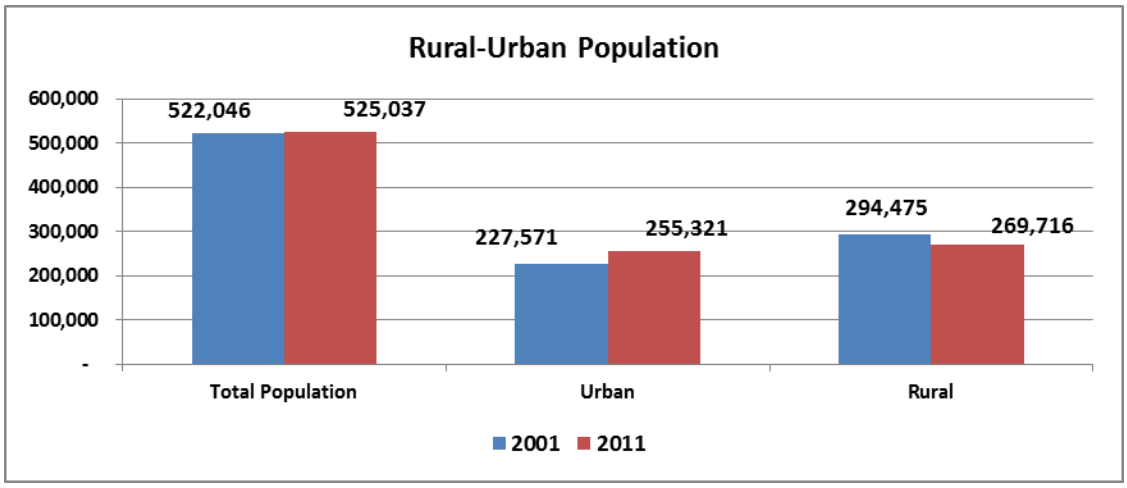


Figure 2.2 shows that even though the rural population declined during 2001-2011, its geographical distribution did not change significantly during 2001-2011. About 4.6 percent of the residents of CSDs with less than 1000 population are included in CMA or CA regions. These are CSDs that either fall completely or partly inside the core of a CMA or CA or meet the above mentioned commuting flow rules for CMA or CA. The majority of the population of areas with less than 1000 residents live in areas designated as moderate, weak or no metropolitan influenced zones.

Using the rural and small town definition which defines rural population as persons living in non-CMA/CA areas, Figure 2.3 shows the distribution of Newfoundland and Labrador's population into rural and urban during 2001-2011. The figure shows that the overall picture does not change due to the changing definition of rural areas. The percentage of the population living in rural areas increases by 12.2 percent due to the definition of rural having been expanded to areas with less than 10,000 population. However, the percentage decline in rural population during 2001-2011 increases dramatically from 3.6 percent, based on the narrower definition of rural, to 8.4 percent with the small town and rural definition.[12]

[12] Based on the narrower definition of rural (Figure 2.1), the rural population declined from *216,734 in 2001 to 208,970 in 2011*. Based on the rural and small town definition (Figure 2.3), the rural population declined from 294,475 in 2001 to 269,716 in 2011.

Figure 2.3: Distribution of Rural & Urban Population



The total provincial population declined by 2.2 percent during 2001-2006 but grew by 2.8 percent during 2006-2011. The urban population grew by 12.2 percent while the rural population declined by 8.4 percent during 2001-2011. Some of the above rural and urban population changes may be due to the reclassification of boundaries.[13] In their analysis of rural and small town Canada, Mendelson and Bollman also found that when the reclassification of boundaries is taken into account, Canada's RST population was 18.0 percent smaller in 1996 compared with 1976.[14]

Figure 2.3 also shows that the population living in rural and small towns declined both in absolute and relative terms. The share of the population living in RST areas declined from 56.4 percent in 2001 to 51.4 percent in 2011. Mendelson and Bollman also found that the share of Canada's population living in RST areas declined from 34.0 percent in 1976 to 22.0 percent in 1996.[15] Mitchell also reports that between 1971 and 2001, the percentage of the population residing in rural and small towns declined by about one fifth, to only 20.3 percent.[16] She also finds that during the last census period of the millennium (1996-2001), more than 50 percent of the country's smallest settlements lost residents.[17]

[13] The reclassification of boundaries from rural and small towns to urban areas are likely to affect CSDs that are in the commuting zone of CMAs and CAs and not those that are farther away from urban areas, i.e., those with zero, weak or moderate MIZ classification. Mitchell attributes the growth of rural areas close to metropolitan regions to the decision of urban residents to combine an urban workforce with the benefits of rural living. She states that as a greater number of ex-urbanites relocate to the countryside, "municipalities formerly classified as rural and small town soon became engulfed by the expanding sphere of urban influence." See Mitchell Clare J.A., *Population Growth in Rural and Small Town Ontario: Metropolitan Decentralization or Deconcentration*?, Canadian Journal of Regional Science, 2009, 377-392.

[14] Mendelson Robert and Ray D. Bollman (1998), *Rural and Small Town Canada Analysis Bulletin*, Vol. 1, No. 1, Cat. No. 21-006-XIE.

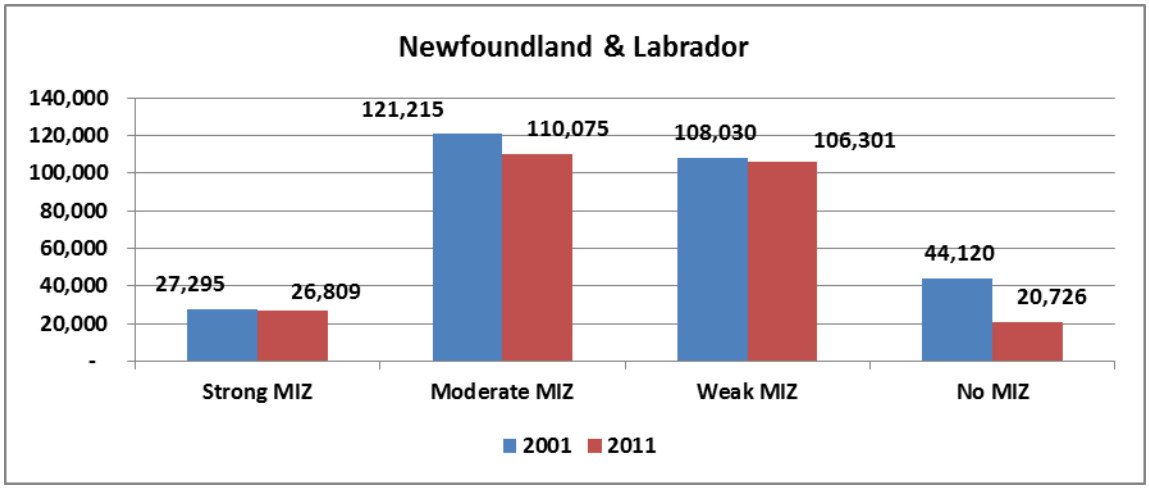
[15] Ibid, p. 7.

[16] Mitchell Clare J.A., *Population Growth in Rural and Small Town Ontario: Metropolitan Decentralization or Deconcentration?,* Canadian Journal of Regional Science, 2009, 377-392.

[17] Ibid, p. 377.

Using custom tabulations based on the 2001 census and 2011 National Household Survey, Figure 2.4 shows the distribution of the rural population in Newfoundland and Labrador by degree of rurality. It shows that the rural population has declined irrespective of the distance from population centres. However, the remote rural areas have experienced the largest decline of about 53.0 percent followed by 9.2 percent decline in areas with a moderate link to metropolitan centres. Rural areas designated as strong and weak metropolitan influenced zones also experienced slight population decline.

Figure 2.4: Rural Population by Degree of Rurality



In relative terms, the share of rural population living in CSDs with a strong urban influence declined from 5.2 to 5.1 percent. The share of rural population in CSDs with a moderate metropolitan influence declined from 23.2 percent in 2001 to 21.0 percent in 2011. The share of rural population living in areas with a weak link declined from 20.7 to 20.2 percent. The share of population in remote rural areas declined significantly from 8.5 percent to 3.9 percent during 2001-2011. Figure 2.4 also shows that about 85.3 percent of the rural population live in areas designated as moderate to no metropolitan influenced zones. This is identical to the figure suggested based on the definition of rural as areas with less than 1000 residents (Figure 2.2).

Age Distribution of Population in Newfoundland and Labrador

Table 2.1 and Figure 2.5 show the age distribution of the total population in Newfoundland and Labrador during 2001-2011.[18] As mentioned above, the provincial population declined by 2.2 percent during 2001-2006 but grew by 2.8 percent during the subsequent period. As a result, as Table 2.1 shows, the provincial population increased marginally by 0.57 percent during 2001-2011.

The population in all age categories below 50 experienced decline during 2001-2011. On the other hand the number of people aged 50 and over increased during the same period. As a

[18] Age distribution of the population is based on population data by single year of age obtained through census custom tabulations.

result, the total population below the age of 50 declined by 12.8 percent while the number of seniors increased by 29.4 percent during 2001-2011. The number of the prime working age population between the ages of 20 and 44 declined by 12.5 percent during 2001-2011.

Figure 2.5 shows that the share of the population under 19 years of age has also declined from 24.7 percent in 2001 to 20.5 percent in 2011. Similarly, the share of the population in prime working age declined from 36.8 percent in 2001 to 32.0 percent in 2011. During the same period, the share of the population between the ages of 50 and 64 rose by 5.8 percent. The share of seniors 65 years and over increased by 3.5 percent during the above period.

Table 2.1: Age Distribution of the Total Population

Age Category	2001	%	2011	%	Percentage Change
0 to 4 years	25,198	4.83	24,802	4.72	- 1.57
5 to 9 years	29,125	5.58	25,174	4.79	-13.57
10 to 14 years	34,924	6.69	27,116	5.16	-22.36
15 to 19 years	39,754	7.62	30,396	5.79	-23.54
20 to 24 years	35,588	6.82	32,455	6.18	- 8.80
25 to 29 years	32,299	6.19	31,218	5.95	- 3.35
30 to 34 years	37,338	7.15	31,205	5.94	-16.43
35 to 39 years	42,852	8.21	34,528	6.58	-19.42
40 to 44 years	44,186	8.46	38,838	7.40	-12.10
45 to 49 years	43,561	8.34	42,551	8.10	- 2.32
50 to 54 years	39,976	7.66	43,209	8.23	8.09
55 to 59 years	30,599	5.86	42,345	8.07	38.39
60 to 64 years	23,027	4.41	38,896	7.41	68.91
65 to 69 years	19,224	3.68	28,920	5.51	50.44
70 to 74 years	16,322	3.13	20,101	3.83	23.15
75 to 79 years	12,696	2.43	14,598	2.78	14.98
80 to 84 years	8,726	1.67	10,041	1.91	15.07
85 and over	6,651	1.27	8,644	1.65	29.97
Total - Age	**522,046**	**100.00**	**525,037**	**100.00**	**0.57**
0 to 50	364,825	69.88	318,283	60.62	-12.76
20 to 44	192,263	36.83	168,244	32.04	-12.49
0 to 64	458,427	87.81	442,733	84.32	- 3.42
65 and over	63,619	12.19	82,304	15.68	29.37

The aging of Newfoundland and Labrador's population is also reflected in the fact that the median age of the population increased from 38.4 years in 2001 to 41.7 years in 2006 and 44.0 years in 2011. An aging population increases demand for the services catered to the needs of the elderly such as health care. It has important implications for the labour force and the ability of the province to generate output and income. It also affects other aspects of the economy such as a household's income, spending, savings and investment behaviour. Lower household income

also results in lower provincial tax revenue. This is happening while demand for public services such as health care is rising.

As mentioned above, an aging population affects the relationship between the working and non-working segments of the population. This relationship is captured by a dependency ratio defined as the ratio of the total population to the working age population, i.e., those aged 20 to 64 years. Based on Table 2.1, the dependency rate declined from 158.5 percent in 2001 to 156.6 percent in 2011. As the baby boomers move into retirement, the dependency burden will start to increase. This increase will begin during the next 15 years when the last group of boomers retire.

Figure 2.5: Aging Population in Newfoundland & Labrador

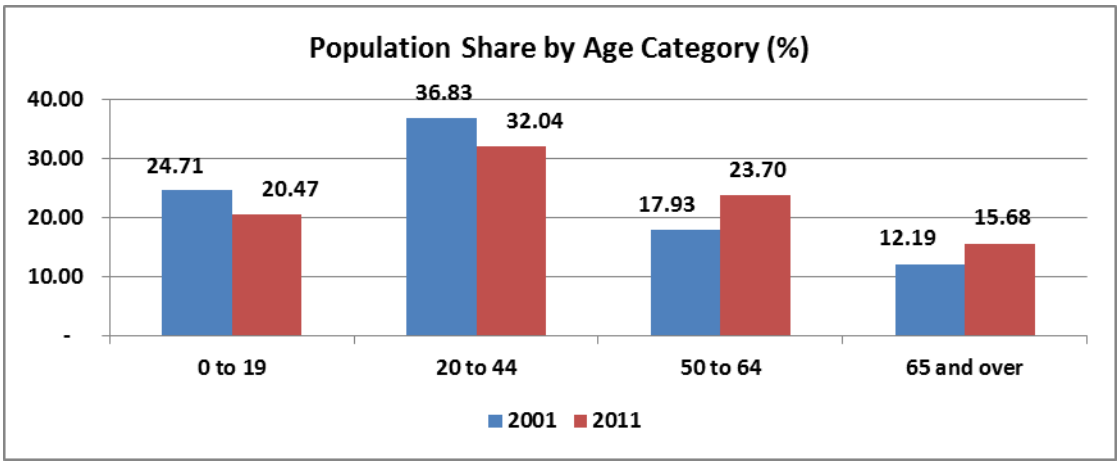


Table 2.2 and Figure 2.6 show the percentage age distribution of the urban population in Newfoundland and Labrador. They show that the urban population increased by 12.2 percent during 2001-2011. As is the case for the total population, the urban population is also aging. As shown in Table 2.2, seniors aged 65 years and over are the fastest growing segment of the urban population in N.L.

In addition, even though the population size has increased in most age categories, the percentage share of younger people has declined. For example, the share of individuals under 19 years of age has declined from 24.5 percent in 2001 to 21.2 percent in 2011, a decline of about 3.3 percent. The share of the prime working age population aged 20 to 44 has declined by 2.9 percent. On the other hand, the share of population aged 50 to 64 has increased by 4.2 percent. The share of seniors 65 years and over increased by 2.1 percent.

Table 2.2: Age Distribution of Urban Population in Newfoundland & Labrador

Age Category	2001	%	2011	%	Percentage Change 2001-2011
0 to 4 years	11,620	5.11	13,365	5.23	15.02
5 to 9 years	12,864	5.65	12,871	5.04	0.05
10 to 14 years	14,887	6.54	13,112	5.14	-11.92
15 to 19 years	16,476	7.24	14,844	5.81	- 9.91
20 to 24 years	18,034	7.92	19,519	7.64	8.23
25 to 29 years	15,966	7.02	19,068	7.47	19.43
30 to 34 years	17,092	7.51	17,932	7.02	4.91
35 to 39 years	19,365	8.51	18,044	7.07	- 6.82
40 to 44 years	19,324	8.49	18,849	7.38	- 2.46
45 to 49 years	18,454	8.11	20,187	7.91	9.39
50 to 54 years	16,351	7.19	19,533	7.65	19.46
55 to 59 years	12,638	5.55	18,222	7.14	44.18
60 to 64 years	9,160	4.03	15,859	6.21	73.13
65 to 69 years	7,540	3.31	11,735	4.60	55.64
70 to 74 years	6,459	2.84	8,100	3.17	25.41
75 to 79 years	5,011	2.20	5,942	2.33	18.58
80 to 84 years	3,510	1.54	4,252	1.67	21.14
85 and over	2,820	1.24	3,887	1.52	37.84
Total - Age	**227,571**	**100.00**	**255,321**	**100.00**	**12.19**
0 to19	55,847	24.54	54,192	21.23	- 2.96
20 to 44	89,781	39.45	93,412	36.59	4.04
0 to 64	202,231	88.87	221,405	86.72	9.48
65 and over	25,340	11.13	33,916	13.28	33.84

Figure 2.6: Aging Urban Population

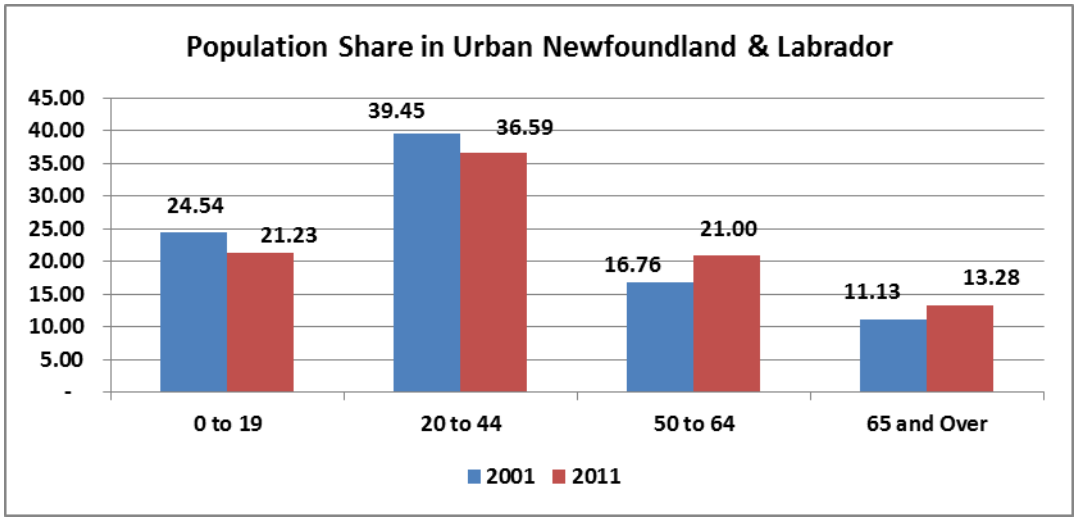


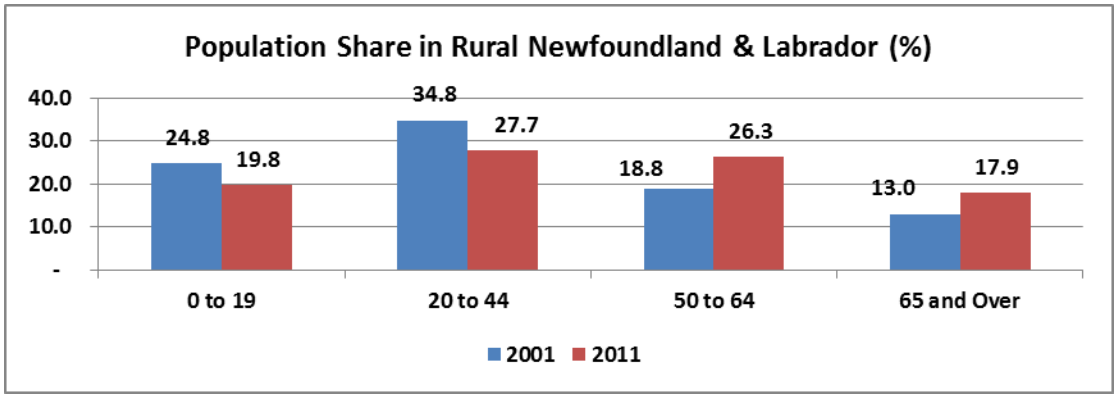
Table 2.3 and Figure 2.7 show the percentage age distribution of the rural population in Newfoundland and Labrador. The total rural population declined by 8.4 percent during 2001-2011. Every age category under 50 years has experienced a significant decline. For example, the number of individuals under the age of 19 declined by 27.1 percent. Similarly, the number of the prime working age population declined by 27.0 percent. Overall, the population under the age of 64 declined by 13.6 percent while the number of seniors aged 65 and over increased by 26.4 percent.

The share of the population under the age of 19 declined from 24.8 percent to 19.8 percent during 2001-2011. The share of the prime working age population declined from 34.8 percent in 2001 to 27.7 percent in 2011. On the other hand, the size and share of the population aged 50 and over increased during the above period. The share of seniors aged 65 years and over increased by 4.9 percent during 2001-2011. This is much greater than the growth rate of seniors in urban areas (2.1%). In other words, the rural population is aging much faster than the urban population in Newfoundland and Labrador. The share of seniors in rural N.L. equals 17.9 percent compared to 13.3 percent in urban areas and 15.7 percent in Newfoundland and Labrador.

Table 2.3: Age Distribution of Population in Rural Newfoundland and Labrador

Age Category	2001	%	2011	%	Percentage Change 2001-2011
0 to 4 years	13,578	4.61	11,437	4.24	-15.77
5 to 9 years	16,261	5.52	12,303	4.56	-24.34
10 to 14 years	20,037	6.80	14,004	5.19	-30.11
15 to 19 years	23,278	7.90	15,552	5.77	-33.19
20 to 24 years	17,554	5.96	12,936	4.80	-26.31
25 to 29 years	16,333	5.55	12,150	4.50	-25.61
30 to 34 years	20,246	6.88	13,273	4.92	-34.44
35 to 39 years	23,487	7.98	16,484	6.11	-29.82
40 to 44 years	24,862	8.44	19,989	7.41	-19.60
45 to 49 years	25,107	8.53	22,364	8.29	-10.93
50 to 54 years	23,625	8.02	23,676	8.78	0.22
55 to 59 years	17,961	6.10	24,123	8.94	34.31
60 to 64 years	13,867	4.71	23,037	8.54	66.13
65 to 69 years	11,684	3.97	17,185	6.37	47.08
70 to 74 years	9,863	3.35	12,001	4.45	21.68
75 to 79 years	7,685	2.61	8,656	3.21	12.64
80 to 84 years	5,216	1.77	5,789	2.15	10.99
85 and over	3,831	1.30	4,757	1.76	24.17
Total - Age	**294,475**	**100.00**	**269,716**	**100.00**	**- 8.41**
0 to19	73,154	24.84	53,296	19.76	-27.15
20 to 44	102,482	34.80	74,832	27.74	-26.98
0 to 64	256,196	87.00	221,328	82.06	-13.61
65 and over	38,279	13.00	48,388	17.94	26.41

Figure 2.7: Aging Rural Population in Newfoundland & Labrador



Socio-Economic Characteristics of Rural and Urban Population in Newfoundland & Labrador

Demographic change and economic change are inextricably linked. Individuals migrate from economically depressed areas to those with favorable economic conditions. At the same time, lack of a qualified labour force reduces the ability of rural residents to participate in the benefits of economic development in their regions. Lack of a qualified labour force can also represent a barrier to economic development in remote regions. This is especially true in resource-based communities.

This part of the study examines various socio-economic characteristics of rural and urban areas in Newfoundland and Labrador based on detailed 2011 census custom tabulations. The study pays special attention to the degree of rurality. We note that the average statistics reported in this part is the average over all Census Subdivisions (CSDs) in rural and urban areas and not that of the individuals living in those regions. In other words, each CSD gets an equal weight in the calculation of the average statistics irrespective of the number of residents in the CSD. Therefore, the averages reported in this part may be slightly different from those reported by Statistics Canada, which are based on individuals rather than areas.

Figure 2.8 shows the average labour force participation and unemployment rates among individuals between the ages of 15 and 64 in urban and rural Newfoundland and Labrador during 2001-2011. It shows that improved economic conditions resulted in a rising labour force participation rate in urban and rural areas in the province. The participation rate is highest in urban areas. The rise of the participation rate also reflects a growing number of women joining the labour force. In fact, the labour force participation rate during 1980-2009 increased by 43.0 percent for women compared to 6.0 percent for men.[19] Similarly, the unemployment rate declined in all urban and rural regions of Newfoundland and Labrador due to improved economic conditions during 2001-2011. The unemployment rate is lowest in urban areas and increases as the degree of rurality rises. The unemployment rate in remote rural regions in 2011 is about 17.0 percent higher than the rate prevailing in urban regions.[20]

[19] Newfoundland and Labrador Statistics Agency, Labour Force Characteristics by Sex, 1976 to 2010, Annual Averages.
[20] Note that the official unemployment rates do not include individuals who have stopped looking for work and therefore underestimates the effective rate of unemployment in rural regions. In addition, high unemployment rates in rural regions would lead to out-migration which artificially reduces the unemployment rates in those areas.

Figure 2.8: Participation and Unemployment Rates in Urban & Rural Newfoundland & Labrador

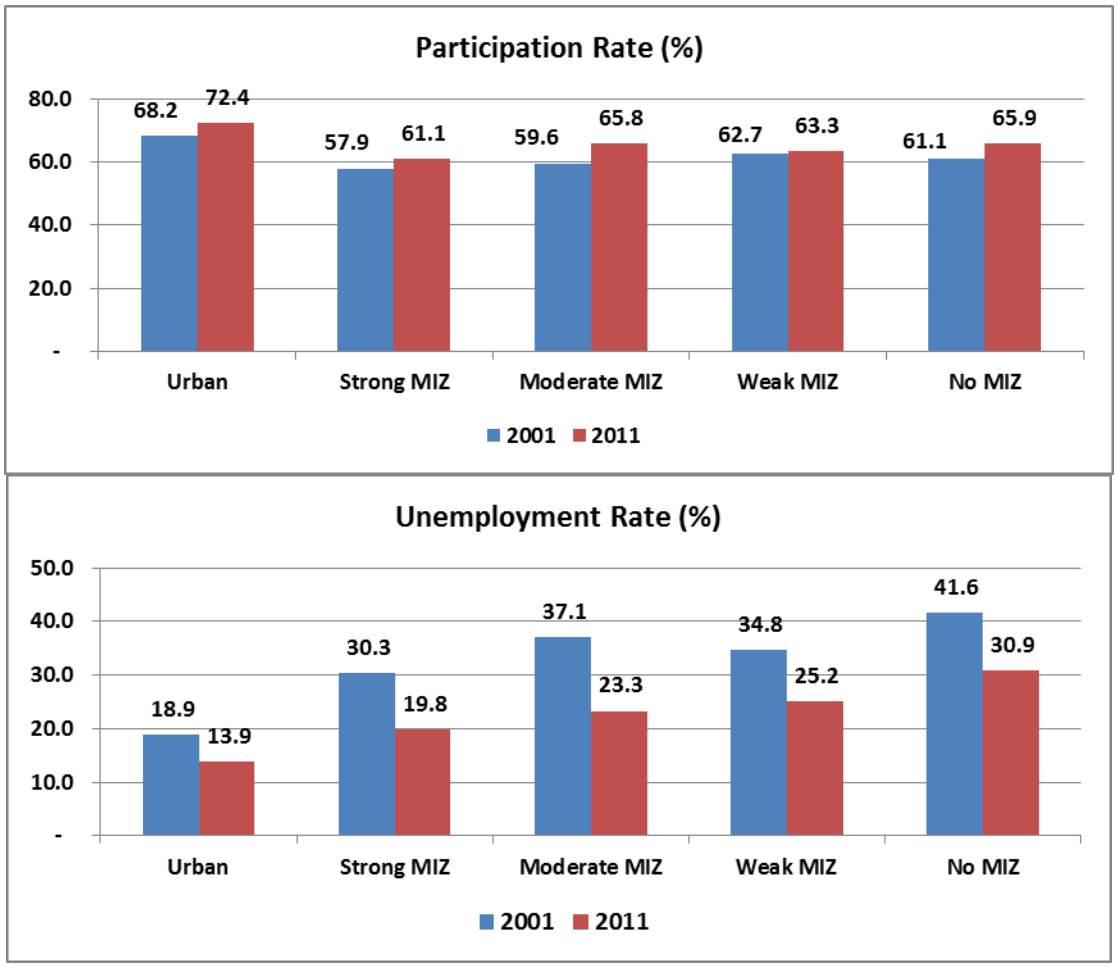


Figure 2.9 shows the percentage of population aged 15 to 64 who received government transfer payments in 2011. It shows that an average of 12.8 percent of individuals in Newfoundland and Labrador's urban areas received transfer payments. The dependency rate increases marginally as the degree of rurality rises. Figure 2.9 also shows that the dependency rate in rural areas with a strong link to urban centres equals 19.8 percent. The dependency rates in all other rural regions are double that in urban centres.

Figure 2.9: Dependency Rate on Government Transfer Payments

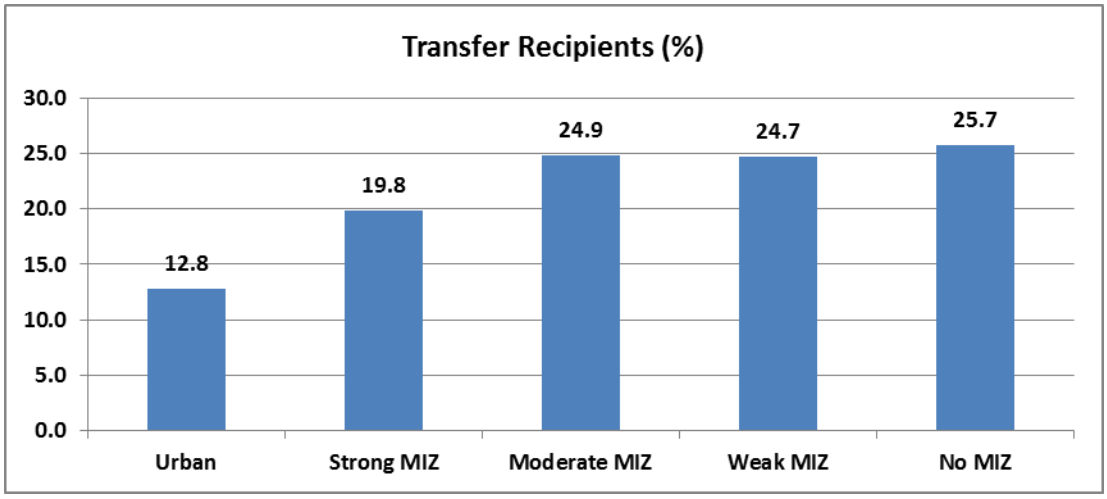


Table 2.4 shows the share of individuals aged 15 to 64 with their highest level of schooling in various regions in Newfoundland and Labrador in 2011.

Table 2.4: Regions by Highest Level of Schooling (%)

Highest Level of Schooling	Urban	Strong MIZ	Moderate MIZ	Weak MIZ	No MIZ
Less than High School	18.31	25.44	33.60	34.20	36.53
High School	24.63	22.80	23.86	23.45	22.58
Trade	15.02	15.17	15.56	12.85	9.95
College	23.71	22.07	15.42	19.31	9.36
University	17.50	9.14	4.85	6.72	1.83

Table 2.4 shows that the level of educational achievement in urban areas is much higher than that in rural regions. Urban areas have the smallest percentage of people without a high school diploma and largest share of those with a college or university degree. The share of individuals without a high school diploma rises as the degree of rurality increases. The percentage of individuals without a high school diploma in remote rural regions is about twice greater than that in urban regions. At the same time, the percentage of persons with a post-secondary education is lowest in remote rural regions. In fact, many multinational and multi-locational firms have identified lack of a qualified labour force as one of the most important obstacles they face in rural Canada.[21]

[21] See B. Moazzami, *Multi-national and Multi-locational Enterprise Initiative*, Industry Canada, 2011.

Figure 2.10 shows the percentage of individuals aged 15 to 64 with employment income in rural and urban regions. We note that about 24 percent of the CSDs did not report information regarding the percentage of the individuals 15 to 64 with employment income. Those observations were deleted. This could affect the results shown in Figure 2.10.

Figure 2.10: Population 15 to 64 Years of Age with Employment Income

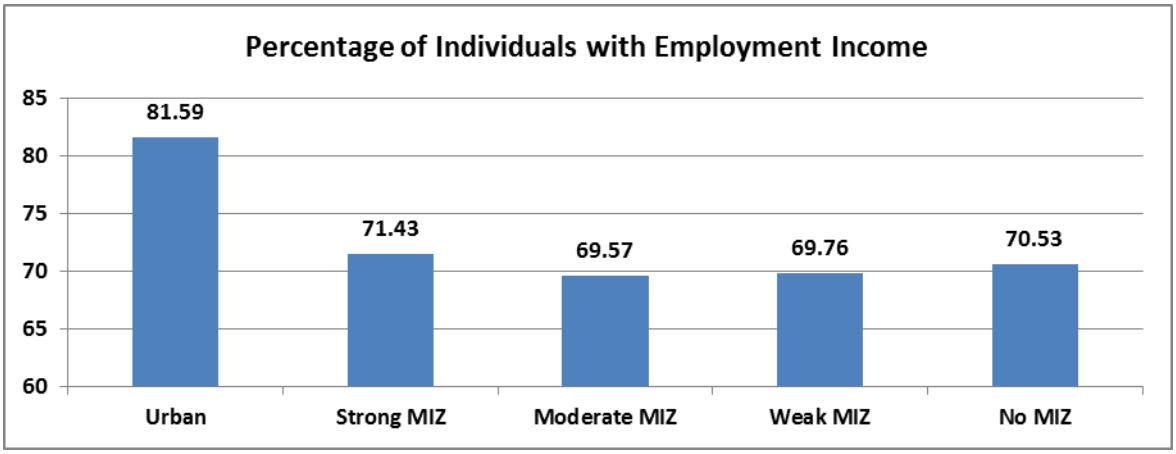
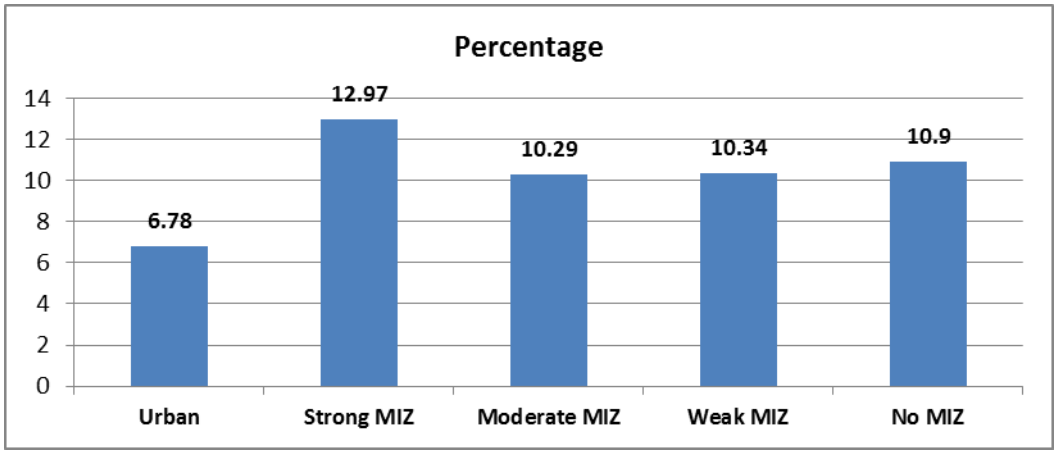


Figure 2.10 shows that 81.6 percent of individuals in urban areas work and earn employment income. The percentage of the population aged 15 to 64 with employment income in rural areas is much smaller than that in urban centres. However, the percentage of people with employment income does not change significantly as the degree of rurality rises. On average, only about 70.3 percent of individuals aged 15 to 64 in rural areas reported having employment income compared to 81.6 percent in urban areas. Figure 2.11 shows the percentage of population aged 15 to 64 who fall below the low income cut-offs in 2010.

Figure 2.11: Percentage of People Below Low Income Cut-offs

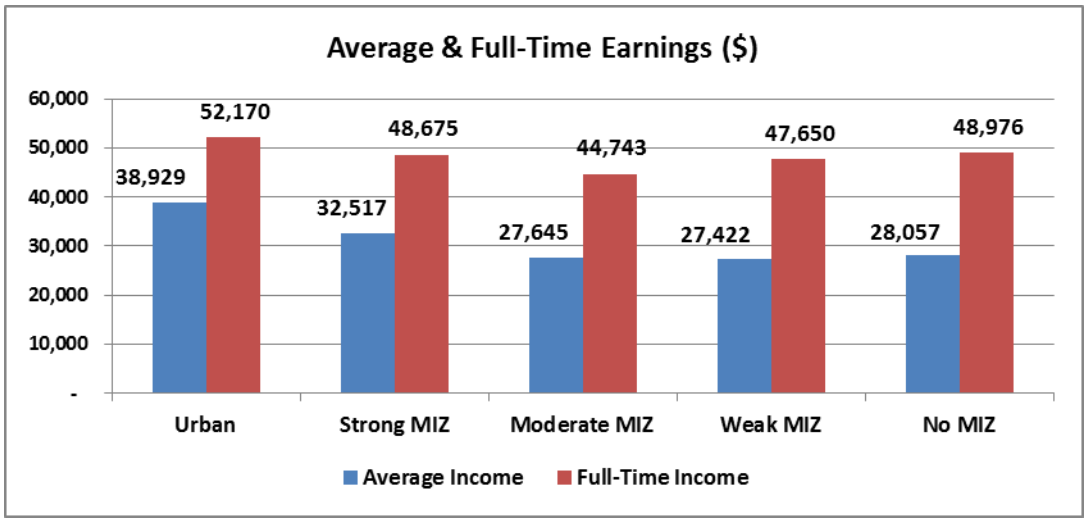


The share of the population aged 15 to 64 whose incomes are below the low income cut-offs as determined by Statistics Canada equals 6.8 percent in urban Newfoundland and Labrador. The poverty rate increases to about 13.0 percent in rural areas with a strong link to urban centres. It declines to 10.3 percent in rural areas with a moderate link to population centres and stays more or less constant as the degree of rurality increases. In other words, the poverty rate in remote rural regions is approximately equal to those in rural areas with a moderate link to urban regions. Moreover, the poverty rate in remote rural areas is lower than the rate in rural areas with a strong link to urban centres. It appears that remote rural regions are as well off as those close to urban centres. What are the factors explaining this apparent anomaly?

Figure 2.12 shows the average earnings of all who worked as well as those who worked full-time and full-year and had positive employment earnings. It shows that the average earnings in urban areas equalled $38,929 which is much higher than earnings in rural areas. The average earnings decline to $32,517 in rural areas with a strong link to urban centres. It declines to an average of about $27,707.85 in rural areas with a moderate to no link to urban centres. Note that this average earnings includes all those who worked full-time, full-year, part-time or part-year.

Lower average earnings can be due to fewer numbers of hours worked per year or lower level of human capital in remote regions. To control for the number of hours worked, we also present average earnings of those who worked full-time and full-year in Figure 2.12. It shows that the earnings of those who worked full-time and full-year are also higher in urban areas. Again, the average full-time earnings does not decline as the degree of rurality rises. In fact, the average full-time earnings of those in remote regions equals those in rural areas with a strong link to urban centres. On average, full-time workers in rural areas earned about $47,511.19 which is only $4,659.2 lower than earnings in urban areas.

Figure 2.12: Earnings of Employed Persons in Newfoundland & Labrador



It appears that distance from population centres does not influence earnings significantly. To examine factors explaining this phenomenon, we calculate the percentage of the employed labour force engaged in resource-based occupations and industries in urban as well as rural areas. Results are shown in Figure 2.13.

Figure 2.13: Employed Workers by Occupation and Industry

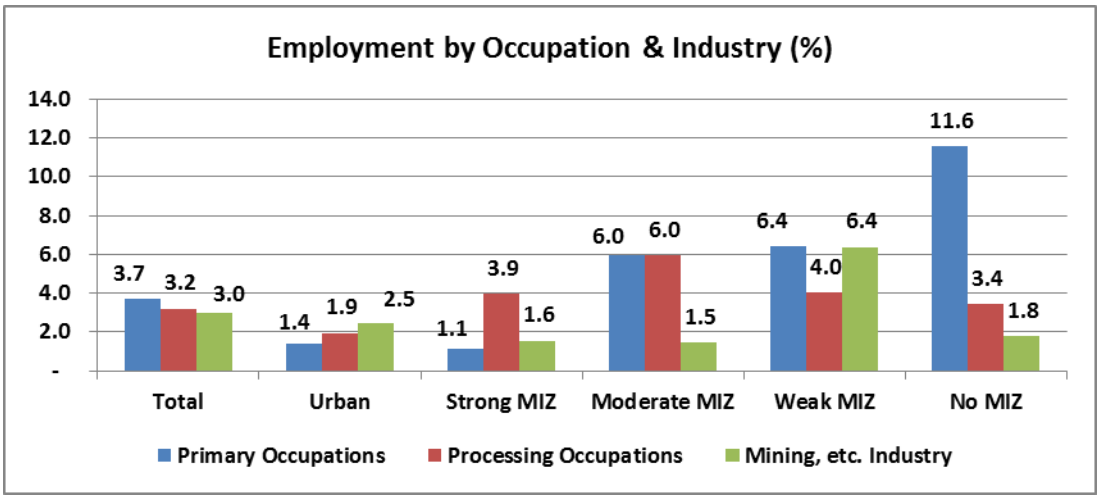


Figure 2.13 shows that a relatively high percentage of the employed workforce is engaged in occupations unique to primary industry in rural areas with moderate to no link with urban centres. These occupations include those in agriculture, fishing, forestry, mining as well as oil and gas industries. Similarly, the percentage of the employed workforce engaged in occupations unique to processing and manufacturing industries in rural areas with moderate to no link to urban centres is higher than the provincial average. Also, the percentage of the employed workforce engaged in mining as well as oil and gas industries is much higher in rural areas with weak link to urban centres than in other areas. It appears that the occupational and industrial concentration of the workforce in rural Newfoundland and Labrador can partly explain the earnings distribution in rural and urban regions.[22]

[22] It is worth noting that average earnings does not tell us about the income distribution which could be deteriorating in rural areas. Changing the industrial structure of rural communities could influence income distribution in those regions. Examination of rural-urban income inequality trends is beyond the scope of the present study.

Demographic Trends among the Francophone Population in Newfoundland & Labrador

Table 2.5 shows the age distribution of the Francophone population in Newfoundland and Labrador during 2001-2011.

Table 2.5: Age Distribution of Francophone Population in Newfoundland & Labrador

Age Category	2001	2011	Percentage Change
0 to 14	210	185	- 11.9
15 to 24	195	185	- 5.1
25 to 34	290	295	1.7
35 to 44	385	305	- 20.8
45 to 54	465	465	-
55 to 64	300	495	65.0
65 to 74	155	335	116.1
75 years and over	170	230	35.3
Average age	43.6	48.7	11.7
Median age	45.1	50.9	12.9
Total	**2,170**	**2,495**	**15.0**

We note that there is a discrepancy between the Francophone population reported by the 2011 Census and the one based on the 2011 National Household Survey (NHS). According to the NHS, the total Francophone population in Newfoundland and Labrador equalled 1,770 in 2011. The 2011 Census gives a total Francophone population of 2,495 in 2011.[23] Also note that the sum of the Francophone population based on summation of all 2001 CSD populations equals 2,220 which is different from the aggregate data reported by the 2001 Census (Table 2.5). This can be due to rounding errors. For consistency, we have used data from the 2001 and 2011 Censuses of Canada.

Table 2.5 shows that the total Francophone population in Newfoundland and Labrador increased by 15.0 percent during 2001-2011. The total number of people in the 0 to 44 age category declined from 1,080 in 2001 to 970 in 2011, a decline of about 10.2 percent. During the same period, the number of seniors aged 65 and older increased from 325 in 2001 to 565 in 2011, a rise of about 73.8 percent.

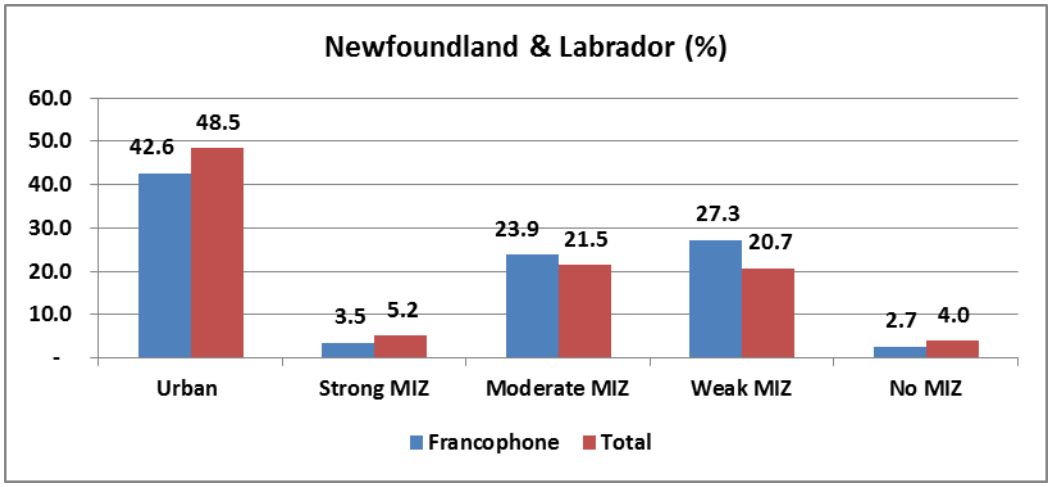
It appears that the Francophone population is aging rapidly in Newfoundland and Labrador. Overall, the average age of the Francophone population increased from 43.6 in 2001 to 48.7 in 2011. The median age increased from 45.1 years in 2001 to 50.9 years in 2011. The Francophone population is older than the total provincial population. The average age of the provincial population is 41.2 years compared to 48.7 years for the Francophone population.

[23] Two factors explain the differences between the 2011 NHS estimates and Census counts. First is the definition of the population of each data source. The target population for the 2011 Census includes usual residents in collective dwellings such as hospitals, nursing homes, prisons or correctional centres as well as persons living abroad, whereas the target population for the NHS excludes them. The second factor relates to the higher non-response error in NHS data due to the survey's voluntary nature.

Similarly, the median age in the province is 43.6 years compared to 50.9 years for the Francophone population. The median age is the age that divides a population into two equal groups with 50 percent of the people being younger than this age and 50 percent being older. In other words, the median age is the age of a person who separates the higher half of the population from the lower half.

Figure 2.14 shows the geographical distribution of the Francophone and total population in Newfoundland and Labrador in 2011.

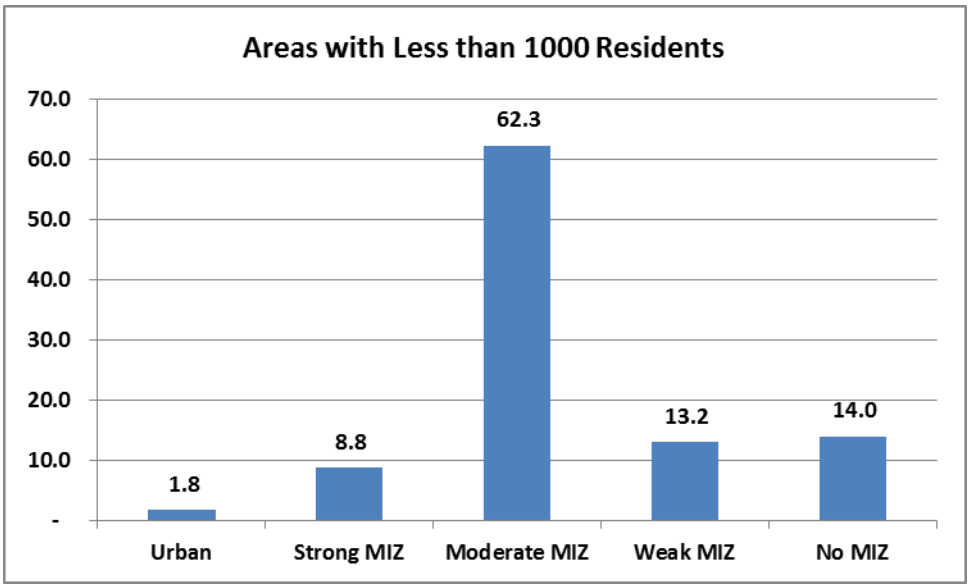
Figure 2.14: Francophone Population in Urban and Rural Areas



The majority or 42.6 percent of the Francophone population live in urban areas. About 23.9 percent live in rural areas with a moderate link with urban centres. Another 27.3 percent live in rural areas with a weak link to urban centres. About 3.5 percent live in strong metropolitan influenced zones. Only about 2.7 percent live in remote rural communities. Figure 2.14 also shows that the Francophone population are under-represented in urban areas but over-represented in rural areas with moderate or weak link to urban centres.

Does the geographical distribution of the Francophone population change if one uses an alternative definition of rural areas? Figure 2.15 shows the percentage geographical distribution of the Francophone population in areas with less than 1000 population.

Figure 2.15: Francophone Population in Urban and Rural Areas



Overall, only 19.1 percent of the Francophone population live in areas with less than 1000 inhabitants. The rest or 80.9 percent reside in bigger centres. Therefore, using the alternative definition of rural areas reduces the share of the Francophone population living in rural areas from 57.4 percent in Figure 2.14 to 19.1 percent.

About 1.8 percent of those who reside in areas with less than 1000 population live in urban centres. About 8.8 percent live in areas designated as strong MIZ. About 62.3 percent live in rural areas with a moderate link to population centres, 13.2 percent live in areas designated as a weak metropolitan influenced zone and 14.0 percent live in remote rural areas.

Aboriginal Population

Table 2.6 shows the age distribution of the on- and off-reserve Aboriginal population in Newfoundland and Labrador during 2001-2011. The 2011 data is based on the 2011 NHS. It shows that the Aboriginal population has increased from 18,770 in 2001 to 35,805 in 2011, a growth rate of about 90.8 percent. There are various factors explaining the significant growth of the Aboriginal population during the above period. 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.[24] The passage of Bill C31 in 1986 has been a factor in this ethnic mobility.

Table 2.6: Aboriginal Population in Newfoundland & Labrador

	2001		2011	
Aboriginal	**On-Reserve**	**Off-Reserve**	**On-Reserve**	**Off-Reserve**
0 to 14	190	4,860	1,025	7,130
15 to 24	130	3,470	580	5,295
25 to 34	175	2,745	450	3,970
35 to 44	120	2,875	390	4,920
45 to 54	70	2,210	290	4,925
55 to 64	30	1,020	145	3,815
65 to 74	30	580	55	1,975
75 years and over	10	255	40	800
Total Number	**755**	**18,015**	**2,975**	**32,830**
0 to 44	615	13,950	2,445	21,315
45 to 64	100	3,230	435	8,740
65 years and over	40	835	95	2,775
Average age	28.8	29.2	25.5	34.6
Median age	28.4	27.6	22.7	35.1

According to Statistics Canada, "The Aboriginal population has grown faster than the non-Aboriginal population. Between 1996 and 2006 it increased 45 percent (4.5 percent per year), nearly six times faster than the 8 percent (0.8 percent per year) rate of increase for the non-Aboriginal population."[25] Statistics Canada also reports that: "Of the three Aboriginal groups, the fastest gain in population between 1996 and 2006 occurred among those who identified themselves as Métis. Their number increased 91 percent, to an estimated 389,785. This was more than three times the 29 percent increase in the First Nations population, whose number reached 698,025. The number of people who identified themselves as Inuit increased 26 percent, to 50,485 in 2006...Several factors may account for the growth of the Aboriginal population. These include demographic factors, such as high birth rates. In addition, more individuals are identifying themselves as an Aboriginal person. There has also been a reduction in the number of incompletely enumerated Indian reserves since 1996."[26]

In addition to the above factors, 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 as enumeration was not permitted, or it was interrupted before completion. In 2006,

[24] Siggner A. and Rosalinda Costa, *Aboriginal Conditions in Census Metropolitan Areas*, 1981-2001, Statistics Canada, 2005.
[25] Statistics Canada, *Aboriginal peoples in Canada in 2006: Inuit, Metis and First Nations*, 2006 Census.
[26] Ibid.

there were 22 incompletely enumerated reserves, down from 30 in 2001 and 77 in 1996.[27] 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 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."[28]

Higher fertility rates along with relatively low mobility rates and other factors discussed above have resulted in significant growth of the Aboriginal population in Newfoundland and Labrador (Table 2.6).

As was the case for the total provincial population, the Aboriginal population is also aging. The average age of the Aboriginal population increased from 27.0 in 2001 to 33.8 in 2011. Similarly, the median age of the Aboriginal population increased from 24.6 in 2001 to 33.6 in 2011.

Figure 2.16 shows the geographical distribution of the Aboriginal and total population in Newfoundland and Labrador based on detailed 2011 data on all census subdivisions in the province.

About 25.8 percent of the Aboriginal population live in urban areas compared to 48.5 percent of the total provincial population. Only about 1.7 and 16.1 percent live in rural areas that have strong or moderate links to urban centres. The majority, or 54.6 percent of the Aboriginal people live in remote areas with weak or no link to urban centres. Overall, the Aboriginal population is under-represented in urban and rural areas close to urban centres, but is over-represented in remote rural areas.

[27] Ibid.
[28] Ministry of Health and Long-Term Care, *Health Analytic Branch, First Nations Peoples in Ontario: A Demographic Portrait*, January 2009, page 15.

Figure 2.16: Rural and Urban Population in Newfoundland & Labrador

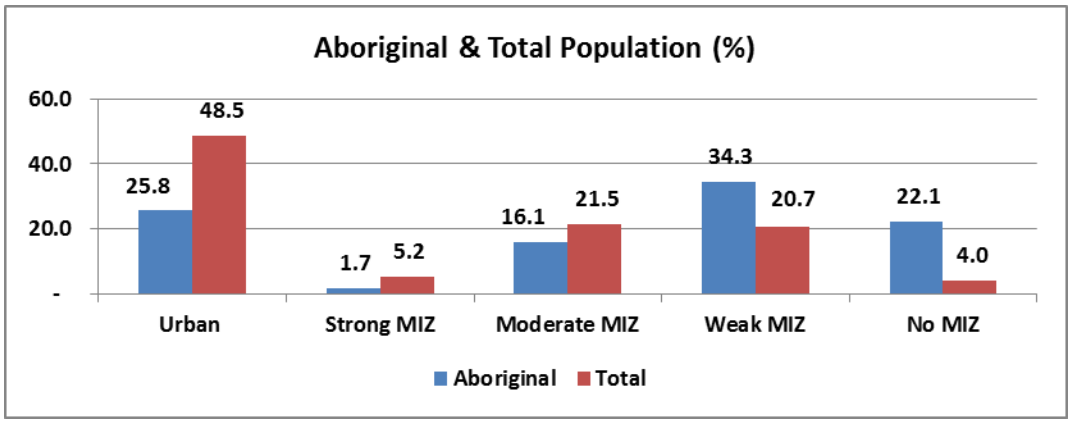


Figure 2.17 shows the geographical distribution of the on- and off-reserve Aboriginal population in Newfoundland and Labrador based on the 2011 Census information.

Figure 2.17: On-Reserve and Off-Reserve Aboriginal Population

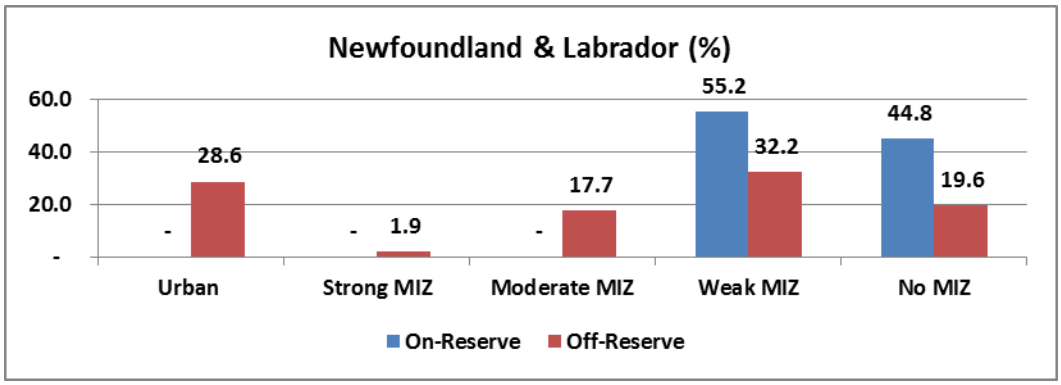
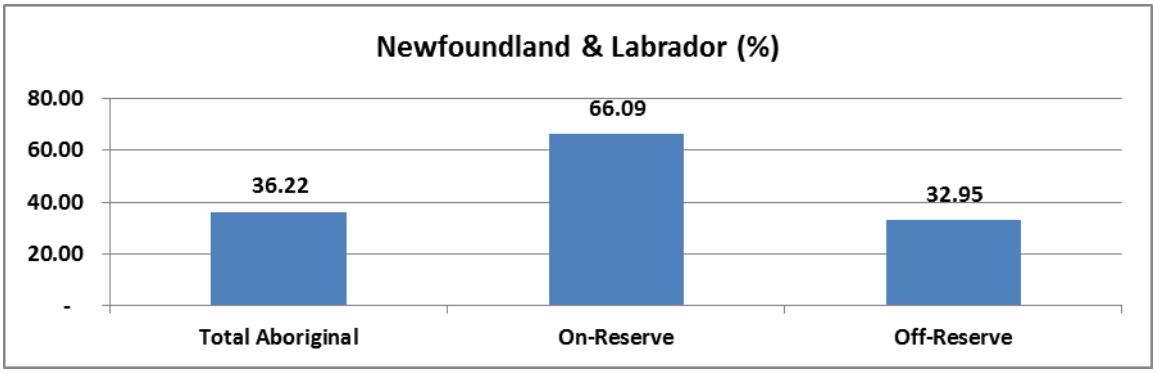


Figure 2.17 shows that all the on-reserve Aboriginal people live in rural areas designated as weak or no metropolitan influenced zones. Similarly, 32.2 percent of the off-reserve Aboriginal people live in rural areas with weak link to urban centres and 19.6 percent reside in remote rural regions. About 28.6 percent of off-reserve Aboriginal people live in urban centres and the rest live in rural areas with strong or moderate link to urban centres.

Is the geographical distribution of the Aboriginal people sensitive to a change in the definition of rural area? Figure 2.18 shows the share of Aboriginal people living in areas with less than 1000 population.

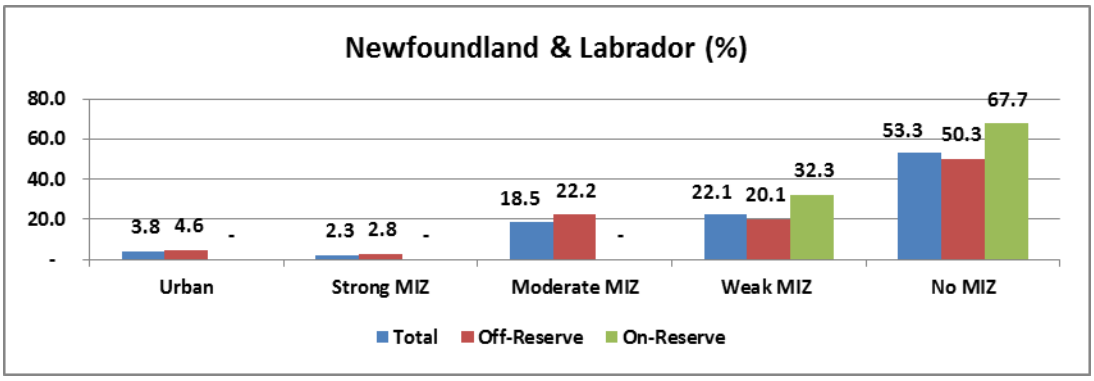
Figure 2.18: Aboriginal Population Living in Areas with Less than 1000 Inhabitants



More than 66.0 percent of the on-reserve Aboriginal population live in areas with less than 1000 inhabitants. On the other hands, only about 33.0 percent of the off-reserve Aboriginal population live in areas with less than 1000 population. The majority or 67.1 percent live in bigger communities. On average, about 36.2 percent of the Aboriginal population in Newfoundland and Labrador live in areas with less than 1000 inhabitants.

Figure 2.19 shows that all the on-reserve and most of the off-reserve Aboriginal population who live in areas with less than 1000 population reside in relatively remote regions of the province. Only about 6.0 to 7.0 percent live in urban or rural areas with strong link to urban areas.

Figure 2.19: Aboriginal People in Areas with Less than 1000 Population



Immigrant Population in Newfoundland and Labrador

Table 2.7 shows the age distribution of the immigrant population in Newfoundland and Labrador during 2001-2011.

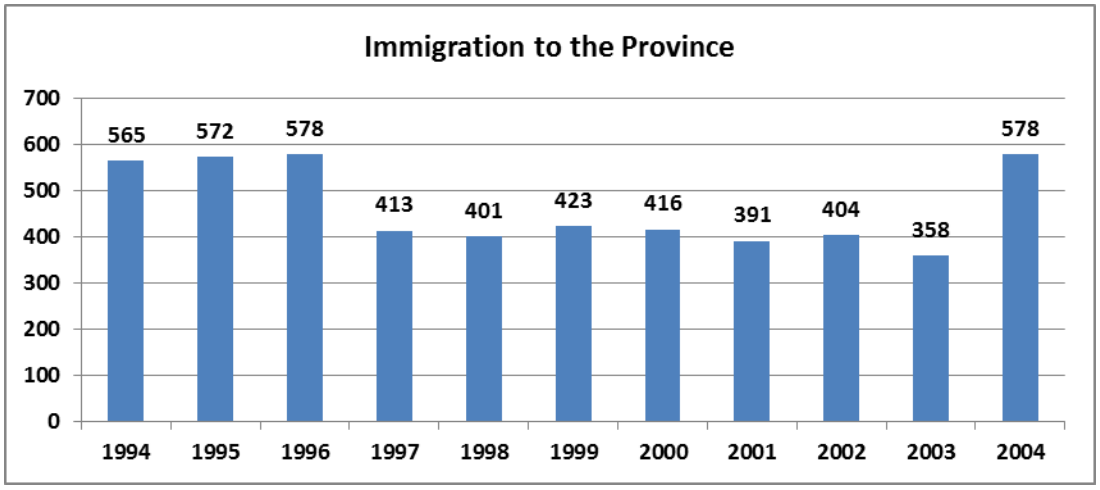
Table 2.7: Immigrant Population in Newfoundland and Labrador

Age Category	2001	2011	Growth Rate (%)
0 to 14	435	840	93.10
15 to 24	445	745	67.42
25 to 34	690	1,035	50.00
35 to 44	1,455	1,275	-12.37
45 to 54	1,590	1,635	2.83
55 to 64	1,650	1,540	- 6.67
65 to 74	1,000	1,390	39.00
75 years and over	745	705	- 5.37
Total Number	**8,010**	**9,160**	**14.36**
0 to 44	3,025	3,895	28.76
45 to 64	3,240	3,175	- 2.01
65 years and over	1,745	2,095	20.06
Average age	49.3	46.7	- 5.27
Median age	51.7	49.0	- 5.22

Table 2.7 shows that the immigrant population has increased by 1,150 during 2001-2011. This is equivalent to an average annual net immigration of 115 persons during the above period. This is lower than the average annual immigration levels of about 464 the province experienced during 1994-2004 (Figure 2.20).[29]

[29] Gross Gilroy Inc., *Retention and Integration of Immigrants in Newfoundland and Labrador –Are we Ready?* Prepared for Atlantic Canada Opportunities Agency and Coordinating Committee on Newcomer Integration, May 5, 2005.

Figure 2.20: Annual Immigration Levels to Newfoundland & Labrador



Relatively high immigration levels during 1994-1996 reflect higher numbers of refugees and skilled workers admitted in those years. Assuming that the average annual immigration flows during 2001-2011 were similar to that during 1994-2004, a much lower net immigration during 2001-2011 (115 persons per year) suggests out-migration of immigrants to other provinces during that period. This is consistent with Statistics Canada's estimate of the immigrant retention rate of about 36.0 percent for Newfoundland and Labrador. This is the lowest retention rate among all Canadian provinces.[30]

Table 2.7 shows that the number of immigrants aged 25 to 34 has increased by 50.0 percent. The number of children as well as young adults have also increased significantly. As a result, the average and median age of immigrants have declined during 2001-2011. In other words, the immigrant population is getting younger in Newfoundland and Labrador. However, the median age of the immigrant population is 49.0 years which is greater than the median age of the provincial population in 2011 (43.7 years).

Figure 2.21 compares the age distribution of immigrants and the total provincial population in 2011. It shows that the percentage of immigrants in younger age categories are less than the provincial population while a higher percentage of them are in higher age categories. In other words, immigrants are generally older than the provincial population. We saw above that the immigrant retention rate in Newfoundland and Labrador is about 36.0 percent. Does the above picture imply that the provincial immigrants are generally older or does it suggest that the younger ones migrate to other provinces?

[30] Statistics Canada Annual Demographic Statistics, Cat. No. 91-213.

Figure 2.21: Percentage Age Distribution of Immigrants in Newfoundland & Labrador

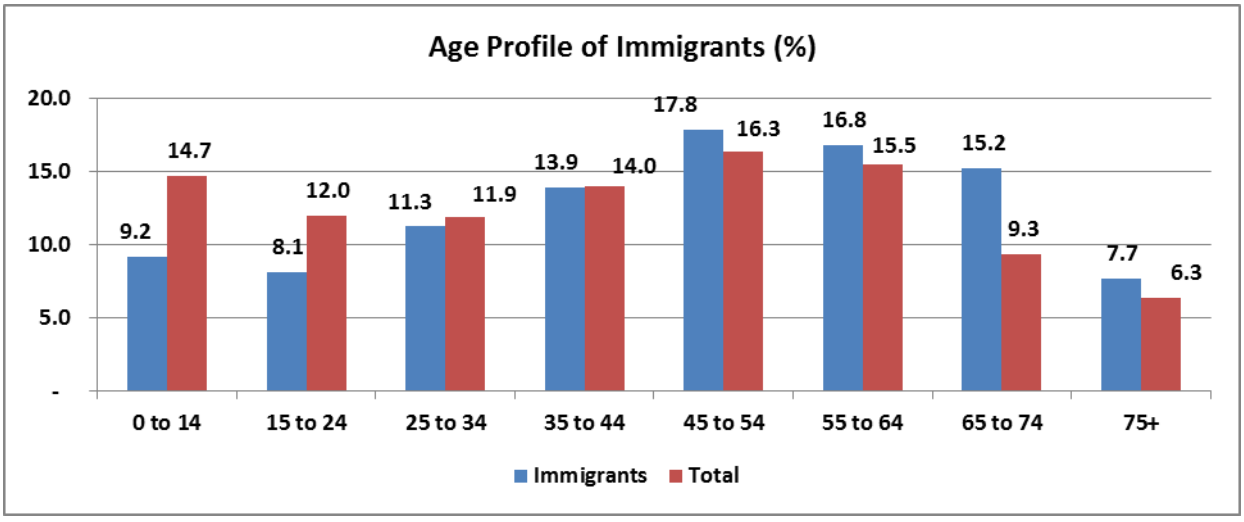


Figure 2.22 shows the age distribution of immigrants who arrived in Newfoundland and Labrador during 1991-2001. It portrays a completely different picture. It shows that immigrants at the time of arrival are much younger than the provincial population. Comparison of Figures 2.21 and 2.22 suggests that the estimated 64.0 percent of the immigrants who out-migrate from the province are among the younger age categories.

Figure 2.22: Age Distribution of Immigrants during 1991-2001

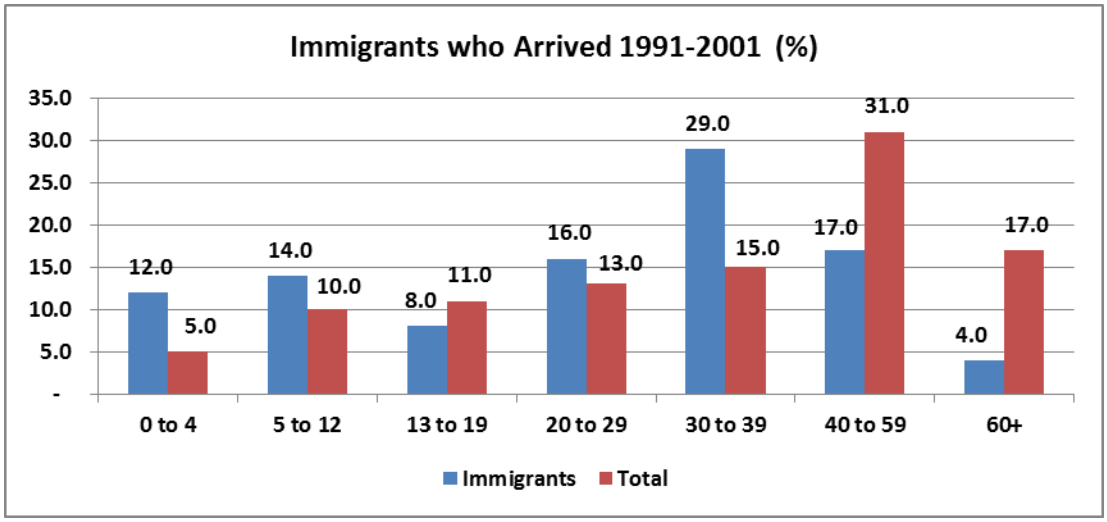


Figure 2.23 shows the place of birth of immigrants to Newfoundland and Labrador. Asian immigrants represent the largest single group of immigrants to Newfoundland and Labrador followed by those from Europe (other than UK), United Kingdom, Africa and the United States.

Figure 2.23: Immigrants by Country of Origin

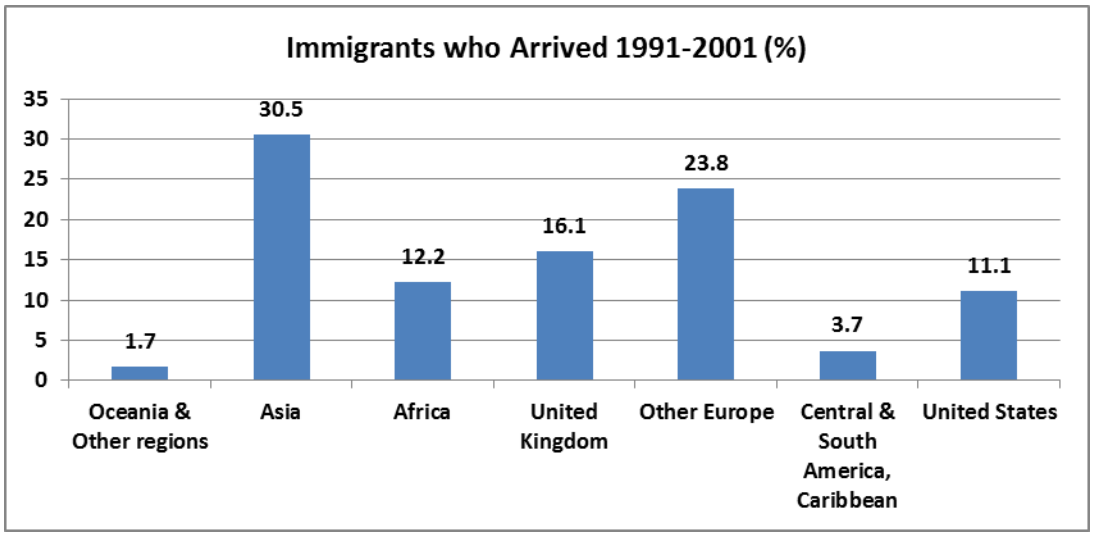
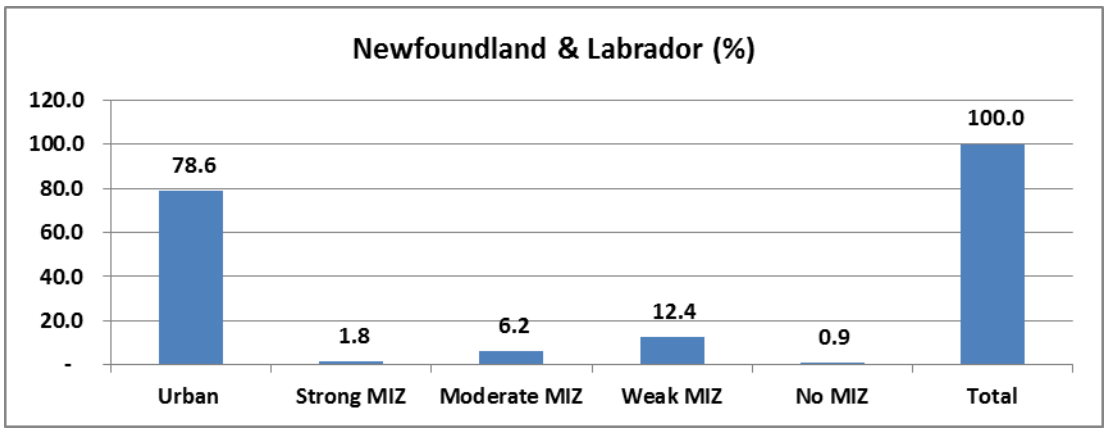


Figure 2.24 shows the geographical distribution of the immigrant population in Newfoundland and Labrador in 2011.

Figure 2.24: Immigrant Population with Place of Residence



The majority or 78.6 percent of the immigrant population live in urban centres. About 18.6 percent of the immigrant population live in rural areas with moderate to weak link to urban

centres. As we saw previously (Figure 2.13), these are areas with significant primary, processing and mining operations. According to a 2005 report on immigration, 70.0 percent of immigrants who arrived during 1991-2001 were concentrated in the St. John's CMA. Another 7.0 percent resided in major centres outside the St. John's CMA while 23.0 percent lived in rural areas.[31] It appears that the geographical distribution of immigrants has not changed during the past two decades.

What Factors Explain the Urban-Rural Earnings Differential?

As shown previously, the average employment earnings in urban centres equals $38,929 compared to $32,517 in rural areas with a strong urban influence and $28,057 in remote rural areas. In other words, the average employment earnings of those living in urban regions is higher than those living in rural areas. There are at least two competing explanations for this observed earnings gap.

One potential explanation is the presence of agglomeration economies which refers to the idea that larger urban centres provide firms with a productive advantage that is not usually available to firms in rural areas. The productive advantage relates to the benefits firms obtain from locating near each other. Higher productivity leads to higher earnings. Agglomeration economies relate to the values of economies of scale and network effects. The cost per unit of output is expected to decline as close proximity results in greater specialization and division of labour, access to shared infrastructure, lower input costs due to competing multiple suppliers and availability and diversity of labour and market size.

Another potential explanation emphasizes the importance of human capital in explaining the earnings gap between rural and urban regions. The rationale is that workers and firms in larger urban areas are more productive resulting in higher wages commensurate with the worker's human capital level.

Beckstead et. al. (2010) examined the effects of agglomeration economies and human capital composition on urban-rural earnings differences in Canada.[32] They argue that (p. 7): "If agglomeration economies are the primary force underlying earnings differences, then the urban-rural earnings gap may be driven by the productive advantages that firms derive from the geographic concentration of economic activity. It is the very nature of urban economies themselves – the dense intertwining of firms and workers – that leads to their advantage. And yet, if it is the skill composition of cities that matters, then the advantage of cities turns on their capacity to educate, as well as attract and retain, highly skilled workers." Using the detailed 2001 census micro-data file, they find that rural-urban earnings gaps are associated with both agglomeration economies and differences in human capital composition. Their econometric results suggest that up

[31] Gross Gilroy Inc., *Retention and Integration of Immigrants in Newfoundland and Labrador –Are we Ready?* Prepared for Atlantic Canada Opportunities Agency and Coordinating Committee on Newcomer Integration, May 5, 2005, p. 11.
[32] Beckstead Desmond, W. Mark Brown, Yusu Gue and K. Bruce Newbols, *Cities and Growth: Earnings Levels Across Urban and Rural Areas: The Role of Human Capital,* Statistics Canada, Catalogue No. 11-622-M – No. 020, 2010.

to one-half of urban-rural earnings differences are related to human capital composition. The rest are likely due to agglomeration economies. Other researchers have also found similar results.

Glaeser and Maré (1994) find that wages are 32% higher in large cities (over 500,000 population) than in the hinterland.[33] The earnings gap falls to less than 4% when they control for education, experience and race. The gap falls to only 2% when they also control for different occupational composition. The urban wage premium is higher for older workers, but the premiums from living in a city are not higher for the more educated or those with more tenure.

In addition to the agglomeration economies and human capital level, there are other factors that influence earnings differentials between regions. Some of these factors include skill differences, compensating differentials due to regional amenities and special occupation and industry factors such as the presence of mining, forestry and agricultural activities in an area. In general, the Aboriginal people have lower average earnings than the total population. Therefore, the increased share of the Aboriginal population in an area can influence the average earnings in a region.

Constructing a Human Capital Index

The objective of this part of the present report is to explore the role of human capital in explaining the earnings gap between rural and urban areas in Newfoundland and Labrador.

In order to estimate the influence of human capital on earnings, one needs to specify and measure a proxy for human capital for each of the CSDs in Newfoundland and Labrador. To obtain a human capital index, we first estimate a standard earnings model for Newfoundland and Labrador using the 2006 census micro-data file.[34]

Then, we use the estimated coefficients as weights to calculate a weighted average index of the share of individuals with different levels of schooling for each of the CSDs in Newfoundland and Labrador.[35] Note that the estimated returns to education or productivity coefficients used as weights to calculate the human capital Index are different for each province and therefore the

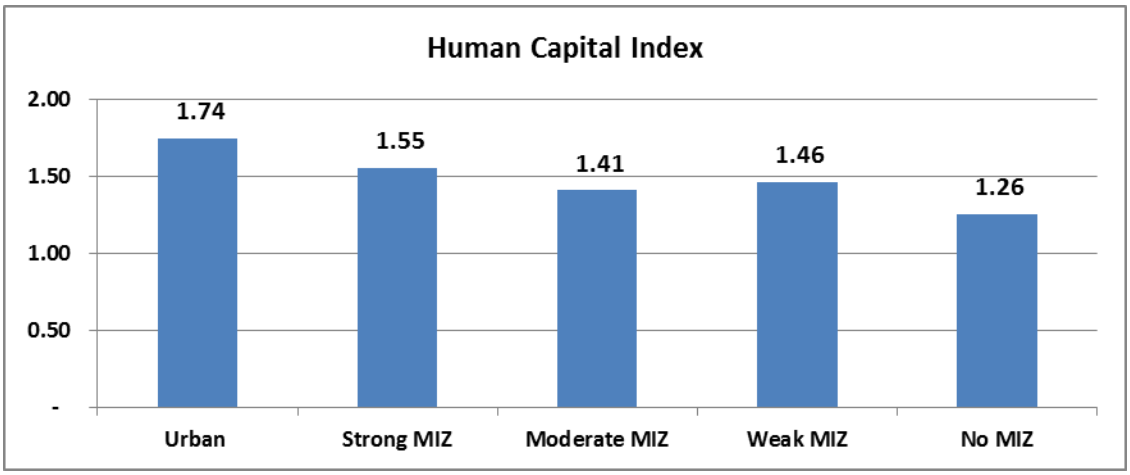
[33] Glaeser Edward and David C. Mare, 1994, *Cities and Skills,* NBER Working Papers 4728, National Bureau of Economic Research, Inc.

[34] The earnings model is of the form: lnWage = $\alpha + \Sigma\beta_i S_i + X_i\delta_i + \varepsilon_i$, where S_is are the highest level of schooling, X_is are other control variables which include age categories, marital status, etc. and ε_i is an error term.

[35] HCI = exp{$\Sigma\beta_i$. Si shares) where exp stands for exponential and Si shares are share of the population 15 to 64 with Si level of education in a given CSD. Note the weights or productivity measures are estimated separately for each province. Thus, the estimated HCIs are not comparable across different provinces. 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.

estimated indexes are specific to each province. The estimated human capital indexes for urban and rural Newfoundland and Labrador are shown in Figure 2.25.[36]

Figure 2.25: Human Capital Index for Urban and Rural Areas in Newfoundland & Labrador



The estimated index ranges from 1 if none of the area's residents have completed high school to 3.5 if all residents have obtained a university degree.

Agglomeration Economies or Human Capital: Checking the Data

In general, agglomeration economies suggest that larger places offer higher productivity and therefore higher average earnings. Figure 2.26 shows the relationship between the population size and average earnings in various CSDs in Newfoundland and Labrador.

[36] To make the HCIs comparable across different provinces, one could use the estimated coefficients from the returns to education model for Canada to calculate the HCIs for different provinces.

Figure 2.26: Relationship between Population Size and Average Earnings in Newfoundland & Labrador CSDs[37]

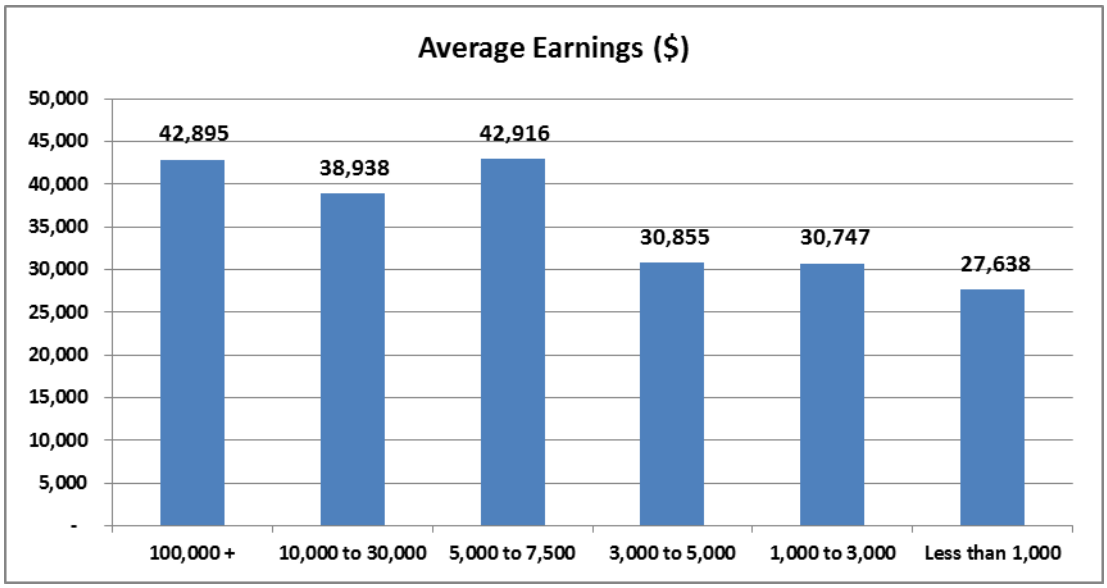
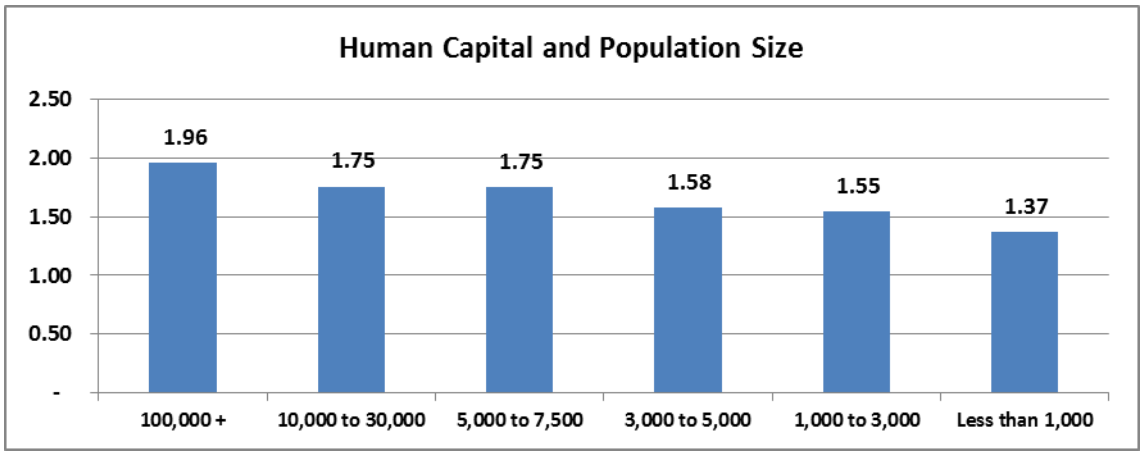


Figure 2.26 shows a positive association between earnings and population size of an area. However, the relationship is not perfect. The estimated correlation coefficient between average population size and average income is 0.79.[38] Note that the maximum value a correlation coefficient can take is 1.0 which suggests perfect correlation. It appears that there are other factors affecting earnings that are not necessarily captured by the population size. Similar results appear when the population size categories are changed.

Next, we examine the relationship between population size, average earnings and human capital composition in Newfoundland and Labrador. Comparison of Figures 2.26 and 2.27 show that the relationship between human capital and average earnings is very close. The correlation coefficient between the two variables is 0.93 which suggests a near perfect correlation between human capital and average earnings in the province.

[37] Note the data set included one CSD with a population greater than 100,000, 7 CSDs with a population between 10,000 and 30,000, 8 CSDs with 5000 to 7500 population, 11 CSDs with population of 3000 to 5000, 56 CSDs with 1000 to 3000 population and 265 CSDs with less than 1000 population.
[38] Average population estimates are calculated based on the CSDs' populations.

Figure 2.27: Area Size and Human Capital Index in Newfoundland & Labrador



To estimate the role of human capital and agglomeration economies in explaining the urban-rural earnings gap, we estimated a model that includes both variable as well as other control variables such as the share of employed workers in primary and processing occupations as well as the share of those employed in mining, agriculture, forestry and manufacturing industries. We also included the share of the Aboriginal population in each CSD.[39] As is standard in this literature, we use employment levels as a means to estimate the effect of agglomeration economies. The idea is that employment levels correspond most closely to the population-based characterization of the rural-urban spectrum. Results are shown in Figure 2.28.

[39] The estimated model is of the form: Ln(Earnings) = $\alpha + \beta_1$ Ln(employment) + β_2 HCI + $\Sigma\delta_i X_i + \varepsilon_i$. Since the dependent variable is average earnings, then the error term will be heteroskedastic by construction. We used heteroskedastic consistent variances to judge whether the estimated coefficients have a statistically significant impact on earnings or not. The estimated coefficient of determination (goodness of fit) was 0.47 percent.

Figure 2.28: Earnings, Human Capital & Agglomeration Economies

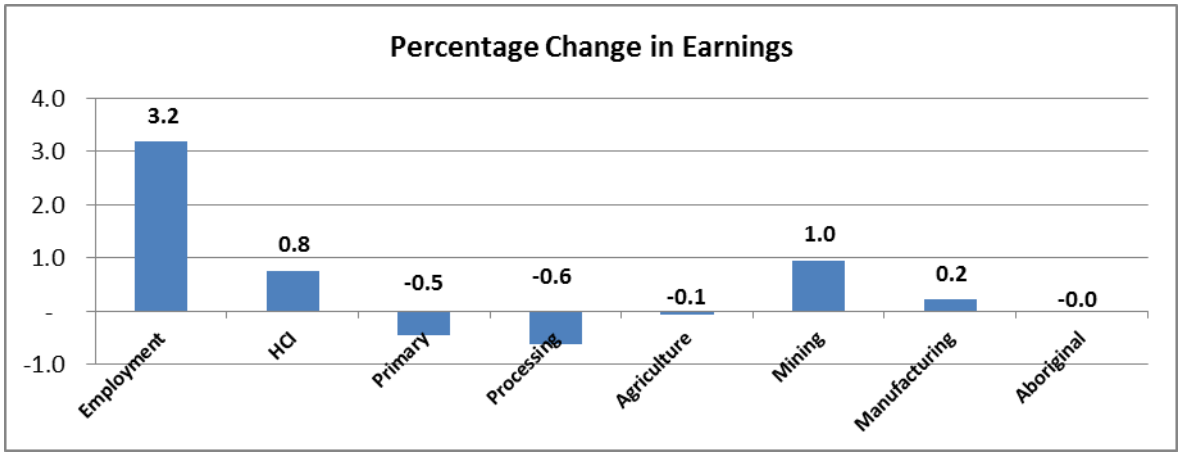


Figure 2.28 shows that a percentage increase in a total area's employment results in a 3.2 percent rise in average earnings. Also, a percentage rise in the human capital index results in a 0.8 percent increase in average earnings. Figure 2.28 also shows that areas concentrated in primary, processing and agricultural activities have lower average earnings. Each percentage increase in manufacturing employment increases earnings by 0.2 percent. Similarly, each percentage rise in mining employment increases local average earnings by 1.0 percent.[40]

We also estimated the relationship without including the human capital composition index. The agglomeration effect increased significantly to 10.5 percent suggesting that a one percent increase in total area employment results in a 10.5 percent rise in local average earnings. This estimate is significantly greater than the one obtained by Beckstead et. al. (2010).[41] We saw above that the influence of employment size equals 3.2 percent when we include the human capital index. In other words, the inclusion of control for human capital reduces the effect of agglomeration economies by 69.5 percent.

The above results suggest that the urban-rural earnings gap is influenced by agglomeration economies as well as the human capital composition. How much of the urban-rural earnings gap is due to differences in their human capital composition? To answer this question, we estimated two models, one with only binary variables representing rural areas with different degrees of urban influence. Note that we excluded urban areas and thus the estimated coefficients of the binary variables measure the urban-rural earnings gap based on distance from urban centres.

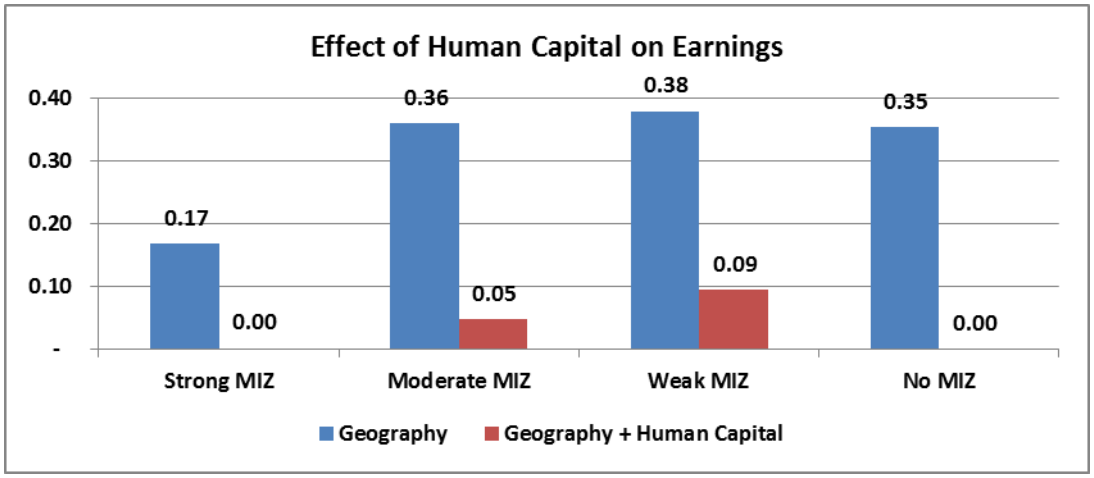
Agglomeration economies suggest that the estimated coefficients of the binary variables should be negative and increasing as the degree of rurality increases. The second model adds the human capital indicator to the first model. We expect the inclusion of human capital composition to

[40] Using population size rather than employment levels reduced the agglomeration effect to 0.2 percent while increasing the human capital effect to 0.87 percent

[41] Regressing average earnings on employment levels across various geographical units in Canada, they found an income elasticity of about 5.0 percent.
Combes et. al. (2008) also found the same elasticity across various geographical areas in France.

explain some of the urban-rural earnings gap and therefore resulting in a decline in the estimated coefficients of the binary variables. In other words, the difference between the estimated values of the binary variables from the two models is attributed to the inclusion of the human capital index. Results are shown in Figure 2.29.[42] Note that the estimated coefficients were all negative and as such, highly significant suggesting a negative earnings gap between urban and rural areas.

Figure 2.29: Impact of Human Capital on Rural-Urban Earnings Differentials



First, we concentrate on the estimated coefficients of the model which only includes binary geographical variables. Figure 2.29 shows that the average earnings of workers in rural areas designated as having a strong MIZ is about 17.0 percent lower than average earnings in urban centres. The reduction in average earnings increases to 36.0 percent for rural areas with a moderate MIZ, to 38.0 percent for areas with a weak MIZ and to 35.0 percent for remote rural areas. How much of the above earnings gap is explained by differences in human capital composition?

Figure 2.29 shows that the estimated coefficient of the binary variable representing rural areas with a strong MIZ declined to zero when human capital composition is included in the model. In other words, almost 100 percent of the earnings gap between rural areas with a strong MIZ and urban regions are accounted for by differences in the human capital composition of their employed workforce. The effect of agglomeration economies is zero. The coefficient of the binary variable representing rural areas with a moderate MIZ has changed from -0.36 to -0.05, a change of about 86.8 percent. In other words, about 86.8 percent of the earnings gap is attributed to the differences in the human capital composition of the employed people in moderate MIZ areas and urban regions. The rest or 13.2 percent of the gap is likely due to agglomeration economies that are represented by the binary variables. Similarly, 75.1 percent of the earnings gap between urban and rural areas with a weak MIZ is accounted for by

[42] Inclusion of the human capital index increased the coefficient of determination from 0.23 to 0.61.

differences in their human capital composition. Again, the rest or 24.9 percent is likely to be explained by agglomeration economies.

Finally, almost 100.0 percent of the earnings gap between remote areas and urban areas is due to differences in their human capital composition. Our estimates of the share of human capital in explaining the urban-rural earnings gap are significantly higher than those obtained by Beckstead et. al. (2010). The difference can be due to a different set of data used in their study as opposed to ours as well as a different approach to measuring human capital.

PART III: DEMOGRAPHIC CHANGE IN NEWFOUNDLAND AND LABRADOR

Population Projection Model

This part of the report employs the Cohort Component method to make projections of the rural and urban populations in Newfoundland and Labrador from the base year of 2011 to 2025.[43] Population projections are an extrapolation of historical data into the future based on certain assumptions about future fertility rates, mortality rates and migration flows. The accuracy of population projections is directly proportional to the population size and its historical growth rate and is inversely proportional to the length of the time projection.

The four basic components of population change are:

1. Births
2. Deaths
3. In-migration
4. Out-migration

Births and in-migration add to the population whereas deaths and out-migration subtract from it. One can write the demographic balancing equation as:

$$P_t - P_0 = (\text{Births} - \text{Deaths}) + (\text{In-migration} - \text{Out-migration}) \quad (1)$$

Where P_0 is the initial population and P_t is the population after time t.

If population information from two censuses are available and the numbers of births, deaths and in- and out-migrations are known, then the demographic balancing equation (1) must be exactly balanced. Therefore, the population of a province or a region at any time interval can be calculated using the demographic balancing equation as:

$$P_t = P_0 + (B - D) + (I - O) \quad (2)$$

As model (2) shows, the cohort component technique uses the four components of demographic change to project population growth. The technique projects the population by single year of age and sex. The method takes each age class of the population and ages it over time using survival rates.

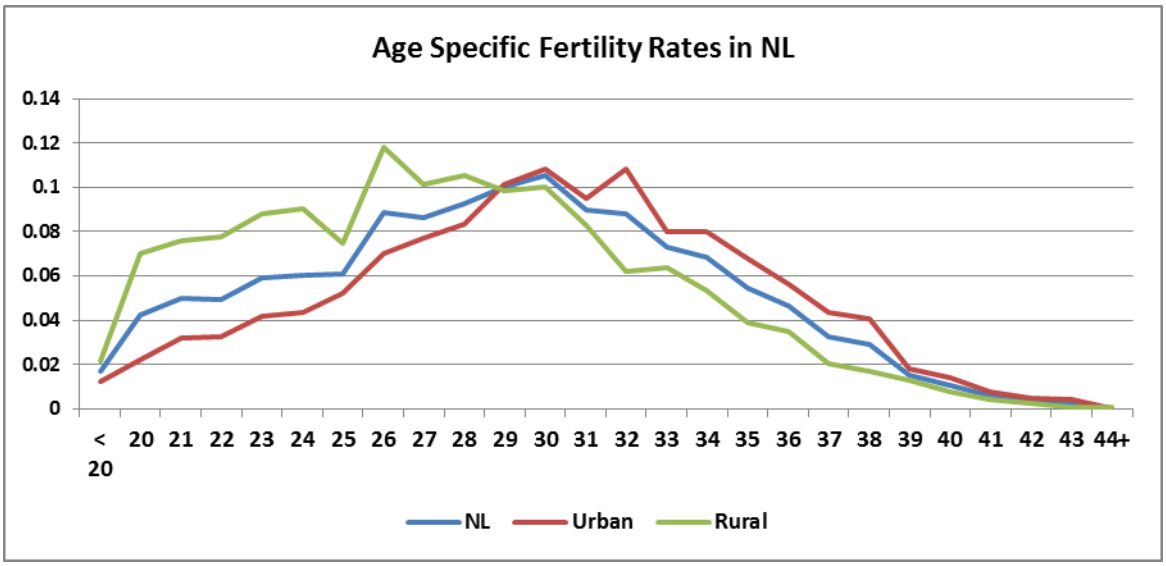
[43] This projection method is the most widely used tool by planners since it provides information on the potential growth or decline of a region by age and sex. The Ontario Ministry of Finance also uses the cohort-component method for its long-term population projections.

Examination of model (2) reveals that the natural population growth (B-D) evolves slowly over time. However, net migration (I-O) is a much more volatile component of population projections due to fluctuation in interprovincial (province to province) migration and changes in immigration. As discussed above, the province of Newfoundland and Labrador was the only Canadian province to record a negative natural population change in 2006.[44] In addition, the immigrant population in Newfoundland and Labrador increased by only 1,150 during 2001-2011 or 115 per year. This has been below the historical average of about 464 immigrants per year. As we will see in this part of the report, both of the above factors affect population trends in the province.

To employ the cohort component method we have used detailed 2001 and 2011 population data based on Statistics Canada and Department of Finance of the government of Newfoundland and Labrador. We have also obtained age-specific fertility rates for rural and urban regions in Newfoundland and Labrador in 2011. An age-specific fertility rate indicates the probability that a woman in her reproductive years will give birth in a given year. These rates are used to project the number of births that occur during the projection period.

As Figure 3.1 shows, the fertility rates in rural Newfoundland and Labrador have been higher than those in urban regions for women aged 15 to 28 and lower for women older than 28 years of age. Overall, the total fertility rate for women in rural areas equals 1.51 compared to 1.35 for women in urban regions. On average, the total fertility rate in the province equals 1.40 which is significantly below the national average of 1.61 and the generational replacement rate of 2.1.

Figure 3.1: Fertility Rates in Urban and Rural Newfoundland & Labrador in 2011



[44] Economics and Statistics Branch, Department of Finance, Government of Newfoundland and Labrador, *Demographic Change: Issues & Implications*, October 2006.

The 2009-2011 Life Table for Newfoundland and Labrador is used to calculate survival rates at every single year of age. The last piece of information needed to undertake population projections is to estimate net migration. For this, an indirect method is often used. Assuming no migration flows and using one census data, P_0, the forecaster projects population at time t, say P^e_t, assuming zero net migration flows. The difference between the actual and expected population at time t equals the net migration from time 0 to time t. Using the demographic balancing equation (2), one can calculate net migration as:

Net Migration flows = (In-migration – Out-migration) = $(P_t - P_0)$ – (births – deaths)

$$= P_t - (P_0 + \text{births} - \text{deaths}) = P_t - P^e_t \qquad (3)$$

Model (3) is referred to as the 'residual method' since it calculates net migration as a residual of the balancing equation. In other words, net migration is set equal to the actual population at any point in time minus the predicted or expected population based on natural population growth. Net migration estimates can be negative in some years indicating out-migration in a given age group. Alternatively, it can indicate mortality in older age groups.

To determine the number of net migrants to Newfoundland and Labrador during 2001-2011, the expected population of year 2011 in the absence of net migration (P_0 + births – deaths) is subtracted from the actual Census 2011 population.

It is also assumed that the components of demographic change, i.e., mortality, fertility, and migration flows, will remain constant throughout the projection period and net migration will be equal to its 2001-2011 average. Hypothetically, one can alter the vital statistics and migration estimates to reflect his or her view of the future.

Population Projection for Urban Newfoundland & Labrador during 2011-2025

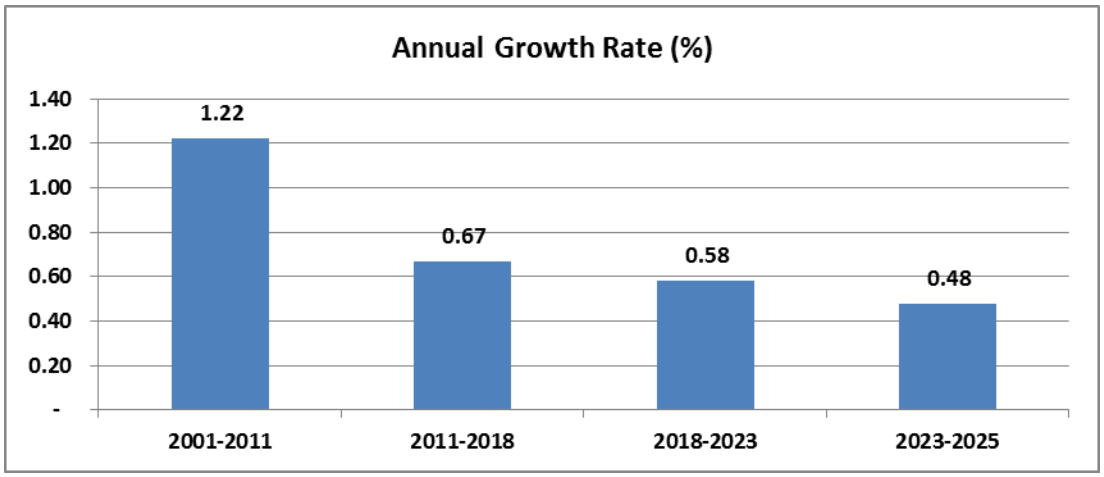
Using the demographic model discussed above, Table 3.1 shows population projections for urban areas during 2011-2025.

Table 3.1: Population Trends in Urban Newfoundland & Labrador

Age Category	2011	2018	2025
0-4	13,360	13,631	13,578
5--9	12,861	13,307	13,743
10--14	13,107	13,548	13,828
15--19	14,854	13,963	14,664
20--24	19,519	15,860	15,720
25--29	19,062	20,966	17,288
30--34	17,948	19,919	18,982
35--39	18,044	18,951	21,992
40--44	18,859	19,928	21,004
45--49	20,177	19,444	20,608
50--54	19,548	19,759	19,867
55--59	18,212	19,471	18,856
60--64	15,854	17,808	18,899
65--69	11,730	15,225	16,728
70--74	8,105	11,501	13,869
75--79	5,937	7,010	9,987
80--84	4,241	4,006	5,123
85--89	2,524	2,061	2,120
90+	1,319	851	732
Total	**255,262**	**267,212**	**277,588**

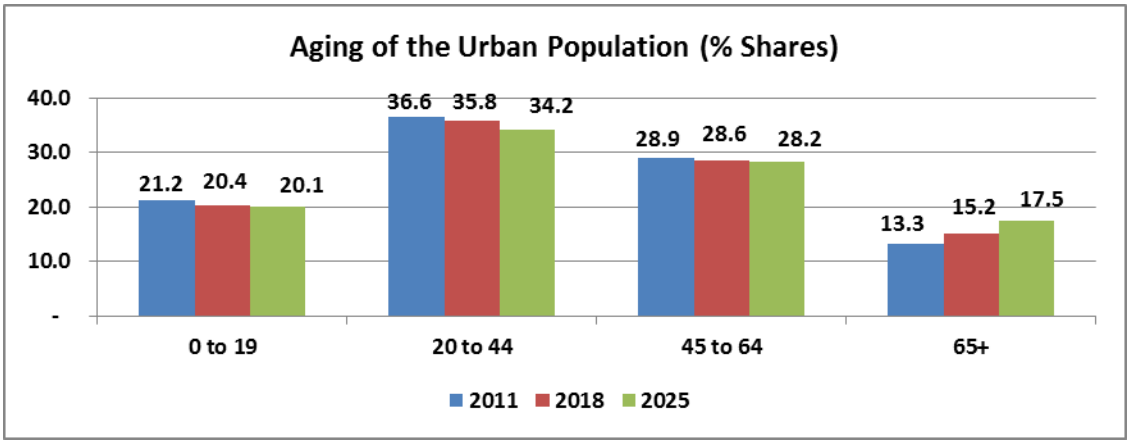
Assuming that the 2001-2011 demographic trends will continue into the future, Table 3.1 shows that the province's urban population is expected to rise slowly during 2011-2025. However, due to the low fertility rate and aging of the population, the growth rate declines as we go forward into the future (Figure 3.2).

Figure 3.2: Population Growth in Future Urban Population



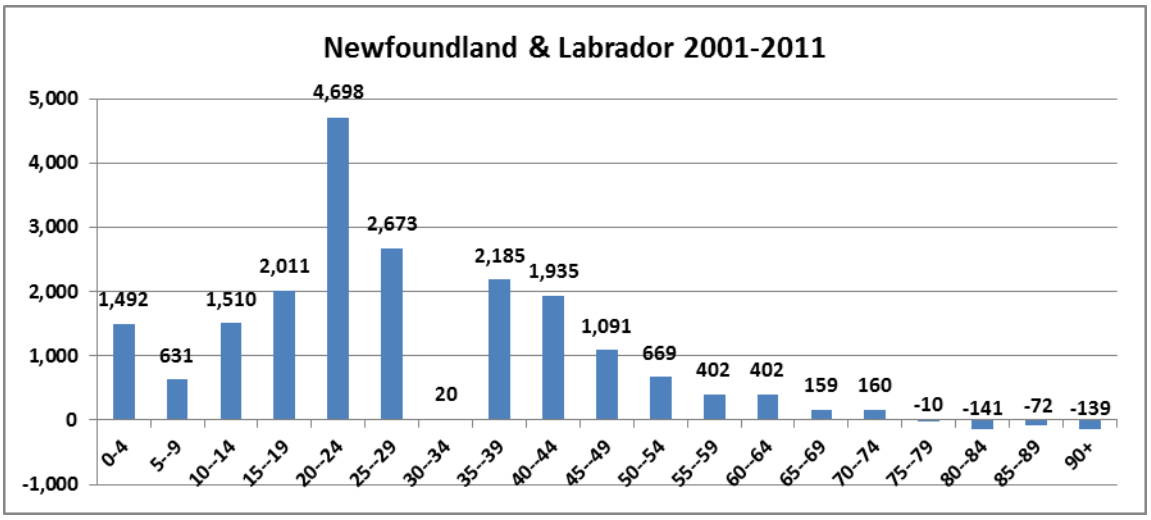
As is the case for the overall provincial population, the urban population will continue to age. As Figure 3.3 shows, the share of individuals below the age of 19 and those between 45 and 64 are expected to remain relatively constant over the projection period. However, the share of those in the prime working age category is expected to decline from 36.6 percent in 2011 to 34.2 percent in 2025. More importantly, the share of seniors aged 65 and over rises from 13.3 percent in 2011 to 17.5 percent in 2025.

Figure 3.3: Age Structure of Urban Population in Newfoundland & Labrador



The above relatively stable population structure is primarily due to a significant net in-migration that urban areas have been experiencing. Figure 3.4 shows that urban areas experienced significant net inflow of people in almost all age categories during 2001-2011. The newcomers came from other provinces, rural areas and other countries. Overall, the province experienced a net inflow if about 19,672 people during 2001-2011.

Figure 3.4: Net Migration Flows to Urban Regions



Had it not been for the newcomers, the province's urban population structure would have been very different. To see the structure that would have emerged in the absence of migration, we used the province's 2011 population to forecast its future structure based on natural factors of fertility and mortality alone. The result is shown in Figure 3.5.

Figure 3.5: Newfoundland & Labrador's Urban Population Structure in the Absence of Migration

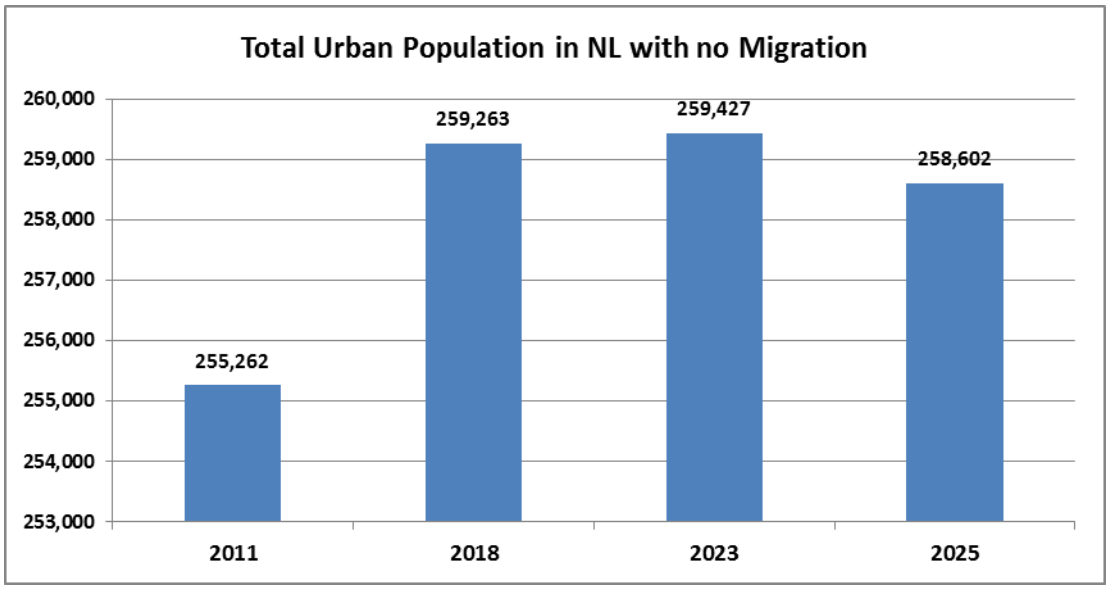


Figure 3.5 shows that under the scenario of zero net migration in the future, the urban population continues to grow from 255,262 in 2011 to 259,263 in 2018 when the growth slows down and becomes negative during 2023-25. In fact, in the absence of net in-migration, the growth of the

urban population would decline significantly from 1.22 percent per year during 2001-2011 to 0.22 percent during 2011-2018 and 0.01 percent in 2018-23 before becoming negative after 2023 (Figure 3.6).

Figure 3.6: Population Growth Rate Under Zero Migration Scenario

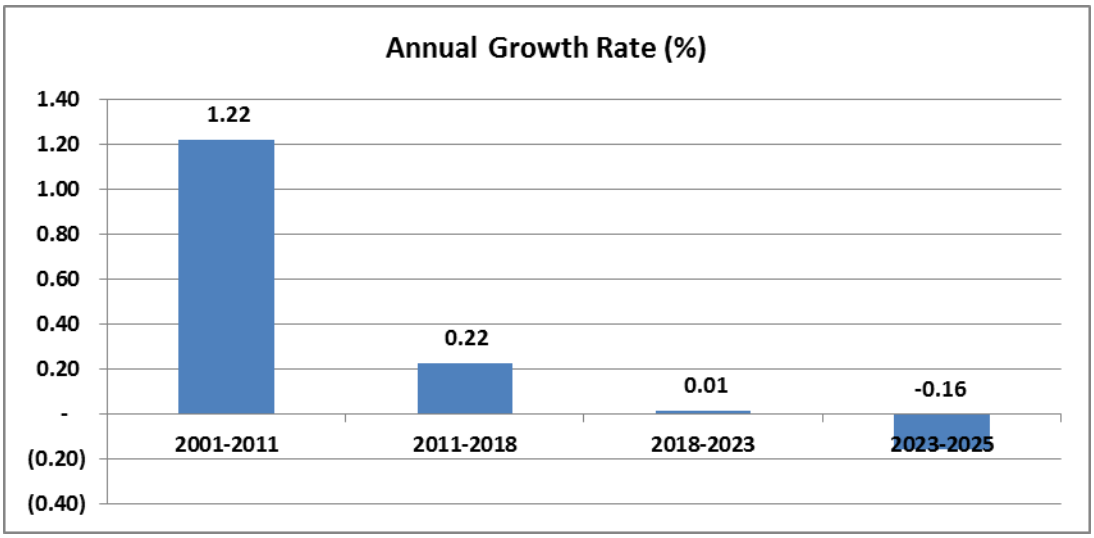
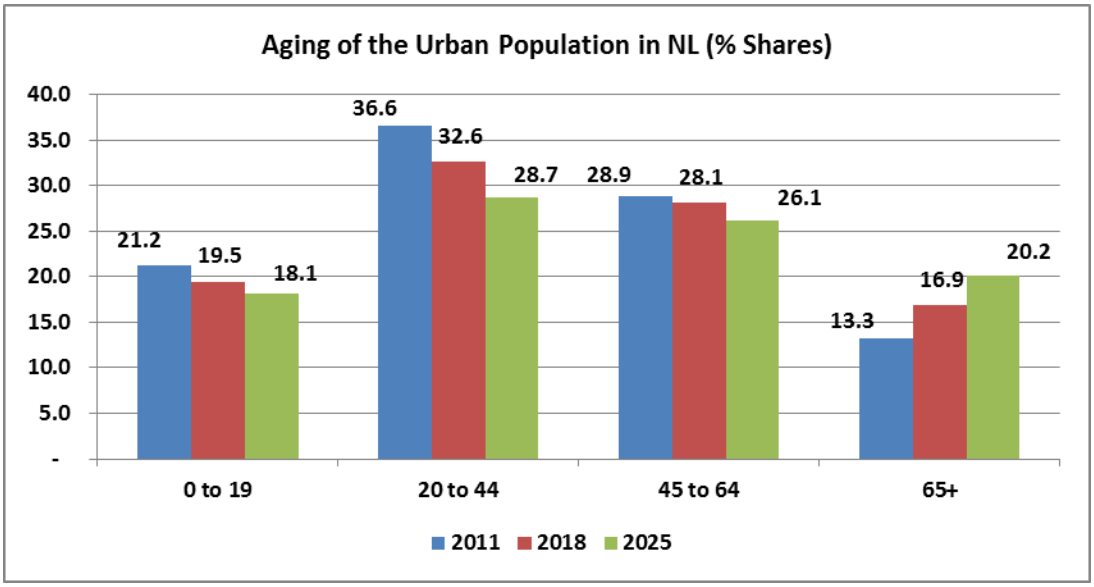


Figure 3.7: Urban Population Structure in the Absence of Migration



Without migration flows, the province's urban population ages very rapidly. The share of individuals aged 19 and younger declines from 21.2 percent in 2011 to 18.1 percent in 2025.

The share of those in prime working age drops from 36.6 percent in 2011 to 28.7 percent in 2025. The share of those aged 45 to 64 falls from 28.9 percent in 2011 to 26.1 percent in 2025. The share of seniors increases from 13.3 percent in 2011 to 20.2 percent in 2025.

Population Projection for Rural Newfoundland and Labrador for 2011-2025

The province's rural population declined from 294,495 in 2001 to 269,719 in 2011, a decline of about 8.4 percent during 2001-2011. This is in contrast to the total urban population that grew about 12.2 percent and the provincial population that grew about 0.6 percent during the same period.

Using the demographic model discussed above and assuming the 2001-2011 trends will continue into the future, Table 3.2 presents population trends in rural areas during 2011-2025.

Table 3.2: Population Projection for Rural Newfoundland & Labrador

Age Category	2011	2018	2025
0--4	11,437	9,519	8,049
5--9	12,323	11,004	8,964
10--14	14,009	12,098	10,495
15--19	15,532	13,332	11,773
20--24	12,936	13,194	11,099
25--29	12,155	9,793	9,210
30--34	13,257	8,080	7,771
35--39	16,484	11,552	7,196
40--44	19,989	15,232	10,287
45--49	22,379	18,280	13,537
50--54	23,651	20,635	16,301
55--59	24,118	21,884	18,539
60--64	23,047	22,531	20,122
65--69	17,205	21,699	20,466
70--74	11,996	17,115	18,944
75--79	8,661	9,829	14,448
80--84	5,800	5,629	6,879
85--89	3,144	2,544	2,676
90+	1,595	931	789
Total	**269,719**	**244,882**	**217,544**

Table 3.2 and Figure 3.8 show that the declining rural population is expected to continue into the future. Total rural population is expected to decline from 269,719 in 2011 to 217,544 in 2025, a decline of about 1.38 percent per year. Out-migration of youth along with low fertility rates

and aging population results in acceleration of population decline in the future. The rate of decline increases from 0.84 percent during 2001-2011 to 1.32 percent during 2011-18, 1.57 percent during 2018-23 and 1.80 percent during 2023-25 (Figure 3.9).

Figure 3.8: Future Rural Population Trend

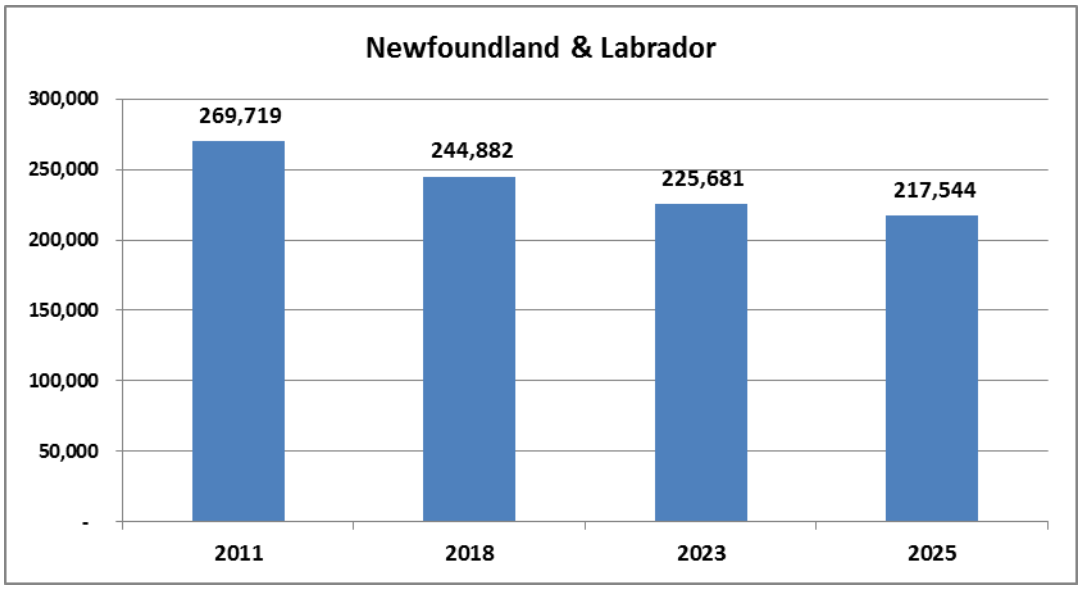
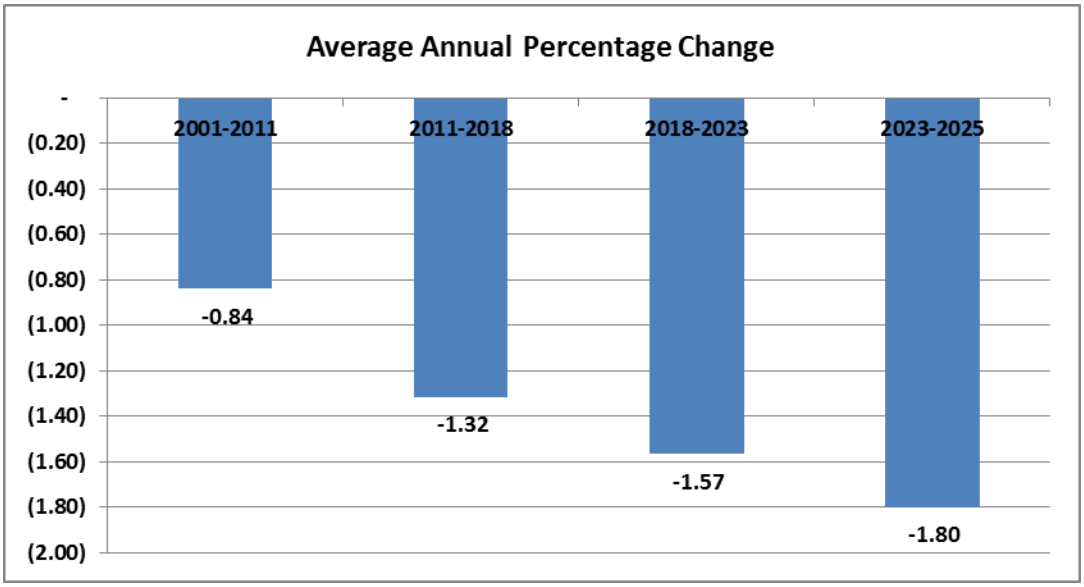
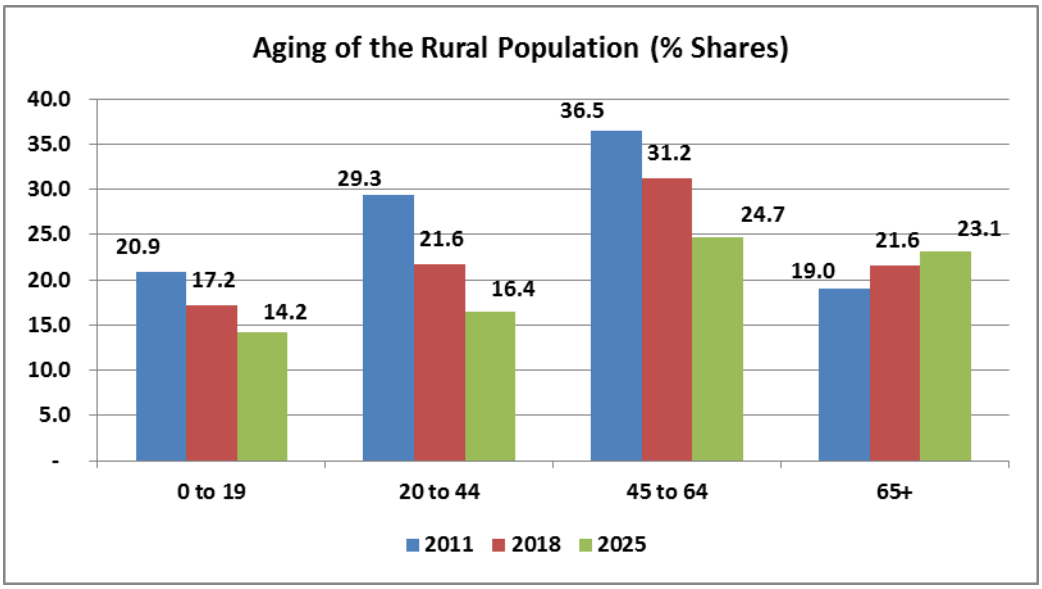


Figure 3.9: Rural Population Decline in Newfoundland & Labrador



In addition to the declining population, rural Newfoundland and Labrador's population will also be aging rapidly. Figure 3.10 shows the percentage share of different age groups during 2011-2025. All age categories except for seniors will experience decline during the forecast period. The share of the population under 19 years of age declines from 20.9 percent in 2011 to 14.2 percent in 2025. The share of prime working age groups is expected to decline from 29.3 percent in 2011 to 16.4 percent in 2025. The share of seniors aged 65 and over is expected to rise from 19.0 percent in 2011 to 23.1 percent in 2025.

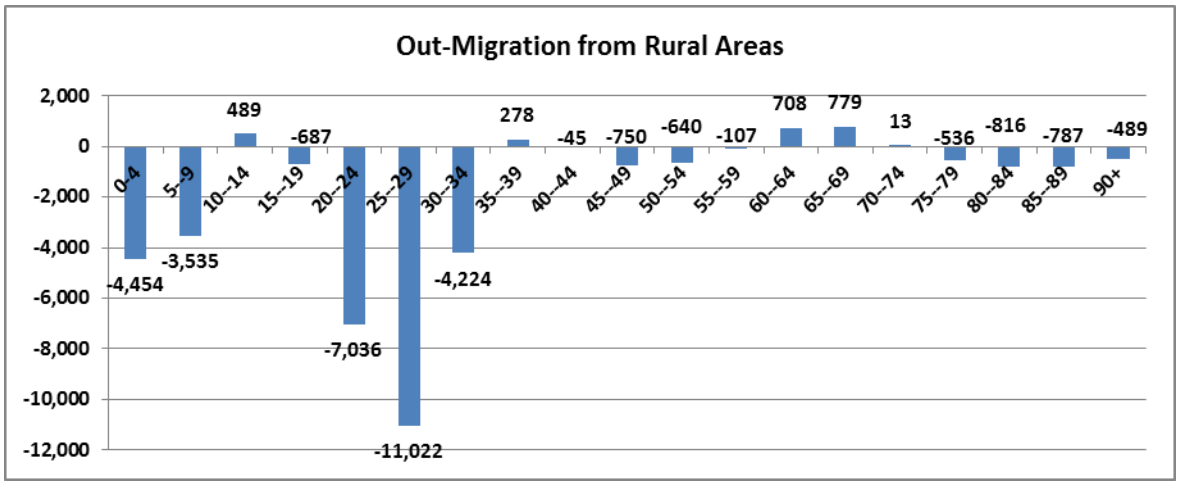
Figure 3.10: Age Structure of Newfoundland & Labrador's Rural Population



How much of the rural population decline is caused by out-migration and how much is due to low fertility rates?

First, we focus on out-migration. To examine the impact of migration flows on the rural population trends, we used the 2001 population to forecast its 2011 level assuming zero net migration flows. Comparing the actual 2011 population with the expected 2011 population in the absence of migration provides us with information regarding the level of net migration by age during 2001-2011. Results shown in Figure 3.11 reveal that rural Newfoundland and Labrador experienced a significant out-migration during 2001-2011.

Figure 3.11: Net Out-Migration from Rural Newfoundland & Labrador 2001-2011



The largest group of movers are those between the ages of 20 and 34 years old. It is expected that the youth out-migrate in search of better employment opportunities in urban areas. However, this process leaves rural areas without the necessary human capital that is required if rural areas in Newfoundland and Labrador are to remain productive. It is also noteworthy that young adults who out-migrate from rural areas take their children with them. That is reflected in a decline of children under age 9.

Next, we examine the effect of natural factors on the province's rural population. Had it not been for out-migration, the decline of the province's rural population would have been much smaller reflecting only relatively low fertility rates. To investigate the structure that would have emerged in the absence of migration, we used 2011 rural population statistics to forecast its future structure based on natural factors of fertility and mortality alone. The result is shown in Figure 3.12.

Figure 3.12: Rural Population Structure in the Absence of Migration

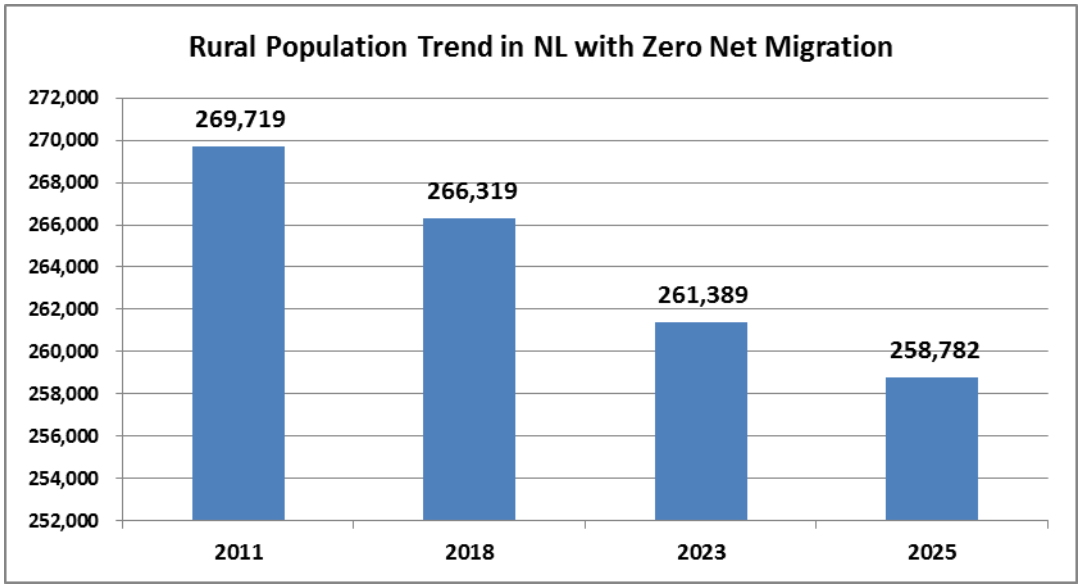
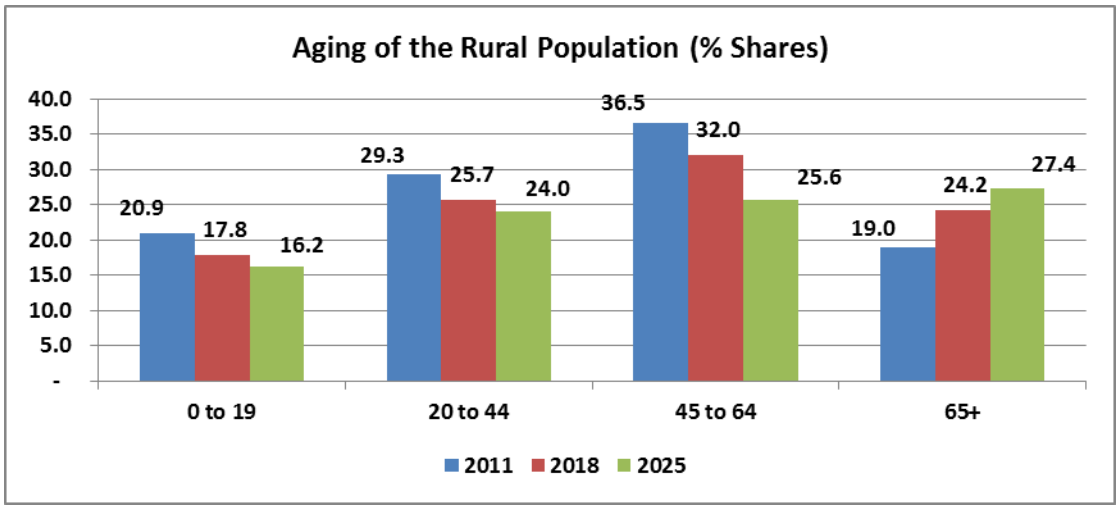


Figure 3.12 shows that had it not been for out-migration, the province's rural population decline would have been much smaller. The declining rural population in the absence of migration reflects the fact that the total fertility rate in rural areas equals 1.51 which is significantly below the generational replacement rate of 2.1. The rates of decline, however, would have been much smaller than those observed in Figure 3.9. The rural population decline would have been 0.18 percent per year during 2011-18, 0.37 percent per year during 2018-23 and 0.50 percent per year during 2023-25.

Even in the absence of out-migration, the aging process along with a low fertility rate would have changed the rural population structure during the forecast period. This is shown in Figure 3.13.

Figure 3.13: Aging Rural Population in the absence of Migration



Without migration flows, the province's rural population continues to decline and age. Figure 3.13 shows that the share of the population under 19 years of age declines from 20.9 percent in 2011 to 16.2 percent in 2025. Similarly, the share of the prime working group declines from 29.3 percent in 2011 to 24.0 percent in 2025. The share of population aged 45 to 64 declines by more than 10.0 percent during 2011-2025. The share of seniors rises from 19.0 percent in 2011 to 27.4 percent in 2025.

PART IV: CONCLUDING REMARKS

The present report analyzes past, present and future demographic changes in rural and urban Newfoundland and Labrador (NL). It examines various socio-economic characteristics of the rural and urban population and makes projections of their future demographic trends. The relationship between earnings and human capital composition of rural and urban regions are investigated and attempts are made to explain the existing earnings differences between rural and urban areas. The report focusses on four population groups, namely total provincial population, Francophone, Aboriginal and immigrant population and pays special attention to the degree of rurality.

The study shows that the population of Newfoundland and Labrador grew from 361,416 in 1951 to 580,109 in 1992 at which time the moratorium on cod fishing was imposed resulting in a widespread economic decline in many parts of the province. As a result, the total fertility rates, defined as the average number of children that a woman will have over the course of her life, declined to 1.3 children per child bearing age woman in 2001, the lowest in the country and well below the generational replacement rate of 2.1. Out-migration along with a low fertility rate caused the provincial population to decline to 509,039 in 2007. Improved economic conditions during the 2000s resulted in increased population to 525,037 in 2011.

In general, the implication of a low fertility rate is that the natural increase (births minus deaths) has become a less important factor in provincial population growth. Conversely, immigration has become an increasingly significant factor. According to Census data, about 1.4 million immigrants came to Canada during 2001-2011. However, the immigrant population in NL increased by only 1,150 during that period. In other words, while declining fertility rates and net losses through migration to other provinces explain a part of the declining provincial population, a more significant explanation is the disproportionately small number of immigrants to Canada who have taken up residency in the province.

Demographic change has not been uniform across rural and urban areas. The total provincial population increased by 0.6 percent during 2006-2011. The urban population grew by 12.2 percent while the rural population declined by 8.4 percent during that period. The study shows that the population living in rural and small towns has not only declined in absolute terms but its share of the total population also declined from 56.4 percent in 2001 to 51.4 percent in 2011.

The study reveals that the rural population is aging rapidly not only due to the declining birth rate but also due to an out-migration of youth between the ages of 15 and 34 years. At the other end of the spectrum, urban areas are experiencing in-migration from rural areas as well as other provinces and countries.

The study finds that the share of individuals under 19 years of age has declined from 24.5 percent in 2001 to 21.2 percent in 2011, a decline of about 3.3 percent. The share of the prime working age population aged 20 to 44 has also declined by 2.9 percent. On the other hand, the share of population aged 50 to 64 has increased by 4.2 percent. The share of seniors 65 years

and over increased by 2.1 percent. The aging of the population is more pronounced in rural areas where the share of the population under the age of 19 declined from 24.8 percent to 19.8 percent during 2001-2011. The share of the prime working age population declined from 34.8 percent in 2001 to 27.7 percent in 2011. On the other hand, the share of seniors aged 65 years and over increased by 4.9 percent during 2001-2011. This is much greater than the growth rate of seniors in urban areas (2.1%). In other words, the rural population is aging much faster than the urban population in Newfoundland and Labrador. The share of seniors in rural N.L. equals 17.9 percent compared to 13.3 percent in urban areas and the provincial average of 15.7 percent.

Slower growth and aging of the population affect the labour force and hence the region's ability to generate output and income. A declining labour force coupled with relatively low participation rates influences the region's present and future productive capacity. The lack of a qualified labour force reduces the ability of residents to participate in the benefits of economic development in their regions. Lack of a qualified labour force also represents an important barrier to economic development, especially in rural areas.

According to a recent survey, local businesses identified the lack of human resources as their greatest challenge. About 40.0 percent of local businesses surveyed ranked recruitment of human resources as their most important labour market challenge.[45] Other studies have also shown that multinational and multi-locational firms in Canada have difficulty finding qualified workers in rural areas.[46]

The aging rural and urban population has significant budgetary implications for the province. An aging population affects the tax bases from which the provincial government draws revenue. It also impacts demand for government program expenditures such as health care. What healthcare related services will be essential to meet the requirements of a rapidly aging provincial population? How many doctors, nurses and other types of healthcare providers do we need to train to replace the aging healthcare providers while satisfying the growing demand for healthcare services? How much of specific types of services and facilities do we require? These are important questions that policy makers need to address in the coming years.

The study finds that human capital is the main determinant of the rural-urban earnings differentials. The level of educational achievement declines as the distance between rural areas and population centres increases. More than one-third of the rural population do not have a high school diploma.

Given that the stock of human capital affects productivity and earnings capacity of the rural as well as urban population, one approach to maintaining or even increasing earnings and production capacity is to enhance productivity by increasing investment in education in rural

[45] Vodden, K., Lysenko, E. and Freshwater, D. (2011), *Urban-Rural Interaction in Newfoundland and Labrador: Summary of pilot region questionnaire results*.
[46] For example see B. Moazzami, *Multi-national and Multi-locational Enterprise Initiative: Survey of Northern Ontario Companies and Analysis of the Results*, prepared for Federal Economic Development Initiative for Northern Ontario (FedNor), March 2012.

areas. In fact, apart from increasing productivity and earnings, investment in education has significant positive social and economic consequences as well.

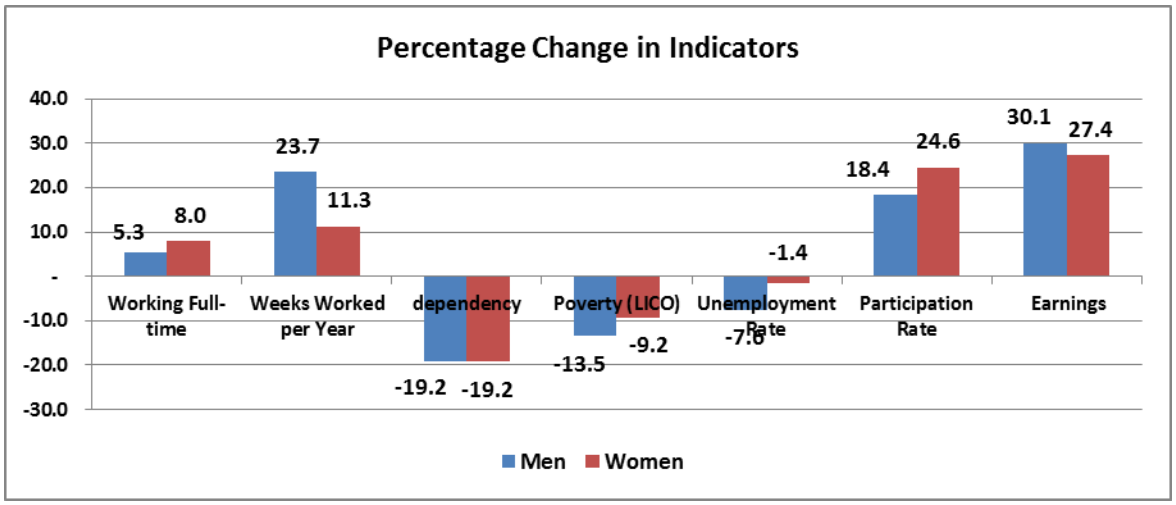
The study shows that the dependency on government transfer payments increases as the degree of rurality rises. While the average dependency rate in urban areas is about 12.8 percent, the dependency rate in remote rural regions averages about 25.7 percent.

The report finds that the average labour force participation rate has increased in recent years due to improved economic conditions as well as a growing participation of women in the labour force. According to the 2011 National Household survey, the participation rate in NL equals 70.4 percent compared to the national average of 76.5 percent. The unemployment rate is lowest in urban areas and increases as the degree of rurality rises. The unemployment rate in remote rural areas equals 30.9 percent compared to 13.9 percent in urban areas. Overall, the provincial unemployment rate stood at 14.5 percent in 2011 compared to the national average of 7.8 percent.

High unemployment in rural and urban regions of the province coexists with growing demand for labour. Employers appear to have difficulty finding qualified workers. Lack of qualified workers creates a significant obstacle for any economic development initiative in rural as well as urban regions. Historically, minimum formal skills requirements in the fishing industry have resulted in relatively low stock of human capital in rural areas. According to the 2011 National Household Survey, about 23.2 percent of individuals between the ages of 15 and 64 in NL do not have a high school diploma compared to the national average of about 17.0 percent.

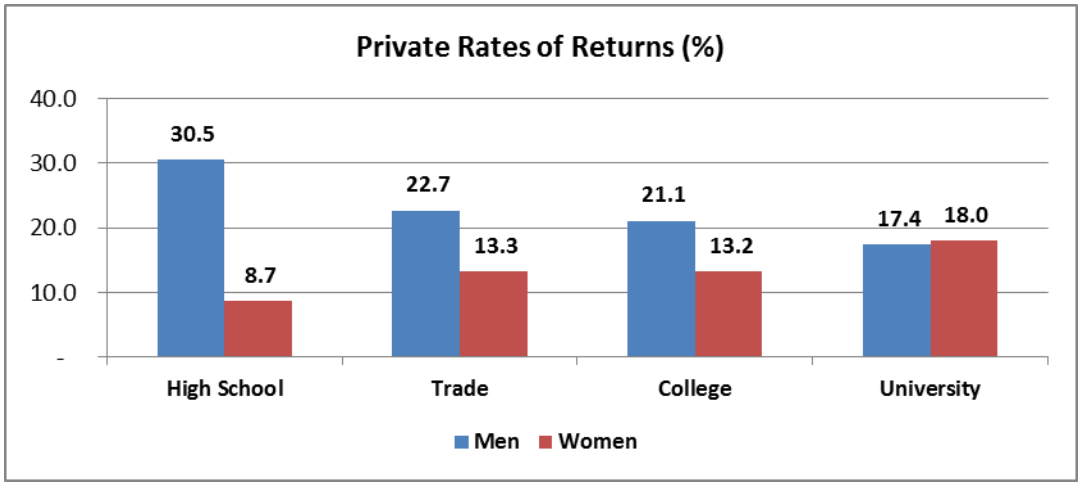
A companion study to the present report shows that a higher level of educational achievement in NL increases the likelihood of working full-time weeks as well as increasing the number of weeks worked per year; lowers the probability of dependency on government transfers and reduces the chance of falling below the poverty line; reduces the likelihood of being unemployed and increases the chance of participating in the labour force. Higher level of schooling is also associated with higher productivity and earnings. Figure 4.1 summarizes the impact of obtaining a high school diploma, relative to those without a secondary certificate, on various socio-economic indicators for men and women in Newfoundland and Labrador. Achieving post-secondary education also produced similar impacts.

Figure 4.1: Impact of Obtaining a Secondary Diploma



Having found human capital as the main determinant of productivity, earnings and other socio-economic determinants of well-being, a companion study to the present report investigates returns to investment in education for men and women in Newfoundland and Labrador. It is found that the rates of returns to investment in education are well above the returns for other forms of investment. This suggests that investment in secondary and post-secondary education yields relatively high ex-post rates of returns over and above the earnings foregone and length of time invested. The report finds that the rates of returns to investment in a high school diploma, trade and college certificate are higher for men. On the other hand, the returns to investment in a university education are greater for women. Figure 4.2 summarizes returns to investment in education for men and women in Newfoundland and Labrador.

Figure 4.2: Internal Rates of Returns to Investment in Education



Although monetary returns may not be the only factor influencing the decision to pursue higher education, the above rates of returns are a useful indicator for prospective students as well as those involved in the education system. The above results have important policy implications emphasizing the importance of measures aimed at increasing secondary completion rates especially in rural areas.

Finally, the present study shows that acquiring a secondary or post-secondary education offers substantial labour market advantage over those without a secondary certificate. Better labour market outcome includes higher earnings, lower likelihood of unemployment or underemployment and improved job quality. Technological change has resulted in a shift in demand for labour towards higher skilled workers relative to lower skilled ones. This has resulted in growing employment opportunities for better educated workers and declining demand for less skilled ones.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