

STRENGTHENING
RURAL
CANADA



RENFORCER LES
COMMUNAUTÉS
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Our people. Our communities. Our future.

STRENGTHENING RURAL CANADA: **Fewer & Older: Population and Demographic** **Crossroads in Rural Saskatchewan**



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

This project is funded by the Government of Canada's
Adult Learning, Literacy and Essential Skills Program

Canada 

ROADMAP FOR CANADA'S OFFICIAL
LANGUAGES 2013-2018

EDUCATION
IMMIGRATION
COMMUNITIES

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ACKNOWLEDGEMENTS ■■■

This paper would not have been possible without the research team at Essential Skills Ontario. I would like to take the opportunity to thank Ron Samson who provided insightful feedback and notes on the drafts with respect to the overall direction of the research and potential avenues for data analysis. I would also like to thank Sandip Basi for his work on organizing and preparing the data for analysis and providing feedback and edits for the initial drafts of the report.

The communications team at Essential Skills Ontario also played a pivotal role in this report. I would like to thank Amber Haas for her excellent work in developing communications tools to disseminate the findings, as well for designing the report and presenting the findings on the website.

I am also grateful for the role that the management team played in overseeing the project. Chris Black played an integral role in organizing partner meetings and ensuring that project timelines were met. I would also like to acknowledge John MacLaughlin, for his valuable insights - his knowledge and passion for the subject, as well as the depth and acuity of his feedback, led to many improvements. Finally, I'd like to thank Lesley Brown, Executive Director at Essential Skills Ontario - the project has benefited from her dedicated leadership and sustained interest in understanding the challenges facing rural Canada.

While there were many important contributions from numerous individuals, the responsibility for this report remains with its author. I take full responsibility for any errors of omission, commission or interpretation in this report.

Dr. Bakhtiar Moazzami

March 2015

EXECUTIVE SUMMARY

The main objective of the present report is to analyze past, present and future demographic changes in the province of Saskatchewan. With 1.7 persons per square kilometer, Saskatchewan has one of the lowest population densities among Canadian provinces. Only Newfoundland has a lower density. However, there are significant differences between various regions in Saskatchewan. For example, the density is as low as 0.1 in northern regions and less than 1.0 in 257 out of 297 rural municipalities. On the other hand, the density exceeds 3,000 persons per square kilometer in some residential areas in Saskatoon and Regina with a population of 222,189 and 193,100 in 2011 respectively.

The population of Saskatchewan has been effectively at or near one million people for the past eighty years. Despite its relative constancy, the population trend was not uniform during the 1931-2011 period. Saskatchewan's population declined during 1931-51, experienced growth during 1951-91 but declined slightly during 1991-2006 while experiencing significant growth during 2006-2011 due to record level investment and employment creation in the province during the latter period.

Saskatchewan's share of the Canadian population has declined steadily during the past eighty years. It declined from 8.9 percent in 1931 to 6.0 percent in 1951, 4.0 percent in 1981 and 3.0 percent in 2011.

The declining population share has happened despite the fact that the total fertility rate in Saskatchewan has been significantly greater than the Canadian rate. The total fertility rate is defined as the average number of children that a woman will have over the course of her life. In Canada, the total fertility rate reached 3.94 in 1959. It declined below the generational replacement rate of 2.1 in 1972 and reached its historical low of 1.49 in 2000. It increased to a high of 1.68 in 2008, but declined to 1.61 in 2011. In Saskatchewan, the total fertility rate has consistently been above the Canadian rate and reached its recent high of 2.06 in 2009 but declined to 1.99 in 2011. The higher fertility rate in Saskatchewan compared to Canada suggests that the declining population share in Saskatchewan is not due to natural population change. Examination of the data suggests that Saskatchewan has not only been experiencing net outmigration but has also been receiving disproportionately low immigration rates until recently.

The federal government sets the target levels of immigration in 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.¹ According to Census data, about 1.4 million immigrants came to Canada during 2001-2011. About 43.8 percent of the new immigrants chose Ontario as their place of residence. Only about 3.3 percent selected Saskatchewan as their place of residence. Historically, Saskatchewan had one of the highest immigration rates in Canada during the first two decades of the 20th century. However, the Great Depression as well as recurrent drought and unfavorable economic conditions resulted in rural

¹ Ministry of Finance, *Ontario Population Projections Update 2012-2036*, Spring 2013.

depopulation. The province became an unattractive destination for immigrants. Between 1931 and 1945, the province suffered from the lowest immigration rates to Canada in history. Additionally, by 2006, Saskatchewan registered one of the lowest immigrant retention rates in Canada (57%).

However, the number of immigrants to Saskatchewan increased sharply after 2006 due to improved economic conditions. Saskatchewan experienced out-migration up to 2007 when the net interprovincial migration turned positive. As a result, the province experienced population increase during 2006-2011.

Outmigration of youth along with rising life expectancy have resulted in aging of Saskatchewan's population. The baby boomers were followed by much smaller generations 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 32.2 percent in 1986 to 26.1 percent in 2011 while the share of seniors aged 65 years and over rose from 12.7 percent in 1986 to 14.9 percent in 2011. Aging of the population is also reflected in rising median age in Saskatchewan from 26.2 to 38.7 years over the last 30 years.² The median age is the age that divides a population into two numerically equal groups whereby half the people are younger than the median age and half are older.

Slower growth and aging of the population affect the labour force and hence Saskatchewan's ability to generate output and income. In fact, aging population affects virtually all other aspects of the economy too. It affects patterns of saving and household consumption and investment. It influences sales, production, and investment levels and its impact falls unevenly on different industries and sectors of the economy. Aging population also affects the tax bases from which the provincial government draws revenue and influences demand for government program expenditures such as health care. What healthcare related services will be necessary to meet the requirements of a rapidly aging provincial population? How many doctors, nurses and other type 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 each type of services and facilities do we require? These are important questions that policy makers need to address in the coming years.

An important aspect of demographic change in Saskatchewan relates to the diversity of the population. The share of the Francophone population declined from 1.9 percent in 2001 to 1.6 percent in 2011. The share of the Aboriginal population increased from 13.4 percent to 15.0 percent during 2001-2011. Similarly, immigrants comprised 4.9 percent of the provincial population in 2001. Their share increased to 6.4 percent in 2011.

The share of the Aboriginal population living on reserves rose from 4.5 percent in 2001 to 5.4 percent in 2011. During the same period, the share of the Aboriginal population living off reserve

² Crosby Hanna & Associates, *Saskatchewan Health region Population Projections (2006-2026)*, June 2010, p. 27.

increased from 8.9 percent in 2001 to 9.7 percent in 2011. 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.

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 study uses detailed socio-economic information on all census sub-divisions (CSDs) in Saskatchewan obtained from 2001 and 2011 census custom tabulations. Using Statistics Canada's Statistical Area Classification (SAC) system, the 959 CSDs in Saskatchewan can be classified into 41 Census Metropolitan Areas (CMAs) and 25 Census Agglomerations (CAs) which are considered as urban areas and the other 893 CSDs are classified as rural and small towns with different degrees of rurality.

The population size of CSDs in Saskatchewan varies significantly from less than hundred to 193,100 and 222,189 in Regina and Saskatoon respectively. There are many municipalities with just a few hundred residents. About 150 of the villages and towns in southern Saskatchewan have fewer than 100 residents.

Excluding the two major urban centers, the average number of residents in the remaining CSDs in urban regions are about 3,447 people. The average number of people living in CSDs declines considerably when we move to rural and small towns. Areas designated as having a weak link with urban centres appear to have a relatively larger population base (889 persons per CSD) whereas the remote regions have the lowest average number of residents (190 people in each CSD). Based on the above classification, 628,978 people lived in urban centres while 404,403 persons lived in rural Saskatchewan in 2011. The urban population increased by 12.9 percent while the rural population declined by 1.8 percent during 2001-2011.

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 and small towns according to their degree of rurality, one finds that the rural population has declined irrespective of the distance between rural and urban 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 a slight population decline.

Saskatchewan is unique in a sense that it consists of many municipalities with a few hundred residents and many villages and towns with fewer than 100 residents. Statistics Canada often uses an alternative definition of rural population as persons living outside centres with a population of more than 1,000 and outside areas with 400 persons per square kilometer.

The rural population in Saskatchewan has been trending downward since 1931. The share of the rural population has also been decreasing over time. It declined from 84.4 percent in 1901 to

69.6 percent in 1951 and 37.0 percent in 1991 to 33.2 percent in 2011. The changing relative size of the rural population is largely the result of migration of population from rural to urban areas in search of employment, education and other opportunities. One of the forces behind the declining rural population has been a decline in farm numbers resulting from incorporation of smaller farms into larger units which coincided with an increased application of technology and substitution of capital for labour. The number of farms in Saskatchewan declined from 138,713 in 1941 to 50,598 in 2001.

The study also examines various socio-economic characteristics of rural and urban population in Saskatchewan and pays special attention to the degree of rurality. The study finds that the labour force participation rate is highest in urban areas and declines as the degree of rurality rises. The unemployment rate is lowest in urban areas (6.6%) and increases as the degree of rurality rises. The unemployment rate in remote rural regions in 2011 was about 12.6 percent higher than the prevailing rate in urban centres. This picture does not change when one defines rural areas as those with less than 1,000 or fewer population.

In terms of dependency on government transfer payments, the study finds that an average of 5.5 percent of individuals in urban areas receive transfer payments. The dependency rate increases to 7.2 percent in rural areas with a strong link to urban centres and to 10.1 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 72.2 percent of earnings in urban regions. The earnings of those who worked full-time and full-year equalled \$58,507 in urban centres compared to \$55,256 in rural areas with a strong link to urban centres, \$45,617 in those with a moderate link, \$45,301 in relatively remote regions and \$43,360 in remote rural areas. It appears that earnings decline as the degree of rurality rises.

Focusing on various population groups, the study finds that the average age of the Francophone population was about 53.9 years in 2011 compared to 37.9 years for the provincial population. Similarly, the median age in Saskatchewan equalled 37.8 years compared to the median age of the Francophone population that was 56.9 years in 2011. It appears that the Francophone population is much older than the overall provincial population. This can be the result of a low fertility rate among the Francophone population or caused by the outmigration of Francophone youth from the province.

The study finds that the majority or 56.6 percent of the Francophone population live in urban areas. About 35.9 percent live in rural areas with weak to strong link with urban centres. Only 7.5 percent live in remote rural communities.

Focusing on the Aboriginal population, the study finds that the on-reserve population has increased by 27.1 percent during 2001-2011. During the same period, the off-reserve Aboriginal population increased by 18.4 percent. Overall, the total Aboriginal population increased from 130,029 in 2001 to 157,740 in 2011, a growth rate of about 22.6 percent. The

study discusses various factors explaining the significant growth of the Aboriginal population in the province.

The Aboriginal population is much younger than the overall population. The median age of the Aboriginal population equals 22.6 compared to the provincial median of 37.7. In other words the Aboriginal population is on average about 15 years younger than the overall population in Saskatchewan. The study also shows that the on-reserve population is slightly younger than the off-reserve population. This can reflect a higher fertility rate for the on-reserve population compared to the off-reserve population.

About 44.4 percent of the Aboriginal population live in urban areas. The rest live in rural and small towns in Saskatchewan. About 36.4 percent of the Aboriginal population live in rural and small towns with a weak or no link to urban centres. The geographical distribution of the Aboriginal population changes when one focuses on CSDs with less than 1,000 population. In this case, the majority or 93.1 percent of the population reside in rural areas with moderate to no link to urban centres.

Focusing on the Aboriginal population living in rural and small town Saskatchewan, the majority or 68.4 percent of the off-reserve Aboriginal population live in urban areas (Figure 2.6). About 7.6 percent live in rural areas with a moderate link to urban centres and 18.1 percent live in rural regions with a weak link to urban centres. The majority or 51.7 percent of the on-reserve population live in rural areas with a weak link to urban centres. Another 34.9 percent live in rural areas with a moderate link to urban regions. Finally, about 10.0 percent of the on-reserve Aboriginal population live in remote areas with no link to urban centres.

Turning attention to the immigrant population, the study finds that the immigrant population has increased by about 44.4 percent during 2001-2011. This amounts to a growth rate of 4.4 percent per year. It appears that the province has experienced significant in-migration of young immigrants during 2001-2011. As a result, the average age of immigrants declined from 52.0 years in 2001 to 42.4 years in 2011. The median age of the immigrant population has also declined from 52.4 years in 2001 to 41.6 years in 2011. Despite the significant influx of young immigrants, the immigrant population in Saskatchewan is still much older than the general population. As mentioned above, the average and median age of the general population in Saskatchewan in 2011 equalled 36.5 and 36.4 years respectively.

The study finds that the majority or 85.9 percent of the immigrant population reside in urban areas. Only 7.4 percent of them live in areas designated as weak MIZ and 4.0 percent live in areas with moderate link to urban areas.

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 also

examines the effect of differences in industrial and occupational composition of the employed labour force in different regions.

To examine factors explaining the rural-urban earnings gap, the study estimates human capital indexes for rural and urban regions in Saskatchewan and compares them with those in Canada.

The human capital index for Saskatchewan rose during 2001-2011 due to an in-migration of skilled workers from other regions. Overall, the human capital index for Saskatchewan has been below the national level. The study also finds that a significant share of the earnings gap between rural and urban regions is explained by the differences between their stock of human capital. In addition, industrial and occupational differences also explained a part of the earnings gap in Saskatchewan.

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 total fertility rates in urban and rural Saskatchewan equal 1.78 and 2.40 compared to 1.54 and 2.11 in Canada, respectively. Overall, the total fertility rate in the province equaled 1.99 in 2011 which is significantly greater than the national average of 1.62.

Assuming that the 2001-2011 demographic trends will continue into the future, the province's urban population is expected to rise from 606,300 in 2011 to 639,817 in 2018 and 674,072 in 2025.

The growing population trend in Saskatchewan is primarily due to a significant net in-migration that urban areas have been experiencing. The report 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 of about 19,672 people during 2001-2011.

The province's rural population declined from 415,370 in 2001 to 412,020 in 2011, a decline of about 0.81 percent during 2001-2011. This is in contrast to the total urban population that grew about 10.7 percent and the provincial population that grew about 5.7 percent during the same period. The study shows that the 2001-2011 trend is expected to continue into the future.

How much of the rural population decline is caused by out-migration? The study estimates the migration flows during 2001-2011. It appears that out-migration of youth between the ages of 20 and 30 has played a significant role in the declining rural population in Saskatchewan.

The study finds that the urban population in Saskatchewan has been rising due to significant economic growth and investment in recent years. Recent resource-related developments have created favorable economic conditions attracting youth from rural areas as well as other provinces and countries. On the other hand, the rural population has been declining due to out-migration of youth. In fact, out-migration of youth has been a reality in rural areas for some time. 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. Recent studies have shown that the lack of human resources represent the greatest challenge to rural development in Canada. In fact, 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 agriculture industry has resulted in relatively low stock of human capital in rural areas. According to the 2011 National Household Survey, about 30.0 percent of individuals between the ages of 15 and 64 in rural Saskatchewan do not have a high school diploma compared to the national average of about 17.0 percent.

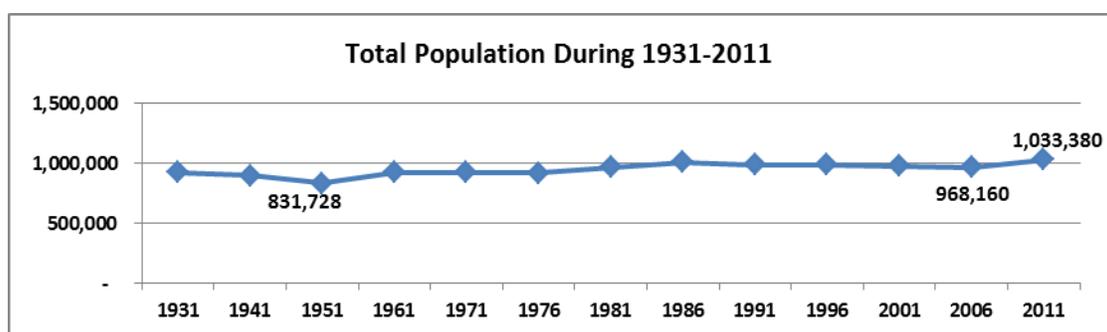
The study shows that youth out-migration from rural areas has been a significant factor explaining the declining rural population. This will continue as long as no sustainable economic opportunity exists in those areas. The present mismatch between demand and supply of skills in rural as well as urban 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 Saskatchewan.

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.

PART I: POPULATION TRENDS IN SASKATCHEWAN ■ ■ ■

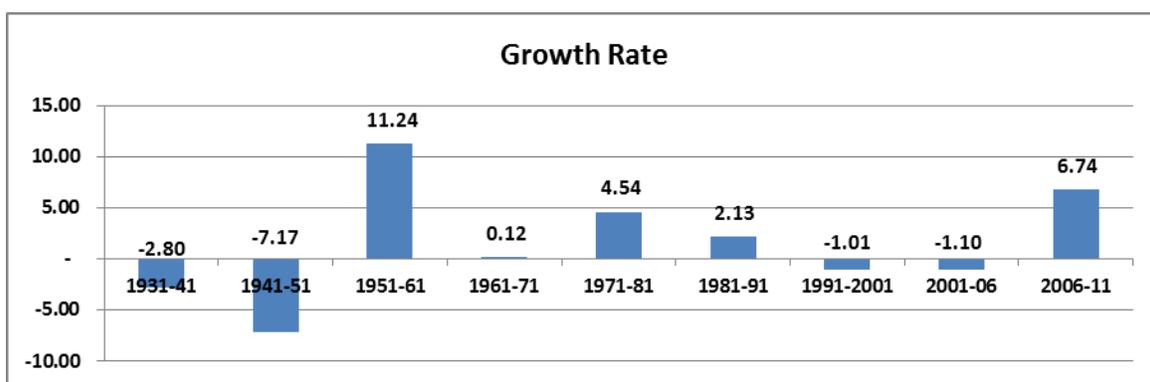
Saskatchewan started the twentieth century with a population of only 91,279 people. Its population exploded shortly after separating from the Northwest Territories in 1905 reaching about 492,432 in 1911, 757,510 in 1921 and 921,785 in 1931. The population peaked at 931,547 in 1931 but declined during the 1930s and 1940s to 831,728 in 1951. This decline was primarily due to the depression and recurrent drought.⁴ The province's population has been effectively at or near one million people for the past eighty years (Figure 1.1). Outmigration of youth is often blamed for this apparent constancy of the population in Saskatchewan.⁵

Figure 1.1: Population Trends in Saskatchewan



Despite its apparent constancy, the population trend has not been uniform during the 1931-2011 period. As Figure 1.2 shows, Saskatchewan's population declined during 1931-51, experienced growth during 1951-91 but declined slightly during 1991-2006 and experienced significant growth during 2006-2011. This was due to record level investment and employment in the province during that period.

Figure 1.2: Percentage Growth Rate of Population in Saskatchewan



⁴ Alan Anderson, *Population Trends*, University of Regina and Canadian Plains Research Centre, 2007.

⁵ Doug Elliot, *Demographic Trends in Saskatchewan, A Statistical Analysis of Population, Migration, and Immigration*, August 2003.

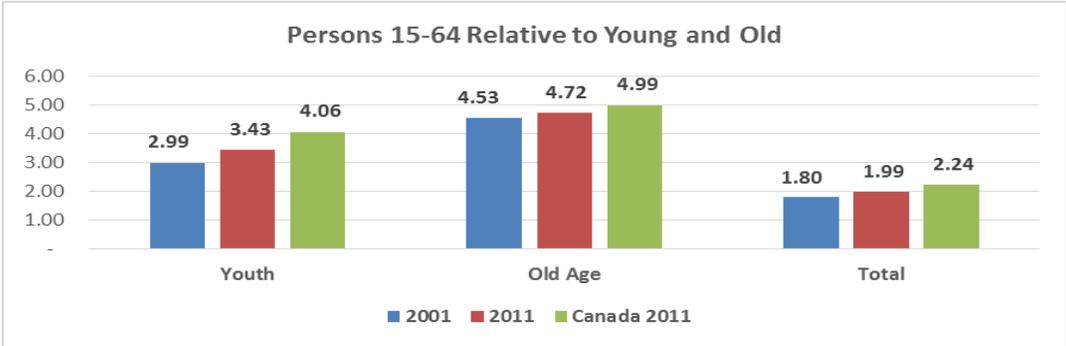
Saskatchewan has one of the lowest population densities among Canadian provinces. On average, there are about 1.7 persons per square kilometer in the province. Only Newfoundland has a lower density. However, there are significant differences between areas. For example, the density is as low as 0.1 in northern regions and less than 1.0 in 257 out of 297 rural municipalities. On the other hand, the density exceeds 3,000 persons per square kilometer in some residential areas in Saskatoon and Regina with a population of 222,189 and 193,100 in 2011 respectively.⁶

Demographic changes have significant impact on social and economic conditions in the province. Individuals grow older as they move through the life cycle. The baby boomers, born in the two decades following World War II, are aging and the first group of them are retiring now. The generation that came after the boomers is much smaller. As a result, the overall provincial population is aging slowly and this process will continue into the foreseeable future.

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

We examine three dependency ratios, namely old age dependency, youth dependency and total dependency ratios. Old age dependency is defined as the number of working age population (15 to 64) relative to persons aged 65 years and over. Similarly, youth dependency is defined as the ratio of the number of working age persons to those aged 15 years and under. The total dependency ratio is defined as the ratio of the working age population to persons aged 15 years and under plus those aged 65 years and over. Figure 1.3 shows the dependency ratios during 2001-2011. Assuming jobs are available for the working age population, a rise in the dependency ratio suggests that the province can reap the benefits of increased production capacity therefore lowering the costs associated with the declining proportion of dependents.

Figure 1.3: Working Age Population Relative to Other Groups in Saskatchewan

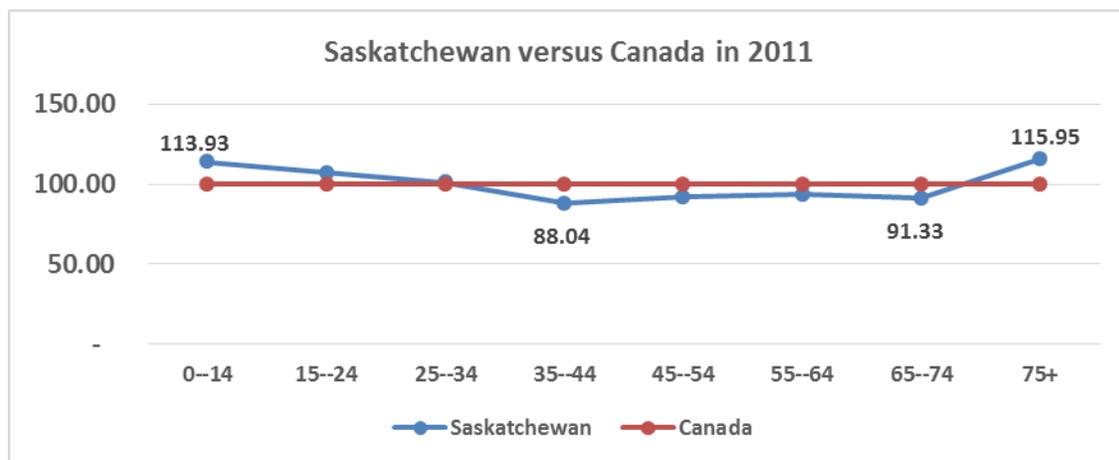


⁶ Alan Anderson, *Population Trends, University of Regina and Canadian Plains Research Centre, 2007.*

Figure 1.3 shows that there were 2.99 working age persons for every person under the age of 15 in Saskatchewan in 2001. This ratio increased to 3.43 working age persons per each youth in 2011 due to an inflow of working age persons to the province during 2001-2011. The number of working age persons relative to youth in Saskatchewan was still below the national average in 2011. The same trend emerges when we compare the total working age persons to seniors. Overall, the number of working age persons relative to youth and seniors increased from 1.80 in 2001 to 1.99 in 2011 suggesting an increased capacity of the province to support its non-working population during 2001-2011. The ratio was still below the national average in 2011. In other words, there are still fewer working age people compared to youth and seniors in Saskatchewan compared to Canada. Decreasing the gap between the dependency ratios in Saskatchewan and the national levels can be a goal the province may strive to achieve in the long-term.

The above dependency trends suggest that the age distribution of the population in Saskatchewan is different from that in Canada. As Figure 1.4 shows, compared to the national average, there are a relatively higher percentage of youth as well as a higher share of seniors and conversely a lower share of the working age population in Saskatchewan.

Figure 1.4: Relative Age Distribution

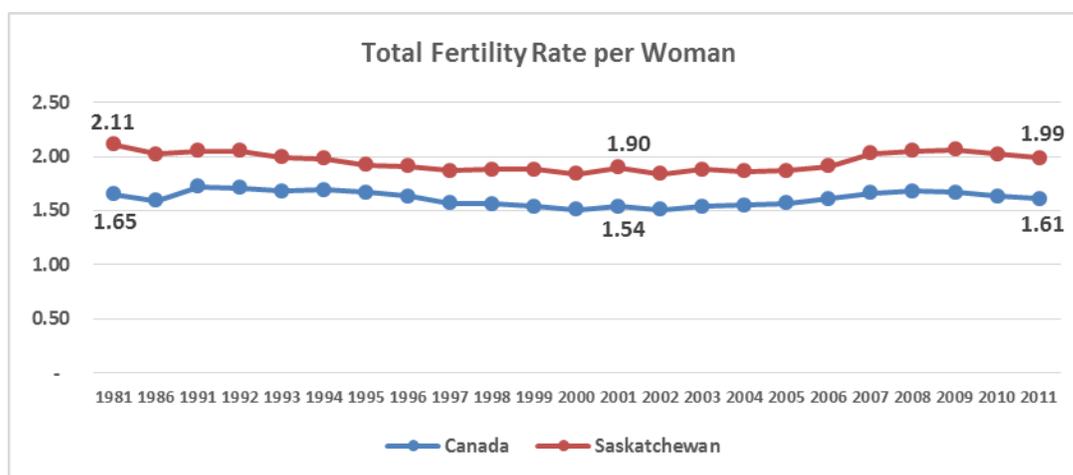


Saskatchewan's share of the Canadian population has declined steadily during the past eighty years. It declined from 8.9 percent in 1931 to 6.0 percent in 1951 and from 4.0 percent in 1981 to 3.0 percent in 2011.

The declining population share has happened despite the fact that the total fertility rate in Saskatchewan has been significantly greater than the Canadian rate. The total fertility rate is defined as the average number of children that a woman will have over the course of her life. In Canada, the total fertility rate reached 3.94 in 1959. It declined below the generational replacement rate of 2.1 in 1972 and reached its historical low of 1.49 in 2000. As Figure 1.5 shows, it increased to a high of 1.68 in 2008, but declined to 1.61 in 2011. In Saskatchewan, the

total fertility rate has consistently been above the Canadian rate and reached its recent high of 2.06 in 2009 but declined to 1.99 in 2011. The higher fertility rate in Saskatchewan compared to Canada suggests that the declining population share in Saskatchewan is not due to natural population change. Examination of the data suggests that Saskatchewan has been experiencing net outmigration as well as receiving disproportionately low immigration until recently.

Figure 1.5: Fertility Rates in Canada and Saskatchewan during 2000-2011



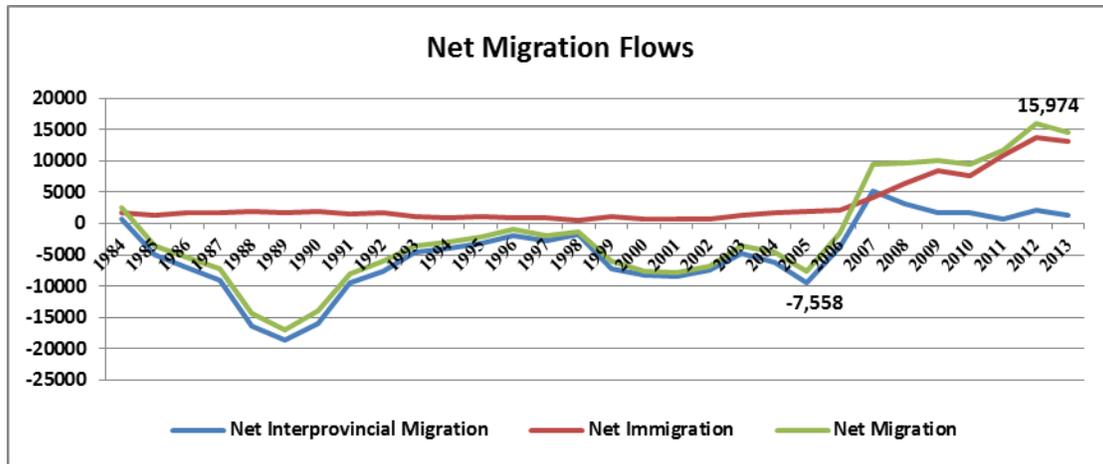
The federal government sets the target levels of immigration in Canada. For example, the target level is set at 240,000 to 265,000 during 2013-2015. The target range has increased over the past 20 years and is presently about 0.75 percent of population each year.⁷ According to Census data, about 1.4 million immigrants came to Canada during 2001-2011. About 43.8 percent of the new immigrants chose Ontario as their place of residence. Only about 3.3 percent selected Saskatchewan as their place of residence. Historically, Saskatchewan had one of the highest immigration rates in Canada during the first two decades of the 20th century. However, the Great Depression as well as recurrent drought and unfavorable economic conditions resulted in rural depopulation and as a result the province became an unattractive destination for immigrants. Between 1931 and 1945, the province suffered from the lowest immigration rates to Canada in history.⁸ Additionally by 2006, Saskatchewan registered one of the lowest immigrant retention rates in Canada (57%).

However, as Figure 1.6 shows, the number of immigrants to Saskatchewan increased sharply after 2006 due to improved economic conditions. Figure 1.6 also shows that Saskatchewan experienced out-migration up to 2007 when the net interprovincial migration turned positive. As a result, the province experienced population increase during 2006-2011.

⁷ Ministry of Finance, *Ontario Population Projections Update 2012-2036*, Spring 2013.

⁸ Alan Anderson, *Population Trends*, University of Regina and Canadian Plains Research Centre, 2007.

Figure 1.6: Net Provincial and International Migration



Historically, outmigration of youth defined as those between the ages of 15 to 29 years of age has been of particular concern in Saskatchewan. This age cohort has the weakest economic link to a particular location and are most likely to migrate to other provinces. They accounted for over 50 percent of out-migration during 2001-02.⁹ A report prepared for Saskatchewan Intergovernmental and Aboriginal Affairs suggests that out-migration rates among youth in Saskatchewan during 1970-2000 was higher than in other provinces.¹⁰ They also found that the same was true for the adult and retiree groups.

Outmigration of youth along with rising life expectancy have resulted in aging of Saskatchewan's population. The baby boomers were followed by much smaller generations 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.

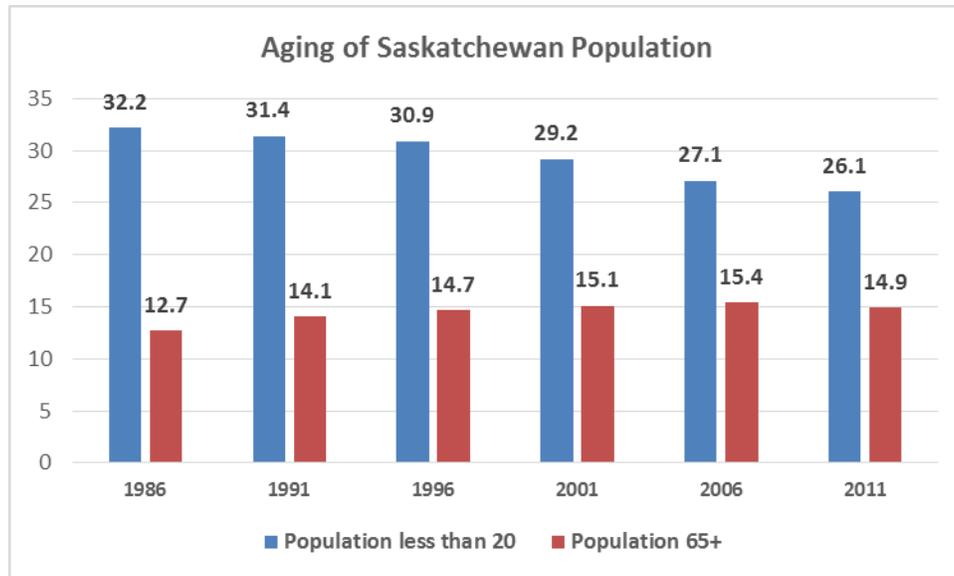
As a result, as is shown in Figure 1.7, the share of individuals below the age of 20 has declined from 32.2 percent in 1986 to 26.1 percent in 2011 while the share of seniors rose from 12.7 percent in 1986 to 14.9 percent in 2011. Aging of the population is also reflected in rising median age in Saskatchewan from 26.2 to 38.7 years over the last 30 years.¹¹ The median age is the age that divides a population into two numerically equal groups whereby half the people are younger than the median age and half are older.

⁹ Doug Elliot, *Demographic Trends in Saskatchewan, A Statistical Analysis of Population, Migration, and Immigration*, August 2003, p. 31.

¹⁰ *Ibid*, p. 33.

¹¹ Crosby Hanna & Associates, *Saskatchewan Health region Population Projections (2006-2026)*, June 2010, p. 27.

Figure 1.7: Changing Composition of Saskatchewan's Population



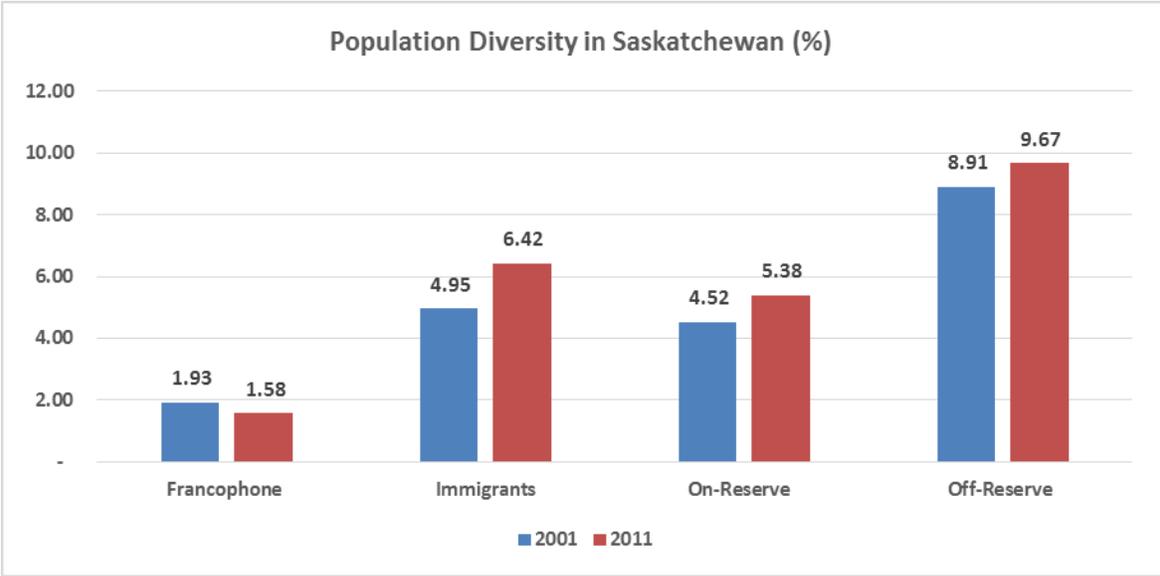
Slower growth and aging of the population affect the labour force and hence Saskatchewan's ability to generate output and income. In fact, aging population affects virtually all other aspects of the economy too. It affects patterns of saving and household consumption and investment. It influences sales, production, and investment levels and its impact falls unevenly on different industries and sectors of the economy. Aging population also affects the tax bases from which the provincial government draws revenue and influences demand for government program expenditures such as health care. What healthcare related services will be required to meet the requirements of a rapidly aging provincial population? How many doctors, nurses and other type 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 each type of services and facilities do we require? These are important questions that policy makers need to address in the coming years.

An important aspect of demographic change in Saskatchewan relates to the diversity of the population (Figure 1.8). The share of the Francophone population declined from 1.9 percent in 2001 to 1.6 percent in 2011. The share of the Aboriginal population increased from 13.4 percent to 15.0 percent during 2001-2011. Similarly, immigrants comprised 4.9 percent of the provincial population in 2001. Their share increased to 6.4 percent in 2011.

The share of the Aboriginal population living on reserves rose from 4.5 percent in 2001 to 5.4 percent in 2011. During the same period, the share of the Aboriginal population living off reserve increased from 8.9 percent in 2001 to 9.7 percent in 2011. 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.

Figure 1.8: Aboriginal, Francophone and Immigrant Population in Saskatchewan



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

Demographic changes have not been uniform across rural and urban Saskatchewan. According to the 2011 Saskatchewan population report, the total population in Saskatchewan cities, towns and villages during 2006-2011 grew by 8.4, 8.0 and 4.7 percent respectively. However, during the same period, rural municipalities and resort villages saw population decline of 0.9 and 3.2 percent respectively.

The objective of this part of the report is to examine population trends in rural and urban Saskatchewan during 2001-2011. Various socio-economic characteristics of the rural and urban population are analyzed. The earnings gap between rural and urban Saskatchewan has been widening. We examine whether this gap is associated with agglomeration economies (geographic concentration of economic activity in larger centres) or reflects differences in their human capital composition?

In analyzing demographic changes in Saskatchewan, we pay special attention to 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.

How have the recent demographic changes affected these four population groups? Has the impact been the same for rural as for urban areas? 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? Have demographic changes been similar in rural and urban areas? These are questions we seek to explore in this part of the study.

Changing demographics and fluctuating populations in rural areas have important implications for resource development. Canada's economic prosperity has been based on a staples economy relying on the export of natural resources. The staple theory is one model commonly used to explain economic development of Canada's peripheral and rural regions.

Before examining demographic changes in rural and urban Saskatchewan, 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 focuses 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).”¹²

Based on the above information, one can define rural and small town (RST) to refer to the population living outside Census Metropolitan Areas (CMAs) and Census Agglomerations (CAs). A CMA is a grouping of census subdivisions comprising a large urban core and the surrounding urban fringes that are closely integrated with the core. To qualify as a CMA, an area has to have an urban core population of at least 100,000 and includes all neighbouring Census Sub-Divisions (CSDs) where:

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 is a smaller version of a CMA and 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.

Alternatively, Statistics Canada often defines rural population as persons living outside centres with a population of 1,000 and outside areas with 400 persons per square kilometer. In analyzing rural-urban population trends, this report uses both definitions, i.e., rural and small towns as well as areas with less than 1,000 population.

Using recently developed Statistical Area Classification (SAC), one can group various census subdivisions in a province according to whether they are a part of a census metropolitan area or a census agglomeration in which case they are referred to as urban areas or a part of census metropolitan influenced zones referred to as rural areas with different degrees of rurality. Statistics Canada defines various metropolitan influenced zone (MIZ) categories as follows:

¹² 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.

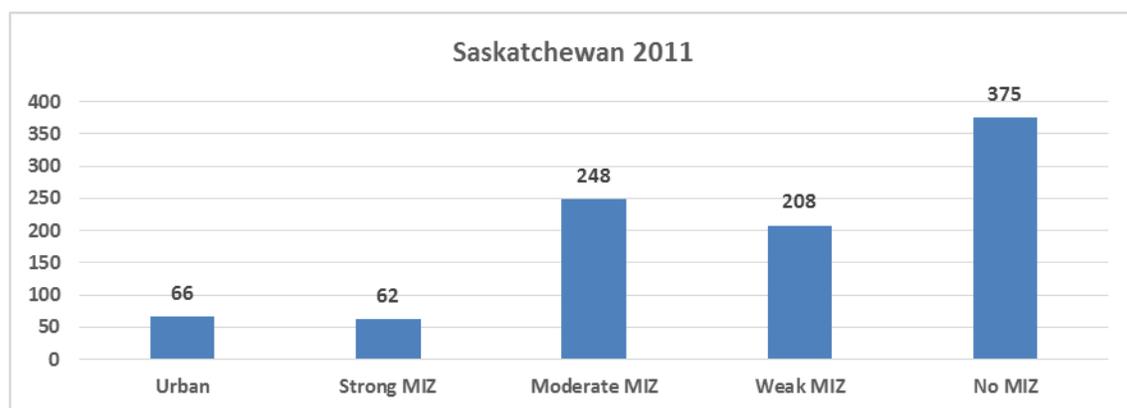
1. *Strong MIZ* includes CSDs with a commuting flow of 30 percent or more. In other words, at least 30 percent of the total employed labour force living in the CSD works in any CMA/CA urban core;
2. *Moderate MIZ* includes CSDs with a commuting flow of between 5 and 30 percent. This means that at least 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 Saskatchewan

The data used in this part of the study is based on detailed socio-economic information on all census sub-divisions in Saskatchewan 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 959 CSDs in the province of Saskatchewan into 41 within CMAs and 25 within CAs which are considered as urban areas and the other 893 CSDs are classified as rural and small towns with different degrees of rurality. Figure 2.1 shows the geographical distribution of 959 CSDs in Saskatchewan in 2011 into urban and rural and small towns with different degrees of rurality.

Figure 2.1: Geographical Distribution of Census Subdivisions



The population size of CSDs in Saskatchewan varies significantly from less than a hundred to 193,100 and 222,189 in Regina and Saskatoon respectively. There are many municipalities with just a few hundred residents. About 150 of the villages and towns in southern Saskatchewan have fewer than 100 residents.¹³ Figure 2.2 shows the average population size of various CSDs in Saskatchewan. We have excluded Regina and Saskatoon from calculating the average population sizes to prevent biasing the results due to a relatively large number of residents in those two communities. We have also excluded 56 smaller CSDs for which population data was not available.

Figure 2.2: Average Population Size of CSDs by Geography

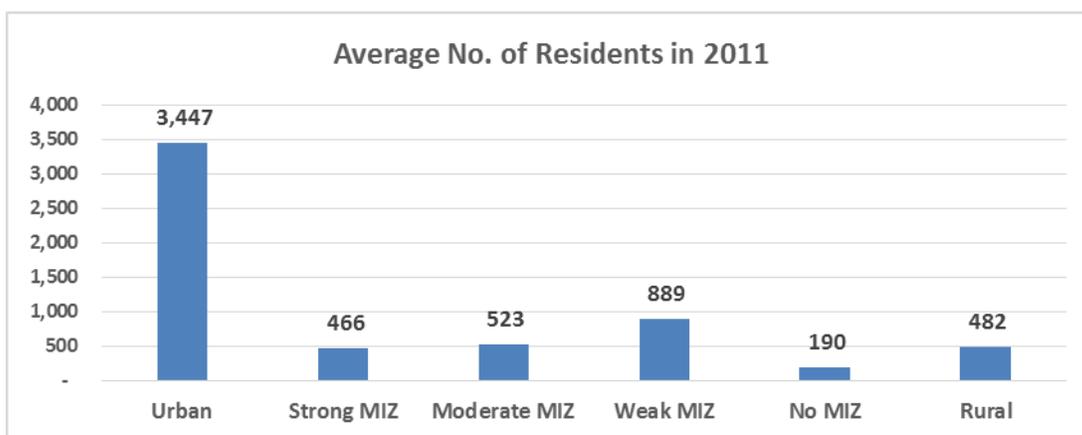


Figure 2.2 shows that, excluding the two major urban centers, the average number of residents in the remaining CSDs in urban regions are about 3,447 people. The average number of people living in CSDs decline considerably when we move to rural and small towns. Areas designated as having a weak link with urban centres appear to have a relatively larger population base. Conversely the remote regions have the lowest average number of residents.

Using the above urban and rural and small town classification, Table 2.1 shows the population change in rural and urban Saskatchewan during 2001-2011.

Table 2.1: Urban and Rural Population in Saskatchewan

Saskatchewan	2001	%	2011	%	Percentage Change 2001-11
Urban	557,325	57.51	628,978	60.87	12.86
Rural	411,840	42.49	404,403	39.13	-1.81
Total	969,165	100.00	1,033,381	100.00	6.63

¹³ Kevin O'Connor, "Too many tiny towns in Saskatchewan", CBC News Posted Nov. 17, 2011.

We note that the sum of individual CSD population data for 2001 shown in Table 2.1 is slightly lower than the total provincial population based on the 2001 census report (978,933). The reason is that the 2001 Census did not report population statistics for some of the smaller CSDs. However, for the sake of consistency, we use population statistics based on the aggregation of individual CSD data to analyze urban-rural population changes in this part of the study.

Table 2.1 shows that Saskatchewan's population increased by 6.6 percent during 2001-2011. The urban population grew by 12.9 percent or 1.3 percent per year while the rural and small town population declined by 1.8 percent during 2001-2011. In other words, all the provincial population growth occurred in urban areas. Some of the above rural and urban population changes may be due to the reclassification of boundaries.¹⁴ 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 1976.¹⁵

Table 2.1 also shows that Saskatchewan's population living in rural and small towns has declined in relative terms. The share of Saskatchewan's population living in RST areas declined from 41.7 percent in 2001 to 39.1 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 1996.¹⁶ 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.¹⁷ 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.¹⁸

Using 2001 and 2011 census custom tabulations, Figure 2.3 shows the percentage distribution of the rural and small town population in Saskatchewan by degree of rurality. It shows that the rural population living in areas designated as strong, moderate and weak MIZ increased during 2001-2011. As mentioned above, a part of this change can be due to reclassification of boundaries especially in areas having strong urban influence. The rural areas designated as no MIZ lost population during 2001-2011. It appears that all the gain in rural areas designated as weak to strong MIZ are offset by a greater population loss in the areas designated as remote with no link to urban centers.

¹⁴ 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.

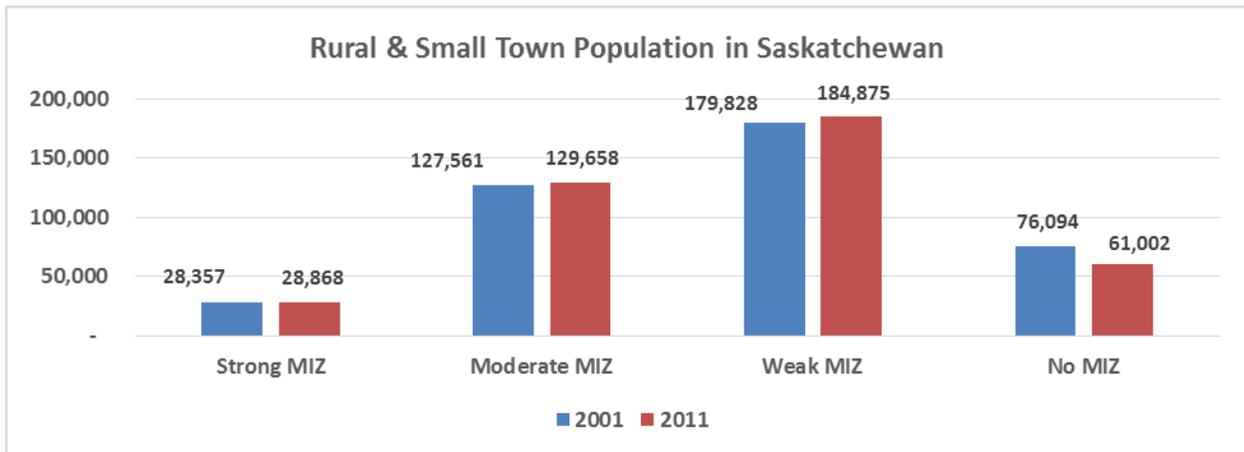
¹⁵ Mendelson Robert and Ray D. Bollman (1998), *Rural and Small Town Canada Analysis Bulletin*, Vol. 1, No. 1, Cat. No. 21-006-XIE.

¹⁶ Ibid, p. 7.

¹⁷ Mitchell Clare J.A., *Population Growth in Rural and Small Town Ontario: Metropolitan Decentralization or Deconcentration?*, Canadian Journal of Regional Science, 2009, 377-392.

¹⁸ Ibid, p. 377.

Figure 2.3: Saskatchewan's Rural & Small Town Population by Degree of Rurality



Saskatchewan is unique in a sense that it consists of many municipalities with a few hundred residents and many villages and towns with fewer than 100 residents. As mentioned above, Statistics Canada also defines rural population as persons living outside centres with a population of 1,000 and outside areas with 400 persons per square kilometer.

Figure 2.4 shows population trends in rural and urban Saskatchewan based on the above definition. Statistics Canada notes that prior to 1981, the rural population referred to populations outside centres of 1,000 population.

Figure 2.4: Rural-Urban Population in Saskatchewan

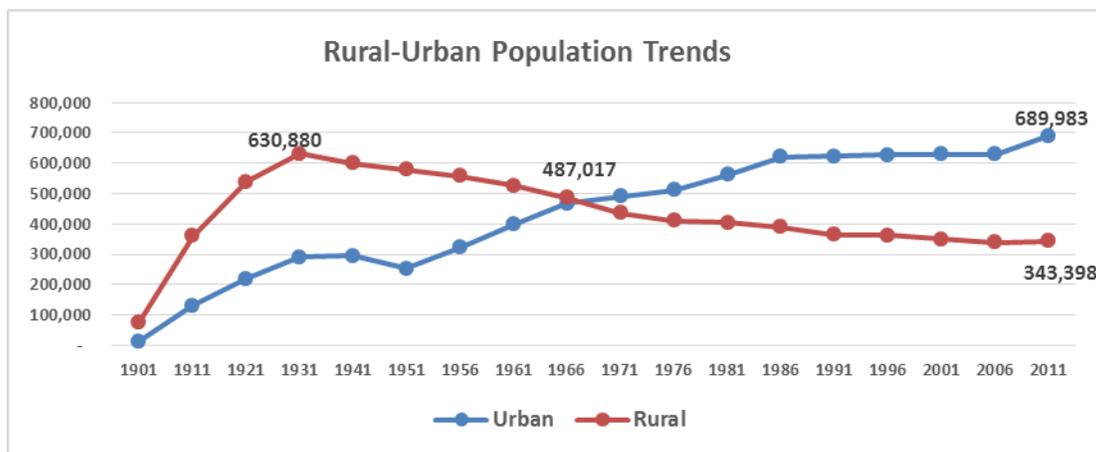


Figure 2.4 shows that the rural population in Saskatchewan has been trending downward since 1931. The share of the rural population, based on this alternative definition, has also been decreasing over time. It declined from 84.4 percent in 1931 to 69.6 percent in 1951, 37.0 percent in 1991 and 33.2 percent in 2011. The changing relative size of the rural population is

largely the result of migration of population from rural to urban areas in search of employment, education and other opportunities. One of the forces behind declining rural population has been a decline in farm numbers resulting from incorporation of smaller farms into larger units which coincided with an increased application of technology and substitution of capital for labour. The number of farms in Saskatchewan declined from 138,713 in 1941 to 50,598 in 2001.¹⁹

There were about 840 CSDs with less than 1,000 population in Saskatchewan in 2011. In other words, about 87.6 percent of CSDs have less than 1,000 residents in Saskatchewan. The geographical distribution of the 840 CSDs with less than 1,000 population is shown in Figure 2.5.

Figure 2.5: Geographical Distribution of CSDs with Less than 1,000 Population

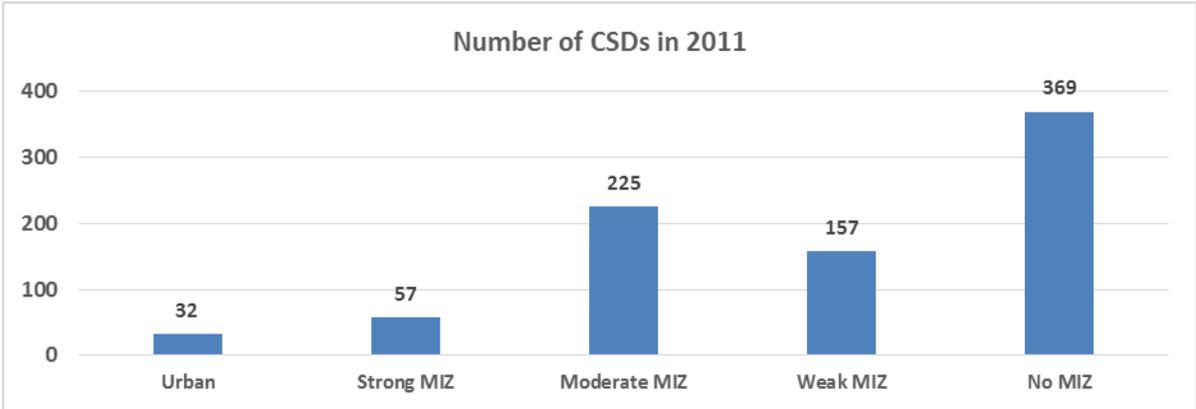
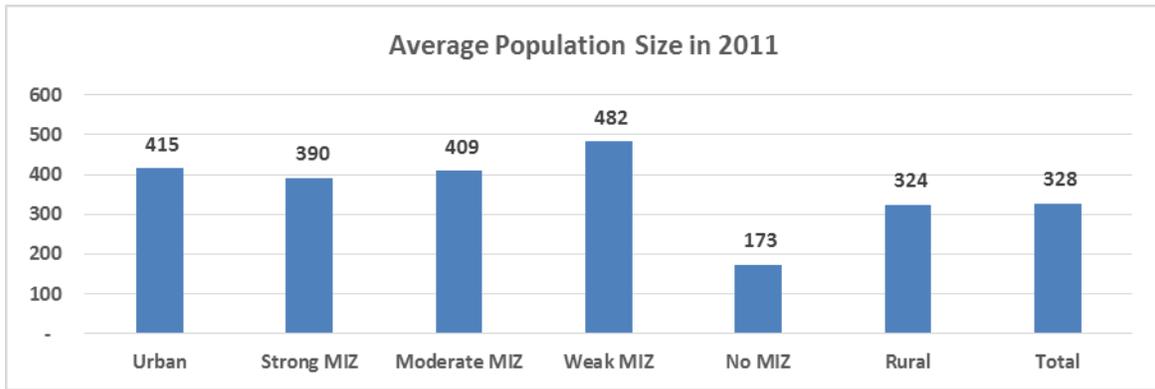


Figure 2.5 shows that 43.9 percent of CSDs with less than 1,000 population are in remote areas followed by 26.8 percent in areas designated as moderate MIZ and 18.7 percent in areas with weak link to urban centres.

Figure 2.6 shows the average population size of CSDs with less than 1,000 population in 2011. We have excluded 56 smaller CSDs for which population data was not available for 2011.

¹⁹ David Hay, *Rural Population*, University of Regina and Canadian Plains Research Centre, 2007.

Figure 2.6: Average Number of Residents in CSDs with Less than 1000 Population



Comparing Figures 2.2 and 2.6 shows that the average size of CSDs with less than 1,000 population (Figure 2.6) is much smaller than those in Figure 2.2. For example, the overall average of rural CSDs with less than 1,000 population is 324 compared to 482 for the overall rural regions in the province.

It is of interest to see population trends in areas with less than 1,000 residents and to examine how recent economic growth has affected their population size. In order to make a valid comparison, we selected the CSDs with less than 1,000 population for which we have population counts and Statistical Area Classification codes for 2001 and 2011. There were 669 CSDs that satisfied the above conditions. Then, we tracked all CSDs that had a population of less than 1,000 in 2001 to see how their population changed during the 2001-2011 period. Figure 2.7 shows population trends in areas with less than 1,000 residents in Saskatchewan during 2001-2011.

Figure 2.7: Population Trends in Areas with Less than 1,000 Residents

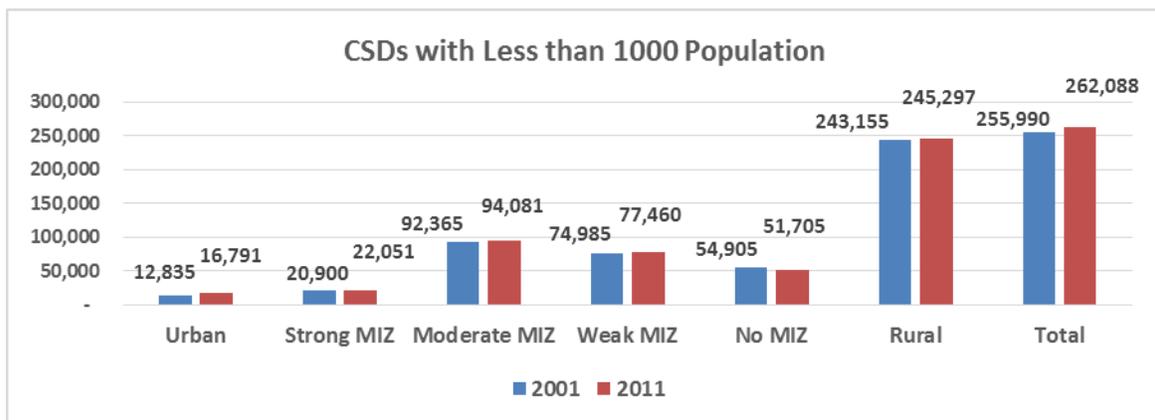
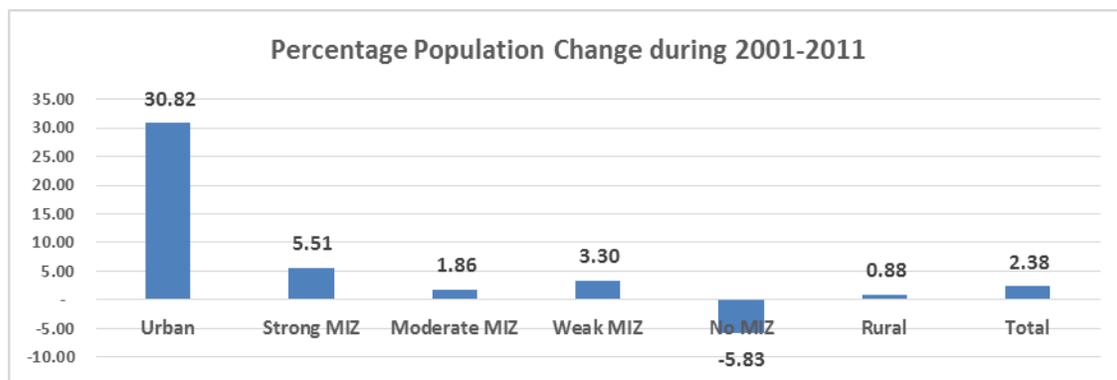


Figure 2.7 shows that CSDs in all geographical areas, except for remote regions, experienced growth during 2001-2011. The CSDs with less than 1,000 population that are located in CMAs or

CAs experienced the highest growth rate. On the other hand, those subdivisions located in remote regions experienced population decline. This is identical to the picture that emerges from Figure 2.3. In other words, using a different definition of rural areas results in similar findings.

Figure 2.8 shows the percentage change in population size of the CSDs with less than 1,000 residents during 2001-2011. It shows that the number of persons living in CSDs located in CMAs and CAs experienced the highest growth rate of about 30.8 percent. Next are the CSDs with strong link to urban centres that experienced a growth rate of about 5.5 percent. Total population in rural areas with less than 1,000 residents designated as weak and moderate MIZ rose by 3.3 and 1.9 percent respectively. Rural areas with no link to urban centres experienced a population decline of about 5.8 percent. Overall, rural areas with less than 1,000 residents experienced population growth of about 0.9 percent during 2001-2011. Comparing Figures 2.3, 2.7 and 2.8, one can observe that all three figures portray a similar picture of growing urban and rural population except for those in remote rural areas.

Figure 2.8: Population Change in CSDs with Less than 1,000 Residents



The same picture appears when one selects areas with less than 500 or 300 (Figure 2.9) or smaller population sizes. The overall picture that emerges is that the average population size of areas close to urban centres is growing faster than those farther away from urban areas. The remote regions are the only areas experiencing population loss.

Figure 2.9: Population Trends in Areas with Less than 500 Residents



Age Distribution of Population in Rural & Urban Saskatchewan

Table 2.2 and Figure 2.10 show the percentage age distribution of the total population in Saskatchewan during 2001-2011.²⁰ We note that the population numbers are slightly different from those obtained by adding individual CSD population numbers. Table 2.2 shows that the provincial population has increased by 5.7 percent during 2001-2011. It has also been gradually aging during the same period. The percentage of the population below the age of 20 has declined from 29.6 percent in 2001 to 26.4 percent in 2011. Similarly, the percentage of the population in their prime working age group of 20 to 44 years declined from 34.0 percent in 2001 to 32.3 percent in 2011. During the same period, the percentage of the population aged 45 to 64 increased from 22.2 percent in 2001 to 27.2 percent in 2011. The number of seniors aged 65 and over increased by about 5.0 percent during 2001-2011 but their share stayed

²⁰ Age distribution of the population is based on population data by single year of age obtained through census custom tabulations.

relatively constant during the above period. The median age of the population increased from 36.3 years in 2001 to 37.7 years in 2011.

An aging population increases demand for 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 happens while demand for public services such as health care are rising.

Table 2.2: Age Distribution of the Total Population

Age Category	2001	%	2011	%	Percentage Change 2001-2011
0--4	60,895	6.32	68,680	6.74	12.78
5--9	69,285	7.19	63,295	6.22	-8.65
10--14	76,785	7.97	65,545	6.44	-14.64
15--19	77,950	8.09	71,440	7.02	-8.35
20--24	65,425	6.79	72,100	7.08	10.20
25--29	56,875	5.91	69,895	6.86	22.89
30--34	57,315	5.95	64,970	6.38	13.36
35--39	71,570	7.43	60,735	5.96	-15.14
40-44	76,650	7.96	61,010	5.99	-20.40
45--49	70,890	7.36	74,085	7.28	4.51
50--54	59,005	6.13	76,960	7.56	30.43
55--59	44,835	4.66	69,585	6.83	55.20
60--64	38,940	4.04	56,460	5.54	44.99
65--69	36,645	3.80	41,065	4.03	12.06
70--74	34,650	3.60	33,235	3.26	-4.08
75--79	29,455	3.06	27,895	2.74	-5.30
80--99	35,920	3.73	41,230	4.05	14.78
100+	60	0.01	130	0.01	116.67
Total	963,150	100.00	1,018,315	100.00	5.73
Median Age	36.3	-	37.7	-	3.86

Figure 2.10: Aging Population in Saskatchewan

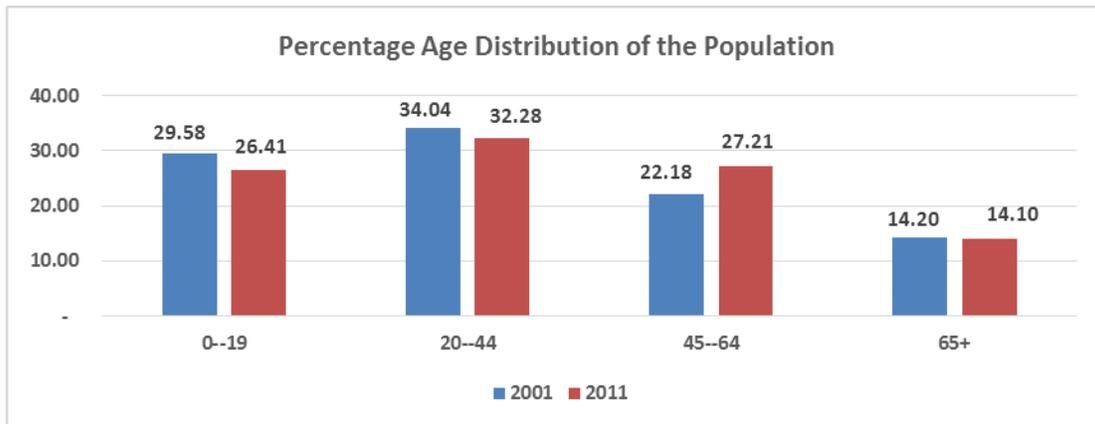
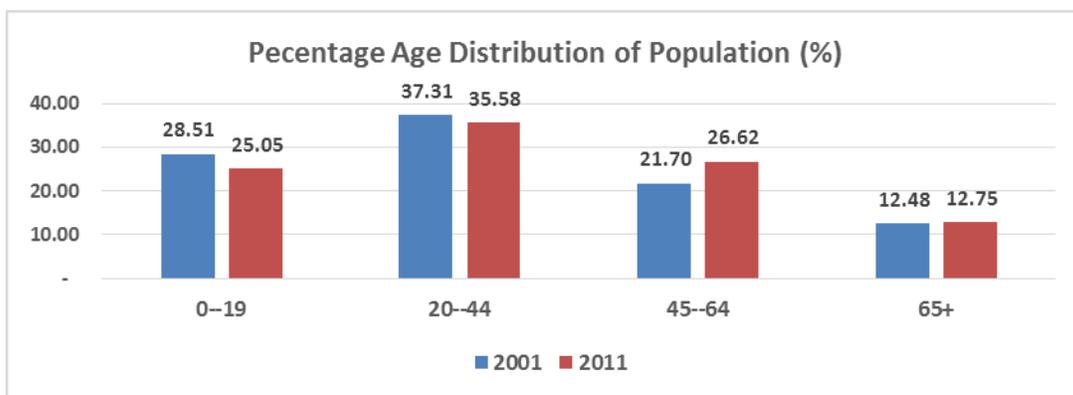


Figure 2.11 and Table 2.3 show the percentage age distribution of the population in urban Saskatchewan. They show that the urban population in Saskatchewan increased by 10.7 percent during 2001-2011.²¹ As is the case for the total population, the urban population is also aging. Even though the population 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 28.5 percent in 2001 to 25.1 percent in 2011, a decline of 3.5 percent. The share of the prime working age population aged 20 to 44 has declined by 1.7 percent. On the other hand, the share of population aged 50 to 64 has increased by 4.9 percent. The share of seniors 65 years and over increased by 0.3 percent.

Figure 2.11: Aging Urban Population in Saskatchewan



²¹ We note that this percentage population increase is slightly lower than the one reported in Table 2.1 (12.86%), primarily due to a different set of data used.

Table 2.3: Age Distribution of Population in Urban Saskatchewan

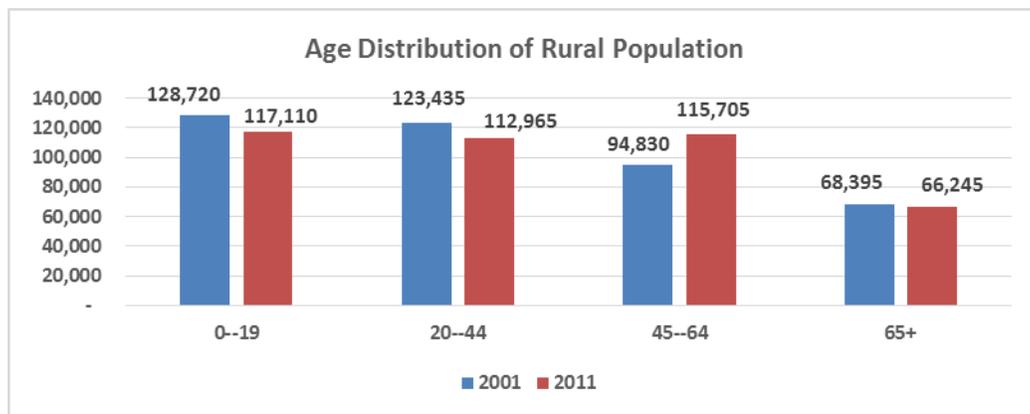
Age Category	2001	%	2011	%	Percentage Change during 2001-2011
0--4	34,095	6.22	39,125	6.45	14.75
5--9	38,095	6.95	35,565	5.87	-6.64
10--14	41,065	7.50	36,095	5.95	-12.10
15--19	42,940	7.84	41,065	6.77	-4.37
20--24	43,630	7.97	48,800	8.05	11.85
25--29	36,655	6.69	47,660	7.86	30.02
30--34	35,455	6.47	42,865	7.07	20.90
35--39	43,330	7.91	38,690	6.38	-10.71
40-44	45,330	8.28	37,730	6.22	-16.77
45--49	40,915	7.47	45,080	7.44	10.18
50--54	33,570	6.13	45,500	7.50	35.54
55--59	23,990	4.38	39,610	6.53	65.11
60--64	20,365	3.72	31,195	5.15	53.18
65--69	18,710	3.42	21,540	3.55	15.13
70--74	17,240	3.15	17,800	2.94	3.25
75--79	14,685	2.68	15,305	2.52	4.22
80--99	17,670	3.23	22,590	3.73	27.84
100+	30	0.01	75	0.01	150.00
Total	547,770	100.00	606,290	100.00	10.68
Median Age	35.30	-	36.50	-	

Table 2.4 and Figure 2.12 show the age distribution of the rural population in Saskatchewan. Table 2.4 shows that the rural population declined by 0.81 percent during 2001-2011. The size and share of the population under the age of 19 and between 20 and 44 years have declined significantly during 2001-2011. Declining working age population in rural Saskatchewan can be due to the out-migration in search of employment and other opportunities. We will explore this proposition later in this report. The reason for the decline of youth under the age of 19 can be related to outmigration of their parents. The size and share of the population aged 45 to 64 increased by 22.0 percent during 2001-2011. The share of seniors aged 65 years and over stayed relatively constant during 2001-2011.

Table 2.4: Age Distribution of Population in Rural Saskatchewan

Age Category	2001	%	2011	%	Percentage Change 2001-2011
0--4	26,800	6.45	29,555	7.17	10.28
5--9	31,190	7.51	27,730	6.73	-11.09
10--14	35,720	8.60	29,450	7.15	-17.55
15--19	35,010	8.43	30,375	7.37	-13.24
20--24	21,795	5.25	23,300	5.66	6.91
25--29	20,220	4.87	22,235	5.40	9.97
30--34	21,860	5.26	22,105	5.37	1.12
35--39	28,240	6.80	22,045	5.35	-21.94
40--44	31,320	7.54	23,280	5.65	-25.67
45--49	29,975	7.22	29,005	7.04	-3.24
50--54	25,435	6.12	31,460	7.64	23.69
55--59	20,845	5.02	29,975	7.28	43.80
60--64	18,575	4.47	25,265	6.13	36.02
65--69	17,935	4.32	19,525	4.74	8.87
70--74	17,410	4.19	15,435	3.75	-11.34
75--79	14,770	3.56	12,590	3.06	-14.76
80--99	18,250	4.39	18,640	4.52	2.14
100+	30	0.01	55	0.01	83.33
Total	415,370	100.00	412,020	100.00	-0.81

Figure 2.12: Aging Rural Population in Saskatchewan



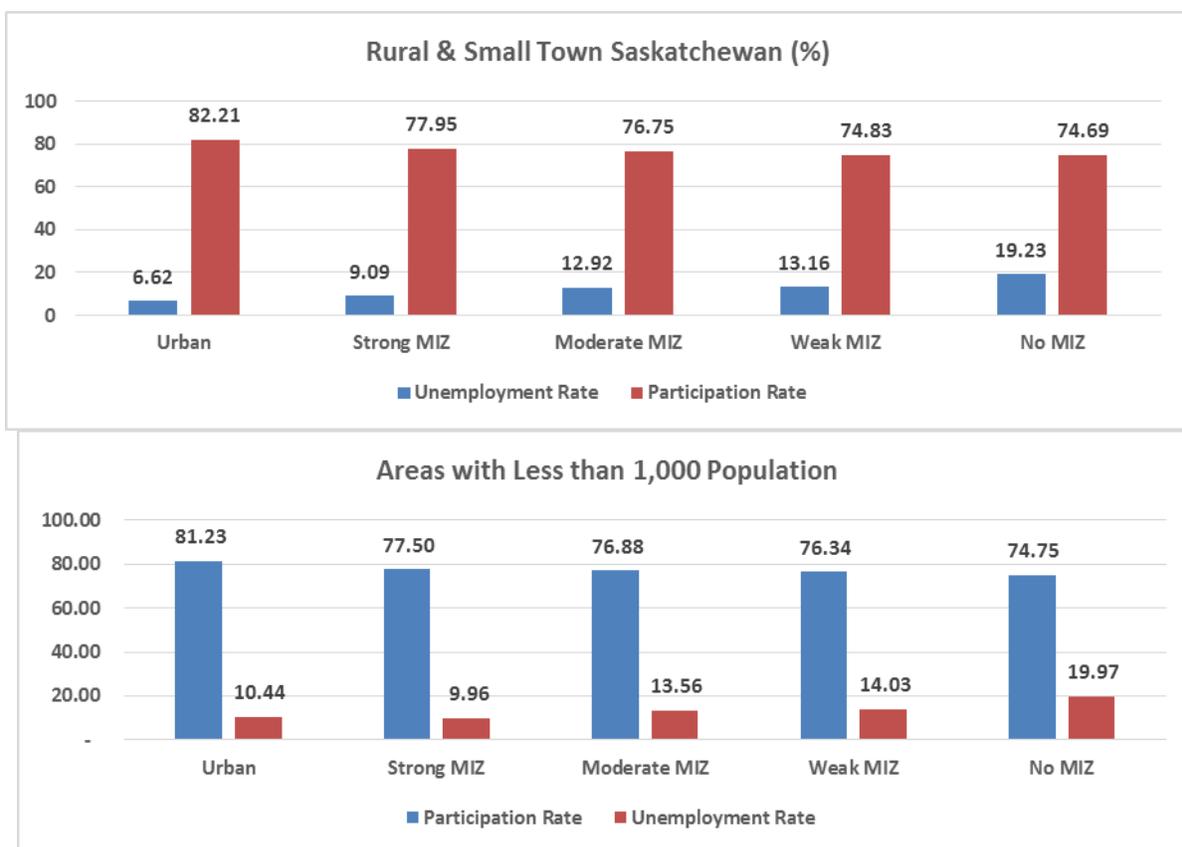
Socio-Economic Characteristics of Rural and Urban Population in Saskatchewan

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 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 Saskatchewan based on detailed 2011 census custom tabulations. We pay special attention to the degree of rurality. We note that the average statistics reported in this part is the average over all CSDs 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 2.13 shows the average labour force participation and unemployment rates among individuals between the ages of 15 and 64 in urban and rural Saskatchewan.

Figure 2.13: Participation and Unemployment Rates in Urban & Rural Saskatchewan

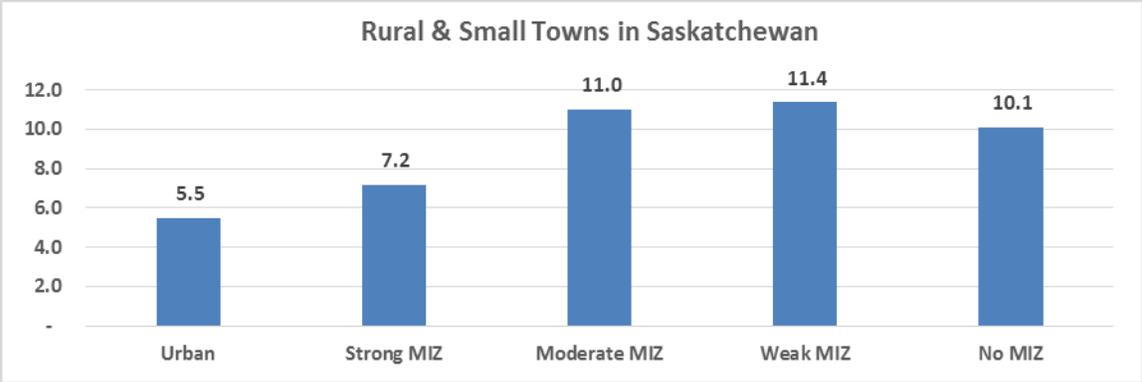


According to the 2011 National Household Survey, the unemployment rate in Saskatchewan equalled 5.9 percent. The labour force participation rate equalled 69.2 percent. Focussing on the population aged 15 to 64, the unemployment rates in Regina and Saskatoon fall to 5.0 and 5.8 percent respectively. In fact, the unemployment rate in Saskatchewan hit a historical low of 3.3 percent in July of 2014. This unemployment rate was lower than the rates in all other provinces in Canada. Similarly, the participation rate increases significantly when one focuses on the population between 15 and 64 years of age. The participation rates equalled 82.5 and 80.9 percent for Regina and Saskatoon respectively in 2011.

Figure 2.13 shows that the urban unemployment rate among individuals aged 15 to 64 years equalled 6.6 percent in 2001. The unemployment rate rises as the degree of rurality increases and reaches a high of 19.2 percent in remote rural areas. The labour force participation rate declined slightly from a high of 82.2 percent in urban regions to 74.7 percent in remote rural areas. The unemployment rate is higher in areas with less than 1000 population irrespective of how far or close they are to urban centres. For example, the unemployment rate in CSDs with 1,000 population that are located within urban regions equalled 10.4 percent compared to the average unemployment rate of 6.6 percent in urban regions.

Figure 2.14 shows the percentage of population aged 15 to 64 who received government transfer payments in 2010.

Figure 2.14: Dependency Rate on Government Transfer Payments



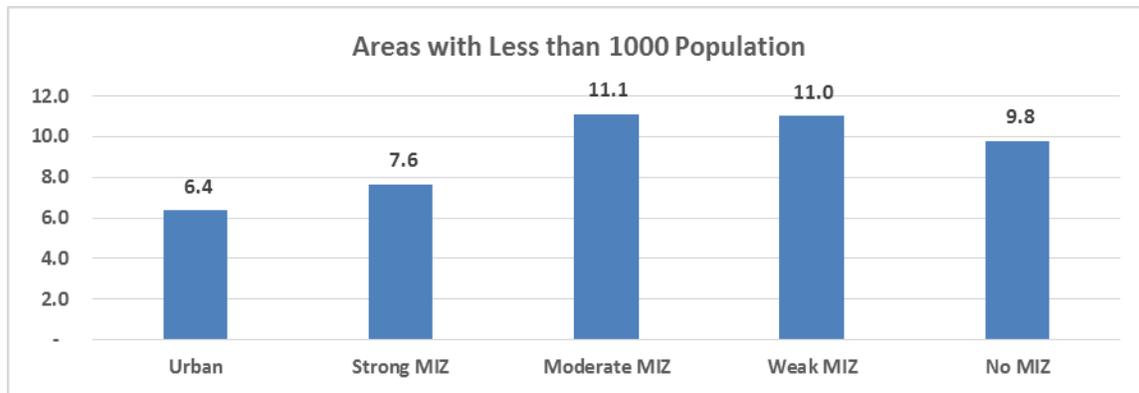


Figure 2.14 shows that an average of 5.5 percent of individuals in Saskatchewan’s urban areas receive transfer payments. The urban dependency rate rises to 6.4 percent when we focus on areas with less than 1,000 population. In general, the dependency rate increases as the degree of rurality rises and then declines slightly as one moves to remote rural regions. Figure 2.14 shows that the above dependency picture stays unaffected as we change the definition of rural and urban regions.

Table 2.5 shows the share of individuals aged 15 to 64 with their highest level of schooling in various regions in Saskatchewan in 2010.

Table 2.5: Saskatchewan Regions by Highest Level of Schooling (%)

	No Certificate	High School	Trade	College	University below Bachelor	University at/above Bachelor
Urban	19.8	30.6	14.2	18.2	2.5	12.8
Strong MIZ	22.9	32.1	13.6	15.1	2.1	9.6
Moderate MIZ	28.9	28.7	12.4	14.5	1.7	6.5
Weak MIZ	30.7	30.0	11.8	13.5	2.3	7.5
No MIZ	33.2	28.4	10.2	10.6	1.2	5.0

Table 2.5 shows that the level of education in urban areas is much higher than that in rural regions. In general, the level of educational achievement appears to decline as the distance between rural areas and population centres increases. About a third of the remote rural population does not have a high school diploma. Similarly, the percentage of individuals with a trade or a college diploma declined from 14.2 and 18.2 percent in urban areas to 10.2 and 10.6 percent in remote rural regions respectively. The percentage of individuals with a university degree also declines as we move away from urban centres. We note that the percentages across different levels of schooling do not necessarily add up to 100 percent since the level of educational achievement is not always reported for small rural regions. The above picture stays

relatively unchanged when we restrict the sample to areas with less than 1,000 population (Table 2.6).

Table 2.6: Saskatchewan Regions with less than 1,000 Residents by Highest Level of Schooling (%)

	No Certificate	High School	Trade	College	University below Bachelor	University at/above Bachelor
Urban	22.1	30.4	15.1	17.4	0.6	10.0
Strong MIZ	22.8	32.5	13.8	14.7	1.8	9.1
Moderate MIZ	28.9	28.7	12.2	14.4	1.8	6.0
Weak MIZ	30.3	30.8	11.5	13.1	2.1	6.7
No MIZ	33.1	28.3	10.0	10.5	1.1	4.9

Figure 2.15 shows the percentage of individuals aged 15 to 64 with employment income in rural and urban Saskatchewan in 2010. The picture remains relatively unchanged when one restricts the sample to areas with less than 1,000 residents.

Figure 2.15: Population 15 to 64 Years of Age with Employment Income

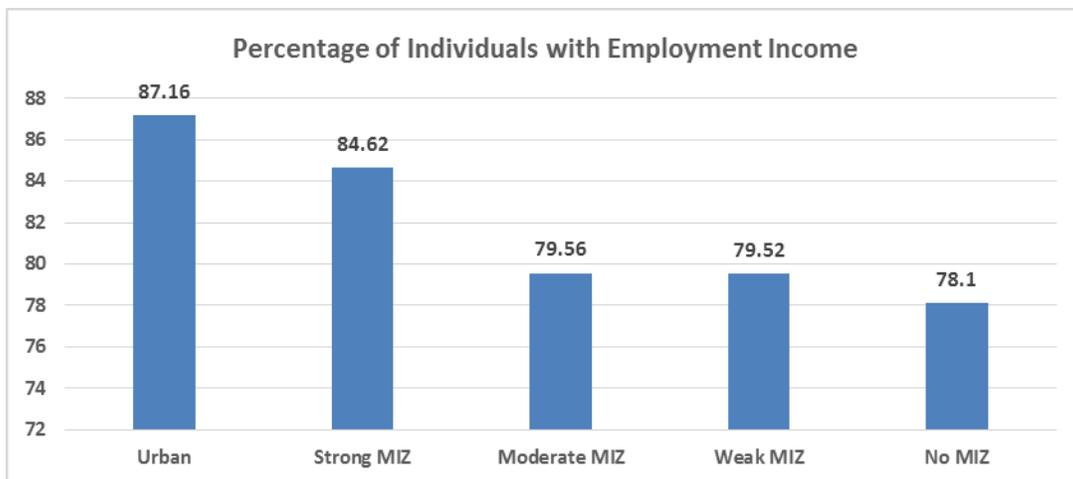


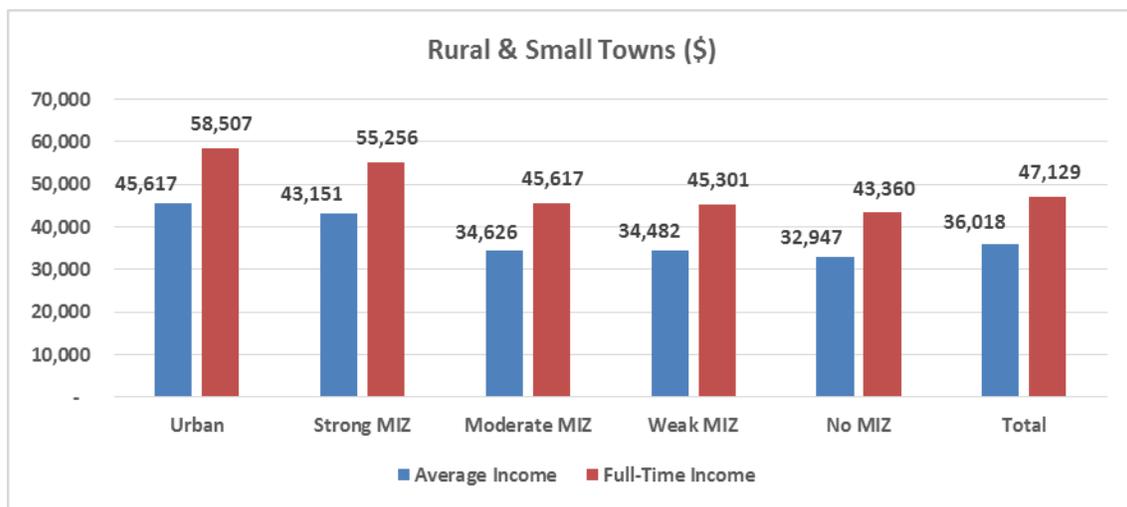
Figure 2.15 shows that 87.2 percent of individuals in urban areas worked and earned employment income during the year prior to the 2011 Census. The percentage of the population having employment income declines as we move away from population centres. On average, only 78.1 percent of individuals aged 15 to 64 in remote areas reported any employment income compared to 84.6 percent in rural areas with a strong link to population centres.

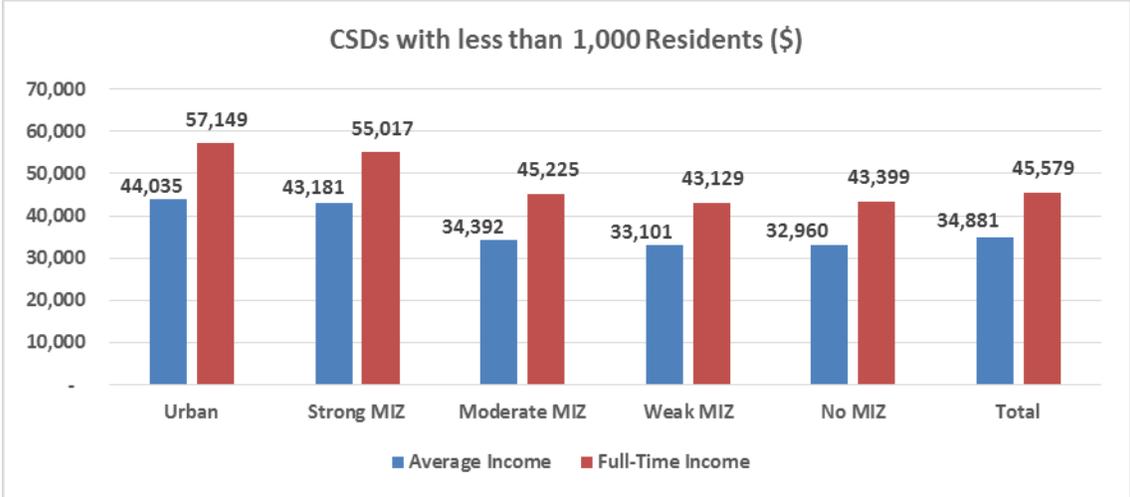
Figure 2.16 shows the average earnings of all who worked as well as those who worked full-time and full-year in 2010. It shows that the average earnings in urban areas equalled \$45,617 which was higher than earnings in rural areas. The average overall earnings equalled \$36,018. The average earnings in CSDs with moderate to no link with urban centres was lower than the overall average provincial earnings. On the other hand, the average earnings in CSDs classified as having a strong link with urban centres equalled \$43,151 which was significantly higher than the average provincial earnings. Note that this average earnings includes all those who worked full-time, full-year, part-time or part-year.

Figure 2.16 shows that the average earnings declines as the degree of rurality rises. The average full-time earnings in Saskatchewan equalled \$47,129. The average full-time earnings in urban regions equalled \$58,507 compared to \$55,256 in rural regions with a strong link to urban centres. The average full-time earnings declines as the degree of rurality rises. It equals \$43,360 in remote rural areas. This average earnings is about 25.9 percent lower than the average full-time earnings in urban regions. The average earnings estimates do not change significantly when one focuses solely on areas with less than 1000 population.

As we saw above, the level of educational achievement declines as one moves away from urban centres. The level and composition of human capital are linked to productivity and therefore earnings of individuals. Does lower earnings in rural areas reflect a lower level of human capital in those regions? Or is it the geography, distance from urban regions, industrial or occupational composition of the labour force that influences the earnings gap between rural and urban regions? These are hypothesis that we will explore later in this report.

Figure 2.16: Average Earnings in Rural & Urban Saskatchewan





Demographic Trends Among the Francophone Population in Saskatchewan

Table 2.7 shows the age distribution of the Francophone population in Saskatchewan during 2001-2011.

Table 2.7: Age Distribution of Francophone Population in Saskatchewan

Age Category	2001	2011	Percentage Change
0 to 14	1,180	805	-31.78
15 to 24	1,110	900	-18.92
25 to 34	1,415	1,130	-20.14
35 to 44	2,665	1,055	-60.41
45 to 54	3,455	2,550	-26.19
55 to 64	2,745	2,935	6.92
65 to 74	2,560	2,305	-9.96
75 years and over	2,520	2,510	-0.40
Total	17,650	14,190	-19.60
Average Age	50.8	53.9	6.10
Median Age	52.2	56.9	9.00

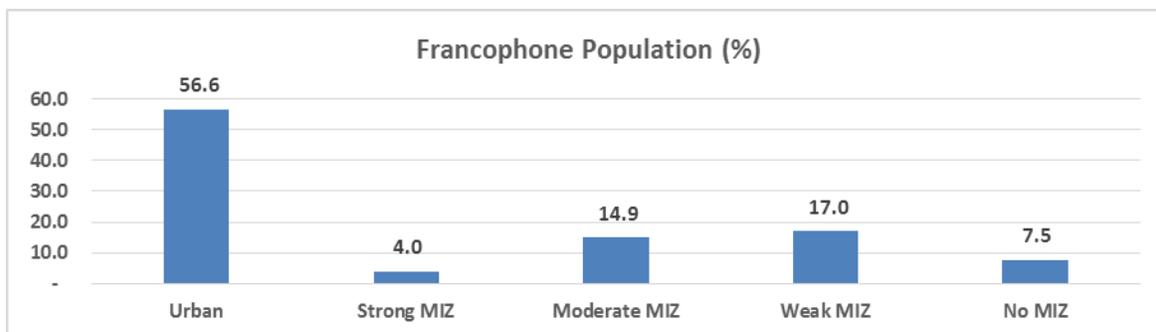
We note that there is a discrepancy between the number of the Francophone population reported by the 2011 Census and the one based on the 2011 National Household Survey (NHS). According to the NHS, the total Francophone population in Saskatchewan equalled 14,190 in 2011. However, the 2011 Census reports a total Francophone population of 16,280 in Saskatchewan in 2011.²²

Table 2.7 shows that the total Francophone population in Saskatchewan declined during 2001-2011. It also appears that the Francophone population is much older than the provincial population in Saskatchewan. Overall, the average age of the Francophone population is about 53.9 years in 2011 compared to 37.9 years for the provincial population. Similarly, the median age in Saskatchewan equalled 37.8 years compared to the median age of the francophone population that was 56.9 years in 2011. 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.

²² 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.

Figure 2.17 shows the geographical distribution of the Francophone population in Saskatchewan in 2010.

Figure 2.17: Francophone Population in Urban and Rural Saskatchewan



The majority or 56.6 percent of the Francophone people live in urban areas. About 35.9 percent live in rural areas with weak to strong link with urban centres. Only 7.5 percent live in remote rural communities.

Aboriginal Population

Table 2.8 shows the age distribution of the on- and off-reserve Aboriginal population in Saskatchewan during 2001-2011. It shows that the on-reserve population has increased by 27.1 percent during 2001-2011. During the same period, the off-reserve Aboriginal population increased by 18.4 percent. Overall, the total Aboriginal population increased from 130,029 in 2001 to 157,740 in 2011, a growth rate of about 22.6 percent.

Table 2.8: Aboriginal Population in Saskatchewan

Age Category	2001			2011		
	On-Reserve	Off-Reserve	Total	On-Reserve	Off-Reserve	Total
0 to 14	18,160	33,355	51,515	20,795	32,980	53,775
15 to 24	8,185	15,745	23,930	11,400	19,460	30,860
25 to 34	5,805	13,030	18,835	6,940	14,070	21,010
35 to 44	5,200	11,110	16,310	6,160	11,735	17,895
45 to 54	3,130	6,730	9,860	5,220	11,990	17,210
55 to 64	1,800	3,560	5,360	3,020	6,880	9,900
65 to 74	1,100	1,705	2,805	1,555	3,360	4,915
75 years and over	570	830	1,400	745	1,425	2,170
Total	43,945	86,075	130,020	55,835	101,905	157,740
Average Age	23.7	24.1	24	25.2	28	26.7
Median Age	18.6	20.8	20	20.7	24	22.6

The high Aboriginal population growth is not solely due to the natural demographic process. According to Statistics Canada, the traditional demographic components of growth (fertility, mortality and migration) are not the only factors that have affected the growth of the Aboriginal population in Canada. Something else 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.²³ The passage of Bill C31 in 1986 has been a factor in this ethnic mobility.

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.”²⁴ 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, and there has been a reduction in the number of incompletely enumerated Indian reserves since 1996.”²⁵

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, there were 22 incompletely enumerated reserves, down from 30 in 2001 and 77 in 1996.²⁶ 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: “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.”²⁷

Higher fertility rates along with other factors discussed above have resulted in significant growth of the Aboriginal population in Saskatchewan (Table 2.8).

²³ Signer A. and Rosalinda Costa, *Aboriginal Conditions in Census Metropolitan Areas, 1981-2001*, Statistics Canada, 2005.

²⁴ Statistics Canada, *Aboriginal peoples in Canada in 2006: Inuit, Metis and First Nations*, 2006 Census.

²⁵ Ibid.

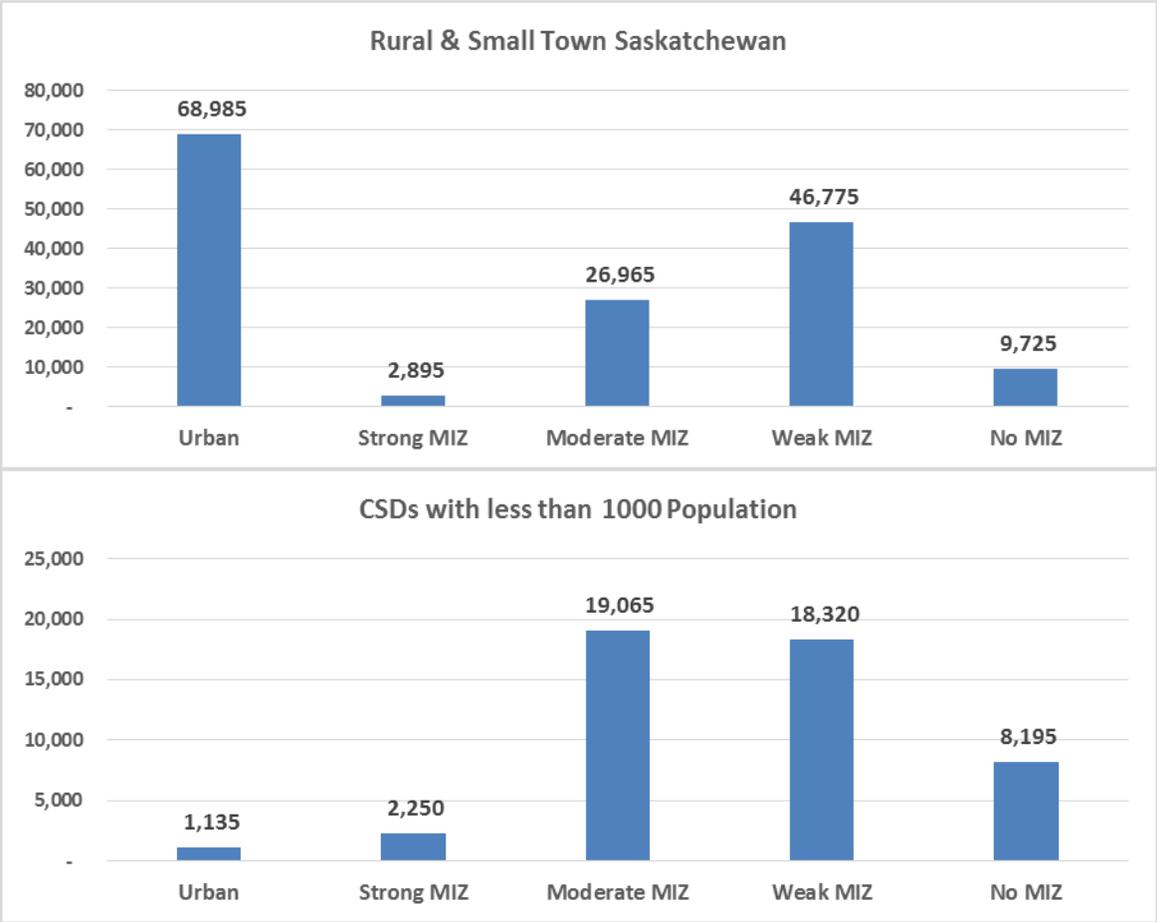
²⁶ Ibid.

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

Table 2.8 also shows that the Aboriginal population is much younger than the overall population. The median age of the Aboriginal population equals 22.6 compared to the provincial median of 37.7. In other words the Aboriginal population is on average about 15 years younger than the overall population in Saskatchewan. Table 2.8 also shows that the on-reserve population is slightly younger than the off-reserve population. This can reflect a higher fertility rate for the on-reserve population compared to the off-reserve population.

Figure 2.18 shows the geographical distribution of the Aboriginal population in Saskatchewan in 2010.

Figure 2.18: Rural and Urban Aboriginal Population in Saskatchewan



About 44.4 percent of the Aboriginal population live in urban areas. The rest live in rural and small towns in Saskatchewan. Figure 2.18 shows that about 36.4 percent of the Aboriginal population lives in rural and small towns with a weak or no link to urban centres. The geographical distribution of the Aboriginal population changes when one focuses on CSDs with less than 1,000 population. In that case, the majority or 93.1 percent of the population resides in rural areas with moderate to no link to urban centres.

Figure 2.19 shows the distribution of the on- and off-reserve Aboriginal population in Saskatchewan in 2010.

Figure 2.19: On-Reserve, Off-Reserve Aboriginal Population



Focusing on the Aboriginal population living in rural and small town Saskatchewan, the majority or 68.4 percent of the off-reserve Aboriginal population live in urban areas. About 7.6 percent live in rural areas with a moderate link to urban centres and 18.1 percent live in rural regions with a weak link to urban centres. The majority or 51.7 percent of the on-reserve population live in rural areas with a weak link to urban centres. Another 34.9 percent live in rural areas with a moderate link to urban regions. Finally, about 10.0 percent of the on-reserve Aboriginal population live in remote areas with no link to urban centres.

Focussing on areas with less than 1000 inhabitants, only 31.5 percent of the Aboriginal population live in such areas. About 65.5 percent of the on-reserve population live in areas with

less than 1000 population compared to only about 12.7 percent of the off-reserve population. The majority of the Aboriginal people who live in areas with less than 1000 population reside in rural regions with moderate to no link to urban centres. These are areas with potentially significant mineral resources development which requires a skilled labour force and developed infrastructure which are both a challenge at the present time.

Immigrant Population in Saskatchewan

Table 2.9 shows the age distribution of the immigrant population in Saskatchewan during 2001 - 2011.

Table 2.9: Immigrant Population in Saskatchewan

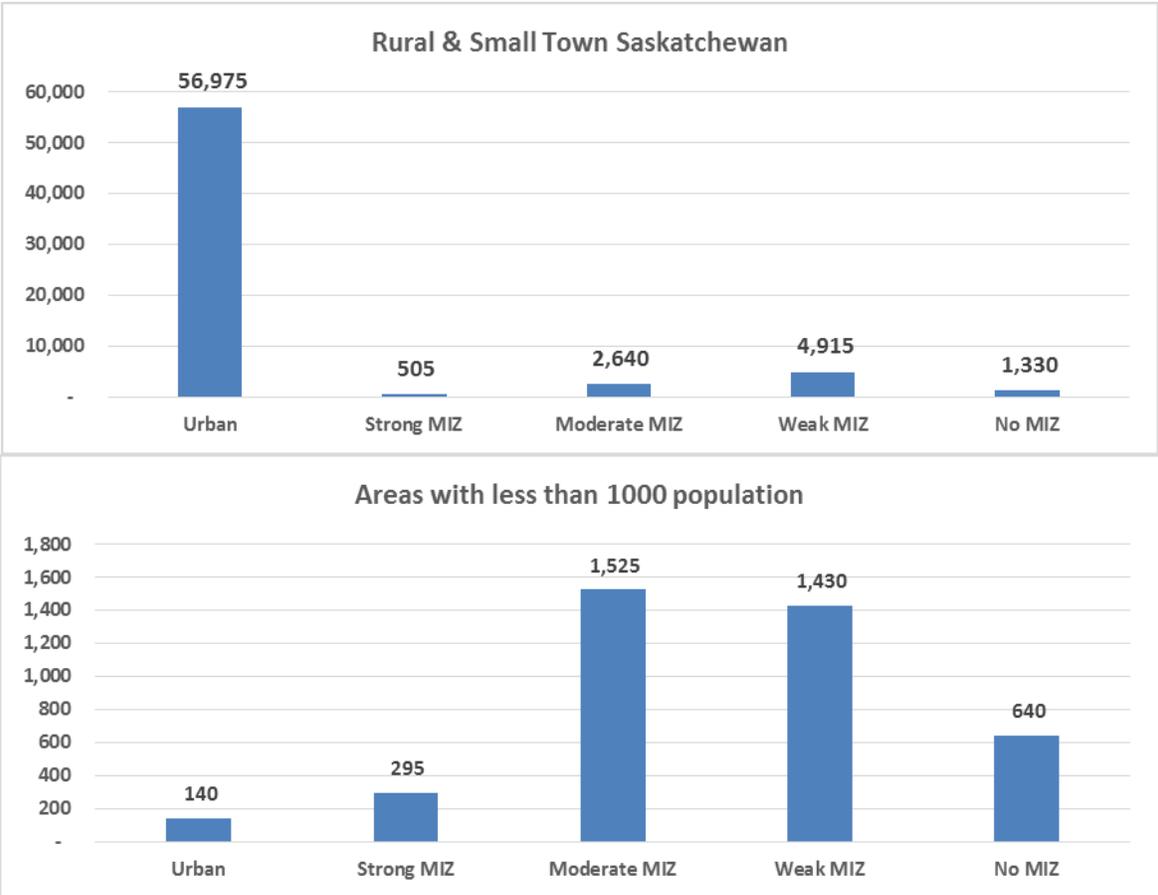
Age Category	2001	2011	Percentage Change 2001-11
0 to 14	2,305	8,280	259.22
15 to 24	3,175	6,555	106.46
25 to 34	4,900	10,635	117.04
35 to 44	7,265	13,195	81.62
45 to 54	8,445	10,385	22.97
55 to 64	6,670	8,125	21.81
65 to 74	6,115	5,525	-9.65
75 years and over	8,750	6,085	-30.46
Total	47,635	68,775	44.38
Average Age	52.0	42.4	-18.46
Median Age	52.4	41.6	-20.61

Table 2.9 shows that the immigrant population increased by about 44.4 percent during 2001 - 2011. This amounts to a growth rate of 4.4 percent per year. It appears that the province has experienced significant in-migration of young immigrants during 2001-2011. As a result, the average age of immigrants declined from 52.0 years in 2001 to 42.4 years in 2011. The median age of the immigrant population has also declined from 52.4 years in 2001 to 41.6 years in 2011. Despite the significant influx of young immigrants, the immigrant population in Saskatchewan is still much older than the general population. The average and median age of the population in Saskatchewan in 2011 equalled 36.5 and 36.4 years respectively.

Figure 2.20 shows the geographical distribution of the immigrant population in Saskatchewan in 2010. It shows that the majority or 85.9 percent of the immigrant population resides in urban

areas. Only 7.4 percent of them lives in areas designated as weak MIZ and 4.0 percent lives in areas with moderate link to urban areas.

Figure 2.20: Immigrant Population with Place of Residency in 2010



Focusing on areas with a smaller population size, one finds that only about 6.01 percent of the immigrant population live in areas with less than 1,000 population. In other words, the majority of the immigrant population live in larger centres. From those who live in smaller communities, about 73.3 percent live in areas designated as having moderate to weak link to urban centres.

What Factors Explain the Urban-Rural Earnings Gap?

As shown above, the average employment earnings decline as we move away from population centres. In other words, the employment earnings of those living in urban regions are much 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 ideas 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.²⁸ 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 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. 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 can influence earnings differentials between regions. Some of these factors include skill

²⁸ 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.

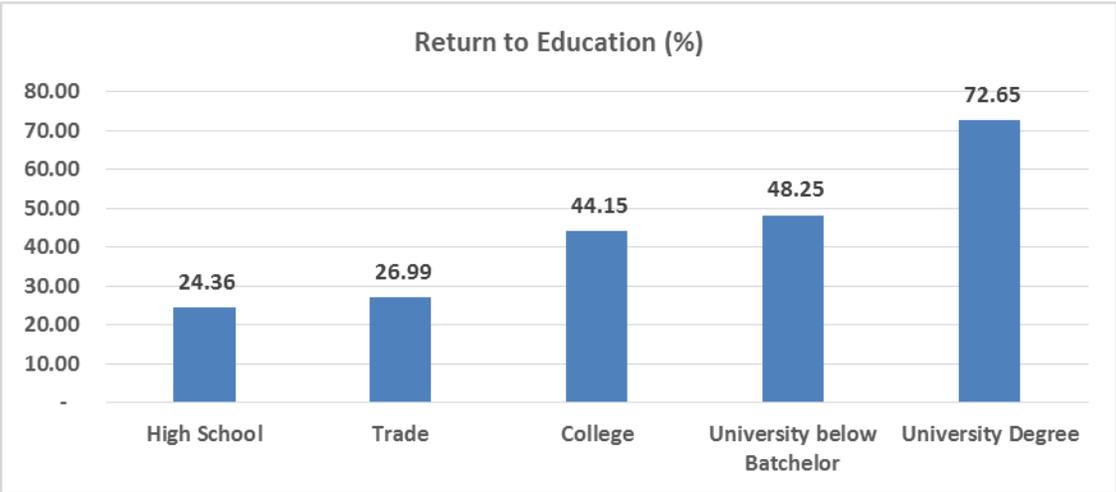
differences, compensating differentials due to regional amenities and special occupation and industry factors such as the presence of mining, forestry and agricultural activities in an area. In general, the Aboriginal people have lower earnings than the total population. Therefore, the increased share of the Aboriginal population in an area can also influence the average earnings in a region.

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 Saskatchewan while controlling for other factors that influence earnings differentials.

Constructing a Human Capital Index

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 Saskatchewan. To obtain a human capital index, we first estimate a standard earnings model using the 2006 census micro-data file.²⁹ We used data pertaining to all working Canadians between the ages of 15 and 64 who were not attending school and whose employment earnings were greater than \$1,000 and less than \$1 million. Those with less than a high school diploma were the benchmark group. The estimated return to schooling coefficients are shown in Figure 2.21.

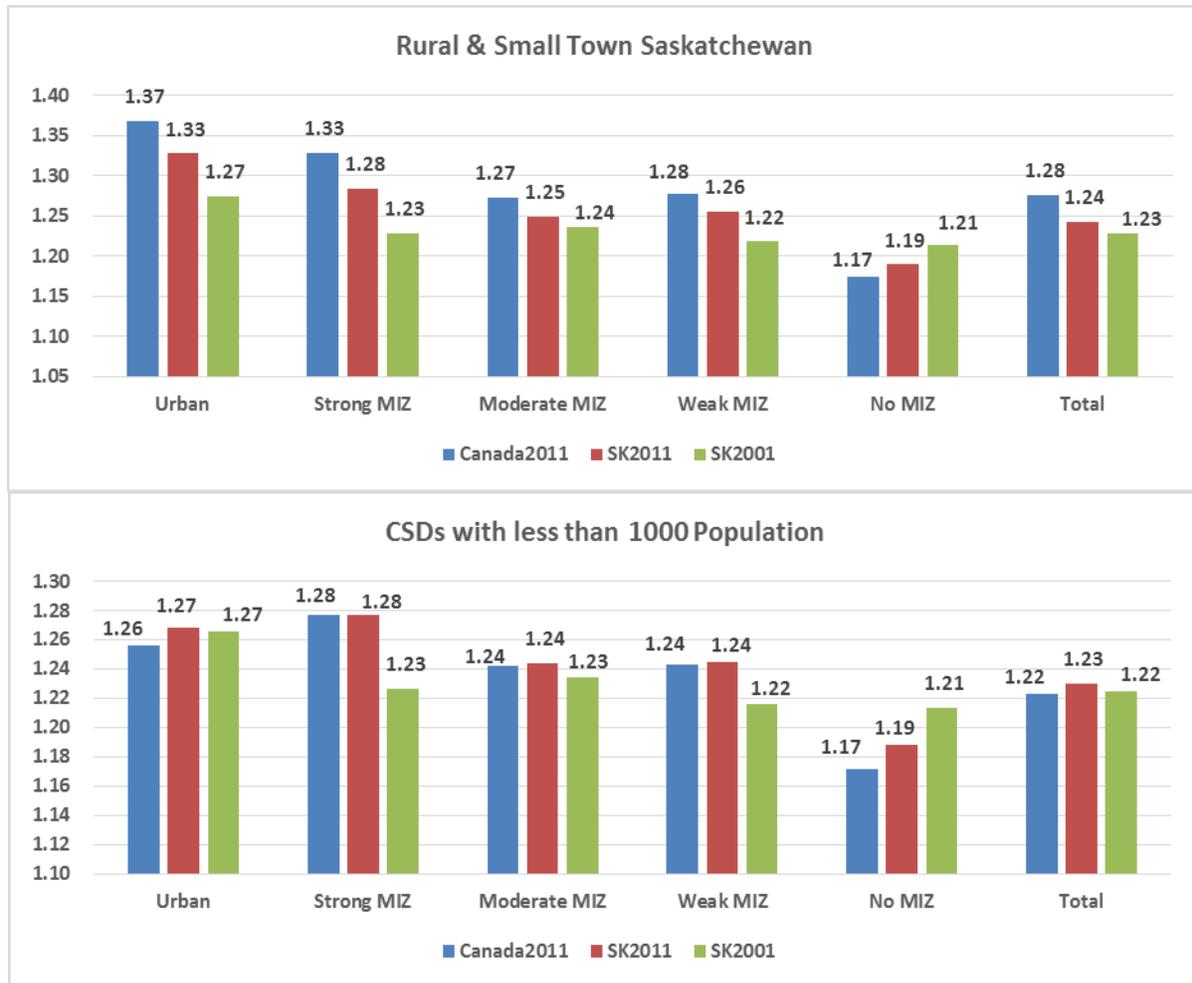
Figure 2.21: Return to Education in Canada



²⁹ The earnings model is of the form: $\ln Wage = \alpha + \sum \beta_i S_i + \sum X_i \delta_i + \varepsilon_i$, where S_i s are the highest level of schooling, X_i s are other control variables which include age categories, marital status, etc. and ε_i is an error term.

Then, we use the estimated return to schooling coefficients as weights to calculate a weighted average index of the share of individuals with different levels of schooling for each of the CSDs in the province of Saskatchewan.³⁰ The estimated human capital indexes for urban and rural areas are shown in Figure 2.22. The estimated index ranges from 1 if none of the area's residents have completed high school, to about 2 if all residents have obtained a university degree.

Figure 2.22: Human Capital Index for Urban and Rural Areas in Saskatchewan



Focussing on the human capital index for rural and small town Saskatchewan, Figure 2.22 shows that the index has increased significantly during 2001-2011 reflecting an inflow of skilled individuals in search of employment to Saskatchewan. For remote rural areas, the human capital index has actually declined during 2001-2011 suggesting an outflow of educated persons from remote rural areas during that period. Compared to the Canadian benchmark, the human capital

³⁰ $HCI = \exp\{\sum \beta_i \cdot S_i \text{ shares}\}$ where \exp stands for exponential and S_i shares are share of the population 15 to 64 with S_i level of education in a given CSD. The formulation of the human capital measure is based on Hall, R.E. and C.I. Jones (1999), *Why do some countries produce so much more output per worker than others?*, the Quarterly Journal of Economics 114 (1), 83-116. Also see Francesco Caselli, "Accounting for Cross-Country Income Differences", First Draft, November 2003.

index for Saskatchewan is below the Canadian index in 2011 suggesting a lower level of human capital in Saskatchewan compared to the national standard in 2011.

Focussing on areas with less than 1000 residents, Figure 2.22 shows that the index has increased slightly during 2001-2011 and is equal or slightly greater than the national average in 2011.

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 2.23 shows the relationship between the population size and average earnings in various CSDs in Saskatchewan.

Figure 2.23: Relationship between Population Size and Average

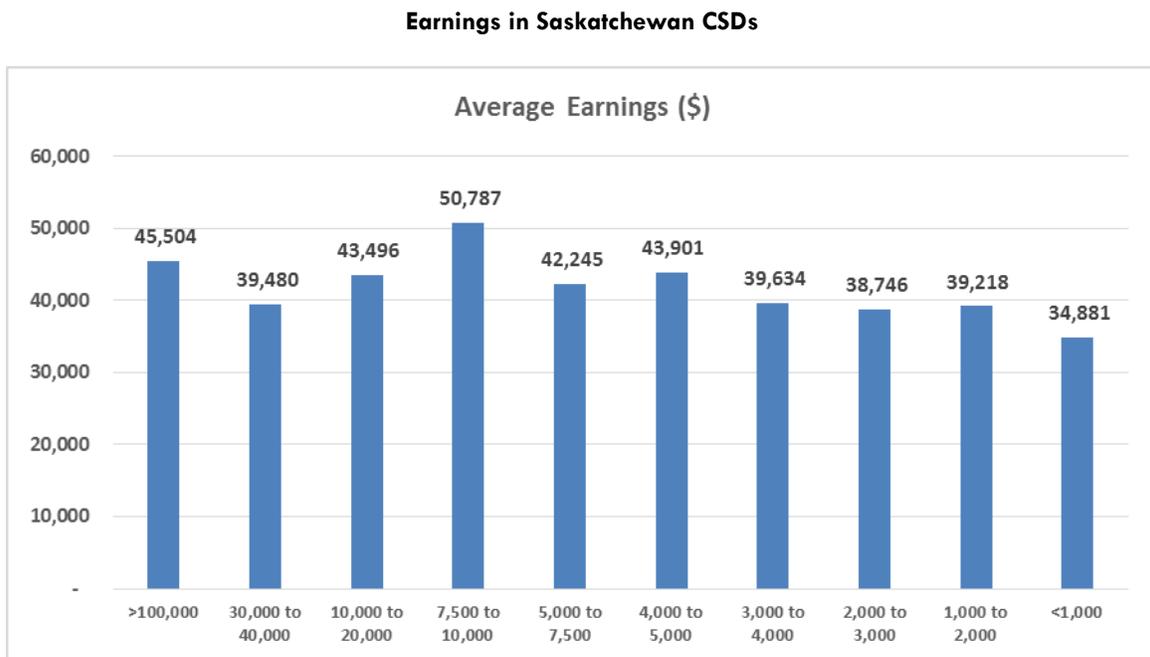
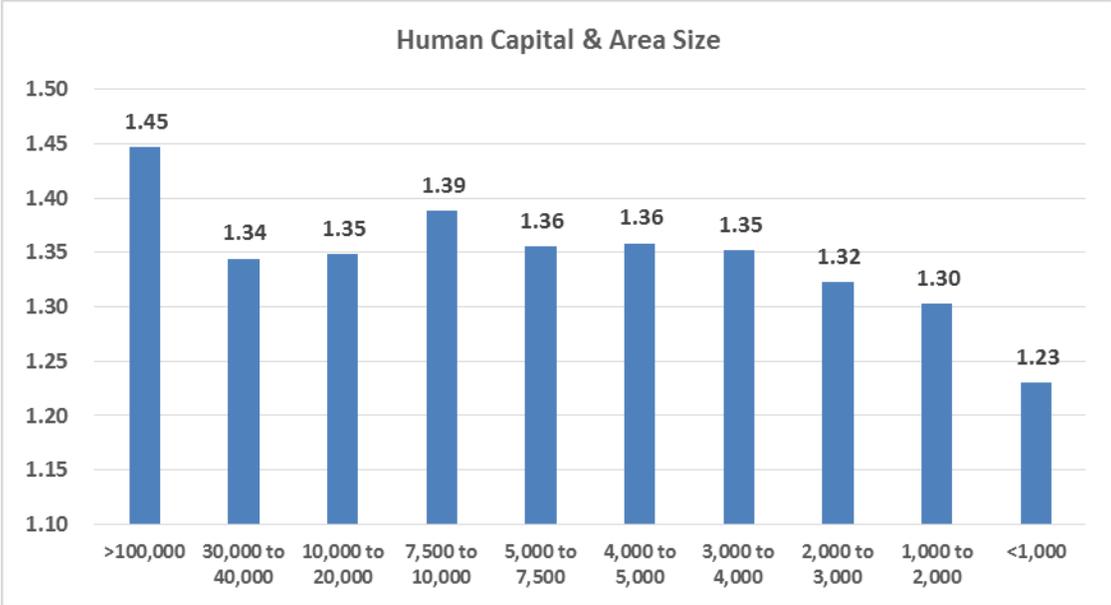


Figure 2.23 shows a positive association between earnings and population size of an area. However, the relationship is not perfect. The estimated correlation coefficient between average population size and average earnings is 0.31. It appears that there are other factors affecting earnings that are not 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 Saskatchewan. Figure 2.24 shows the relationship between population size and human capital index. Comparison of Figures 2.23 and 2.24 shows that the correlation between

human capital and average earnings (0.79) is much greater than the one between average earnings and area size (0.31). The correlation coefficient of 0.79 suggests a very high association between human capital and average earnings in Saskatchewan. However, it also suggests that there are other factors besides human capital that influence earnings in different CSDs.

Figure 2.24: Area Size and Human Capital Index in Saskatchewan in 2010



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, processing, mining, agriculture, forestry and manufacturing as well as the Aboriginal population in each CSD.³¹ As is standard in this analysis, 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. Using population size rather than employment levels had a marginal influence on the results (Figure 2.25).

The statistical results suggest that the level of employment as well as the human capital composition index are statistically highly significant. Results suggest that the outcome of a percentage increase in a total area’s employment is a 0.04 percent rise in average earnings. Also, a percentage rise in the human capital index results in a 0.79 percent increase in average earnings. Figure 2.25 also shows that areas concentrated in primary, processing and agricultural activities have lower average earnings. The same is true for areas with a higher share of the

³¹ The estimated model is of the form: $\text{Log}(\text{Earnings}) = \alpha + \beta_1 \text{Log}(\text{employment}) + \beta_2 \text{HCI} + \sum \delta_i X_i + \varepsilon_i$. 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.

Aboriginal population. Figure 2.25 also shows that each percentage rise in employment in mining or manufacturing increases local average earnings by 0.89 and 0.14 percent respectively.

Figure 2.25: Earnings, Human Capital & Agglomeration Economies



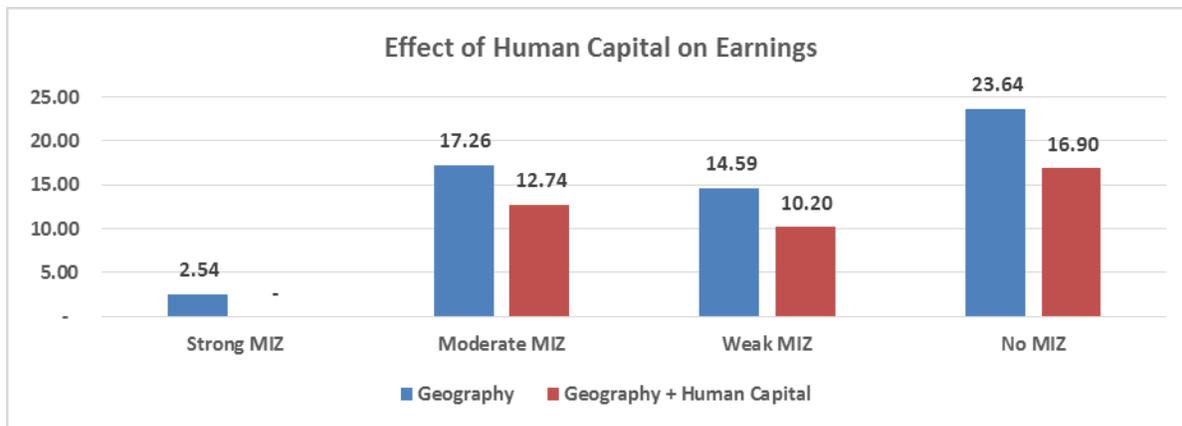
We also estimated the relationship without including the human capital composition index. The agglomeration effect increased by 50 percent to 0.06 percent suggesting that one percent increase in total area employment results in 0.06 percent rise in local average earnings. This estimate is significantly smaller than the one obtained by Beckstead et. al. (2010).³² We saw above that the influence of employment size declines to 0.04 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 50 percent.

The above results suggest that the urban-rural earnings gap is influenced by agglomeration economies as well as the human capital composition and other variables shown in Figure 2.25. How much of the urban-rural earnings gap is due to differences in their human capital composition? To examine this question, we estimated two models, one with only binary variables representing rural areas with different degrees of urban influence as well as the above-mentioned control variables. Note that we excluded urban areas and thus the estimated coefficients of the binary variables measure the urban-rural earnings gap due to 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

³² Regressing average earnings on employment levels across various geographical units in Canada, they found a similar elasticity of about 5.0 percent. Combes et. al. (2008) also found the same elasticity across various geographical areas in France.

capital composition to 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 two models is attributed to the inclusion of the human capital index. Results are shown in Figure 2.26.³³ Note that the estimated coefficients were all negative and highly significant suggesting a negative earnings gap between urban and rural areas. Figure 2.26 shows the values in positive form to simplify exposition.

Figure 2.26: 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 2.26 shows that the average earnings of workers in rural areas designated as having a strong MIZ is about 2.5 percent lower than average earnings in urban centres. The reduction in average earnings increases to 17.3 percent for rural areas with a moderate MIZ, to 14.6 percent for areas with a weak MIZ and to 23.6 percent for remote rural areas. How much of the above earnings gap is explained by differences in human capital composition?

Figure 2.26 shows that the estimated coefficient of the binary variable representing rural areas with a strong MIZ declined to zero when control for human capital composition is included in the model. In other words, 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 almost nil. The coefficient of the binary variable representing rural areas with a moderate MIZ has changed from -17.26 to -12.74, a change of about 26.2 percent. In other words, about 26.2 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 73.8 percent of the gap is likely due to agglomeration economies that are represented by the binary variables. Note that the control variables for occupation and industry are included in the models. Similarly, 30.1 percent of the earnings gap between urban and rural areas with a weak MIZ is accounted for by differences in

³³ Inclusion of the human capital index increased the coefficient of determination from 0.23 to 0.61.

their human capital composition. Again, the rest is likely to be explained by agglomeration economies.

Finally, about 28.5 percent of the earnings gap between remote areas and urban areas is due to differences in their human capital composition. The rest is due to agglomeration economies. Our estimates of the share of human capital in explaining the urban-rural earnings gap are lower than those obtained by Beckstead et. al. (2010). The difference can be due to differences between the industrial and occupational composition of the labour force in Saskatchewan and Canada as well as differences between the set of data used in their study as compared to ours as well as a different approach to measuring human capital.

PART III: DEMOGRAPHIC CHANGE IN SASKATCHEWAN: LOOKING INTO THE FUTURE

Population Projection Model

This part of the report employs the Cohort Component method to make projections of the rural and urban populations in Saskatchewan from the base year of 2011 to 2025.³⁴ 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 the population projections is directly proportional to the population size and its historical growth rate and 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 and 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:

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

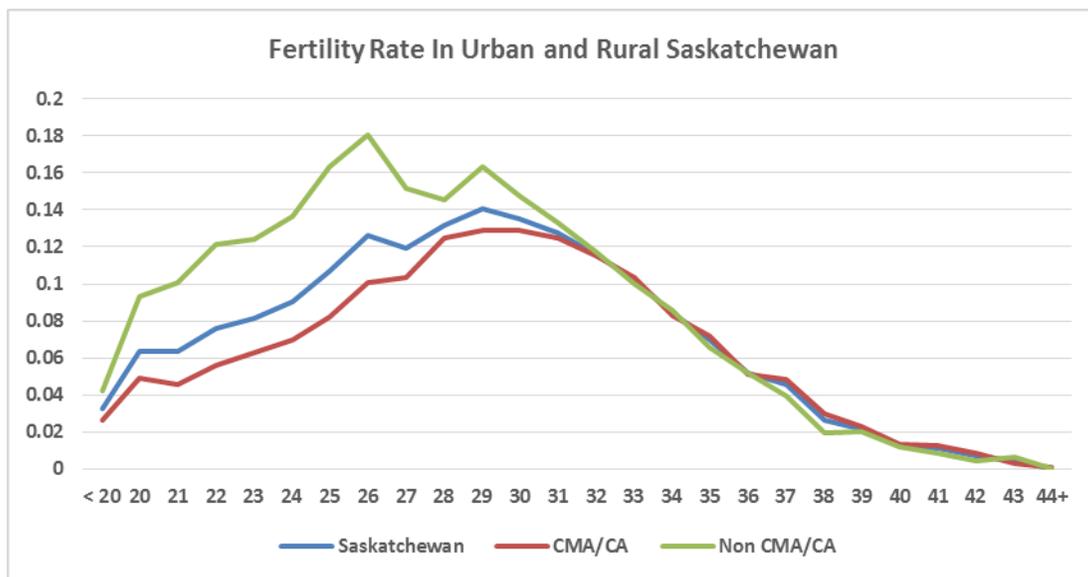
As model (2) shows, the cohort component technique uses the four components of demographic change to project population growth. The technique projects the population by single year of age and sex. The method takes each age class of the population and ages it over time using survival rates.

³⁴ 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 migration and changes in immigration. High economic growth in recent years have resulted in greater net migrations levels to Saskatchewan. In fact, net interprovincial migration to Saskatchewan has been positive since 2007.³⁵ A changing economic environment would influence changes in interprovincial and international migration in the coming years.

To employ the cohort component method we have used detailed 2001 and 2011 Census population data obtained from Statistics Canada. We have also obtained age-specific fertility rates for rural and small towns as well as urban regions in Saskatchewan 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 will occur during the projection period. As Figure 3.1 shows, the fertility rates in rural and small town Saskatchewan have been much greater than those in urban regions for women aged 15 to 30 years of age. Overall, the total fertility rate for women in rural Saskatchewan equals 2.40 compared to 1.78 for women in urban Saskatchewan. The average provincial fertility rate equalled 1.98 in 2011.

Figure 3.1: Fertility Rates in Saskatchewan in 2011



The 2009-2011 Life Table for Saskatchewan 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 . 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:

³⁵ Net migration which includes net interprovincial plus net international migration equalled 9,384 in 2007, 9,645 in 2008, 10,145 in 2009, 9,395 in 2010, 11,675 in 2011, 15,974 in 2012 and 14,476 in 2013 (CANSIM, 053-001, 051-0017 AND 051-0037).

$$\begin{aligned} \text{Net Migration flows} &= (\text{In-migration} - \text{Out-migration}) = (P_t - P_0) - (\text{births} - \text{deaths}) \\ &= P_t - (P_0 + \text{births} - \text{deaths}) \end{aligned} \quad (3)$$

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 Saskatchewan during 2001-2011, the expected population of year 2011 in the absence of net migration ($P_0 + \text{births} - \text{deaths}$) is subtracted from the actual Census 2011 population.

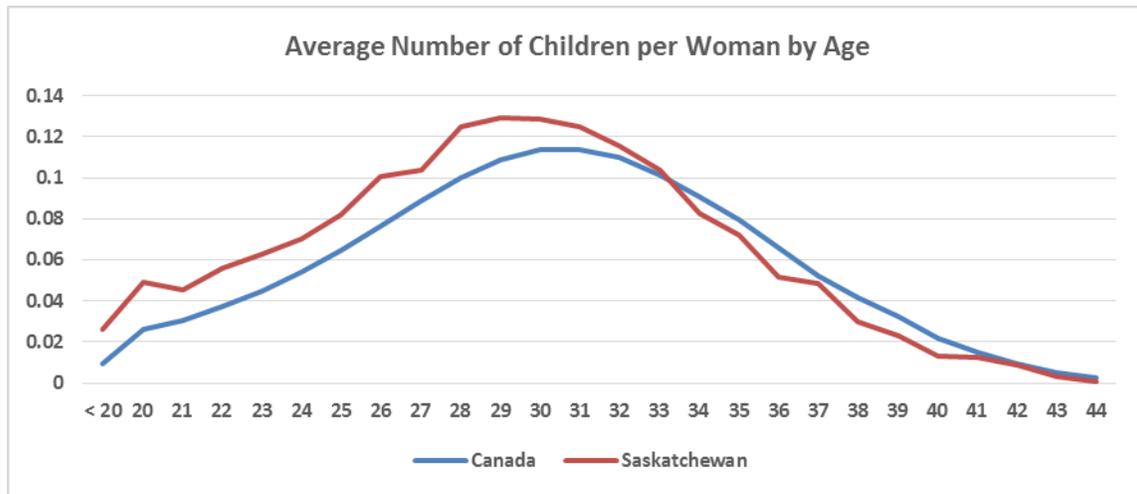
It is also assumed that the components of demographic change, i.e., mortality, fertility, and migration flows, will remain constant throughout the projection period and net migration will be equal to its 2001-2011 average. Hypothetically, one can alter the vital statistics and migration estimates to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

Saskatchewan's Urban Population Structure

According to a custom tabulation obtained from Statistics Canada, Saskatchewan's population residing in Census Metropolitan and Census Agglomeration areas increased from 547,770 in 2001 to 606,290 in 2011, an average growth rate of 10.68 percent which is much greater than the provincial average of 5.73 percent during 2001-2011.

As discussed above, urban Saskatchewan has experienced population growth primarily due to large interprovincial and international migration to the province in recent years. On average, the total fertility rate in urban Saskatchewan equals 1.78 compared to 1.54 in urban Canada in 2011 (Figure 3.2). A combination of in-migration and high fertility rate has resulted in positive population growth during 2001-2011.

Figure 3.2: Fertility Rates in Urban Canada and Saskatchewan



Looking into the Future: Population Projection for Urban Saskatchewan during 2011-2025

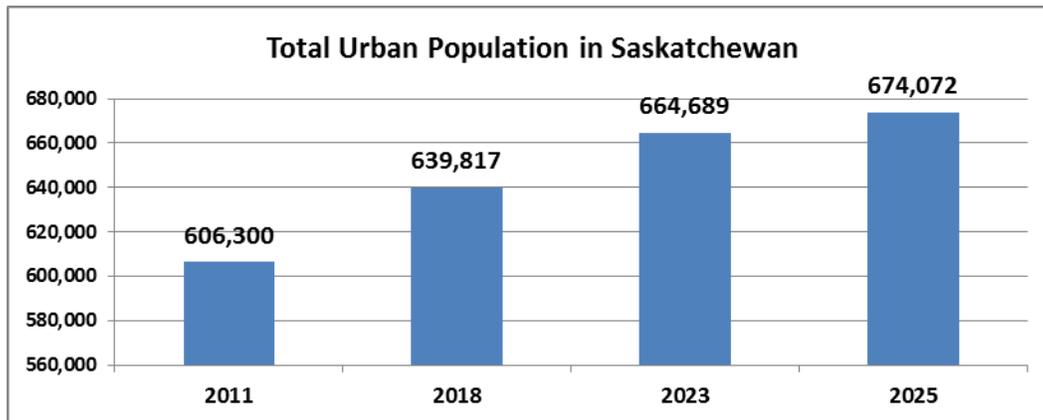
Using the demographic model discussed above, Table 3.1 shows population projections for urban Saskatchewan during 2011-2025.

Table 3.1: The Future Population of Saskatchewan's Urban Areas

Age Category	2011	2018	2025
0-4	39,130	42,274	43,256
5--9	35,570	39,668	42,965
10--14	36,095	37,782	41,288
15--19	41,065	36,627	40,191
20--24	48,805	41,327	39,232
25--29	47,675	52,006	42,911
30--34	42,860	50,134	49,347
35--39	38,690	46,281	54,034
40--44	37,725	42,579	50,789
45--49	45,085	39,306	46,004
50--54	45,490	41,172	40,129
55--59	39,610	45,092	37,349
60--64	31,185	39,764	41,926
65--69	21,535	29,676	37,359
70--74	17,800	21,355	28,645
75--79	15,300	14,706	19,304
80--84	12,065	10,574	10,889
85--89	7,245	6,436	5,754
90+	3,370	3,057	2,701
Total	606,300	639,817	674,072

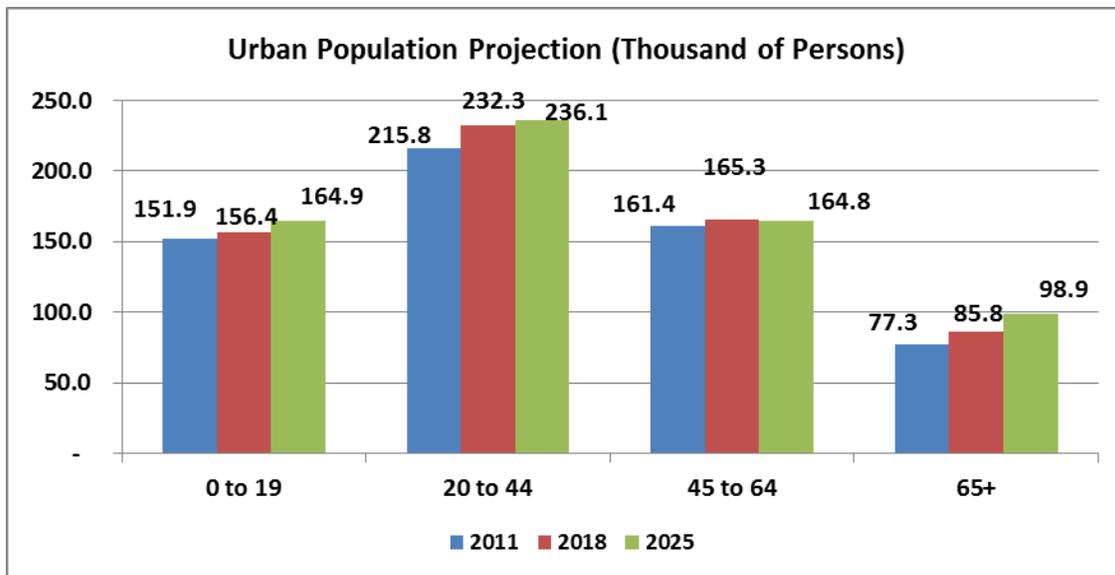
Saskatchewan's urban population is expected to grow from 606,300 in 2011 to 674,072 in 2025, a growth rate of 11.2 percent (Figure 3.3).

Figure 3.3: Saskatchewan's Future Urban Population



All age categories experience growth during the forecast period (Figure 3.4). The number of people in their prime working age of 20 to 44 years increases from 215.8 thousands in 2011 to 236.1 thousands in 2015. However, the share of this age group stays relatively constant at about 35.0 percent during the forecast period. The share of those between the ages of 45 and 64 declines slightly from 26.6 percent in 2011 to 24.5 percent in 2025. The share of seniors 65 years and over increases from 12.7 percent in 2011 to 15.5 percent in 2025.

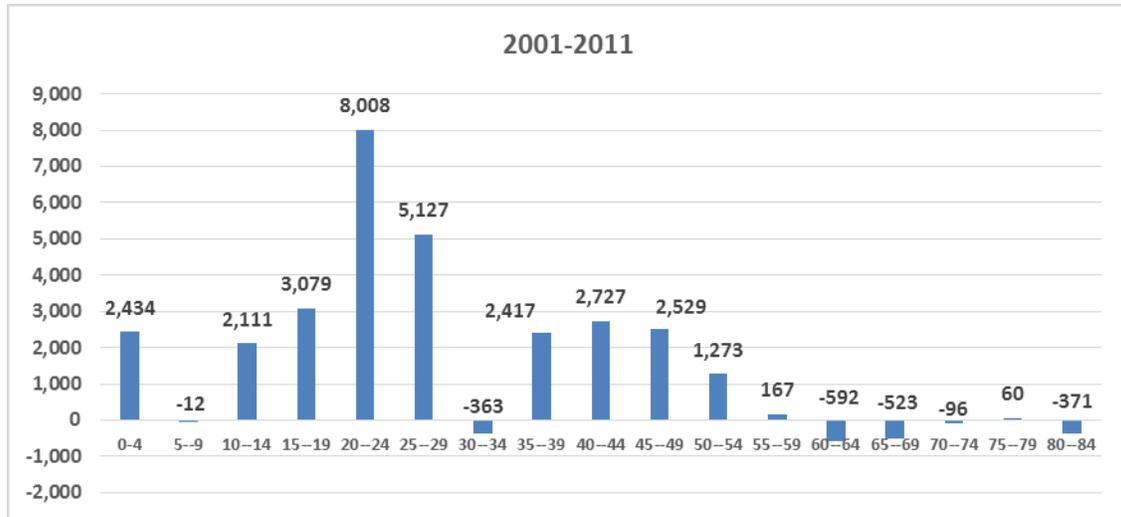
Figure 3.4: Age Structure of Saskatchewan's Urban Population



The above relatively stable population structure is primarily due to a significant in-migration that urban Saskatchewan has been experiencing in the past. Figure 3.5 shows that urban Saskatchewan experienced significant inflow of people in all age categories during 2001-2011. Overall, about 25,000 people appear to have migrated to Saskatchewan during 2001-2011.

Most of the new comers are young. They come from other provinces, rural areas and other countries.

Figure 3.5: Net In-Migration to Urban Saskatchewan



Had it not been for the new comers, Saskatchewan’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 3.6.

Figure 3.6: Saskatchewan’s Urban Population Structure in the Absence of Migration

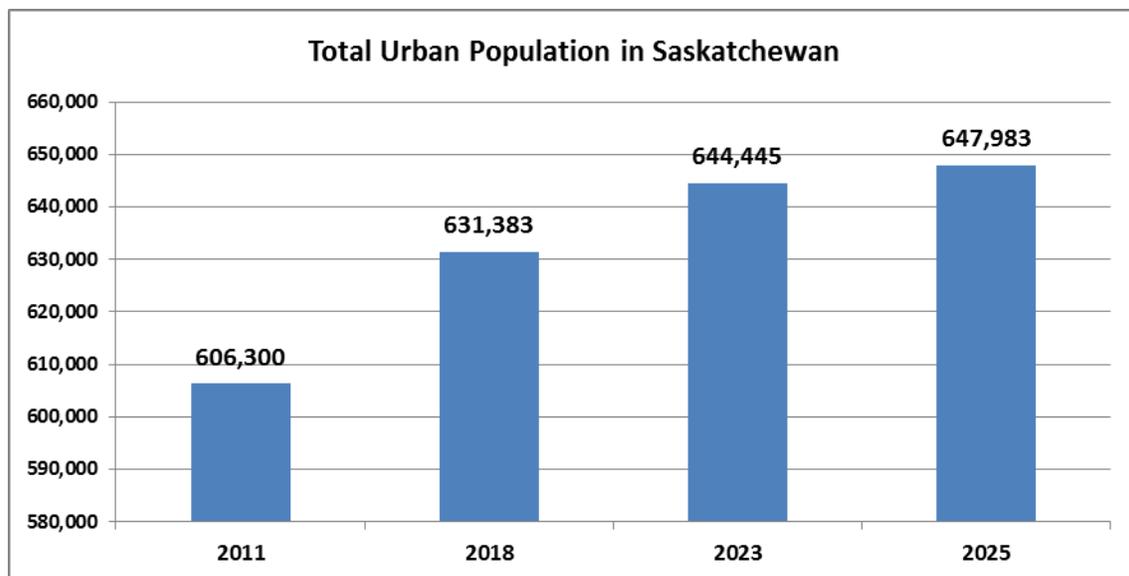
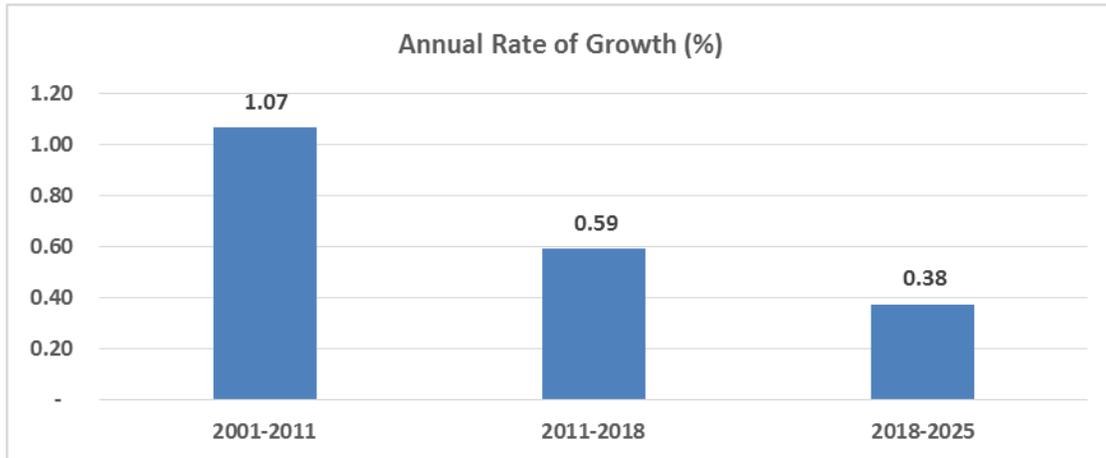


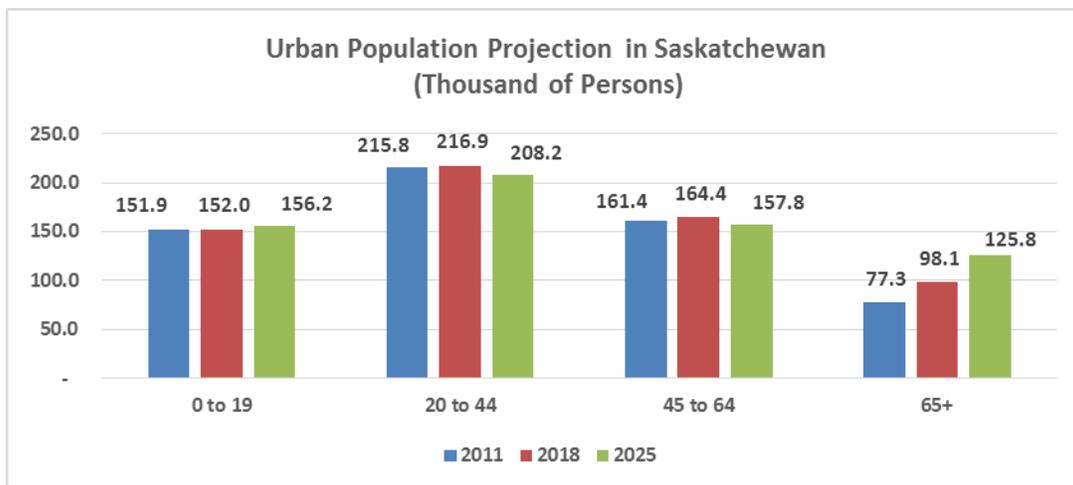
Figure 3.7 shows that under the scenario of zero net migration, the growth of Saskatchewan's urban population would have declined significantly from 1.07 percent per year during 2001 - 2011 to 0.59 percent during 2011-2018 and 0.38 percent during 2018-25 (Figure 3.7).

Figure 3.7: Population Growth Rate under Zero Migration Scenario



The age structure would have also changed considerably. As shown in Figure 3.8, the number of people between the ages of 20 to 44 and 45 to 64 would decline while the number of seniors aged 65 and over would increase during 2011-2025.

Figure 3.8: Urban Population Structure in the Absence of Migration



Without migration flows, Saskatchewan's urban population ages very rapidly. The share of individuals aged 19 and younger declines slightly from 25.1 percent in 2011 to 24.1 percent in

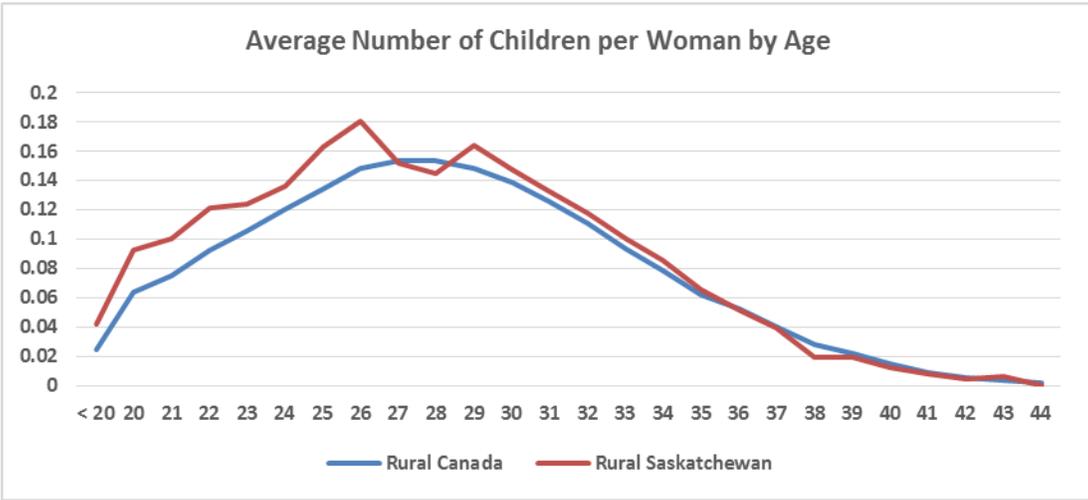
2025. The share of those in prime working age drops from 35.6 percent in 2011 to 32.1 percent in 2025. The share of those aged 45 to 64 falls from 26.6 percent in 2011 to 24.4 percent in 2025. The share of seniors increases from 12.7 percent in 2011 to 19.4 percent in 2025.

Saskatchewan’s Rural Population Structure

As shown in Table 2.4, Saskatchewan’s rural and small town population declined from 415,370 in 2001 to 412,020 in 2011, a decline of about 0.81 percent during 2001-2011. This is in contrast to the total urban population that grew about 10.68 percent and the provincial population that grew about 5.73 percent during the same period.

The declining of Saskatchewan’s rural population is happening not due to low fertility rates relative to urban regions. As mentioned above, the total fertility rate in rural Saskatchewan equals 2.40 which is significantly greater than the generational replacement rate of 2.1. In fact, the fertility rate in rural Saskatchewan is significantly greater than that in rural Canada (Figure 3.9). The horizontal axis shows the age groups and the vertical axis shows the average number of children per woman at a given age. On average, the total fertility rate in rural Saskatchewan equals 2.4 compared to 2.1 in rural Canada in 2011. Since the total fertility rate in rural Saskatchewan is significantly greater than the generational replacement rate of 2.1, the declining rural population can only be caused by out-migration.

Figure 3.9: Fertility Rates in Rural Saskatchewan and Canada



Looking into the Future: Rural Population Projection for 2011-2025

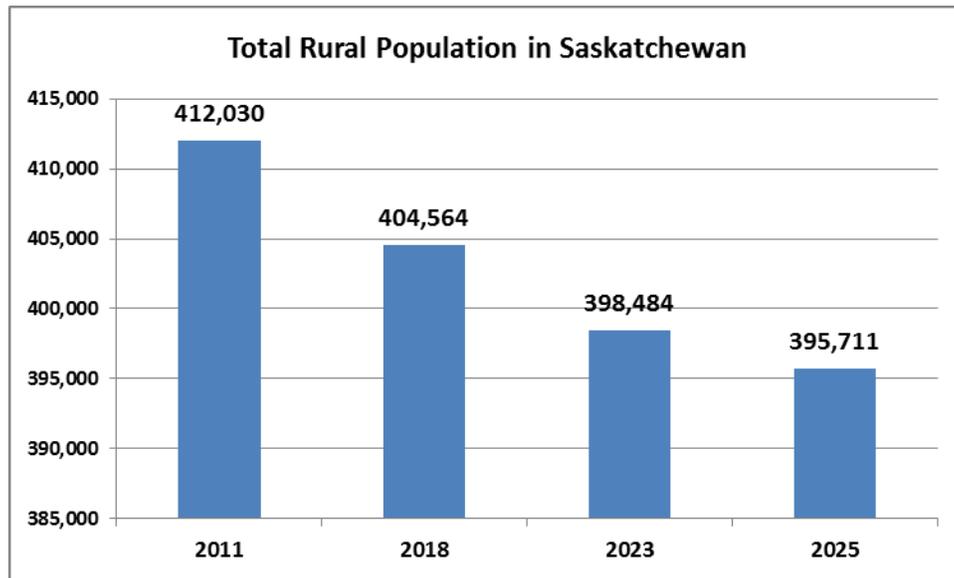
Using the demographic model discussed above, Table 3.2 presents population trends in rural Saskatchewan during 2011-2025.

Table 3.2: The Future Population of Saskatchewan's Rural Areas

Age Category	2011	2018	2025
0-4	29,550	26,044	25,019
5--9	27,720	28,622	25,565
10--14	29,455	29,084	27,993
15--19	30,375	29,568	30,623
20--24	23,295	26,925	25,416
25--29	22,225	18,663	20,571
30--34	22,115	18,688	18,378
35--39	22,055	23,513	18,211
40--44	23,275	23,943	24,223
45--49	29,000	23,310	24,693
50--54	31,480	25,924	23,162
55--59	29,985	30,439	23,278
60--64	25,275	30,120	28,511
65--69	19,535	24,634	28,194
70--74	15,430	18,552	22,814
75--79	12,595	12,221	15,421
80--84	9,965	7,734	8,272
85--89	5,885	4,441	3,731
90+	2,815	2,141	1,635
Total	412,030	404,564	395,711

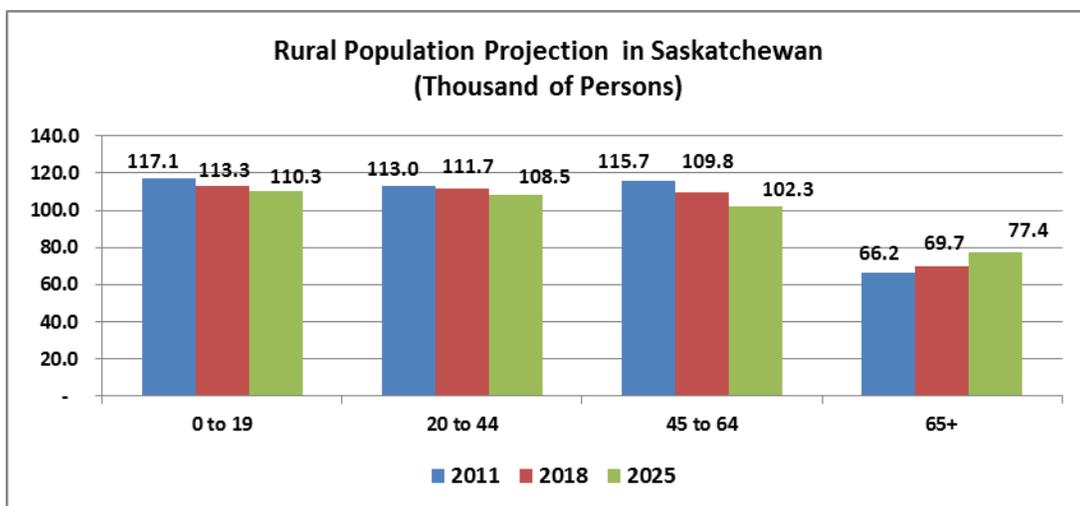
Saskatchewan's rural and small town population is expected to decline from 412,030 in 2011 to 395,711 in 2025, a decline of about 3.96 percent during the above period (Figure 3.10).

Figure 3.10: Saskatchewan's Future Rural & Small Town Population



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 28.4 percent in 2011 to 27.6 percent in 2025. Similarly, the share of those between 20 and 44 and between 45 and 64 years of age declines from 27.4 and 28.1 percent in 2011 to 27.0 and 25.2 percent respectively in 2025. The share of seniors is expected to rise from 16.1 percent in 2011 to 20.2 percent in 2025.

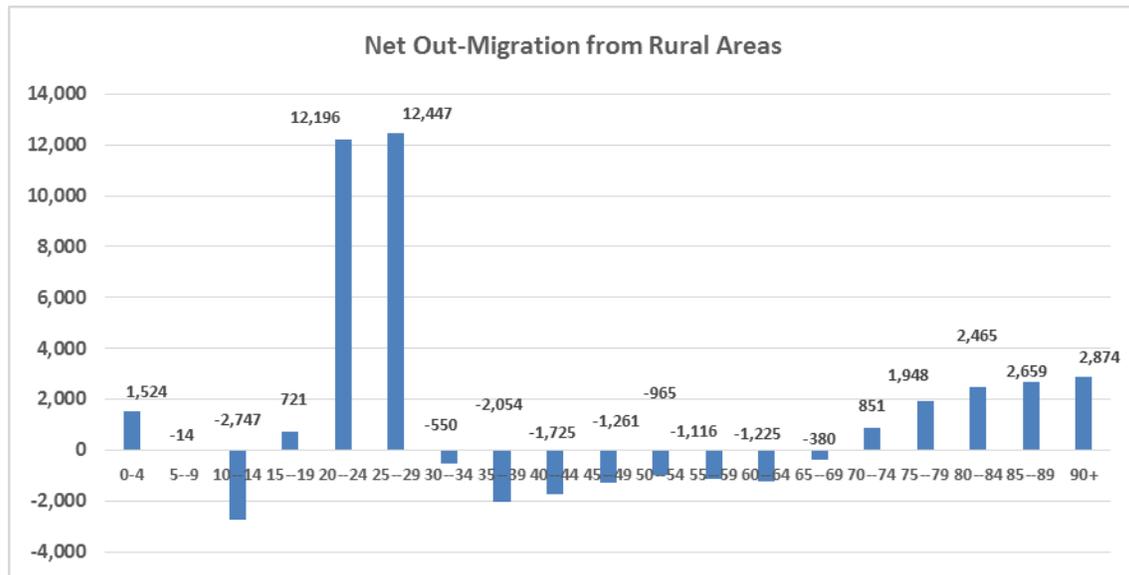
Figure 3.11: Age Structure of Saskatchewan's Rural Population



To examine the potential factor explaining the declining rural population in Saskatchewan, 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 migration by age during 2001 - 2011. Results shown in Figure 3.12 reveals that rural Saskatchewan experienced both in-migration as well as out-migration during 2001-2011.

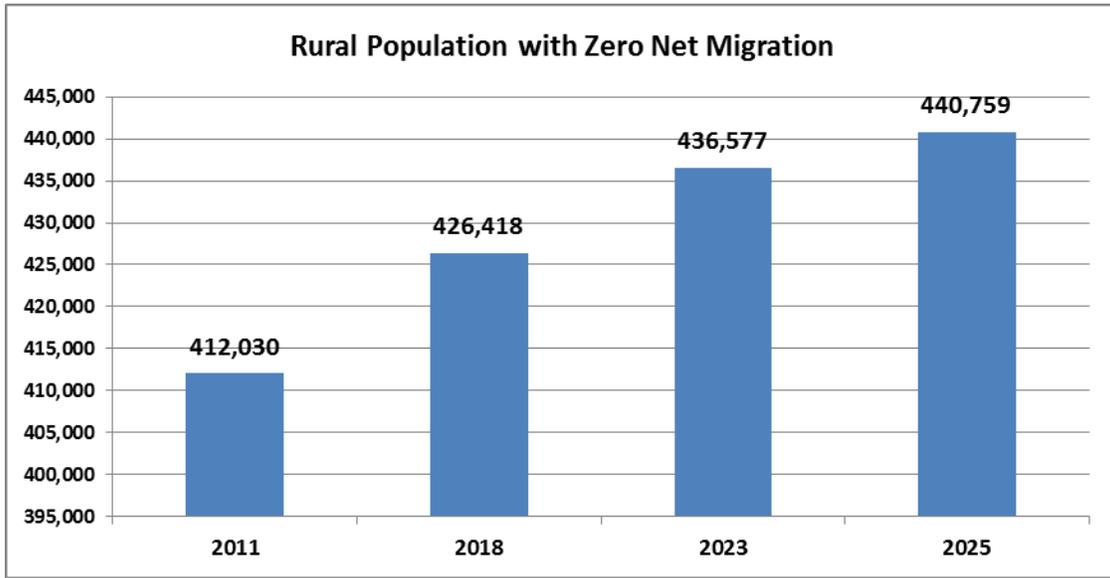
Figure 3.12: Net Out-Migration from Rural Saskatchewan



The largest group of movers are those between the ages of 20 and 30 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 are to remain productive. In addition to the youth, the data shows a significant out-migration of seniors seeking better medical services in urban regions or following their young children to other regions. It is also noteworthy that young adults who out-migrate from rural areas take their children with them which is reflected in a decline of children under age 4. The data suggests that Saskatchewan rural areas have also experienced net in-migration of individuals aged 30 to 69 years of age. Overall, the data suggests that about 25,000 people out-migrated from rural areas. Some moved to urban regions within Saskatchewan and some moved out of the province.

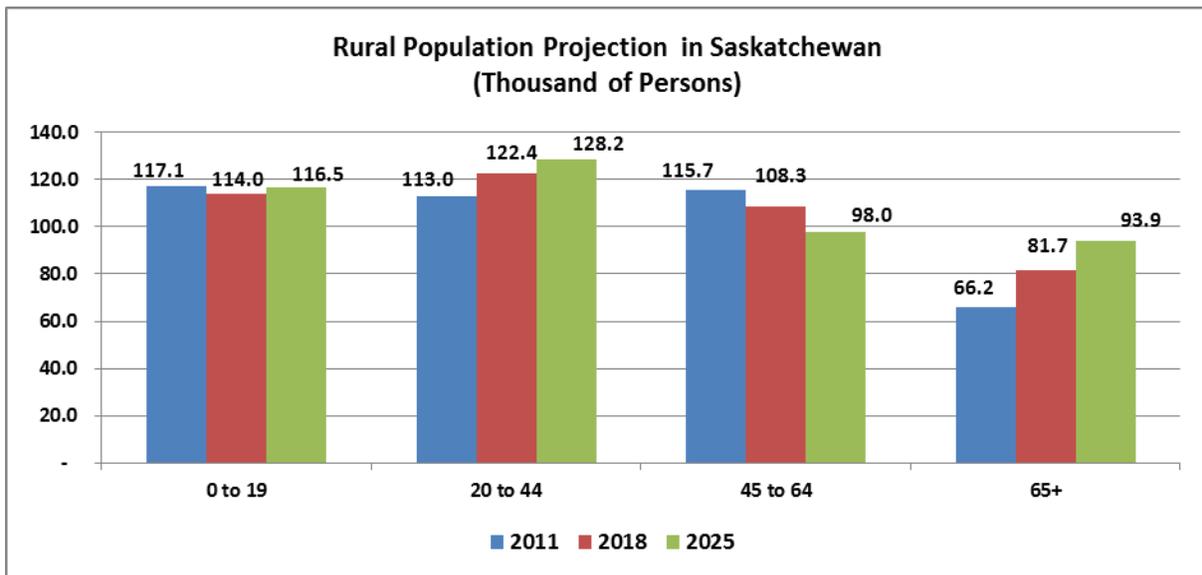
To investigate the structure that would have emerged in the absence of migration, we used rural Saskatchewan's 2011 population to forecast its future structure based on natural factors of fertility and mortality alone. The results shown in Figure 3.13 suggest that had it not been for out-migration, Saskatchewan's rural population would have increased from its current level of 412,030 to 440,759 in 2025, a growth rate of about 7.0 percent.

Figure 3.13: Saskatchewan's Rural Population in the Absence of Migration



Without migration flows, Saskatchewan's rural population would have increased and aged slowly. Figure 3.14 shows that the share of the population under 19 years of age would decline from 28.4 percent in 2011 to 26.9 percent in 2025. The share of individuals in their prime working age of 20 to 44 would have increased from 27.4 percent in 2011 to 29.6 percent in 2025. The share of the population aged 45 to 64 would have declined from 28.1 percent in 2011 to 21.3 percent in 2025. The share of seniors aged 65 years and over would have increased from 16.1 percent in 2011 to 22.2 percent in 2025.

Figure 3.14: Population Trends in Rural Saskatchewan in the Absence of Migration



PART IV: CONCLUDING REMARKS

The present report analyzes past, present and future demographic changes in rural and urban Saskatchewan. 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 focuses on four population groups, namely total provincial population, Francophone, Aboriginal and immigrant population and pays special attention to the degree of rurality.

The study uses various definitions of rural areas. First, we use the “rural and small town” definition referring to the population living in towns and municipalities outside the commuting zone of larger urban centres (outside the commuting zone of centres with a population of 10,000 or more). We also used the traditional definition of rural referring to the population living in areas with less than 1,000 inhabitants. We have also used areas with less than 500 or 300 inhabitants to test the sensitivity of our results to changing definition of rural regions. The findings of the study appear to be robust with respect to the rural definition employed.

The study shows that Saskatchewan’s population has been effectively at or near one million people for the past eighty years. It increased from 968,160 in 2006 to 1,033,380 in 2011 and reached an estimated record high of 1,117,503 in 2013.³⁶ Despite its recent growth, Saskatchewan’s share of the Canadian population has declined steadily during the past eighty years. It declined from 8.9 percent in 1931 to 6.0 percent in 1951, 4.0 percent in 1981 and 3.0 percent in 2011.

The declining population share has happened despite the fact that the total fertility rate in Saskatchewan has been significantly greater than the Canadian rate. The total fertility rate equals 1.99 in Saskatchewan compared to 1.61 in Canada in 2011. A higher fertility rate in Saskatchewan compared to Canada suggests that the declining population share in Saskatchewan is not due to natural population change but is due to its disproportionately low immigration as well as the outmigration of youth until recently. Between 1931 and 1945, the province suffered from the lowest immigration rates to Canada in history. Additionally by 2006, Saskatchewan registered one of the lowest immigrant retention rates in Canada (57%). Recent economic growth resulting from the resource boom the province has experienced has resulted in significant net immigration and interprovincial migration to Saskatchewan. This has resulted in growth of its population during the post 2006 era.

Demographic change has not been uniform across rural and urban areas. The province’s rural and small town population declined from 415,370 in 2001 to 412,020 in 2011, a decline of about 0.81 percent during 2001-2011. This is in contrast to the total urban population that grew about 10.7 percent and the provincial population that grew about 5.7 percent during the same period.

³⁶ Government of Saskatchewan, *Economic Review 2013*, No. 67.

The study reveals that the rural population is declining and aging in spite of the fact that the fertility rate in rural Saskatchewan is significantly greater than the generational replacement rate of 2.1. The reason for the declining and aging of rural Saskatchewan is the outmigration of youth between the ages of 20 and 30 in search of opportunities outside rural areas.

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 shows that the unemployment rate equals 6.6 percent in urban centres and rises as one moves away from population centres and towards rural areas. It reaches an average of about 19.2 percent in remote rural regions. The high rural unemployment rate is caused by a mismatch between the existing skills and those in high demand. Similarly, the labour force participation rate declines as the degree of rurality rises.

The study develops and estimates a human capital indicator for rural and urban Saskatchewan during 2001-2011. It shows that the human capital composition of urban and rural Saskatchewan has improved during 2001-2011 due to an in-migration of skilled workers during that period. However, the human capital indicators for Saskatchewan were still below the national levels in 2011. The study finds that the stock of human capital is one of the factors influencing 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 areas. In fact, apart from increasing productivity and earnings, investment in education has significant positive social and economic consequences as well. The goal should be to reduce the gap between the human capital level in rural and urban Saskatchewan and their national counterparts.

High unemployment in rural regions of the province coexists with growing demand for skilled labour. Employers appear to have difficulty finding qualified workers. A recent report on the profile of Saskatchewan trades finds that: "Saskatchewan currently has skilled labour shortages in the majority of the trades. A few of the trades have reached the stage of severe shortages, a situation where qualified workers are not available in local and adjacent markets to meet current demand. Intense competition for workers exists throughout the province, and recruiters are forced to look in other jurisdictions for skilled labour.

A recent survey of 150 chief executives of leading businesses in all sectors and regions in Canada reported that companies were unable to fill approximately 11,000 jobs during 2011-2013. Alberta and Saskatchewan were often mentioned due to their tight labour market and high vacancy rates. When asked in which cities, towns and rural regions shortages were most prevalent, Saskatoon, Regina and various rural regions of Saskatchewan were mentioned by a large majority of respondents. Many of the respondents stated that they expect shortages to increase over the next five to 10 years as the population ages and the economy expands.³⁷

Lack of qualified workers creates a significant obstacle for any economic development initiative in rural as well as urban areas in Saskatchewan. More importantly, many working in the trades are over age 50 and will be retiring and exiting the industry within the next 10 to 15 years. Therefore, there is a need to train the next generation of tradespeople. Investment in education and training appears to be necessary in order to ensure the future economic development of the province.

Historically, minimum formal skills requirements in the agriculture industry have resulted in relatively low stock of human capital in rural areas. According to the 2011 National Household Survey, about 30.0 percent of individuals between the ages of 15 and 64 in rural Saskatchewan do not have a high school diploma. Rural Saskatchewan can be viewed as the underlying fabric for the provincial economy.

A companion study to the present report shows that a higher level of educational achievement in Saskatchewan 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 or a trade certificate, relative to those without a secondary certificate, on various socio-economic indicators for men and women in Saskatchewan. Achieving post-secondary education also produced similar impacts.

³⁷ The Canadian Council of Chief Executives, *Second Survey Report: Skills Shortages in Canada*, March 2014.

Figure 4.1: Percentage Change in Indicators (%)

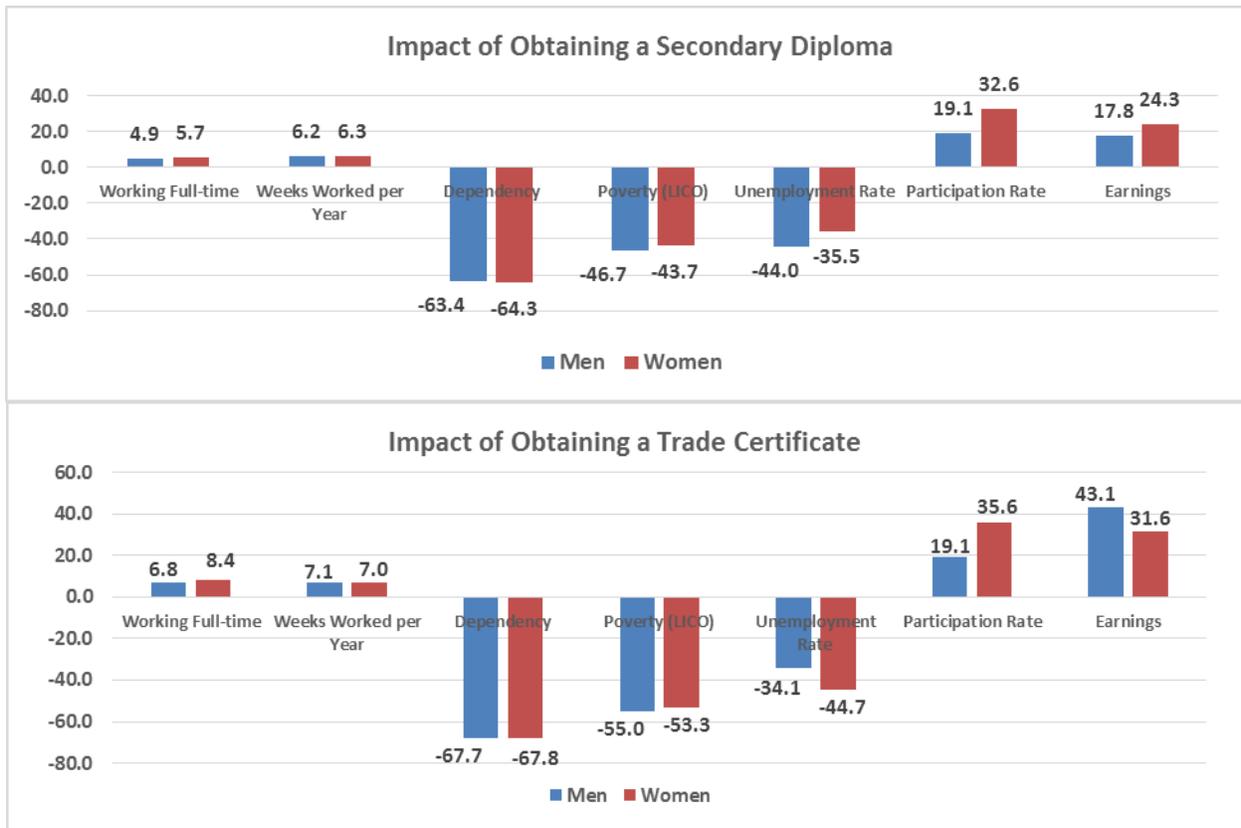
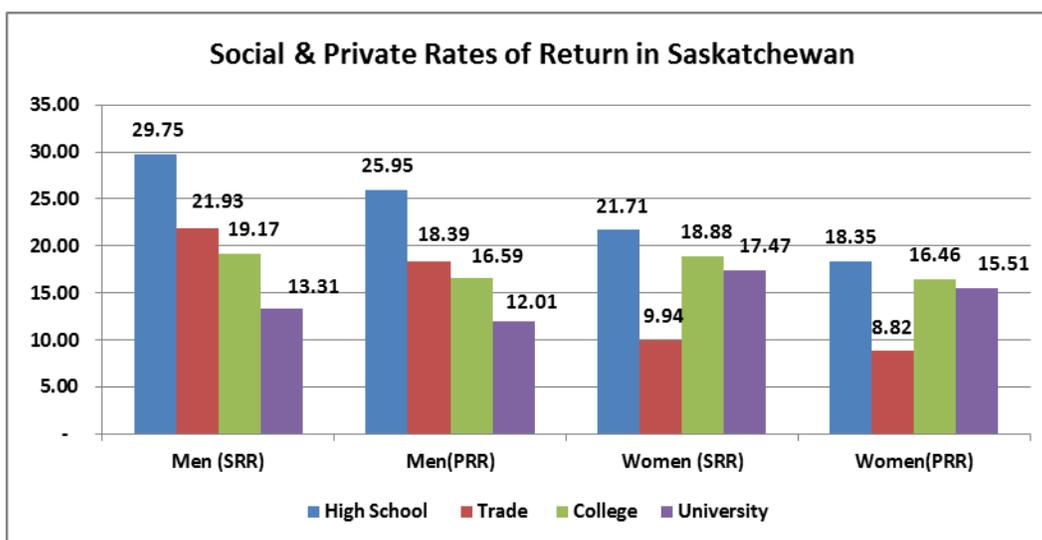


Figure 4.1 shows that obtaining a secondary diploma or a trade certificate increases the likelihood of working full-time, number of weeks worked per year, probability of participation and earnings. At the same time, it reduces the likelihood of unemployment, poverty and dependency on government transfer payments.

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 Saskatchewan. 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 Saskatchewan.

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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